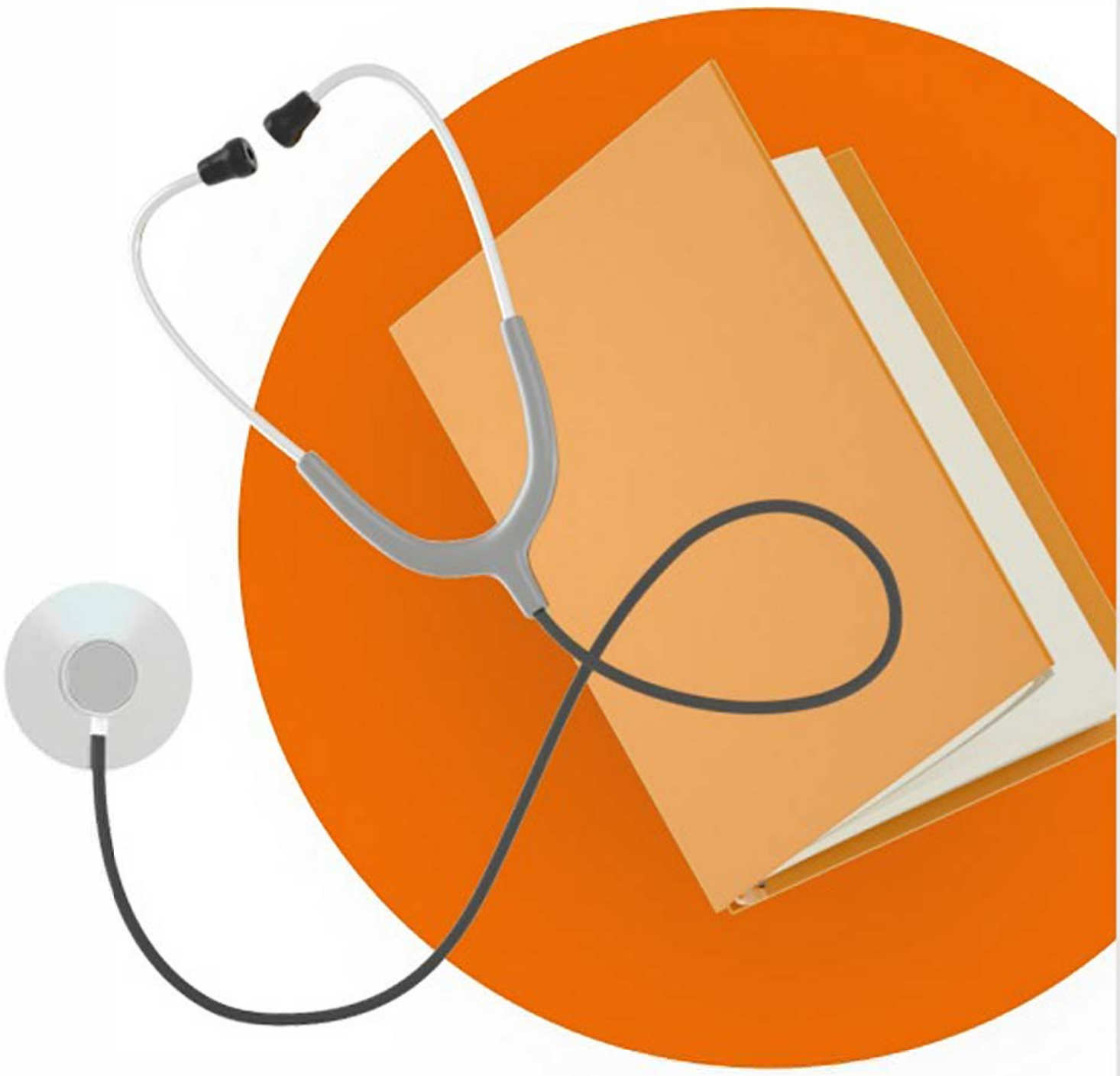
STRIDES in DEVELOPMENT of MEDICAL EDUCATION

Kerman University of Medical Sciences



Volume 16 | Issue 1 | Autumn 2019

Online ISSN: 2645-3452

Kerman University of Medical Sciences

Strides in Development of Medical Education

VOLUME 16, ISSUE 1, 2019

JOURNAL INFORMATION

AIM AND SCOPE

The aim of publishing Strides in Development of Medical Education is to promote the quality of the medical education and inform via publishing the conducted researches in all topics related to medical education. Such topics may include modern teaching methods, designing educational courses, evaluating the success rate of these courses, planning in medical sciences education based on the society's needs, and planning, management, and assessment of education. However, the Journal of Strides in Development of Medical Education welcomes any subjects causing a communication between the faculties and professors of the medical sciences and medical experts.

The Journal of Strides in Development of Medical Education is of the publications of the Kerman Medical Sciences Education Development Center and is financially sponsored by the aforementioned center. Now, the publishing of this journal is updated Continuous. Moreover, it is an online publication.

CONTENT COVERAGE

This journal publishes original, review, editorial, letter to the editor, short communication articles, all related to the journal goals.

Full Journal Title	Strides in Development of Medical Education
Abbreviation Title	Strides Dev Med Educ
Category	Medical Education
P-ISSN	1735-4242
E-ISSN	2008-272X
Language	English
Journal Country / Territory	IR Iran
Frequency	Continuous
Online Submission	www.sdme.kmu.ac.ir E-mail: medcj@kmu.ac.ir
Distribution	Iran (This Journal has published in Persian)
Price	**Online:** Open Access;
Indexing Sources	IMEMR, Index Copernicus, EBSCO, MagIran, IranMedex ,SID, ISC, Google Scholar
Editorial Board	**Postal Address:** Educational Development Center, Haft Bagh Blvd., No 8 Building, Kerman, Iran; Tel: +98-34-31325332; Fax: +98-34-31325347
Publisher	**Kerman university of medical education** **Postal Address:** • Kerman University of Medical Sciences, Medical University Campus, Haft-Bagh Highway, Kerman, Iran; Tell: 009834 31325829 Fax : 009834 31325830 **Electronic Address:** Website: www. Kmu.ac.ir

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This journal accepts references according to Vancouver style (with some minor changes) rules established by the International Committee of Medical Journal Editors. In the Vancouver system, the only indication required in the text of a paper is a number, allocated in ascending sequence, and presented in the text either in brackets, or in superscript. For example:

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Ford MJ, Munro JF. Introduction to Clinical Examination. 7th ed. Edinburgh: Churchill Livingstone; 2000.

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Meltzer PS, Kallioniemi A, Trent JM. Chromosome Alterations in Human Solid Tumors. In: Vogelstein B, Kinzler KW, editors. The Genetic Basis of Human Cancer. New York: McGraw-Hill; 2002. p. 93-113.

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Meydani SN, Leka LS, Fine BC, Dallal GE, Keusch GT, Singh MF, et al. Vitamin E and Respiratory Tract Iinfections in Elderly Nursing Home Residents: a Randomized Controlled Trial. JAMA. 2004 Aug 18;292(7):828-36.

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Strides in Development of Medical Education

VOLUME 16, ISSUE 1, Autumn 2019

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Strides Dev Med Educ. 2019 December; 16(1):e100142. doi: 10.5812/sdme.100142.

Published online 2019 December 24. **Editorial**

Outpatient Training: An Obscure and Old Challenge in Medical Education

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Received 2019 December 13; **Accepted** 2019 December 15.

Keywords: Outpatient Care, Medical Education, Barriers, Iran

In our country, the educational curriculum of general medicine starts with basic sciences, which often lasts 2.5 years. After passing a basic sciences comprehensive exam, the clinical stage starts in which medical students deal with the management (diagnosis and treatment) of the diseases (1).

Clinical education is a process in which medical students attend different clinical settings to gradually acquire skills and be prepared for rational and evidence-based decision making (2, 3). It is expected at the end of the clinical courses, the graduating physicians poses the competencies will help them to practice effectively in their new practice setting (4).

Although the quality of clinical education can guarantee safe independent practice for future doctors, numerous studies have shown that a number of clinical education programs are not able to provide the necessary skills in their graduate, since the trainees practice and learn in a dysfunctional environment (3-7). In our country, the majority of clinical training is provided in a tertiary educational hospital while the graduates, in the future, should be worked at the first and second level of health services system.

This challenge dates back to 1988 when International Meeting on Medical Education recommended the establishment of community-oriented medical education and the extension of clinical education from hospitals to the community (8). In 2001, the Accreditation Council of Graduate Medical Education (ACGME) stated that one-third of clinical training should be provided in outpatient settings (9).

Since then, in our country, community-oriented medical education was taken into consideration by Ministry of Health and many medical schools have sought to extend their clinical training programs to the outpatient setting. Over the years so far, under different titles; community-oriented medical education, community-based medical education, and social accountable medical education, Educational Health Network ,etc.), the issue has been studied, its strengths, weaknesses, opportunities and threats have been stated and even some effective interventions have been carried out in some medical schools (10, 11). But this obscure and old challenge, in spite of many efforts, still exists in our education system and no tangible result was found. Why?

Recently, by the Secretariat of the General Medical Council, a new issue has been raised as “field training” to extend and improve the outpatient training. According to the announcement of this council, a field can be a hospital affiliated clinic, and urban, suburb or even rural health care center, etc. with appropriate number and diversity of the patients in order to achieve the outpatient training goals.

If we want this new directive not to be caught in the fate of previous similar ones, some points should be considered seriously by medical education planners and policy maker before finalizing and communicating the new directive to all medical schools.

• To Fix a Misunderstanding: When it comes to outpatient and field training, all minds go to the Community Medicine Department Training but it is not right. Due to its nature, the training in the Community Medicine Department is not possible elsewhere except in the urban or rural health centers. According to the curriculum, during community medicine clerkship/internship, medical students should become familiar with the structure and processes

of the health care system, concepts such as integrated care for vulnerable population, national programs for the control and prevention of diseases, measurement and analysis of health indicators, and assessment of social determinants of health, etc.

Given the low proportion of these courses in general medicine curriculum (1/21 of the clerkship and 1/17 of the internship) and also their approved educational content, the outpatient training, in its true sense, is not possible during these periods. Therefore, medical school should involve other departments (at least major departments) in the outpatient training.

• To Specify the Outpatient Training Content: All contributing departments should specify their educational content for outpatient training, the content which could not be taught in the ward-based training programs. If this content does not exist clearly, students and professors get confused and the motivation for teaching and learning is reduced.

• To Identify the Appropriate Place for Outpatient Training: As mentioned above, a field can be a hospital affiliated clinic, and urban, suburb or even rural health care center, etc. To determine which of these centers are suitable for the outpatient training, each contributing department is responsible to identify the appropriate location based on its outpatient educational goals.

• To Specify Executive Responsibilities: After the content and location have been determined by the Training departments, the time has come for the contribution of the university deputies such as education, health, treatment and even management and resources development. Because if a department determines that its hospital-affiliated centers are not suitable for outpatient education, in terms of the number and diversity of the patients, each of these deputies can help the department to find a more suitable center. Finding, equipping and coordinating a training center for field training is beyond the responsibility of that departments and requires an agreement between all considered deputies with a clear description of their duties and responsibilities. If this contribution not done correctly, in addition to jeopardizing the implementation of new outpatient training program, routine service delivery processes also face problems.

However, it seems that the above points are the least things that must be considered for successful implementation of an ambulatory care training before the new introduced program "field training" is forgotten as previous similar programs.

Footnote

Conflict of Interests: There is no conflict of interests.

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Strides Dev Med Educ. 2019 December; 16(1):e80871. doi: 10.5812/sdme.80871.

Published online 2019 August 18. **Review Article**

Barriers and Facilitating Factors of Communication in Iranian Educational Health Care Centers: A Systematic Review

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Received 2018 June 14; **Revised** 2019 September 16; **Accepted** 2019 September 17.

Abstract

Context: Communication, as an essential human skill, is one of the most influential factors in the performance of healthcare workers. In fact, the establishment of effective communication with the recipients of healthcare services and patients can increase their satisfaction and quality of life. Due to the paucity of comprehensive research in this area, the present study aimed to investigate the barriers and facilitating factors concerning communication among healthcare workers.

Evidence Acquisition: This systematic review was conducted by searching PubMed, Scopus, Web of Science, MagIran, Iranmedex, Google Scholar, and SID databases, using the following keywords: "communication", "communication barrier", "communication facilitator", "health system", "nurse", "physician", "faculty member", "teacher", "student", "health manager", and "patient". All searches were conducted within a 10-year period from 2008 to 2018.

Results: According to our literature review, 44 articles (38 quantitative and 6 qualitative) met the inclusion criteria. In these studies, "pleasant greetings" and "tidy appearance" were the most important factors facilitating the patient-physician relationship, "teacher's modesty", "patience", and "respect for students" were the main factors facilitating the teacher-student relationship, and finally, "responsibility", "empathy", and "companionship" were identified as the most significant factors in the patient-health care worker relationship. On the other hand, the most important barriers to communication in the clinical setting were "poor introduction of the healthcare provider to patients", "high workload and fatigue", and "lack of training on the principles of communication skills and environmental factors".

Conclusions: Based on the findings, identifying the facilitating factors and barriers to communication is the most important step in the management of health services. Communication skills training can have a beneficial effect on the health education programs for the healthcare staff. In addition, it can improve the efficacy of health services.

Keywords: Communication Facilitator, Communication Barrier, Health Care, Systematic Review, Iran

1. Context

Communication is the cornerstone of human societies, without which social life cannot be sustained. Social life and dynamic social interactions provide an opportunity for individuals to develop their capacities, abilities, and personal traits. In fact, without effective communication, it is not possible to boost one's creativity and vision (1). Generally, communication is described as the process of transmitting information and common understanding from one person to another. There are at least three essential components in communication, including the sender, receiver, and message (2).

Communication takes place in both verbal and non-verbal forms (3). Verbal communication involves all aspects of speech and verbal tools and is widely used by healthcare workers to facilitate communication with patients and other people in the healthcare setting and present oral medical reports to colleagues (4). On the other hand, more than two-thirds of every communication is non-verbal. Non-verbal communication integrates a wide range of physical responses, such as facial expressions, eye contact, hand and head movements, noise, and silence. It represents an individual's feelings and attitudes toward others and is otherwise known as body language (5).

Among non-verbal skills, facial expressions are of particular importance, as they can reveal the individual's feelings and attitude toward others' actions or behaviors (6). It should be noted that non-verbal messages are often subconsciously transmitted; therefore, they can be more reliable than verbal communication (7). In order to establish an effective and dynamic relationship, both verbal

and non-verbal skills should be used effectively. Among different groups of people, healthcare workers including faculty members, students, residents, nurses, consultants, and health care administrators have the most direct and indirect interactions with each other, people and health care recipients. In educational health centers, therapeutic services are provided in addition to education and training for students. Therefore, effective communication is the key to provide the desired health services in these centers.

Failure in communication has adverse effects, such as poor student training, increased rate of misdiagnosis, increased medical errors, reduced knowledge, and information of patients, patient dissatisfaction, patient noncompliance with health care, lack of treatment or incomplete treatment, and mortality. By the same token, it has harmful effects on the physical, psychological, and socioeconomic aspects of an individual's life and negatively affects healthcare services (8). Evidence shows that physicians who are well connected with patients are more likely to make accurate diagnoses and identify emotional distress in patients (9); accordingly, mastery of communication skills is vital. Overall, the identification of barriers and facilitating factors concerning communication among healthcare workers in different domains of education, research, health, and treatment, along with the acquisition of communication skills, seems crucial.

Multiple factors are known to influence the process of communication. Various studies have been published on communication skills and related factors, each focusing on one or more indicators or one aspect of communication. Since no research has comprehensively examined all the contributing factors of communication, the purpose of this study was to summarize relevant studies in this area and to meet the requirements of knowledge development related to communication. In addition, the present study focused on facilitating factors and barriers to communication among healthcare workers.

2. Methods

This systematic review was conducted on studies and data sources related to the facilitating factors and barriers to communication in the Iranian Educational Health Care centers. Overall, a systematic review is a structured search of the literature according to a predefined set of rules. This type of review, by integrating strategies with minimum error and bias, presents a summary of the results of primary studies. In other words, a systematic review is an observational study of quantitative and qualitative research, which allows the researcher to concentrate on major results.

2.1. Search Strategies and Data Sources

Two assessors independently searched the literature in PubMed, Scopus, MagIran, Web of Science, Iranmedex, Google, SID and reviewed the references of articles found in the primary search. All studies published in the last decade (2008 - 2018) were reviewed without any language restrictions (both Persian and English articles were included). However, studies without an English abstract, such as letters to the editor, proposals, poster presentations at congresses, and case reports were eliminated.

The electronic databases were searched based on the Medical Subject Headings (MeSH). An extensive search was carried out using a combination of the following keywords: "communication", "communication barrier", "communication facilitator", "healthcare system", "nurse", "physician", "faculty members", "instructors", "students", "health managers", and "patients". To increase the sensitivity of primary search, available resources were thoroughly searched to avoid missing relevant documentation. Therefore, papers which were possibly unrelated to our subject were included in the initial stage, while in the later stages, less relevant articles were removed. We tried to only include relevant and reliable information in this study.

2.2. Selection and Quality Assessment of Articles

At first, all retrieved articles were entered in EndNote. Duplicate articles were identified and removed from the analysis. The remaining articles were listed based on their title and abstract. Afterward, studies with abstracts, which were clearly irrelevant to the research topic, were excluded. Next, the full-text of relevant and partially relevant articles was reviewed to ensure the relevance of their subject matter to the purpose of our study and to identify and classify the main findings.

Qualitative assessment of articles was based on the main guidelines for improving the quality of systematic review methodologies for scholars and reviewers. The evaluated items in the checklist included the year of study, type of study, study location, sample size, population, data collection tools, validity and reliability of tools, data analysis methods, and report of findings. In the evaluation of articles, the checklist items were scored from 0 to 10. Based on scientific consensus, studies which at least obtained 50% of the total score were considered eligible for the study after approval by methodology experts (10, 11).

2.3. Data Analysis and Synthesis

The research team agreed on the type of information to be extracted from the articles. The collected information included the study objectives, year of the study,

study methods (quantitative and qualitative), study design, study population, main findings, and references. In the present study, we tried to focus on the important sections of studies to extract the main findings. These sections included the final part of the introduction section (objectives), primary results, and findings presented in the discussion and conclusion sections of the articles.

Information was extracted and analyzed by the research team. Meanwhile, to increase the accuracy of our study, all articles were examined by the research team to avoid any errors caused by personal differences. Then, the research team approved the review, summary, and abstraction of articles, and facilitating factors and barriers to effective communication were evaluated in the educational-health care centers of Iran. This article is based on a research project with the title of Survey and community need assessing of three populations in Chaharmahal and Bakhtiari province, Iran (ethics code, IR.SKUMS.REC.1397.104).

3. Results

The search process of articles is presented in Figure 1.

To increase the search sensitivity and avoid missing relevant articles, the search was first conducted without any time limitations. Almost 1125 articles were retrieved. Also, five articles were identified from the reference lists of articles. A total of 1130 papers were found in our primary search.

In the second phase of the study, 824 articles were removed, and 170 full-text articles were selected, based on their title, abstract, subject, and time frame and general assessment of researchers. In the third phase, the articles were evaluated using a checklist. A total of 44 studies were found to be eligible for our systematic search, including 15 papers on the teacher-patient relationship, 20 papers on the patients' relationship with managers, nurses, and caregivers, eight articles on the patient-physician relationship, and one article on the relationship between nurses and caregivers and patients' families. Papers were classified and evaluated with respect to their topic (including teacher-student relationship, physician-patient relationship, the relationship between health managers, nurses, caregivers, and patients, and the relationship between nurses, healthcare team, and patient's family) and communication barriers and facilitating factors in Iranian Educational Health Care centers. The characteristics of these studies are presented in Table 1.

3.1. Factors Facilitating Communication in the Educational Health Care Environment

Patient-physician relationship: In the patient-physician relationship, the physician's professional meeting and greeting and appearance were the most significant facilitating factors (Table 2).

Student-teacher relationship: Factors such as teacher's humility, ethics, and respect for students accounted for the highest percentage of facilitating factors (Table 2).

Relationship of patients with managers, nurses, and healthcare providers: Empathy and sympathy for patients and expressing a friendly feeling with the patient were the most important factors in communication with patients (Table 2).

Relationship of nurses and healthcare providers with patients' families: Spiritual and emotional aspects, counseling, guidance in decision making as well as treatment selection were the most important factors affecting the relationship with patients' family members and companions (Table 2).

3.2. Barriers to Communication in the Educational Health Care Environment

Patient-physician relationship: Poor physician's introduction to the patient accounted for the highest percentage of barriers to establishing communication with patients (Table 3).

Teacher-student relationship: Some of these barriers included behaviors, which increase students' anxiety, frustration, and fear (Table 3).

Relationship of nurses and healthcare providers with patients: The high workload, followed by language and cultural differences, is one of the most important factors, affecting the quality and quantity of communication with patients (Table 3).

4. Discussion

The purpose of this study was to systematically review the evidence, documents, and articles regarding the facilitating factors and barriers to effective communication among healthcare personnel in order to strengthen the facilitators of effective communication, remove the barriers, and use creative strategies for establishing effective communication with the healthcare team. In the present review, articles were categorized according to their subject into four areas: physician-patient relationship; teacher-student relationship; nurse-manager relationship; healthcare team, nurse, and manager relationship; and the relationship of the healthcare team with the patient's family and companions. Comparisons and discussions about these relationships are presented in this section.

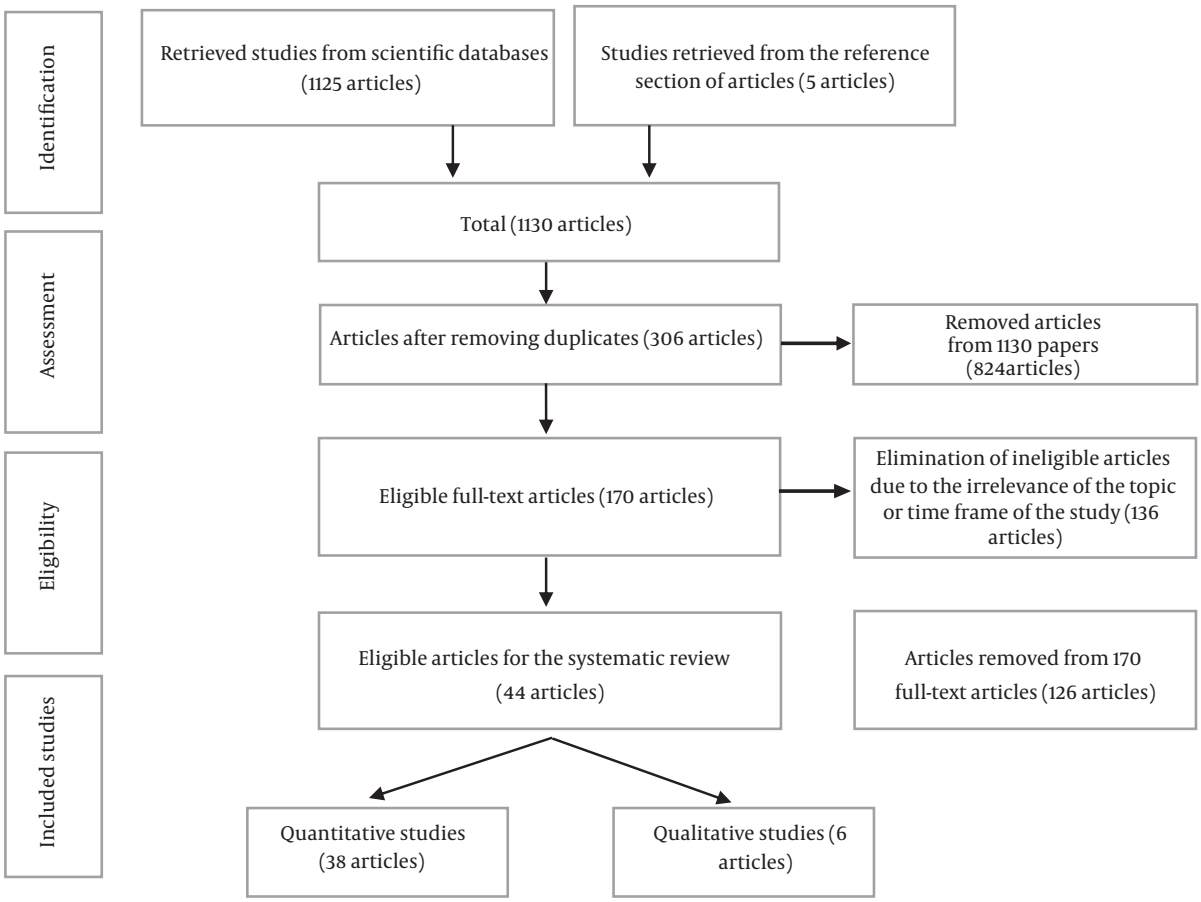

Figure 1. The structured search strategy of databases and selection of articles

Different studies have pointed to one or more determinants of physician-patient communication. Since each study has focused on one aspect of this phenomenon, not all indicators were investigated in one single article. Therefore, it is natural that all indicators are not observed in non-overview studies, and in this research, we tried to summarize and describe all factors associated with communication skills. According to previous studies, the level of communication skills in three areas of a teacher-student relationship (1, 12-15, 18, 19), physician-patient relationship (22, 23, 26, 32), and healthcare provider-patient relationship was generally assessed at a moderate level (8, 33, 38, 39).

4.1. Physician-Patient Relationship

Medical practice is an integration of science and art. A competent physician should have several skills, including effective communication skills for interacting with patients. Communication skills are considered a vital component of clinical practice, as they are effective tools for accurate diagnosis of disease and convincing them through medical consultation. On the other hand, interpersonal and communication skills are considered as one of the main areas of competence assessment for medical students, residents, and physicians (48). In fact, proper interaction and communication between physicians and patients is an effective factor in treatment outcomes.

The physician's professional and empathetic attitude towards patients, based on active communication, increases the patient's trust in the physician for accurate and timely treatment. In fact, by building trust in patients, physicians can improve the patients' compliance with treatment and increase their satisfaction (28, 53, 54). In addition, increased patient satisfaction improves patient compliance with medical directives increases and predisposition to follow up with the provider is strengthened, while 30-day readmission rates are lower, and ultimately, the cost of treatment is reduced (55).

Table 2. The Most Important Findings on the Facilitators of Communication in the Educational Health Care Environment in the Systematic Descriptive Review

Factors	Findings
Patient-physician relationship	Start of interview: Meet and greet (28, 31, 32), physician's demeanor and appearance (16, 28, 31), addressing patients and asking their names (25, 30, 31), explaining the purpose of assessment to patients and even comforting them (28, 31), and finally introduction of physicians to patients (25, 30, 32).
	During interview: Physician's friendly attitude towards patients (25, 28, 31), empathy for patients (25, 31, 32), giving time to patients to discuss their problems (25, 26, 31, 32), having respect for the beliefs and ideas of patients (25, 26, 31), establishing non-verbal communication with patients (25, 26), respecting patient privacy (25, 31), presenting questions in a simple manner in accordance with the patient's literacy level (25, 26, 28, 31), encouraging patients to further discuss their issues (25, 30, 31), listening to patients (25, 26, 28, 31), giving appropriate answers to the patients' questions and ensuring the patient's understanding of the discussed subjects (25, 26, 31).
	End of interview: Asking patients about the topics which are left undiscussed and answering the patients' possible questions (28), summarizing the findings of interviews and assessing the patients' understanding of interview results (25, 26, 28, 31), and announcement of the end of interview through verbal and non-verbal communication (28, 30).
Student-teacher relationship and nurse-physician relationship and collaboration	Personal factors: humility and good manners (1, 12-15, 17-19, 21, 23), high work motivation (1), gender (1, 22), age (1, 18, 20), marital status (1), demeanor and appearance (1, 6, 24), religious beliefs (1, 14, 24), secrecy and confidentiality (12, 13, 24), eloquence (1, 24), patience (1, 12-15, 18, 19, 23, 24), speaking skills (1, 12, 13, 15, 24), clarity of the presented subjects (1, 24), good listening skills (1, 20, 23, 24), teacher's intimacy and politeness (1, 17, 24), respect for students (1, 12-15, 18, 19, 23, 24), student guidance (17, 23, 24), amiability (13, 14, 23, 24), positive an attitude (24), flexibility (14, 23, 24), impartiality in treating students (13, 14, 18, 24), students' understanding and empathy (1, 15, 18, 24), and assistance with the students' problems (23).
	The scientific factors and attributes included: having up-to-date information (1, 12, 13, 18, 24), experience (13, 15, 24), having teaching knowledge, and mastery of subject matter (12, 13, 15, 18, 21, 24).
	The professional qualities included: professional competence (1, 24), strict teaching disciplines (1, 13), presentation of study subjects and teaching skills (1, 12, 15, 21, 24), teacher's emphasis on regulations (1, 13, 24), motivating and involving students (23, 24), motivation and desire to guide students (15, 17, 24), punctuality (24), and interest in the teaching process (24, 25).
	Environmental and physical factors of the work environment (1, 21).
Relationship of patients with managers, nurses, and healthcare providers	Gender (37, 46-48), age (12, 33, 36, 41, 46), cooperation of physicians and nurses in treatment decision-making and teamwork (29), employees' appearance and demeanor (44), empathy for patients (29, 38, 39, 42), friendliness (29, 39, 42), assuming responsibility (29, 39, 42, 49), respectful behavior and attitude (39, 42), ensuring the safety of patients (49), appropriate clinical conditions (38, 42, 44), timely and proper delivery of services (38, 49), genuine interest in helping patients (39, 49), patient's trust in the scientific and practical competence of therapists (39), interest in cooperation and helping patients (29, 38), guidance and response to patients' questions (44, 49), being knowledgeable (42, 49), experience of providing care for patients in the family (39), being respectful (39, 42), gaining the trust of patients (44, 49), secrecy (44, 49), being accessible and communicating with patients (44, 49), competence in providing care (42, 44, 49), and use of simple sentences instead of complicated medical terms (44, 49).
Relationship between the healthcare team and the patient's family	Spiritual factors (faithfulness and adherence to religious rules), emotional factors (empathy, mutual understanding, and feelings of trust and comfort), attracting cooperation (participation in decision-making and physical care), and consultation and guidance in the selection of optimal treatment (50).

Since the clients referred to healthcare centers may have different cultural backgrounds, complaints, or socioeconomic and health literacy levels, they may have different expectations from physicians. Accordingly, physicians should consider the basic needs and causes of patient referrals with respect to cultural, social, and economic conditions in order to communicate effectively with patients; therefore, communication skills are essential to medical performance. On the other hand, these skills can be taught and learned. In recent years, many medical universities around the world have added communication skills training to their curriculum. Overall, a vital factor in the effectiveness of healthcare services is maintaining patient centrality through effective communication (56).

The most common physician-patient communication weaknesses were reported at the beginning and end of the examination (28, 30, 51); however, fewer shortcomings were reported during the examination process. One of the barriers to physician-patient communication in healthcare settings is the lack of job motivation and satisfaction among physicians, inattention to the importance of patient involvement in diagnostic and therapeutic decisions, unsuitable workplace conditions, and unsuitable location of the patients' waiting room (43 Moreover, the presence of physicians in clinics after visiting the patients in the area that is often tired is one of the reasons for poor communication between physicians and patients (57).

Based on the findings, basic physician-patient communication skills, including meet and greet, respect for patient's beliefs and ideas, active listening, confidentiality, empathy, humility, patience, information collection and presentation, patient education, and ensuring the patient's understanding, should be strengthened (25, 31, 32).

4.2. Teacher-Student Relationship

Communication in the process of learning occurs by the exchange of information and knowledge in a two-way interaction between the teacher and student. Teachers by

Table 3. The Most Important Findings on Barriers to Communication in the Educational Health Care Environment in the Systematic Descriptive Review

Barriers	Findings
Physician-patient relationship	Poor physician's introduction to patients (28, 30, 32, 51), lack of explanation about the purpose of medical examinations (28, 30), lack of understanding and respect for patients (24, 25), use of medical jargon (25, 28), lack of understanding for the patients' beliefs (26, 28, 31, 32, 52), and patients' lack of access to physicians (27).
Student-teacher relationship	Behaviors leading to the students' anxiety and stress, discrimination between students, lack of understanding about the students' needs, tidy appearance and demeanor, poor behavior, and lack of teaching knowledge.
Relationship between patients and managers, nurses, and healthcare team	Factors related to department management and healthcare team communication with patients: high workload (34, 36-38, 46), disregard for the needs of nurses and patients (41, 48), difficult work (8, 34, 38, 41, 46), Additional work shifts and lack of supervision (36, 48), effective management (49), supervisor's professional and supportive care (49), mutual trust and interaction of physicians, nurses, and other hospital staff (29, 49), imbalanced patient-to-nurse ratio (8, 34, 36, 38), lack of training on the principles of in-service communication skills (35, 42), aggressive or unprofessional attitude towards patients (8, 35, 46), work-related fatigue and stress (35, 36, 42-44, 46), lack of motivation and enthusiasm at work (8, 38, 43), personnel's low self-esteem (44), sense of vulnerability and negative attitude towards patients, especially those with contagious and chronic diseases (41), care for chronic patients (34), lack of interest in communication (34, 37, 42, 45, 48), unpleasant experiences in previous encounters with patients, inadequate understanding of the patients' needs and status (8, 43, 49), occupational burnout (34, 36, 38), feeling of injustice in the workplace, work experience (38), lack of speech clarity (42), use of medical jargon (45), insufficient explanation of the treatment process (40, 43), physician's abrupt cessation of communication with patients and attention to other issues (43), frequent phone calls made by the patients' family (40), delayed purchase of drugs from pharmacy (40), delayed attention to new medical guidelines, and inadequate physicians' information (40).
	Mutual factors: age and gender differences between the patient and personnel (33, 37, 41, 46-48), cultural and religious differences (43, 47, 48), language differences (34, 37, 41, 46-48), illiteracy and low health literacy (48).
	Environmental factors: Overcrowded environment, inappropriate environmental conditions, presence of chronic patients in the department, noisy environments, frequent hospital visits, poor ventilation, unpleasant smell, insufficient light in the room, low room temperature, presence of patient in the unfamiliar environment of the hospital, and poor sanitation of the patient's room (33, 34, 36-39, 44, 45).

using effective communication skills and knowledge and creating an appropriate environment can improve the students' learning. In fact, they can facilitate the process of learning through appropriate communication with students and even compensate for the lack of educational facilities. In contrast, the teacher's inability to communicate properly with students can turn dynamic environments into inactive and unproductive settings (13).

The most significant part of learning takes place in the university environment and is shaped by instructors and lecturers. Education is considered to be of greater importance if the provided training is related to community health. Also, medical students are among groups of learners, who acquire communication skills in the university environment. Overall, these skills can significantly affect their performance and patient satisfaction (58). Accordingly, improving the quality of learning process through effective communication is important (16). Since students of medical universities come from different geographical regions and cultural backgrounds, instructors should pay particular attention to cultural factors in order to establish effective communication with the students. Also, they should interact with the students based on their primary assessment and students' conditions.

Review of different studies showed that among individual, ethical, scientific, professional, and workplace factors, the teacher's ethical and scientific characteristics had the greatest influence on the teacher-student relationship. These factors included the teacher's ethics and humility, respect for the students' morale and understanding their psychological needs, amiability, patience, impartiality, confidentiality, being up-to-date, mastery of subject matter, and rhetoric skills.

According to the findings from various studies, it is necessary for teachers to understand the importance of patience, respect for students, and mastery of subject matter in communication with students (1, 12-15, 18, 19, 21, 23, 24). Also, Universities are required to organize workshops on communicating with the students, organizing and setting up lessons and teaching methods for the teacher, to increase student's satisfaction with increasing educational quality. However, negligence in this area will lead to the reduced quality of education, and ultimately, reduced quality of services in the health sector of the country (19). Although there isn't any literature on barriers to teacher-student communication, we believe that different factors, such as no attention to the main issue and Professor's hardening and behaviors lead to anxiety and intimidation of students, can affect effective communication. In fact, all effective factors in effective communication, if not followed, can be considered as a barrier to communication.

4.3. Relationship of Nurses and Healthcare Team with Patients

Communication is considered as one of the most important principles and prerequisites for the personnel of primary healthcare settings (24). In the healthcare system, health care providers encounter different clients, each requiring a different method of communication (59). Ef-

fective communication with patients in the educational health care environment improves their satisfaction and quality of life (59). On the other hand, one of the main reasons for inattention to the psychosocial needs of patients is the lack of proper communication between patients and clinical staff (14).

The results of previous studies indicate that most public complaints and incorrect application of directives by patients and health care workers are not the results of the incompetence of the staff, but they are due to communication problems (60).

Studies show that most public complaints and incorrect application of directives by patients and health care workers are not the results of the incompetence of the staff, but they are due to communication problems (14).

In this regard, Zamanzadeh et al. concluded that patients lose confidence and respect for nurses due to their lack of knowledge and skills (44). Therefore, communication skills are a prerequisite for providing high-quality health services. It is also vital for physicians to know how to communicate with different patients under different circumstances. Accordingly, healthcare personnel should receive training in communication skills.

Culture plays an important role in communication. In order to establish effective communication, the medical staff should be aware of the patients' cultural differences, as culture affects how patients perceive death and illness and communication will be impaired without this knowledge. Overall, the provided care should be in line with the patient's culture (60, 61). The medical staff should establish a good relationship with patients, regardless of their individual characteristics or culture. This type of relationship is built on trust, and physicians should be honest in their relationship. Also, building trust in patients encourages them to express their needs, concerns, and fears. In this case, the health care environment can be used for evaluating, planning, and managing the patient's disease (42, 62).

Language and gender differences between the patient and nurse were among barriers of an effective relationship; these differences were mostly addressed by female nurses and male patients. Differences in spoken language and culture are among the most important factors affecting the quality and quantity of communication with patients. Environmental factors and working conditions are also among barriers affecting the quality of communication. Therefore, providing a safe psychological and physical environment can increase the comfort and satisfaction of patients and health authorities. Evidence suggests that working in an environment where the safety and welfare of employees are taken into consideration increases their motivation and interest in communication and facilitates effective communication with patients (47).

Based on the results of previous studies, high workload, anxiety, physical pain, and discomfort were the main barriers to understanding therapeutic communication. The hospital authorities should ensure that the nursing workload is reduced in order to facilitate effective therapeutic communication (63). According to the findings reported by Keall et al. (64) and Strang et al. (65), lack of knowledge and awareness of the medical staff about effective communication is one of the most important communication barriers. Therefore, in-service communication skills training is essential.

4.4. Relationship of the Healthcare Team with Patients' Family

Anxiety and stress are among the main psychological problems, which affect the families of patients. In fact, the main concerns of families are the consequences and complications of diseases and cost of treatment (49). Therefore, the relationship between the clinical staff and patients' family members and companions is of great importance. Inadequate interpersonal authority, high workload, and imbalanced staff-patient ratio result in the reduced efficacy of clinical staff and consequently inadequate support and information about the disease and treatment for patients (21).

The results of a qualitative analysis of effective communication between the medical team and patients' family indicated five major classes: spiritual factors (faithfulness and adherence to religious rules), emotional factors (empathy, mutual understanding, and feelings of trust and comfort), cooperation (participation in decision-making and physical care), interactive education (identification of the information needs of families, answering the families' questions, and patient education), and consultation and guidance in the selection of optimal treatment (50).

The main strength of the present review was that since each study had focused on one aspect of the subject matter and not all indicators were included in one study, the findings of various studies were merged, and all aspects of the relationship were combined and summarized. The present findings can present a deep insight into the facilitating factors and barriers of communication in Iranian Educational Health Care centers.

The main limitation of all systematic reviews is selection and publication bias. No language restrictions were considered in this study to prevent bias (both Persian and English articles were extracted); also, information sources were searched by two individuals both electronically and manually. Another limitation of this review was the low contribution of English articles.

5. Conclusions

Identification of factors affecting communication can be the first step in solving communication problems. Different studies have pointed to one or more factors related to effective communication. Since each study had evaluated the phenomenon from one particular aspect, not all indicators were evaluated in one single study. It is also obvious that non-review studies do not examine all relevant indicators. According to various studies conducted in Iran, the level of communication skills was generally assessed at a moderate level in three areas of teacher-student relationship, physician-patient relationship, and healthcare provider-patient relationship, but there was a great gap to reach the desired situation which indicates the need for deep attention to the issue of communication in the university and clinical settings.

These findings also indicate the need for attention to communication in academic and clinical settings. Since communication is a key factor in achieving positive treatment outcomes, reducing stress and anxiety, increasing the quality of life and satisfaction of patients' health; therefore, administrators and policymakers should do their utmost to strengthen communication skills, as well as the necessary steps to remove or moderate barriers to communication in the educational health care setting. Moreover, a complete understanding of communication in the Iranian healthcare system is a prerequisite for planning and policymaking in order to address the barriers and propose the best communication model. It is suggested to conduct further research to determine the quantity contribution of each of these indicators to effective communication. It is also recommended to examine the impact of communication styles on effective communication. So far, most studies have focused on the barriers to communication between clinical therapists and patients. It would have been interesting to have a balanced outlook on both barriers and facilitators to effective communication.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The present study was granted by the Modeling in Health Research Center of Shahrekord University of Medical Sciences, as well as the Virtual Education Center of the university.

Footnotes

Conflict of Interests: It is not declared by the authors.
Funding/Support: It is not declared by the authors.

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Table 1. Characteristics of the Extracted Articles in the Systematic Descriptive Review

Resources	Study Title	Study Population	Study Type	Primary Results
Ghazi Mir Saeed et al. (12)	Identifying effective factors in communication between students and professors from the viewpoint of postgraduate students at the Faculty of Paramedical, Tehran University of Medical Sciences	A sample of 52 MS and BS students of the Paramedicine Faculty of Tehran University of Medical Sciences	Descriptive, cross-sectional	The most effective factors in establishing student-teacher communication included respect for students, being up-to-date, rhetoric and teaching skills, and confidentiality. Meanwhile, sex, age gap, stringency, and professors' appearance were not crucial to establishing communication.
Obeidi (13)	Effective factors in communication between students and faculty members from the viewpoint of paramedical students	A sample of 181 students of the paramedicine faculty of Bushehr University of Medical Sciences	Descriptive, cross-sectional	From the students' viewpoint, teacher's amiability, humility, and confidentiality were significantly effective in improving the learning of students.
Bahador et al. (14)	Effective factors in communication between teacher and student: Viewpoints of students of basic sciences	A sample of 147 students of basic medical sciences	Descriptive, cross-sectional	Professors' respect for students, indiscrimination in dealing with students, and accepting criticism were the most important factors, while religiosity, sex, and age were the least significant factors from the perspective of students.
Ghadami et al. (15)	Students' point of view regarding effective factors in establishing communication between students and faculty members	A sample of 162 students of Arak University of Medical Sciences	Descriptive, cross-sectional	According to the students, the most effective factors in establishing communication were faculty members' rhetoric and teaching skills, knowledge, experience, and moral behavior, while more than 50% of students reported that faculty members' age and sex had no effects on communication.
Rezaeian et al. (16)	A survey on communication skills of Rafsanjan University of Medical Sciences faculty members in 2013	A sample of 132 faculty members of Rafsanjan University of Medical Sciences	Descriptive, cross-sectional	There was no significant relationship between communication skills and variables, such as age, gender, teaching experience, number of presented credits, university department or faculty, academic rank, administrative responsibilities, administrative type of engagement, and participation in communication skills workshops.
Torabipour and Zahiri (1)	Study of influencing factors in the relationship between teacher and student in the view of students of Ahvaz University of Medical Sciences	A sample of 384 students of Ahvaz University of Medical Sciences	Descriptive, cross-sectional	From the students' point of view, the impact of teacher's individual, ethical, and personal characteristics on communication was highly evaluated. Among these factors, the teacher's ethical behavior and modesty, as well as proficiency, had the greatest impact from the students' point of view. Professional and scientific factors also showed a major influence. The effects of environmental and physical factors in the teacher's workplace were the least significant.
Haghighi et al. (17)	The study of interactions between students and instructors from the perspective of Shushtar nursing students	A sample of 82 students of Shushtar nursing branch of Ahvaz University of Medical Sciences	Descriptive, cross-sectional	The majority of students believed that restriction in communication between the instructor and student, such as indigenous knowledge of Islamic laws and ethical standards of communication, counseling, and balance between intimacy and communication restrictions could build confidence and improve effective communication between teachers and students and improve the learning process.
Abedini et al. (18)	The effective factors in communication between students and faculty members from the students' perspective in Birjand University of Medical Sciences	A sample of 323 students of Birjand University of Medical Sciences	Descriptive, cross-sectional	Teacher's behavior, age, respect for social norms, mutual respect between the teacher and student, teacher's mastery of subject matter, teaching quality, teaching methods, and teacher's appearance were the most effective factors in the teacher-student relationship.

Abedini et al. (19)	The effective factors in communication between students and faculty members from the student's perspective in Babol University of Medical Sciences	A sample of 111 clinical students of Babol Dentistry Faculty	Descriptive, cross-sectional	From the viewpoint of clinical students, the most important factors affecting the student-teacher relationship included the teacher's patience, respect for students, and mastery of subject matter. On the other hand, the teacher's gender, presentation of the lesson plan to students, and academic level were among factors which were considered less important by the students.
Norouzinia et al. (20)	Communication skills of academic members and its relation with evaluation outcomes in Alborz University of Medical Sciences	A sample of 85 professors of Alborz University of Medical Sciences	Descriptive, cross-sectional	Teaching experience, age, and academic rank had the highest scores in establishing communication. The results showed that there was a significant relationship between the faculty members' communication skills and evaluation scores.
Samyari et al. (21)	Assessment of communication skills and related factors in dental school teachers in 2010	A sample of 755 students of dental schools	Cross-sectional survey	From the viewpoint of 48% of students, professors had acceptable communication skills, while 52% believed that they had poor skills. Non-verbal communication skills included amiability, humility, self-esteem, interest in teaching, calmness, appearance, attention to students, and use of body gestures for conveying messages were among influential factors in student-teacher communication. However, the teacher's rank, teaching experience, and place of the study did not play a role in communication skills. There was a direct relationship between the teacher's limited use of teaching aids and lack of communication skills.
Peyman et al. (22)	Assessment of interpersonal communication skills in lecturers of Ilam University of Medical Sciences: A case study	A sample of 60 lecturers of Ilam University of Medical Sciences	Descriptive, analytical	Based on the results, the interpersonal communication skills of lecturers were evaluated to be average. Gender was the only factor which had a significant relationship with the level of interpersonal communication skills of faculty members. There was no significant relationship between communication skills scores and age, educational background, or academic rank.
Dehnavi et al. (23)	Communication skills of undergraduate students' advisors in Kerman University of Medical Sciences	A sample of 379 students of Kerman University of Medical Sciences	Descriptive, analytical	The average scores of counseling professors in the domains of communication skills (including oral and written skills), feedback communication, empathy, listening skills, and being influential were 54.60%, 95.50%, 57.76%, 58.38%, and 55.49%, respectively. Overall, attempts to increase motivation by the consulting professors, counselors' feeling of responsibility towards students' problems, and being a good listener were the most influential factors in the communication of counseling professors with the students.
Sabbahi Bigdeli et al. (6)	Students' viewpoints on advisors' nonverbal communication skills: A survey in schools of health and allied health sciences of Kashan University of Medical Sciences	A sample of 202 students of Kashan schools of health and paramedical sciences	Descriptive, cross-sectional	Among non-verbal communication skills, appearance, facial expressions, perception of signs, and tone of speech had the most significant effects.
Yaghoubinia et al. (24)	Student-educator relationship in clinical nursing education: Qualitative content analysis	A sample of eight nursing students with a Bachelor's degree and 10 clinical nursing educators	Qualitative	The participants considered characteristics, such as respect, trust, and mutual understanding as essential factors in establishing communication. Also, some communication skills, such as effective listening, confidentiality, academic impartiality, and amiability, were found necessary, especially for clinical professors.
Rezaei and Askari (25)	Evaluation of the relationship between physicians' communication skills and outpatients' satisfaction in the clinics of Isfahan Al-Zahra Hospital in 2011	A sample of 55 physicians in the surgical, pediatric, urology, obstetrics, nephrology, cardiac, rheumatology, and hematology wards of Al-Zahra Hospital and 275 patients referred to these hospitals	Descriptive, analytical	Uninterrupted speech of patients, physicians' active listening to patients, active participation of patients in treatment, patient privacy, emotional support for patients, interpersonal interactions of physicians in medical visits, and building trust in patients can have great effects on communication and patient satisfaction.

Barati et al. (26)	Professional communication skills of medical practitioners and related factors in Bahar healthcare centers of Hamadan, Iran, 2010	A sample of 309 employees of Bahar healthcare centers of Hamadan	Descriptive, analytical	The verbal, listening, and feedback skills of the participants were 62.2%, 57.1%, and 60.2%, respectively. The communication skills of more than half of the participants were poor or moderate. The factors influencing communication skills included age, gender, educational level, employment status, workplace, and experience.
Bigdeli et al. (27)	Factors affecting the relationship between doctor and patient and their effects on the self-care behaviors of type II diabetes patients	A sample of 500 patients with diabetes referred to healthcare facilities facilitated to Abyek Health Center	Cross-sectional, analytical	Patients' lack of access to specialists was an effective factor in the relationship between doctor and patient. Trust in the physician and satisfaction with treatment obtained the highest scores, while lack of access to the physician was the most important barrier to communication.
Banidavoodi (28)	Comparison of the characteristics of effective teaching from the students' perspective in Ahvaz Jundishapur University of Medical Sciences	A sample of 50 physicians (specialists, general doctors, assistants, and interns) and 50 patients admitted to the educational centers of Ahvaz Jundishapur University of Medical Sciences	Descriptive, cross-sectional	In both viewpoints, most defects occurred at the beginning, at the end, and finally during the examination.
Zeyghami Mohammadi and Haghighi (29)	The association between nurses' communication skills and nurse-physician relationship and collaboration in Alborz Hospital of Karaj in 2008	A sample of 100 nurses working in Alborz State Welfare Hospital of Karaj	Descriptive, correlational	There was a significant relationship between communication skills and nurse-physician communication; however, there was no significant relationship between communication skills and collaboration between physician and nurse. Personnel shortage, organizational policies, and lack of communication skills were the most important factors affecting the relationship between doctors and nurses.
Farajzadeh et al. (30)	Interns' communication with patients during interviews: The perspectives of patients and observers	A sample of 72 medical interns of Kerman University of Medical Sciences	Descriptive, cross-sectional	From the viewpoint of patients and observers, most problems occurred in the final stage, followed by the interview. In most cases, the patients' and observers' views were not consistent. In older patients, the score of communication significantly increased from the patients' point of view.
Moin and Anbari Akmal (31)	The patient-physician communication and related factors	Unspecified	Review study	The basic required skills included interpersonal skills of physicians and patients (e.g., meet and greet, active listening, empathy, respect, humility, patience, confidentiality, information documentation, information presentation, and patient education).
Khatami and Asefzadeh (32)	Communication skills of medical interns of Qazvin teaching hospitals	A sample of 110 medical interns of teaching hospitals	Descriptive, analytical	Overall, 38.18% of medical interns greeted their patients, while only 1.82% introduced themselves to patients. Also, 21.88% empathized with and accompanied the patients, while none of the patients requested a treatment protocol from their physician. Moreover, 49.09% of patients were fully aware of their problems. Finally, 61.82% of patients had a good feeling about sympathy and companionship of interns.
Vafaei et al. (8)	Barriers of effective communication between midwives and parturient women in hospitals of Khuzestan Province, Iran	A sample of 310 participants (157 midwives and 153 parturient women)	Cross-sectional	From the viewpoint of midwives, midwife's difficult work, staffing shortage, and lack of work motivation were the most important barriers. Also, from the viewpoint of parturient women, being bad-tempered, inadequate understanding of the parturient needs, and inappropriate environmental conditions were reported as the most important barriers to effective communication between midwives and parturient women.
Mirhaghjou et al. (33)	Communication skills and related factors in nursing students of Shahid Beheshti Faculty of Nursing and Midwifery, Rasht	A sample of 176 nursing students of Shahid Beheshti Faculty of Nursing and Midwifery, Rasht	Descriptive, analytical	The communication skills of students were moderate to good. There was a significant association between the mean score of communication skills and variables including marital status, communication skills training, and patient care experience in the family. There was a significant positive correlation between age, the importance of clinical conditions, and communication skills. Also, marital status was one of the related factors and predictors of communication skills.

Ardalan et al. (34)	Barriers of nurse-patient communication from the nurses' point of view in educational hospitals affiliated to Kurdistan University of Medical Sciences	A sample of 90 nurses of Sabzevar educational hospitals	Descriptive, analytical	Nurses' communication barriers included the high nursing workload in the hospital unit, imbalanced nurse-patient ratio, negligence of medical staff in performing the tasks, nurses' unwillingness to acquire communication skills, and lack of nursing information and skills were important in establishing proper communication with patients. Patient's anxiety, stress, physical discomfort, and companion's interference were among communication barriers from the patients' viewpoint. The most important environmental barriers included busy environment and unsanitary patient rooms.
Mohammadi et al. (35)	Barriers to effective nurse-patient communication from the perspective of nurses employed in educational hospitals of Ilam	A sample of 80 nurses of Ilam teaching hospitals	Descriptive, analytical	Nurses' poor behavior among personal and social factors, physical and psychological fatigue among work-related factors, presence of patient's companion among clinical factors, and lack of in-service training of communication skills among environmental factors were the most important barriers to communication.
Ramezanli et al. (36)	Barriers of nurse-patient' effective communication from the nurses' viewpoint	A sample of 100 nurses of teaching hospitals affiliated to Jahrom University of Medical Sciences	Descriptive	The most important barrier to effective nurse-patient communication was the nurses' job characteristics. Environmental factors, individual-social factors, and patient's clinical condition were the most important communication barriers mentioned by nurses. Also, there was a significant relationship between barriers to communication and nurses' age and working hours.
Ardalan et al. (34)	Barriers of nurse-patient communication from the nurses' point of view in educational hospitals affiliated to Kurdistan University of Medical Sciences	A sample of 151 nurses of teaching hospitals affiliated to Kurdistan University of Medical Sciences	Descriptive, cross-sectional	Cultural differences between nurses and patients were the most important barriers to nurse-patient communication. The most important patient-related barrier was the companion's interference. Among environmental barriers, care for a critical patient was the most important barrier.
Norouzinia et al. (37)	Communication barriers perceived by nurses and patients	A sample of 70 nurses and 50 patients from hospitals affiliated to Alborz University of Medical Sciences	Descriptive, cross-sectional	Differences in the spoken language of nurses and patients, nurses' work overload, patient's family involvement, and the presence of emergency patients in the ward were the most important communication barriers according to nurses. Also, according to patients, gender differences between the nurse and patient, nurse's reluctance to communicate, environmental conditions of the ward, anxiety, and patient's physical pain and discomfort were the most important communication barriers.
Rahdar et al. (38)	Investigating the viewpoint of nursing students in relation to barriers to effective communication between nurses and patients in hospitals of Iranshahr	A sample of 67 nursing students in Iranshahr	Descriptive, analytical	From the viewpoint of students, occupational and environmental factors were the most important factors, while individual and clinical factors were the least significant barriers to communication.
Nakhaee et al. (39)	Factors affecting a student-patient relationship: The nursing students' viewpoints in Birjand University of Medical Sciences	A sample of 91 nursing students of Birjand University of Medical Sciences	Descriptive, cross-sectional	From the students' point of view, important individual factors included the student's and patients' religious beliefs and physical and mental fatigue. The most important social factor was nursing status, and the most important professional factor was the student's previous experience in establishing communication with patients. Also, major environmental factors included the number of students and patients' companions, and the clinical factors included patient's trust in the academic and practical skills of students. The students' viewpoints on personal, educational, environmental, professional, and demographic variables (gender, marital status, religion, history of communication problems, employment during education, and educational year) did not show any significant relationship.
Rajaeian and Masoudi Alavi (40)	Barriers to the nursing performance from the perspective of nurses working in intensive care units	A sample of 80 nurses of intensive care units of the selected hospitals in Kashan, Iran	Descriptive, cross-sectional	The most common barriers included receiving frequent phone calls from the patients' families, delay in drug delivery by the pharmacy, delayed observation of new medical guidelines, and inappropriate information provided by doctors.

Anoosheh et al. (41)	Nurse-patient communication barriers in Iranian nurses	Three hospitals randomly selected from major cities of Iran (61 patients and 75 nurses)	Descriptive	According to nurses, difficult nursing tasks and lack of facilities for nurses were the main barriers to communication. From the patients' point of view, nurses' unfamiliarity with the patient's spoken language, having contagious diseases, and gender differences were the main communication barriers. The common communication barriers included differences in age, social class, and chronic diseases.
Pejhmankhah et al. (42)	Effective factors in communication with patients and barriers from the perspective of nurses of Val-e-Asr Hospital, Birjand	A sample of 70 nurses of Val-e-Asr Hospital, Birjand	Descriptive, analytical	Nurse's attention to communication, knowledge about the processes of disease and treatment, personal problems (fatigue and stress), inclination towards communication, physical health, and self-confidence, besides skill and knowledge, including knowledge about communication skills, proper application of communication skills, and establishment of in-service training courses on communication skills, were the most important factors in this relationship. Knowledge about communication skills, the proper performance of communication skills, and in-service training courses in communication skills were the most important factors in the nurse-patient relationship. The least important factors were related to the environment and place of communication and physical features of the environment (e.g., ventilation, light, noise). The most important barrier to the patient-nurse relationship was lack of knowledge and skills in this area.
Shafipour et al. (43)	Barriers to nurse-patient communication in cardiac surgery wards: A qualitative study	A sample of 10 nurses and 11 patients from three hospitals affiliated to Tehran University of Medical Sciences	Qualitative content analysis	The findings were categorized into three main themes, including job dissatisfaction (sub-themes of workload tension and decreased motivation), routine-centered care (sub-themes of habitual interventions, routine and technical interventions, and objective supervision), and distrust incompetency of nurses (sub-themes of cultural difference, less responsible nurses, and apathy towards patients).
Zamanzadeh et al. (44)	Factors influencing communication between the patients with cancer and their nurses in oncology wards	Nine patients, three family members, and five nurses of two major oncology centers of Tabriz (Alinasab Hospital and Shahid Ayatollah Qazi Tabatabaei Hospital)	Qualitative content analysis	The characteristics of patients, nurses, and care environment seem to affect communication.
Aghamolaei and Hasani (45)	Communication barriers among nurses and elderly patients	A sample of 150 nurses of Bandar Abbas hospitals, Iran	Cross-sectional	The most important communication barriers for nurses included the use of medical jargon, professional behavior, and unfriendly attitude towards patients. The communication barriers for elderly patients included nursing distrust in nurses, fatigue, forgetfulness, and hearing problems. Also, important barriers in the hospital environment included the presence of chronic patients in the ward, noise in the hospital environment, and the unfamiliar environment of the hospital for patients.
Baraz Pordanjani et al. (46)	Assessing barriers of nurse-patient' effective communication in educational hospitals of Ahwaz, Iran	A sample of 80 nurses and 80 patients from three educational hospitals	Descriptive, analytical	From the nurses' perspective, nursing work overload, demanding nursing tasks, deficiency of welfare facilities for nurses, physical and emotional fatigue, and lack of appreciation for nurses were the main barriers to effective communication. Patients considered nurses' unfamiliarity with the local language, work overload, bad temper, and age and sex differences as the main barriers to effective communication.
Aghabarari et al. (47)	Barriers to the application of communicative skills by nurses in nurse-patient interaction: Nurses and patients' perspectives	A sample of 90 nurses and 45 patients from two hospitals affiliated to Tehran University of Medical Sciences	Descriptive, analytical	Differences in spoken language had the greatest impact as a communication barrier, followed by cultural and gender differences. Also, age and religious differences were the least significant.

Rassouli et al. (48)	Patient-centered communication barriers: Experiences of patients with cancer, their family members, and nurses	A sample of nine patients, three family members, and five nurses of oncology wards of Tabriz, Iran	Qualitative content analysis	In the organizational context, the discrepancy between nurses' workload and time, disregard for the needs of nurses and patients, routine rather than patient-centered care, extra work shifts, and lack of supervision were the most significant barriers to communication. In the psychological context, emotional problems of patients due to cancer diagnosis and invasive treatments and nurses' feeling of vulnerability due to risks related to working with cancer patients were the most significant barriers. Also, in the cultural-social domain, language and gender differences, illiteracy, low health literacy, and misconceptions about communication prevented patient-centered communication.
Nobahar (49)	Professional communication among nurses, patients, and physicians in intensive cardiac care units: A content analysis	A sample of 15 nurses, three physicians, three patients, and two family members in the cardiac intensive care unit of Fatemieh Hospital of Semnan	Qualitative content analysis	The main extracted theme was the necessity of developing trust in professional communication. Also, eight subthemes, including nurses' sense of responsibility, head nurses' supportive actions, supervisors' professional relationship, effective management, interaction with physicians, cooperation with service providers and security guards, patients' trust, and dealing with the concerns of patients' relatives, were extracted.
Loghmani et al. (50)	Factors affecting the nurse-patient's family communication in intensive care units of Kerman: A qualitative study	A sample of eight nurses and 10 family members of patients admitted to the intensive care units of hospitals, affiliated to Kerman University of Medical Sciences	Qualitative content analysis	According to the data analysis, facilitative factors for the communication of nurses with family members included spiritual care, emotional support, participation, informing, and consultation. The barriers included misunderstandings about treatment and patient difficulties.

Strides Dev Med Educ. 2019 December; 16(1):e67209. doi: 10.5812/sdme.67209.

Published online 2019 November 30. **Review Article**

Comparative Study of the Undergraduate Nursing Curricula Among Nursing Schools of McMaster University of Canada, Hacettepe University of Turkey, and Tehran University of Iran

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Received 2018 February 07; **Revised** 2018 November 19; **Accepted** 2018 December 05.

Abstract

Context: Evaluation of different education systems or approaches can help improve educational quality. To implement a program successfully, it is essential to examine the curricula of leading countries from different aspects. The present study aimed at comparing the bachelor of science in nursing (BSN) programs at nursing schools of McMaster in Canada, Hacettepe of Turkey, and Tehran (Iran).

Evidence Acquisition: The current descriptive-comparative study was performed in 2016 using the Brody method; the BSN programs were compared among Nursing School of Tehran University of Medical Sciences in Iran, Faculty of Nursing at Hacettepe University of Turkey, and McMaster School of Nursing in Canada.

Results: In the BSN program curricula of Tehran and Hacettepe universities, no correlation was found between contents and educational goals (theoretical and clinical), while a significant conformity was found between the theoretical and clinical goals of courses offered in the BSN curriculum of McMaster University. The ability to transfer leadership, management, communication, critical thinking, and clinical decision-making skills were formally ignored in the BSN curriculum of University of Tehran, while the mentors act just as a role model. There were programs and workshops for practicing critical thinking in Hecettepe University, while the evidence-based nursing and research in nursing were stressed in educational goals; the points disregarded in the curriculum of the BSN program of the University of Tehran.

Conclusions: It seems that the School of Nursing and Midwifery of Tehran University of Medical Sciences should reconsider educational goals and content and pay more attention to issues such as problem solving, critical thinking, clinical judgment, and efficient leadership skills, as well as creativity and innovation.

Keywords: Comparative Study, Bachelor of Nursing, McMaster, Hecettepe, Tehran

1. Context

Nursing is an independent discipline and a branch of medical sciences that deals with the training of key members of the health team in various educational, research, counseling, prevention, management, support, and health care and rehabilitation areas (1). The main mission of nursing education is to train competent nurses with the knowledge, attitude, and skills required for maintaining and promoting health in the community (2). The purpose of nursing education in nursing schools is to develop critical and creative thinking, self-directed learning, professional capabilities, time management, self-esteem, communication, and prevention of inactivity in students (3). Likewise, health care organizations such as the World Health Organization have called the upgrading of existing standards for new graduates (4).

The quality of health care services depends to a large extent on the way of delivering care provided by the nursing system, and identifying the issues in nursing education and taking measures to modify them improve the achievement of educational goals and training of qualified experts, and promote the quality of health care services at nationwide level in each country (5). Hence, the BSN program curriculum should be constantly reviewed. Evaluation of the history of evolution in the education system shows that most leading countries have used comparative studies to achieve this goal (6).

The main purpose of evaluating the education system

of different countries in various fields and degrees is to understand the causes of failures and successes of curricula (7). In addition, comparative investigation of education systems among two or more countries highlights their differences and similarities, educational issues, and ways of dealing with problems (8). Comparative studies can investigate two or more education systems comprehensively or from aspects such as administrative organization, curriculum, content of a certain course, etc. (9). Therefore, evaluation of different education systems or approaches can help improve education quality. Education issues and goals are similar in all communities, but the methods and programs to teach sciences and solve related problems usually correlate with the tradition and culture of each community (10). Therefore, it is necessary to evaluate the curricula of the leading countries in order to successfully implement a program from different aspects (11).

Comparative research is a research method in education for the revision and modernization of curriculum, which deals with the analysis and understanding of the similarities and differences among educational phenomena, institutions, and systems (12). The recognition and interpretation of such findings should be embedded in the social, cultural, political, and economic context of educational events and result in an approach to solve education problems and identify effective areas for educational achievement or failure (13). Since the education system in each country can be considered as the investment of one generation to another in order to raise knowledge and develop human abilities (14), by using the experiences of other nations in different educational fields and considering the cultural, political, economic, and social context of Iran, the dilemmas of higher education can be administered and the curricula can be improved (15).

Hence, the present study aimed at comparatively comparing the BSN program curricula among nursing schools of Tehran University of Medical Sciences, Hacettepe University of Turkey, and McMaster of Canada. These three faculties were chosen since the School of Nursing and Midwifery of Tehran University of Medical Sciences frequently ranks among the top in Iran; likewise, Faculty of Nursing at Hacettepe University is also one of the most distinguished nursing schools in Turkey and some Iranian nurses apply to it for further education. Also, Turkey is a Muslim country with an Eastern culture similar to that of Iran. Nursing education in Turkey, similar to Iran, follows American nursing education system. In addition, Canada is a country where immigrants, especially Iranian nurses, are widely accepted. Also, the McMaster School of Nursing has a global attitude toward nursing and trains nurses with a cross-disciplinary approach.

2. Evidence Acquisition

The current descriptive-comparative study aimed at better understanding the current conditions, facilities, and resources of the three aforementioned nursing schools. Frank Hickler and Brady both introduced four-step comparative methods for the evaluation of education systems (16).

Description: The first step is to compare. The issue compared among different countries should be clearly explained in details. The best elements of descriptive data are often obtained during studying on site.

Interpretation: Data collected on the education system are complex and often have many implications. Therefore, in order to avoid major possible errors, the necessity of the interpretation of data is raised.

Adjustment: Data are written in columns or in separate tables and sheets.

Comparison (evaluation and analysis): It is a type of evaluation that compares and matches the resulting data. It analyzes and evaluates similarities and contradictions (16).

In order to find the BSN program curriculum and the manual of the mentioned schools, their official websites were searched and the required information was extracted. For this purpose, the keywords “nursing curriculum” and “Nursing Bachelor” were also used to search for further information about the studied faculties. Based on the model, the curricula of the three schools were first collected and translated fluently into Farsi. Then the components of the curricula were identified, evaluated, and analyzed, and the similarities and differences among their elements were determined. Finally, based on the similarities and differences, comparisons and practical suggestions were made in order to improve the elements of the Iranian curriculum.

3. Results

The components evaluated in the present study according to the standards of the World Federation of Medical Education 2015 revision included: A) Review of the education system and student admission in the studied countries and the history of nursing (goals, number of centers and scope of activities, faculty members, and educational calendar); B) educational structure (student admission methods, goals and mission of the studied schools curricula, the structure of the entire curricula, and length of the course); and C) the curriculum (teaching methods, media and educational materials, courses, and evaluation and appraisal).

3.1. The Review of the Education System and Student Admission in the Studied Countries and the History of Nursing

According to the data in Table 1, the 12-year education, which begins at age of 6 - 7, was used in the studied countries. Also, the undergraduate course was four years in all three countries. Student admission in Iran and Turkey was through the university entrance exam; while in Ontario State of Canada (location of McMaster University), passing high school courses and holding diploma was the prerequisite for university entry.

3.1.1. A Review of the History of the Studied Schools

School of Nursing and Midwifery of Tehran University of Medical Sciences: The Nursing College was established in 1947 to train students for a three-year bachelor's equivalent degree in nursing. A total of 100 - 120 female students were admitted to this course through a specific entrance exam. These students were trained 24-hour daily using a special education system for working and providing nursing services in hospitals affiliated to Tehran University Medical School. After the cultural revolution in 1983, the College of Nursing was renamed the College of Nursing and Midwifery and in 1987, by the merger of several colleges, the School of Nursing and Midwifery was established. Currently, the faculty has 80 members and since 2011 admits students into bachelor, masters, and PhD programs.

McMaster School of Nursing: This institute established in 1946 has an over 60 years long history in nursing education, nursing knowledge, and nursing practice. According to the McMaster School of Nursing, the major factor influencing the nursing carrier in the 20th and 21st centuries is the cooperation among faculty members, staff, students, and graduates at local, national, and international levels. Both the community and hospitals affiliated to McMaster Nursing School throughout Ontario struggle to make evidence-based clinical practice via providing learning opportunities for undergraduate and postgraduate students. It is also a world famous college, which admits many students from all over the world. Through the application of international students in clinical setting, they learn how to deliver health care services in different cultural and environmental context. The faculty members contribute to provide and support educational programs in countries such as Pakistan, United Arab Emirates, Thailand, Japan, Australia, and Sweden. McMaster School of Nursing has about 39 full-time faculty, 95 part-time faculty, and more than 100 clinical faculty members.

Faculty of Nursing at Hacettepe University: It is stablished in 1961 as a nursing school affiliated to the University of Ankara, and in 2007, it became a Nursing Department under the supervision of the Faculty of Health Sciences at Hacettepe University. In 1990, the Higher Education Council considered eight specialized aspects in nursing education. Since 22 November 2012, the Department of Nursing became the School of Nursing. Since 1968, the School of Nursing admits students into postgraduate and since 1972 into PhD programs. Hacettepe University is one of the leading institutes to educate and train the future nursing workforce in Turkey. The Nursing School currently has 21 faculty members and 33 research assistants and admits students to pursue undergraduate, postgraduate, and PhD degrees. One-third of the courses in Hacettepe Faculty of Nursing are offered in English and the rest in Turkish.

3.1.2. Undergraduate Admissions in the Studied Faculties

Admission for BSN degree in Iran and Turkey, like other higher education disciplines, is among high school graduates through a nationwide exam, but admission for BSN degree at McMaster University is through holding six courses of 12th grade in Ontario including biology, chemistry, one of the courses in mathematics (statistics and mathematics), and information management, as well as holding a CPR (cardiopulmonary resuscitation) certificate, experience in working with an electroconvulsive device, having no criminal record, holding international certificate of vaccination, having no infectious diseases, and passing courses of 12th grade, IELTS (International English Language Testing System) score 7, or one of the biology, chemistry, or physics courses.

3.1.3. Objectives and Mission of the Studied Curricula

Based on the study objectives, perspective, and mission, all the three schools intended to train competent nursing workforce in order to render care services as a team member to maintain and promote community health through acquiring the knowledge, attitude, and required skills and applying professional ethics. Promoting personal, mental, social, and professional nursing skills, lifelong learning, contribution and interactive communication with health team members and patients, responsibility, improving community health, encouraging students to conduct research and apply obtained results, and adherence to the principles of professional commitment were of the most important principles considered by nursing schools. Of course these programs had differences; for example, in training nursing leaders and cross-cultural attentions. Providing decision-making grounds for change and helping to create change and evaluating the effects of the change were the highlights of McMaster's goals. Also, McMaster University had stated more realistic goals in detail. Innovation and revenue generation were also the goals addressed by McMaster University, so that admission

Table 1. The Procedure of Student Admission in the Studied Countries

Country	Education System and Student Admission Criteria
Iran	Elementary education covers pupils within the age range of 6 - 11 years and after 6 years of secondary education, it is divided into two 3-year periods of first and second secondary education. Overall, the formal education lasts 12 years. The Iran's higher education system is governed by the trustees of universities and institutes of higher education and higher education mainly leads to associate degrees, bachelors, masters, and PhD. student admission is through the national university entrance exam in the fields of experimental sciences, mathematics and physics, humanities, art and foreign languages (17).
Canada	Unlike most countries, Canada has no ministry or a nationwide education institution, and the State Education Department is responsible for the management of education in each state. Since McMaster is located in Ontario, the Ontario state's education system was investigated in the study.Pre-university course in the state of Ontario lasts 10 years and covers students within the age range of 6 - 16 years. The elementary education is the first educational level in Ontario, which is divided into two levels of preschool course and elementary education, lasting 8 years and covering pupils within the age range of 6 - 14 years. The secondary education is the second educational level in Ontario that lasts 4 years and covers students within the age range of 14 - 18 years. One year of postsecondary education is required to take the Ontario universities entrance exams. The most prominent higher education institutions of Ontario include educational centers, Ontario State University, Ontario State College, informal mentors, and Ontario College of Applied Arts. Most university courses in Ontario lead to a bachelor's degree or honours degree, often lasting four years. Undergraduate courses in Ontario are offered through both continuous and non-continuous programs (18).
Turkey	Elementary education (IlKOgretim) starts at the age of 7 and lasts for 8 years and then is followed by high school education (Lise). Overall, the formal education lasts 11 - 12 years. After completion of the elementary school, high school education can also be continued in disciplines such as religious sciences and industrial conservatories, which almost lasts 12 years. Students are awarded a Lise diploma at the end of high school.To enter universities and higher education centers, high school diploma is required and the applicant should also take the national university entrance exam. Students' admission is relied on their scores in the exam. The national university entrance exam has two stages and held annually by the Student Selection and Placement Center under the surveillance of the Higher Education Council (17).

of foreign students is indicated one of the revenue generation activities (Table 2).

Focusing on teamwork and global reputation were among the most important goals of the McMaster School of Nursing. The goals of the McMaster School of Nursing were changing rapidly with speed of science, and its current focus was on evidence-based clinical practice during the study. Paying attention to moral values and distinguished graduates were also among the goals of McMaster University. Although the Hacettepe Faculty of Nursing had written the goals in general, it was considered more goals compared to those of School of Nursing and Midwifery, Tehran University of Medical Sciences.

3.2. Educational Structure

The overall structure, as well as the length of BSN program and educational content of the teaching strategy was teacher-centered in Tehran and Turkey and student-centered at McMaster University. The length of the BSN program was in accordance with the educational regulations adopted by the Supreme Council for the Planning of Medical Sciences and the courses were offered theoretical, practical, theoretical-practical, internship, and apprenticeship in field. The curriculum of the Faculty of Nursing and Midwifery, Tehran University of Medical Sciences, was discipline-based and the total number of units required for BSN program was 130; i.e., 20 units in general courses, 16 in basic courses, 12 in main courses, 46 in specialized courses, 12 in internship, and 24 units in apprenticeship in field, based on the syllabus. Internships and apprenticeship sessions were held at internal medicine, surgery, orthopedics, intensive cardiac care, dialysis, and pediatric departments.

Clinical education was simulated for freshmen using a practice room. The Practice Hall of School of Nursing and Midwifery, Tehran University of Medical Sciences consisted of two audiovisual and one control room. The audiovisual unit was prepared with educational aids and a set of educational videos and posters, and training mollages and manikins. Also, practical procedures of the practice unit were provided in contents. In terms of clinical education, students attend clinical departments for training with guidance of mentor from the third semester. Theoretical classes were mainly utilized the teacher-centered method. For evaluation, formative and summative techniques were used. It should be noted that feedback system was less considered by Iranian nursing education system.

3.3. The Curriculum

BSN program in McMaster University was implemented using student-centered teaching method, relying on a problem-solving approach using small groups, educational classes, and self-directed learning. The BSN curriculum at this school is relied on goal-oriented comparative approach. The BSN program curriculum in McMaster University in addition to nursing was focused on physiology, psychology, social sciences, and humanities courses. Nursing education is defined in four main levels. The number of specialized (theoretical and practical) nursing courses is gradually increasing from level 1 to 2.

At levels 1 and 2, students achieve complete information in the social sciences and health and can choose from a variety of optional courses. They learn about themselves and their clients as human beings, while focusing on health, health assessment, and health promotion. They concentrate on basic nursing skills including communi-

Table 2. Comparison of Goals, Perspective, and Mission Among the Nursing Schools of Tehran, Hacettepe, and McMaster Universities

	Goals	Perspective	Mission
Nursing School of Tehran University (16)	Education of individuals who are capable of providing healthcare, educational, research, counseling, management, support, and rehabilitation services as part of the health team to provide, maintain, and enhance the health at the individual, family, and community levels.	According to this curriculum, during the next ten years, students are trained in accordance with regional and global standards along with the changing world. Graduates determine and consolidate their situation in different areas of service delivery at all levels of prevention. At the national level, they will hold management positions and provide effective and cost-effective services to promote health in community and improve the quality of life of clients and are prominent at the regional and international levels.	To train informed, committed, knowledgeable, and efficient human resources that can provide the required health care and rehabilitation services cost-effectively at the highest standard via acquiring professional abilities and knowledge of the day in order to provide, maintain, and promote health in community. This is possible through the education, research, and development of nursing knowledge.
Hacettepe Faculty of Nursing (19)	Applying knowledge and skills in health promotion and maintenance, recognizing nursing carrier, responsibility and accountability in nursing practice, acquiring knowledge in nursing education, implementation, problem solving, and research process, and development of professional independence	Introducing the Hacettepe Faculty of Nursing as a national and international nursing school and a model for students and faculty members in educational/research programs	Preparation of professional and effective nurses in both clinical and research domains using scientific and technological methods. Training therapeutic nurses as mentor, researcher, manager, counselors, and health care practitioners by taking multiple roles to protect, develop, and improve the health of individuals, families, and communities. In addition, the mission is to encourage alumni to collaborate in the multidisciplinary departments of the university, and promotion and development of nursing education and services.
McMaster School of Nursing	Correlation between faculty members to move from ego to us, participation of students in perspective design, acting as a role model to show special qualities of mind and thinking, and continuation of admirable personality traits, The university graduates should be leaders in their disciplines and be known for achieving excellence. We should be the global leader in the way of innovation in nursing education, clinical practice, and research and conduction of research tailored to community priorities. McMaster School of Nursing is well known for research and intervention and such strengths should also be recognized internationally. The school should move towards evidence-based clinical practice. After achieving evidence-based clinical practice in health care systems, the school seeks to improve health in the community, quality of care, efficacy, and patient experience; Having a sustainable financial outlook; Strengthening innovative educational programs; Paying attention to technology and using it to maximize opportunities in education, research, and service delivery	Working together and making something different	Strengthen collaboration and participation of nurses in health for everyone at the international level through leadership in education, research, clinics, policy, and services

cation, hand washing, vital signs, and physical examination in the lab for four hours a week. Moving from level 2, they start to pay more attention to the family and society as clients. In small groups, one mentor trains eight students eight hours a week. All students pass internal medicine and surgery courses to learn how to deal with critical and complicated situations. At level 3, students spend 12 hours a week in acute and varied departments such as pediatrics, mental health, and mothers and infants. At level 4, students spend 24 hours per week without a mentor in clin-

ical departments in the first 12 weeks, 24 hours per week in the second six weeks, and 35 hours per week in the final six weeks of the semester in the hospital and community settings. Students are trained directly by a preceptor and indirectly by a clinical mentor. At level 4, students complete vocational training courses under the supervision of two mentors. Preceptors usually are role model, clinical mentor, or supervisor. A clinical mentor helps students identify their clinical needs and achieve their realistic goals, and tries to enable students to identify types of available learning opportunities through clinical settings. It also helps students develop clinical thinking and assist in critical thinking in clinical affairs and issues dealing with patient care, emotional support, and information support. Faculty members try to use the theory in practice, socialization, and professional commitment throughout the education.

The BSN program is offered based on student-centered approach in McMaster University. The BSN students are placed in small groups and accordingly, teacher-student and student-student interactions are increased and the strengths and weaknesses of the groups are better understood.

If a BSN graduate looks for a registered nurse (RN) job in specialized departments, she should take the related exams and obtain the general certificate of the College of Nurses of Ontario.

Students are evaluated by a portfolio during the RN course and finally, a form including self-assessment score (with a reason for each score), preceptorship score, and clinical mentor score is completed for each student in order to obtain the total score. All the RN-BScN students should take at least one clinical course.

There was also the World Health Unit in McMaster Nursing School, which provides students with the opportunity of learning about the impact of various factors on the health of different populations. This course guides McMaster graduates interested in providing care and assistance to people in resource-constrained areas and also provides undergraduate students with international and intercultural learning experiences. Since 1984, faculty members and personnel of McMaster School of Nursing have provided the opportunity for the presence of 240 nursing students from 25 countries, six provinces, and three states in the Northern Canada.

Students of Hacettepe University should take 147 units of core and elective courses in eight semesters. Students should enroll minimum 15 and maximum 22 units per semester. Academic writing skills and Turkish language skills were among the core courses. Psychology, development of emotional intelligence, histology, policy making and health economics, and communication skills were among the elective courses offered to students.

In terms of the total number of units students should pass during the study course, BSN program students in Turkey should pass 147 elective and core units. In Iran, there are 130 elective and core units in BSN program. At McMaster School of Nursing, students should pass 130 units in four levels during the general course. All three schools offered elective courses to students, which in addition to enhancing their motivation, contributes to the efficiency and effectiveness of the course. Also, the McMaster School of Nursing focused heavily on community health and the training of students to maintain health. For example, students attending internship program should be housed in community-based centers. Legal nursing is a course offered in Turkey, which seems worth pondering and more attention should be paid on that in Iran.

In Iran and Turkey, the BSN program typically took four years, but in McMaster College, there were three courses as a four-year program for general nursing, a two-year program for post-RN, and a three-year program for RPN (registered practical nurse). Unlike McMaster University, which trained nursing student at four levels, Turkey and Iran offered BSN program in eight semesters.

A noteworthy point regarding McMaster University was the adequacy of resources, equipment, space, facilities, and allocation of faculty members for clinical education, which reflects the particular attention of the school on clinical education. Also, the portfolio-based assessment was used for the evaluation of students. The preceptorship training was one of the most important parts of the BSN program that is not addressed in Tehran and Hacettepe nursing schools. In the case of attending clinical courses, students were not allowed to take specialty courses, such as adult, cardiac, and neonatal intensive care unit nursing, until achieving the basic level. McMaster University also had an interesting idea about evaluation including the sum of the scores given by self-assessment, the preceptor, and the clinical mentor of the school.

Unlike the teacher-centered approach in the undergraduate education in Iran and Turkey, the McMaster School of Nursing followed the person-centered approach relying on problem-solving models, in small groups including eight students and one mentor. One-third of the courses were offered in English language at the Hacettepe School of Nursing. The academic writing skills was also an important core course.

The continuous assessment system in McMaster University was defined based on educational dimensions including skills and knowledge, professional behavior and attitude toward performance, and personal health, while the continuous assessment system was not defined in Iran and Turkey. In terms of alumni contact, all the three

colleges had programs in place, but McMaster University demonstrated it more effectively so that the alumni taught students in clinical practice. The graduates of McMaster University should hold license of competence to find a job in nursing carrier. In Iran, however, graduates were required to complete a two-year compulsory medical service program and receive no license of competence from eligible institutions or associations. No information was found on the website of the Hacettepe University about entering the nursing graduates into job market.

There were many similarities between the courses offered in Tehran and Hacettepe universities. For example, courses such as microbiology, parasitology, biochemistry, anatomy, internal-medicine, surgery, pediatrics, gynecological diseases, psychiatric nursing, nursing history and development, and deontology are common, but among nursing courses offered in Turkey, communication and self-awareness, critical thinking, sexual health, school health, development of emotional intelligence, wounds and nursing care were also considered. Health policy-making and health economics to train nursing leaders were among the interesting courses offered in the Nursing School of Hacettepe University. Although there were courses in infants nursing care, internal medicine, surgery, and pediatrics nursing care at McMaster School of Nursing, courses such as occupational health, palliative care, and nursing care at chronic and outpatient departments were also offered in the BSN program.

In the evaluation of the McMaster School of Nursing curriculum, an interesting point that was not that much considered by the other two schools was the monthly and four-year performance reports of the school; the four-year performance report included events, awards, changes, number of admissions and graduates, and the percentage of goals achievement in the faculty during the considered period. For example, the four-year performance report of McMaster School of Nursing (2008 - 2011) was currently available on the official website of the university.

McMaster School of Nursing trained nursing workforce to work throughout the world. Hence, it welcomed students from all over the world and considered intergroup interaction in the training of nursing workforces.

4. Conclusions

The study aimed at comparing the BSN program curriculum among three nursing schools of University of Tehran, Hacettepe University in Turkey, and McMaster in Canada.

Numerous comparative studies are conducted each year worldwide including Iran of which the study of BSN program between Iran and Japan, the study of education system and curriculum of nursing PhD program between Iran and Johns Hopkins School of Nursing (14), the study of the nursing PhD curriculum between Iranian universities and Widener University (11), and the study of the structure of BSN program curriculum between Iranian universities and several accredited nursing school from different countries are noteworthy (20). All of the studied programs emphasized the need to modify the nursing curriculum.

Nouhi et al., in the nursing adaptation program, placed a strong emphasis on reviewing and making serious revision in goal orientation, student admission, research, teaching methods, and theoretic and practical evaluations (20). The BSN program curriculum in Iran should be revised in terms of definition of goals, content, evaluation, clinical skills, and alumni status. In this regard, Nouhi et al., concluded that although the nursing curriculum of Iran was not in a bad situation compared to the curricula studied, in order to eliminate its shortcomings and defects, issues such as goals, student admission, research, teaching methods, and theoretic and practical evaluation should be seriously reviewed and revised to achieve the maximum efficacy by solving problems and meeting needs (20).

Concerning clinical education, although there was no difference between the Tehran School of Nursing and Midwifery and Hacettepe School of Nursing in education system, there was a significant difference in the clinical nursing education between the McMaster University, and Tehran and Hacettepe universities. A Preceptorship program with direct assistance from a preceptor and indirect assistance of a clinical mentor in teaching and evaluation of the students was the turning point of the differences. Although Rasouli et al., considered the evaluation of clinical education by mentors as a strength point of Iran's education system, they also indicated some issues such as inadequate experience of mentors in clinical setting and the inappropriate treatment of clinical nurses with mentors as the challenges the clinical nursing education faces in Iran (16).

The system of admission to nursing program in Iran was through the university entrance exam and getting an acceptable score, which also caused some problems for students during the education or afterwards. In many cases, students were disinterested after entering the program or lacked the skills required to enter the job market or pursue a degree or even continue the education, while at McMaster University, the student applied for the program based on his/her personality, ethics, and interests, attitudes, beliefs, and consciously. In this regard, Rafati et al., criticized the student admission system of Iran, and indicated paying attention to personal interests and conducting interviews for nursing admission essential (11). Nouhi et al., also

found in their study that nursing education program in Iran needs modifications in goals, content, method of admission, alumni matters, and clinical education (20).

It seems that the Tehran School of Nursing and Midwifery should reconsider educational goals and content and address issues such as problem solving ability, critical thinking, clinical judgment, efficient leadership ability, creativity, initiation, and efficient leadership ability. The mission of adaptive education is to recognize the similarities and differences of different education systems, and identify the reasons for their successes and failures and utilize their experiences to advance the education system. Educational goals and issues are similar in most educational systems, but the methods and plans used to teach science and solve problems depend on the tradition and culture of each community. Therefore, employing adaptive programs and updating educational systems proportional to the science advances and adaptation of the tradition and culture in each community seem essential. Accordingly, and based on the aforementioned issues stated, BSN education may require some revisions in the curriculum based on successful standards and expert opinions.

In terms of curriculum contents, it is evident that the content should be designed and organized in accordance with curriculum goals and on a way to fulfil it. There was no correlation between the courses offered and the curriculum content of BSN program with educational (theoretical and practical) goals at Tehran Nursing School. Issues such as ability to transfer leadership, management, communication, critical thinking, and clinical decision making skills were neglected in the BSN curriculum of Tehran Nursing School, and the mentors acted as a role model. In fact, the hidden curriculum of this program might be involved in teaching such skills. In addition, the evidence-based nursing and research in nursing were the goals emphasized in the program, but they were overlooked in the BSN program curriculum. Looking at the elective courses of the other two nursing schools (McMaster and Hacettepe), it can be said that the diversity in the courses was elective and the student could take the program according to his/her interests and needs.

Nevertheless this program was limited in Iran. Also, the curriculum of other two nursing schools (McMaster and Hacettepe) was focused on home-based care and community-based care, but treatment-oriented approach was still pursued in Iran. Given to the population aging in the world, special attention was paid to family-centered care and the care of the elderly in the curricula of the McMaster and Hacettepe nursing schools. Also, less attention was paid to the issue of prevention in the BSN program curricula of Hacettepe and Tehran universities.

Other aspects of health (mental, psychological, and social) may also need to be considered in the curriculum. Also, it is better to reconsider the procedure of student admission in clinical setting in Iran. Issues such as designing nursing curriculum based on the community needs, and modification of evaluation system and the procedure graduates entering the job market should be considered. Nursing professionals may need to pay more attention to interview and psychological exam scores of applicants in addition to their scores in the university entrance exam. In clinical education, training of preceptor and mentor is of particular importance as it has already started at Tehran School of Nursing and Midwifery and is hoped that will continue. As in the past, it seems better to hold the comprehensive or competency nursing exam to certify graduates applied to enter the workplace. Also, training nurses for home care and community health should be considered. Paying more attention to the issue of research in BSN program is also of particular importance.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The authors would like to express their gratitude to the Vice Chancellor for Research as well as the Library of Tehran School of Nursing and Midwifery.

Footnotes

Conflict of Interests: There is no conflict of interests.

Funding/Support: None declared by the author.

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Strides Dev Med Educ. 2019 December; 16(1):e89897. doi: 10.5812/sdme.89897.

Published online 2020 January 1. **Review Article**

Challenges and Problems of Clinical Medical Education in Iran: A Systematic Review of the Literature

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Received 2019 January 26; **Revised** 2019 July 17; **Accepted** 2019 July 20.

Abstract

Context: In order to improve the quality of clinical education, it is necessary to investigate the current situation in clinical settings and identify its problems. This step is the most important part of modifying a clinical education program and meeting learning goals. The purpose of this study was to identify the challenges and problems of clinical medical education in Iran.

Evidence Acquisition: This systematic review was performed to determine the challenges and problems of clinical medical education in Iran in 2017. In order to retrieve articles, the following keywords: Clinical education, bedside teaching, clinical teaching, teaching round, ward round, ward round teaching, bedside round, teaching round, medical education, clinical round, ambulatory education, clinic education, grand round, and education in emergency were searched in reliable Persian and English databases. Then, the articles related to the research objective were carefully reviewed and key information was extracted. Data were analyzed using MAXQDA software version 10.

Conclusions: The problems of clinical education are in different areas. Identifying these areas and planning for them can improve clinical education status, achieve educational goals, and provide medical students with a more effective education.

Keywords: Challenges, Clinical Education, Iran, Systematic Review

1. Context

In medical education, clinical education has a pivotal role due to providing learning opportunities for medical students. Clinical environments are important not only because of providing opportunities for students to learn but also they can provide feedback on educational, professional and personal development of medical students through the transfer of the experiences of an effective instructor (1). Approximately half of the educational time is devoted to clinical practice through exposure to patients in order to acquire clinical skills (2). Therefore, clinical education is core to medical education, where medical students with the help of a clinical teacher, present to the patients' bedside and gradually acquire the skills required to solve the patients' problems and perform clinical care. Clinical skills cannot be developed if this training does not provide appropriate learning conditions (3).

Thus, the acquisition of essential skills in medical education depends on the quality and quantity of training in clinical settings, and these environments must be continuously evaluated and monitored to ensure that the professional identity of medical students, interns, residents and fellows is shaped with appropriate clinical education. These groups are not only part of the medical staff and medical care team in the hospital wards, but are also receiving training and learning clinical skills while being exposed to patients (4).

Studies conducted in Iran concerning clinical education show that these trainings are not effective. It has been reported that there is a relatively deep gap in the process of medical education and clinical care practice, in a way that the existing clinical training does not provide students with the ability to attain clinical competence (5-7) and medical students have the most problems and dissatisfaction with clinical education (8). Research findings in Iran indicate that the level of complete or partial satisfaction of medical students in clinical education during the internship was 38.8% and the satisfaction rate in the three domains of clinic education, clinical education and theoretical education was 52.0, 52.0 and 78.0%, respectively (9).

Evidence suggests that clinical education is one of the most important and critical stages in medical students' education that presents many challenges and problems, including time constraints, increasing numbers of students, fewer patients, inadequate resources for education, inappropriate clinical settings for education, opportunistic clinical education, lack of clear goals and expectations, passive observation rather than active learner engagement, inadequate monitoring and feedback, and limited opportunity for reflection and discussion (10).

A research conducted by Nair et al. examined the opinions of clinical teachers about the barriers to clinical education. In their study, medical teachers expressed factors such as the limited number of patients with good clinical symptoms, lack of patient collaboration, short duration of hospital stay, emphasis on community care, and lack of privacy in crowded wards as obstacles to having a proper bedside teaching (11).

In a study performed in London by Hendry et al., researchers described the problems of clinical education as "resource constraints, forgetting to teach basic skills in the clinical setting, time constraints, unclear goals and expectations, emphasis on memorization rather than problem-solving skills, passive observers instead of active participants, lack of adequate supervision and feedback and lack of informed patient consent" (12).

Therefore, identifying the challenges and problems in the clinical medical education is very important and improving the quality of clinical education requires constant review of the current situation and identification of strengths and weaknesses. Failure to identify barriers to clinical education and lack of planning to address them leads to a weakening of students' professional skills and reduced efficiency of the educational system and quality of services to the community.

By identifying the existing barriers and removing them, steps can be taken to implement clinical education more effectively. This will lead to improved clinical education, achieving the goals of education and training qualified individuals to provide quality services to the community. The aim of this study was to identify the challenges and problems of clinical medical education in Iran.

2. Evidence Acquisition

This systematic review was carried out to identify the challenges and problems of clinical medical education in Iran during the first six months of 2017.

In order to achieve the research objectives, we searched the following keywords and their Persian equivalents: "clinical education", "bedside training", "medical education", "clinical round", "ambulatory education", "clinic education", "grand round" and "education in emergency" in national reliable databases such as the Scientific Information Database (SID), the Iranian Institute of Information Science and Technology (Irandoc), the Iranian Journals Database, the Barakat Knowledge Network System and Google Scholar.

In order to identify Persian-language articles, first the keywords were searched individually in each database and the search results were stored. Then, more searches were performed if possible by combining the keywords using the AND and OR operators with the Persian equivalents of the words: problems, challenges, medical student, intern, resident, medical teacher and patients.

In order to identify the English-language articles of Iranian authors, in addition to the national databases, the databases of PubMed, Cochrane, Embase, Scopus and Web of Science were searched. The keywords used in these databases included: teaching round, ward round, ward round teaching, bedside teaching, bedside round, training round, grand round, clinical teaching, ambulatory education and clinical education. These keywords were searched by combining them with the terms: problems, challenges, barriers, obstacles, medical students, externs, interns, residents, externship, internship, residency, clinical teachers, medical teachers and patients. The following is a sample search strategy for English databases.

"teaching round" OR "ward round" OR "ward round teaching" OR "bedside teaching" OR "bedside round" OR "training round" OR "grand round" OR "clinical teaching" OR "ambulatory education" "clinical education") AND ("medical students" OR "externs" OR "interns" OR "residents" OR "externship" OR "internship" OR "residency" OR "Medical teachers" OR "clinical teachers" OR "patients") AND ("problems" OR "challenges" OR "barriers" OR "obstacles".

There was no specific timeframe for searching the articles, but we did try to include all the articles available (last searched 10.5.2017). The initial search was done individually by one of the authors, and then the accuracy of the search was examined by a medical librarian. It should be noted that in all stages of selection, the articles were reviewed by two evaluators and, if there were any differences, the cases were referred to a third party.

For the sake of thoroughness of the study, in addition to searching the databases, the references of all the articles meeting the inclusion criteria were reviewed. In order to verify the obtained information, all data were examined in two stages. In the first stage, a list of challenges and problems was prepared, and in the second stage, when coding was performed in MAXQA software, the challenges and problems were re-checked.

Concerning the review process, the search results of

each database were stored separately in Excel version 2017 software. An initial search resulted in the identification of 1021 articles. After the search results were merged into one file, the articles were reviewed for duplication and the duplicates were removed.

Next, articles were reviewed by title and then abstract. Only unrelated articles that were not explicitly relevant to the research question were identified. In other words, to increase the search sensitivity, no suspicious items were removed during this stage. Finally, according to the inclusion and exclusion criteria, eligible articles were selected and their content was analyzed, and the challenges and problems related to clinical education were extracted.

2.1. Inclusion Criteria for Research Articles

We included studies examining the challenges and problems of clinical medical education, whose target group comprised of medical students, interns, residents, fellows, clinical teachers and patients. The included articles were original research studies with available full text in Farsi or English. The studies must have been performed in Iran and only in the field of clinical medicine.

2.2. Exclusion Criteria for Research Articles

We excluded conference papers, seminars, case reports, short reports, letters to the editor, commentary articles, review articles, review studies, researches performed among non-clinical medical students and non-clinical medical teachers, articles whose full text was not available, articles examining the basic science or the pre-clinical courses (only data related to clinical course was analyzed if the two courses were combined). Articles that evaluated the status of clinical education from the perspective of the participants as very good and good without any undesirable (bad or very bad) aspects were also excluded from the study. The average cut off point was considered as a measure for modification and change.

To summarize the articles, we used their full text. In order to reassure the relevance of the article to the research objective, the final part of the introduction, which stated the purpose of the paper, was considered. In this regard, special attention was paid to the important sections and strategies identified in the results section and some parts of the discussion. This was done by a member of the research team and to ensure the accuracy of the work, the categories and information extracted by another team member were reviewed. Also, someone outside the research team was asked as an external observer to examine the codings and categories.

In order to extract data from qualitative studies, all sections related to the results and discussions were studied several times by the researcher. Then, the sentences related to the challenges and problems were extracted from the text and saved in a separate Word file. These sentences included themes and categories extracted by the first author, the participants' conversations in the results section, and the author's conclusions.

In the case of quantitative articles with multiple choice questions, the challenges and problems were noted on the basis of what the author himself/herself stated. Also, if there was a table in the article, the items of the study questionnaire and those with a moderate, poor or very poor score were considered as barriers to clinical education and saved in a separate Word file.

The MAXQDA software was used to analyze the data; all the categories related to challenges were entered into the software and each challenge was considered as a code and the codes were compared according to their differences and similarities and classified into categories. The categories were given a title based on the related challenge (Table 1). The characteristics of the systematically reviewed studies are presented in Table 2. Data extracted from the articles included: the name of the first author, the purpose of the study, the type of study, the method of study, the target group, the sample size, and the study setting. It should be noted that we obtained a code of ethics (IR.MU.REC.1396.3.165) from Isfahan University of Medical Sciences.

3. Results

In the initial search, 1021 articles were found, and after removing duplicates, 593 articles were reviewed by title and abstract (546 Persian and 47 English). Of these, 492 were removed and 101 were selected. Next, based on the full text and the inclusion criteria the final separation was performed and 39 articles were included in the study. Of these, 28 were in Persian and 11 in English. The content of these articles was analyzed and the challenges and problems of clinical medical education were examined. The process of entering articles into the research is shown in Figure 1.

In terms of the type of studies included in this systematic review, there were 28 (71.8%) articles with quantitative methodology, 8 (20.5%) with qualitative methodology and 3 (7.7%) with quantitative-qualitative design.

Concerning the views of different research groups, 28 (71.8%) articles explored medical students' views, 5 (12.8%) articles investigated clinical teachers' views, 5 (12.8%) articles explored the opinions of students as well as teachers and 1 (2.6%) article examined patients' views about the challenges of clinical medical education (Table 2).

By perusing the data, 498 initial codes (semantic units) were extracted from the articles. The codes were entered

Table 1. Themes, Categories, and Sub-Categories Obtained from the Literature Review of the Challenges and Problems of Clinical Medical Education in Iran[a]

Theme	Category	Sub-Category
Contextual challenges	The prevailing atmosphere	Ambiguities
		Dominant priorities
	Management problems	Education management
		Educational regulations
	Resources and facilities problems	Infrastructure
		Educational-medical equipment
		Educational-therapeutic environment
Challenges in the areas of clinical education	Problematic clinical rounds	Low-quality rounds
		Crowded rounds
		Stressful rounds
		Overcoming specialized education
		Time limitation
		Poor learning skills of learners
		Limited educational opportunities
	Patient role in clinical education	Poor educational content of rounds
		Patient condition and diversity
		Patient dissatisfaction
		Failure to respect patient rights
		Improper interpersonal interactions
	Outpatient education problems	Undesirable clinic education
		Lack of skills
		Clinic crowdedness
		Time limitation
Educational planning challenges	Weakness in formulating and communicating goals	Lack of familiarity with the course objectives
		Unclear training objectives
	Inadequate clinical teaching methods	Not using proper training methods
		The application of traditional methods in teaching
	Inadequate educational management	Weakness in defining professional duties
		Poor planning
		Theory and practice gap
	Weakness in resources and content	Inadequate scientific content in education
		Lack of access to up-to-date scientific resources
	Weakness in monitoring and evaluation	Evaluation system
		Teacher evaluation
		Student evaluation
		Methods of clinical evaluation
Challenges associated with clinical teachers	Educational injustice	Student discrimination
		Inattention to the needs of students
	Weaknesses in educational skills	Lack of teaching skills
		Lack of steadfast principles in education
	Lack of professional empowerment and promotion	Unfamiliarity of teachers to new educational concepts
		Lack of a program to improve teacher skills
	Occupational dissatisfaction	Teachers' financial problems
		Lack of motivation in teachers
	Burnout	Multiple tasks and responsibilities
Challenges associated with students	Educational dissatisfaction	Financial problems
		Motivational factors
	Inappropriate communications	Inappropriate behaviors
		Lack of educational cooperation

[a] Due to the inductive nature of theme extraction, the first column is dedicated to the subcategories.

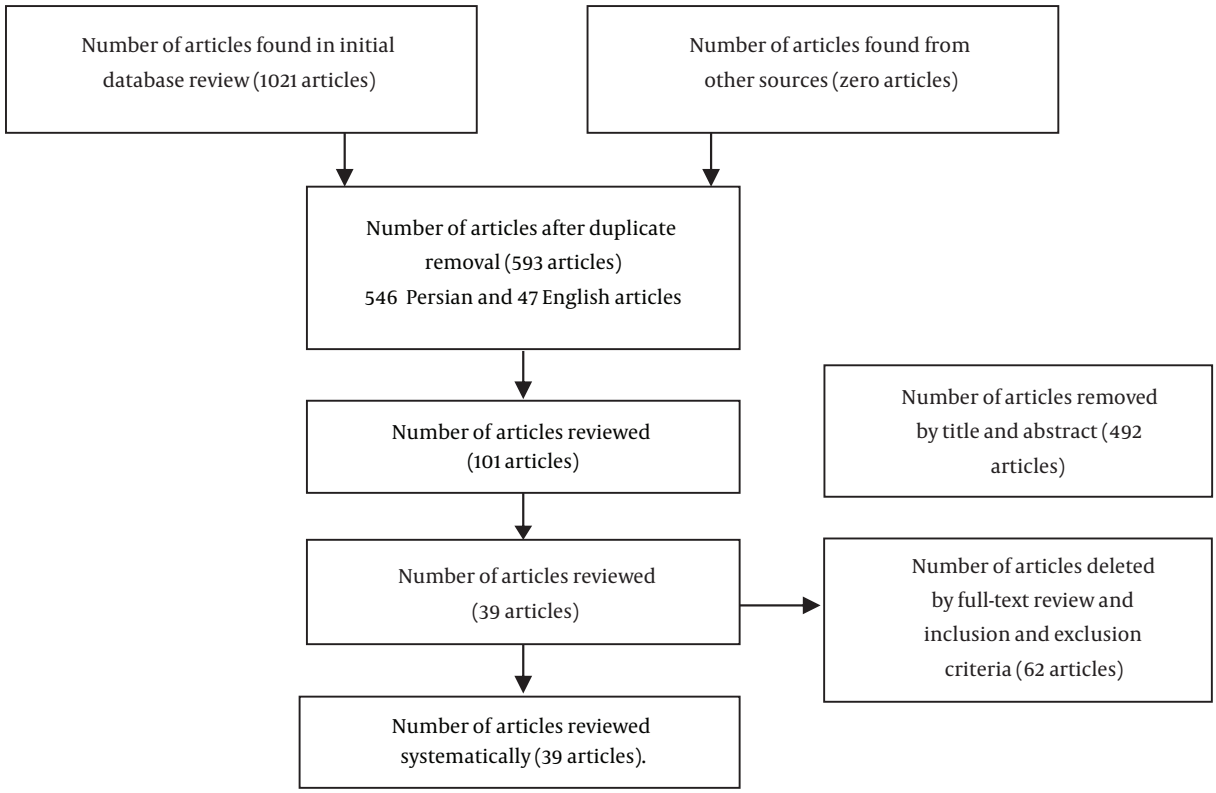

Figure 1. The process of entering articles to the systematic review

into the MAXQDA software for ease of work. Then, the common items and similar codes were merged and the categories were grouped in a theme. Based on the findings, the challenges of clinical medical education in Iran were classified into 5 themes, 18 categories and 49 subcategories.

4. Discussion

The main mission of medical universities is to train specialized staff to provide high-quality care to the community. In this regard, it is necessary to identify the challenges and problems of educational programs in order to improve the current situation by formulating and implementing systematic programs.

This will lead to improved achievement of the goals of education and training of skilled people and improvement of the quality of health services throughout the country. The current systematic review has led to the identification of a number of challenges related to clinical education in Iran. The themes derived from data analysis are discussed in more details below.

4.1. Challenges and Problems of Clinical Medical Education in Iran (498 Codes)

4.1.1. Contextual Challenges

This theme comprised 96 (19.3%) codes and three categories: prevailing atmosphere (16 codes), management problems (20 codes), and resources and facilities problems (60 codes).

The clinical education environment is a stressful environment for medical students. This environment of an unpredictable nature (21, 27) makes it difficult for students to be taught at patient bedside. International research has referred to factors such as students' fear of patient exposure (51) and fear of presence in hospital wards without the presence of teachers (52), which are consistent with the results of the present study. Also, the results of some studies have shown that the future of medical students is ambiguous and worrying for them (13, 30, 34).

In a study, 30% of students did not show interest in the medical profession (53), which is consistent with the results of the present study. It seems that by raising students' awareness of the human aspects of the medical profession and expressing existing job opportunities and providing counseling, some of their concerns can be mitigated and

a positive attitude can be instilled in them. Among the other issues affecting the current state of clinical medical education are the prevailing priorities in the medical education system, treatment priority over education, education being affect by medical and research responsibilities (47), stronger role of research compared to education (27), priority of residency examination over education (27, 30) and lack of attention to student education at lower levels of medical education such as medical students and interns compared to senior students (26, 27, 47). In another study, priority was given to health care over bedside education (54).

Other problems with clinical education include inadequate educational management and lack of educational regulations. The findings of the literature review indicate that lack of management is the source of numerous problems such as interpersonal and interdepartmental relationships (27), incorrect planning (44) and excessive workload in health care (15, 27, 36, 37, 49).

Teaching management principles, planning by experienced people, and using effective management techniques can partially alleviate the existing management problems. The clinical education system should provide the responsibilities associated with everyone involved in the education process. These include lack of job descriptions for teachers and students (30), lack of clarity of staff duties towards students (29), and lack of job descriptions for students at the beginning of the course (34).

Other issues that have affected clinical education are resource problems and facilities. The results of the present study showed that the necessary infrastructures such as lack of access to the Internet and web-based educational resources (18, 21, 26), lack of availability and updating of library resources (31, 34) and lack of access to educational journals (31) are important things that can lead to student dissatisfaction.

Therefore, medical school education authorities should take the necessary steps to provide appropriate educational facilities. Masic et al. in a study in Sarajevo found that students considered the most important factor in improving the quality of medical education as having up-to-date educational facilities (55). On the other hand, lack of physical resources such as inadequate library space (34), insufficient number of computers in hospitals (31) and lack of human resources such as experts and faculty members (26, 27, 33, 37) are among the factors affecting the quality of clinical education.

International research has referred to the shortage of staff (faculty) (56) and nurses (57) in clinical education. Findings regarding the physical condition of the clinical education environment indicate that hospitals are facing a shortage of educational facilities (13, 18, 27, 31, 34) and equipment (15, 23, 24, 32, 49).

Ramani et al. cited one of the barriers to clinical education being the lack of a negatoscope for viewing radiology images when discussing with students at the patient's bedside (58). In addition, lack of medical equipment and their inadequacy (21, 30, 43) and lack of educational aids (22, 25) disrupt the teaching process. One of the most important issues in clinical education is paying attention to the appropriate educational environment when teaching students. Given that most of the time spent in the patient's bedside is devoted to inpatient departments, educational clinics, or clinical rounds, these environments should be standardized and proportionate to the number of students, but evidence suggests that educational space is limited (18, 27), and there is no correlation between educational spaces and the number of students (13).

The results of the study conducted by Obeidi and Motamed in Bushehr also showed that the lowest score was related to the lack of proportion between the number of students and physical space in the internship wards (59). Research results have shown that the physical space of the wards (13, 29, 43, 46), clinics (17, 32, 35) and clinical rounds (21, 22, 28, 42, 48) are inadequate for teaching. International research has referred to the lack of space in the patient rooms (60), small rooms (61) and lack of room for pre- and post-clinical rounds (56) which is consistent with the results of the present study.

4.1.2. Challenges of Clinical Education Areas

This theme consisted of 184 codes (37%) and had three categories: Problematic clinical rounds (114 codes), patient role in clinical education (44 codes) and outpatient education problems (26 codes).

Most of the codes extracted from the literature review were related to the challenges of clinical education and the category of problematic clinical rounds. Undesirable process of clinical rounds (4, 38), simultaneous working round and teaching round (21) and failing to make appropriate and timely decisions on how to conduct teaching rounds on the part of the relevant authorities (20, 41) and, on the other hand, lack of proper participation and student discipline (14, 19-21) and their presence at different levels in rounds (21, 27, 47) lead to poor quality of education (14, 19, 29, 42) and ultimately affects the effectiveness of education (45, 49).

One of the main and important problems of clinical rounds in Iran is the crowdedness of rounds due to the large number of students in clinical departments or rounds during training (22, 24, 38, 44, 45, 48). This factor creates a noisy and crowded environment (21, 50), which results in disorder and dissonance in student education (44). International studies have referred to crowded

rounds (62), large numbers of students at the clinic (63), and the presence of students with varying levels in rounds (64).

Research results show that the crowded environment of clinical rounds prevents the effectiveness of training in clinical rounds (11, 64, 65). The physical and psychological conditions of the clinical teaching environment should be such that it provides a good basis for students' thinking and practice. Having stress to deal with the patient alone and the fear of working in the real environment (45) creates an overwhelming amount of stress. Proper student interaction with the instructor and clinical teaching environment and receiving adequate social support from residents and teachers also play an important role in modifying this environment and enhancing clinical learning (45, 49), which has received little attention (23).

Also, cases such as dispersed and inconsistent discussions at the bedside (4, 38), specialization of teaching in clinical rounds (20, 21, 27, 33, 47), inadequate level of students with specialized and sub-specialized fields (27, 30), inappropriateness of examination of complex clinical cases for interns (26), limited clinical training time (27, 31, 50) and lack of time to discuss patients in clinical rounds (19, 27) lead to disruptions in student learning and double the necessity of creating specific frameworks and criteria for conducting clinical rounds.

Numerous studies have pointed to the lack of time for bedside education (11, 56, 57, 62, 65-67), which is consistent with the results of the present study. The unfavorable status of clinical skills education (29) and the low level of students' learning from the provided clinical education (25, 44, 45) indicate weaknesses in examination (21, 36), treatment (15) and patient management (26).

Although clinical education provides students with the most important opportunities for bedside learning of medical science, the results of literature review show that educational opportunities, such as visiting and treating patients independently (17, 35), clinical decision-making in the treatment process (45) and the opportunity to apply knowledge and skills in patient care (24) are not sufficiently provided to students in the clinical course. According to Wiseman, medical students need to be allowed to observe and participate in clinical counseling and patient visits to develop their attitudes and skills as an effective and evolving physician (68).

Other considerations that greatly affect students' learning quality are the problems associated with educational content of the rounds. The content of educational rounds is not of sufficient quality, with less attention being paid to such topics as patient-related social aspects in rounds, critical thinking, physiopathology, differential diagnoses, diagnostic indices, prevention and treatment indices, and follow-up (14, 20). This has led to a decrease in the educational impact of clinical rounds on students' success in the

4.1.3. Objective Structured Clinical Examination (OSCE) and Clinical Skills of Students (19)

The role of the patient in clinical education is very significant; insufficient diversity of patients in the inpatient departments (43), limited clinical cases (24, 27) and the sudden deterioration of the patient's status during rounds (21), affect clinical education (50). Evidence suggests that patient-related concerns are ignored during the clinical education process. Given the large number of students in clinical rounds, especially in the intern group, it is not clear to the patient who is the physician in charge when students and teacher attend at the bedside. The resultant is an insecure feeling concerning treatment by someone other than the treating physician (4, 38).

On the other hand, crowded rounds cause fatigue in patients due to examination by multiple medical students (27, 30), high frequency of visits (4, 21) and prolonged visits (4). For this purpose, it is recommended that group visits be performed at one time to reduce the number of visits per clinical round. In international studies, patients' concerns about long-term presence of students at bedside (66) and physical examinations (52, 61) have been mentioned.

Not paying enough attention to the patient's privacy (6, 21, 50) and being examined by a group of people in rounds (4, 38) induce unpleasant feelings. It is necessary to talk to the patient before the clinical round begins and inform them of students' education at their bedside, but the findings show that these are ignored during rounds and even those present in the round are not introduced to the patient (16).

Patients' rights being ignored (45, 48), including lack of patient consent during clinical rounds (21), lack of patient consultation in medical decisions (4, 38), lack of sufficient and comprehensible explanations for the treatment process (4) and failure to provide explanations on the treatment and the concept of the round for the patient (38) are among the factors that lead to patient dissatisfaction. Numerous studies have indicated the importance of patient privacy (61, 69, 70)

In order to prevent dissatisfaction in patients, it is advisable to give them brief explanations about the disease and its treatment. Physical and psychological harms to patients and lack of proper communication with them (21, 39) are some of the factors that cause a great deal of dissatisfaction during clinical rounds, leading to inappropriate interpersonal interactions and lack of co-operation for bedside education (50).

According to the outcome-based education approach, any higher education system must train students according to their future career needs (71). In the medical field, this is achieved through outpatient and clinic training, as more than 50% of clinical practices of interns are dedicated to this matter (72), but evidence suggests that all students do not participate adequately in clinic education (32), which can be due to inappropriate clinic education (35, 37), lack of respect for outpatient medicine (33), limited educational opportunities in outpatient clinics (47), and lack of a steadfast principle in education (30).

The busyness of clinics (18, 35) and time constraints in outpatient education (30, 46, 47) also affect students' educational opportunities and impede the acquisition of necessary skills (28, 30, 35) in this stage of clinical education. The results of studies in developed countries have reported relatively low satisfaction with clinic education (73). Evidence indicates lack of attention to clinic education in the society and the lack of a coherent plan to improve clinic education compared to advanced countries. Since outpatient clinics have a greater share of assimilating future working conditions of the students than the inpatient departments in terms of the variety and prevalence of illnesses in the community, more careful planning is needed by the authorities.

4.1.4. Educational Planning Challenges

This theme consisted of 131 codes (26.3%) and included five categories: weak compilation and information briefing (10 codes), inadequate clinical teaching methods (11 codes), inappropriate educational management (57 codes), resource and content weaknesses (16 codes) and inadequate monitoring and evaluation (37 codes).

Uncertainty and failure to provide educational goals to students at the beginning of the course (15, 22, 33, 35, 40) is due to a weakness in formulating and informing educational goals. As a result, the clinical education minimum is not specified for students (28, 29) and their learning is not in line with predetermined educational goals (22). Therefore, clinical education needs to be planned according to predetermined goals and announced to the students at the beginning of each course and each lesson.

The inadequacy of clinical teaching methods (28, 43, 50) and the use of traditional teaching methods (33) lead to inactivity of students during training. Therefore, it is recommended that new, student-centered teaching methods be continuously evaluated and analyzed by medical education experts and the most fective be identified and taught in on-the-job training workshops to medical teachers.

Lack of awareness and uncertainty of students' clinical responsibilities (4, 39, 49) and irrelevant tasks (30, 45) indicate weaknesses in defining students' professional duties. This results in less commitment in interns towards patients. On the other hand, the low level of educational needs assessment (29) and lack of attention to educational needs in planning (21, 32) exacerbate this problem.

The results of literature review show that proper planning for clinical education is not done in a way that maximizes student learning and training. This lack of planning leads to inconsistency in training programs (15, 36), problems with scheduling educational classes (41, 45), decreased learning and increased fatigue among students (45).

One of the important issues in the student learning process is the integration of theoretical and practical lessons at the bedside. The gap between theoretical and practical knowledge at the bedside and the discrepancies between the two (22, 30) should be taken into account in educational planning. Research findings show that learning experiences do not meet students' professional needs (33, 45) and place greater emphasis on teaching theoretical concepts rather than clinical education and clinical skills (31). Therefore, consideration should be given to tailoring and bringing theory lessons into practice in educational planning. Consistency of theoretical courses with practical skills in student education has been reported as one of the factors having an impact on the effectiveness of educational programs (74).

Theories learned must be essential and applicable and extracted from up-to-date scientific sources (21, 30, 33). This requires the availability of the scientific resources needed for further study of students (16) and the relevance of the scientific content in clinical education (25, 30, 41). This is especially important at the bedside so that students can improve their knowledge using up-to-date scientific resources, but evidence suggests that up-to-date scientific resources are not used in clinical education (40) and access to educational resources and journals is limited (18, 26).

Monitoring and evaluation should not be neglected to enhance the quality of clinical education and identify the strengths and weaknesses of the educational system. According to the studies, inadequate evaluation system (15, 30) and insufficient supervision over the clinical education process (33, 49) have a negative impact on students' learning and teaching process. Lack of objective evaluation of teachers' educational activities and clinical education program (21), inadequate student evaluation methods and lack of specific criteria (15, 33), students' dissatisfaction with the end-of-course evaluations (32) and low level developmental evaluations of students during the course of clinical education (29) indicate the absence of an efficient and effective evaluation system.

These objectives are achieved when education manage-

ment develops a clear plan for a reasonable evaluation system. The results of the study conducted by Fakhari et al. showed that more than 50% of interns were dissatisfied with the evaluation methods and only 28% were satisfied with the evaluation methods of their skill and ability (75). What is important in the evaluation process is providing appropriate feedback to students, but unfortunately, appropriate feedback on students' educational activities is not provided (24, 26, 39, 49). In addition, the evaluation methods used are unfavorable (29, 49) and have low validity (29).

4.1.5. Challenges Related to Clinical Teachers

This theme consisted of 62 codes (12.4%) and had five categories including inequality in education (12 codes), weaknesses in educational skills (21 codes), empowerment and professional promotion (9 codes), job dissatisfaction (11 codes) and burnout (9 codes).

Inconsistencies in education may include disregard of interns in the clinical training process (18), lack of involvement of interns in the training process and clinical rounds (26), inappropriate allocation of educational activities among students (21), disregard of student needs (39), students' lack of access to teachers informally (39), lack of discrimination between active and inactive students (30), discrimination between medical students and interns (45), student discrimination on the number of on-call shifts (45), lack of access to a clinical teacher for troubleshooting and answering student questions (29), disregarding student opinions (3), disregarding students and their problems (44), and inadequate division of students between teachers (21).

Inappropriate training provided by clinical teachers and their inappropriate performance can be due to insufficient mastery of teachers and lack of necessary skills in performing clinical-educational role (27, 34, 45, 50), inadequate teaching experience (42), the lack of ability to manage and control the discussions in clinical rounds (40), the lack of regular presence of professors in the morning report sessions (40) and the lack of steadfast principle in teaching and at the bedside (33).

It should be noted that implementing the teaching process through competent and efficient mentors can enable students to make the most of their abilities. The results show that teachers with sufficient clinical knowledge and skills can play an effective role in teaching students. These teachers, as professional role models, play an important role in the growth of students and empowering them to embark on their future careers (1, 76-78). International studies reported lack of training skills (61), lack of clinical skills and knowledge (60), and lack of experience in bedside clinical training (65), which is consistent with the results of the present study.

Ramani et al. cited barriers to clinical teaching as well as the fear of young teachers failing to deliver good clinical education. Clinicians believed that empowering these people is not considered important in the educational setting (58). In order to have a high quality and effective clinical education system, empowerment of clinical teachers should be considered and planned because of their lack of knowledge of existing programs for professional development (13) and lack of adequate training and curriculum (13), leading to a disruption in education and presenting scientific and practical concepts in an incorrect way.

Literature shows that clinical teachers are not familiar with teaching methods and new educational concepts to perform their educational role (27) and no workshops are held to teach these skills (30). Certainly, empowerment courses can help to promote clinical teachers. Along with the empowerment of teachers, other motivational aspects must also be considered. Uncertainty about the employment status of some teachers (30), financial problems (21, 27) job dissatisfaction and lack of motivation due to some inequalities and inconsistencies in the existing administrative structure can lead to discouragement of teachers which impedes their career development (13, 30).

Numerous studies have pointed to the lack of teachers' motivation in student education (30, 35, 40, 50), which is one of the important factors in reducing the quality of clinical education. In their research, Hendry et al. expressed lack of funding and, more importantly, lack of education and lack of attention to educators as inhibiting factors for teacher motivation (12). The study done by Razavi Asl showed that salaries and benefits, job promotion, etc. are the main factors affecting job satisfaction (79).

Numerous studies have pointed to the lack of teachers' motivation to teach students (51, 57, 58, 63, 67). These finding is in line with the present study. Many duties and responsibilities and the overwhelming workload of clinical teachers apart from teaching (21, 30, 47) lead to excessive fatigue and burnout (13, 24, 27) and have an important role in reducing the quality of education. Most studies published in the field of clinical education have cited the high volume of clinical duties and lack of training for teachers regarding their teaching role (11, 80-85), which is consistent with the findings of the present study. Similar studies have also highlighted the clinical and research responsibilities of faculty members that affect students' clinical education (58, 60, 64).

4.1.6. Student-Related Challenges

This theme contained 25 codes (0.5%) and had two categories including educational satisfaction (12 codes) and in-

appropriate interactions (13 codes).

Few studies have examined the role of students' financial problems and their impact on learning, but undoubtedly the burden of financial problems and their consequences cannot be ignored (21, 30). Another challenge related to students' educational dissatisfaction is lack of motivation. Studies show that students do not have sufficient motivation for education (13, 24, 27, 30, 44, 50). Students' lack of motivation in both learning and clinical practice can sometimes be covered by encouraging them to do group work (39). This creates a sense of belonging and being seen as part of the medical team and enhances the motivation and dynamics of students (45). Many international studies indicate a lack of learning motivation among students (51, 56, 62, 63), which is similar to the results of the present study.

Overall, considering that one of the important factors in education is having a passion for learning, attention should be paid to planning priorities of medical education centers. An inadequate interaction among students, teachers, and staff in the medical field is a major obstacle in the creation of a healthy learning environment. Lack of respect and mutual trust among different groups involved in education (16, 24, 34, 40, 45) leads to unhealthy workplace and mental environment which in addition to undermining the performance of each group, also underpins the overall effectiveness of clinical education. According to the results of the Zygmont and Schaefer, clinical education for students should be conducted in collaboration with clinical staff (86).

In the study by Aga Khan et al. in Urmia, 75% of medical students rated the performance and cooperation of medical staff as poor and 21.4% rated it as moderate and only 3.6% rated it as good (87). Fear of humiliating behaviors of teachers and staff has always been one of the concerns of students in clinical education and is one of the serious barriers to self-esteem and student learning in the clinical setting. This demonstrates the importance of educational authorities' attention to providing an appropriate teaching environment.

One of the most important aspects in this regard is the role that clinical teachers play in teaching students because their professional behaviors are monitored by students and students expect their professors to be responsible in their professional interactions and have appropriate professional communication with their students, patients, and other health care providers (88).

The present study emphasized the need to identify challenges and problems in order to improve quality in clinical medical education. By reviewing articles in the field of medical education, several challenges such as contextual challenges, challenges in clinical education, educational planning challenges and challenges associated with faculty and students were identified. Careful planning is expected to help solve these problems, as neglecting this can lead to a weakening of students' professional skills, a decline in the efficiency of the educational system, and a decline in the quality of service to the community. The findings of this study can help policy makers in medical education, medical university officials at different levels, and faculty members in implementing interventions and decision making to enhance the clinical education process.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

This article is part of a PhD. thesis at Isfahan University of Medical Sciences with code number 396165. The entire project was financially supported by the vice chancellor of research at Isfahan University of Medical Sciences. In addition, the National Center for Strategic Research in Medical Education (NASR) supported it financially with code number 960215. We would like to thank Dr. Yazdi, Dr. Dehghan, and Ms. Esmaili for their valuable suggestions for improving the quality of this study, as well as Ms. Shahsavari, who was instrumental in investigating the validity and accuracy of the articles. Finally, we wish to thank all the researchers whose articles were reviewed in this study. It should be noted that we obtained a code of ethics (IR.MU.REC.1396.3.165) from Isfahan University of Medical Sciences.

Footnotes

Conflict of Interests: It is not declared by the authors.

Funding/Support: Isfahan University of Medical Sciences and the National Center for Strategic Research in Medical Education (NASR).

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Table 2. Characteristics of the Systematically Reviewed Studies

Sources	Purpose of the Study	Type of Study	Study Method	Study Population	Sample Size	Study Setting
Ahmady et al. (13)	Assessment of faculty members' perceptions on identifying and addressing medical education challenges in order to improve educational goals and improve service quality	Phenomenology	Qualitative	Clinical teachers	10	Azad University of Iran, Mashhad branch
Rohani et al. (14)	Determining the perspective of medical students, interns, residents, and clinical teachers concerning grand round	Descriptive-analytical	Quantitative	Medical students, interns, residents and clinical teachers	237	Iran University of Medical Sciences
Salari et al. (15)	Determining interns' satisfaction with the quality of clinical education	Descriptive - cross-sectional	Quantitative	Interns	106	Guilan University of Medical Sciences
Jameaazghandi et al. (16)	Evaluating the quality of education at the bedside	-	Qualitative and quantitative	Medical students	-	Mashhad University of Medical Sciences
Iranmanesh et al. (17)	Evaluating the educational quality of neurology department	Descriptive - cross-sectional	Quantitative	Interns	67	Kerman University of Medical Sciences
Niroumand et al. (18)	Evaluating the quality of clinic education from the perspective of medical students	Descriptive - cross-sectional	Quantitative	Medical students and interns	140	Kermanshah University of Medical Sciences
Fani Pakdel et al. (19)	Assessing the viewpoints of medical residents on different dimensions of the grand round program and satisfaction with these meetings	Descriptive - cross-sectional	Quantitative	Residents	34	Mashhad University of Medical Sciences
Ala et al. (20)	Determining the factors affecting the quality of educational grand round from the perspective of the teacher team	Descriptive - cross-sectional	Quantitative	Medical students, interns, residents and fellows	57	Tehran University of Medical Sciences
Arabshahi et al. (21)	Identifying the challenges of education in clinical rounds	Phenomenology	Qualitative	Clinical teachers	9	Isfahan University of Medical Sciences
Jalalvandi et al. (22)	Quality assessment of clinical education	Descriptive-analytical	Quantitative	Medical students	119	Kermanshah University of Medical Sciences
Sarchami et al. (23)	A survey of medical students' viewpoints on the quality of clinical education	-	Quantitative	Medical students, interns and residents	228	Qazvin University of Medical Sciences
Azemian et al. (24)	Investigating the obstacles and facilitators of clinical education and strategies for improving its quality	Descriptive-analytical	Quantitative	Medical students	92	Boushehr University of Medical Sciences
Maasoumi and Dastgiri (25)	Evaluating the quality of training provided to interns in the emergency department	Descriptive - cross-sectional	Quantitative	Interns	100	Isfahan University of Medical Sciences
Ghaffarifar et al. (26)	Evaluation of interns' skills in clinics	-	Quantitative	Interns	45	Tabriz University of Medical Sciences
Gandomkar et al. (27)	Determining the underlying factors affecting clinical education	Phenomenology	Qualitative	Clinical teachers	8	Tehran University of Medical Sciences
Anbari et al. (28)	Determining medical students' satisfaction with the clinical education process	Descriptive-analytical	Quantitative	Medical students and interns	97	Arak University of Medical Sciences
Anbari and Ramezani (29)	Identifying barriers to clinical education and providing appropriate solutions	Descriptive	Quantitative	Medical students and interns	84	Arak University of Medical Sciences
Jamshidian et al. (30)	Identifying the challenges of the clinic education program	Phenomenology	Qualitative	Clinical teachers and interns	14	Isfahan University of Medical Sciences
Sharifi et al. (31)	Quantification and quality of clinical education	Descriptive - cross-sectional	Qualitative and quantitative	Medical students and interns	54	Yasouj University of Medical Sciences
Bazazi et al. (32)	Assessment of Medical Students' Viewpoints about the Quality of Clinical Education	Descriptive - cross-sectional	Quantitative	Medical students and interns	107	Hamadan University of Medical Sciences
Siabani et al. (33)	Identifying educational problems from the perspective of medical students	Group discussion	Qualitative	Medical students and interns	24	Kermanshah University of Medical Sciences
Nasri et al. (34)	Identifying educational barriers, problems as well as problem-solving strategies	Descriptive - cross-sectional	Quantitative	Medical students and interns	72	Arak University of Medical Sciences

Adibi and Alizade (4)	Determining the viewpoint of the care team concerning the impact of clinical rounds on patients	Descriptive - cross-sectional	Quantitative	Medical students and interns	150	Isfahan University of Medical Sciences
Khorasani et al. (35)	Evaluating the quality of clinical education from the viewpoints of medical teachers and students	Descriptive - cross-sectional	Quantitative	Medical students, interns, residents and clinical teachers	180	Mazandaran University of Medical Sciences
Roodpeyma and Salemi (36)	Determining students' perceptions of clinical education programs in the pediatric department	Observational	Quantitative	Medical students and Interns	120	Shahid Beheshti University of Medical Sciences
Zamanzad et al. (37)	Evaluating the satisfaction rate and factors affecting the promotion of satisfaction with clinical training	Descriptive-analytical	Quantitative	Medical studnets and interns	77	Shahrekord University of Medical Sciences
Adibi and Anjavian (38)	Determining patients' viewpoints about internal clinical bedside rounds	Descriptive	Quantitative	Patients	100	Isfahan University of Medical Sciences
Zahedi and Amirmaleki (39)	Investigating the effectiveness of general medical doctoral education from students' viewpoints	Survey	Quantitative	Medical students	162	Tehran University of Medical Sciences
Fasihi Harandi et al. (40)	Determining the quality of clinical education from the perspective of medical students	Descriptive-analytical	Quantitative	Medical students and interns	249	Iran University of Medical Sciences
Hosseinpour et al. (41)	Investigating interns' training in surgery ward	Analytical	Quantitative	Medical students	123	Isfahan University of Medical Sciences
Ziaee et al. (42)	Assessment of medical students' satisfaction with the quality of clinical education	Descriptive - cross-sectional	Quantitative	Medical students	250	Tehran University of Medical Sciences
Mortazavi and Razmara (43)	Assessment of medical students' satisfaction from different aspects in different educational positions	Descriptive - cross-sectional	Quantitative	Medical studnets and interns	400	Isfahan University of Medical Sciences
Fekri and Sarafinejad (44)	Assessment of medical education status in three educational groups	Cross-analytical	Quantitative	Medical studnets and interns	239	Kerman University of Medical Sciences
Karimi Monaghi et al. (45)	Search, describe, and interpret medical students' understanding of clinical learning	Group discussion	Qualitative	Medical students	20	Mashhad University of Medical Sciences
Avizhgan et al. (46)	Evaluating the quality of outpatient education from the perspective of medical students to improve quality of education	Descriptive - cross-sectional	Quantitative	Medical studnets and interns	180	Isfahan University of Medical Sciences
Esteghamati et al. (47)	A survey of residents and attending experiences and views on learning in the clinical environment	Phenomenology	Qualitative	Residents and attending	30	Tehran University of Medical Sciences
Haghani et al. (48)	Assessment of faculty members' experiences regarding training in clinical rounds	Phenomenology	Qualitative	Clinical teachers	9	Isfahan University of Medical Sciences
Rezaee and Ebrahimi (49)	Identifying factors affecting medical students' learning in clinical environments	-	Qualitative and quantitative	Clinical teachers and residents	184	Shiraz University of Medical Sciences
Mosalanejad (50)	Evaluation of quality and barriers to education at the bedside	Cross-sectional	Quantitative	Clinical teachers	50	Jahrom University of Medical Sciences

Strides Dev Med Educ. 2019 December; 16(1):e66296. doi: 10.5812/sdme.66296.

Published online 2019 April 8. **Research Article**

Study of the Status of Medical Students and Residents' Thesis in Kerman University of Medical Sciences in Terms of Contribution to Scientific Development

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Received 2018 January 15; **Revised** 2018 June 24; **Accepted** 2018 July 01.

Abstract

Background: Dissertations or theses are valuable sources of information, which play an important role in scientific development because of their specific nature and characteristics.
Objectives: The aim of this study was to investigate the status of medical students and residents' dissertations in terms of contribution to scientific development in Kerman University of Medical Sciences.
Methods: This cross-sectional, analytical study examined the status of medical students and residents' dissertations, submitted to the Medical Faculty of Kerman University of Medical Sciences during 2012 - 2015. First, the research deputy of Kerman University of Medical Sciences provided the dissertation information. Then, the information was analyzed in terms of study design, study type, extraction of Persian and English articles, publication in domestic and international journals, and indexing in reputable scientific databases in two groups of medical students and residents' dissertations. SPSS was used for all statistical analyses.
Results: In total, 643 dissertations were studied, including 342 (53%) residents and 301 (47%) medical students' thesis. Overall, 267 (41.5%) dissertations were published as articles in domestic and international journals. The findings showed that 13.4% of articles were indexed in the Scopus database. The mean scores of medical students and residents' dissertations were 19.22 $\pm$ 0.70 and 19.15 $\pm$ 0.85, respectively.
Conclusions: Despite the large number of medical students and residents' dissertations submitted to Kerman University of Medical Sciences, a limited number of dissertations were published as scientific and research papers, and the number of articles indexed in international journals was insignificant. Thesis writing is generally a unique opportunity for students to learn research skills and methods. In addition, publication of thesis findings in domestic and international databases can lead to scientific development.

Keywords: Dissertation, Residents, Medical Students, Kerman University of Medical Sciences

1. Background

Scientific research is an essential activity, which contributes to the development of human knowledge. Through research, we can find reliable solutions to problems by systematic data collection, analysis, and interpretation (1). Today, a significant part of systematic research is conducted in universities and higher education institutions, the main purpose of which is to develop and expand the current level of knowledge, eliminate the ambiguities of previous findings, and finally apply the developed knowledge for human development.

A large part of scientific research is presented as dissertations or theses. Many scientific papers are also extracted from dissertations. Therefore, it can be claimed that dissertations play an important role in the production of new knowledge (2). Among different educational programs, the great role and importance of higher education cannot be ignored. In fact, higher education programs are an important source of scientific development due to the integration of research in education (3).

Dissertations, which are the focal point of curricula in higher education programs, are associated with scientific development (4). Doctoral dissertations are one of the important components of higher education studies and a primary source of scholarly publications in universities (5). These valuable resources not only allow students to com-

plete their educational activities, but also enables them to improve the existing knowledge of their field (4). They are also proper tools for assessing the academic, personal, and clinical skills of students. In addition, presentation of high-quality dissertations can initiate a series of comprehensive and fundamental research at universities (6).

Higher education dissertations are expected to address problems in a scientific discipline and promote scientific development (7). Therefore, one of the goals of thesis integration in the curriculum of universities is practical application of findings in an actual environment (2); this goal can be achieved by publishing the results of theses in domestic and international databases. Publication of researchers' findings in indexed journals not only shows the scientific value and credibility of these resources to the scientific community, but also presents valuable results to the readers (5) and promotes the current knowledge and scientific production.

Research in different fields of medical and health sciences leads to the development and improvement of medical sciences. Academic research in medical fields and related disciplines, by examining different parameters and their relationships, can lead to scientific development (8). In fact, if medical research is practically applied to make suitable social, political, and health changes, it can result in the promotion of public health (9, 10). One of the driving forces of research in a certain discipline is the practical application of findings reported by researchers. On the other hand, researchers may be discouraged to continue their studies if they assume that their findings are fruitless or impractical.

Application of research findings not only encourages research activities for further scientific progress, but also promotes future studies. One of the major problems in scientific research is disregard for the practical role of dissertations and theses and the distance between the actual and desired states in the country's scientific community (11). One of the reasons for the inapplicability of thesis findings is non-publication of data (12). Generally, there is a large gap between research and practice, the cause and extent of which are not precisely identified (13).

In Iran, there is a large gap between research and practice. A large number of studies with different designs and formats are conducted annually, the results of which may be archived. Also, the findings of some dissertations can be only found in libraries and remain unpublished. Consequently, other scholars are not introduced to the results of these studies, thereby increasing the possibility of duplication. Due to non-publication, not only new knowledge is not developed, but also considerable time and money are wasted on repetitive research. Also, a large part of governmental funding and a significant amount of faculty members' time and resources are squandered (12).

According to the assessment of dissertations, the gap between research and practice is noticeable. Evaluation of 318 dissertations, submitted by the graduates of a medical sciences university in Iran, showed that only 106 dissertations were published (8). Moreover, among 516 residents' theses in herbal medicine, submitted to pharmaceutical schools, only 38 articles were extracted and published in reputable Persian journals (14). Also, study of theses written by the medical students of French universities showed that only 17% of the articles were published in reputable scientific journals (15). In another study from Spain, the number of articles extracted from doctoral dissertations on anesthesiology was limited in journals with international readership (16).

2. Objectives

With this background in mind, the aim of this study was to investigate the status of medical students and residents' dissertations, submitted by the medical students of Kerman University of Medical Sciences, in terms of contribution to scientific development. In addition to examining the status of dissertations in terms of characteristics, such as type and design, publication percentage and indexing of Persian and English dissertation articles in domestic and international journals were also investigated.

3. Methods

This cross-sectional, analytical study was carried out using content analysis method to determine the status of medical students and residents' dissertations, submitted to Kerman University of Medical Sciences, in terms of contribution to scientific development. For this purpose, all medical students and residents' dissertations, which were submitted by the students to the research deputy of Medical Faculty of Kerman University of Medical Sciences during 2012 - 2015, were reviewed.

The content analysis method is generally used to examine the conveyed messages in a text. In this method, the explicit content and messages are described both systematically and quantitatively (17). It is also a systematic and replicable assessment of communication symbols, which attributes numerical values to the text and then evaluates the relationships between these values, using appropriate statistical methods (18).

At first, the required data (thesis-related) were obtained from the deputy of research of Kerman University of Medical Sciences. Then, the following information related to dissertations was recorded in the data collection

form: study design (e.g., basic, applied, and population-based research and basic-applied); study type (e.g., patient assessment, cross-sectional, case-control, cohort, interventional, clinical trial, experimental, and health system management); publication rate of Persian and English dissertation articles; publication in domestic and international journals; indexing in reputable databases (e.g., PubMed, Scopus, ISC, Embase, Index Copernicus, and ISI); and publication of articles in educational subcategories.

Finally, the data were analyzed in SPSS version 16 (SPSS Inc., Chicago, IL, USA), using descriptive statistics (frequency, relative frequency, mean, and standard deviation) and analytical tests (chi-square and independent *t* test). The results were compared in the medical students and residents groups. Also, the dissertation score and impact factor were compared between the two groups.

The present study was approved by the Ethics Committee of Kerman University of Medical Sciences (IR.KMU.AH.REC.1395.17).

4. Results

In this study, a total of 643 dissertations, submitted to the medical school of Kerman University of Medical Sciences, were reviewed. Overall, 301 (47%) medical students' thesis and 342 (53%) residents' dissertations were included in our analysis. The majority of dissertations (n, 279; 43.7%) involved applied research, and the minority (n, 35; 5.5%) were community-based.

In terms of research method, there was a significant difference between the groups of medical students and residents' dissertations (P = 0.011). Most of the dissertations had a cross-sectional design (n, 290; 45.3%), followed by the interventional design (n, 142; 22.2%). The findings showed that residents did not use the health system management method. There was also no significant difference between the two groups in terms of study type (P = 0.069).

In total, the results of 267 (41.5%) dissertations were reported as articles. Persian articles were extracted from 118 (18.4%) dissertations, including 40 (13.3%) medical students and 78 (22.8%) residents' dissertations; there was a significant difference between the two groups (P = 0.002). The findings showed that 148 (23%) articles were written in English, including 34 (11.3%) medical students and 114 (33.3%) residents' dissertations; there was a significant difference between the two groups (P = 0.001).

Based on the findings, 220 (34.2%) articles were published in domestic journals and 47 (7.3%) articles were published in international journals. There was a significant difference between medical students and residents' dissertations in terms of publication in domestic journals (P = 0.001), whereas there was no significant difference regarding publication in international journals (P = 0.244) (Figure 1).

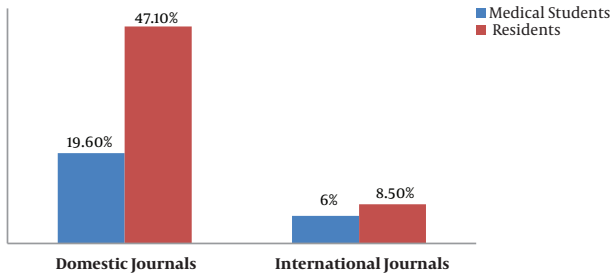

Figure 1. The frequency distribution of dissertations based on publication in domestic and international journals

The highest number of articles (59 articles, 9.2%) was published in the "Journal of Kerman University of Medical Sciences", followed by the "Journal of Addiction and Health" (22 articles, 3.4%). Moreover, the frequency distribution of articles with regard to medical subspecialty indicated that 22.6% of the articles were related to internal medicine, followed by pediatrics (84 articles, 13.1%) and obstetrics (64 articles, 10%). The lowest number of articles was related to urology (8 articles, 1.2%) (P = 0.001).

Most extracted articles (86 articles; 13.4%) were indexed in Scopus, and the lowest number of articles (4 articles, 0.6%) was published in the Index Copernicus. There was a significant difference between medical students and residents' dissertations regarding indexation in Scopus, PubMed, and ISI databases (P = 0.001), while there was no significant difference in terms of indexing in ISC (P = 0.133), Embase (P = 0.228), and Index Copernicus (P = 0.257) (Figure 2).

The mean medical students and residents' dissertation scores of the students were 19.22 $\pm$ 0.70 and 19.15 $\pm$ 0.85, respectively; no significant difference was found between the two groups (P = 0.263). Overall, 53.6% of the articles were published in journals with an impact factor; the mean impact factor was 0.81 $\pm$ 0.65. Also, the mean impact factor of journals publishing medical students and residents' dissertation articles was 1.00 $\pm$ 0.66 and 0.76 $\pm$ 0.06, respectively; however, the difference was not significant (P = 0.346). The mean impact factor was the highest in the neurosurgery group (0.70 $\pm$ 0.12) and the lowest in the internal medicine group (rheumatology) (0).

5. Discussion

One of the most important activities of medical universities is the production of knowledge through research

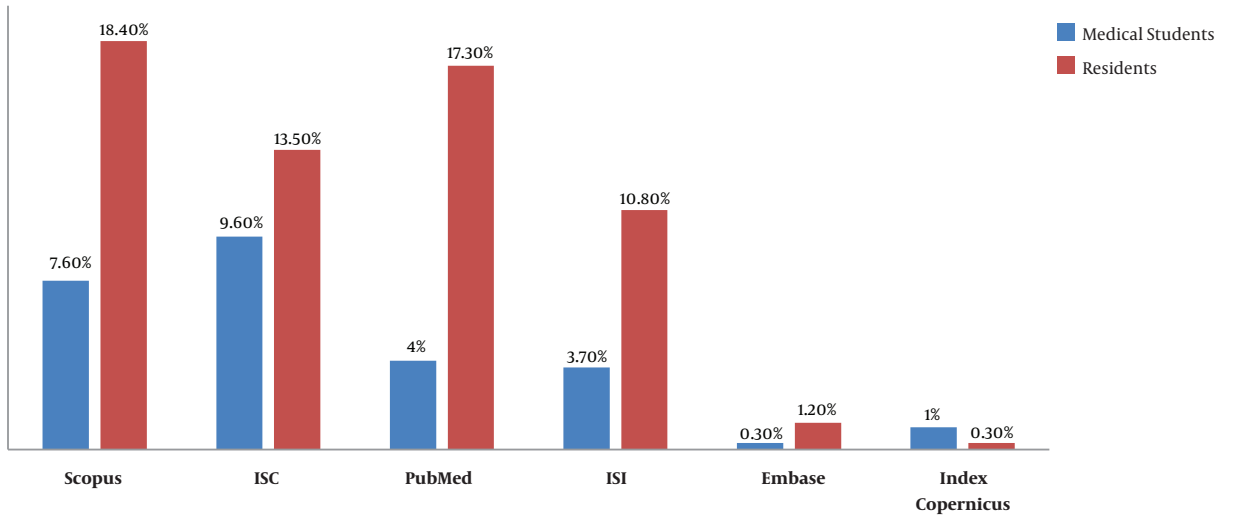

Figure 2. Frequency distribution of dissertations with regard to indexing in scientific databases

in different branches of medical sciences, which can lead to scientific progress, as diagnostic, therapeutic, and managerial decisions can be made based on research findings. Dissertations comprise the most important part of research activities in medical universities. Publication of the results of these activities can expand the boundaries of knowledge and increase the recognition of scholars.

In the present study, review of 643 dissertations submitted to Kerman University of Medical Sciences showed that 267 (41.5%) dissertations were presented as articles. Analysis of the results of clinical studies indicates the low number of publications from dissertations in the literature (5, 9, 19). In this regard, analysis of residents studies in 39 universities between 2000 and 2010 showed that 47.6% of theses had no important publications (19). According to a study by Dhaliwal et al., the researcher's high workload and educational responsibilities, routine professional tasks, and financial problems are among the barriers to publishing the results of dissertations (20).

While these valuable information sources are used for educational purposes in curriculum development, publication of results as articles can improve the students' research and writing skills (21) and help the research community to identify the strengths and weaknesses of graduate-level research (22). In addition, with the publication of dissertation articles, the results of studies are presented to potential users (physicians or researchers), leading to the development of knowledge in a particular field. These articles can help prevent and control diseases and improve public health by introducing the causes of diseases and their treatment strategies.

Assessment of the status of research projects carried out at Tehran University during 2004 - 2006 showed that the results of most projects (62%) were published in domestic journals (23), which is inconsistent with the present findings. The cause of discrepancy between the results is that researchers usually aim at publishing their findings from the beginning of the project (before research funding), while in case of residents' dissertations, students and professors may only consider them as part of the syllabus (23). On the other hand, lack of time, unfamiliarity with the methods of article writing, lack of funding, low impact of dissertations and articles on career prospects, and participation in residence training, may discourage the students and professors from writing an article.

One of the important factors for scientific communities regarding research activities, including dissertations, is the use of appropriate research methods, which can improve the effective role of dissertations (7). In this study, most dissertations used a cross-sectional design, while in the study by Poursani and Aminpour, the applied method was predominant (24). Overall, in most studies, the highest frequency was attributed to the cross-sectional design (22, 25-27). This design is mostly selected because it is somewhat cost-effective, safe, and simple (21).

As the results of the present study indicated, the interventional design was used in 22.2% of the dissertations. In this regard, according to the content analysis of doctoral dissertations in social services submitted to the University of Florida, 13.49% of theses engaged in interventional research (28). In a similar study from Egypt, interventional research was reported in 5% of theses (21). Generally, this

type of research requires more time, experience, and financial resources (21).

Scientific development in every country is indicative of its contribution to the international scientific community. Therefore, the mere increase in scientific development and restricted publication in domestic journals cannot improve the country's status in the international scientific community or support sustainable development. Nonetheless, publication of scientific articles in international journals or submission of articles to reputable databases can help achieve this goal (29).

One of the most important indicators of scientific and cultural development in every country is publication of scientific research in international journals (30). Based on the results of the present study, 34.2% of the articles were published in domestic journals and 7.3% in international journals, which is consistent with previous research (21, 31). In this regard, the findings of a previous study showed that 68.9% of theses submitted to Suez Canal University of Egypt were published in domestic journals, while 31.1% were published in regional/international journals (21).

Furthermore, the majority of dissertations (80%), submitted to a Peruvian medical school, were published in Spanish and Peruvian journals, while 17 (20%) dissertations were published in international journals (31). According to a study by Van Teijlingen and Hundley, journals are selected by scholars with respect to factors, such as scientific audience, gap between article submission and subsequent publication, and journal's scientific level, which is often assessed by impact factor (32).

The present study revealed the regional publication pattern of the evaluated dissertations. The highest number of articles (9.2%), extracted from medical school dissertations, was published in the "Journal of Kerman University of Medical Sciences". In a similar study, the "Medical Journal of Peru University" published about one-third of dissertations, submitted to a Peruvian Medical School (31). One of the reasons for this finding might be the familiarity of students with university journals. On the other hand, students may not be familiar with other similar journals to publish their articles. Overall, publication of the results of research activities, research projects, and dissertations in reputable journals plays an important role in documenting human knowledge and recognition of scholars at international levels.

Internal medicine is a medical specialty, which enables the practitioner to prevent, evaluate, diagnose, treat, and follow-up diseases through promoting his/her knowledge, skills, attitudes, and behaviors. In this specialty, the main objective is to train professionals who can provide the highest level of care, diagnosis, and evidence-based treatment for patients and contribute actively to medical education, science production, research, and medical ethics. Based on our findings, most published articles were related to internal medicine in the current study.

Considering the important role of internal medicine experts in the health system, the increasing need of Iran and neighboring countries for these experts, and academic association of this field with other internal medicine subspecialties, it is essential to publish the results of conducted studies for promoting the level of education and research, and consequently, patient treatment and community health. In a study by Alishri et al., the highest number of dissertation articles was reported in the neurosurgery group (66.7%), followed by the general surgery (15.7%) and internal medicine (7.5%) groups (8).

Most dissertation articles (86 articles; 13.4%) were indexed in Scopus, followed by ISC (11.7%) and PubMed (11%); nevertheless, similar studies have reported higher rates (20, 21, 33). The publication rate of articles from dissertations, submitted to Angers Medical School in France, was reported at 16% in PubMed journals (33) and 13.3% in the study by Nour-Eldein et al. (21). Moreover, in the study by Dhaliwal et al., the publication rate of dissertation articles in PubMed journals was estimated at 30% (20).

Publication of articles in PubMed journals can be related to the scope of the journal and quality of submitted articles (21). Medical databases, such as PubMed, can provide access to the latest research findings in areas of treatment and diagnosis in all medical disciplines and related sciences. In fact, publication of articles in these databases can increase the recognition of scholars in scientific communities and expand the knowledge boundaries (20).

The results of the present study showed that the mean scores of medical students and residents' dissertations were 19.22 ± 0.70 and 19.15 ± 0.85, respectively. In another study, the mean total score of dissertations by medical graduates was 18.86 ± 2.10 in one of the medical sciences universities of Iran (8). In another study by Rezakhani Moghadam et al., the mean assessment scores of medical students and residents' dissertations in health education, submitted to Tehran University of Medical Sciences, Tarbiat Modares University, and Iran University of Medical Sciences, were 88.28 and 90.84, respectively (11). These results are inconsistent with the findings of our analysis, and there was no significant difference in the scores.

5.1. Conclusions

Publication of the results of dissertations, as valuable research resources, in reputable domestic and international databases can be effective in promoting the scientific level of the community. According to the review of medical students and residents' dissertations submitted

to Kerman medical school, less than half of the dissertations were published as articles. However, the rate of publication in international journals was lower than domestic journals. Indexation of these articles in scientific databases was also insignificant; Therefore, it is suggested to publish the results of dissertations as articles in reputable journals and consider the presented information in these dissertations. Overall, these valuable sources of information are becoming more and more available to potential readers and promote the country's status in the international scientific community. In addition, one of the main goals of postgraduate studies (Master's and doctoral degrees) is to familiarize students with the principles of scientific research. Through independent research and presentation of dissertations, students can implement these scientific principles in practice. In fact, the skills that students acquire in these programs determine their future research activities.

5.2. Recommendations

Based on our findings, the following activities are recommended: (1) holding training workshops on research methodology and article writing for university professors and students to improve the quality of articles and dissertations; (2) giving special credit to students for publishing articles in domestic and international journals; (3) review of the strengths and weaknesses of dissertations and attempts to resolve them; (4) providing facilities and financial resources for publishing the results of dissertations; and (5) evaluation of the causes of non-publication.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The present study was extracted from a thesis in general medicine, approved by the Faculty of Medicine of Kerman University of Medical Sciences. We would like to thank all the people who cooperated with us in this study.

Footnotes

Conflict of Interests: Authors mention that there is no conflict of interests in this study.

Ethical Approval: IR.KMU.AH.REC.1395.17.

Funding/Support: It is not declared by the authors.

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Strides Dev Med Educ. 2019 December; 16(1):e68365. doi: 10.5812/sdme.68365.

Published online 2019 July 10. **Research Article**

A Survey on the Present Status of the Course Plans at Tehran University of Medical Sciences: A Prelude to Future Decisions

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Received 2018 March 06; **Revised** 2018 October 20; **Accepted** 2018 November 19.

Abstract

Background and Objectives: The development of a course plan is an essential activity before presenting each course, which enables effective education by mapping the road ahead. For this reason, the study of the status of course plans at universities is of particular importance, such that access to the documentations in this regard can lead to the discovery of the uncertainties of the status quo.

Methods: This was a survey study performed in two stages. In the first stage, data about the current status of course plans was collected through a researcher-made questionnaire. Then, quantitative data were analyzed using descriptive statistics in SPSS software. Secondly, the content of the course plans was examined. The data was collected using a researcher-made checklist based on review of the related texts.

Results: In total, 99 (92.52%) of the 107 academic departments completed the questionnaire. Of the 6926 responded units, 2251 units (32.5%) had a course plan. Of the 173 disciplines, 15 (8.7%) had provided a course plan on the faculty website. Of the 99 departments, 39 (39.4%) had a defined plan for course design and 34 (34.3%) departments had a monitoring committee. Qualitative analysis of course plans showed that 45.3% had an acceptable status, 6.2% were somewhat acceptable, 10.4% were incomplete and 38.1% were unacceptable. The general characteristics of the course (96.1%), the general description of the course (45.6%), the general objectives (87.0%), the specific goals (63.2%), and the introduction of resources (45.9%) had a "complete" and "fairly complete" status respectively and had the highest scores in course design. Also, students' role and tasks components-role dimensions (66.4%), student's assessment at the end of the course- summative evaluation (56.0%) and course timetable (51.8%) respectively, had the "incomplete" and "non-observance" status more than other components, and did not have a proper situation in course design.

Conclusions: The results of this study lead to the recognition of the current status of course plan in Tehran University of Medical Sciences and can be considered in future decisions.

Keywords: Design, Course Plan, Survey, Documentations, Decision-Making

1. Background

One of the most important educational processes that plays a major role in the development and continuation of other educational efforts is curriculum planning, and the various levels of curriculum, as a as a roadmap and a path for educators, explain the overall format of the whole educational activities.

Considering the importance of this issue and the trend of the world's leading activities in this field, the study of course plan at the level of departments of faculties affiliated to Tehran University of Medical Sciences has always been a necessity, such that obtaining documentation about this level of the curriculum as a micro-level leads to further study, critique and analysis of the status quo.

The problems due to the inappropriateness of the educational content with the tasks and responsibilities of individuals make it necessary to formulate a specific framework for each course (1). At the micro level, the responsibility of planning a course is typically the teacher's duty. At this level, the instructor must design the course (2). Of course, in each university, the responsibility given to the teacher varies, but the model that gives the teacher more control over the planning and decision making of classroom materials is more common (3). In the process of designing and revising the course, faculty members are faced with at least three basic decisions: "What is being taught, how to teach it and how to ensure that students are learn-

ing what is being taught?"

Many teachers wish to enrich students with all their knowledge and provide enormous content in the course, but this does not provide students with a deep understanding. To resolve this problem, the content should be narrowed down and specific aspects of the course should be delved into.

The operational course chart should consist of all educational topics and components such as those that can be included in the course, the sequence of topics, the prerequisite courses, group sessions, and the topics appropriate for self-study. Moreover, the whole course should have a temporal framework and logical organization (4). The course plan is similar to a one-year lesson plan, but given the fact that many courses are less than one year, the lesson plan can be further elaborated (5).

In this regard, Harden believes that medical teachers should consider 10 aspects in designing a course. The needs related to course design, goals, content, content organization, educational strategies, teaching methods, students' assessment, communication between the components of the course plan, the learning environment and process management are examples of these aspects (6). This map is designed through an interactive process of analysis, in which content, educational strategies and media are selected, organized and used (7).

In order to explain the importance of this small-scale educational map and the need for investment in research activities in this area, review of the regulations on the responsibilities of the Education Development Centers approved by the Ministry of Health and Medical Education and the standards of accreditation institutions will be helpful. According to Clause 12, Article 2 of the mentioned regulations, curriculum planning is within the authorities granted to medical universities and is among the main responsibilities of the Education Development Centers of all universities in the country. This is followed by monitoring how all steps of this process are implemented at different levels.

In this way, the current status of different curriculum levels from the macro level and the national curriculum to micro levels and layers associated with course and lesson planning all contribute to the achievement of this clause. On the other hand, given the importance of course design in the current disciplines at universities as evidence of the realization of the basic standards for global accreditation, it is important to guide and monitor their design process.

By reviewing the standards of accreditation institutions in various fields of medicine, dentistry, pharmacy, nursing and midwifery in the field of curriculum design, the importance of this issue becomes more evident and is considered as an inevitable necessity. In the field of medical education, this topic has been mentioned as part of the Accreditation Council for Graduate Medical Education (ACGME) standards, which requires that for each rotation, general and specific goals, educational methods, and tools for assessing the competencies of residents be specified and presented in printed or electronic form (8).

Also, according to the accreditation standards of the Commission on Dental Accreditation (CODA), the assessment of all courses with the consideration of the defined competencies is stipulated. In fact, all course plans should be designed in such a way to include narrative descriptions of students' performance and professional behavior in each lesson, such that student and teacher interactions can allow these subtleties to be evaluated (9).

The Accreditation Council of Pharmacy Education (ACPE) also deals with the design, presentation, and monitoring of curriculums, while emphasizing the need to design and update course plans (specifically for each lesson) in a college-approved process. Monitoring curriculums during the design, implementation, evaluation and quality improvement stages has been emphasized through the collaboration of the faculty members with the provost (10).

Based on the World Health Organization's guidelines for evaluating nursing and midwifery curriculums in different parts of the world, and in describing the basic standards in curriculum structure, schools of nursing and midwifery are required to determine the content, scope and sequence of the lessons while determining the distribution of hours required for each learning unit (11). The standards of the Australian Nursing and Midwifery Council (ANMC) emphasize that the structure of a curriculum should include a guide book or equivalent, with emphasis on the details of presentation of courses, comprising the professional experience and information technology requirements (12).

Regarding the stated issues and the importance of the subject, it seems that in order to determine the basic status of the course plan in Tehran University of Medical Sciences, examining the present situation is an inevitable necessity and can provide a suitable foundation for the formation of a systematic path; in such a way that the achievement of a precise plan is based on predetermined steps of research results, and any decision for the future will be taken in the form of this plan.

2. Objectives

This study was considered as a necessity of high priority. Accordingly, the present study was conducted to investigate the current status of the course plans of the current disciplines in Tehran University of Medical Sciences and ac-

cess documentations to analyze the status quo and make future decisions.

3. Methods

This study was a survey that was carried out in two stages. In the first stage, a research was conducted to investigate the current status of the courses in the university departments in 2016. The data collection tool was a researcher-made questionnaire drafted by reviewing texts and documents. The questionnaire includes eight questions about the type of discipline, the number of courses offered in the discipline, having written course plan for each course, the course plans are available on the website of the department, the plan for designing course plans of the courses with no course plan, the main obstacles faced by the department to implement the plan, suggested solutions to remove barriers and having a department-level committee to study the course plans in terms of overlap and possible gaps.

In order to ensure the content and face validity of this questionnaire, the first draft was piloted among the four schools of Medicine, Dentistry, Pharmacy, and Advanced Technologies in Medicine to complete it and to give corrective suggestions. After collecting comments and reviewing corrective suggestions, due to the differences between the disciplines in the university and the need to adopt a different approach in designing the questionnaire, four fields of general medicine, general dentistry, general pharmacy and other disciplines were determined in this survey and some changes were applied to the questionnaire related to other disciplines. Then, the data collection tools specific to the three fields of general medicine, general dentistry and general pharmacy redesigned and were sent to the relevant faculties to receive their comments.

After applying the comments, the final versions of the questionnaires were sent to different departments through separate official letters and it was stipulated that if the course plans were not accessible through the websites of the departments, a copy of the course plan along with completed questionnaires be sent to Education Development Center. The respondents were chosen through the census sampling method and included the deans of all the educational departments affiliated to Tehran University of Medical Sciences.

In the second stage, we analyzed all the 307 course plans offered by the departments in the second semester of the academic year 2015 - 2016. The data were collected using a researcher-made checklist, which was designed based on the review of relevant texts, reviewed by three medical education specialists, and finalized after applying their views (13-15). The checklist included nine effective components and twelve criteria for assessing the course plan.

In order to observe ethical considerations, all the information in the departments was regarded as completely confidential and not focusing on the results in the evaluation process of the faculties and their faculty members was emphasized. This was mentioned in a letter to the deputies for education of the faculties and then in the questionnaire guide. Data were analyzed using descriptive statistics (frequency and percentage) in SPSS version 18 (SPSS Inc., Chicago, IL).

4. Results

Out of the 11 colleges and four dedicated research subgroups, despite repeated correspondences and follow-ups, one of the sub-groups did not send any fulfilled questionnaire. In total, of 107 departments, 99 (92.5%) completed the questionnaires. Also, of all the responded units (6926), 2251 (32.5%) had a course plan. Of the 173 disciplines, only 15 (8.7%) provided their course plans on the faculty's website. Among 99 participating departments, 39 (39.4%) had a specific program for course design, and 34 departments (34.3%) had a committee to monitor the process of course design. Quantitative data were analyzed using descriptive statistics (Table 1).

In the second stage, after qualitative analysis of the course plans, 45.3% of them had an acceptable status, 6.2% had a somewhat acceptable status, 10.4% had an incomplete status and 38.1% had an unacceptable status. Also, the components of the general characteristics of the course (96.1%), general description of the course (45.6%), general objectives (87.0%), specific course objectives (63.2%), and introduction of resources (45.9%) respectively had the "complete" and "fairly complete" status more than the other components, and consequently, had the highest scores and the best status in course planning. Student roles and responsibilities - role dimensions (66.4%), student assessment at the end of the course - summative assessment (56.0%) and course timetable (51.8%) were classified as "incomplete" and "non-observable" more than the other components, and they did not have a proper status in course planning. Also, in analyzing the overall course plan in terms of having a real structure, 40.1% of the course plans were complete and 16.9% were relatively complete (Table 2).

5. Discussion

This study aimed to investigate the current status of the course plans of the current disciplines in Tehran University of Medical Sciences. Out of the total number of the

Table 1. The Current Status of the Course Plans in the Departments of Tehran University of Medical Sciences in the Second Semester of the Academic Year 2015 - 2016

Faculty[a]	The Number of Departments	The Number of Participating Departments	The Number of Disciplines	The Total Number of Completed Forms	Response Rate	The Total Number of Units	The Number of Units with a Course Plan	The Percentage of Units with a Course Plan[b]	Presentation on the Website[c]	Developmental Plan in the Department[c]	Surveillance Committee[c]	Course Design Processing (Percentage)			
												Acceptable	Somewhat Acceptable	Incomplete	Unacceptable
1	11	11	40	37	93	1358	410	30	0 (0)	4 (36)	2 (18)	75.0	-	4.0	21.0
2	7	7	13	13	100	532	334	63	9 (69)	4 (57)	4 (57)	100	-	-	-
3 graduate	10	5	23	12	52	336	257	76	1 (4)	2 (40)	3 (60)	91.0	-	9.0	-
3 general	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	8	8	22	22	100	1251	49	4	0 (0)	5 (100)	3 (60)	67	0/22	5.0	5
5	4	4	12	12	100	701	85	12	0 (0)	3 (75)	4 (100)	-	-	-	-
6 graduate	13	13	14	14	100	326	215	66	3 (21)	6 (46)	6 (46)	-	-	-	100
6 general	13	12	1	1	92.3	212	197	93	-	-	-	-	-	-	100
7 specialized	12	10	22	19	86	1193	276	23	0 (0)	5 (50)	3 (30)	26	15	5	54
7 general	13	13	1	1	100	217	86	40	-	-	-	24	3	30	43
8	3	3	3	3	100	125	48	38	0 (0)	2 (66.6)	3 (100)	100	-	-	-
9	3	3	9	9	100	290	48	17	0 (0)	3 (100)	1 (33)	-	-	-	-
10	5	5	9	9	100	219	127	58	1 (11)	2 (50)	3 (75)	21	-	-	79
11	5	5	6	6	100	166	119	72	1 (16)	2 (40)	2 (40.0)	100	-	-	-
Total	107	99	173	147	87.3	6936	2251	32.5	15 (8.7)	39 (39.4)	34 (34.3)	45.3	6.2	10.4	38.1

[a] In the case of faculties with deputies of education in general and postgraduate areas, the results of each of them were reported separately.
[b] The calculation of the percentage of units with a course plan was performed based on the number of units of the disciplines that responded the questionnaire.
[c] Values are expressed as No. (%).

responded courses, only one-third of them had a course plan. However, the item of disciplines with course plans on the website had the lowest rate among the other items under review. In the second stage, all the course plans presented to the Education Development Center and analyzed their contents at the curriculum Planning division.

In the analysis of course plans, it was found that half of them had an acceptable or somewhat acceptable status. Also, the components of the general characteristics and general description of the course, the general objectives and the specific objectives of the course and the introduction of resources had the highest scores and the best situation with regards to the principles of the course design. The components of student roles and duties - role dimensions, student assessment at the end of the course (summative assessment) and the course timetable also had the highest deficiency and the lowest scores (Table 2).

Few studies have been conducted in relation to the course design in Iran, which each of them has addressed this issue with respect to one of the dimensions of the current study, and the most widely addressed aspect has been the qualitative analysis of the content of the course plan. In other words, none of these studies has simultaneously addressed all these dimensions at all faculties of a university. However, the results of the present study are in some cases similar and in some others different from the findings of other national studies (16-21).

The results of a study which aimed to assess the quality of lesson plans of the selected faculties of nursing and midwifery in Iran showed that the most commonly considered elements in the lesson plans were respectively the contents, specific objectives, and the resource determination, while the least specified components were the teaching methods, the teaching aids and their use, and behavioral goals (16). Results of another study showed that the general and specific objectives, assessment methods, and resource introduction are, in most cases, the main weaknesses of course plans (17).

Delgoshaei et al. conducted a study at Ilam University of Medical Sciences and concluded that the different results in qualitative analysis of course design in various studies could be due to the different methods of lesson plan assessment, the differences in the number of samples examined, the existence of previous training in the relation with lesson plans and incomplete lesson plans. According to their findings, workload of faculty members, especially those with managerial positions, is one of the reasons for writing unbalanced and inaccurate lesson plans (18).

Results of a study performed in Babol University of Medical Sciences showed that 88% of the faculty members agreed with drafting a lesson plan before the outset of the

Table 2. The Results of the Components of the Course Plans Presented by the Departments of Tehran University of Medical Sciences[a]

Component, Assessment Criteria	The Status of the Course Plans According to the Criteria			
	Complete	Somewhat Complete	Incomplete	Not Observed
General characteristics of the course				
The general characteristics have been mentioned	295 (96.1)	-	-	12 (13.9)
General description of the course				
The course has been described in one or two paragraphs	240 (45.6)	-	-	67 (21.8)
Objectives				
The general objective has been written in the right format	267 (87.0)	-	-	40 (13)
The specific objectives have been written in the correct format	190 (61.9)	4 (1.3)	-	113 (36.8)
Teaching method				
The teaching and learning methods have been specified.	133 (43.3)	110 (35.8)	64 (20.8)	-
Course timetable				
The course timetable has been fully completed.	88 (28.7)	60 (19.5)	45 (14.6)	114 (37.1)
Student's roles and tasks				
The various dimensions that each student shows in dealing with different educational, research, service, advisory, and therapeutic situations have been precisely defined.	30 (9.8)	73 (23.8)	10 (3.2)	194 (63.2)
Students' responsibilities have been defined in the form of each role.	30 (9.8)	82 (26.7)	30 (9.8)	65 (21.2)
Students' assessment				
The student's assessment during the course has been indicated by the activities that the student carries out independently or with the guidance of the teacher.	68 (22.1)	44 (14.3)	62 (20.2)	33 (10.7)
The student assessment methods at the end of the course has been determined (summative assessment) and the assessment tools and the score of each student activity in the final assessment has been defined.	71 (23.1)	64 (20.8)	112 (36.5)	60 (19.5)
Resources				
Textbooks, specialized journals, related articles and related electronic resources have been introduced.	141 (45.9)	31 (10.1)	3 (1.0)	32 (10.4)
The general structure of the course plan				
The course plan has the actual structure	123 (40.1)	52 (16.9)	56 (18.2)	76 (24.7)
The general status of the course plans	Acceptable 139 (45.3)	Somewhat acceptable 19 (6.2)	Incomplete 32 (10.4)	Unacceptable 117 (38.1)

[a] Values are reported as No. (%).

course, but the work overload and the lack of motivation hindered the preparation of a lesson plan (19). In the study of Bazrafkan and Shokrpour, according to the faculty members' points of view, the large number of students is an obstacle to the implementation of a lesson plan (20). The results of a research carried out in Kerman University of Medical Sciences indicated that the knowledge of the faculty members was not satisfactory, and their attitude towards the design of a lesson plan was not positive, which is mostly because most of the faculty members had not participated in any formal course or educational workshops to promote their knowledge and change their attitude (21).

The common obstacles to designing a course plan in most faculties of Tehran University of Medical Sciences were the low availability of faculty members and their various activities, the resistance of some professors and reluctance to formulate course plans, teaching lessons by other departments or faculties (professors outside the department), the lack of recognition of the need to formulate course plans among senior lecturers, the impossibility of establishing a curriculum monitoring committee due to the involvement of faculty members in various educational activities, lack of human resources, including faculty members and experts, lack of awareness of the definition of course plan and lack of its discrimination from other levels of curriculum, the lack of a sense of necessity for its implementation by the faculty or department, lack of adequate education and information for faculty members and students regarding the benefits and uses of a course and lesson plan, lack of incentive and a regulatory mechanism and lack of a standard format for course plan.

In their research, Adib et al. stated that holding workshops related to teaching methods and curriculum planning for professors and motivating them can lead to the improvement of the quality of lesson plan (16). According to the results of Jokar et al., holding related educational workshops, provide standard formats for designing a lesson plan and proper monitoring by Education Development Centers of universities on how to formulate, present and implement a lesson plan can play a significant role in

designing optimal lesson plans (17). According to the results of a research carried out at Ilam University of Medical Sciences, holding related training courses for faculty members and providing standard draft forms can provide a good basis for designing lesson plans (18).

The results of the present study, in addition to the clarification of the findings of previous studies and relative agreement with them, revealed new solutions to the existing obstacles. The following paragraph delineates the proposed strategies by the departments in Tehran University of Medical Sciences to improve course plans.

Considering the course plan item in the faculty members' evaluation, such that if they do not provide a course plan, they would not obtain the relevant points, providing educational support and having a plan for training faculty members, providing a university-approved framework for course plans, the formal request of the matter by the deputy for education of the university or faculties, having regulations in faculties, whereby all faculty members are required to submit a course plan, create a culture for course design based on scientific principles, having incentive mechanisms for faculty members, holding relevant workshops by the Education Development Center or Education Development Offices, reviewing the proposed course plans by the Education Development Offices and providing feedback to organize the course plans, having a program for monitoring in the form of a four-year college-level program for the regular configuration of future work, activating the Education Development Offices and appointing active and interested faculty members as the head of them, more interaction between the deans of schools and academic departments by establishing a two-way communication, evaluation of Education Development Offices and careful supervision by EDCs, reinforcing human resources, giving sufficient knowledge to faculty members on how to design course plans, and finally, appointing a committee for monitoring the process of course design, which can improve the status quo.

Given the current situation and the upcoming trend, the use of solutions tailored to both the needs of the country and the credible global practices in this field can be effective in solving the existing challenges and barriers in the near future. The findings from the extensive research project conducted by Kennedy et al. on the 21st Century European Medical Education Curriculum emphasize the move towards a new attitude towards students as participants in the learning process and avoids looking at them as customers or consumers. In this type of view, students should be involved with the curriculum, and this can be done by employing them in the curriculum committees. Also, the results of their study suggest the importance of educational support from faculty members in the field of education and incentive mechanisms and rewards for participating in education as future trends (22). The solutions presented in this study are in accordance with some of the results of the mentioned research.

One of the advantages of this study was examining the status of course planning in all the departments of Tehran University of Medical Sciences. The authors, in view of the differences in the nature of the disciplines in the university and the need to adopt different approaches to designing a questionnaire, planned to implement this survey in four sub-domains (general medicine, general dentistry, general pharmacy and other disciplines in the university), and data collection tools tailored to these sub-domains were also designed. Also, in addition to obtaining information based on self-report of academic departments, in order to achieve comprehensive information, all course plans were analyzed using a researcher-made checklist.

5.1. Limitations

One of the limitations of the present study was the lack of cooperation of the sub-domain of medicine, which seems to be due to differences in the study environment in this area. In addition, due to the difference in the nature and complexity of residency subdomain and various aspects of it, it was not possible to address it in this study. Due to the importance of examining the status quo in this field, it is suggested to design and implement a separate research with a qualitative methodology and to select an exploratory sequential mixed method research (MMR) design.

The lack of familiarity with the concept of the course planning and lack of its clear distinction from other curriculum levels in the university departments was a general limitation of the present study. After conducting a pilot and taking into account the views of the faculty members participating at that stage, the authors tried to some extent to resolve this issue by providing a brief explanation of the definition of the course plan and its elements in the questionnaire's footnote.

5.2. Conclusions

The present study was conducted to investigate the current status of the course plans of the current disciplines taught in Tehran University of Medical Sciences and discover the unknown and existing barriers in this field. Our findings can be considered as a solid foundation for future planning and decision making.

The results of this study were used to design and elaborate a mega plan for the preparation of course plans in Tehran University of Medical Sciences. This program was designed to develop a vision, define and prioritize and

identify the desired outcomes, provide a suitable platform for improving the status quo, and map out the path ahead for a targeted change. In this regard, due to the necessity of publishing the results, the findings of the present study were presented in the form of a comprehensive report to the Deputy of Education and President of Tehran University of Medical Sciences. Undoubtedly, the optimal use of the results of this research requires the elaboration and explanation of the necessity of trying to improve the status of the university to make the next steps possible. Based on this plan, one of these basic steps is to compile, approve and introduce a bylaw for organizing course plans in Tehran University of Medical Sciences in order to integrate and organize all activities in this area.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

We wish to thank the vice-deans in education and deans of the departments of the faculties of Tehran University of Medical Sciences who contributed to this research with their valuable suggestions and good cooperation.

Footnotes

Conflict of Interests: It is not declared by the authors.

Funding/Support: It is not declared by the authors.

Ethical Considerations: In order to observe ethical considerations, all the information of the faculties' departments is considered to be completely confidential and emphasize at all stages on the preservation of the information presented and the lack of use of the results in the assessment process of the educational groups and their faculty members. This issue was first mentioned at the beginning of the process and then in the questionnaire's guide.

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Strides Dev Med Educ. 2019 December; 16(1):e74295. doi: 10.5812/sdme.74295.

Published online 2019 June 9. **Research Article**

Stress, Anxiety, and Depression and Their Related Factors Among Dental Students: A Cross-Sectional Study from Southeast of Iran

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Received 2018 May 05; **Revised** 2018 December 09; **Accepted** 2018 December 17.

Abstract

Background: Dental students are exposed to various stressors that are related to treatment procedures, training, and administrative challenges in the college.
Objectives: The aim of this study was to assess the stress, anxiety, and depression levels of dental students and their relationships with demographic factors.
Methods: This was a descriptive-analytical cross-sectional study on 297 dental students enrolled at the Kerman University of Medical Science in 2015 - 2016. The stress, anxiety, and depression levels were measured using the depression anxiety stress scale-21 (DASS-21). Data on demographic characteristics were also obtained. The statistical analysis was carried out by SPSS (version 11.0) using the chi-squared test. $P < 0.05$ was set as the level of significance.
Results: The mean age of the participants was 23.80 $\pm$ 1.2 years; 58.9% were female, 88.9% were married, and 33.7% were dormitory students. Free education was provided for 64% of the students while the others were charged a tuition fee. The prevalence rates of moderate to extremely severe levels of stress, anxiety, and depression were 39.7%, 39.4%, and 35.7%, respectively. Stress, anxiety, and depression were not significantly associated with the year of academic study, gender, marital status, and place of residence ($P > 0.05$). The students with higher scores in the entrance exam who were free of charge presented significantly higher levels of severe-to-extremely severe stress and depression ($P = 0.003$ and $P = 0.033$, respectively) than students who were charged tuition fees.
Conclusions: Based on the findings of the present study, the high prevalence of depression, anxiety, and stress among dental students in Kerman is alarming. This emphasizes the need for interventions, with the development of appropriate support services for this group. However, further studies should be conducted to find major sources of depression, anxiety, and stress.

Keywords: Depression, Anxiety, Stress, Dental students

1. Background

Stress occurs when the pressure and demands of the environment (both real and unreal) exceed the individual ability (1, 2). Favorable levels of stress increase a student's learning ability, while high levels lead to adverse consequences (3).

Communication problems that likely lead the individual to feel isolated, lonely, confused, and anger, play a significant role in inducing stress. Therefore, education of communication methods and coping with loneliness can help relieve stress. Stress can lead to depression, anxiety, misbehavior, an excessive number of absences, reduced productivity/output per working hour, and job burnout (2, 4). The most adverse effect of long-term stress is executive function deficit and hampering the ability to think and learn (5). It has been reported that dental students show higher levels of stress-related mental problems and mood disorders compared to other clinical groups (6, 7). According to Garbee et al. dental students are required to learn a great deal of information in different fields in a limited time. It may cause the person to feel that he/she is unable to cope with the situation and hence, stress is induced (6). The alarming prevalence of mental, depressive, and mood disorders, as well as occupational burnout, has been observed among dental students in Europe (1, 2). In addition, the high level of stress can lead to reduced students' per-

formance (8, 9). In a study by Koh et al. high levels of IL-2 were found in students who experienced high levels of stress. The result showed the effect of stress on the function of the immune system (10).

Various studies have identified stress sources among dental students. Time and schedule pressure, examinations, assigned workload, clinical issues, and educational costs are some of the mentioned stressors (11-14). In a study by Polychronopoulou and Divaris, performance pressure, workload, and self-efficacy beliefs were the most significant concerns among dental students from different countries (15). Personality variations, emotional intelligence, and social support (16) are the other factors that affect and modify stress response. Socio-cultural and gender factors may make a difference in response to stress (15). Factors such as class size, tuition payment, and education program (curriculum/the method of teaching/learning, and evaluation of students) are also related to stress responses (15, 17).

Eremsoy et al. observed that anxiety and depression are significantly linked to each other (18). Considering the association of stress and anxiety with performance and the health of dental students, the recognition of stress sources and providing specific measures to reduce the stress levels are of utmost importance.

2. Objectives

The aim of this study was to assess the relationship of stress, anxiety, and depression with demographic factors among dental students in Kerman University of Medical Sciences.

3. Methods

This descriptive-analytical cross-sectional study was conducted on 297 dental students attending the School of Dentistry, Kerman University of Medical Sciences in 2015 - 2016. The selection of the students was based on a census. The list of the students was provided by the educational affairs office. Before the questionnaires were distributed to the participants, the objectives of the study had been explained to the students and they had been well informed that the results of the study would have no impact on their education and the information provided by them would remain strictly confidential. The inclusion criteria were the satisfaction of the students with participation in the study. The qualifying students did not enter the study.

The data collection tool was a two-part questionnaire including demographic data (age, academic year, gender, marital status, residence place, and tuition fee status) and the Persian version of depression anxiety stress scale-21 (DASS-21). This questionnaire contains 21 questions. Each item is scored on a 4-point Likert scale from zero (does not apply to me at all) to 3 (applies to me very much). For each questionnaire, an overall score was calculated separately for stress, anxiety, and depression. The categorization of the scores obtained by the questionnaire is presented in Table 1 (19).

The validity of DASS-21 for the Iranian population was confirmed by Sahebi et al. (20). Different studies in Iran also proved the validity and reliability of this questionnaire (21-23). The internal consistency of the scale was calculated by Cronbach's alpha as 0.83 for stress, 0.74 for anxiety, and 0.84 for depression domains. The questionnaires were distributed by a well-trained student in a session and collected after 20 minutes.

The relationships between the level of stress, anxiety, and depression and variables such as the academic year, gender, marital status, the place of residence, and tuition fee status were evaluated using chi-square test. The obtained data were statistically analyzed by SPSS version 11. In the initial analysis of the data, we focused on obtaining basic descriptive statistics as the measures of central tendency and dispersion. The ethical code IR.KMU.REC.1393.235 was assigned to this study.

4. Results

In this study, 297 questionnaires were completed and returned (response rate of 100%). The mean age of the participants was 23.80 $\pm$ 1.2 years. Overall, 58.9% of the participants were female, 88.9% were married, and 33.7% were dormitory students (Table 2). Free education was offered for 64% of the students while the others were charged a tuition fee. The levels of anxiety, stress, and depression in the participants are summarized in Table 3. The severe and extremely severe levels of anxiety, stress, and depression were seen in 25.3%, 17.5%, and 12.8% of the students, respectively.

As shown in Table 3, the students with higher scores in the entrance exam, who were free of charge, presented significantly higher levels of severe-to-extremely severe stress and depression ($P = 0.003$ and $P = 0.033$, respectively) compared to students who were charged tuition fees (Table 4). No significant relationship was found between the levels of anxiety, stress, and depression and demographic variables such as the year of academic study, gender, marital status, and place of residence ($P > 0.05$).

Table 1. The Categorization of Scores Obtained by the DASS-21 Questionnaire

Variable	Normal	Mild	Moderate	Severe	Extremely Severe
Stress	0 - 14	15 - 18	19 - 25	26 - 33	34+
Anxiety	0 - 7	8 - 9	10 - 14	15 - 19	20+
Depression	0 - 9	10 - 13	14 - 20	21 - 27	28+

Table 2. The Demographic Characteristics of the Participants

Variable	No.	Percentage
Academic year		
One	54	18.2
Two	41	13.8
Three	61	20.5
Four	34	11.4
Five	37	12.5
Six	64	21.5
No answer	6	2
Gender		
Male	113	38
Female	175	58.9
No answer	9	3
Marital status		
Single	32	10.8
Married	264	88.9
No answer	1	0.3
Residency		
Dormitory	100	33.7
Non-dormitory	192	64.6
No answer	5	1.7
University fees		
Free charge	190	64
With tuition fee	106	35.7
No answer	1	0.3

5. Discussion

High-level stress is a common and potentially widespread concern. It is estimated that stress is the trigger of 75% of physical diseases. It plays a significant role in dissatisfaction, restlessness, and frustration. On the other hand, increases in cardiovascular diseases, malignancies, and drug addiction are inextricably linked to a progressive increase in the frequency and intensity of stress and tension (24).

Researchers have stated that the dental profession is one of the most stressful jobs (25). To become a responsible dental professional, students have to reach high levels of academic knowledge in various fields in a relatively short period and deal effectively and quickly with patients' concerns (26). The competitive nature of the dental school is also stressful (7). An inverse relationship has been observed between stress and academic performance (9). The results of the previous studies have shown that health professions students including dentistry and medicine students are susceptible to stress and similar psychological disturbances (27-30).

In addition, pressure can also contribute to placing students at a higher risk of psychological problems (31). According to Galen et al. study, a significant association was found between burnout and depression, and suicide prevalence in dental students (32).

Based on the results of the present study, the rate of students presenting severe and extremely severe levels of stress was higher than the results reported by Amini et al. (14), Shahravan et al. (33), and Shahbazi Mogadam et al. (34). However, in the study of Bolhari et al. on 400 medical students of Iran and Tehran Universities of Medical Sciences, 24.8% had high levels of stress, which was higher than our findings (24). The differences may be due to the sample size, the method of data collection, the used questionnaire, changes in curricula, and different teaching methods and facilities among various colleges.

In a study conducted on the students of four Universities of Medical Sciences in Tehran, the prevalence of stress was 40.7% (35). Due to the high prevalence of stress among dental students in Kerman and serious adverse effects of these tensions, exploring stress sources and coping strategies seems essential.

Because of the increasing number of dentists, a lack of job security is conceived due to a drop in demand for dentists' technical skills. According to the study of Tangade et al. one of the main causes of senior students' stress is finding a suitable job position after graduation (36). Moreover, different studies showed that third-year students had higher levels of academic stress than any other year-groups because of limited clinical experience in clinics (28, 37, 38). However, in the present study, there was no significant difference between students' academic year

Table 3. The Frequency of Anxiety, Stress, and Depression in Dental Students at KMUS[a]

Variable	Severity				
	Normal	Mild	Moderate	Severe	Extremely Severe
Anxiety	128 (43.1)	52 (17.5)	42 (14.1)	26 (8.8)	49 (16.5)
Stress	128(43.1)	51 (17.2)	66 (22.2)	40 (13.5)	12 (4.0)
Depression	148(49.8)	43 (14.5)	68 (22.9)	23 (7.7)	15 (5.1)

[a]Values are expressed as No. (%).

Table 4. The Comparison of Anxiety, Stress, and Depression Frequency Among Dental Students According to Their Educational Status[a]

Variable	Severity					Total	P Value[b]
Normal	Mild	Moderate	Severe	Extremely Severe			
Anxiety							0.24
Charge -	79 (41.6)	33 (17.4)	31 (16.3)	20 (10.5)	27 (17.4)	190 (100)	
Charge +	48 (45.3)	19 (17.9)	11 (10.4)	6 (5.7)	22 (20.8)	106 (100)	
Total	127 (42.9)	52 (17.6)	42 (14.2)	26 (8.8)	49 (16.6)	296 (100)	
Stress							0.033
Charge -	81 (42.6)	38 (20.0)	43 (22.6)	25 (13.2)	3 (1.6)	190 (100)	
Charge +	46 (43.4)	13 (12.3)	23 (21.7)	15 (14.2)	9 (8.5)	106 (100)	
Total	127 (42.9)	51 (17.2)	66 (22.3)	40 (13.5)	12 (4.1)	296 (100)	
Depression							0.003
Charge -	89 (46.8)	33 (17.4)	52 (27.4)	10 (5.3)	6 (3.2)	190 (100)	
Charge +	58 (54.7)	10 (9.4)	16 (15.1)	13 (12.3)	9 (8.5)	106 (100)	
Total	147 (49.7)	43 (14.5)	68 (23.0)	23 (7.8)	15 (5.1)	296 (100)	

[a]Values are expressed as No. (%).
[b]Chi-square test result.

and the levels of stress, anxiety, and depression. The result is consistent with the study by Shahravan et al. on dental students in Kerman (33) and other similar studies (26, 37).

In the present study, consistent with some other studies, men and women showed no difference in stress levels (4, 11-13). However, in this context, the results are controversial (16, 36).

In line with various similar studies, we found no significant difference in stress, anxiety, and depression between single and married students (33, 39). However, there are some inconsistent results in this matter (4, 40). The reason for this discrepancy may be related to major cultural differences among nations and cities.

According to some studies, students regain their psychological stability while living at home with their parents (38). However, in the present study, similar to the study by Shahravan et al. living in dormitories had no significant effect on students' stress, anxiety, and depression (33). In addition, in the study by Sedky, students who lived away from the security of their families had higher levels of stress (38).

The students with better grades in the entrance exam, who were studying free of charge, presented significantly higher levels of severe-to-extremely severe stress and depression compared to the students who were charged tuition fees. It seems that competitive pressure to achieve good grades and being worried about grades may lead to high stress. It is beneficial for the students to know how to cope with stress and help themselves to have a better quality of life. Authorities should consider effective support services such as counseling and stress management courses in this regard.

Acknowledgments

None to declare.

Footnotes

Authors' Contribution: Study concept and design: Niloofar Shadman, Maryam Raoof; acquisition of data:

Mahsa Mahdian; analysis and interpretation of data: Niloofar Shadman, Maryam Raoof, Sara Amanpour; drafting of the manuscript: Niloofar Shadman, Maryam Raoof, Sara Amanpour; critical revision of the manuscript for important intellectual content: Niloofar Shadman, Maryam Raoof, Jahangir Haghani; study supervision: Jahangir Haghani, Molouk Torabi Parizi.

Conflict of Interests: It is not declared by the authors.

Ethical Considerations: IR.KMU.REC.1393.235.

Funding/Support: The authors would like to thank the vice-chancellery for Research of Kerman University of Medical Sciences for providing financial support for this study.

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Strides Dev Med Educ. 2019 December; 16(1):e80152. doi: 10.5812/sdme.80152.

Published online 2019 May 8. **Research Article**

The Relationship Between Critical Thinking and Clinical Competence in Nurses

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Received 2018 June 03; **Revised** 2018 August 29; **Accepted** 2018 September 02.

Abstract

Background: The lack of clinical competence in nurses leads to problems in providing nursing services. Studies indicate that nurses lacking the required skills can endanger the public health in medical centers. Critical thinking is a factor that can affect nurses' clinical competence.

Objectives: The current study aimed at investigating the relationship between critical thinking and clinical competence in nurses.

Methods: The current descriptive-analytical and cross sectional study was conducted on 120 nurses selected by random sampling method. Data collection tools included the California Critical Thinking Disposition Inventory (CCTDI), as well as clinical competence and demographic information questionnaires. Data were analyzed with SPSS using Pearson correlation coefficient, linear regression, and *t*-test.

Results: Pearson correlation test showed a positive correlation between the total scores of critical thinking and clinical competence. Based on the results of the linear regression analysis, the tendency toward critical thinking could predict 28.4% of the clinical competence. The nurses mean CCTDI scores were at the positive level and their mean clinical competence scores were at the average level.

Conclusions: According to the obtained results, nursing authorities can organize practical workshops on the development of critical thinking of clinical nurses as one of the most important and operational strategies to improve nursing clinical competence and, ultimately, move towards optimal care.

Keywords: Critical Thinking, Clinical Competence, Nurses

1. Background

In spite of the close relationship between clinical competence and quality care concept, as a practical discipline, clinical competence enjoys a unique position in nursing (1). According to the experts, having clinical competence is one of the essential conditions to assign and accept professional responsibility and accountability (2). According to the American Nurses Association, clinical competence is the utilization of knowledge in decision-making, psychomotor, and interpersonal skills, which nurses expect from their role (3). One of the current problems is the lack of clinical competence in nurses, which causes problems in providing nursing services. Studies show that nurses working in medical centers may endanger the health of the community, if they lack the necessary skills (4). Several factors affect the acquisition, retention, and promotion of nurses' clinical competence, i.e., the experience, environment, use of opportunities, motivation, theoretical knowledge, individual characteristics (5), the organization of the clinical environment, mental atmosphere of the department, continuation of the educational programs, employment of the available technologies, effective management, and control and supervision (6).

Critical thinking is one of the factors influencing nurses' clinical competence (5), which is an essential component of clinical decision making and professional competence and its utilization, using cognitive skills and intellectual abilities, helps nurses to promote their position from a follower of others' commands to an independent decision-maker (7), which strengthens their decision-making ability to better identify patient needs and choose the best nursing practices (8). Today, the gap between theory and practice in medical fields, including nursing, is one of the main dilemmas. Students, despite passing

theoretical units in the clinical environment, cannot use their scientific knowledge; whereas critical thinking can turn the scientific knowledge into practice and apply it. In fact, critical thinking is a way to eliminate the gap between theory and practice (9). Critical thinking is one of the remarkable determinants influencing human's thinking ability and plays an important role in obtaining, evaluating, and effectively using information, which includes skills and tendency toward critical thinking. Skills form the cognitive aspect, and tendencies form the sympathetic-emotional aspect of critical thinking and are one of the areas of personality (10). The tendency toward critical thinking is a set of mental habits or a tendency toward critical thinking, which consists of seven dimensions of truth-seeking, open-mindedness, analyticity, systematic, critical self-confidence, maturity of judgment, and inquisitiveness (11).

There are several definitions for the concept of critical thinking in nursing. Some experts believe that there is no general agreement on the definition of this concept, except for the emphasis on its importance in clinical nursing (12). Nursing researchers consider critical thinking as a kind of rational, purposeful, and consequential thinking relied on patient needs and guided by professional standards and policies (13). Carbogim Fda et al., by analyzing the concept of critical thinking in nursing, acknowledged that the use of critical thinking can enhance the safety, quality of patient care, professional growth, professional satisfaction, autonomy in practices, and professional skills and competence compared with those of technical variables (14).

The results of many studies show that critical thinking, as a valid method in thinking and tendency toward critical thinking plays an important role in personal and social situations; as many studies emphasize a significant relationship between the tendency toward critical thinking, academic achievement, problem-solving skills, and caring behaviors (15-21). Despite the great importance of critical thinking in decision-making and the improvement of nurses' clinical competence, the researchers stated that little attention is paid to the development and promotion of critical thinking in nursing (22). Although many studies were performed on critical thinking in nursing, and nursing clinical competence and their relationship with some variables, to the best of authors' knowledge, there were no adequate studies on the effect of the tendency toward critical thinking on the clinical competence in nurses.

2. Objectives

Therefore, the present study aimed at investigating the relationship between the tendency toward critical thinking and clinical competence in nurses.

3. Methods

The current descriptive-analytical study with cross sectional design was conducted in 2017. The research population consisted of all nurses working in two hospitals in Tehran, Iran. Sampling was performed based on tables of random numbers and the sample size was determined based on the total number of nurses in each hospital. The sample size was set to 120, with 95% confidence interval, 90% power test, using the sample size estimation formula used in correlation studies (23), and correlation coefficient was based on the pilot study (r = 0.23). According to the samples dropouts, the questionnaires were distributed among 140 nurses. Finally, 120 questionnaires were evaluated due to the incompletion or confounding of some questionnaires.

The inclusion criteria were having at least an associated degree in nursing, not participating in other research with similar questions within the past year, having at least six months of clinical working experience, and willingness to participate in the study. After obtaining the approval of Ethics Committee (code No. IR.IAU.K.REC.1395.41), sampling was started by referring to the selected hospitals and obtaining informed consent from nurses willing to participate in the study. The study objectives and the method of completing the questionnaire were explained to the subjects and they were assured about the confidentiality of the information. The California Critical Thinking Disposition Inventory (CCTDI), and nurses' clinical competence assessment questionnaire were given to the participants. Their demographic information was also recorded.

The CCTDI was first developed by Facione et al., consisting of 75 items scored based on a six-point Likert scale from 1 to 6 according to the scoring system of the questionnaire. The CCTDI assesses the seven subscales of tendency toward critical thinking, i.e., truth-seeking (12 items), criticism (11 items), systematic (11 items), critical self-confidence (9 items), maturity of judgment (10 items), inquisitiveness (10 items), and analyticity (11 items).

To score the negative items, score 1 is given if selects "I totally agree", and 6 is given if selects "I totally disagree".

Since the test has seven sub-scales, the scores range 70 to 420.

The total score < 210 means negative, 210 - 279 instable, and 280 - 350 positive, and > 350 means a strong and stable tendency toward critical thinking (24). This test was frequently used by Facione et al. (11), as an appropriate tool to evaluate critical thinking factors. The validity and reliability of the CCTDI in Iran was confirmed by Bahman Poor (25). The reliability of the instrument was assessed in a study by Badry Gargari and Fathi Azar using the Cronbach's alpha coefficient (α = 0.89) (26). In the study by Facione et al., performed on 164 students, the reliability of the CCTDI was

0.90 for the whole instrument, and 0.80 for the seven subscales using Cronbach's alpha (11).

Clinical competence was assessed using the nurses' clinical competence assessment instrument, which involves amateur to professional subjects according to the Benner theory (27). This instrument evaluates 73 nursing skills in seven different areas including helping the patient (seven skills), training and guidance (16 skills), diagnostic measures (7 skills), managerial abilities (8 skills), therapeutic interventions (10 skills), quality assurance (6 skills), and occupational and organizational tasks (19 skills). The items are scored based on a four-point Likert scale from never to always, and the total score ranges from 0 to 219. Based on the obtained scores, the utilization of clinical competence was divided into three levels of low, moderate, and high. A score of < 73 is referred to low, 74 - 146 to moderate, and 147 - 219 to high clinical competence (27).

Among the advantages of nurses' clinical competence assessment questionnaire, its ease-of-use and good validity and reliability are noteworthy. The internal consistency of the seven areas of this scale in the study by Meretoja et al., was 0.79 to 0.91, indicating the desired internal consistency of areas and the appropriate reliability of the instrument (28). Also, Bahreini et al., by translating the scale from the original language into Persian and then reversing the translation, according to the World Health Organization recommendation, examined its validity approved based on the comments of clinical teaching experts and professors as well as experienced nurses from different Iranian universities. The reliability was 0.75 - 0.89 based on the Cronbach's alpha coefficient in the seven areas of the instrument (29, 30).

Data were analyzed by descriptive (mean, median, frequency, frequency percentage, and standard deviation) and inferential (Pearson correlation coefficient, linear regression, and *t*-test) tests with SPSS version 15 (SPSS Inc., Chicago, IL). Regarding the normality of the research variables, based on the Kolmogorov-Smirnov test, at a significant level of 0.05, Pearson correlation test was used to examine the relationship between clinical competence variables and tendency toward critical thinking. Linear regression test was also used to predict the effect of tendency toward critical thinking on clinical competence.

The study protocol was approved by the Ethics Committee of Islamic Azad University, Karaj Branch, (ethical core: IR.IAU.K.REC.1395.41); the study was funded by the local institution.

4. Results

Of the 140 questionnaires, 20 (14.28%) had incomplete information. Therefore, statistical analysis was performed on 120 nurses including 84 female (70%) and 36 male (30%) subjects. The mean age of participants was 29.00 $\pm$ 7.76 years, with average of experience 68.64 $\pm$ 4.92 years; 42% of the subjects were married (n = 50), 65% (n = 78) had undergraduate education, and 35% (n = 42) held Master's degree in nursing. The average score of nurses in CCTDI was 28.81 $\pm$ 41.77 that was in the positive level, and the highest score of the nurses was in the truth-seeking dimension (Table 1). However, 1.7% of the nurses had negative, 0.66% instable, 36.2% positive, and 0.6% strong tendency toward critical thinking.

The average score of clinical competence was 37.148 $\pm$ 37.21 and 12.62 $\pm$ 25.79 for female and male subjects, respectively. The average total score of clinical competence was 32.184 $\pm$ 34.7 (Table 1). Based on the findings regarding the clinical competence utilization, 9% (n = 10) of the participants were at low, 64% (n = 76) moderate, and 40% (n = 48) high levels. More than half of the nurses were in average level in all areas of clinical competence. The utilization of clinical competence in female subjects was significantly higher than that of male subjects (P = 0.041). The mean scores of clinical competence utilization were significantly higher in nurses with a bachelor's degree than their counterparts with Master's degree (P = 0.1010).

The results of Pearson correlation test showed a positive correlation between the total scores of critical thinking and the utilization of clinical competence (r = 0.284; P = 0.002) (Tables 2 and 3).

Based on the results of linear regression analysis, the tendency toward critical thinking can predict 8.1% of clinical competence utilization (P = 0.004) (Table 4).

5. Discussion

Today, experts believe that critical thinking is an integral part of education at any level, since critical thinking is the kind of thinking that leads to the best solution using analysis, evaluation, selection, and application (31). The current study aimed at investigating the relationship between tendency toward critical thinking and clinical competence of nurses. It is noteworthy that the current study results were compared among similar groups, such as nursing students and other medical fields, since to the best of authors' knowledge, there were no similar study on the relationship between critical thinking and the utilization of clinical competence in nurses. In the current study, there was a significant and positive correlation between the level of tendency toward critical thinking and the utilization of clinical competence; since by increasing clinical thinking tendency, the utilization of clinical competence among nurses also increased. Some studies on critical thinking and its impact on nurses' performance showed similar results. Facione examined the impact of critical thinking on evidence-based performance

Table 1. Means of the Dimensions of Tendency Toward Critical Thinking and Areas of Clinical Competence

Dimensions of Tendency Toward Critical Thinking	Mean ± SD	Clinical Competence Areas	Mean ± SD
Tendency toward critical thinking	258.19 ± 41.37	Total clinical competence	132.84 ± 34.77
Truth-seeking	46.97 ± 7.37	Helping the patient	12.82 ± 3.20
Criticism	45.41 ± 7.33	Education and guidance	29.46 ± 8.20
Systematic	42.81 ± 8.75	Diagnostic measures	12.53 ± 3.90
Critical self-confidence	35.61 ± 6.42	Quality assurance	14.26 ± 4.41
Maturity of judgment	37.50 ± 6.95	Managerial abilities	18.22 ± 5.65
Inquisitiveness	33.80 ± 7.49	Quality assurance	10.18 ± 3.33
Analyticity	43.00 ± 7.46	Occupational and organizational tasks	35.34 ± 10.00

Table 2. Correlation Between Tendency Toward Critical Thinking and Clinical Competence and the Dimensions of Critical Thinking Tendency

Variable	Total Tendency Toward Critical Thinking	Truth-Seeking	Criticism	Systematic	Critical Self-Confidence	Maturity of Judgment	Inquisitiveness	Analyticity
Total clinical competence	r = 0.284[a]	r = 0.375[a]	r = 0.272[a]	r = 0.217	r = 0.246[a]	r = 0.162	r = 0.137	r = 0.181

[a] P < 0.001.

Table 3. Correlation Between Critical Thinking Tendency and Clinical Competence Areas

Variable	Helping the Patient	Education and Guidance	Diagnostic Measures	Managerial Abilities	Therapeutic Measures	Quality Assurance	Occupational and Organizational Tasks
Total critical thinking tendency	r = 0.256[a]	r = 0.246[a]	r = 0.152	r = 0.240[b]	r = 0.296[a]	r = 0.324[a]	r = 0.260[a]

[a] P < 0.001.
[b] P < 0.050.

Table 4. The Results of Linear Regression Analysis to Predict Nurses Clinical Competence

Predictor variable	β	Standard Error	β	t	P Value
F	64.27	-	-	2.92	0.004
Disposition of critical thinking	0.024	0.284	0.284	3.51	0.002
	r = 0.284	R^2 = 0.081	Adjusted R^2 = 0.073	-	-

of nurses at clinical practices and concluded that nurses' perception of evidence-based performance was very low at clinical practices and they often had no proper understanding of evidence-based performance (32). The results of McKinley et al., showed a significant relationship between evidence-based care and critical thinking skills (33). Also, Pai and Eng performed a study on nursing students and found a significant relationship between tendency toward critical thinking and nurses' caring behaviors (21). In other words, students with higher levels of critical thinking got more success. Accordingly, Kırbaşlar and Özsoy-Güneş concluded that the tendency toward critical thinking influenced students' entrepreneurship (34).

The results of a study by Paryad et al., on nursing students showed that the highest mean of scores belonged to deductive reasoning, inductive reasoning, evaluation, inference, and analysis courses (35). Nasrabadi et al. (36), reported a positive correlation between students' critical thinking and academic achievement. The role of critical thinking attitude in academic performance of students is of great importance, and due to the teachable nature of critical thinking, this importance is stressed. This can be due to the fact that people with a positive tendency towards critical thinking, due to their sense of truth-seeking, openness to criticism, systematic, critical self-confidence, maturity of judgment, inquisitiveness, and analyticity, can have better academic performance and, based on the results of the current study, clinical competence, because nurses should have the personality to make effective decisions in the clinical setting. Many research results show that critical thinking is a good predictor for students' academic performance (37-40).

According to the results of the current study, the highest score of tendency toward critical thinking belonged to

truth-seeking dimension, which was consistent with the results of the study by Abbasi et al. (41). Results of a study on 27 Norwegian nursing colleges showed that nearly 80% of newly graduated nurses had a positive tendency toward critical thinking. The highest and lowest means belonged to inquisitiveness and truth-seeking dimensions (42), which were not in line with the results of the current study. In the current study, the lowest score of tendency toward critical thinking belonged to analyticity dimension that could be due to the dominance of traditional teaching methods at the university, since these methods do not allow analytical expressions in students. Also, the results of the current study showed no significant relationship between the dimensions of critical thinking tendency in male and female nurses. In this regard, Ricketts and Rudd found a significant difference only in some dimensions of critical thinking tendency between the genders; therefore, female students got higher scores in mental openness than their male counterparts, and male students got higher scores in truth-seeking and cognitive maturity than their female counterparts (43). The contradictory results of studies show that in order to investigate the relationship between critical thinking tendency and gender, it is essential to qualitatively study various gender-associated aspects.

The results of the current study showed that the mean of critical thinking tendency in nurses was at positive level that was consistent with the findings of studies by Gharib et al. (44), Sabouri Kashani et al. (45), and Ojewole and Thompson (46) that studied the critical thinking tendency of nursing and other medical fields' students. Also, there was no significant difference in the mean score of tendency toward critical thinking between male and female nurses in the current study that was in agreement with the results of the studies by Ozdemir (47), Kawashima and Shiomi (48), Azar (49), Nazem Ghadi et al. (50), and Kolayiş (51). In the current study, no significant relationship was observed between age and tendency toward critical thinking. There was no significant relationship between age and critical thinking in the studies by Shabouni et al. (52), and Khoda Moradi et al. (53), but this relationship was reported significant in the study by Noohi et al. (54), in which the contradictory results can be attributed to the differences in the age range of participants.

Based on the results of the current study, there was no significant difference in the tendency toward critical thinking between undergraduate and postgraduate nurses, which was consistent with the findings of Abbasi et al. (41). They concluded that the scores of tendency toward critical thinking, except for open mindedness dimension, did not have a significant difference in the two levels of education (41). These results indicated that postgraduate curriculum did not work to improve critical thinking, as well as inference-making and analyzing ability. Most of the nurses in the current study were in a moderate level for the utilization of clinical competence, which was in line with the results of the study by Komeili Sani et al., in which the mean total score of clinical competence of nurses was at moderate level and reported good (55). Also, the utilization of clinical competence in female nurses was more than that of their male counterparts and in postgraduate nurses it was higher than those of undergraduate ones and the results can be attributed to the fact that in postgraduate nursing curricula less attention is paid to clinical education and nurses that continue to study, most of the times get away from clinical settings. There was no relationship between the educational level (nurse, head nurse, and supervisor), department, and work experience, and clinical competence, which was consistent with the findings of some studies (56). In the current study, nurses got the highest score in education and guidance dimension of the clinical competence questionnaire, which was consistent with the results of studies by Komeili Sani et al. (55), but inconsistent with the results of the study in Australia, in which nurses' competence in therapeutic interventions was higher than that of other dimensions (57), the controversy between the results of overseas and domestic studies could be due to the difference in educational methods that in some countries, in addition to theoretical education, the clinical training is also provided more successfully.

In the current study, there was no significant relationship between age and work experience, and clinical competence of nurses, which was consistent with the results of the study by Bahreini et al. (29), and even inconsistent with the results of some other studies (58, 59). The contradictory results in this regard suggested that further studies are needed on the causes of clinical competence growth cessation with the age and work experience increase in nurses, as it is expected that with the age increase and subsequently clinical experience, the clinical competence of nurses also increases.

Since the studies on critical thinking and their impacts on the clinical competence of nurses in Iran are very limited and the current study was conducted only on a small sample of nurses, and given the importance of the subject, it is suggested that further studies be conducted on larger populations and different clinical environments as well as the last year nursing students. It is necessary to consider the impact of providing practical strategies of critical thinking promotion on clinical competence increase through implementing interventional studies. The results of the current study indicated the necessity of designing suitable educational programs to strengthen critical thinking in nursing students and nurses working in hospitals. According to the results of the current study, which is a positive relationship between tendency toward critical

thinking and utilization of clinical competence in nurses, nursing practitioners can hold practical workshops on the development of critical thinking of clinical nurses as one of the important and practical strategies to improve nursing clinical competence, and finally, move on to the optimal care that is the ultimate goal of nursing.

5.1. Limitations

The main limitation of the current study was the difficulty of accessing participants and collecting data. In addition, the complexity of questions on the CCTDI from nurses' viewpoint, spending more time to complete the questionnaire, and the lack of collaboration in some nurses were the other limitations that led to dropouts.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The authors hereby wish to thank nursing students, especially Ms. Dalir Sharemi, collaborating in collecting information from the questionnaires. They also thank all nurses participating in the study.

Footnotes

Conflict of Interests: It is not declared by the authors.

Ethical Approval: IR.IAU.K.REC.1395.41

Funding/Support: Karaj Branch, Islamic Azad University, Karaj, Iran.

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Strides Dev Med Educ. 2019 December; 16(1):e81991. doi: 10.5812/sdme.81991.

Published online 2019 September 25. **Research Article**

Modelling the Budget Determination of Educational Sector in Iran's Medical Sciences Universities

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Received 2018 July 11; **Revised** 2019 January 13; **Accepted** 2019 January 14.

Abstract

Background: Because of resources deficiency, a well-funded budget system is very important for achieving organizational goals. Hence, providing a specific pattern for performance analysis is important to allocate funds to medical universities
Objectives: In this study, econometric method and linear regression estimation were used to investigate the economic behaviour of the budget allocation process.
Methods: Data used in the present study were panel data from medical universities obtained during an eight-year period. The explanatory variables in this model included the numbers of faculty members and students. Also, separate linear regression was estimated as a dependent variable for the levels of expenditure budget and total budget.
Results: Our findings showed that if budgeting is done solely based on faculty members, allocation of public budget for each faculty member is 113.7 million Tomans, and if it is performed based on students, the allocated budgets are 9.8, 2.2, and 25.9 million Tomans for each undergraduate, professional doctorate (medicine, pharmacy, and dentistry) and postgraduate student, respectively.
Conclusions: In general, budget allocation for university education sector had a strong relationship with faculty members and students. However, the place of budget consumption and performance quality indicators still remain unclear. The results of this study can be applied for quantitative modelling to predict and allocate budget to medical universities.

Keywords: Academic Medical Centers, Budget Modeling, Resource Allocation

1. Background

Universities and higher education institutions are responsible for the dissemination of knowledge and the provision of higher education to train professional human resources, hence contributing to social development. The most basic administrative system of universities is the financial system, and any small change in the external and internal environments of the university may affect the effectiveness of the respective financial system (1). Universities need to have a logical performance to optimize their resources and facilities and seek to increase their income and reduce their costs. In other words, universities' budget allocation should be in such a way that they can gain optimum outputs with a series of inputs (2). However, being predominantly funded by the government has caused the administrative body of state-run universities not to properly and reasonably allocate their resources (3). Governments apply three approaches to fund allocation, including input-based budgeting, performance-based budgeting, and output-based budgeting (4).

According to Article 49 of the Fourth Economic, Social, and Cultural Development Plan of the Islamic Republic of Iran, the allocation of budgets to universities is based on their performance and expenditure (output-based budgeting approach). That is to say, the government allocates budgets to compensate for the actual costs for different outputs (3). The aforementioned approach is applicable from the two perspectives of cost and income. In terms of costs, governments allocate budgets to universities to compensate for the costs of a certain period. Based on this approach, the actual cost of each output plays the most important role in budget allocation (5, 6).

It is therefore clear that when budgeting to universities is cost-based, universities will have an incentive to over-report their past expenditures. This causes state-run universities to seek a larger share of the budget rather than lowering their expenditures, which leads to inefficient and ineffective management of universities. In contrast, from the income viewpoint, which has a quasi-market perspective, governments allocate budgets to universities irrespective of the actual costs of outputs. Accordingly, what is important to the state is the individual and social effectiveness of the outcomes. Therefore, universities need to strive to increase their output in terms of both quality and quantity in order to be able to gain more budgets from the government, making universities function more efficiently (5-7).

If budgeting criteria are not properly adjusted and transparent, the quality and efficiency of the system will be undermined and the system's performance will face serious problems. Further, if budgeting is carried out based on the number of students, universities will move towards increasing student admissions to enhance their share of budgets and may refrain from recruiting academic staff, which unsettles the existing balance. In a similar scenario, if the budget and higher education expenditures are not correctly depicted, universities that have a larger share of graduate education will be adversely affected and the vitality and growth of universities will be negatively overwhelmed in the medium-term.

Several studies have been conducted to model budgeting at different universities. For instance, Melin et al. studied different models of budgeting at universities in six European countries in 2016 (8). Volk (9) and d'Sylva (10) did the same at Arizona University. In Iran, Saketi and Saeidi (1) and Safari and Sardari (11) conducted similar studies at Shahed University, and Keyzouri (7) and Saeedi (12, 13) examined the methods and models of budgeting in universities affiliated to Iran's Ministry of Sciences.

In Iran, the budgets of medical universities are allocated under headlines of health, treatment, research, and education, while there is usually no concrete benchmark for allocating these budgets. Moreover, even in the presence of criteria for budgeting, it will undoubtedly be changes in the way of parliamentary approval and allocation by the planning and budget organization. Therefore, in the absence of a model for analyzing budgeting allocation at the level of medical universities, further attempts should be made to develop a model for this purpose. The provision of such a model requires formulating a financial policy for public universities. Therefore, more accurate analysis of budget allocation to universities of medical sciences and the factors affecting the allocation is mandatory.

2. Objectives

This study was conducted to analyze the trend of budget allocation in the education sector of medical sciences universities in Iran.

3. Methods

This is an applied research that has analytically examined the educational budgeting process in universities of medical sciences in 2016. The econometric methodology and linear regression model were used to study the economic behaviour of the budget allocation process. The study population included all the medical sciences universities and affiliated faculties, because the budgets of these universities are provided by governmental resources.

3.1. Data Collection

Data used in the present study were panel data and the following variables were collected in the form of an eight-year time series from 2008 to 2016 from 78 universities and medical faculties. It should be noted that the universities during the study period varied from 40 to 78 universities. Information required for analyzing budget allocation to the medical sciences universities was extracted from a booklet entitled "Health Sector Credits", published annually by the Ministry of Health and Medical Education and reports from the Budget and Performance Monitoring Centre of the Ministry of Health and Medical Education. The factors that may theoretically be effective in determining the budget of the education departments include the numbers of faculty members, postgraduate students, and undergraduate students, which were obtained from the report of the Board of Trustees of the Universities.

3.2. Variables

The factors that may theoretically affect the budgeting of education departments were used as the criteria for modelling. In other words, the explanatory variables in this model include the numbers of faculty members (assistant professors, associate professors, and professors), undergraduate and lower-level undergraduates (B.Sc. and under B.Sc. degree), professional doctorate students (MD students in medicine, pharmacy and dentistry) and postgraduate students (M.Sc. and Ph.D.).

It is worth mentioning that the budget allocated to the education sector is classified into four levels of expenditure budget, belongings and property budget, special incomes and total budget, and we used separate linear regression models for two levels of budget (expenditure budget and total budget) and reported the results of each

level distinctively. It should be considered that based on the model under our study, the dependent variable in this study is either expenditure budget or total budget of the entire education departments. Due to scarcity of data on the belongings and property budget, the total budget of the education departments is calculated excluding the belongings and property budget.

3.3. Modelling

The following functional form was used for modelling:

$$Y_{it} = \alpha_{it} + \beta_1 FM_{it} + \beta_2 US_{it} + \beta_3 MS_{it} + \beta_4 PS_{it} + \beta_5 T_{it} + U_{it}$$

Where i represents cross-sectional observations for universities, t indicates a period, α is a scalar value, βs are the coefficients of the explanatory variables of the model, and *FM* represents the faculty members. Also, *US* is the number of lower-level undergraduates, *MS* is the number of professional doctorate students, *PS* is the number of postgraduate students, and T indicates trend. In addition, *U* is a randomized error term of the model that has a normal distribution with a mean of zero and a constant variance. In addition, *Y* could include one of two levels of budget according to various models that are estimated. In order to select the optimal model, criteria such as significant coefficients, theoretical consistency, goodness of fit (R^2) and the Akaike-Schwartz criterion are used.

The F-Limer test showed that the data model was a type of panel data (F [75.349] = 1.98, P = 0.0001), and with this result, it is necessary to use the Hausman test to decide upon using fixed effects model or random effects model. The results of the Husman test showed that the model with random effects was more suitable for these conditions (χ^2 = 7.57, P = 0.108). Also, the Breusch-Pagan heteroscedasticity test showed that the variance of the study data was heterogeneous (χ^2 = 1118.46, P = 0.0001). All the models and related tests were analyzed at the significance level of 0.05 using STATA version 12.

4. Results

In this study, budget allocation to 78 medical universities and faculties across the country has been studied. Table 1 presents a description of the funding status of universities over the eight years of the study. In this table, the universities of medical sciences are classified into small, medium and large groups based on the number of faculty members. The average number of faculty members in small universities over the course of eight years was about 28, while in large universities, this parameter was 537. The growth rate of the total budget allocated to education departments over the course of study showed that small universities had the lowest growth rate of 43% and large universities had the largest growth of 735%. In other words, during this period, the growth rate of the budget allocated to education departments for large universities was 17 and 5 times greater than the budget growth of small- and medium-size universities, respectively.

According to the results of tests conducted for combined data and random effects, different models were estimated using the generalized least squares (GLS) method. In the light of the measures of goodness of fit, six models have been selected to analyze the budget allocated to the education departments of universities of medical sciences. As shown in Table 2, the distinction among the six models is with respect to the explanatory variables, that is, the determinants of expenditure budget.

Table 1. Describing the Status of Studied Medical Sciences Universities

Mean Parameter	University		
	Small	Medium	Large
Faculty member	27.53	143.79	537.26
Students			
Undergraduate	326.72	982.45	2272
Professional doctor	76.46	442.04	1545.26
Postgraduate	63.2	249.04	1300.96
Budget (million Tomans)	3319	17254	62772
Growth rate over the 8 years	43.5	154.3	735.7

4.1. The General Budget of the Education Sector

According to the measures of the goodness of fit (R^2), most models were well-fit, and over 82% of the budget variations of the education departments were explained by the included variables. Considering that the unit of measurement in the models is million Iranian Tomans, each of the estimated coefficients means that every one unit increment in the explanatory variable will increase the allocated budget by several million Tomans.

Model 1 shows that with every increase in the number of faculty members in the university, the educational budget increased by an average of 11.43 million Tomans. In addition, it was found that universities received 5.43, 7.53, and 22 million Tomans for every undergraduate, professional doctorate and postgraduate student admission, respectively. It should be stressed that this model, enjoying higher R^2 and lower Akaike-Schwartz criterion, was selected as the best model (Table 2).

The most important variables affecting budget allocation are the numbers of faculty members and postgradu-

Table 2. Estimated Regression Coefficients for Allocating General Budget of Universities Education Using GLS Method

Explanatory Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Faculty member	114.34[a]	68.10	17.88	77.23					1143.83[b]	22.71	1137.01[b]	25.27
Undergraduate students	54.33[b]	13.29	96.40[b]	14.62	65.30[b]	11.59	98.03[b]	12.88				
Professional doctorate students	75.34[b]	23.20	20.50	25.96	85.97[b]	22.36	22.34	24.83				
Post graduate students	220.02[b]	14.63	257.12[b]	16.32	236.29[b]	10.99	259.60[b]	12.37				
Trend	29207[b]	2492			28701[b]	2479			32662[b]	3185		
Constant	-150889[b]	14271	-17938[a]	9890	-150652[b]	14300	-18266[a]	9835	-176029[b]	18246	-13622	10087
						Goodness of Fit Criteria						
R^2	0.922		0.896		0.921		0.896		0.857		0.823	
AIC	11233.65		11352.29		11234.5		11350.35		11668.31		11761.13	

[a] P value < 0.1.
[b] P value < 0.05.

ate students. According to Model 1, the general budget increased by 11.43 million Tomans for every increment in the number of faculty members, which was statistically significant. Also, for every admission of postgraduate student, a budget of 22 million Tomans was granted in addition to the university's education budget, which is statistically significant. Therefore, the numbers of postgraduate students and faculty members play a decisive role in the amount of budget allocated to the medical sciences universities. The trend variable also suggested that over the course of an eight-year period, the average annual educational budget increased by 2920 million Tomans.

On the other hand, Model 3 shows that if the allocation of educational budget is set based on the number of students, budgets of 6.73, 8.59, and 23.63 million Tomans will be allocated to universities for every undergraduate, professional doctorate and postgraduate student, respectively.

If the allocation of educational budget is merely based on the number of faculty members (Model 5), the regression coefficient indicates that for every unit increase in faculty members, the budget will increase by 114.38 million Tomans. In other words, for each academic faculty member in the university, the amount of budget allocated to education department will increase by 114.38 million Tomans.

Based on the coefficients of most models for all levels of budget allocation, the number of undergraduate and professional doctorate students has a less significant role in budgeting. In models 1, 3 and 5, the trend variable, that is time, has been also considered as an influential variable in education budgeting. Based on these models, the education budget of universities has increased on average by 3000 million Tomans annually.

In general, it can be stated that according to the data collected in the study period, on the one hand, each academic staff has injected an average budget of 114.38 million Tomans to the medical university, on the other hand, the trend variable reveals an increase of 3000 million Tomans in the average annual budget of universities. Therefore, in order to predict the next year budgets of universities, one should multiply the number of each parameter by its coefficient, and then, taking one-year elapsed time into consideration, an amount of 3000 million Tomans should be added to the budget as the time parameter. In models wherein only students are considered, the budget is predictable similarly.

4.2. Total Budget of the Education Sector

The results of the total budget allocation model (including expenditure budget and special incomes) for education departments using the GLS method are shown in Table 3. Among the various estimated models, three models were considered as final models for modelling total budget allocations of the education sector in medical universities. In these models, the unit of measurement is million Iranian Tomans. Therefore, each of the coefficients of the model means that every one unit increase in the explanatory variable will increase the total budget by several million Tomans.

The goodness of fit criterion for the estimated models suggests that all the models are well fitted and explain a high percentage of total budget changes across the departments of education. Model 1 shows that with every increase in the number of faculty members in the university, the budget of the entire department of education will increase by an average of 8.99 million Tomans. In addi-

Table 3. Estimated Regression Coefficients for Allocating Total Budget of Universities Education Sector Using GLS Method

Explanatory variable	Model 1		Model 2		Model 3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Faculty member	89.97	95.97			1378.57[a]	30.89
Undergraduate students	70.53[a]	18.73	79.16[a]	16.30		
Professional doctorate students	69.39[a]	32.69	77.75[a]	31.45		
Post graduate students	292.88[a]	20.62	305.68[a]	15.45		
Trend	42124.66[a]	3512.52	41726.62[a]	3486.28	46825.87[a]	4332.6
Constant	-218578[a]	20111	-218391[a]	20107	-256935[a]	24819
			Goodness of Fit			
R^2	0.898		0.898		0.827	
AIC	11528.69		11527.58		11937.23	

[a] P value < 0.05.

tion, universities have been granted 7.05, 6.94 and 29.29 million Tomans for every student admission in undergraduate, professional doctorate and postgraduate levels, respectively.

Among the parameters for allocating the total budget, similar to the general budget, faculty members and postgraduate students have the highest shares in the total budget. According to Model 1, for every one unit increase in the number of faculty members, the total budget will increase by about 9 million Tomans. In addition, for every admitted undergraduate student, 29 million Tomans will be added to the total budget of the university, which is statistically significant. The trend variable also suggests that over the course of the eight years of the study, the total education budget has increased by an average of 4212 million Tomans on a yearly basis.

If the total budget allocation is merely based on the number of faculty members (Model 3), the regression coefficient shows that for every unit increase in the faculty members, the education budget will be increased by 137.85 million Tomans. In a model where the number of students is considered as the determining variable of the total education budget, the number of postgraduate students with a weight of 30 million Tomans has the highest impact on budget allocation.

5. Discussion

The budgeting of the education sector is strongly influenced by the numbers of postgraduate students and faculty members in particular. This is, by all mean, justified by the monthly salary paid to faculty members and the per capita spent on postgraduate students. In other words, a university with more faculty members and more M.Sc. and Ph.D. students will receive more budgets in order to pay the current salaries and expenses.

If the number of students be considered as the basis for the education budget allocation of universities (Model 3), the results showed that the university is granted 6.5, 8.5, and 23.6 million Tomans budgets for every undergraduate, professional doctorate and postgraduate student admission, respectively. Based on this model, the costs of postgraduate students are 3 - 4 times higher than those of undergraduate students. However, it is worth mentioning that the budget assigned per each professional doctorate student is much lower than that assigned per each postgraduate student, while the general belief is that professional doctorate students should have a higher share of budget allocation and a high proportion of the allocated budget should be spent on this category. A number of studies have been conducted in this regard among which are: the studies of Haghdoost et al. (14) on the cost analysis of education of students at schools of Public Health, Ebadifard Azar et al. (15) on unit cost calculation of student training at different levels at Schools of Management and Medical Information and Ghasempour et al. (16) on calculating the final cost of student training at schools of paramedicine. All these studies, consistent with our study, have confirmed that the total cost of postgraduate student training is about 3 - 4 times higher than that of undergraduate students.

The educational costs of postgraduate students were 4.3, 6.2 and 9.8 million Tomans in 2006 (15), 2011 (14) and 2012 (16), respectively. In the present study, it can be concluded that the educational cost of postgraduate students is about 22 million Tomans; and considering the five-year time interval since the last study and adjusting costs to today's prices, we arrived at approximately the same cost per

student. In the model of total budget, as previously noted, postgraduate students have the largest share in the budget. Considering that special incomes are also taken into account in the model, it is predictable that postgraduate students have a significant role in the special incomes of universities through paying tuitions. In other words, large universities have the power of admitting tuition payers and international students who are mostly postgraduate students.

Therefore, it is recommended that the total budget should be directed in a way to cover the shortage of special incomes in the medium- and small-size universities. However, the cost of academic staff in large universities may be higher because academic staff with higher experience and ranks are paid more. Therefore, in addition to the models mentioned in the Results section, such issues call for much attention in order to determine the budget.

The results of the designed budgeting models are presented only in terms of quantitative value and in fact, do not indicate the process of improvement or decline in the quality of performance in universities, and it is not clear that the allocated budget per each student category is spent on what section from an activity-based perspective. Keyzouri (7) studied the quality indicators in academic budgeting and pinpointed poor attention to the process of improving the quality of education, as well as the lack of coordination between the methods of distribution of higher education budgets among universities. He claimed that there are flaws in the method of distributing educational budgets in higher education system and uncertainty remains whether the absorbed budget due to the admission of postgraduate students is spent on training of this category.

National health, higher education and research are of the main pillars of sustainable development, and a major part of this mission has been undertaken by the Ministry of Health and Medical Education and the affiliated medical sciences universities. One of the important missions of the Ministry of Health and Medical Education for sustainable development is the provision of public health and treatment as well as health services whose realization calls for huge annual financial resources. Bearing in mind the problems of budgeting system among universities of medical sciences in Iran, reforming the budgeting system is necessary. Therefore, in order to overcome such problems, the operational budgeting system, which is widely used in the world, was introduced. The ultimate goal of the operational budgeting in the health system of Iran is the promotion and establishment of public health and health equity among people (17).

Another important point to note is that the major direct costs of recruiting an academic staff, including his salary and benefits, are paid through student per capita, and recruiting new faculty members without raising the number of students will result in serious loss to the university because the faculty has brought up only 11 million Tomans budgets, while only his salary and benefits are more than 80 million Tomans. Therefore, recruitment of one academic staff should be accompanied by admission of more than 20 undergraduate or at least five postgraduate students into the system. That being the case, recruiting academic staff without increasing the admission capacity is problematic and, of course, universities with a large number of admissions and without faculty employment enjoy economic benefits.

Among the limitations of this study are the exclusion of belongings and property budget from the actual budget, sudden growth in the number of universities from 40 universities in 2008 to 78 universities and medical faculties in 2015, and non-inclusion of the academic ranks of faculty members in the model. In addition, this study was conducted using expenditure and budgeting data of 78 medical universities in Iran where some concerns remain regarding the integration of the budget of some seemingly independent medical schools in cities into the total budget of the provincial universities and the independent budget of faculties. On the other hand, one of the strengths of this study is that all the estimated econometric models have a satisfying goodness of fit and the estimation of parameters in all models has been highly accurate, which confirms that the results of this study are functional in that they could be used to accurately understand and formulate the budgeting of universities for future plans.

Also, according to the goodness of fit of the statistical models and the significant coefficients of the variables in the models presented in in our study, assigning students into three or four different groups is very important in terms of budgeting because different educational groups, as shown by studies of Haghdoost et al., Ebadifard Azar et al., and Ghasempour et al. (14-16), have non-identical educational costs across universities of medical sciences. On the same basis, dividing educational categories into groups and allocation of budget according to specific coefficients of each group could improve the accuracy and precision of analysis and planning.

5.1. Conclusions

The models built on the basis of heath section data suggest that the criteria under which we assessed the education budgeting less accurately explain the budgeting rate of medical universities in terms of general budgets and belonging and property budgets. In other words, it seems that the methods of budgeting in case of underserved areas with lower economic and social indicators

are not transparent and are adversely affected by factors other than what we would deem. Another point about the allocation of health budgets is that special incomes have attracted a larger share of total budget on a yearly basis, which is higher in more developed regions, and such a difference in the special income is not compensated by the general budgets as well as belongings and property budgets, thus gradually the gap between developed and deprived areas increases.

In sum, it can be stated that one can use the models presented in this study together with more extensive future models to formulate the results based on more accurate and detailed data to obtain a highly precise and impeccable structure for budgeting in the educational and therapeutic sections of medical sciences universities. Accordingly, similar methods should be incorporated along with the implementation of operational budgeting principles as an alternative to the traditional and inefficient budgeting systems, such as output-based budgeting, to improve the effectiveness of organizational goals on the one hand and to realize performance-based budgeting on the other. In this way, higher education budgeting planners can assess the conditions and plans of universities in comparison with the status of their comprehensive quality indicators and allocate resources and funds through scoring the performance of universities.

Acknowledgments

The authors would like to thank the Center of Budgeting and Performance Evaluation of Ministry of Health and Medical Education of the Islamic Republic of Iran for their collaboration.

Footnotes

Authors' Contribution: All authors contributed to the design and implementation of the research, analysis of the results and writing of the manuscript.

Conflict of Interests: There is no conflict of interest regarding this paper.

Ethical Approval: IR.KMU.RES.012.

Funding/Support: No specific funding has been received to conduct this study.

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Strides Dev Med Educ. 2019 December; 16(1):e82412. doi: 10.5812/sdme.82412.

Published online 2019 November 19. **Research Article**

Investigating the Factors Influencing E-Book Acceptance Among Students from Less-Privileged Regions: A Case Study on Students of Shahrekord Universities

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Received 2018 July 20; **Revised** 2019 April 17; **Accepted** 2019 May 07.

Abstract

Background: E-book is one of the forms of network publishing that has attracted extensive attention.
Objectives: The purpose of this study was to investigate the factors affecting the acceptance of e-books among students of less-privileged areas such as Shahrekord.
Methods: In this descriptive, analytical study, 371 students of Shahrekord University were selected through simple random sampling. The research instrument was a researcher-made questionnaire consisting of 48 questions that was designed with the help of research literature related to the technology acceptance model and interviews with five educational technology experts. Data were analyzed using ANOVA, Independent t-test, multiple regression and Pearson correlation tests.
Results: Cultural factors had a significant impact on users' attitudes and their use of e-books. A significant relationship was observed between the components of usefulness, ease of use, perceived enjoyment, cultural influences and attitude with the acceptance of e-books ($P < 0.001$). Also, the best predictors of acceptance and use of e-books were the components of perceived enjoyment, barriers, cultural influences, and attitudes.
Conclusions: The results regarding the identification of the factors affecting the acceptance of e-books can be used in virtual, non-formal and distance learning centers to design primary and supplementary educational resources. Design engineers and e-book providers can also use the findings of the current research to improve and promote electronic products.

Keywords: University, E-Book, Technology Acceptance Model, Students

1. Background

Today, electronic devices and equipment have affected all levels of life and have led to major changes in human life. With the expansion of virtual universities and e-learning as well as the access of students to computers and the Internet, the industry has gradually entered the field of books to the extent that e-books can be considered as a complement or substitute for educational institutions. The e-book is a new phenomenon that has affected educational systems, and its main purpose is to overcome the limitations that print books face. The main feature of e-books is its dynamic, interactive and flexible nature that can be transformed into various shapes and formats and is accessible at any time and place (1).

One of the potential advantages of e-books is their flexibility and accessibility compared to paper texts. Other features include increased visual appeal due to features such as static and animated graphics, as well as the potential to add supplementary materials such as audio sets and more (1). According to the National Intelligence Agency's definition, e-books mean digital documents with or without a license that can be searched and can be compared to a printed book (2). The e-book can be classified into four groups according to its features, facilities and functions, which are detailed below.

Text-based e-books: These e-books are text-only and contain no images, charts, or tables.

Picture e-books: In these books, some images, charts, and tables can also be found along with text. There are also some animated images and animations for more impact.

E-books with audio features: These books use audio features to interact more and better with their audiences, which is also usable for the blind.

Multimedia e-books: These books combine all the features of the previous three groups and utilize audio, video, animation, and charts to further engage their readers and users (3).

Although the e-book was introduced four decades ago, many scholars have claimed that its spread in many countries was slow (4). They believe that e-book acceptance was not as high as expected. For example, the results of a study by Roesnita and Zainab performed in Malaysia among 250 undergraduate computer science and information technology students indicated that only 39% of respondents preferred e-books (5). The results of the study by Chong et al. showed that e-book acceptance rate was 52.5% (6). Abdullah and Gibb by conducting a research on Scottish higher-education students found that 60% of respondents did not use e-books. They cited the lack of awareness and publicity about access to e-books as the reasons for this finding (4).

In recent decades, various models of technology adoption have been designed and presented. The literature on technology acceptance shows that the theory of reasoned action, the theory of planned behavior, the decomposed theory of planned behavior, the technology adoption model, the secondary model of technology adoption, and the integrated theory of technology adoption and application are among the widely used models (7), the most valid of which is the technology adoption model (8). The model is based on two factors: "mental perception of usefulness and mental perception of ease of use". These two factors influence people's attitude towards using a technology and make the decision to use that technology and ultimately the use of technology.

Research results show that models have different functions with regards to different technologies and their acceptance. The effectiveness of technology is positively related to its adoption. If potential users of a technology do not resist using it, its intended goals cannot be achieved (9). Therefore, it is important to understand why users accept or reject to use a technology. If the factors affecting IT adoption are identified and understood, it will be possible to identify and understand IT systems and design better ones and thereby, increase user acceptance (10).

The results of studies have shown that in addition to the type of e-books, their features are also effective in their use (11, 12). The results of Roskos and Burstein's research, "Fundamentals of an E-Book Learning Model", show that e-books require factors such as better quality, more accurate book design specifications in the classroom, trained qualified teachers on how to use the educational approaches for sharing the content of books (11). Also, the results of Wang and Bai's research showed that aesthetics, ease of use, user satisfaction and suitability for the type of use are important in the acceptance of e-books (12).

Studies in advanced countries show that libraries are expanding their e-books. For example, about 95% of academic libraries in the United States are equipped with e-books and 9.6% of the librarirs' overall budget is dedicated to the purchase of e-books. The cost will increase to 19.5% by 2017 (13).

Considering factors such as the position of books in centralized education systems, university-level curriculum designers should consider e-books as a major or supplemental source of instruction in designing and revising curricula. In less-privileged areas such as Shahrekord, where access to newly published printed books is less compared than privileged areas such as Tehran, access to digital books is crucial. Due to cultural, linguistic, and other problems discussed in the present study, most students are still looking for print versions of books, and electronic versions are not widely accepted by the community, especially students. For the optimal use of these information resources, research is needed on the factors influencing technology adoption among these students and what university officials need to do to adopt e-books.

2. Objectives

On the other hand, most studies in recent years on the acceptance of e-books in Iran have been conducted in privileged universities and cities, and very few studies have been conducted in less-privileged cities. Therefore, the present study aimed to investigate the factors affecting the adoption and use of e-books among Shahrekord University students based on the technology acceptance model.

3. Methods

This was a survey-based study, the statistical population of the study consisted of all students of Shahrekord University in 2016. Thus, through simple random sampling in which individuals have an equal chance of being selected, 371 students were chosen using the Morgan table (14). The students studying in Shahrekord universities in 2016 were enrolled in the study.

A researcher-made questionnaire was used for data collection. A questionnaire was used to interview five educational technology experts. The questionnaire consisted of two parts. The first part contains items on demographic information and the second part includes 48 items related to six categories (8 questions on usefulness, 8 on ease of use, 10 on perceived enjoyment, 4 on cultural influences, 8 on attitude, and 10 related to barriers to use). Responses were rated on a 5-point Likert scale (ranging from strongly agree

to strongly disagree). Each student answered the questionnaire within 10 minutes. Content validity was used to determine the validity of the questionnaire. For this purpose, the questionnaire was given to four faculty members of Isfahan University and its validity was confirmed. The internal reliability of the questionnaire was estimated to be 0.89 using Cronbach's alpha coefficient. Cronbach's alpha coefficients of usefulness, ease of use, perceived enjoyment, cultural influences, attitude and barriers to use were 0.73, 0.81, 0.88, 0.78, 0.82 and 0.76, respectively.

Descriptive statistics were reported in frequency, percentage and mean. Inferential statistics were also analyzed using ANOVA, independent *t*-test, multiple regression and Pearson correlation in SPSS version 19.

All the ethical principles in human studies, including obtaining informed consent, confidentiality of the data, and obtaining legal authorization to initiate the study, were observed in this review. The research was approved by the Ethics Committee of Payame Noor University under the code IR.PNU.REC.1397.059.

4. Results

Overall, 166 (53%) of the participants were male, 147 (47%) were female, and 58 (16%) had not declared their gender. About 52% (194) of the samples were undergraduate and the rest had PhD, MA and Associate's degrees. Also, 26% of the participants were in the technical engineering group (n = 98) and 21% in the medical sciences group (n = 78). Nineteen percent (n = 70) of the participants also belonged to each of the basic sciences and humanities groups. Fifty-four (14%) of the study participants did not declare their study group.

Research question: Is there a significant relationship between e-book acceptance and the factors of usefulness, ease of use, perceived enjoyment, cultural influences, and barriers to use?

According to the data in Table 1, the correlation coefficients of usefulness, ease of use, perceived enjoyment, cultural influences, attitude, and barriers to using and accepting e-books by students were significant at $P < 0.05$. Therefore, there was a significant relationship between these factors and the acceptance of e-books. According to the coefficient of determination, 42% of the variance of usefulness, 20% of ease of use, 36% of perceived enjoyment, 16% of cultural influences, 21% of attitudes, and 4% of barriers to using e-books were related to acceptance of e-books.

Standardized regression coefficients showed that among the factors affecting e-book acceptance, ease of use, attitudes and barriers can be good predictors of e-book acceptance and use. However, perceived enjoyment and cultural influences were not significant and were not good predictors of students' acceptance and use of these books (Table 2).

Table 1. Correlation Coefficients of Factors Affecting E-Book Acceptance (n = 371, P Value = 0.001)

Factors	r
Usefulness	0.654
Ease of use	0.444
Perceived enjoyment	0.604
Cultural influences	0.402
Attitude	0.462
Barriers to use	-0.207

5. Discussion

The introduction of technology and computers into the realm of life has influenced one of the main educational tools, books and educational texts and has created a phenomenon called e-books. Therefore, the present study aimed to determine the factors affecting students' acceptance of e-books. Based on the results, the factors of usefulness, perceived enjoyment, ease of use, cultural factors and decision-making barriers affect the acceptance of e-books among students of Shahrekord universities. These findings are in line with the results of some studies on usefulness components suggesting a relationship between usefulness and e-book acceptance (5, 10, 15, 16).

Other research on technologies has also placed great emphasis on attitudinal and perceived value factors for technology use (5, 17). In this context, it is important for students to understand how to use an e-book and to understand the benefits of using it. Of course, the use of printed books has also become a habit, and most students still consider the Internet and computers as recreational tools and are more familiar with computer games and different types of Internet entertainment and are less familiar with their other uses, especially the scientific and educational uses of e-books. In this regard, teachers can also use electronic articles and books in their teaching.

The results of the study of the relationship between ease of use and acceptance of e-books are also in line with the findings of some previous studies (5, 10, 15, 18, 19). These studies reported that students consider the following factors effective: portability, access to e-books when libraries close, lack of access to a library, and quick search for e-book titles (5, 10, 15, 18, 19). Therefore, the creators of these tools should seek to provide greater ease and functionality of menus or accessories that make these tools easier to use. Producers of articles and textbooks should also use titles

Table 2. Results of Multiple Regression Analysis to Predict Factors Affecting E-Book Acceptance

Model	Non-Standard Coefficients		Standardized Beta Coefficients	t	P Value	95% Confidence Interval	
	B	SD Error				Upper Bound	Lower Bound
Constant value	7.261	1.456	-	4.987	< 0.001	10.127	4.395
Ease of use	0.279	0.054	0.298	5.168	< 0.001	0.368	0.173
Perceived enjoyment	0.025	0.053	0.026	0.464	0.643	0.130	-0.080
Attitude	0.251	0.049	0.314	5.080	< 0.001	0.348	0.153
Cultural influences	0.091	0.050	0.115	1.835	0.068	0.189	-0.007
Barriers	-0.103	0.028	-0.169	-3.746	< 0.001	-0.049	-0.158

that make searching for information faster and easier, and use of these should not require relying on extra skills.

One of the factors affecting the adoption of information technology is the positive attitude of individuals. This finding is consistent with previous research results (15, 17, 20, 21). The results of a recent study (15) showed that the attitude towards using electronic services had a significant effect on citizens' tendency to use municipal electronic services, which was not in line with the findings of Roesnita and Zainab (5). In addition, the findings regarding the impact of barriers to the acceptance and use of e-books were in line with the results of Shaverdi (22).

Overall, the results of the present study showed that the elements of technology acceptance pattern in less-privileged areas are similar to those in privileged areas; however, perceived value and cultural factors are more important in less-privileged areas. This may be due to less familiarity of the students in these areas than other areas, which may require more investment from government officials such as the Ministry of Science and Research and Higher Education because of less access to advanced Internet facilities and computers. Compulsory courses to enhance the computer and internet literacy of university professors and emphasize the benefits of using virtual and combined education should be considered.

Compulsory in college does not mean coercion, but it means free choice to receive annual promotions. The perceived values and understanding the importance of adopting a technology in deprived areas are of great importance, as the benefits of emerging technologies are taught, the value of using them becomes clear to users and as a result, they will try to use them. Therefore, timely and continuous training will increase the perceived value and culture of using these tools. Therefore, curriculum experts and specialists in universities and higher education centers should take this into account and consider these findings when making up-to-date and useful planning for students.

To increase the use of e-books, students can be introduced to virtual libraries and virtual bookstores and to develop a positive attitude towards these types of facilities, and more combined education (in-person and virtual) at different levels of education should be provided. It is also worth focusing on educating users of e-books and paying attention to familiarizing faculty members with the specific features of e-texts, their types and the use of e-books as a resource for teaching. The following are suggestions for expanding and improving the use of e-books.

It is useful to conduct research separately on each of the factors affecting the acceptance of e-books for a deeper investigation. Further research should be carried out with regard to other variables such as community culture, infrastructure and electronic readiness. Adaptive studies should be conducted on ways to create and expand the use of e-books in the light of the experiences of advanced countries.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The present study was derived from the research number: 97/46/9/97/97 approved by the Research Council of Payame Noor University of Chaharmahal va Bakhtiari Province. We would like to thank all those who participated in this study.

Footnotes

Authors' Contribution: Zahra Babadi Akashe designed and performed the experiments. BiBi Eshrat Zamani derived the models and analyses the data. Ali Kheradmand assisted help in revise.

Ethical Approval: The study was approved by the Ethics Committee of Payame Noor University with the code of ethics IR.PNU.REC.1397.059

Funding/Support: This article is extracted form the report research titled "the effective factors in acceptance and utilization and of electronic books in the process of teaching and learning in Sharekord universities" that was supported by Payame Noor university of Charmahal and Bakhtiari province. The researchers would like appreciate the financial support of Sharekord Payame Noor and all students who had participated in this study.

Informed Consent: All moral regulations such as getting permission for deliberate participating in study, participants' satisfaction for continuing, privacy rights, copy rights and to get legal authorization from related organizations for needed information were considered.

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Strides Dev Med Educ. 2019 December; 16(1):e82679. doi: 10.5812/sdme.82679.

Published online 2019 November 10. **Research Article**

The Relationship of Happiness and Quality of Educational Services with Academic Burnout Among Students of Zahedan University of Medical Sciences, Iran

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Received 2018 July 29; **Revised** 2019 March 02; **Accepted** 2019 March 16.

Abstract

Background: Paying attention to students' academic burnout and identifying the factors affecting it is one of the concerns of higher education authorities.
Objectives: The purpose of this study was to investigate the effect of quality of educational services and happiness on students' academic burnout.
Methods: In this descriptive-analytical study, 477 students of Zahedan University of Medical Sciences participated in the academic year 2017-2018. The sampling method was stratified. Data were collected using the SERVQUAL Questionnaire, Isfahan-Fordyce Happiness Inventory (IFHI) and Breso Burnout Questionnaire. Then, they were analyzed by Pearson's correlation coefficient, independent *t*-test, One-way ANOVA and Multiple linear regression using SPSS. P value less than 0.05 was considered significant.
Results: According to Pearson correlation coefficient, there was a significant relationship between students' happiness and academic burnout ($P < 0.001$), but there was no significant relationship between the quality of educational services and academic burnout ($P = 0.060$). The level of academic burnout was higher in male students than in female students ($P = 0.003$). Multiple linear regression analysis showed that only the students' happiness variable significantly predicted variations in academic burnout ($P = 0.001$).
Conclusions: In order to reduce students' academic burnout, effective factors such as happiness should be considered by the respective authorities and educational packages should be used to promote happiness and increase the quality of educational services.

Keywords: Quality of Educational Services, Happiness, Academic Burnout, Students

1. Background

Burnout has been attributed to a state of mental and emotional exhaustion resulting from an overwhelming role, pressure, time constraint and lack of resources to perform tasks (1). In recent years, the variable of burnout has spread to educational contexts and it is referred to as academic burnout. Academic burnout involves the three areas of fatigue in doing tasks, academic disinterest and academic inefficiency (2). According to Neuman, academic burnout is very important and helpful in understanding students' poor performance and lack of enthusiasm for education (3). Various factors such as studying and exams, essay writing, economic pressures, professional expectations and doubts about the usefulness of studies and career prospects contribute to academic burnout, which can be reduced through students' encouragement (4, 5).

Higher education is one of the most important institutions for education and human resources provision and the main pillar of the country's comprehensive development. As a dynamic and purposeful system, it faces serious challenges and its sustained development requires balanced and appropriate growth of its quantitative and qualitative aspects (6, 7). A glance at the current developments in the higher education system suggests that higher education should maintain and improve the quality of services along with addressing the crisis of financial problems (8). Students' evaluation of the quality of the provided services yields useful results for the decision makers of the educational system (1).

One of the methods used for measuring service qual-

ity is the SERVQUAL model developed by Parasuraman et al. (9) with the five aspects of tangibles, reliability, responsiveness, assurance, and empathy (10). Among the studies that have used this model to evaluate the quality of educational services in Iranian universities, we can refer to Changyzi Ashtiyani and Shamsi research in which this tool was used among 400 students of Arak University of Medical Sciences. In that study, they came to the conclusion that from the students' point of view, there is a gap in the quality of services offered and students' perceptions of the status quo is lower than their expectations. This gap was reported in all educational dimensions (11). Also, in their research using the SERVQUAL evaluation model, Tabarraei and Mohebi concluded that from the point of view of students of Qom University of Medical Sciences, the quality of educational services was poor in all dimensions (12).

Happiness denotes a person's evaluation of one's life in general, such as satisfaction with particular areas of life including marriage, work, and emotions (13). It is clear that happiness and optimism affect the body in addition to spirit and social relationships. The concept of happiness includes emotional, social and cognitive components. The emotional component generates positive emotional states, the social component leads to extensive and positive social relationships with others and the cognitive component produces a mental framework that interprets everyday events positively (14).

Students are among the most important strata of the society that are likely to achieve greater success in all academic pursuits and then in employment if they enjoy genuine happiness (15). Evidence suggests that factors such as personality dimensions, income level, marital status and field of study significantly explain students' happiness (4, 16). Studies confirm that there is a significant positive relationship between happiness and progress and academic performance (17, 18). The results of a study conducted by Rostamzadeh and Narimani among students of Mohaghegh Ardabili University showed that there is a significant negative relationship between students' happiness and academic burnout (19). On the other hand, their research showed that the quality of educational services also affects students' academic burnout. In this regard, we can refer to the study by Nasiri et al., whose results revealed a significant negative relationship between the quality of educational services and students' academic burnout (1).

2. Objectives

Paying attention to academic burnout by university officials is important as it is not only related to students' academic prospects but also increases students' mental health. Thus, in addition to identifying the factors affecting academic burnout, knowing the strategies to cope with it seems necessary. The purpose of this study was to determine the relationship of the quality of educational services and happiness with academic burnout among students of Zahedan University of Medical Sciences in the academic year 2017 - 2018.

3. Methods

This was a descriptive, analytical, cross-sectional study. The samples were students of Zahedan University of Medical Sciences (n = 477 students). To calculate the sample size, we used Equation 1, where the values of type I (α) and type II (β) error were 0.05 and 0.2, respectively.

$$\omega = \frac{1}{2} log \left(\frac{1+r}{1-r} \right) \quad (1)$$

$$n_0 = \left(\frac{z_{1-\frac{\alpha}{2}} + z_{1-\beta}}{\omega} \right)^2 + 3 \quad (2)$$

The Pearson correlation coefficient (r) between the two variables of happiness and aspects of creativity was 0.12 according to a similar research (20). Based on these values, the sample size was estimated to be 542. Since the total number of university students was about 4,000, the sample size was calculated at 477, using Equation 3, which is the equation for limited community correction.

$$n = \frac{n_0 N}{n_0 + N - 1} \quad (3)$$

To select the samples, the stratified random sampling method was used. Zahedan University of Medical Sciences was divided into six strata according to the faculties of Medicine, Nursing and Midwifery, Health, Rehabilitation Sciences, Paramedicine and Dentistry. Then, from each stratum, samples were selected proportionate to their students. Questionnaires were distributed and then collected after coordination with the faculty authorities and explaining to the students about the research and assuring them of the confidentiality of the data.

The data collection tool was a four-section questionnaire consisting of demographic questions, SERVQUAL model educational service quality questionnaire, Isfahan-Fordyce Happiness Inventory (IFHI) and Breso Burnout Questionnaire. The demographic information included age, gender, marital status, living in dormitory, nativeness to the province and type of school, which were completed by self-report. The inclusion criteria included studying at Zahedan University of Medical Sciences and informed consent to participate in the study. Also, the questionnaires

that were not thoroughly completed for various reasons were excluded.

To collect information on the quality of educational services, we used the Quality of Services in Higher Education Questionnaire based on the SERVQUAL model, which consists of 20 items and the five sub-scales of tangibles (4 questions), reliability (3 questions), responsiveness (5 questions), assurance (4 questions) and empathy (4 questions). The questionnaire is rated on a five-point Likert scale, with scores of 1 to 5 for the "strongly disagree, disagree, disagree, agree and strongly agree" options, respectively. The lower limit is 20, the average score is 60 and the upper limit is 100. A score of 20 to 40 denotes poor services, a score of 41 to 79.5 shows average services and a score of above 80 was considered good.

To obtain the score for each subscale, the scores for that subscale's questions are summed up and calculated. The face and content validity of the questionnaire was confirmed by several faculty members of the Educational Management and Psychology Department of Islamic Azad University. The reliability of the tool for the whole questionnaire using Cronbach's alpha coefficient was reported 0.93 (10). The reliability of the questionnaire in this study was calculated at 0.93 using Cronbach's alpha coefficient.

Data related to happiness were collected using the IFHI. This tool consists of 38 four-point items including "Very Low, Low, Medium, and High" rated from 1 to 4, respectively. Scores range from 38 to 152 and higher scores mean greater happiness. Content validity of the IFHI has been confirmed by behavioral sciences experts. Its Cronbach's alpha coefficient reliability was found to be 0.92 in a sample of 200 students from Isfahan universities (21). In the present study, the reliability of the instrument calculated using the Cronbach's alpha coefficient was 0.90.

Academic burnout was measured using the Breso Burnout Questionnaire (22). The instrument consists of 15 items in the three domains of academic burnout, namely academic exhaustion (5 items), academic disinterest (4 items), and academic inefficacy (6 items), rated on a seven-point Likert scale. Scores of questions ranged from 1 to 7 and the minimum and maximum scores obtained from the questionnaire were 15 and 105, respectively. Scores between 15 and 37 denote low academic burnout, scores between 37 and 60 represent moderate academic burnout and scores above 60 indicate high academic burnout. The validity of the questionnaire was confirmed by Marzoghi et al. reliability coefficients for the three domains were estimated 0.70, 0.82 and 0.75, respectively (23). In the present study, the reliability of the questionnaire as calculated by Cronbach's alpha coefficient was 0.87.

Pearson correlation coefficient was used to investigate the correlation between quantitative variables. Independent *t*-test and one-way ANOVA tests were run to examine the quantitative variables separately, and multiple linear regression (Enter method) was used to model and predict academic burnout. All these analyses were performed using SPSS, version 21 (IBM Corporation, version 21, Armonk, NY). P-value less than 0.05 was considered significant.

4. Results

In the present study, 477 questionnaires were completed by the students, 23 of which were incomplete and were excluded. In terms of gender, 45.4% were male and 54.6% were female. The minimum and maximum GPAs were 12 and 20, respectively, with a mean of 16.46 $\pm$ 1.25 (Table 1).

Table 1. Students' Distribution Based on Demographic Characteristics

Variables	Number (%)
Age, y	
Less than 25	360 (79.3)
Between 25 and 35	76 (16.7)
Between 35 and 45	4 (0.9)
Marital status	
Single	354 (78)
Married	69 (15.2)
Nativeness to the province	
Native to the province	268 (59)
Non-native to the province	114 (25.1)
Place of residence at the dormitory	
Yes	177 (39)
No	95 (20.9)
Faculty	
Medicine	101 (22.3)
Dentistry	69 (15.2)
Nursing and midwifery	106 (23.3)
Rehabilitation	54 (11.9)
Health	49 (10.8)
Paramedicine	72 (15.9)

The mean score of quality of educational services was 56.23 $\pm$ 12.15, and the minimum and maximum scores were 21 and 94, respectively. The mean score of happiness was 106.06 $\pm$ 12.76 with the minimum and maximum scores of 43 and 152, respectively, and the mean score of academic burnout was 56.39 $\pm$ 12.49 with the minimum and maximum scores of 15 and 99, respectively.

According to the findings, 11.2% of the students described the quality of educational services as poor, 87% as

moderate and 1.8% as good. The level of academic burnout was found to be low in 8.4% of the students, moderate in 56.2% and very high in 35.4%. Happiness status was low in 1.5%, moderate in 82.8% and high in 15.6%.

The rate of academic burnout was higher in male students than in female ones, and there was a significant difference between the two sexes (P = 0.033). However, the difference in academic burnout was not significant for other demographic variables (P < 0.05; Table 2).

The highest level of happiness was related to students aged 35 - 45 years, and students of medicine had higher mean scores of happiness than those studying in other faculties, but the difference in the mean score of happiness was not significant at any of the levels of demographic variables (P > 0.050; Table 2).

Independent *t*-test showed that the evaluation of the quality of educational services by native university students was higher than that of non-native students and there was a significant difference between the two groups (P = 0.004). No difference was observed in other demographic variables (P > 0.050; Table 2).

According to the results of Pearson correlation test, there was a significant inverse relationship between academic burnout and students' GPA (P = 0.02). The relationship between academic burnout and happiness was also inverse, which was statistically significant (P < 0.001), and there was a significant positive relationship between educational service quality and GPA (P = 0.004), while no significant relationship was found between other variables (P > 0.050; Table 3).

According to multiple linear regression analysis, about 6% of variations in students' academic burnout (dependent variable) is explained by independent variables, namely happiness, educational service quality and demographic variables.

Happiness was the only significant variable in the model, such that per one unit increase in students' happiness score, their academic burnout score decreased by an average of 0.18 (P = 0.001). Other independent variables were not significant for prediction in the multiple linear regression model (P > 0.050; Table 4).

5. Discussion

The aim of this study was to determine the relationship of happiness and quality of educational services with academic burnout among students of Zahedan University of Medical Sciences. The results showed a significant inverse relationship between the variables of happiness and academic burnout of students, that is, academic burnout was lower in students with higher happiness. These results were in line with the findings of the Rostamzadeh and Narimani study, which examined the role of social intimacy and happiness in predicting students' academic burnout (19), and in some ways, our results were consistent with the findings of the Veiskarami and Yousefvand (20) and Sharififard et al. (24).

Evidence suggests that there is a direct relationship between happiness and mental health (24). Therefore, factors such as stress, distrust to the system, poor quality of life and concern for occupational future that threaten students' mental health can directly affect students' happiness, and in turn, influence their academic performance and accountability.

In the present study, a negative relationship was observed between the quality of educational services and academic burnout, which was not statistically significant. These results were in line with the findings of Mohammadi et al. who examined the relationship between university environment quality and students' academic burnout (25). It was also in part consistent with the results of Nasiri et al., who reported a significant relationship between educational service quality and academic burnout in only one dimension of emotional exhaustion (1), but our findings were contradictory to the results of Naami (3) and Azizzadeh Forouzi et al. (26).

According to the results of this study, there was a significant positive relationship between the quality of educational services and students' academic performance, which was measured using students' GPA, and improving the quality of educational services led to an increase in academic performance and GPA. Although there is little research in this area, it can be concluded that improving the educational environment and the quality of its services can affect students' motivation and academic achievement, which is itself a major impetus for increasing the quality and quantity of students' study and research.

The mean score of academic burnout in the present study was about 56 and its level was reported moderate in most students. Also, the level of academic burnout was higher among male students than female students. Many studies have been conducted in this area, including the studies of Zaregar et al. (27) and Ghadampour et al. (28) who evaluated students' academic burnout with similar instruments. The results of the mentioned studies were in line with the findings of the present study. On the other hand, the study by Hosseinpour et al. reported students' academic burnout to be below average (29), which is inconsistent with the results of the present study, which may be due to differences in research conditions and environment.

In the present study, the quality of educational services was assessed using the SERVQUAL model and most of the

Table 2. The Mean Scores of Academic Burnout, Happiness and the Quality of Educational Services Based on Demographic Variables[a]

Demographic Variables	Academic Burnout (Mean ± SD)	Statistical Test	P Value	Happiness (Mean ± SD)	Statistical Test	P Value	The Quality of Educational Services (Mean ± SD)	Statistical Test	P Value
Gender		t = 2.13	0.033*		t = 0.002	0.990		t = 0.350	0.720
Female	55.24 ± 12.92			106.08 ± 17.54			56.04 ± 12.64		
Male	75.57 ± 11.84			106.08 ± 15.82			56.45 ± 11.55		
Age, y		F = 0.055	0.940		F = 0.92	0.390		F = 0.69	0.500
Less than 25	56.39 ± 12.9			106.15 ± 16.93			56.63 ± 12.19		
Between 25 and 35	56.81 ± 9.55			105.78 ± 14.22			55.06 ± 11.61		
Between 35 and 45	55.25 ± 2.50			117.25 ± 9.53			52.75 ± 19.61		
Marital status		t = 1.31	0.190		t = 0.29	0.760		t = 1.67	0.090
Single	56.68 ± 12.37			105.69 ± 16.10			55.77 ± 12.15		
Married	54.56 ± 11.84			106.33 ± 18.26			58.46 ± 12.21		
Native status		t = 0.05	0.950		t = 0.48	0.630		t = 2.86	*0.004
Native to the province	57.54 ± 12.78			105.29 ± 16.91			57.87 ± 12.40		
Non-native to the province	59.61 ± 11.31			106.21 ± 7.40			53.92 ± 12.25		
Residence at the dormitory		t = 0.56	0.570		t = 0.08	0.930		t = 1.73	0.080
Yes	56.61 ± 12.08			106.60 ± 16.47			54.46 ± 11.67		
No	57.50 ± 12.94			106.42 ± 16.67			57.05 ± 11.92		
Faculty		F = 1.09	0.360		F = 1.47	0.196		F = 1.24	0.280
Medicine	58.00 ± 12.81			109.83 ± 16.73			55.34 ± 10.22		
Dentistry	57.31 ± 12.44			106.08 ± 18.47			54.11 ± 14.83		
Nursing and midwifery	54.66 ± 13.07			105.57 ± 17.32			58.30 ± 12.05		
Rehabilitation	56.49 ± 10.10			103.48 ± 14.05			56.50 ± 10.92		
Health	57.25 ± 14.52			104.16 ± 17.86			55.32 ± 13.16		
Paramedicine	54.81 ± 11.00			105.00 ± 15.31			56.86 ± 12.00		

[a] Independent *t*-test is significant at 0.05.

Table 3. The Matrix of Pearson Correlation Coefficients of the Studied Variables[a]

Variable	GPA	Happiness	The Quality of Educational Services	Academic Burnout
Grade point average (GPA)	1			
Happiness	r = -0.039, P = 0.413	1		
The quality of educational services	*r = 0.136, P = 0.004	r = -0.002, P = 0.956	1	
Academic burnout	*r = -0.108, P = 10.022	*r = -0.22, P < 0.001	P = 0.060, r = -0.088	1

[a] Correlation is significant at the level of 0.05.

students (87%) reported it as moderate, while the results of the Yarmohammadian et al. study, which aimed to evaluate the quality of educational services at Isfahan University of Medical Sciences, showed that more than half of students (57.7%) evaluated the quality of educational services as poor (30), which is contradictory to the results of the present study. This difference in results may be due to differences in data collection tools.

According to the results of our study, most students had a moderate level of happiness. Also, there were no significant relationships between students' happiness and GPA and the quality of educational services and happiness. These findings were in agreement with the results of Tavan et al. (31) and Raisi et al. (32) and the results of our research contradicted with the results of Barati et al. (33). They rated students' happiness relatively high, but there was a significant difference in the degree of happiness in the demographic variables of gender, place of residence and interest in the field (33), which may be due to differences in the study population and environment.

5.1. Conclusions

Overall, the results of the present study showed that happiness significantly predicts variations in students'

Table 4. Multiple Linear Regression Analysis to Predict Students' Academic Burnout Using Happiness, Educational Service Quality, and Demographic Variables[a]

Variable	B	t	P Value	95% Confidence Interval for B	
				Upper Limit	Lower Limit
Happiness	-0.182	-3.301	0.001	-0.07	-0.29
The quality of educational services	-0.125	-1.520	0.130	0.03	-0.28
Grade point average	-1.162	-1.431	0.150	0.44	-2.76
Gender					
Female (basic group)					
Male	2.110	1.003	0.310	6.21	-2.11
Marital status					
Married (basic group)					
Married	-2.248	-0.817	0.410	3.20	-7.65
Age, y					
Less than 25 (basic group)					
Between 25 and 35	1.013	0.391	0.690	6.10	-4.13
Between 35 and 45	6.135	0.482	0.630	31.7	-18.42
Residence at the dormitory					
Yes (basic group)					
No	-1.480	-0.574	0.560	3.54	-6.62
Nativeness status					
Native to the province (basic)					
Non-native	-1.310	-0.526	0.600	3.55	-6.28
Faculty					
Nursing and midwifery (basic)					
Medicine	3.870	1.169	0.240	10.41	-2.67
Dentistry	0.889	0.262	0.790	7.58	-5.80
Paramedicine	0.960	0.310	0.750	7.07	-5.16
Health	1.740	0.520	0.600	8.35	-4.86
Rehabilitation	1.230	0.355	0.730	8.07	-5.61

[a] $F(12 \& 227) = 1.77$, $P = 0.045$, $R^2 = 0.13$, R^2 (modified) $= 0.057$, $DW = 1.81$

academic burnout. Therefore, considering students' average level of happiness, psychological educational interventions, positive changes in the educational environment and implementation of appropriate programs to promote vitality, mental health and motivation for academic achievement seem to be necessary.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The present study was extracted from an MSc thesis in the field of educational management with the code of ethics IR.ZAUMS.REC.1397.73 approved by the Islamic Azad University of Zahedan. The authors would like to thank the authorities and all the students involved in the study.

Footnotes

Conflict of Interests: The authors state that there are no conflicts of interest regarding the present study.

Funding/Support: None declared by the authors.

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Strides Dev Med Educ. 2019 December; 16(1):e82695. doi: 10.5812/sdme.82695.

Published online 2019 November 2. **Research Article**

Integration of Lecture and Role-Play in Teaching Immunology to Medical Students

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Received 2018 July 29; **Revised** 2019 January 30; **Accepted** 2019 February 03.

Abstract

Background: Medical education is viewed as a challenging phenomenon, which can cause stress in learners and affect the learning quality. Considering the importance of basic sciences education, development of new pedagogical approaches is necessary to improve medical education. Role-play is an efficient simulation-based approach, which can improve the students' perception and imagination. In basic sciences, immunology is of high relevance in clinical situations, as immunological disorders are becoming increasingly prevalent.

Objectives: Given the importance of deep learning in immunology, we integrated role-play in teaching immunology to medical students in order to promote deep and durable learning.

Methods: In this study, two independent classes of medical students were evaluated in two consecutive academic semesters in 2014 - 2015. In one class, only lectures were conducted, while in the other class, lectures, along with role-play, were integrated. Pretest and posttest scores were determined at the beginning and end of the semesters in both classes, and the scores were compared. Also, the students' point of view was studied using a questionnaire.

Results: The pretest score, which indicated the students' general knowledge of immunology, was not significantly different between the two classes. However, there was an increase in the score of students participating in the class, which integrated lecture and role-play. In addition, the score obtained by female students, who participated in the class with lecture and role-play, was significantly higher than that of female students in the lecture-based class. The results of the questionnaire revealed that the students were satisfied with the integrated teaching method and believed that their knowledge had improved.

Conclusions: Based on the findings, dramatization can make learning an exciting process and improve the students' understanding of immunology concepts.

Keywords: Medical Education, Immunology, Role-Play, Simulation

1. Background

Medical education is completed in a long period and includes a variety of subjects and courses. Medical students have a demanding curriculum, which may expose them to significant stress and mental pressure. In such circumstances, the students' learning quality and cognition may be negatively influenced. Therefore, development of new pedagogical approaches is necessary to improve the quality of medical education.

Since the clinical relevance of basic sciences is not properly understood by medical students, application of new educational methods for basic sciences is essential. Currently, use of simulation as an effective teaching approach has been advocated for medical students (1, 2). There are various types of simulation methods for medical education, including role-play, which has been shown to be an efficient tool for improving the students' perception and imagination (3, 4). It is generally important to promote a deep understanding of immunology among medical students, as knowledge of immunology concepts can improve decision-making in clinical situations (5, 6). However, medical students often find it difficult to understand the concepts of immunology using regular methods.

Notwithstanding the above, active learning associated with simulation activities, especially role-play, has not been used to teach immunology to medical students.

2. Objectives

Considering the clinical relevance of immunology as a basic science, we aimed to integrate role-play in teaching immunology to establish whether it can improve the medical students' learning.

3. Methods

3.1. Sampling and Study Setting

This interventional study, which aimed to propose an educational method, was performed on two groups of students. Two teaching methods, i.e. lecture and lecture plus role-play, were used to teach the immunology course, after which the academic performance of medical students was evaluated. The study population included all medical students, who were enrolled in the immunology course in 2014 - 2015. The students were from two independent classes in two consecutive academic semesters. They were randomly assigned to either the lecture-based group in one semester or the lecture-role play group in the following semester. The research setting was the Medical School of Alborz University of Medical Sciences, Alborz Province, Iran.

In the lecture-based group (n = 46), only lectures were conducted, while in the other group (n = 50), lecture, along with role-play, was integrated. The lectures were held every session, and the topic was presented in a small episode in which students played role of the immune systems elements discussed in that session. In addition, at the end of the all lecture sessions, the topics were dramatized by the students, who had enough time to review the materials during the lecture sessions. The final role-play session continued for almost three hours, during which all students participated in role-play at least once. The students watched other students' role-playing. Lectures were conducted in the faculty, and the final role-play was performed in the amphitheater hall of the faculty. The lecturer was the same for both groups, and none of the students dropped out of the study.

3.2. Study Process

Information, including age, sex, and grade point average (GPA) of both groups in two previous semesters, was collected from the training department, and differences between the groups were examined. In both lecture-based and lecture-role playgroups, ten immunology lectures (90 minutes) were conducted according to the Ministry of Health syllabus, using the same audiovisual equipment. In the lecture-based group, a question-and-answer (Q&A) session was held after teaching all the basic concepts. On the other hand, for the lecture-role playgroup, lectures were conducted in the same manner as the lecture-based group, along with dramatization of the subject matter by the students.

The purpose of dramatization was to increase the students' perception of the role of immune system cells. Each student played the role of a component in the immune system. For instance, in a session related to complements, the role of each complement was played by the students, or in case of inflammation and diapedosis of immune cells, the students played the role of endothelial cells, neutrophils, and monocytes. At the same time, the name of each adhesion molecule (e.g., selectins and integrins), expressed during the process of inflammation by endothelial cells, was written on a sheet of paper. The students who played the role of endothelial cells displayed the sheet of paper. Subsequently, students who played the role of immune cells showed the corresponding ligand written on a sheet of paper.

Similarly, regarding the migration of antigen-presenting cells to lymph nodes, the students played the role of immune response elements to represent the antigen and trigger T-cell responses. To perform the role of each element in the immune system, each student was required to think about the function of the element and its time of action; this made the students reflect on every element of the immune system. Importantly, they noticed the connection between different elements and the order of communication among these elements. In the final session, when all topics had been covered, the students played the role of innate, humoral, and cellular immunity factors against an infectious agent.

The lectures in both classes had the same content and included an appropriate introduction to attract the students' attention and activate their previous knowledge. The content of the lectures was conveyed using appropriate examples, visual/audiovisual cues, and Q&A sessions. Also, engagement of students in the classroom was encouraged to increase their intellectual activity and the topics, along with the key points, were summarized.

3.3. Data Collection and Tools

At the beginning of each class, a similar 10-item pretest was performed for both classes to evaluate the general knowledge of students about immunology. At the end of the semester, similar paper-based exams, consisting of 40 questions (20-point scale), with the same difficulty and dis-

crimination indices, were performed, and the scores of the two classes were compared. The exams included different levels of questions on the students' knowledge, analysis, synthesis, and evaluation, according to Bloom's taxonomy. The students were questioned about their opinion and interest in the teaching method using questionnaire described previously (7).

3.4. Ethical Considerations

This study was carried out after obtaining approval under reference No.2342193 from the Ethical Committee of Alborz University of Medical Sciences. All class members were involved in the study, and there was no discrimination between the members of the groups. Also, there was no executive problem in either of the groups.

3.5. Data Analysis

To compare the final scores, *t*-test and Mann-Whitney U test were performed using Prism 6, when applicable. A significant difference was considered when $P < 0.05$. Data are presented as Mean $\pm$ SD.

4. Results

4.1. General Educational Information

Data collected from the training department indicated that the students of both classes were in the third semester. The distribution of female and male students in the population of each class was nearly 73.6% and 26.4%in the lecture-based group, respectively, while in the lecture-role playgroup, female and male students comprised nearly 66.7% and 33.3% of the population, respectively. In terms of age, students in both groups were19 - 21 years old. We evaluated the GPA of the two groups to determine if there is a significant difference. The maximum, minimum, and mean GPA scores in each group are shown in Table 1.

Comparison of the two groups showed that GPA of the lecture-based group was significantly higher than that of the lecture-role play group ($P = 0.02$). In addition, GPA of female students in the lecture-based group was significantly higher than that of female students in the lecture-role play group ($P = 0.03$). Conversely, there was no significant difference in the GPA of male students between the two groups ($P = 0.5$). The findings showed that the GPA of female students in each group was significantly higher than that of males in the same group ($P < 0.001$ for the lecture-based group and $P = 0.05$ for the lecture-role play group).

4.2. Pretest Results and Final Grades at the End of Semester

The pretest scores were not significantly different between the two groups. Statistical analysis of the final scores at the end of the semester showed that the mean score obtained by the lecture-role play group (15.65 ± 2.9) was significantly higher than that of the lecture-based group (14.47 ± 0.92) ($P = 0.02$; Figure 1). In addition, the final score of female students in the lecture-role play group (16.21 ± 2.9) was significantly higher than that of female students in the lecture-based group (14.61 ± 1.01) ($P = 0.017$). However, the final grade of male students was not significantly different between the two groups (14.61 ± 2.96 in the lecture-role play group and 14.12 ± 0.57 in the lecture-based group) ($P = 0.5$). The results suggest that lecturing plus role-play is more effective for female students than males. On the other hand, the difference in the final score of female (16.2 ± 2.9) and male (14.6 ± 2.95) students was significant in the lecture-role play group ($P = 0.04$). Nevertheless, no significant difference was observed between female (14.61 ± 1.01) and male (14.12 ± 0.57) students in the lecture-based group ($P = 0.1$).

The maximum and mode of final grade were higher in the lecture-role play group (max = 20; mode = 18), compared to the lecture-based group (max = 16.15; mode = 14.9). Moreover, the female students' grade in the lecture-role play group (max = 20; mode = 18) was higher than that of the lecture-based group (max = 16.15; min = 15.4). Also, the maximum grade of male students in the lecture-role play group was higher than that of the lecture-based group (19 vs. 14.9). However, the mode of male students' grade in the lecture-based group was higher than that of students in the lecture-role play group (14.65 vs. 14). These results suggest that lecturing along with role-play can improve the learning process of male students.

Comparison of female and male students in each group showed that the average score of female students was higher than that of male students in the lecture-role play group. Nonetheless, the mean scores of female and male students were not significantly different in the lecture-based group. Effect size (8) was also determined to determine the magnitude of significance. The measurements indicated that the effect size between the two groups was medium (0.6); however, the effect size for female students in the two groups was high (0.8).

4.3. Questionnaire Results

In the lecture-role play group, a survey was conducted to study the opinions of students (7). This survey was conducted in two stages, once before and once after role-play,

Table 1. Comparison of Maximum, Minimum, and Mode of GPA Between the Two Groups

	Lecture	Lecture+Role Play	Lecture (Female)	Lecture+Role Play (Female)	Lecture (Male)	Lecture+Role Play (Male)
Max.	18.68	18.42	18.68	18.42	16.33	17.15
Min.	14.46	13.76	14.62	13.76	14.46	13.88
Mode	15.98	16.01	15.4	18	14.65	14

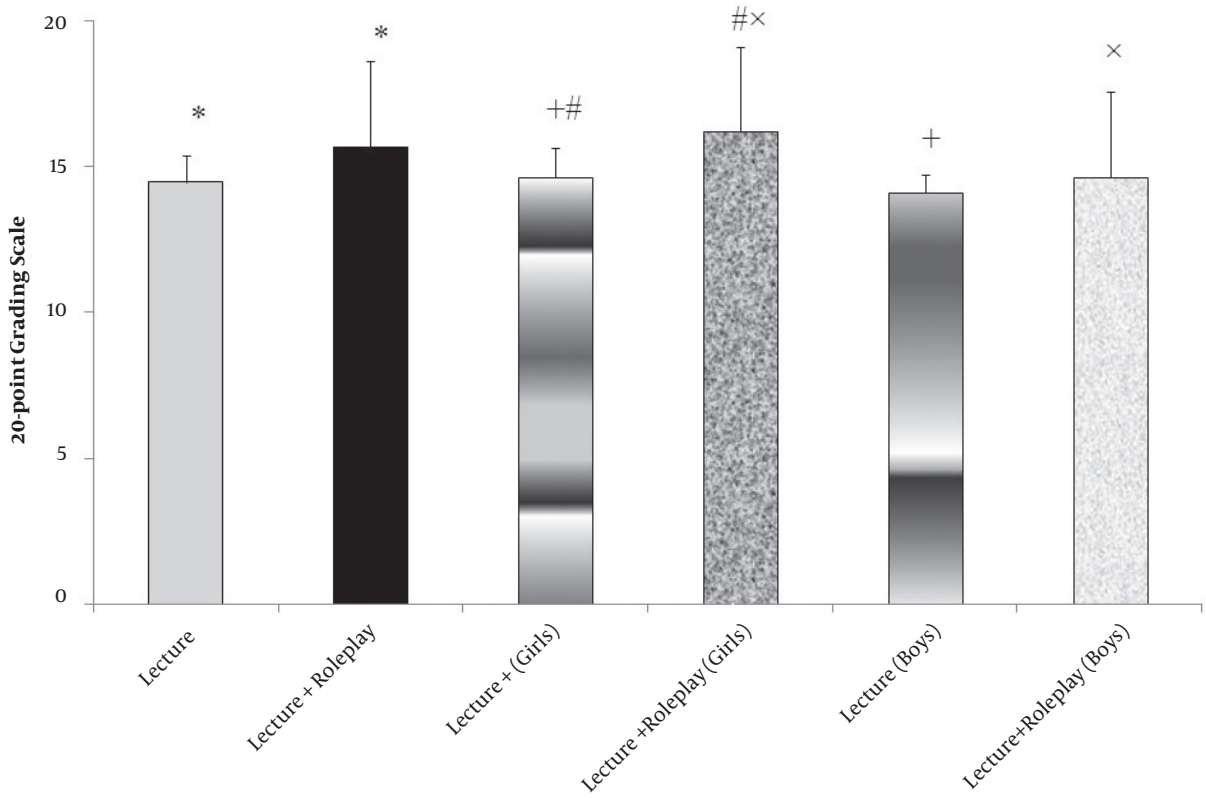

Figure 1. Comparison of final scores at the end of the semester in the two groups and female and male students (*and # represent significant differences [P < 0.05]; + and × represent relative differences [P = 0.1]).

using two forms to determine the students' point of view about role-play in the learning process. The students' responses to the questions in form 1 (questionnaire 1) are presented in Table 2. The results showed that 73.81% of students were satisfied with the teaching style, including 62.96% of girls and 93.75% of boys. Moreover, 100% of male students and 89.66% of female students were interested in entertainment education.

After role playing, form 2 (questionnaire 2) was used to determine the students' opinions, the results of which are shown in Table 2. The results indicated that the students' satisfaction with teaching increased from 73.81% to 83.33% after role-play; this increase was mainly due to the increased satisfaction of female students from 62.96% to 77.27%. However, satisfaction of male students did not change significantly before and after role-play. Although 84.62% of females and 92.86 of males enjoyed lectures along with role-play, 100% of females and 92.86% of males believed that role-playing helped them learn and internalize the immunology concepts.

5. Discussion

Based on the hygiene hypothesis, immunological disorders are becoming increasingly prevalent worldwide. In some clinical situations, if not many, physicians do not

Table 2. Students' Opinions before and After Role-Play in the Two Groups and Female and Male Students (Based on the Questionnaire)

	Yes			No			Abstention		
	Female	Male	Class	Female	Male	Class	Female	Male	Class
	Students' Response to the Questionnaire Before Role-Play								
Are you satisfied with the current teaching method?	62.96	93.33	73.81	37.04	6.67	26.19	0.00	0.00	0.00
Are you satisfied with your learning method?	57.14	93.33	69.77	42.86	6.67	30.23	0.00	0.00	0.00
Do you want to be an engaging teacher in the future?	89.66	100.00	93.02	10.34	0.00	6.98	0.00	0.00	0.00
	Students' Response to the Questionnaire After Role-Play								
Are you satisfied with the teaching method?	77.27	92.86	83.33	0.00	0.00	0.00	22.73	7.14	16.67
Did you enjoy the class?	84.62	92.86	87.50	15.38	7.14	12.50	0.00	0.00	0.00
Did you gain what you expected at the end of the class?	100.00	92.86	97.50	0.00	7.14	2.50	0.00	0.00	0.00
Should this teaching methodology be included in the routine teaching program?	84.62	85.71	85.00	15.38	14.29	15.00	0.00	0.00	0.00

consider the immunological basis of the disease. They often investigate the infectious causes and neglect the immunological basis; therefore, patients do not receive appropriate treatment. On the other hand, drawing the medical educators' attention towards the importance and health impact of efficient immunology education can improve medical diagnoses and health services. Accordingly, emphasis on immunology teaching and learning is an important part of new educational methods for medical students.

Attempts have been made to evaluate different approaches, which seem suitable for teaching immunology (9, 10). In the present study, the effect of role-play, along with lecture, on the students' learning and performance was investigated during an immunology course. The purpose of dramatization was to increase the students' understanding of immune responses and to internalize the concepts. For comparison of GPA scores between the two groups at the end of the semester, the students' opinions about the effect of role-play on learning quality were determined using questionnaires. The results indicated that the final score of the lecture-role play group was significantly higher than that of the lecture-based group. Interestingly, GPA of the lecture-based class was higher than that of the lecture-role play class. Meanwhile, most students believed that role-playing improved the learning process. The students were satisfied with the teaching method and believed that it would be applicable in other classes. Also, a remarkable finding of this study was that students asked precise conceptual questions during role-plays.

The present findings suggest that role-play along with lecture makes the learning process more interesting and promotes a deep and durable understanding of immunology concepts. With respect to the students' questions during role-plays, it seems that this method could also flourish the students' imagination, initiatives, and creativity. It should be noted that we repeated the procedure for the next two consecutive classes of medical students and obtained similar results (data not shown). Another interesting finding of this study is the similar efficiency of this method for female students.

The present results are consistent with previous findings from the United States, indicating the effectiveness of role-play in teaching immunology, regardless of class size (11). However, there are differences between our study and previous research, such as the students' field of study and method of role-play implementation (11, 12). One possible reason for the effect of dramatization on learning may be stimulation of the limbic system with auditory, visual, and kinesthetic cues for presenting information, while lectures involve aural, visual, and read/write learning styles. In addition, role-play integrates senses and emotions in learning, while lectures usually reduce the impact of senses and emotions (13, 14). Moreover, in role-plays, the learner, who becomes a part of the learning-teaching process, outlines the concepts; therefore, it is a unique self-learning approach, which exposes the student to challenges (11-15).

The present study is the first step towards the implementation of role-play in immunology education. It is important to analyze every student's final exam score in the lecture-based and lecture-role playgroups to determine if role-play improves higher-order thinking skills in students. One of the problems of this method is that it is not applicable to all courses. Also, it should be noted that people's interest in role-play can be different, and conse-

quently, the learning effects may vary. In addition, this method is labor-intensive for the instructor and increases his/her responsibilities, which may not be acceptable for many instructors. One of the important tasks of instructors in this area is to design and direct role-playing, which is demanding and requires an extra session. Meanwhile, in the present study, differences in the teacher's emotional state were inevitable in the two semesters.

Acknowledgments

This work was financially supported by the Deputy of Research, Alborz University of Medical Sciences (No. 2342193).

Footnotes

Authors' Contribution: Nafiseh Pakravan proposed the idea and developed by the help of the other authors. Nafiseh Pakravan performed the process with the help of the other authors. All of the authors have been involved in preparation of the article.

Conflict of Interests: The authors declare that there is no conflict of interest regarding the publication of this article.

Ethical Approval: This study was carried out after approval of the Ethical Committee of Alborz University of Medical Sciences. All of the class members were involved in the work, and there was no discrimination between the members of each group. There was no executive problem in either of the two groups.

Funding/Support: This work was financially supported by the Deputy of Research, Alborz University of Medical Sciences under reference No. 2342193.

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Strides Dev Med Educ. 2019 December; 16(1):e83135. doi: 10.5812/sdme.83135.

Published online 2019 December 25. **Research Article**

The Role of Job Motivation in Faculty Members' Participation in Curriculum Development

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Received 2018 August 11; **Revised** 2019 July 14; **Accepted** 2019 July 21.

Abstract

Background: Higher education researchers always need to analyze the factors that influence the faculty members' participation in curriculum development.
Objectives: The purpose of this study was to investigate the role of faculty members' job motivation in their participation in academic curriculum development.
Methods: This was a cross-sectional descriptive-analytical study. The statistical population of the study consisted of all faculty members of Islamic Azad University, Kerman branch (213 faculty members), of whom 137 subjects were selected by simple random sampling. Data were collected using Hackman and Oldham job motivation scale and academic planning questionnaire by Zeinaddiny-Meymand. Data were analyzed using descriptive and inferential statistics, including Pearson's correlation coefficient and regression analysis using SPSS software.
Results: Job motivation and its components played an important role in the role of faculty members for curriculum development as "active planning". Task significance (r = 0.520) followed by skill variety (r = 0.490), task identity (r = 0.330), job feedback (r = 0.280), and autonomy (r = 0.164) were effective, respectively.
Conclusions: Considering the importance of faculty members' job motivation for their active role in curriculum development, it is necessary to provide a good motivational system in higher education and universities to promote their attitudes toward understanding the significance and identity of their jobs. In addition to that, a suitable motivational system is essential to promote and diversify multiple specialized professional skills and to provide appropriate job feedback as well as securing the autonomy of faculty members.

Keywords: Job Motivation, Curriculum, Faculty Members

1. Background

One of the most important issues considered by the higher education system officials is to pay attention to critical responsibility of the academic staff of the universities through scientific and principled curriculum development. Providing the advancement of community by informing students about themselves and their surroundings is a major mission of higher education. In this regard, there are certain components that should be considered by university faculty members in the academic curriculum development process as the core of the educational system.

These may include stimulating students to cultivate and express their latent delicacy and desire for growth and development, equipping students for specialized job, understanding science and expanding the science in favor of economics and society and the revival of a main role in the formation of a democratic, civilized and thoughtful society (1). The main task of faculty members is research, teaching and service to achieve the important mission of the higher education system (2).

Faculty members are an important factor in curriculum development. They design and engineer courses, based on which develop their teaching. In general, regarding academic curriculum, they carefully consider important elements of the curriculum, including selecting valuable scientific goals, choosing appropriate ways to achieve the goals and also selection of appropriate evaluation methods to assess the extent to which the goals are met (3). Many researches emphasize the important role of faculty members in curriculum planning, because of

the awareness of students' learning needs and interests in a real and operational manner as well as the necessity to learn appropriate and effective teaching methods (4). Faculty members are important contributors to the University Curriculum Council, because of their theoretical and empirical knowledge of the factors that influence curriculum planning and in many cases, they design and teach useful curricula (3). According to research results, one of the reasons for the importance of faculty members in curriculum planning is that they identify many of the actual needs of the classroom and students and play an important role in reflecting it on higher decision-making authorities. Reflecting the actual needs and information of students and the surrounding community to include them into the curricula based on the scientific principles and criteria have made faculty members as the major factor for the curriculum planning and curriculum engineering process, production, implementation, and evaluation (5, 6).

Studying and analysis of the effective factors in faculty members' curriculum participation and production are of great importance, and motivational (internal and external) factors are one of the most important factors (3, 6). Aghdasi in his study indicated that the lack of motivation of faculty members to participate in curriculum development directly affects their performance (7). Zeinoddiny-Meymand identified motivational factors as one of the four factors influencing faculty members' participation in academic curriculum development (1). Momeni-Mahmouei also emphasized the role of motivation in the curriculum development of faculty members and found it necessary to have a scientific spirit, creativity and academic freedom (8). Helton identified intrinsic motivational factors (personal and technical) and extrinsic motivational factors (professional and organizational) as factors influencing the utilization of diverse resources in curricula development by faculty members (6). The following factors have found to affect job motivation of faculty members: self-esteem, job satisfaction and educational system environment, organizational commitment, a sense of responsibility and independence at work, of financial and moral support, benefits, a reward and promotion system, gratitude and appreciation of services and also a teamwork culture.

People can perform well in their jobs and have a good job performance when they are qualified and motivated to perform well (9, 10). Therefore, it is necessary to make accurate and systematic planning in order to create, maintain and increase the motivation of employees to promote organizational productivity. These plans require an in-depth study and prioritization of factors that influence the promotion of human resource motivation (11). Based on the theoretical foundations, the individual characteristics, job nature, organizational atmosphere and the surrounding environment can be considered as effective factors in providing a good motivational system (12).

The motivation of individuals in organizations has special dynamic and complexities and is influenced by different conditions and factors. For this reason, different theories and models have been developed to explain and predict motivation in organizations. In this study, Hackman and Oldham's job motivation model was investigated. According to this framework, job motivation consists of five dimensions: "skills diversity, task identity, task significance, autonomy and feedback" (13).

The importance and role of job motivation and its five important components in academic curriculum planning of faculty members and, subsequently, the main and important elements of the curriculum should be considered. Based on the three basic stages of specialized curriculum science, specific elements and components, including educational need assessment, choosing educational goals, choosing a proper content, choosing the method of organizing the content, choosing the method of presenting content, choosing and adopting the time of presentation, choosing and using technology and choosing evaluation method have been discussed (1, 14). The process of curriculum planning is a systematic and purposeful process that requires decision-making on each of these elements, which requires the necessary motivation alongside professional and technical competence (15). Zeinaddiny-Meymand in his research aimed at examining the role of faculty members in curriculum development concluded that the current role of faculty members differs from their expected role in curriculum development. In the current period, the educator feels that he not allowed performing his role and he is asked to play his role based on the headlines and the approved framework, whereas faculty members are expected to play a more active role and participate in curriculum development with regard to the three sources of basic and specialized community needs, student conditions and the specialized and modern knowledge (16). A spectrum of faculty members is essential in faculty members' curriculum development, ranging from a passive executer based on the academic headlines to the executer tending to perform the approved academic curriculum and considered headlines, an active and independent executer based on the needs of the community, students and modern specialized knowledge.

The important role of faculty members' curriculum development is critical for the survival and maintenance of the educational system (17). Zeinaddiny-Meymand et al. concluded that female faculty members had more job motivation than men, and on the other hand, the motivation of nursing faculty members was higher than other faculties (18).

Based on the mentioned issues, the important question is "what role does the faculty members' career motivation play in their role in curriculum development and how does it affect the considered community (Kerman Islamic Azad University)"

2. Methods

This study was a cross-sectional descriptive-analytical research. The statistical population of the study consisted of all faculty members of Islamic Azad University, Kerman branch (213 students) and the sample size was estimated 137 subjects using Cochran formula (19).

In this study, simple random sampling method was used; so that the samples were selected based on the list of faculty members introduced by the Employment Department and a code assigned for each subject and also using the random number table. The questionnaires were provided to the faculty members by referring to the relevant faculties. Inclusion criteria included full-time faculty members, at least one year (two semesters) of work experience, and consent to participate in the study. Faculty members with less than one year old of work experience or those who were not full time faculty members were excluded.

Data collection tools were Hackman and Oldham job motivation questionnaire and academic planning questionnaire by Zeinaddiny-Meymand. The Hackman and Oldham questionnaire is based on the translated questionnaire by the job diagnostic survey (JDS) of America and is designed to measure the level of job motivation of employees for all job types. It includes 15 four-choice questions (very much, much, low, and very low) assessing what are the features of a motivational job? The questionnaire identifies five key characteristics, including "skill variety, task identity, task significance, autonomy and feedback" that can be used to describe a job's potential motivation.

The components of the job motivation questionnaire included skills diversity (questions 1, 6 and 11), task identity (questions 2, 7 and 12), task significance (questions 3, 8 and 13), autonomy (questions 4, 9 and 14) and feedback (questions 5, 10 and 15).

The minimum and maximum scores for the Hackman and Oldham questionnaire were 15 and 60, respectively. Its reliability in a study by Pasha Sharifi et al. was reported 0.72 using the Cronbach's alpha coefficient (20).

In the university curriculum planning questionnaire by Zeinaddiny-Meymand, four roles, including "an executor, an executor tending to be a planner and observe headlines, an active executor, and an independent planner (student-centered)" are considered for professors.

Being an active executor, planning is based on three areas, including the needs of the community, the need of the student, and the need for global specialized knowledge and issues. It should be noted that in order to investigate the role of faculty members in curriculum planning, 9 components (subscales) of curriculum planning must be examined. In fact, curriculum planning consists of 9 components (steps) or subscales. In other words, the purpose was to determine which role each faculty member would select from the mentioned roles (an executor, an executor tending to be a planner and observe headlines, an active executor, and an independent planner) and the role of faculty members in each component or factor and subscale is examined; so that by examining 9 subscales or components, the role of members in curriculum planning is identified. Therefore, the university curriculum planning questionnaire consisted of 36 items and assesses 9 factors and components of curriculum development (need assessment, choosing educational goals, choosing a proper content, choosing the method of organizing the content, choosing the method of presenting content, choosing and adopting the time of presentation, deciding and choosing the place of presenting, selecting and using technology, and choosing evaluation method). For each component, four items indicating the considered roles are considered.

The components of university curriculum development questionnaire for faculty members include choosing educational goals (questions 1 to 4), need assessment (questions 5 to 8), choosing a proper content (questions 9 to 12), choosing the method of organizing the content (questions 13 to 16), choosing the method of presenting content (questions 17 to 20), selecting and using technology (questions 21 to 24), choosing and adopting the time of presentation (questions 25 to 28), deciding and choosing the place of presenting (questions 29 to 32) and the choosing a proper method for evaluation of content was selected (questions 33 to 36).

The validity of the university curriculum development questionnaire for faculty members based on the Sigma counting methodology and according to the opinions of five experts was 0.80 and its reliability was 0.85 using Cronbach's alpha coefficient (16). It should be noted that the questionnaire is scored on a 5-point Likert scale from completely appropriate (5 points) to completely inappropriate (1 point) and its minimum and maximum points were 9 and 36, respectively.

Data were analyzed using Pearson's correlation coefficient and regression analysis after approval of the necessary assumptions by SPSS software version 21 (IBM Corporation, Armonk, NY).

3. Results

Table 1 shows the demographic characteristics of the faculty members participating in the study. Accordingly, most of the participants were male and were associate professors.

Table 1. Demographic Characteristics of Study Participants

Variable	No. (%)
Gender	
Female	95 (69.4)
Male	42 (30.6)
Work experience, y	
< 5	6 (4.2)
5 - 10	29 (21.5)
11 - 15	49 (36.1)
16 - 20	43 (31.3)
> 21	10 (6.9)
Academic rank	
University instructor	35 (25.7)
Assistant professor	99 (72.2)
Associate professor and professor	3 (2.1)
Major	
Nursing and midwifery	31 (22.9)
Engineering	19 (13.9)
Basic sciences	42 (30.6)
Humanities	45 (32.6)

In the present study, job motivation was considered as a predictor and curriculum development as a criterion variable. Job motivation score was 3.54 ± 0.91 and curriculum development score was 3.87 ± 0.82.

Kolmogorov-Smirnov test was used to ensure the normality of data and its significance level was more than 5% for all data, indicating the normal distribution of data.

Pearson correlation coefficient was used to measure the relationship between job motivation and its components with curriculum development. Accordingly, a positive and significant correlation coefficient was observed between job motivation and participation in curriculum planning, which showed that by increasing job motivation, the faculty members' participation in curriculum development also increased (Table 2). Also, job motivation components (skill variety, task identity, task significance, autonomy, and feedback) were effective in faculty members' participation in the curriculum development actively and the most effective component was skill variety.

Table 2. Correlation Between Job Motivation and Its Components with Faculty Members' Participation in the Curriculum Development (137 Persons)

Predictive Variables and Their Components	Participation in the Curriculum Development	P Value
Job motivation	0.520	< 0.001
Skill variety	0.492	< 0.001
Task identity	0.330	< 0.001
Task significance	0.425	< 0.001
Autonomy	0.164	0.055
Job Feedback	0.279	< 0.001

Durbin-Watson test was used to check autocorrelation (for using regression). These statistics ranged from 1.5 to 2.5, indicating no correlation between residuals.

The standardized coefficient of job motivation was 0.520, which was significant at the level of 0.05 ($P < 0.001$; Table 3). Therefore, job motivation was effective in participation of faculty members of Islamic Azad University, Kerman branch in curriculum development. Other data in the table also indicate the role of job motivation components in participation of the faculty members in curriculum development. The most effective component was skill variety, followed by task significance, task identity, feedback and autonomy ($P < 0.001$).

4. Discussion

The results of the present study showed that faculty members' job motivation is one of the factors influencing their role in academic curriculum development and it motivates the faculty members to be an active planner. In curriculum development process, an active role in the curriculum development process considers the conditions and needs of students, their strengths and weaknesses, the needs and conditions of the society, expectations and values needed. On the other hand, scientific and ethical anomalies and trying to reduce them and, more importantly, paying close attention to the current level of global modern science and trying to become more specialized and using these concerns, it plans the curriculum and executes and evaluates it. Therefore, all these concerns will be purposeful and continues, when the job motivation is at the desired level and always strengthens the faculty member. It is notable that, other studies has shown that the current conditions of the universities make the faculty members as an executor (not a planner) in all of the curriculum components and also they are committed to the approved program and the headlines. However, in their desired situation, they tend to be an active planner, based

Table 3. Results of Regression Analysis for Predicting Participation in the Curriculum Development Using Job Motivation and Its Dimensions

Predictive Variables	B	Standard Error	Beta	T	P Value
Constant	1.249	0.210	-	5.273	< 0.001
Job motivation	0.581	0.054	0.520	10.741	< 0.001
Skill variety	0.559	0.057	0.490	6.410	< 0.001
Task identity	0.375	0.066	0.330	5.649	< 0.001
Task significance	0.590	0.075	0.425	7.860	< 0.001
Autonomy	0.084	0.032	0.164	2.630	0.009
Job feedback	0.267	0.058	0.279	4.590	< 0.001

on three important areas of curriculum development (student's needs and conditions, community's needs and the specialized modern knowledge) (21, 22).

Another important point is that curriculum development is done in a process and is also systematic, which starts with a needs assessment (a type of needs assessment) in one step and will continue with choosing valuable goals, choosing the appropriate written and non-written content, organizing and ordering the content, choosing and adopting the time of presentation (start time, presentation time and lesson value), choosing the place of presenting, and the choosing and using technology. It ends with choosing the appropriate evaluation method and will begin after implementation and reevaluation of the needs assessment (it can be the continuation of the final evaluation process of the previous stage) (1, 16, 21, 22).

Accordingly, job motivation is the primary need of every step of the decision making process in the active curriculum development by the faculty members. The lack of job motivation for any reason can result in failed university curriculum development. Aghdasi in his study, showed the lack of job motivation in faculty members as one of the factors that directly influences their participation in curriculum development (7).

Considering a significant relationship between each of the key components of job motivation (task significance, skill variety, task identity, feedback, and autonomy) and the active curriculum planning by faculty members, and also the fact that each component is effective in predicting the role of active curriculum planning (13), by careful consideration of each component and attempting to prepare an appropriate context to develop and enhance the level of these components, job motivation can be influenced leading to providing the basis for a more active curriculum development. The results of other studies on the factors affecting the job motivation of faculty members refer to the factors associated with each of the five components of job motivation.

Autonomy is one of the important issues that along with feedback play a key and central role in the motivating potential score (MPS) formula. So, according to the formula, by reaching "independence" to the least or zero score, the job motivation will be reached to zero (it is also true for feedback) (23). Momeni-Mahmouei cited the "academic freedom" of faculty members as one of the important motivational factors (8). Other effective factors found in the results of other studies are: "confidence, job satisfaction, sense of responsibility, rewards and welfare facilities, having a scientific spirit, creativity, funding, acknowledgments and appreciation, specific plans, encouraging culture of the work, and organizational atmosphere" (6-8, 12, 18, 23, 24).

4.1. Conclusions

Studying the main hypotheses of the present study, aiming at enhancing the quality of the active curriculum development by faculty members, based on the promotion of their job motivation through the important factors in job motivation, yielded the following results.

The results of the main research hypothesis showed that job motivation plays an important role in faculty members' active curriculum development. Accordingly, it is essential for higher education system officials to provide an effective and impressive support system to enhance the motivation of faculty members.

Based on the results of the present study, job motivation components have an important role in predicting faculty members' participation in active curriculum development. These components based on their importance included "task significance, skill variety, task identity, feedback, and autonomy."

4.2. Suggestions

It is suggested to continuously evaluate the level of job motivation of faculty members based on its important components in order to find the affecting factors and appropriate measures as well as the level of job motivation

in candidates for faculty members for more scientific and informed selection.

In order to provide an appropriate context for officials and senior directors to promote their beliefs about the importance of faculty members in the university and society and also create a positive attitude toward this job among the faculty members, it is suggested to conduct consultative meetings, appropriate courses and workshops to promote the attitude and belief of faculty members and the importance of their role in the higher education system and also to meet the higher education's goal.

Considering the important role of "skill variety" as an influential component on the role of faculty members, it is suggested that appropriate conditions be provided for promoting and diversifying their professional skills (including teaching skills, educational management, educational evaluation, curriculum development, research methodology, etc.). Therefore, providing a support system to enhance the qualitative and quantitative skills of faculty members in technical, specialized, personal, and professional fields seems necessary.

Given the importance of "task identity", it is suggested that faculty members believe in their professional role regarding the core mission of the university and higher education in order to form a growing, civilized and thoughtful society. In this regard, emphasis on the role of senior and prominent faculty members in identifying this job at national and international level through modeling and model-making, and subsequently promoting positive thinking in the minds of other faculty members are suggested.

Providing a scientific and specialized evaluation system to advice on the results of faculty members' performance in their role demonstrates the importance of the role of the "feedback" component.

Given the important role of the "job autonomy", it is necessary to provide favorable intra organizational and extra organizational conditions for appropriate delegation of authority in different cases based on the academic, professional and personal level of the faculty members in their work. In this regard, moving from centralized curricula to semi- centralized or decentralized curricula is suggested.

4.3. Limitations

One of the limitations of this study (controllable by the researcher) was that it was conducted among the faculty members of Islamic Azad University, Kerman branch and the faculty members with at least one year of work experience were selected. Only full-time (not part-time) faculty members were included.

Inability to conduct an interview or observation of faculty members' role in curriculum development and inability of faculty members to evaluate curriculum and educational planning based on the results of the university Supervision and Evaluation Office were among the limitations uncontrollable by the researcher.

4.4. Implication of the Study

The purpose of this study was to improve the professional and specialized performance of faculty members considering one of the factors affecting performance (job motivation). It is important to know and understand the importance and prominence of the faculty member's job and also understand which factors are effective on their job motivation. Understanding their conditions, position and needs should not be overlooked. Curricula are considered as the core of the higher education system, and faculty members are planners and are those who reform the curriculum truly. Conducting the present research and relevant studies is urgently and continuously needed for the higher education to accomplish its valuable national and global mission. The results of the present study showed that the proper participation of faculty members in curriculum development as their most important and essential role requires the provision of an optimal motivational system; so that by increasing the level of job motivation components (task significance, task identity, skill variety, job feedback, job autonomy), it can be expected that faculty members will perform well as independent and active planners.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The authors are grateful to the Deputy of Research, Islamic Azad University, Kerman Branch for providing support to perform this research.

Footnotes

Conflict of Interests: None declared by the authors.

Ethical Approval: The present study was approved by the Research Ethics Committee of Kerman University of Medical Sciences (approval code: IR.KMU.REC.1397.04).

Funding/Support: None declared by the authors.

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Strides Dev Med Educ. 2019 December; 16(1):e83435. doi: 10.5812/sdme.83435.

Published online 2019 December 30. **Research Article**

The Relationship Between Learning Environment and Expectations and Perceptions of Graduate Students at Kerman University of Medical Sciences, Kerman, Iran

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Received 2018 August 18; **Revised** 2019 August 06; **Accepted** 2019 September 01.

Abstract

Background: Many factors involve in the process of education i.e., the teacher, curriculum, and learning environment. The educational climate has an exact and tangible relationship with the expectations and perceptions of students, especially students of medical sciences universities, and particularly, the graduate ones.
Objectives: The current study aimed at investigating the relationship between learning environment and expectations of graduate students at Kerman University of Medical Sciences, Kerman, Iran.
Methods: The present cross sectional study was conducted on 193 graduate students from April to July 2017. The subjects were selected by stratified random sampling and weighting methods from each faculty. Data were collected through Dundee ready education environment measure (DREEM) and SERVQUAL instruments. Data were analyzed using multiple linear regression and Pearson correlation coefficient in SPSS. $P < 0.05$ was considered as the level of significance.
Results: Among the subjects, 62.2% were male and 52.0% single; however, 76.2% were masters' students and 23.8% PhD candidates. From the students' point of view, the educational climate had a better status among the learning environment dimensions. In terms of students' expectations and perceptions of the learning environment, the tangibles and the client consideration dimensions got the highest mean scores as 42.8 and 88.8, respectively. There was a significant relationship between marital status and learning environment ($P = 0.04$). There was also a significant relationship between students' perception of educational services and their semester number ($P = 0.04$).
Conclusions: It is better to use student-centered viewpoints in educational planning. Students' satisfaction can be improves by providing appropriate learning spaces and optimizing the existing ones. Adjusting students' expectations by familiarizing them with the line and staff constraints in higher education can play a significant role in enhancing the quality of educational services.

Keywords: Learning Environment, Expectations, Perception, Students, Higher Education, University of Medical Sciences

1. Background

Higher education is the key element of human development in each community. The quality of education is an effective factor in the output of educational organizations that drives the cycle of cultural and economic development. Today, education, especially higher education, is one of the most important issues facing human societies, which plays a very bold and decisive role in the growth and development of the society; however, with the advent of technology in the last century, this has become even more important. Nevertheless, dare to say education may be the most critical factor in maintaining the dynamics of societies, especially the developing ones (1).

Many factors are involved in the process of education and each alone has a certain impact on learning; teacher is one of them as a human factor. Curriculum and resources is another factor influencing the teaching and learning process, but the climate of the learning environment and spaces, which is most influenced by the implementation of the curriculum, teachers' attitude towards learning behavioral and organizational culture of the institute, and student's attitude toward the learning environment and their perception of social conditions, is the most important factor. The learning environment climate is a determining factor in students' motivation in education, because it promotes behaviors that lead to better learning and academic

achievement (2).

In general, the organizational climate is the internal quality of the organization according to the perception and experience of its members. Climate refers to a set of features that distinguishes one organization from another. As personality refers to one's essential characteristics, the climate also relates to the enduring characteristics of organizations (3). The university climate is also a relatively enduring quality of the learning environment resulting from efforts, relationships, and interactions among internal groups, officials, faculty members, staff, and students. The end result of these interactions is the formation of values, beliefs, and social norms of the university system. The interaction between learners and the social environment is of particular importance (4). The key to building and promoting any society is in the hand of youths. If the best and most advanced stratum of the society, namely young students, does not like its learning environment, does not find the subjects useful, and does not enjoy the kind of relationships with faculty and staff, a severe blow destroys its exploratory spirit (5).

As mentioned, learning climate and environment are among the factors influencing the education process, but they have an exact and tangible relationship with the expectations and perceptions of students, especially students of medical sciences universities, and particularly, the graduate ones. The quality of educational services is determined by examining the gap between students' expectations (optimal status) and their perception of the educational services provided (status quo). The lower the gap between the expectations of students and the educational services provided, the better the quality of educational services (6).

Students receive a variety of services during their education. Therefore, their viewpoint toward the educational services offered can be considered as one of the quality indices of the university (7). Lack of awareness of students' expectations means spending resources on things that are not important to them, which can lead to students' dissatisfaction (8). Expectations and perceptions are directly related to quality; in fact, its customer-centric approach. In this approach, quality is a subjective matter defined and explained by the receivers and depends heavily on clients' perception. A key strategy for the success and survival of any organization (commercial, medial, or educational) is to provide clients with high-quality services. Customer satisfaction is his/her feeling or attitude toward a particular service after receiving it. Satisfaction and quality of services are often discussed as a function of client perceptions and expectations. Customer satisfaction is determined by defining his/her perceptions of quality, expectations, and preferences (9). Knowing this, it can be concluded that the level of these expectations of the learning environments has reached maximum due to particular conditions, and consequently, the identification of these expectations and being aware of the gap between the services provided and the expectations met in that environment even seem more important (10).

Despite the critical role of educational services among other types of services, the way of delivering such services often leads to dissatisfaction in the students and, subsequently, the society (11). Proper quality control is a way to reduce the quality gap. Evaluation of learning environments indicates that the students' demands are not fulfilled. An essential first step in compensation for gaps in educational services is to identify students' perceptions and expectations of service quality, determine the strengths and weaknesses of educational services, and then adopt strategies to reduce such gaps and fulfill students' demands (12).

The educational climate has a direct relationship with students' expectations and perceptions and influences them. The results of the study by Sanagu et al. (13), conducted at Golestan University of Medical Sciences, Iran, showed that the educational climate is an effective factor in students' satisfaction. Therefore, getting constant feedback from students about their perceptions of the social environment is important. In their study, only 7% of the subjects reported educational climate as dissatisfactory (13). Al-Ayed and Sheik in a study concluded that shortages in the learning environment cause many changes in the learning process (14). The findings of the study by Kavosi et al. (11), at the Faculty of Management and Medical Informatics, Shiraz University of Medical Sciences, showed that students' expectations were significantly higher than their perceptions and there was a large gap between students' expectations and perceptions. According to the research results, there is a direct relationship between the educational climate in the institutions and the expectations and perceptions of their students (15). Also, the research results indicated that there is a significant gap between service quality and students' expectations, indicating that the provided services do not cover the students and teachers' expectations in any of the quality dimensions and some plans should be designed to improve service quality and fulfill demands (12). In his study, Hutchinson concluded that students' learning in different learning environments is influenced by their expectations and perceptions, which in turn indicates the relationship between these two variables (16).

2. Objectives

Considering the aforementioned issues and in order to improve the quality of the educational process, it is necessary to investigate the relationship between educational climate and students' expectations and perceptions to reduce the gap between these two variables.

3. Methods

The present descriptive-analytical, cross sectional study was performed from April to June 2017 on 193 graduate students at all faculties of Kerman University of Medical Sciences; i.e., 40 students from the Faculty of Medicine, 31 from the Faculty of Midwifery and Nursing, 40 from the Faculty of Management and Medical Information, 50 from the Faculty of Allied Medicine and Public Health, 12 from the Faculty of Pharmacy, and 16 from the Faculty of Dentistry selected by stratified random sampling.

Questionnaires were distributed and collected before or after the class, following the coordination with the professor. The enrolled students studied at semesters 3 to 7. The study population consisted of 643 graduate students at medicine (n = 222), midwifery and nursing (n = 100), pharmacy (n = 29), dentistry (n = 73), public health and allied medicine (n = 145), and management and medical informatics (n = 74) faculties at Kerman University of Medical Sciences, Kerman, Iran.

The required information were collected using the Dundee ready education environment measure (DREEM) including 50 items on learning (12 items), professors (11 items), student perception of academic ability (8 items), educational climate (12 items), and socioeducational environment (7 items). Eight questions (i.e., 48, 39, 35, 25, 17, 9, 8, and 4) had a negative concept; hence, they were scored reversely (13).

The SERVQUAL instrument was used to measure the perceptions and expectations of graduate students of the educational services provided. This 30-item instrument consisted of five service quality dimensions including physical (tangibles) (4 items), validity and reliability (ability of the university to deliver the services promised to students) (5 items), responsiveness (degree of staff responsiveness to the services provided for students) (5 items), professional competence and assurance (11 items), and client consideration (5 items) (17).

Both instruments were scored based on a five-point Likert scale from strongly agree to strongly disagree; scores 1 to 5 were converted to 0 to 100 and the mean score of each dimension was calculated based on the items scores. According to the statistics consultant, the mean scores 0 to 33.3 were considered as poor, 33.4 to 66.6 as moderate, and 66.7 to 100 as good. Reliability of the SERVQUAL was reported 0.93 using Cronbach's alpha coefficient in a similar study on 30 students. The instrument had also a good validity (11). The reliability of the DREEM was confirmed in a pilot study on 20 students; its Cronbach's alpha coefficient was 0.75. SERVQUAL had an acceptable validity (1).

Data were analyzed using multiple linear regression and Pearson correlation coefficient in SPSS version 22 (IBM Corporation, Armonk, NY). P value < 0.05 was considered as the level of significance. The response rate was 100% since in case of non-cooperative subjects, alternatives were assigned to complete the questionnaire.

The protocol of the present study was approved by the Ethics Committee (code no.: IR.KMU.REC.1394.355) and the Environmental Health Engineering Research Center (project no.: 94/341) of Kerman University of Medical Sciences; it was also granted by the Vice Chancellor for Research and Technology Affairs of the university.

4. Results

Among the students, 62.2% were male and 37.8% female; 72.5% belong to Fars ethnicity and 27.5% to other ethnicities; 52.0% were single and 46.0% married. Also, 76.2% of the participants were master's students and 23.8% PhD candidates. The mean age of the subjects was 26 ± 2 years.

Regarding the learning environment, the highest and the lowest mean scores belonged to the dimensions of educational climate and student perception of academic ability respectively, showing moderate status in this regard. Regarding the variable of students' expectations of the learning environment, the highest and lowest mean scores belonged to tangibles and professional competence and assurance respectively, reflecting the moderate status of these dimensions. Regarding the variable of student's perception of the learning environment, the highest and lowest mean scores were related to client consideration and tangibles respectively, showing the good status of the dimensions (Table 1).

There was a significant relationship between marital status and mean score of learning environment, so that the mean score of married subjects in learning environment was 2.6 points lower than that of single ones. There was no significant relationship between mean scores of other demographic variables and learning environment status (Table 2).

There was a significant relationship between students' semester number and the mean score of their perception of educational status; by each semester increase, the mean score of students' perception of learning environment decreased by 1.2 points, but no significant relationship was observed between the mean score of other demographic variables and students' perception status (Table 3).

There was a significant difference between the students of allied medicine and public health, and management and Medical Informatics faculties and those of the Faculty of Medicine (the reference faculty) in terms of the mean score of expectations; so that the mean scores of students' perception of learning environment 8.8 points in the Faculty of Allied Medicine and 9.8 points in the Faculty of Management and Medical Informatics were higher than that of the Faculty of Medicine; however, no significant difference was found in this regard between other faculties and the faculty of medicine (Table 4).

Table 1. Mean Score of Students in Learning Environment, Perceptions, and Expectations[a]

Dimension	Values
Learning environment	
Learning	44.5 ± 9.2
Professors	43.5 ± 10.8
Students' perception of academic ability	42.7 ± 11.2
Educational climate	45.5 ± 9.6
Socio-educational environment	45.0 ± 10.4
Total score	44.3 ± 8.1
Student perception of educational services provided	
Tangibles	87.4 ± 14.3
Validity and reliability	88.2 ± 13.5
Responsiveness	88.0 ± 13.8
Professional competence and assurance	87.7 ± 14.1
Client consideration	88.8 ± 13.4
Total score	88.0 ± 12.9
Expectations of learning environment	
Tangibles	42.8 ± 16.4
Validity and reliability	40.9 ± 15.2
Responsiveness	42.5 ± 16.3
Professional competence and assurance	40.2 ± 15.1
Client consideration	40.6 ± 16.4
Total score	41.1 ± 13.3

[a]Values are expressed as man ± SD.

There was a significant correlation between learning environment and its dimensions. The highest and lowest correlations were found in the dimensions of professors and socio-educational environment; in other words, the dimension of professors had the highest role and the social-educational environment dimension the lowest role on the perception of postgraduate students of educational environment.

There was a significant relationship and correlation between students' perceptions of learning environment and its dimensions. The dimension of professional competence and assurance played the highest role and the two dimensions of tangibles and client consideration played the lowest role on the perception of postgraduate students of educational environment.

There was a significant correlation between expectations and its dimensions; the highest correlation was related to two dimensions of professional competence and assurance and client consideration and the lowest correlation was related to intangibles dimension, meaning that the dimensions of professional competence and assurance and client consideration had the highest influence and tangibles had the lowest influence on student's expectations.

The correlation between learning environment and students' perceptions and expectations was poor and no significant relationship was also found between learning environment and students' perceptions and expectations; i.e., by increasing the quality of learning environment, students' expectations of educational quality decreased (Table 5).

5. Discussion

The results showed that the highest and lowest mean scores of learning environment were related to the educational climate and students' perception of academic ability, respectively. In the study by Faghani et al. (1), conducted at Golestan University of Medical Sciences, the highest and lowest mean scores belonged to educational climate and social environment. The study by Tripathy and Dudani in India indicated that the highest and lowest scores were respectively attributed to educational climate and students' social perception (18), while in the study by Riquelme et al. (19), in Chile, the highest and lowest scores were respectively related to students' perceptions of academic ability and learning environment.

Concerning the variable of students' perception of learning environment, the highest and lowest mean scores belonged to the client consideration and tangibles, respectively. The results of the study by Aghamolaei et al. (20), showed that the highest and lowest scores of students' perception of learning environment were related to the confidence and responsiveness dimensions, respectively. In a study on students' viewpoint toward the educational climate, Sanagu et al. (13), stated that among the five dimensions, professors and educational climate got the lowest the highest scores, respectively.

Based on the results of the present study on students' expectations of the learning environment, the highest and lowest mean scores belonged to tangibles and professional competence and assurance dimensions, respectively. Kavosi et al. (11), concluded that among the five dimensions of the SERVQUAL regarding students' expectations and perceptions, the highest and lowest scores in the expectations variable were related to assurance and intangible dimensions, respectively. The highest and the lowest scores in the perception dimension were respectively belonged to the dimensions of assurance and empathy, while the highest and the lowest scores in the present study belonged to the client consideration and tangibles dimensions. The difference between the results of the present study and those of aforementioned studies can be attributed to differences in the studied populations.

The results of the present study showed that the mean score of married subjects in learning environment was 2.59 points lower than that of single ones; to explain, it can be said that married students have other concerns that are more important to them than the classroom and learning environment.

Table 2. Relationship Between Demographic Characteristics and Learning Environment in Students[a]

Demographic Characteristics	Values	Regression Coefficient	95% Confidence Interval	P Value
Gender				
Female[b]	43.4 ± 7.9	-	-	-
Male	44.9 ± 8.2	1.60	-0.9, 4.1	0.22
Ethnicity				
Fars	44.5 ± 8.7	-	-	-
Others[b]	43.8 ± 6.2	1.80	-0.6, 4.4	0.15
Marital status				
Single	45.4 ± 8.8	-	-	-
Married	43.1 ± 7.0	-2.59	-5.1, -0.05	0.04
Level of education				
Master's degree[b]	44.6 ± 8.5	-	-	-
PhD	43.5 ± 6.5	1.60	5.4, -2.2	0.41
Faculty				
Medicine[b]	44.9 ± 7.5	-	-	-
Midwifery and Nursing	42.0 ± 5.5	-0.72	-4.6, 3.1	0.71
Allied Medicine and Public Health	44.7 ± 10.1	0.38	-2.8, 3.6	0.81
Dentistry	40.7 ± 2.7	-4.60	-9.6, 0.41	0.72
Management and Medical Informatics	47.3 ± 8.6	3.50	-0.08, 7.2	0.05
Pharmacy	41.3 ± 5.8	-3.40	-8.3, 1.4	0.16
Age	-	0.41	-0.08, 9.0	0.10
Semester	-	-0.42	-1.1, 0.2	0.24

[a] Values are expressed as man ± SD.
[b] Reference group.

Table 3. Relationship Between Demographic Characteristics and Students' Perceptions of the Educational Services Provided[a]

Demographic Characteristics	Values	Regression Coefficient	95% Confidence Interval	P Value
Gender				
Femaleb	89.4 ± 10.6	-	-	-
Male	87.1 ± 14.1	-2.6	-6.8, 1.6	0.22
Ethnicity				
Fars	87.8 ± 12.9	-	-	-
Othersb	88.3 ± 13.1	-1.0	-5.3, 3.2	0.62
Marital status				
Single	88.2 ± 14.2	-	-	-
Married	87.7 ± 11.3	-1.2	-5.4, 2.9	0.56
Level of education				
Master's degree[b]	88.0 ± 12.7	-	-	-
PhD	87.7 ± 13.7	2.1	-4.3, 8.5	0.52
Faculty				
Medicine[b]	85.6 ± 15.5	-	-	-
Midwifery and Nursing	87.5 ± 10.7	0.7	-5.7, 7.2	0.81
Allied Medicine and Public Health	90.1 ± 9.9	4.3	-1.0, 9.6	0.11
Dentistry	88.4 ± 11.4	2.4	-5.9, 10.8	0.57
Management and Medical Informatics	88.0 ± 11.4	0.9	-5.0, 7.0	0.74
Pharmacy	88.2 ± 10.7	2.6	-5.4, 10.7	0.52
Age	-	-0.1	-1.0, 0.6	0.65
Semester	-	-1.2	-2.3, -0.04	0.04

[a] Values are expressed as man ± SD.
[b] Reference group.

Table 4. Relationship Between Demographic Characteristics and Students' Expectations of the Learning Environment[a]

Demographic Characteristics	Values	Regression Coefficient	95% Confidence Interval	P Value
Gender				
Female[b]	42.1 ± 13.4	-	-	-
Male	40.6 ± 13.3	-1.4	-5.6, 2.7	0.500
Ethnicity				
Fars	42.8 ± 11.1	-	-	-
Others[b]	40.5 ± 14.0	-2.0	-6.1, 2.1	0.340
Marital status				
Single	40.6 ± 14.1	-	-	-
Married	41.8 ± 12.3	-0.8	-4.9, 3.2	0.690
Level of education				
Master's degree[b]	40.6 ± 13.4	-	-	-
PhD	42.8 ± 12.8	2.9	-3.1, 9.6	0.360
Faculty				
Medicine[b]	35.8 ± 14.0	-	3.6, 14.14	-
Midwifery and nursing	37.4 ± 10.6	3.2	-5.9, 10.4	0.320
Allied medicine and public health	44.9 ± 11.7	8.8	3.8, 15.8	< 0.001
Dentistry	41.2 ± 12.0	2.2		0.590
Management and medical informatics	44.9 ± 15.2	9.8		< 0.001
Pharmacy	42.0 ± 10.5	5.3	2.6, 13.2	0.190
Age		0.7	-0.01, 1.5	0.050
Semester		-0.2	-1.3, 0.9	0.700

[a]Values are expressed as man ± SD.
[b]Reference group.

Table 5. Correlation Between the Dimensions Studied in Students

Dimensions	Pearson Correlation Coefficient	P Value
Learning environment		
Learning	0.76	< 0.001
Professors	0.85	< 0.001
Students' perception of academic ability	0.82	< 0.001
Educational climate	0.84	< 0.001
Socioeducational environment	0.64	< 0.001
Perception of educational services provided		
Tangibles	0.90	< 0.001
Validity and reliability	0.941	< 0.001
Responsiveness	0.91	< 0.001
Professional competence and assurance	0.96	< 0.001
Client consideration	0.90	< 0.001
Expectations for learning environment		
Tangibles	0.75	< 0.001
Validity and reliability	0.81	< 0.001
Responsiveness	0.83	< 0.001
Professional competence and assurance	0.92	< 0.001
Client consideration	0.92	< 0.001
Total expectations for learning environment		
Total perception of educational services provided	-0.02	0.780
Total learning environment	0.01	0.890
Total perception of educational services provided		
Total learning environment	-0.008	0.910

According to the results of the present study, gender differences had no impact on the evaluation of educational services and expectations and perceptions of students of these services. In studies by Abbasian et al. (21), and Faghani et al. (1), a significant difference was found between male and female students in this regard.

In the study by Kavosi et al. (11), a significant relationship was observed between students' perceptions and the semester they spent studying, which was consistent with the findings of the present study.

Students' expectation score in the faculties of allied medicine and public health and management and medical informatics were respectively 8.8 and 9.8 points higher than that of the faculty of medicine. In fact, it can be said that different faculties make different expectations in students; the studies by Mohammadi and Mohammadi (15), and Kavosi et al. (11), also confirmed the obtained results.

There was a poor relationship between educational climate and expectations and perceptions of students. The findings of the present study showed a negative gap in all dimensions of educational service quality and educational climate terms, indicating that from the viewpoint of students, the delivered service did not cover their expectations and necessary measures should be taken in this regard. The results of the studies by Aghamolaei et al. (20), at Hormozgan University of Medical Sciences, Kebriaei and Roudbari (22), at Zahedan University of Medical Sciences, Arbouni et al. (17), at Zanjan University of Medical Sciences, and Tofighi et al. (23), at Paramedical School, Tehran University of Medical Sciences, Iran as well as Tan and Kek (24) in Singapore and Bradley (25) in China confirmed this finding and were in agreement with the present study results.

The mentioned researches were somehow the analyses of learning environment, and their results can an effective in improving the quality of education. The gaps observed in all components as well as the five dimensions of service quality can be utilized as a guide for proper planning and resource allocation. On the other hand, it is suggested to hold educational workshops for faculty members, advisory professors, and staff in order to improve the quality of services, with the aim of enhancing technical and communication skills using a student-centered viewpoint in educational planning.

Providing appropriate learning spaces and optimizing existing areas can also be effective in increasing students' satisfaction. Also, familiarizing faculty members, advisory professors, teaching staff, and students with educational rules and regulations to better serve students and, on the one hand, moderating students' expectations by familiarizing them with existing line and staff constraints in the higher education system can play an important role in enhancing the quality of educational services. Students may experience a high-quality education, lecturers can receive favorable feedback for professional development, and the university may gain good credit under such circumstances.

Finally, due to differences in courses and levels of education, facilities, equipment, staff, and faculty members as well as cultural, social, and other indices in different societies, the perceptions and expectations of service providers vary toward service quality. Therefore, in order to improve the quality of educational services, similar studies in other universities are recommended.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The authors hereby wish to thank all the professors and graduate students at Kerman University of Medical Sciences for their cooperation with the project.

Footnotes

Conflict of Interests: None declared by the author.

Ethical Approval: The protocol of the present study was approved by the Ethics Committee (code no. IR.KMU.REC.1394.355) and the Environmental Health Engineering Research Center (Project no. 94/341) of Kerman University of Medical Sciences.

Funding/Support: It was also granted by the Vice Chancellor for Research and Technology Affairs of the university.

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Strides Dev Med Educ. 2019 December; 16(1):e84144. doi: 10.5812/sdme.84144.

Published online 2019 April 8. **Research Article**

Qualitative Explanation of the Effect of Changes in the Educational System on the Development of Professionalism in Medical Residents

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Received 2018 September 10; **Revised** 2019 January 05; **Accepted** 2019 January 26.

Abstract

Background: The development of professionalism is one of the fundamental goals of educational systems, especially in medical sciences. Medical students, in addition to acquiring clinical knowledge and skills, should somehow benefit from moral values and professionalism in order to practice in a professional manner. The development of professional ethics is heavily influenced by the hidden curriculum affected by changes in the educational system. The health reform plan is launched in Iran in recent years.
Objectives: The current study aimed at qualitatively explaining the effects of changes to the educational system on the development of the professionalism in medical residents.
Methods: The current qualitative study was performed by the content analysis method. A total of 26 interviews were conducted with 12 prominent professors of medical education, 13 third-year internal medicine residents, as well as a focus group including 10 residents. The purposive sampling method with maximum diversity was used in the current study and continued until data saturation. Data were analyzed using the content analysis method. The Lincoln and Guba criteria were used to increase the credibility of the findings.
Results: The most important finding of the current study was the challenge of developing professionalism due to environmental changes. The main theme included the challenges of professionalism development in the existing educational system, changes related to the sociocultural environment of the community, changes related to health reform plan, and the shift from training to health services and promtion of faculty member.
Conclusions: Changes and interventions in the health care services sector, such as the health reform plan, greatly affect the development of professionalism in medical residents. The plans that affect the health system, a special attention should be paid to the education section and the educational documents should be prepared initially and implemented simultaneously.

Keywords: Education, Medicine, Hidden Curriculum, Residents

1. Background

Health reform plan with the goal of comprehensive health coverage was launched in Iran in 2014. The plan includes eight service packages to reduce the hospitalization cost for patients, support physicians to remain in deprived areas, presence of specialists attending educational hospitals, promotion of the quality of services and visits in educational hospitals, the promotion of normal delivery program, financial protection program for special patients, and launching an air ambulance service (1). The evolutionary plan has different dimensions and effects. Several studies were conducted on the effects of this plan, most of which focused on the effects of the plan on expenditure in health care centers. Although medical residents of the most important elements of implementing the plan, the effects of this plan on this group are less addressed (2, 3). Nematbakhsh evaluated the impact of health reform plan on health research projects (4). Molavi et al. showed that professors and residents in Shahid Beheshti University of Medical Sciences were relatively satisfied with the implementation of the health reform plan and the most prominent source of dissatisfaction was the lack of hospital facilities (5). Professionalism is the important components of medical education, and to the best of authors' knowledge, no study evaluated the effects of the health reform plan on it.

Professionalism are defined as the behaviors, goals, or characteristics that address a profession or a professional person, and include the moral and legal parameters of the profession, the behavior and values of the members of the

profession, and the responsibilities of the profession toward patients, community, and others (6). Professionalism is the concepts for a belief system to achieve trust between physicians and the society (7). From the viewpoint of social expectations, professionalism are essential prerequisites for medical education (8). Medical professionals are expected to have a specific set of behaviors and attitudes toward patients and the community (9). Accordingly, physicians are expected to express professional features such as accurate clinical practice, humility, understanding of individual constraints, professional judgment, and maintaining a relationship based on trust (10).

Responsibility and commitment to professional ethics are two important components that the medical students and medical residents are expected to acquire in order to be a physician (11). However, in recent years, special attention is paid to the development of professionalism in medical students and residents. Adding educational materials for lecture-based teaching and even new educational methods, such as simulation to formal curricula, are of such attempts (8). Nevertheless, in the clinical environment, the role of hidden curriculum and components such as the role models significantly affect the development of professionalism (12). The factors shown by the studies do not always play a positive role in forming professionalism (13-15).

Professionalism are a guiding code for physicians established by the profession and the community in which it serves, and its content changes with changing social expectations and needs (16). As professionals, physicians are committed to the health and well-being of patients and the community through ethical practices, personal standards, accountability to the profession and community, doctor's regulations, and maintain personal health. In recent decades, efforts are made to develop professionalism, especially in the medical profession, along with changes in the society and health systems. Extensive efforts were made to make the medical schools accountable to the community. One of the important steps in this way was the development of professionalism in medical students and graduates. Therefore, responding to social needs was also added to the concept of professionalism. In the recent revisions on the definition of professionalism by the Association of Faculties of Medicine of Canada (AFMC), the concept of global commitment was also added to the definition of professionalism (17).

According to the above mentioned reasons, special attention is paid to the evaluation of professionalism. The results of the research show that professionalism are multidimensional phenomena influenced by many factors and are affected by environmental changes, especially at the level of the educational system. Education of professionalism leads to better response to patient expectations, development of physician-patient relationships, improvement of clinical outcomes, and enhancement of organizational credibility (8). The formation of professionalism is a key indicator of the success of the curriculum. Role models, media, and parents are of the most important factors affecting the formation of professionalism (18). In this regard, the role of hidden curriculum is more effective than the others.

The hidden curriculum is a set of unwritten and informal lessons and unwanted values and perspectives that medical students learn along with formal aspects of education. Hidden curriculum can be defined as unforgettable and often indirect messages that an individual receives from an event or experience. The effects of these experiences are remembered many years after forgetting the source. The hidden curriculum is a set of stimuli that operates at the level of organizational culture. Hidden curriculum is a part of the training that all academic members participate. Hidden curriculum is a theoretical concept that describes learning and takes place apart from training course and taught lessons, and instead infers implicitly from policies, practices, resource allocation, evaluation, and organizational criteria (19). The hidden curriculum of "common understanding" highlights the customs, traditions, and acceptable aspects of medical education (20). The hidden curriculum effects can either support or resist the formal expectations of learning; for example, while the curriculum may explicitly require medical students to be attentive in their daily practices, they may train in a different manner at hospitals (21).

The health reform plan was implemented in recent years in Iran and had a major impact on different dimensions of the health system. Despite the important role of residents , the effect of this plan to this group was less addressed. Also, the effects of the plan on the educational sector, including professors as the role models of residents were less considered. Changes in the health system can affect professionalism of residents through changing the role models and hidden curricula.

2. Objectives

The current study aimed at qualitatively explaining the effects of changes in the educational system on the development of professionalism in medical residents.

3. Methods

The current qualitative study was conducted based on the content analysis approach. The study population consisted of the experienced professors of internal medicine

department including pediatrics, infectious diseases, and internal medicine with more than 10 years of clinical and educational experience, as well as the third-year internal medicine residents from different medical sciences universities of Iran including Iran, Shahid Beheshti, Mazandaran, Mashhad, Kerman, Kurdistan, Isfahan, and Urmia. Totally, 35 participants were enrolled in the study; 26 interviews were conducted with 12 prominent professors of medical education, 13 third-year internal medicine residents , and a focus group discussion with 10 residents was held separately. However, 17 interviewees were female and 18 male. Purposive sampling method was employed in the study. To achieve the experiences of the selected trainers and trainees, the semi-structured interview and qualitative content analysis were employed. For the initial interviews, a few initial questions were designed to discuss the effects of the educational environment, changes in the community values, and changes resulting from the health reform plan on the development of the professionalism in residents. The interview was started with this question: "What changes are made to the education of residents following the implementation of the health reform plan? How such changes affected the development of professionalism in residents? The interview continued with tracking questions, such as "How the involvement of professors outside the university affected the education of residents?" Initially, a list of eligible professors was provided and the objectives of the study were explained to the accessible ones that had enough experience and knowledge, showed interest to share their experiences with researchers, and then they were invited to participate in the interview. The participants should be accessible for an individual interview and possible supplementary interviews. In the process of data analysis, the findings were repeatedly studied along with the formation of themes . When no new theme was created and the characteristics of all themes were determined, the sampling process was stopped due to the repetition and saturation of the data. Two supplementary interviews were conducted at this stage. Repeating the previous data was an indication of the adequacy of sample size. The sample of the current study was selected heterogeneously based on the study objectives; for this purpose, it was attempted to take sample from different groups of internal medicine, gender, age, and work experience in a wide spectrum, as well as different cities.

Interviews were conducted by the first author where the interviewees were comfortable that was mostly the interviewee's place of work. The interviewer was a PhD student in curriculum development, which in addition to passing a course in qualitative research methodology, had experience in participation in qualitative research courses and collaborated in several qualitative studies. The interview lasted 30 - 60 minutes, with an average of 45 minutes. After obtaining the written informed consent, all interviews were recorded and then, transcribed as soon as possible. To understand the content of the written interviews considering the research question, the text was first read several times and then the units of meaning were extracted. Then the codes were summarized and classified according to their similarity. The codes were categorized as sub-themes and then by the evaluation of the relationship between sub-themes, the main themes and the main concepts were extracted (22). In order to achieve the accuracy and validity of data, the four criteria proposed by Lincoln and Cuba were used. To increase the validity, reliability, and creditability of data, the following measures were taken: allocation of sufficient time, immediate transcription of interviews, and the re-study of the entire data. The results of data analysis were presented to five faculty members to evaluate the creditability and verifiability of the results. The purposive sampling method with maximum variability was used in order to help the fitness of data and transferability of the findings. Also, the researcher tried to increase the credibility of the research by cooperation and interaction with the participants, collecting valid data, and obtaining information confirmation from the participants.

The study was a part of the results of a PhD dissertation in the Al-Zahra University (registration code: 679/96). The study permission was issued to medical universities, educational hospitals, and department managers and they were asked to give permission for interviewing the professors and residents. The research objectives were explained to all participants and they were interviewed after obtaining informed written consent. All participants were assured about the confidentiality of their data. All results were published anonymously considering confidentiality and privacy principles.

4. Results

The most important finding of the present study was the challenge of the development of professionalism due to environmental changes. The main themes included the challenges of professionalism development in the existing system, changes related to the sociocultural environment of the community, and changes related to the health reform plan and the shift from education to health services and promotion of faculty member. Table 1 presents the main themes with sub themes and codes.

Table 1. Main Theme, Subthemes, and Codes Related to the Effects of Educational System Changes on the Development of Professionalism in Residents

Main Theme	Subthemes	Codes
The challenge is the development of professionalism due to environmental changes	Challenges to develop professionalism in the existing educational system	Lack of legal supervision to prevent moral misconduct
		The value system of the immoral educational environment
		Lack of properly addressing ethical misconduct
		Non-compliance of residency education system with ethics
		Non-standard educational environment
		Current immoral beliefs in the educational system
		Feeling a lack of support in ethical issues by residency
		Punishment approach to medical error/concealment of error due to fear of the law
	Changes related to the sociocultural environment of the community	Changes in the values of the society and the dominance of financial issues over moral issues
		Influence of the educational value system by the society
		Changes in the moral value system of the society
		Priority of legal issues over ethics
		The value system of educational environment
		Aggression towards health care workers by the clients
	Changes related to health reform plan	Negative changes due to the launch of health reform plan
		Negative impact of health reform plan on the way of dealing with the patient
		Reduction in the level of scientific work load due to the launch of the health reform plan
		Chronic fatigue of residents due to the burden of the evolution plan
	Change the focus from education to health services and promotion of faculty member	Contradiction of the value system of promotion with medical professionalism
		Changes of the value system toward clients' dissatisfaction
		Changes of the educational environment to a servicing environment
		Focus of residency program on healthcare providing services
		Stressing the role of resident as therapist
		Performing unprofessional behaviors in the educational environment by the professors

4.1. Challenges to Develop Professionalism in the Existing Educational System

Participants of the current study believed that the existing educational system did not provide a suitable platform for the development of professionalism. Relationships in the educational system and role models are not effective in the development of professionalism of residents. A number of participants from both professors and residents hinted this important point, for instance:

Participant #2: "The hidden curriculum has the same effect on everyone, why; since it dictates similar behaviors. Well, when you enter an environment where no one respects the patient, it rarely happens that someone does. The majority, except some, do not respect. Such behaviors affect the residents , and they learn that the patient should not be respected."

Participant #4: "When you live in a society where violence and anger are high and patient comes yelling and perky, well, you cannot show kindness and humanity and finally are affected by such conditions and the atmosphere; for example, when you are referring for an administrative issue; how is the behavior of education department personnel? Are your needs provided? In the department, do the nurses and the paramedic behave with you in the right way, or they do not care about you at all and do not respect you, since they know you will leave there? They all affect you unconsciously."

Participants believed that different sections had their own impact on residents based on hidden curriculum. For example:

Participant #3: "The impacts of various sections are different, and this shows the significant influence of organizational culture and role models; in other words, the behavior of the same residents changes when he leaves the hospital due to rotation."

Participants believed that the existing educational system did not rely on professionalism and also did not care about the development of professionalism. For example:

Participant #7: "Not all the places you learn from them are a value based system, they should be completely value based; when you look at the wall, there should be writings in this regard; looking at interpersonal relationships, see the same; looking at the interorganizational relationship, see moral examples; looking at the organization-patient relationship, see signs of ethics."

The lack of an effective rewards and punishment system also makes the people not to care about values, as well as professionalism.

Participant #4: "I said I will write the offender resident and send it to the Disciplinary Committee, but it lasted so long that the person graduated and nothing happened, that is, such dilemmas do not allow the professors to say that this resident is not allowed now to enter the department until his case is addressed in the committee. They say you are not allowed to make such decisions and suspend the resident due to cheating. When the student cheats, and he is caught; the examiner and faculty will punish him and you do not have the right to take the paper from his hand and you should only report it; we would manage it."

Participant 5: "Finally, the behavior of a person in a community, a smaller society, a hospital, is almost like a house. We spend many hours of our lives here. Well, if the peers, seniors, or freshmen are ethics-oriented, everybody may behave in the right way, but if even they have moral problems, all such things eventually transmit to the others; and unfortunately smoking, and other offenses gradually become common among them; I do not know well, but it is very bad, we just have sorrow."

4.2. Changes Related to the Sociocultural Environment of the Community

Alongside the inefficacy of the educational system to promote professionalism, some changes also occur at the community level, which the development of professionalism in many occupations encounter. In fact, the reason is attributed to the coherence of the educational system. Participants said about the impact of such changes as follows:

A participant in the group discussion: "When our society is the one in which ethical behavior is humiliated, the expression of such behaviors in medical environment is much more highlighted, and incidentally, the same behaviors are applied. For example, an angry administrative employee that wants to express his repressed anger, here is the place! Because he can mistreat residents and interns and if we want to do somethings here, definitely we can do nothing! Maslow showed in his hierarchy of needs that when the basic needs are not resolved, when security and economic problems are not resolved, we cannot think about other stages."

Participant #4: "The first meeting I held after being appointed to the deputy of education of the hospital, was on ethics. Heads of departments, one of our department heads, gave me a painting on an A4 paper, at the end of the meeting as said: "Look, I was painting all the time you were talking. This is yours. This words that you are putting on are useless. In this society, all people are like that; do not talk about ethics... . I am influenced by the community, and my resident is also influenced by the community; that is it!"

4.3. Changes Related to Health Reform Plan

Participants believed that the changes made by the implementation of the health reform plan to health services system had a significant impact on the development of professionalism in residents. They believed that a heavy workload would cause an resident not to be able to develop himself scientifically, morally, and professionally. For example:

Participant #1 said: "The health reform plan you have already talked about is like that we try to play the role of an attend in the hospital; in fact, that attend had worked so much, but we have a difference with them that they did not bear such a heavy workload imposed by the reform plan to the current residents. The reason for higher scientific knowledge of former attends that can better manage their patients compared to the current ones is that they had much more time to study, worked on their patients more comfortably, or had more active ward rounds, but we are now unfortunately involved in a set of minor issues of the current health system."

Participants also believed that such changes resulted from lack of resources and facilities required for the implementation of the health reform plan.

A group discussion participant added: "When context is not proper and we just want to do some formalities to say yes we made the visits fees cheaper, or want to show that we are serving people, but this does not happen in reality; until then, I think we cannot practice conscionably."

4.4. Change the Focus from Education to Health Services and Promotion of Faculty Member

The study participants believed that the priorities of the system shifted from education to health services and

promotion of faculty member. Therefore, the development of professionalism in residents is less than what expected. They believed that educational hospitals were more concerned about providing health care services than attending the training of residents. For example:

Participant #1: "The number of patients in public hospitals increased several times within recent years; therefore, higher workload was imposed on us. Resident in fact plays the therapist role; in other words, the educational role is influenced by the health services. In fact we are somehow serving the government with a very low salary and benefits."

Participant #1: "Our work is summarized in providing services; that's all! when a resident comes here he is always involved in providing healthcare services, while is trained anyway and may attend two morning report sessions. Very rarely I heard raising ethical issues in mornings."

The faculty members' promotion system has made some of the professors focus on publishing articles and upgrading themselves rather than concentrating on the training of residents. Participants believed that such an approach affected the development of professional ethics.

Participant #8: "It is said that avoid being involved in legal issues during residency program and just try to write some articles as a privilege for sub-speacialty entrance exams; that's all! What kind of valuation criterion?; to visit a patient within five minutes and spend my time studying and preparing papers since it is the criterion for subspeacialty entrance exam, subspecialty certifying exam, the privilege for my future positions as associate professor, assistant professor to associate professor, and associate professor to professor? This is why I say that everything originates from the law. That is, even my professor, whom I am also influenced by, is also affected by such laws. If the law was right, my professor would tell me not to worry. But all of these things already form the basics of our valuation, which are definitely influencing. In my opinion, the law is the last word and this law affects my professor and I am also influenced by him."

5. Discussion

The current study aimed at qualitatively explaining the effects of changes in the educational system on the development of the professionalism in medical residents. The findings of the current study showed that the medical education system faces challenge in the formation of professionalism in medical residents. These challenges are related to the hidden curriculum and are influenced by changes in the educational system and changes resulting from the health reform plan. According to the results of the current study, to form professionalism in medical residents, the medical education system faces challenges imposed from outside the system; therefore, it shifted the focus from education to health services.

The results of the study showed that educational environment changes were a factor affecting the formation of professionalism. Changes in the Iranian medical education system affect professionalism via two paths of inside (internal), and outside (external) the health system. Changes that in recent years occurred inside the health system were heavily influenced by health reform plan.

Some changes occurred outside the system such as low incomes, a reduction in health expenditure share of households, and the impact of the moral decline of society on the development of the professionalism in medical residents. The results of previous studies also indicated that the economic status of the community influenced the development of professionalism in medical students. For example, a study conducted in Bangladesh showed that the economic status of the country can affect the development of professionalism in doctors (23). Also, the results of a study on low-income countries showed that the situation of education in such countries worsened by low economic status and led to a decline in the development of professionalism in medical students. They also found that the sense of social justice had a significant impact on the development of professionalism in medical students (24). The results of the current study showed that feeling the loss of social justice has a negative impact on the development of professionalism in medical students. The origin of other changes in the educational system, which is the main goal of the current study, was the internal changes as well as health reform plan.

One of the challenges which the development of professionalism faced in different disciplines is the change in the educational system. In fact, changes in social systems, globalization, and their related issues are considered as challenges to develop the professionalism in graduates, especially the ones in the field of medicine. It is recommended that medical education programs and medical faculties prepare their graduates for such changes (25).

Results of a study by Karnieli-Miller et al. (26) showed that staff behavior is an important source to form professionalism in medical students, the point emphasized in the current study. The current study results indicated that medical students were not inspired only by their professors, but the behavior of all the health system staff influenced their professionalism. However, based on the results of Karnieli-Miller's et al.'s research, professors and residents are the cornerstones to form professionalism in the students. Despite the important role of professors, results of a study conducted by Joynt et al. (12) on medical stu-

dents in Hong Kong showed a large discrepancy between the knowledge of medical students taught by the formal curriculum and the perception caused by hidden curriculum in the same students. Their results also showed that clinical instructors did not have necessary preparations to teach professionalism to students. The results of the current study showed that the clinical education environment was not well prepared to develope professionalism in the residents.

In an Australian study on the design of a curriculum to improve the professionalism in medical students, the results showed that the development of a medical philosophy in students and the target of becoming an ethical doctor are the fundamental principles to form professionalism in medical students. The results of the current study showed that the valuation system, rather than strengthening the philosophical foundations of medicine and breeding ethical students, tends to go beyond the legal constraints and not to be caught up in the consequences of patient complaints. Several research results showed that the fear of being sued negatively affects the education of medical students. For example, results of a study in the United Kingdom showed that fear of complaints after treatment reduced the empathy of medical students and the skills they learned during education (27). Nevertheless, according to the results of a study performed on medical students in Detroit, it was recommended that medical errors and ways to deal with them should be taught to medical students to prepare them working with more self-confidence in the educational environment (28). It was also recommended that legal issues should be taught to medical students in order to prepare them to deal with situations in which doctors may face legal consequences (28). The results of the current study showed that the residents tried to deal with patients in a way not to be involved in legal consequences; however, no specific legal issues is provided so far to train legal issues and probably some of their fears are due to inappropriate legal principles. The fear of legal consequences, in addition to the frustrating sense of empathy between the patient and the physician make the residents think about his carrier with the fear of law and looking for ways to escape from it.

5.1. Conclusions

The current study aimed at qualitatively explaining the effects of changes caused by launching the health reform plan on the development of professionalism in medical residents. Based on the results of the research, the development of professionalism in the current educational system faces many challenges and changes at the level of society and the education-health care services system affect it. Changes outside the health system are changes directly caused by health reform plan and changes occurred outside the health reform plan in the health system. Along with these changes, it seems that the educational system also has not the components required to develop professionalism in residents. The interviewed residents and professors believed that the educational system does not have the necessary conditions to promote professionalism.

Changes occurred at society level and the reduction of its financial resources, diminution of moral values, and highlighting the economic values, along with the poor support of residents as well as their bad economic conditions, ban the development of moral values in residents, along with the general community. In addition, the launch of the health reform plan led to an increase in workload and consequently, less attention is paid to the development of ethics. Changes, such as the faculty promotion system and paying more attention to the health services sector, which led residents to seek subsidiary goals such as publishing articles or meeting the therapeutic goals of hospital, diverted the attention from promotion of professionalism. With regard to the integration of the education, health, and health care service systems in Iran, it seems that the change in each one affects the rest. Unfortunately, the changes made in health services affected the education sector and persuaded the policy makers to pay more attention to this issue.

One of the limitations of the current study was the lack of access to all the medical schools nationwide. Certainly, a larger sample of medical schools nationwide can clarify the situation and the impact of changes. However, interviews at several universities, including the universities in the capital, and several large and small universities across the country gave almost a clear image of the current situation. It is recommended that the results of the present study be examined quantitatively.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

The authors wish to thank the professors and residents of medical schools for their helps to conduct the study.

Footnotes

Conflict of Interests: There is no conflict of interests.

Ethical Approval: It was a PhD dissertation approved by Al-Zahra University.

Financial Disclosure: There is no financial disclosure.

Funding/Support: There was no funding.

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Strides Dev Med Educ. 2019 December; 16(1):e84285. doi: 10.5812/sdme.84285.

Published online 2019 November 12. **Research Article**

Investigation of Consistency Between the Students' Scores Using Bayesian Intraclass Correlation Coefficient in Postgraduate Students of Kerman University of Medical Sciences in 2013 - 2015

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Received 2018 September 15; **Revised** 2019 February 04; **Accepted** 2019 February 12.

Abstract

Background: Evaluation of students' scores helps us indirectly examine the status of education system in university departments.
Objectives: In this study, in order to assess the education system, consistency between the students' scores was evaluated by measuring the Bayesian intraclass correlation coefficient (ICC) in postgraduate students of School of Public Health, Kerman University of Medical Sciences during 2013 - 2015.
Methods: This cross sectional study was conducted on all postgraduate students of the School of Public Health of Kerman University of Medical Sciences during 2013 - 2015. The students' scores were collected from the Office of Postgraduate Studies. First, the Bayesian ICC of students' scores was calculated for all fields. Next, cluster analysis was performed on Master's fields of study, and the Bayesian ICC was recalculated for each cluster. Data were analyzed using R 3.3.2 and OpenBUGS 3.2.3.
Results: Out of 117 postgraduate students, 102 (87.2%) were MSc students, and 15 (12.8%) were PhD students. The highest ICC was attributed to health education (ICC = 0.345) and the lowest to environmental health engineering (ICC = 0.023). Clustering was effective in most fields, and ICC of the clusters increased.
Conclusions: According to the results, consistency between the students' scores was low in the majority of fields; therefore, it is necessary to modify and improve teaching and evaluation methods.

Keywords: Intraclass Correlation, Academic Achievement, Students' Scores, Bayesian, Cluster Analysis

1. Background

In every education system, in addition to addressing the quantitative development of educational services, quality development should be also evaluated (1). Several approaches have been proposed to improve the quality of education, the most important of which is modification of teaching and evaluation methods in the assessment of students' academic achievement. Many experts believe that reforms in evaluation methods, as the most important aspect of education, can significantly improve education.

Evaluation is one of the important components of educational planning. Assessment of academic achievement is also one of the important steps in the teaching process. If this assessment is not carried out accurately, students with good and poor performance cannot be differentiated, and revision and decision-making cannot be applied in subsequent teaching activities (2). Therefore, establishment of an effective system for examining the quality of education provides a means for universities to reform their activities, identify their strengths and weaknesses, and select an appropriate strategy for reform (3). Evaluation of academic achievement is a systematic process, which involves collecting, analyzing, and interpreting information to understand to what extent the students have achieved their learning goals. This type of assessment involves an appraisal of students' learning abilities, used in decision-making about teaching activities of university faculties (4).

In Kerman University of Medical Sciences, the most important university in Southeast of Iran, student assessment is performed by educational groups. Different groups evaluate the students' academic achievement by conducting final exams. It seems that by examining the

scores of students at different educational levels in different courses, it is possible to study the status of the educational system of schools, and in part, the educational status of the university department (5).

One of the important measures for the assessment of learning process is measurement of intraclass correlation coefficient (ICC) of the students' scores. ICC, as well as correlation coefficient, measures the magnitude of the relationship between two variables. ICC is a modification of correlation coefficient; therefore, in addition to consistency, it can take measurement differences into account and assess the agreement of two measurements. Overall, if there are "n" individuals, each with "k" measurements, there are two sources of variation: between members of one group (intra-group) and between two different groups (inter-group).

ICC is an appropriate index for measuring the consistency and similarity of intra-group measurements. It is the ratio of inter-group variance to total variance. The low difference in the scores of each student, besides high ICC, can indicate the validity of exams and scores. If there is no consistency between the students' scores in some courses, its cause should be investigated. Such inconsistencies can be found only by measuring the ICC of scores (6). Generally, in standard exams, strong students are expected to achieve higher scores in almost all courses, compared to weak students. In other words, strong students are assumed to achieve higher scores, and weak students are expected to obtain lower scores; therefore, ICC is high and close to one. In fact, a high ICC indicates that the exam can differentiate strong and weak students.

2. Objectives

In this regard, several studies have been conducted in Iran. However, these studies have been performed using classical methods (frequency-oriented) to analyze the students' scores, and Bayesian statistic has not been measured yet. Overall, evaluation of students' scores helps us indirectly examine the education system of university departments. In the present study, for the assessment of education system, consistency between the students' scores was evaluated using Bayesian ICC in postgraduate students of School of Public Health, Kerman University of Medical Sciences during 2013 - 2015.

3. Methods

This descriptive, analytical study was conducted on postgraduate students (MSc and PhD) at the School of Public Health of Kerman University of Medical Sciences from 2013 to 2015, using census sampling. All students' scores were collected from the Office of Postgraduate Studies. Then, the students' scores in each course were determined as a constant value. If a student repeated a course more than once and had more than one score for the course, the mean score was calculated and considered in the statistical analysis.

To determine the ICC of students' scores, the Bayesian model was fitted to the data. The Bayesian method was used because of the small sample size. Generally, in a small sample size, the Bayesian method is more suitable than the classical method, and the confidence interval is narrower; therefore, the precision of ICC is higher. Also, Bayesian ICC always ranges from 0 to 1, while classic ICC is sometimes negative and not meaningful. With the assumption that the structure of some courses may not be consistent with other courses and that some students show better performance in some courses, clustering method was applied to make sure that the student's score don't need to be similar in all courses. First, the courses included in each field were clustered, and then, for each cluster, ICC was calculated.

The Bayesian statistics was determined based on Bayes' theorem by multiplying the likelihood function by "prior probability" for determining the "posterior probability" (7). The Bayesian ICC was also defined using random effect models. In this study, consistency between the students' scores was measured. Consistency means that if a student obtains a high score in one of the courses, he/she will also obtain high scores in other courses; therefore, the two-way mixed-effect model was used (8):

$$y_{ij} \ = \mu + \alpha_i + \beta_j + \epsilon_{ij} i = 1, \ldots, k, \ j = 1, \ldots, n_i \quad (1)$$

Where μ is the total average, y_{ij} is the jth score of the ith student, α_i is the random effect of students, β_j is the fix effect of the course (because the course was specific for students and all courses were included in the analysis), and ε_{ij} is the residual of the model.

In the Bayesian method, σ_a^2 is the variance of scores between students, and σ_ε^2 is variance in the scores of each student. According to the described model, Bayesian ICC was calculated in the consistency mode using the following equation (9):

$$ICC = \frac{\sigma_a^2}{\sigma_a^2 + \sigma_\epsilon^2} \quad (2)$$

Bayesian method estimates ICC based on the posterior distribution, using Markov Chain Monte Carlo (MCMC) algorithm (10). After calculating the ICC of students' scores, a cluster analysis was conducted for the courses in each field, and ICC was calculated for each cluster. Generally, clustering is the classification of data in logical groups

so that data in similar clusters have the greatest similarity, and different clusters have the least similarity. In this study, the courses were clustered using Ward's clustering method. This method is considered the most accurate hierarchical method, where the sum of squared difference between each data from a cluster and the mean vector of the cluster is used as a criterion for evaluating the cluster (11).

In this study, the MSc fields included epidemiology, biostatistics, health education, occupational health engineering, and environmental health engineering, while the PhD fields included epidemiology and biostatistics in the School of Public Health, Kerman University of Medical Sciences. For analyzing the data, R 3.3.2 and OpenBUGS 3.2.3 were used.

4. Results

In this study, 117 postgraduate students from the School of Public Health were included during 2013 - 2015. Among these students, 102 (87.2%) were MSc students, and 15 (12.8%) were PhD students. Also, 55 (47%) students were enrolled in 2013, 28 (23.9%) were enrolled in 2014, and 34 (29.1%) were enrolled in 2015. The MSc students included 30 (29.4%) students of epidemiology with 13 common courses, 19 (18.6%) biostatistics students with 9 common courses, 18 (17.6%) students of health education with 12 common courses, 13 (12.7%) students of occupational health engineering with 13 common courses, and 22 (21.6%) students of environmental health engineering with 11 common courses.

On the other hand, PhD students included 11 (73.3%) students of epidemiology with 10 common courses and 4 (26.7%) students of biostatistics with six common courses. In terms of gender, of 102 MSc students, 58 (56.8%) were female, and 44 (44.2%) were male. Also, of 15 PhD students, 9 (60%) were female, and 6 (40%) were male. The ICC of MSc students' scores, with and without differentiation of the enrolment year, is shown in Table 1.

According to Table 1, health education students, who were enrolled in 2013, had the highest ICC. Also, these students had a higher ICC than students of other fields in all entries. On the other hand, environmental health engineering showed the lowest ICC. The ICC of this field decreased from 2013 to 2014, whereas it slightly increased since 2014; however, all three entries had a very low ICC.

Among MSc students, the scores of biostatistics and epidemiology students showed an increasing trend from 2013 to 2014, whereas a decreasing trend was observed in 2015. Also, there was an insignificant difference between the total ICC (all entries) and ICC of each entry in biostatistics; therefore, it seems that the status of students in this field is stable. It should be noted that Kerman University of Medical Sciences did not accept any students in the field of occupational health engineering in 2014, and there were only two entries; there was a significant difference between the ICCs of these two entries, and a decreasing trend was observed. Moreover, health education showed a decreasing trend from 2013 to 2014, while it had an increasing trend from 2014 to 2015.

After measuring the ICC of MSc students' scores, ICC of PhD students' scores was also calculated. However, due to the low number of PhD students and also the low number of common courses that students had completed during these three years, only the total ICC (without entries differentiation) was calculated for PhD courses. The ICC of PhD students' scores at the School of Public Health, without entries differentiation, is presented in Table 2.

As shown in Table 2, the ICC of PhD students' scores in epidemiology and biostatistics was very low (< 0.1), indicating a very poor consistency between the scores in each field. After examining the ICC, cluster analysis was performed for each MSc field to determine which courses were homogenous with similar scores. Table 3 presents the courses grouped in different MSc clusters.

Clustering of MSc courses indicated that the courses grouped in each cluster had the greatest similarity with each other, whereas they had the lowest similarity with courses in other clusters. Next, ICC for each cluster was calculated, the results of which are presented in Table 4.

As shown in Table 4, the first cluster of biostatistics and the second cluster of health education had the highest ICCs, respectively, indicating a significant correlation between the courses in these two clusters; in other words, the scores of students in these courses were similar. Clustering of courses in occupational health engineering, health education, and biostatistics was effective in finding courses with similar scores.

5. Discussion

The results of the present study showed that by comparing the ICC of students' scores, validity of the scores can be easily determined in different educational departments. The high ICC may be attributed to the students' motivation for better learning, higher faculty experience, or high agreement between the university faculties; in other words, the students' points of view are similar. Low ICC may be related to the substitution of old faculty members with young ones, who use different teaching and evaluation methods. However, confounding variables, such as Internet addiction and social networking addiction, cannot be ignored in recent years.

Table 1. ICC of MSc Students' Scores in the School of Public Health

Field	ICC (95% Confidence Interval)			
	Total Students	Entries of 2013	Entries of 2014	Entries of 2015
Health education (n = 18)	0.34 (0.18, 0.55)	0.42 (0.16, 0.74)	0.29 (0.05, 0.67)	0.35 (0.005, 0.94)
Biostatistics (n = 19)	0.27 (0.11, 0.48)	0.25 (0.008, 0.61)	0.28 (0.001, 0.76)	0.20 (0.002, 0.63)
Occupational health engineering (n = 13)	0.19 (0.05, 0.41)	0.33 (0.11, 0.67)	-	0.11 (0.0008, 0.51)
Epidemiology (n = 30)	0.15 (0.06, 0.26)	0.15 (0.04, 0.33)	0.317 (0.77, 0.03)	0.21 (0.03, 0.50)
Environmental health engineering (n = 22)	0.02 (0.0002, 0.11)	0.09 (0.0006, 0.30)	0.03 (0.0003, 0.22)	0.05 (0.0003, 0.032)

Table 2. The ICC of PhD Students' Scores

Field	ICC (95% Confidence Interval)
Epidemiology (n = 11)	0.03 (0.0005,0.15)
Biostatistics (n = 4)	0.062 (0.001,0.39)

The low ICC may be also attributed to the students' low motivation during education, concerns about their future occupational status, and job saturation in the field of study, which may disperse some of the scores and lead to an unexpected ICC. In other words, low ICC may not be only related to the method of teaching and evaluation, and its value and interpretation may be distorted.

In a study by Danesh Kazemi et al., the correlation coefficient between the students' scores of theoretical and practical tooth restoration courses in the School of Dentistry, Yazd University of Medical Sciences, was determined during 1991 - 2012. There was a direct significant correlation between the evaluation score of all theoretical and practical courses (12). In another study by Haghdoost et al. (5), academic achievement of medical students in Kerman University of Medical Sciences was investigated during 1995 - 2003, and it was found that females are more successful in medical courses. Overall, the ICC between male students' scores was greater than that of females. Also, the students' scores in different courses had low consistency with the students' scores in comprehensive exams (5).

Moreover, in a study by Smits et al. (13), predictive factors of successful learning were investigated in postgraduate medical students. They observed that improvement of students' mental health problems significantly contributed to their academic achievement. It seems that in addition to teaching and evaluation methods, establishment of counseling centers and attempts to improve the mental health status of students can affect their academic achievement (13). In another study by Corell et al. (14), effects of competitive learning tools on the medical education of students were investigated. It was found that students, who used the competitive learning tool, had better academic performance and were more satisfied with this type of learning. Therefore, besides teaching and assessment methods, a healthy competitive environment may contribute to the students' academic achievement (14).

The present study is different from similar studies in this area, as it only focused on the scores of postgraduate students. In this study, it was revealed that the ICC of MSc students' scores in the mentioned fields was low. As shown in Table 1, all ICCs were below 0.5, which represents poor consistency. According to the results, it seems that in some fields with low ICC, improvement of teaching and evaluation methods is essential. Generally, it is suggested to apply new and modern teaching and evaluation methods to increase the ICC and consistency of students' scores. Also, the students' motivation for a more effective learning experience should be promoted.

Clustering in the field of occupational health engineering, health education, and biostatistics was an effective method, which could successfully identify courses with similar scores or classify similar courses in separate clusters. In most fields, the ICC of clusters increased, which shows that some courses were different and that students should not necessarily obtain high scores in all courses. It is recommended to examine more educational groups and more entries in future studies. Also, further research, especially qualitative research, is recommended in departments with low ICC.

The present study had some limitations. The students' data and scores were included only during three years (2013 - 2015), and the sample size for each field of study was small. We used only three entries to remove the effect of faculty member (to have a single faculty member in the course). By including few entries (three entries in the present study), we hoped that the faculty member involved in each course would not change and that consistency and ICC would not be influenced.

Acknowledgments

We would like to thank the Educational Deputy and Office of Postgraduate Studies of Kerman University of Medi-

Table 3. Cluster of MSc Courses in Each Field in the School of Public Health

Field of Study	Course
Epidemiology	
Cluster 1	Epidemiology of non-contagious diseases, social epidemiology in health, seminar, and application of epidemiology in health systems
Cluster 2	Principles of epidemiology, research methodology, epidemiology of contagious diseases, computer-based analysis of health data, and epidemiological methods
Cluster 3	Biostatistics methods (1); biostatistics methods (2); statistical methods in epidemiology, and sampling methods
Biostatistics	
Cluster 1	Survival data analysis in medical research, applied multivariate analysis, design and analysis of clinical trials, statistical methods in epidemiology
Cluster 2	Biostatistics methods (2); biostatistics methods (3); and seminar
Cluster 3	Inference of biostatistics and analysis of categorical data
Health education	
Cluster 1	Health promotion and healthy lifestyle, school health education and health promotion, internship, and health education and communication (2)
Cluster 2	Health education and communication (1); group dynamics, technology and educational methods, communication in health education and health promotion, psychology of healthy behavior, and research methodology in health education and health
Cluster 3	Health sociology and biostatistics
Occupational health engineering	
Cluster 1	Design of lighting in workplace, occupational toxicology, applied occupational toxicology, and evaluation of air pollution
Cluster 2	Work-related diseases, radiation protection in the workplace, design of air pollution control systems in the workplace, and design of noise and vibration control systems
Cluster 3	Applied human-factors engineering (1); design of heat, cold, and humidity control systems, applied human factors engineering (2); modeling in occupational hygiene, and workplace safety (system safety)
Environmental health engineering	
Cluster 1	Management of radiation protection, soil pollution, wastewater treatment plant design, industrial wastewater management, and apprenticeship
Cluster 2	Water treatment plant design, management of water resources development, solid waste management, air pollution control, application of advanced methods in pollutant analysis, and evaluation of the effects of development on the environment

Table 4. Bayesian ICC for MSc Clusters in Each Field

Field of Study	ICC (95% Confidence Interval)		
	Cluster 1	Cluster 2	Cluster 3
Epidemiology	0.08 (0.0007, 0.28)	0.16 (0.004, 0.35)	0.11 (0.06, 0.49)
Health education	0.38 (0.11, 0.64)	0.56 (0.35, 0.75)	0.11 (0.0002, 0.50)
Biostatistics	0.64 (0.43, 0.82)	0.12 (0.0005, 0.44)	0.18 (0.0003, 0.61)
Occupational health engineering	0.32 (0.008, 0.65)	0.25 (0.001, 0.60)	0.33 (0.04, 0.63)
Environmental health engineering	0.03 (0.0005, 0.13)	0.01 (0.0001, 0.08)	-

cal Sciences, who helped us collect the data for this study.

Footnotes

Authors' Contribution: Study concept and design: Fatemeh Mohtasham and Yunes Jahani. Acquisition of data: Fatemeh Mohtasham, Yunes Jahani, Fariba Sharififar, and Abbas Aghaei Afshar. Analysis and interpretation of data: Fatemeh Mohtasham, Yunes Jahani, Abbas Behrampour, Fariba Sharififar, and Abbas Aghaei Afshar. Drafting of the manuscript: Fatemeh Mohtasham, and Yunes Jahani. Critical revision of the manuscript for important intellectual content: Fatemeh Mohtasham, Yunes Jahani, Abbas Behrampour, Fariba Sharififar, and Abbas Aghaei Afshar. Statistical analysis: Fatemeh Mohtasham, Yunes Jahani, and Abbas Behrampour. Administrative, technical,

and material support: Fatemeh Mohtasham, Yunes Jahani, Abbas Behrampour, Fariba Sharififar, and Abbas Aghaei Afshar. Study supervision: Yunes Jahani.

Conflict of Interests: None declared by the author.

Ethical Approval: The study protocol was approved by the Ethics Committee of Kerman University of Medical Sciences. The Ethic approval code is IR.KMU.REC.1396.2198.

Funding/Support: The manuscript has been funded by Kerman University of Medical Sciences, Kerman, Iran.

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Strides Dev Med Educ. 2019 December; 16(1):e84403. doi: 10.5812/sdme.84403.

Published online 2019 December 25. **Research Article**

Readiness for Electronic Learning and Ranking of Related Factors Using the Fuzzy PROMETHEE: A Study at Kerman University of Medical Sciences, Iran

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Received 2018 September 18; **Revised** 2019 April 06; **Accepted** 2019 April 10.

Abstract

Background: Electronic learning (e-learning), as a tool for the acquisition of knowledge, is rapidly expanding and evolving, but in order to employ such a project, identify its strengths and weaknesses, and make the right decision, organizations and institutions should carefully analyze the degree of their readiness.
Objectives: Therefore, the present study aimed at evaluating the readiness of Kerman University of Medical Sciences for e-learning implementation from the viewpoint of faculty members and ranking the identified factors.
Methods: The present survey was conducted on 402 faculty members at Kerman University of Medical Sciences as the statistical population; however, a total of 196 subjects were selected using Morgan table and stratified random sampling. Data were collected by a questionnaire measuring the readiness of university based on four factors. The viewpoint of eight experts as well as fuzzy preference ranking organization method for enrichment evaluation (PROMETHEE) was used to rank the factors.
Results: All the studied factors, except human resources, had good status and overall readiness of Kerman University of Medical Sciences was at a good level. In addition, ranking of the factors revealed that human resources were the most important factor to assess readiness for e-learning implementation at Kerman University of Medical Sciences.
Conclusions: According to the viewpoint of faculty members, Kerman University of Medical Sciences is ready for e-learning implementation and no significant difference was found between the academic rank and academic department of faculty members and their attitudes toward e-learning.

Keywords: E-Learning, Readiness for E-Learning, Faculty Members, Fuzzy PROMETHEE

1. Background

Technology advents in recent years have shown new applications of electronic learning (e-learning), so that its utilization in education has provided opportunities for the employment of new learning methods and effective teaching styles (1). Meanwhile, e-learning is one of the most widely used terms entered education arena through information technology (IT), and many educational centers, especially universities, utilize it as part of their long-term programs and mainly invested heavily in it (2).

Generally, e-learning refers to the use of network technology (e g, the internet) to design, deliver lessons, and implement learning environments for the realization and continuation of learning (3). In the definition provided by Romiszowski (4), which seems more comprehensive than other ones, e-learning consists of four dimensions. According to his definition, e-learning can be an individual or group activity. In addition, it has continuous (synchronous communication) (synchronous and real-time communication with people) and discrete (non-synchronous communication) (using educational CDs provided previously or delivered through educational materials called on the internet) dimensions (4). In fact, e-learning consists of two broad sets of IT and education and research (5).

Education, especially medical education, faced increasingly utilization of e-learning tools in recent years. Global e-learning market reached US$107 billion in 2015, according to reports; while it was US$32.1 billion in 2010. It also had an average annual growth rate of 9.2% over the past five years and it is expected that e-learning to grow in Asia at an annual rate of 25% - 30% and global rate of 15% - 30%. Nevertheless, American and European institutions currently hold 60% and 15% of the e-learning market, re-

spectively (6).

There are many reasons for the growth of e-learning implementation projects, most notably the cost of education. A review of the literature revealed that institutions made good savings by implementing e-learning, since its most important feature is that it can occur at any time even in the workplace and does not require the physical presence of a teacher and traditional classroom scheduling (7). Due to the flexibility created for both the learner and the teacher, many universities, institutes, and educational organizations are rapidly implementing this technology (8). For example, Shultz and Fogarty reported that the large International Business Machines (IBM) saved US$16 million by being pioneer in the implementation of e-learning. PricewaterhouseCoopers could also reduce its training costs by 87% through the implementation of e-learning. They reported that implementing e-learning resulted in 33% - 50% cost savings, 50% time savings, and better results (9).

Implementation of e-learning, in addition to cost savings, has other advantages such as faster development, updating courses, faster training, access at any time and place, opportunities for external learning, improving motivation, and implementing strategic issues (10, 11).

In addition to e-learning advantages, many experts and researchers pointed out that the e-learning projects should be implemented carefully, since without careful planning, e-learning may lead to extra costs, failure to achieve goals, and ultimately, project failure. Researchers also argue that, like many other innovations, successful implementation of e-learning requires considerable analyses, time for development, sufficient funding, appropriate technological structure, and senior management support. Therefore, the necessary preparations should be assessed for implementing e-learning (12-15). Many studies are conducted to assess the readiness of an organization for implementing e-learning (16-18).

A review of the literature showed that several strategies, tools, models, and guidelines are available for practitioners to assess the implementation of e-learning. For example, Haney suggested that the practitioners answer 70 questions to assess the implementation of e-learning. He categorized the questions into seven factors as human resources, e-learning management system, learners, content, IT, financial resources, and e-learning providers (19). Similarly, the studies by Rosenberg (20), Panda and Mishra (21), and Jacobs and Washington (22) also assessed e-learning implementation.

Rogers (23) stated that any system (e.g., culture, country, manpower, etc.) has its own norms and is effective in spreading innovation in the system. Therefore, the considered indicators may not be applicable to other environments, countries, cultures, etc. Many e-learning assessment variables and indicators are tailored for a certain environment and are not suitable for other settings or should be customized (23); the present study was no exception. Therefore, the variables and factors measured in the current study were determined by examining the details of the assessment models, indicators, and tools available in e-learning and fitting them with cultural features; accordingly, four key elements were assessed: technology, innovation, human resources, and personal growth.

Technology is one of the first factors that should be effectively addressed in adapting technical innovation (23). In general, technology consists of two essential components of hardware and software. Organizations deciding on the implementation of e-learning should meet the minimum hardware and software requirements. E-learning hardware includes tactile tools such as servers and networks. It is very difficult to implement e-learning without proper equipment and ease of access (13). The e-learning readiness assessment tool should determine the accessible hardware. Therefore, the present study included questions on easy access to computers, internet, and intranet. Nevertheless, the ease of access to hardware is not enough and users should have basic skills to work with these tools.

Innovation means exploring past experiences. Past experiences within a system about an innovation can be effective in adopting a new technology (23). Past experiences of e-learning practitioners about an innovation and their previous information about its acceptance or rejection in any process and project, in addition to internal, external, legal, and political barriers, have a significant impact on being pioneer in the implementation of e-learning. Therefore, the present study also evaluated the innovation factor.

A review of the literature revealed that human resource skills play a key role in the success of e-learning (13). In this regard, the education level of e-learning practitioners is one of the predictors of readiness. In other words, organizations, institutions, and universities with more skilled human resources are more likely to succeed in e-learning implementation.

Personal growth is the last factor in assessing e-learning readiness. Institutions planning to invest in pioneering individual and organizational developments have managers who believe in personal growth capability and their employees have a positive attitude toward development and can more easily apply innovations such as e-learning (13). In addition, individuals with more personal growth appear to be more inclined to learn about technology, understand new online education and learning ways, and being familiar with mere educational processes.

Since e-learning is still in its infancy in higher educa-

tion, especially medical sciences universities, and implementing e-learning is very sensitive, assessment of universities and evaluation of their attitudes and requirements to address their weaknesses and strengths and taking the right measures are of particular importance.

2. Objectives

Therefore, the present study aimed at assessing the readiness degree of Kerman University of Medical Sciences for the implementation of the e-learning project and ranking the related factors. The research questions were as follows: (1) how ready is the Kerman University of Medical Sciences for the implementation of e-learning from the viewpoint of faculty members?; (2) is there a relationship between the faculty members at Kerman University of Medical Sciences and their attitudes toward readiness for e-learning?; (3) is there a relationship between the academic rank of faculty members at Kerman University of Medical Sciences and their attitude toward readiness for e-learning?; (4) what is the academic rank of e-learning practitioners at Kerman University of Medical Sciences using fuzzy PROMETHEE?

3. Methods

The present survey was performed in 2017. The statistical population included all faculty members of Kerman University of Medical Sciences (n = 402) of whom 196 subjects were selected by stratified random sampling and Morgan table. This sampling method was employed in order to involve all academic departments (seven faculties) in the research.

Table 1 shows the number of faculty members at Kerman University of Medical Sciences and the number of subjects selected from each department.

Table 1. Number of Statistical Population and Samples Based on Academic Department at Kerman University of Medical Sciences

Academic Department	Statistical Population, N	Sample Size, N
Faculty of Public Health	28	14
Faculty of Midwifery and Nursing	24	12
Faculty of Medicine	230	112
Faculty of Allied Medicine	7	3
Faculty of Pharmacy	27	13
Faculty of Dentistry	67	33
Faculty of Management and Medical Informatics	19	9
Total	402	196

To evaluate the readiness of Kerman University of Medical Sciences for the implementation of e-learning project and the attitude of faculty members towards it, a questionnaire was used, which its validity and reliability were confirmed in other studies on e-learning (13). To be more reliable, the validity of the questionnaire was evaluated and verified using the opinions of experts and academic staff. For this purpose, the content validity was used; i.e., six academic staff and experts were asked to express their views on the items of the questionnaire and determine their appropriateness using the options of excellent fit, good fit, partially fit, poor fit, and very poor fit, scored respectively as 1, 0.75, 0.5, 0.25, and 0. The validity of the questionnaire was 0.93, which was confirmed.

Cronbach's alpha coefficient was used to evaluate the reliability of the questionnaire, which was 0.87 and confirmed. The questionnaire used consisted 25 items in two parts. The first part dealt with demographic information including gender, academic department, and academic rank of professors and the second part included items on the readiness of the university and teachers' attitudes toward e-learning based on four factors of technology, human resources, personal growth, and innovation. A five-point Likert scale from 1 to 4 was used for scoring. Thus, faculty members were asked to choose one of the strongly disagree, somewhat disagree, somewhat agree, and strongly agree options with regard to the degree of their faculty readiness or their personal attitude toward the subject.

According to the scores given, the average level of readiness or the line between university readiness and non-readiness for e-learning implementation was 3.4, because dividing the number of intervals by scales results the distance of 0.8. Hence, levels of readiness were identified (Figure 1) (24). In addition, overall university readiness for e-learning was assessed using the mean score of the research questions (or the mean score of the research variables). As soon as the validity and reliability were confirmed, the questionnaire was placed at disposal of the faculty members and then collected after completion.

Data were analyzed using descriptive and inferential statistics. In descriptive statistics, mean and standard deviation and in inferential statistics ANOVA were used. Finally, the data were analyzed in SPSS version 22 (IBM Corporation, version 22, Armonk, NY).

Next, a new fuzzy PROMETHEE was used to rank the e-learning readiness factors. It falls into the category of techniques for ranking options. The PROMETHEE I (partial ranking) and PROMETHEE II (complete ranking) were introduced in 1982 by Brans et al. (25), and a few years later, they developed PROMETHEE III (ranking based on intervals) and PROMETHEE IV (continuous case). Likewise, in later years, other versions of the technique- i.e.,

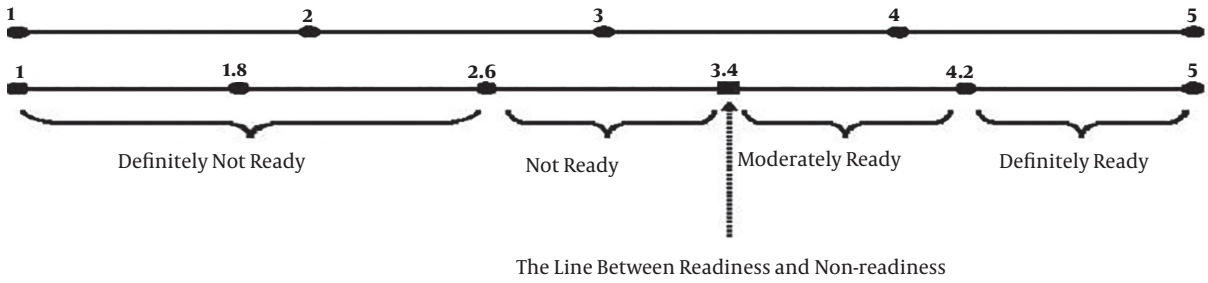

Figure 1. Classification of e-learning readiness

PROMETHEE V (multi-criteria decision making with segmented restrictions) and PROMETHEE VI (representation of the human brain) were introduced. This technique is successfully used in various fields so far. The fuzzy PROMETHEE introduced by Ho (26) is the combination of fuzzy logic and the PROMETHEE with greater flexibility (27).

After examining the factors and the readiness of the university for the implementation of e-learning, the questionnaires were given to experts (one expert per faculty, except the faculty of medicine with two experts) to determine the importance of each question according to their viewpoints. Since it was essential to choose participants who were fully aware of the current status, experts were selected from the heads or deputies of each faculty. Since the involved experts had different abilities, experiences, and competencies in group decision-making, different weights were given to them (Table 2). Also, since the faculty of medicine was more privileged than the other ones, higher weights were given to its experts. Since personal characteristics of individuals influence their subjective interpretations of qualitative variables, by defining the domain of qualitative variables, experts responded to the questions with the same mentality. These variables are defined as triangular fuzzy sets in Table 3.

The fuzzy sets in Table 3 determined by the Minkowski formula were calculated using Equation 1.

$$x = m + \frac{(\beta - \alpha)}{4} \quad (1)$$

Also, the fuzzy mean of each component was calculated using Equations 2

$$A_i = \left(a_1^{(i)}, a_2^{(i)}, a_3^{(i)}\right), i = 1, 2, 3, \ldots, n \quad (2)$$

$$A_{ave} = (m_1, m_2, m_3) = \left(\frac{1}{n}\sum_{i=1}^{n} a_1^{(i)}, \frac{1}{n}\sum_{i=1}^{n} a_2^{(i)}, \frac{1}{n}\sum_{i=1}^{n} a_3^{(i)}\right) \quad (3)$$

where Ai represents the n_i viewpoint of the expert and A_{ave} represents the mean of expert views.

After receiving the questionnaires, the experts described the importance of each question with one of the fuzzy linguistic variables (very low, low, medium, high, and very high). Then, after evaluating the questionnaires, the data were ranked using fuzzy PROMETHEE in Visual PROMETHEE software.

The present study protocol was approved by the Ethics Committee Kerman University of Medical Sciences (code no.: IR.KMU.REC.1397.623).

4. Results

Descriptive statistics of participants' demographic variables are shown in Table 4.

The findings of each question and factor as well as overall readiness of the university for e-learning implementation are shown in Table 5. Among the questions on human resource factor, question 2 got the lowest mean score indicating that the number of e-learning experts at Kerman University of Medical Sciences (i.e., education via internet or use of software for presenting courses; e.g., graphics software) was at a moderate level. Also, among the questions raised, question 4 with a mean score of 4.07 indicated lack of enough experts outside the university to implement e-learning.

Based on Table 5, data on faculty members' attitudes toward personal growth and university readiness were analyzed using seven questions, of which question 9 had the lowest mean score indicating that the professors were not enough ready to participate in e-learning. Question 6 also had a lower mean score, indicating the lack of enthusiasm of the faculty members to present the lessons electronically. The mean score of question 8 indicated that according to the viewpoint of faculty members, funding could be earmarked for e-learning. The higher mean scores of questions 10 and 13 indicated that faculty members believed that e-learning can help achieve university goals, and the personal growth of faculty members may lead to the enhancement of the university standing in Iran.

Table 2. Expert Weights to Rank Factors of E-learning Readiness

Expert Number	1	2	3	4	5	6	7	8
Expert weight	0.07	0.06	0.28	0.28	0.02	0.06	0.18	0.05

Table 3. Definition of Verbal Research Variables

Verbal Variables	Triangular Fuzzy Set	Crisp Set
Very high	0, 0.25, 1	0.9375
High	0.15, 0.15, 0.75	0.7500
Moderate	0.25, 0.25, 0.5	0.5000
Low	0.15, 0.15, 0.25	0.2500
Very low	0.25, 0, 0	0.625

Table 4. Demographic Characteristics of Faculty Members at Kerman University of Medical Sciences[a]

Demographic Variable	Values
Gender	
Male	125 (64)
Female	71 (36)
Academic rank	
Lecturer	13 (7)
Assistant Professor	159 (81)
Associate Professor	18 (9)
Professor	6 (3)

[a]Values are expressed as No. (%).

Technology was another factor that assessed teachers' attitudes via questions 14 to 21. Accordingly, questions 14 and 15 indicated that access to technology (personal computers as well as intranet and internet) was desirable, but in terms of basic skills for using computer and internet as well as regular use of technology and adoption of new technological innovations, the faculty members were at a lower level and there were weaknesses. Questions 20 and 21 also showed a somewhat desirable level and managers had a positive attitude toward technology and sufficient funding was earmarked for e-learning.

The mean scores of questions on innovation factor were somewhat in the same range, 4.11 to 4.56, implying that the university readiness to adopt innovation was at a desirable level.

Finally, the overall mean score of the factors indicated that the overall readiness of Kerman University of Medical Sciences was at a good level. All factors, except the human resources, had a favorable status.

In addition to the descriptive analysis of the data, it was attempted to provide inferences about attitudes of faculty members toward e-learning. For this purpose, ANOVA was used to answer question 2; the results and scores of attitudes toward e-learning in each department are shown in Table 6. Comparing P = 0.279 and acceptable error value (α = 0.05) showed that P value was greater than that of acceptable error (P > 0.05); thus, with 95% confidence interval, no relationship was found between faculty members' attitudes and readiness for the implementation of e-learning, and their academic departments.

ANOVA was used to answer question 3. The results and scores of attitude toward e-learning are shown based on academic rank of respondents in Table 7. Comparing P = 0.671 and acceptable error value (α = 0.05) showed that P value was higher than that of acceptable error (P > 0.05). Thus, with 95% confidence interval, there was no relationship between the faculty members' attitude and readiness for e-learning, and their academic rank.

In order to answer question 4 and rank the e-learning readiness factors at Kerman University of Medical Sciences, the experts were provided with a questionnaire to determine the importance of each question through verbal variables.

Mean fuzzy score of experts on the importance of questions and factors are presented in Table 8. These scores were the inputs of Visual PROMETHEE to rank the factors. According to the software output shown in Figure 2, human resources was the most important factor followed by technology, personal growth, and innovation (Table 9).

5. Discussion

The present study investigated the readiness of Kerman University of Medical Sciences for e-learning implementation from the viewpoint of faculty members and ranked the related factors. The results showed that the university was generally ready to implement the e-learning project, but performance should to be improved in some areas, especially the human resources. This means that professors and academic staff who play role as e-learning practitioners should first be familiarized with general issues such as a positive attitude toward innovation and new electronic and information technologies, and necessary trainings have to be delivered to them. Then, to better implement such a project, e-learning professionals including experienced content designers, network and computer experts, IT managers, educational managers, and professors

Table 5. Attitude of Professors at Kerman University of Medical Sciences Toward the Readiness of the University for E-learning

Item	Question	Mean Score
1	Experienced human resources is available at the university to run and manage short-term courses for the enhancement of professors' level.	4.14
2	There are experts in e-learning at the university.	3.98
3	Professors have sufficient knowledge and skills in technology-based education.	4.39
4	Professionals are available outside the university to design, implement, and manage e-learning.	4.07
5	Most university staff has sufficient knowledge and skills in technology-based education.	4.34
Mean human resources score		4.18
6	Professors have enthusiasm to present their lessons electronically.	4.07
7	Professors have enough day time to enhance their education.	4.11
8	Funding can be earmarked for e-learning at the university.	4.67
9	Professors are ready to participate in e-learning.	4.05
10	E-learning helps the university achieve its goals.	4.65
11	The organizational structure of the university is appropriate for the implementation of e-learning.	4.29
12	The university is definitely ready to implement e-learning.	4.43
13	Senior and middle managers believe that the personal growth of professors can enhance the standing of the university in Iran.	4.57
Mean personal growth score		4.36
14	All professors have access to a personal computer.	4.85
15	All professors have access to internet and the university intranet.	4.81
16	All professors have sufficient basic knowledge and skills in computers.	4.12
17	All professors have sufficient basic knowledge and skills in internet.	4.16
18	Professors are eager to regularly use technology in their affairs.	4.01
19	Most professors embrace technological innovation.	4.16
20	Senior and middle managers have a positive attitude toward the application of technological innovation in affairs.	4.23
21	Based on previous experience, the university earmarks funds for technology.	4.33
Mean technology score		4.33
22	Most of the past innovations at the university are welcomed by professors.	4.55
23	Most of the past innovations at the university are welcomed by staff.	4.22
24	Most of the past innovations at the university are welcomed by senior and middle managers.	4.56
25	There is no domestic or foreign legal and political prohibition to embrace innovation.	4.11
Mean innovation score		4.36
Overall readiness of the university		4.31

interested in such innovations are required that access to such experts was somewhat problematic in Iran.

A deeper examination of the tables revealed that all questions with slightly lower mean scores were related to the direct performance of faculty members. Knowledge and skills of professors in technology-based education, their eagerness and interest in delivering lessons via e-learning, readiness of professors to participate in e-learning, their sufficient knowledge and skills in computer and internet, and interest in regular use of technology for affairs were the factors that had lower scores, and the reason can be attributed to the traditional structure of Iranian universities and the lack of movement towards entrepreneurial and value-creating universities, and lower interest of professors, especially older ones, to such environments. Therefore, the attitude and skills of professors in innovation and new technologies should be enhanced and improved before the implementation of such projects.

Ranking factors using expert opinions and fuzzy PROMETHEE showed that the human resources was the most important factor for the implementation of e-learning at Kerman University of Medical Sciences. Many

Table 6. Mean Scores of Academic Departments and Relationship with Faculty Members' Attitude Toward the University Readiness[a]

Academic Department	Number	Mean
Faculty of Public Health	14	4.23
Faculty of Midwifery and Nursing	12	4.35
Faculty of Medicine	112	4.32
Faculty Of Allied Medicine	3	4.09
Faculty of Pharmacy	13	4.23
Faculty of Dentistry	33	4.38
Faculty of Management and Medical Informatics	9	4.29
Total	196	4.31

[a] F = 1.257 and P value = 0.79.

Table 7. Mean Scores of Faculty Members' Academic Rank and Relationship with Their Attitudes Toward University Readiness[a]

Academic Rank	Number	Mean
Lecturer	13	4.13
Assistant Professor	159	4.34
Associate Professor	18	4.27
Professor	6	4.18
Total	196	4.31

[a] F = 0.503 and P value = 0.671.

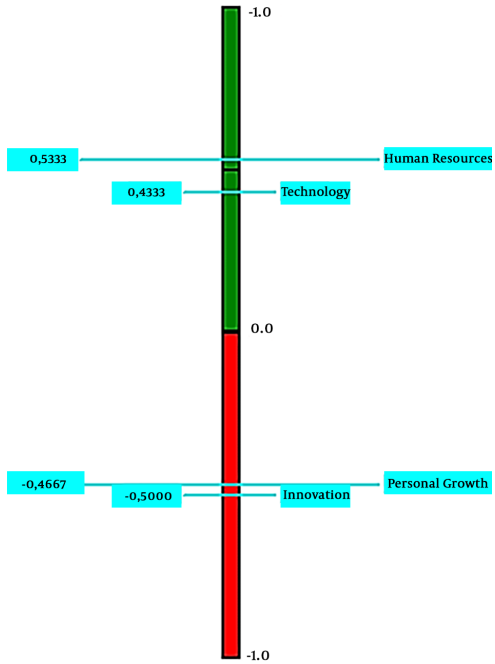

Figure 2. Visual PROMETHEE software output and ranking of e-learning readiness factors

studies state that the most fundamental organizational resource is human resources and its approach and performance toward the organization, environment, and clients (28); e-learning is no exception. The rules of e-learning and human resources development are rapidly changing today. New rules of e-learning every day fulfill some of its value-added promises and further marginalize rules of traditional learning, but this important is fruitless without its essential elements, which human resources is the most important ones. Therefore, the creative and knowledgeable human resources with positive attitude is the main factor in implementing e-learning.

Questions 2 and 3 were to investigate the relationship between academic department and academic rank of Faculty Members at Kerman University of Medical Sciences and their attitudes toward the university readiness for e-learning implementation. According to the results, there was no significant relationship between faculty members' attitude, and their academic department and academic rank. In other words, there was no difference in the attitude of faculty members from different faculties with different academic ranks regarding the readiness of Kerman University of Medical Sciences for the implementation of e-learning.

Because of contingency of the subject, although the results of the present study can be compared with those of some aforementioned ones, it should be conducted with caution, since the application of e-learning in medical sciences is still at the forefront and the present study only focused on four factors affecting the readiness of the university for the implementation of e-learning project from the viewpoint of faculty members and it is not possible to claim that these factors and questions were sufficient to obtain information and data related to readiness for e-learning. Further factors and questions can be easily raised.

However, the questionnaire items assessed some important issues for the implementation of e-learning by examining the research literature, but further factors can be considered in other institutions and universities to obtain more detailed information. In comparison, the first step in developing and promoting e-learning in a university is to determine the current status of the university and consider all the variables and factors influencing the implementation of e-learning project correctly and appropriately.

Nowadays, with the advent of computers and internet in education, universities cannot ignore e-learning. Computers and internet are the indispensable part of higher education and medical education, and utilization of these capabilities are recommended for most educational sys-

Table 8. Mean Defuzzified Scores of Experts

Expert Number	Human Resources	Personal Growth	Technology	Innovation
1.	0.8996	0.7810	0.8278	0.7810
2.	0.8122	0.7498	0.8903	0.5625
3.	0.8496	0.7731	0.7731	0.7185
4.	0.8622	0.8669	0.7810	0.6096
5.	0.9370	0.7810	0.8356	0.8278
6.	0.7748	0.7185	0.8356	0.5468
7.	0.7622	0.7185	0.7810	0.8278
8.	0.8996	0.7263	0.8590	0.7810

Table 9. Ranking of E-Learning Readiness Factors Using Fuzzy PROMETHEE

Factor	Phi	Phi^+	Phi^-
Human resources	0.5333	0.5333	0.0000
Personal growth	0.4333	0.4733	0.0400
Technology	-0.4667	0.0600	0.5267
Innovation	-0.5000	0.0933	0.5933

tems and institutions, but in the meantime, understanding of facts, conditions, and capabilities is essential for successful implementation of e-learning projects. In many cases, negligence of current prerequisites, program, and capabilities can lead to the failure of e-learning projects. Understanding the strengths, threats, and opportunities in the e-learning environment, as well as the needs of audiences, and designing and delivering effective educational materials, and creating learners' communities to build knowledge ensure the success of such a project. What was done in the present study was to understand part of existing conditions and examine the readiness of Kerman University of Medical Sciences from the viewpoint of faculty members based on four factors of human resources, personal growth, technology and innovation. According to the obtained results, the university was ready for the implementation of e-learning. However, understanding the current facts, conditions, and prerequisites requires more instruments that can be found in other studies.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

Authors would like to thank all the Faculty Members at Kerman University of Medical Sciences for cooperation with the project.

Footnotes

Conflict of Interests: It is not declared by the authors.

Ethical Approval: The ethical code of the study was IR.KMU.REC.1397.623.

Funding/Support: It is not declared by the authors.

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Strides Dev Med Educ. 2019 December; 16(1):e85239. doi: 10.5812/sdme.85239.

Published online 2019 August 14. **Research Article**

Does Patient-Centered Attitude Improve During Internship? A Longitudinal Study

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Received 2018 October 11; **Revised** 2019 January 19; **Accepted** 2019 January 21.

Abstract

Background: The patient-centered approach improves the quality of health care. Promoting this approach will increase the patients' satisfaction and improve interpersonal skills among health care providers.
Objectives: The aim of the current study was to compare the viewpoints of interns toward the patient-centered approach in the beginning and the end of the internship at the Kerman University of Medical Sciences (KUMS).
Methods: This longitudinal study was carried out at KUMS between March 2017 and July 2018. All medical students who had passed the internship entrance exam were selected through a census. The Persian version of the patient-practitioner orientation scale (PPOS) was completed at the start and the end of the internship. This instrument has 18 items in two 9-item subscales: sharing and caring. The minimum and maximum scores were 1 to 6, respectively. The higher the score, the more the patient-centered orientation. The data were analyzed by SPSS using independent and paired *t*-tests, ANOVA, and multiple linear regression.
Results: The mean scores of PPOS were 3.92 ± 0.42 and 3.86 ± 0.37 at the beginning and the end of the internship, respectively. This difference was not statistically significant. The mean score of the caring subscale significantly increased during internship but no significant change was found in the mean score of the sharing subscale.
Conclusions: The results of our study showed that the patient-centered attitude toward patient caring improved during the internship in the majority of interns but no significant improvement was found in terms of patient sharing. Significant progress can be made in the quality of physician-patient communication and patient satisfaction if necessary training programs are run on patient-centeredness.

Keywords: Medical Student, Patient-Centeredness, Attitude, Internship

1. Background

Patient-centeredness is an important dimension of the quality of health care that is often overlooked. Patient-centered care is defined as considering patient values, preferences, and needs in a respectful and responsive manner (1). Previous studies revealed different dimensions for patient-centeredness. The characteristics of the clinician such as honesty, respect, and empathy, the clinician-patient relationship in a trusting and caring atmosphere, and considering patients' feelings, expectations, beliefs, concerns, and their social and psychological contexts are some of these important dimensions (2).

It has been found that patient-centeredness can increase the quality and efficiency and decrease the costs and utilization of health care. In addition, it is specified that this approach comes with higher satisfaction and better adherence to the treatment in patients (3).

It is the responsibility of medical schools to place value on communication skills and patient-centeredness and provide learning opportunities for their medical students as future doctors to be trained on how to communicate effectively with their patients. Nevertheless, the evidence reveals that patient-centeredness attitude declines during medical education (4, 5).

Ishikawa and colleagues found that patient-centeredness attitude declined in residents during the first year of residency (6). This reduction may be due to how we train our medical students. A curriculum that emphasizes on biological aspects of diseases has no efficiency in institutionalizing of such attitude. The intensity of the workload and responsibilities of medical students, which can lead to burn out, is another reason (7).

However, the evidence on this regard is contradictory so that some other similar studies indicate an increase or no significant change in patient-centeredness attitude during the course of study (8, 9).

Bombeke and colleagues, studying the medical schools of the Universities of Antwerp and Ghent, Belgium, revealed that in spite of the positive attitude toward patient-centeredness among medical students and acquiring patient-centered skills during the years of medical study, the level of competency in graduates is not satisfactory to face real working environment (4). Currently, there is no clear picture on the issue among our medical students at the Kerman University of Medical Sciences (KUMS), Kerman, southeast of Iran. Therefore, it is necessary to evaluate the current situation and plan accordingly to improve patient-centeredness among our graduates.

2. Objectives

The current study aimed to evaluate if patient-centeredness attitude improves during the internship at KUMS.

3. Methods

This descriptive-analytical longitudinal (panel) survey was carried out at KUMS from March 2017 to July 2018. All medical students (n = 82) who had passed the internship entrance exam were selected through a census method. The data were collected using a self-administered questionnaire, consisting of two sections. The first section comprised questions on demographic data, such as age, gender, residence status, and household income. The second part was the Persian version of the patient-practitioner orientation scale (PPOS).

The PPOS has 18 items in two 9-item subscales: sharing (1, 4, 5, 8, 9, 10, 12, 15, and 18) and caring (2, 3, 6, 7, 11, 13, 14, 16, and 17). The sharing subscale evaluates the extent to which the responder believes that the practitioner should share information with the patient and involve his/her in decision-making. The caring subscale reflects whether the practitioner considers the patient's feelings, expectations, and lifestyle. The questions are scored based on a 6-point Likert scale ranging from 1 = completely agree to 6 = completely disagree. Thus, the minimum and maximum scores were 1 to 6, respectively, for each item of the questionnaire. According to the original version of the questionnaire, a mean total score for the whole questionnaire and its subscales is calculated in the range of 1 to 6. The higher the score, the more patient-centered orientation. A mean score of $\geq$ 5 reflects a patient-centered viewpoint, 4.57 - 4.99 indicates a moderate view, < 4.57 points to a doctor-centered perspective. The psychometric properties of the original and Persian versions were confirmed (10-12). In the current study, using a pilot study on 30 interns, the internal consistency of the PPOS was evaluated and determined as 0.60. These participants then entered into the sample.

The participants completed the questionnaire twice (at the start and the end of the internship). Therefore, a code was given to each questionnaire and the students were asked to remind their code for the second round of the study; thus, it was possible to compare the results. It lasted approximately 10 minutes to complete each questionnaire.

Our study was approved by the Ethics Committee of Kerman University of Medical Sciences (IR.KMU.ACRS.REC.1396.1103). The participants were assured that their data would be used only for research purposes.

The data were analyzed by SPSS version 19 using the Kolmogorov Smirnov test, independent *t*-test, paired *t*-test, and ANOVA.

4. Results

In this study, 82 medical students participated (response rate: 80%). The mean age was 25.50 $\pm$ 0.9 years with minimum and maximum of 24 and 30 years, respectively. The majority of the participants were female (70.0%) and single (77.0%) with a monthly household income of equal to or more than 20 million RLs (81.7%) (Table 1).

Table 2 shows the mean scores of PPOS and its subscales based on the demographic data. Accordingly, there were no statistically significant differences in the scores of PPOS and its subscales according to demographic data (P > 0.05).

Table 3 compares the mean $\pm$ SD scores of PPOS and its subscales at the start and the end of the internship. Accordingly, the scores of PPOS and the sharing subscale decreased at the end of the internship but this difference was not statistically significant. The score of the caring subscale increased significantly at the end of the internship (P = 0.001).

The majority of the participants (74.4% - 95.1%) had a doctor-centered attitude at the start and the end of the internship in terms of PPOS and its subscales.

5. Discussion

The current study was carried out to evaluate if the patient-centeredness improves during the internship course among the interns of KUMS. Our findings revealed

Table 1. Demographic Data of the Participants in the Patient-Centeredness Study in KUMS[a]

Variable	Value
Age, mean ± SD	25.50 ± 0.9
Gender	
Male	33 (40)
Female	49 (60)
Marital status	
Single	58 (71)
Married	24 (29)
Origin	
Native	64 (78)
Non-native	18 (22)
Residence	
Dormitory	22 (26.8)
Private house	34 (41.5)
Parents house	26 (31.7)
Household income, IRRs	
< 20 million	15 (18.3)
≥ 20 million	67 (81.7)

[a] Values are expressed as No. (%) unless otherwise indicated.

the majority of our participants had a doctor-centered attitude at the beginning and the end of the internship. During the internship, no significant change was found in the viewpoint of our participants in terms of PPOS and its sharing subscale. Tsimtsiou and colleagues revealed that the patient-centered attitude significantly decreased while medical students get to higher grades of education, which are compatible with the current study (10). We also found that the mean scores of PPOS and its sharing subscale decreased but the difference was not statistically significant, which may be due to the small sample size.

In the clinical settings, students observe the attitudes and behaviors of the medical professors during the clinical rounds, and informal training sessions. Therefore, the attitude and behavior of clinical professors can be effective in the shaping of students' experiences, thoughts, values, and professional behaviors. It is a concept that is referred to as "hidden curriculum," through which, medical students, as future doctors, get familiar with the medical culture and professionalism (13).

Our finding showed that the hidden curriculum had a weak role in institutionalizing the patient-centered viewpoints in our interns, probably due to traditional practices and skeptical and stereotypical attitude of clinical teachers and other health care providers (14). In addition, the context in which the patient is being cared for has a very important role in limiting or supporting patient-centered care. The context includes patients, providers, and settings, as well as how the patient-centeredness is defined (15, 16). Mirzazadeh and colleagues showed in Babol University of Medical Sciences in 2010 that clinical faculty members have a doctor-centered viewpoint in general and in terms of patient sharing and caring. This study suggested that doctor-patient communication skills workshops be conducted for clinical faculty members (11). Therefore, it is essential to plan similar workshops at Kerman University of Medical Sciences both for faculty members and students, especially in clinical stages and even before the start of the internship. It is better to use modern and attractive training methods in these workshops.

In the current study, there was no significant difference in the scores of PPOS and its subscales at the beginning and the end of the internship based on demographic characteristics such as gender, marital status, residence status, and income. In addition, no significant relationship was found between age and the scores of PPOS and its subscales. Similarly, Wang and colleagues, in China, showed that there was no correlation between the demographics of physicians and patient-centeredness, which is consistent with our study (17). Therefore, considering the demographics of physicians may not seem necessary as the first step in conducting communication skills workshops to create a patient-centered approach. However, similar studies have shown different results in this regard.

Mirzazadeh and colleagues showed that with increasing age and history of clinical practice in clinical faculty members, the overall patient-centeredness score reduces (11). Ribeiro and colleagues in Brazil found that female students, senior students, and those with lower family income studying in the medical schools had a more patient-centered perspective (5). Lee and colleagues showed that female medical students had a higher patient-centeredness score (8). Taghipour revealed female interns, compared to their male counterparts, scored themselves lower in their support for patient-centered communication . Krupat et al. found female physicians are more patient-centered than male physicians (18).

Our finding showed that the score of patient caring subscale significantly increased during the internship period, which is consistent with a Chinese study. It seems that the conditions of our clinical settings at Kerman University of Medical Sciences to some extent paved the way for creating such attitude in interns to consider patients' expectations, feelings, and lifestyles during medical consultation.

One limitation of our study was that the data were collected through a self-reported questionnaire and in two stages; thus, it is possible that the questionnaires were not

Table 2. The Comparison of the Mean Scores of PPOS and Its Subscales According to Demographic Data[a]

Variable	Total Score of PPOS	P Value	Sharing Score	P Value	Caring Score	P Value
Gender		0.32		0.13		0.71
Male	3.98 ± 0.4		4.05 ± 0.6		3.93 ± 0.4	
Female	3.88 ± 0.4		3.87 ± 0.4		3.89 ± 0.5	
Marital status		0.91		0.64		0.58
Single	3.93 ± 0.4		3.93 ± 0.5		3.92 ± 0.5	
Married	3.92 ± 0.3		3.99 ± 0.5		3.86 ± 0.4	
Origin		0.72		0.42		0.43
Native	3.93 ± 0.4		3.92 ± 0.5		3.92 ± 0.4	
Non-native	3.89 ± 0.3		4.03 ± 0.4		3.82 ± 0.4	
Residence		0.88		0.75		0.81
Dormitory	3.91 ± 0.4		4.01 ± 0.5		3.86 ± 0.5	
Private house	3.90 ± 0.3		3.90 ± 0.5		3.90 ± 0.4	
Parents house	3.96 ± 0.4		3.94 ± 0.4		3.95 ± 0.5	
Household income, Rls		0.70		0.17		0.77
< 20 million	3.96 ± 0.5		4.11 ± 0.4		3.87 ± 0.5	
≥ 20 million	3.91 ± 0.4		3.90 ± 0.5		3.91 ± 0.4	

[a]Values are expressed as mean ± SD.

Table 3. The Comparison of the Mean ± SD Scores of PPOS and Its Subscales at the Start and the End of the Internship[a]

Scores	At the Start of the Internship	At the End of the Internship	*t*	P Value
PPOS	3.92 ± 0.4	3.86 ± 0.4	1.15	0.25
Sharing	3.94 ± 0.5	3.79 ± 0.5	1.92	0.06
Caring	3.90 ± 0.4	4.25 ± 0.5	-4.55	0.001

[a]Values are expressed as mean ± SD.

completed accurately. Another limitation was our small sample size.

5.1. Conclusions

The results of our study showed that the patient-centered attitude toward patient caring improved during the internship in the majority of interns but no significant improvement was found in terms of patient participation. The lack of awareness about patients' rights and not paying attention to the impact of patient participation in treatment on health outcomes can be the reasons for these results. The lack of proper training for interns to communicate with patients may be another reason.

Based on the study, it seems that significant progress can be made in the quality of the physician-patient relationship, patient satisfaction, physician acceptance by patients, and community health outcomes if necessary training programs are considered on patient-centeredness and patients' rights in the treatment process before and during the internship.

Acknowledgments

The authors express their gratitude to all the interns of Kerman University of Medical Sciences for their participation.

Footnotes

Authors' Contribution: All authors participated in all stages from concept to edit the manuscript.

Conflict of Interests: It is not declared by the authors.

Funding/Support: The clinical research center in Afzalipour Hospital supported the project.

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Strides Dev Med Educ. 2019 December; 16(1):e85677. doi: 10.5812/sdme.85677.

Published online 2020 January 1. **Research Article**

Challenges of Medical Education Development Centers: A Content Analysis of Authorities' Views

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Received 2018 October 23; **Revised** 2019 July 06; **Accepted** 2019 July 14.

Abstract

Background: The main objective of medical education development centers is to improve the quality of medical education. However, after more than two decades since the formation of these centers, they are still facing numerous challenges.
Objectives: Given the importance of these centers, this study was conducted to identify their challenges.
Methods: A qualitative study was carried out in 2013 on 40 managers of Iranian medical education development centers. Data was collected during a national conference held in Tehran in the form of a questionnaire and analyzed using content analysis.
Results: Key challenges of the centers were identified to be resource shortage, continuous modifications in policies, weak management, structural problems, lack of communication, regulatory problems and centralization in decision making. The key challenges were divided into 17 sub-challenges.
Conclusions: Although decades have passed since the formation of medical education development centers, they are still facing serious challenges. To unveil the true potential of these centers in improving the quality of education, integrated interventions were addressed in this study to help reduce identified challenges.

Keywords: Medical education development centers, challenge, quality, medical education

1. Background

Human resources should be regarded as the most leading development factor for each country (1). This factor is even more prominent in healthcare, to the extent that the World Health Organization, in 2000, reported that one of the main duties of health systems was to produce resources, in particular human resources (2). If this duty is best fulfilled, the performance of each health system will improve and the health status of societies will be promoted. Undoubtedly, human resources can be increased in medical sciences by enhancing the number of medical universities and employing a large number of faculty members.

Despite employing numerous expert faculty members in recent decades, the quality of medical education has been faced with challenges due to inadequate teaching skills of some faculty members (3). To resolve this problem, the Ministry of Health of Iran, similar to successful countries in medical education, has established education development centers in medical universities (4).

These centers have focused their specialized services on students, faculty members, educational processes and learning styles, and graduates. They also work in the five main areas of curriculum planning, teacher training, continuous education, research in education and evaluation (5). After 2003, education development offices (EDOs) were founded as executive arms of education development centers (EDCs) in schools and educational hospitals, recruiting more than fifty faculty members. EDOs were formed to accelerate activities regarding medical education development in all universities (6).

Despite the fact that all EDCs of Iranian universities of medical sciences have made several attempts to promote the qualifications of academic staff and the quality of their education, there still exist serious challenges in the type and method of their performance (6). Haghdoost et al.

studied certain challenges of EDCs, including integration in education and healthcare delivery; trend of health sector privatization; weaknesses in policy making, supervision and evaluations; inappropriate organizational charts; pitfalls in processes, communication, and science; and lack of human resources or experience (7). Kalantari concluded that some of the tasks assigned to EDCs did not fully match their performance (8).

Medical universities are responsible for training efficient human resources; thus, literacy and skills of faculty members play an important role in educating students. Due to the insufficient proficiency of some faculty members, appropriate training of students and thus provision of appropriate services to patients become challenging. Since EDCs are responsible for enhancing the quality of faculty members' teaching skills, it is essential to monitor activities in these centers and resolve their challenges.

2. Objectives

This study aimed to evaluate basic reasons for failures and challenges of EDCs in Iranian universities of medical sciences from the perspective of EDC authorities.

3. Methods

This qualitative study was conducted in 2013 on all managers of Iranian EDCs, who participated in an annual conference in Tehran. The data collection tool was a questionnaire consisting of two open-ended questions on main challenges of EDCs and reasons for their failure, developed by two experts in the field of medical education. The questionnaire items are open-ended so that respondents can describe challenges and reasons without any prejudices. For this purpose, a researcher-designed questionnaire using the opportunistic method was distributed among all the 40 managers of the EDCs affiliated to Iranian universities of medical sciences. All the participating managers completed and returned the questionnaires. In the next step, the questionnaires were numbered so that the opinions could be separately presented in the results. Content analysis was used to analyze the data. Over the past years, content analysis has been widely applied in health studies and been regarded as a flexible option in the analysis of textual data (9, 10). In this method, the researcher avoids application of predefined classifications and allows classifications and concepts to come out of the data. Therefore, the researcher deeply ponders over the data to reach a noble concept or insight into the studied topic. To analyze the data in the current study, the first level coding was conducted to extract sentences containing the answers. Then, topics were given to main intellectual sections of the sentences. After comparing the topics, a list was developed of main topics and subtopics. In the second level coding, the main topics and subtopics were reviewed and main topics with similar concepts were placed in one category. Afterwards, the topics were coded, defined and compared with each other. In case of any conflicts, finalized topics were defined after further discussion.

4. Results

After analysis of the data collected via the questionnaires, main challenges of the EDCs affiliated to Iranian universities of medical sciences were categorized into six main concepts and 17 subgroups (Table 1).

Table 1. Challenges of the EDCs Affiliated to Iranian Universities of Medical Sciences

Concept	Details
Concept 1: Shortage of resources	1-1: shortage of financial resources
	1-2: shortage of human resources
	1-3: shortage of physical space and facilities
Concept 2: Continuous modifications in policies and weakness in management	2-1: continuous changes in policies and defective statutes
	2-2: university presidents unfamiliar with EDCs' lists of duties
	2-3: low stability of management
	2-4: low motivation and support by managers
	2-5: managers unfamiliar with medical education
Concept 3: Structural problems	3-1: lack of appropriate organizational charts and structures
	3-2: a vast spectrum of vague duties allotted to EDCs
	3-3: unspecified duties of EDOs
Concept 4: Weakness in interrelationships	4-1: weakness in interrelationships with the ministry
	4-2: weak interrelationships between EDCs, EDOs and other sectors of universities
Concept 5: Centralization in decision making	5-1: centralization in decision making
Concept 6: Problems in supervision	6-1: lack of a standard evaluation system for assessment of faculties
	6-2: defective follow-ups of duties in EDCs and EDOs
	6-3: weakness in providing feedbacks in different related layers (from the ministry to EDCs and from EDCs to EDOs)

4.1. Concept 1: Shortage of Resources

Shortage of resources was among the challenges in EDCs. The topics presented in this category included shortage of financial and human resources, physical space, and facilities. Regarding shortage of financial resources, one of the managers mentioned, "in addition to the fact that the budget allocated to these centers is insufficient and inappropriate, it is not clearly programmed" (P 27). Another manager participating in the study stated, "EDCs centers do not have an independent source of funding" (P 18).

Another challenge related to EDCs was shortage of human resources including experts and faculty members (with related medical education expertise in particular) to carry out activities pertinent to the activities of EDCs. In this respect, one of the managers noted, "in addition to the shortage of human resources, some existing faculty members do not have enough expertise. Moreover, due to the shortage of human resources, some key positions are occupied by those passing their social service duties" (P 33). Another manager of the participating group mentioned, "inappropriate cooperation with EDCs by some faculty members is a great challenge, resulting from shortage of financial and moral incentives" (P 8). Another important issue in this regard is inappropriateness of physical atmosphere, facilities, and information technology; accordingly, one of the respondent managers reported, "in addition to shortage of facilities and space, defects in information technology prevents effective collaborations between different parts of EDCs in general, and advancement in education methods, in particular" (P 17).

4.2. Concept 2: Continuous Modifications in Policies and Weakness in Management

This concept included challenges in continuous modifications in policies, weak points in statutes, unfamiliar university presidents with reference to duties of EDCs, low stability of management, lack of incentives and support from management teams and managers unfamiliar with medical education. Concerning continuous changes in policies, one of the managers mentioned, "a problem is continuous changes in policies. This probably originates from the absence of a single definite supporting statute defining duties in the ministry; it should be added that even the current statutes are not updated" (P 37). Furthermore, some authorities believed that certain university presidents and their deputies in educational affairs were not familiar enough with the duties and characteristics of EDCs. Accordingly, another one of the managers noted, "this fact that some university presidents and their deputies are unfamiliar with the duties of EDCs causes EDCs not to be in the right position of authority" (P 11). However, the other managers put forward varying challenges and pointed out, "some managers of certain centers are not familiar with medical education; this results in failure in achieving their main goal, i.e. promotion of the quality of education" (P 19). Another one of the managers expressed, "there is no stability in management in universities; sometimes, it is seen that a head of a certain section is changed before they get to know their duties" (P 23).

4.3. Concept 3: Structural Problems

One other important challenge in EDCs was structural problems. This included myriad concepts such as lack of appropriate structure and organizational charts, assignment of a vast range of duties to EDCs, vagueness of duties, and unspecified duties of EDOs. One of the experts added, "EDCs are not given a clear place in universities and due to lack of an appropriate organizational chart, promotion in the quality of education and use of experts' potential talents are not feasible. Moreover, tasks assigned to EDCs are not in accordance with facilities, human resources, and credits available to them" (P 20). Another one of the managers noted, "vagueness in duties of EDCs has led to the fact that EDOs meet challenges in their duties" (P 18). Furthermore, lack of a suitable structure, appropriate planning and supervision imposed another challenge. One of the manager stated, "EDCs are getting far from their main duty, medical education, and are engaged in other tasks such as research" (P 4).

4.4. Concept 4: Weakness in Interrelationships

The findings demonstrated that EDCs did not have good interrelationships with the ministry and other parts of universities. One of the authorities noted, "EDCs are not on good terms with other parts of universities, particularly education and research sectors, and even with EDOs. Some parts of universities do not take EDCs serious and consequently do not invite their members to meetings crucial for EDCs" (P 31). Moreover, the participants of this study pointed out another challenge, which was a weak interrelationship between EDCs of different universities. One of the experts mentioned, "EDCs cannot apply the best of each other's experiences since they are not in contact with one another" (P 39).

4.5. Concept 5: Centralization in Decision Making

One more challenge faced by EDCs was centralization in decision making. In this regard, one of the managers expressed, "sometimes, innumerable attempts and correspondences are established in order to perform a minor task, which requires much energy; this undermines willingness to cooperate with EDCs" (P 33).

4.6. Concept 6: Problems in Supervision

Another major challenge in EDCs was problems in supervision. This implies lack of an evaluation system to assess faculty members' performance, lack of a follow-up system for duties of EDCs, and poor feedbacks from the ministry to EDCs and from EDCs to EDOs. One of the managers noted, "no appropriate evaluation system exists to measure faculties' performance; hence, we cannot give them suitable feedbacks" (P15). Moreover, EDCs were not well followed up with respect to their duties; accordingly, one of the experts stated, "universities do not monitor EDCs' performance" (P 30). A further main challenge was the defective supervision of the ministry on EDCs' activities. One of the experts believed, "the ministry is poorly monitoring EDCs; it is better to say that there is no supervision at all" (P 28). Moreover, EDCs and EDOs did not match each other. One participating expert mentioned, EDCs are not well monitoring EDOs under their control" (P 24).

5. Discussion

It should be mentioned that education development centers were firstly founded to develop medical education in the fields of research in education, education of faculties, continuous medical education of graduates, and evaluation and supervision on educational activities. In order to accomplish the aforementioned tasks, EDCs face certain challenges such as shortage of resources, continuous modifications in policies and defective management, weakness in interrelationships, centralization in decision making, and problems in supervision and structures.

Undoubtedly, in order to properly execute the programs of each organizational sector including EDCs, adequate resources are necessary. Hence, one of the major challenges in EDCs is shortage of financial resources. Due to vagueness in the determined budget, managers of EDCs are strongly dependent on universities to meet their financial needs, which decelerates the process of developing their plans. They are also unable to motivate faculties for further cooperation, leading to a shortage of human resources. It must be added that shortage of expert human resources is only partially due to shortage of financial resources; this could also originate from the inability of authorities to attract expert human resources. Hence, it is observed that only few experts work in EDCs, except for the managers. In other words, people working in EDCs sometimes do not consider the quality of their duties due to all the aforementioned reasons. All these issues lead to challenges in achieving goals assigned to EDCs. Haghdoost et al. reported similar results, indicating that one of the main problems of EDCs was shortage of expert human resources (7). Another study revealed that although evolution in the quality of education led to the foundation of EDCs, shortage of educated human resources decreased the efficacy of these centers (11).

Among the challenges in EDCs are inappropriate physical space and shortage of facilities and educational equipment. A study by Torabian et al. conducted on some fields in Iranian universities of medical sciences showed that these fields did not have sufficient educational facilities (12). In order to attract prominent faculty members and thus improve the quality of education, it is highly essential to meet their needs. Changiz et al. reported in their study that providing educational spaces in accordance with modern methods of education was among the expectations from faculty members (13).

As another barrier, bureaucracy is inevitable in EDCs, leading to deceleration of processes and disappointment of active members, eager faculties in particular. EDCs are also concerned about continuous modifications in their policies, as well as about the list of their duties and goals. This is important because as soon as authorities decide to focus on a particular domain, the importance of this domain alters due to instability of policies.

University presidents unfamiliar with the quality and list of duties in EDCs are another concern of high importance. This causes presidents not to seriously consider EDCs and thus to allocate a small percentage of the budget to them. Moreover, such presidents do not invite EDC managers to meetings where they could be influential.

Disappointment observed among EDC managers is also a critical challenge in these centers. It could be due to several factors such as insufficient facilities and lack of knowledge or dominance on affairs related to EDC missions. A research by Heidari showed that faculties in universities of medical sciences do not have positive viewpoints about EDCs and EDOs; in other words, the place and activities of EDCs are not yet clear for faculty members (14).

Another problem in EDCs is absence of organizational charts and structures. While the place of EDCs is not well clarified, their duties are not known as well. The vagueness of EDC duties causes EDC agents in universities to be confused about what needs to be accomplished. Haghdoost et al. concluded that absence of an appropriate organizational chart was one of the greatest challenges in EDCs. They concluded that the best solution was development of a comprehensive organizational chart for EDCs and EDOs by national headquarters according to type of university (7).

Interrelationships play an important role in the promotion of organizations; an acceptable level of organizational interrelationships between sectors can facilitate useful interactions between centers. EDCs, however, have

an extremely poor relationship with each other and with the ministry. Similarly, the ministry does not have serious control over EDCs.

This internal problem in universities takes place when EDCs are not appropriately monitoring EDOs due to poor interrelationships between EDCs. Another major challenge is a poor relationship between EDCs and other sectors of the same university and also EDCs of other universities. This causes EDCs to be unaware of their achievements. Haghdoost et al. believed that poor relationships and inappropriate interactions within universities, particularly in educational fields, were among the most important challenges of EDCs (7).

It should be noted that one of the issues resulting from inadequate supervision and vagueness in the main duties of EDCs is diminishing the quality of education due to spending much time on extra activities. According to the study conducted by Tehran University, the majority of the faculties in this university claimed that paying much attention to research undermined the role of education in the promotion of the faculties. Consequently, education, as the main duty of the faculties, was negatively affected. Hence, they suggested to focus more on the quality of education (15). Moreover, Ranjbar and Vahidshahi claimed that the role of education was declining due to multiple reasons, such as absence of educational criteria during the employment of faculty members (16).

Clause 1-17 of the standards of accreditation of EDCs published by the ministry of health has described that "the centers should have a clear program for evaluating their output and the outcome of their activities"; yet, evaluation of EDCs is fraught with difficulties and the main issue in this respect is the definition of development indices (17). Therefore, a problem mentioned in the present study was that the follow-up of EDCs' activities was not possible, and the main reason, as discussed in Clause 1-17, was the vagueness of development indices.

The absence of a standard evaluation system to assess faculty members' performance is another challenge faced by EDCs. Undoubtedly, in case an appropriate evaluation system exists, faculties are more inclined to promote the quality of their activities to reach a better quality of education. Moreover, some studies have denoted that continuous evaluation and valid feedbacks play crucial roles in the promotion of education (13, 18-20).

5.1. Conclusions

According to our results, although several decades have passed since the foundation of EDCs, these centers are still facing serious problems. The most important challenges of EDCs are insufficient resources, constant change of policies and managerial weaknesses, structural problems, weaknesses in communication, centralization in decision making, and supervisory problems. Using the potential of EDCs to improve the quality of education requires a coherent program and a serious determination to minimize the problems identified in this study. In order to resolve the challenges of EDCs, this program requires a systematic view to change the current situation and develop a long-term approach in strengthening EDCs so that they could accomplish their mission, i.e. improving the quality of medical education in the country.

5.2. Limitation of the Study

Due to the press of time and large number of the participants, the data was collected in written form through questionnaires. To triangulate the study findings, it is recommended to replicate the study using other methods of data collection such as interviews.

Acknowledgments

The authors would like to express their sincere gratitude to all managers of EDCs who kindly participated in the study.

Footnotes

Conflict of Interests: None declared.

Ethical Approval: The study was approved by the Ethics Committee of Kerman University of Medical Sciences (ethical code: IR.KMU.REC.1398.339).

Funding/Support: There was no support.

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Strides Dev Med Educ. 2019 December; 16(1):e86566. doi: 10.5812/sdme.86566.

Published online 2019 September 25. **Research Article**

Do consecutive Patient Management Problem (PMP) and Modified Essay Question (MEQ) Examinations Improve Clinical Reasoning in Students?

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Received 2018 November 19; **Revised** 2019 May 07; **Accepted** 2019 May 13.

Abstract

Objectives: The purpose of this study was to evaluate the improvement of students' ability to answer consecutive patient management problem (PMP) and modified essay question (MEQ) exams, to assess its relationship with academic progress, and to determine whether consecutive PMP-MEQ exams can improve the students' clinical reasoning skills by improving the test scores.

Methods: This descriptive, analytical, cross-sectional study consisted of 67 third-year nutrition students in three consecutive years, who were asked to prepare for a multiple-choice question (MCQ) test and consecutive PMP-MEQ exams. The students were required to answer PMP-MEQ exam, which comprised of two queries of five-choice question (PMP) and three short-answer questions (MEQ). Repeated measures ANOVA, independent *t*-test, paired *t*-test, and Pearson's correlation test were used for statistical analysis.

Results: The mean difference in PMP scores was significant between the three periods ($P = 0.0001$). However, the difference in the mean score of PMP exam between students with grade point average (GPA) ≥ 16 and GPA < 16 was not significant, except for PMP3 ($P = 0.001$). An increase was observed in the scores of students in both groups by continuous PMP examination. The significant mean difference in PMP3 exam showed that improvement of students with GPA ≥ 16 was greater than that of students with GPA < 16 ($P = 0.001$). The difference in the mean scores of MCQ and PMP exams was significant, except for the third PMP exam in students with GPA ≥ 16 ($P = 0.143$).

Conclusions: Use of PMP-MEQ exams in reasoning-based clinical education can be a suitable approach for clinical evaluation of undergraduate students. Also, continuous PMP-MEQ examination can improve the clinical reasoning of students, mainly those with GPA ≥ 16.

Keywords: Clinical Reasoning, Continuous Assessment, Modified Essay Question, Patient Management Problem

1. Background

Effective clinical reasoning depends on the health professional's ability to collect and analyze the right cues or information to reach an accurate understanding of a patient problem or differential diagnosis, to plan and implement the right interventions, and finally to learn from the process (1, 2). Reasoning- and competency-based medical education requires a robust and multi-dimensional assessment system (3). It relies on continuous, inclusive, and elaborate assessment and feedback systems, which facilitate the development of reasoning and competence (4).

On the other hand, in most countries, a multiple choice question (MCQ) is the most common assessment method of medical knowledge, followed by modified essay question (MEQ) (5). MCQ does not focus on the evaluation of cognitive skills, and many MCQs assess small sections of textbooks. With the introduction of problem-based learning for the evaluation of clinical reasoning and competence in medical and health professional courses, besides the shift from a traditional lecture-based curriculum to a student-centered one, many schools are currently reviewing their assessment tools and introducing new strategies for evaluating the student (6).

In a study, two popular formats of tests, i.e., MCQ and MEQ, were compared. Based on their findings, although MCQ and MEQ may assess different skills, there is a very strong relationship between their content scores (7). In another study, the results of MEQ and MCQ were strongly and positively correlated, and the overall examination showed good reliability and validity. In their study, MEQ included more questions on recall of knowledge, which were more

structurally flawed, compared to MCQ. The MEQ exam failed to achieve its primary goal, that is to assess higher-order cognitive skills (8). In fact, some researchers believe that a well-constructed MCQ is superior to MEQ in assessing the higher-order cognitive skills of undergraduate medical students in a problem-based learning setup.

Development of MEQ for the assessment of students' cognitive skills is not a simple task and is frequently associated with item-writing flaws (9). Knox described that with careful preparation, MEQ can provide a measure of abilities (including attitudes), which cannot be easily assessed by other means. MEQ can also provide an active learning experience in small groups or in a large plenary session (10). In another study, the patient management problem (PMP) method was applied to assess whether an increase in clinical experience can influence the nutrition care planning process. The findings revealed that basic nutrition care planning skills are attained during dietetic internships, while advanced skills, such as information processing and/or confidence in clinical decision-making, are acquired through clinical experience (11).

2. Objectives

The effectiveness of continuous PMP-MEQ examination in clinical reasoning training for nutrition students with different levels of academic progress has not been studied yet. Therefore, the purpose of this study was to evaluate the improvement of students' ability in consecutive PMP-MEQ exams and to determine its relationship with different levels of academic progress. This study also aimed to determine whether consecutive PMP-MEQ exams can improve different aspects of clinical reasoning skills by increasing the exam scores.

3. Methods

3.1. Study Sample

This descriptive, analytical, cross-sectional study was conducted at Kerman University of Medical Sciences among 67 third-year undergraduate nutrition students, who were enrolled in the study between 2015 and 2017 in three consecutive years.

3.2. Study Design

At the end of the routine teaching module on the topic of "food-borne diseases", the students were asked to prepare for MCQ and PMP-MEQ exams. The assessment method was described for all students. Ten MCQs were presented, with five discriminators for each question. The students were told that one of the discriminators would be the correct response to MCQ. In the first phase of the examination, after MCQ, the students were asked to complete the PMP-MEQ exam, which comprised of two queries of five-choice question (PMP) and three short-answer questions (MEQ). In the second and third phases, the students participated in the second and third PMP-MEQ examinations; each exam took place one week after the other.

Generally, the instructor must be familiar with the design and development of PMP-MEQ exams. Arrangement and preparation of PMP-MEQ was based on the modified four-step instructions published by Harden (12). In this exam, no test-retest was performed. In the first stage, the instructor planned and designed a clinical case and provided information about an individual patient, who was referred to the emergency ward with a set of signs associated with the ingestion of an unknown contaminated food (based on the subjective report). Next, students, based on their etiological knowledge of the disease transmitted by microorganisms, described the incubation period, as well as signs and symptoms of the clinical case.

The students were required to answer two questions (PMP exam) about the type of microorganism and the food causing intoxication. In the final stage, the students were required to answer three short questions to explain the reason for their diagnosis and suggest appropriate treatments for patient and preventive methods to prevent the prevalence of the disease in the community. PMPs simulate reality and reproduce the decisions of a medical student for investigating and managing a patient. Also, the students were required to be involved actively in the problem (12).

According to Bloom's taxonomy, there are four levels of cognitive learning, including understanding, applying, analyzing, and evaluating. Various dimensions of clinical reasoning, such as awareness of clinical cues, confirmation of clinical problems, determination and implementation of actions, and evaluation and reflection, were incorporated in the PMP-MEQ exam in this study.

3.3. Statistical Analysis

Statistical analysis was performed in SPSS version 22.0, and $P < 0.05$ was considered statistically significant. General linear models (repeated measures ANOVA) were used to compare the mean differences in PMP and MEQ scores, based on the grade point average (GPA) of the semester and the total GPA of five semesters. GPA generally represents the average value of the accumulated final grades earned in courses over time. The results of analyses are presented in Tables 1 and 2.

The non-significance of Box's test of equality indicates the equality of covariance matrices for dependent variables in the groups. Also, non-significance of Mauchly's

Table 1. Results of One-Way Repeated Measures ANOVA of PMP-MEQ Scores Based on the Students' GPA in the Fifth Semester[a]

Scores	Total (N = 67)	GPA ≥ 16 (N = 26)	GPA < 16 (N = 41)	Sig.
PMP-MEQ1	4.79 ± 4.68	4.85 ± 4.89	4.76 ± 4.60	0.939
PMP-MEQ2	9.93 ± 6.90	10.65 ± 7.12	9.46 ± 6.81	0.496
PMP-MEQ3	14.10 ± 4.54	16.31 ± 3.80	12.71 ± 4.44	0.001
Sig.	0.0001	0.0001	0.0001	

[a]Values are expressed as mean ± SD.

Table 2. Results of One-Way Repeated Measures ANOVA of PMP-MEQ Scores Based on the Students' Total GPA During Five Semesters[a]

Scores	Total (N = 67)	Total GPA ≥ 16 (N = 37)	Total GPA < 16 (N = 30)	Sig.
PMP-MEQ1	4.79 ± 4.68	4.65 ± 4.91	4.97 ± 4.45	0.784
PMP-MEQ2	9.93 ± 6.90	11.41 ± 6.98	8.10 ± 6.46	0.051
PMP-MEQ3	14.10 ± 4.54	15.49 ± 4.25	12.40 ± 4.35	0.005
Sig.	0.0001	0.0001	0.0001	

[a]Values are expressed as mean ± SD.

test of sphericity meets the assumption of compound symmetry, and Levene's test indicates that the variance in three periods (PMP1, PMP2 and PMP3) is equivalent for the measures. Independent t-test was used for the comparison of mean differences between PMP-MEQ and MCQ exams. Also, paired *t*-test was performed for the comparison of mean differences in PMP-MEQ scores between students with GPA ≥ 16 and GPA < 16. Moreover, Pearson's correlation test was used to determine the relationship between the exam scores and academic progress variables, such as GPA and total GPA.

4. Results

Male students comprised 29.9% of the total study population. The results of repeated measures ANOVA showed that the mean difference in PMP scores was significant in three examination periods (P = 0.0001). However, the difference in the mean score of each PMP exam between students with GPA ≥ 16 and GPA < 16 was not significant, except for PMP3 (P = 0.001). Therefore, the scores differed significantly in the three examination periods. We found that the students' scores increased by continuous PMP examination in both groups. The significant mean difference in PMP3 scores showed that the progress of students with GPA ≥ 16 was greater than that of students with GPA < 16 (P = 0.001) (Table 1). Therefore, continuous PMP assessment contributes to the improvement of students' clinical reasoning, mainly in students with GPA ≥ 16.

The results of repeated measures ANOVA indicated no significant difference between the total GPA of five semesters and GPA of the fifth semester. The mean difference in PMP scores was significant between the examination periods (P = 0.0001); in other words, the scores differed significantly in these periods. We found an increase in the students' scores with continuous PMP examination in both groups. However, the difference in the mean score of third PMP exam was significant between students with total GPA ≥ 16 and total GPA < 16 (P = 0.005); the difference was also close to significant in the second PMP exam (P = 0.051). The significance of mean differences in PMP3 scores indicate that the progress of students with total GPA ≥ 16 was greater than that of students with GPA < 16 (P = 0.005) (Table 2). The interpretation of results presented in Table 1 is as the same as the results presented in Table 2.

Additionally, the results of paired *t*-test in Table 3 confirm the results presented in Tables 1 and 2 regarding academic progress variables. The results of independent *t*-test regarding the mean scores of MCQ exam and each PMP exam were significant, except for the mean difference of MCQ score with the third PMP score in students with GPA ≥ 16 (P = 0.143) (Table 3). The increase in the scores of students with continuous PMP examination, particularly in students with GPA ≥ 16, revealed that improvement of clinical reasoning was prominent in this group.

Table 4 presents the results of Pearson's correlation coefficient (r), as a common method for analyzing the relationship between two variables. The results showed that the third PMP exam score was significantly related to academic progress variables, such as GPA and total GPA (P < 0.01). The MCQ score was also significantly related to academic progress variables (P < 0.01) (Table 4). These significant relationships indicate that the students' MCQ scores

Table 3. Significant Differences Between MCQ and PMP-MEQ Scores Based on the Students' GPA of the Fifth Semester and Total GPA of Five Semesters[a]

Scores	MCQ	PMP-MEQ1	Sig.	PMP-MEQ2	Sig.	PMP-MEQ3	Sig.
Total	16.49 ± 2.57	4.79 ± 4.68	0.0001	9.93 ± 6.90	0.0001	14.10 ± 4.54	0.0001
GPA ≥ 16 (N = 26)	17.38 ± 1.86	4.85 ± 4.89	0.0001	10.65 ± 7.12	0.0001	16.31 ± 3.80	0.143
GPA < 16 (N = 41)	15.93 ± 2.81	4.76 ± 4.60	0.0001	9.46 ± 6.81	0.0001	12.71 ± 4.45	0.0001
Sig.	0.023	0.939		0.496		0.001	
Total GPA ≥ 16 (N = 37)	17.27 ± 2.09	4.65 ± 4.91	0.0001	11.41 ± 6.98	0.0001	15.49 ± 4.25	0.015
Total GPA < 16 (N = 30)	15.53 ± 2.81	4.97 ± 4.45	0.0001	8.10 ± 6.46	0.0001	12.40 ± 4.35	0.001
Sig.	0.005	0.784		0.051		0.005	

[a]Values are expressed as mean ± SD.

were similar to the third PMP scores. Therefore, improvement of students' clinical reasoning through continuous PMP examination was confirmed.

5. Discussion

This study aimed to provide applicable evidence for medical and paramedical school instructors in clinical departments, who are responsible for evaluating the clinical reasoning of undergraduate students. Schmidt and Mamede claimed that different approaches can be implemented in clinical reasoning education in different phases of training. In their review, they discussed the most common approach, i.e., serial-cue approach, perhaps because of its simulation of diagnostic activities (13). In Germany, development and implementation of a clinical reasoning course in the final year of undergraduate medical training was a major objective of medical education, which could lead to an improvement in the target skills. Overall, it seems advantageous to integrate a longitudinal course in the medical curriculum in order to present better strategies for improving clinical reasoning (14).

In this regard, a previous study provided a successful example of a small-group brainstorming course for enhancing the diagnostic and clinical reasoning skills of new medical clerks. The positive results obtained during the "clinical excellence program" encouraged the formal implementation of this course as part of the clerkship curriculum (15). Therefore, the small group teaching-learning approach is one of the effective approaches, which can improve clinical reasoning skills.

In the current study, by continuing problem-based learning as PMP-MEQ examination, we aimed to improve the clinical experience and clinical reasoning of students. It should be noted that integration of basic sciences knowledge in clinical reasoning is an essential component of health professional education. Generally, effective clinical reasoning involves several sequential domains, including awareness of clinical cues and collection of cues and information, confirmation of clinical problems, determination and implementation of actions, and evaluation and reflection. It involves remembrance and memory, understanding and recognition, interpretation and organization, integration and analysis, and deduction to solve a clinical case in different situations (e.g., classroom and patient's bed).

Knowledge of basic sciences supports the acquisition of new clinical knowledge, which improves diagnostic reasoning. Successful teaching strategies involve establishing connections between basic and clinical sciences, use of reasonable analogies, and study of multiple clinical problems in multiple settings (16). Conversely, inadequate clinical knowledge is the most common problem, resulting in poor clinical reasoning, as obviously reported in the present study. In the current study, improvement of clinical reasoning in students with poor academic progress was lower than that of students with appropriate academic progress. One of the main concerns in medical education is integration of clinical reasoning into the medical curriculum (without clinical reasoning being consistently defined, taught, or assessed within or between educational programs in the curriculum), which may result in major variations in clinical reasoning education. These findings support the need for the development of optimal educational practices for clinical reasoning curricula and learning assessment (17).

In another study, different attitudes to teaching and learning clinical reasoning were identified, which reflect the Western and Asian cultures of learning. The potential effect of cultural differences in planning optimal programs for teaching and learning clinical reasoning is important in the changing global context of medical education, especially when the Western medical education is implemented in Asian settings (18).

Generally, assessment follows the teaching-learning process. The assessment method of important examinations strongly influences student learning and may shape

Table 4. Correlation Coefficients Between MCQ Score, PMP-MEQ Score, and Academic Progress Variables

Variables	MCQ	PMP-MEQ1	PMP-MEQ2	PMP-MEQ3	GPA of Fifth Semester	Total GPA
MCQ	1	0.162	0.238	0.315	0.424[a]	0.452[a]
PMP-MEQ1		1	0.295[b]	-0.160	-0.002	-0.079
PMP-MEQ2			1	0.080	0.163	0.282[b]
PMP-MEQ3				1	0.373[a]	0.425[a]
GPA of fifth semester					1	0.878[a]
Total GPA						1

[a]Correlation is significant at 0.01.
[b]Correlation is significant at 0.05.

and improve the student's learning approaches (19). In a study, the modified problem-based learning (PBL) method, with short-answer questions, was the preferred method in 39% of students, followed by PBL with the modified essay question (36%) and lectures (25%). Therefore, the modified PBL is a reasonable option for schools that cannot meet the staff and space requirements of PBL curriculum (20). Accordingly, in some universities, where the clinical environment for teaching and learning clinical reasoning is not available, implementation of some exams, such as PMP-MEQ, in a clinical format is preferable.

Palmer and Devitt revealed that MEQs are often preferable to other forms of assessment, such as MCQs, for the evaluation of higher-order cognitive skills. MEQs often form a vital component of end-of-course assessments in higher education. In a study, effectiveness of MEQ in the measurement of higher-order cognitive skills was examined in an undergraduate institution. The modified essay question failed to consistently assess higher-order cognitive skills, whereas MCQ examined more than merely recall of knowledge. The researchers concluded that construction of MEQs for the assessment of higher-order cognitive skills cannot be assumed to be a simple task (21).

Moreover, a study investigated the effect of practice exam on the scores of a test, comprising of both MCQ and PMP. It was found that the effect of practice exam on the PMP score was greater than its effect on the MCQ score (22). In another study, correlations between objective structured clinical examination (OSCE) and written tests, such as script concordance testing and clinical reasoning problems, were insignificant. The results showed that written tests of clinical reasoning could provide additional applicable information for the evaluation of students' capabilities during a course of family medicine clerkship (23).

5.1. Conclusions

Integration of PMP-MEQ in reasoning-based clinical education can be an effective approach to the clinical evaluation of undergraduate students. Continuous PMP examination can improve the students' clinical reasoning, mainly among students with GPA $\geq$ 16.

Acknowledgments

We express our gratitude to all nutrition students, who cooperated with us in this study.

Footnotes

Authors' Contribution: Mohammad Reza Mahmoodi contributed to the conception of the original idea, conducting in the study design, analysis and interpretation of the data, drafting and revising the draft, and approval of the final version of the manuscript.

Conflict of Interests: No potential conflict of interest relevant to this article was reported.

Ethical Approval: It is not declared by the author.

Financial Disclosure: The author declares no relevant financial interests related to the materials of this study.

Funding/Support: It is not declared by the author.

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Strides Dev Med Educ. 2019 December; 16(1):e86701. doi: 10.5812/sdme.86701.

Published online 2019 November 5. **Research Article**

A Study of Courses Related to Drug Abuse Prevention in Medical Sciences Curriculum in Iran

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Received 2018 November 24; **Revised** 2019 June 26; **Accepted** 2019 June 30.

Abstract

Background: One of the most effective ways to prevent substance abuse is to promote addiction knowledge in influential social groups.
Objectives: The purpose of this study was to identify the current status of substance abuse education in medical universities of Iran in order to develop a targeted curriculum on drug abuse and include it in the curriculum of medical students.
Methods: In this descriptive library study, documentary (library) method and checklists were used for data collection. In order to identify the extent to which the existing units and courses deal with substance abuse and with the subject of addiction, the announced titles for active disciplines of the Ministry of Health and Medical Education were reviewed in 2017 - 2018.
Results: Of the 7685.5 units taught in different faculties of medical sciences universities in all disciplines except clinical residency programs.106.1% (optional or mandatory) are related to substance abuse. Of these, 49.5 units were related to the pathophysiology, treatment and pharmacology of substances, and 57.6 units covered topics related to prevention strategies and pathologies of substance abuse.
Conclusions: Despite the high importance of substance abuse issues for medical sciences students, a general unit for prevention and familiarity with the physical, psychological and social consequences of substance abuse does not exist in most of these disciplines. Therefore, it is recommended that studies be conducted to provide specific courses related to the substance abuse phenomenon or to consider substance abuse topics in the courses related to this subject.

Keywords: Substance Abuse, Addiction, Medical Sciences, Units, Course Topics

1. Background

One of the major global health and social problems is substance abuse and its associated social harms. Therefore, a proper understanding of this phenomenon and its adverse consequences and identifying the risk factors associated with drug abuse and strategies to counteract this global problem are essential (1, 2). Over 30 million people worldwide and over 2.5 million in Iran are addicted to addictive substances. These statistics further highlight the importance of attention to rigorous scientific strategies for the prevention and control of substance abuse (3).

Adolescents and young people are at the highest risk for substance abuse and the lack effective and efficient counseling services, lack of targeted planning for leisure times, having peers who use drugs, lack of adherence to religion, mental and psychological problems and lack of knowledge about substance abuse and its physical, psychological, economic and social consequences are among the most important risk factors for drug abuse in these groups (4, 5).

Strategies to fight against substance abuse come in the form of three main approaches: combating the supply and distribution of drugs, therapeutic interventions and rehabilitation and preventing the demand for it in the society, especially in vulnerable groups. One of the most effective ways to prevent substance abuse is the promotion of the knowledge of different social groups, especially the influential ones (6, 7).

Promoting knowledge helps people to change attitudes and adopt and learn social skills to fight substance abuse and can lead to the elimination of misconceptions about drugs and reduce the tendency to abuse drugs (4,

8-13). Effective education is achieved when there is a scientific, rigorous, planned and purposeful framework (11, 14-16). The results of various studies have shown that educational centers that implement drug abuse prevention plans in the form of targeted and planned educational programs are successful in changing attitudes and reducing substance abuse (4, 7).

The higher education curriculum includes all formal and informal learning opportunities designed and implemented in formal courses to improve students' knowledge, attitude and social and professional skills (9, 16, 17). One of the most important challenges of higher education systems in the world is to continuously modify academic curricula such that they can educate students who are responsive to the needs of society and the institutions they serve, while also benefiting from scientific and technological developments (14-16, 18).

Academic curricula, after repeated designs and implementations over time, need to be revised periodically; otherwise, a phenomenon called curriculum deterioration occurs that means obsolescence and the lack of relevance of courses and contents to social needs and developments (14, 18).

Reviewing and updating curricula is one of the most important responsibilities of higher education (7, 12, 16). These reviews should be based on each country's culture and its social, communication, technological, ethical, aesthetic, and belief systems. In restructuring the curriculum of higher education, combining theory and practice, meeting the political and economic development, creating national and international commitment among learners, taking into account different learning strategies, involving all educational standards and providing the grounds for progress should be considered as criteria for building the framework for higher education curriculum (17).

The mission of medical sciences graduates is to control, preserve and promote community health, and as the phenomenon of substance abuse is one of the most important threats to the health of societies, these students should have an accurate understanding of substance abuse so that they can take more effective steps to prevent it from spreading in the community. Promoting the knowledge of the pharmacological effects of drugs, social, psychological and physical consequences of drug abuse, social attitudes, as well as norms and legal penalties related to this phenomenon can be the outline of students' educational programs (4).

2. Objectives

Considering the increasing importance of effective coping strategies in the prevention of social harms, such as substance abuse, the present study aimed to examine the topics and courses related to drugs and psychedelics and their prevention in different disciplines and at different levels of Iranian medical universities and to identify the gaps in education and prevention of substance abuse.

3. Methods

This was a descriptive study since we examined the course titles related to medical sciences fields of study in order to identify the extent to which the existing units and courses are related to substance abuse and addiction. Data collection was performed in 2017 - 2018 academic year using documentation (library) and a checklist designed by the researchers. The announced course titles for all the disciplines currently active in the Ministry of Health and Medical Education were used to identify the extent to which the existing units and covered the subject of substance abuse and addiction.

Titles of medical sciences courses were downloaded and used from the website of the Ministry of Health and Medical Education or the universities of medical sciences. In this method, we first extracted a list of disciplines from all faculties of medical universities in the country, and the units in each discipline that were likely to cover substance abuse were entered into the checklist. According to the panel of experts (Epidemiology, Community Medicine, Medical education, Health Education), the title and nature of the courses proportionate to the field of study were considered as the criteria. Thus, units that were likely to cover subjects related to substance abuse, including its pathophysiology, pharmacology and treatment or prevention as a personal or social harm, were entered into a table, and then the details of the course titles were examined. If the courses were related to drugs and psychedelics, their pharmacological effects, drug abuse prevention, drug toxicities, etc., they were considered as a completely related unit, and finally, a comparative table of similar or drug-related units was completed. The collected information was first described and categorized and then compared.

4. Results

After examining the courses and their titles in each discipline, the results were presented in Tables 1 and 2 based on field of study.

Possibly-related units are those which depending on the title of the course or its scope were likely to have topics related to the subject under study and their headings were examined. The results showed that out of the 7685.5 units in different faculties of medical universities of Iran

Table 1. The Status of the Disciplines and Units Possibly Related and Completely Related to Substance Abuse and Addiction Which Are Active in the Ministry of Health and Medical Education

Faculty	The Number of Disciplines	Total Number of Units	Possibly-Related Units, No. (%)	Completely-Related Units, No. (%)
Paramedicine	6	827	27 (3.26)	20 (2.41)
Pharmacology	5	387	10 (2.60)	7 (1.80)
Traditional medicine	2	98	0 (0)	0 (0)
Management	9	599	4 (0.66)	4 (0.66)
Nursing and midwifery	17	960.5	50.5 (5.25)	44.5 (4.89)
Medicine and basic medical sciences	21	1039	17 (1.64)	13 (1.25)
Dentistry	10	1239	12.5 (1.1)	4.6 (0.37)
Health	23	1349	53 (3.93)	9 (0.81)
Nutritional sciences	7	439	6 (1.36)	0 (0)
Welfare and rehabilitation Sciences	6	748	11 (1.47)	4 (0.53)
Total	106	7685.5	191 (2.48)	106.1 (1.38)

that are taught for in disciplines except clinical residency programs, 106.1 units (whether optional or compulsory) covered drugs and psychedelics. Of these, 49.5 units were related to the pathophysiology, treatment and pharmacology of substances, and 57.6 units covered topics related to prevention strategies and pathologies of substance abuse.

5. Discussion

In the present study, out of a total of 7685.5 units taught in different faculties of medical universities of Iran, which are taught for all disciplines and all levels except clinical assistantship, 106.1 units (both optional and compulsory) covered drugs and psychedelics. Of these, 57.6 units covered the prevention of social harm and substance abuse in their headings. The curricula in Iran do not specify the number of hours devoted to each subject, and it is not possible to state precisely how much of the hours taught in these courses address substance abuse prevention strategies. Most of the topics focused on the prevention of substance abuse, and the prevention of social harms caused by drug abuse mostly belonged to the courses of nursing and midwifery faculties, and in other active disciplines, little attention was paid to these topics. The examination of courses and course titles in some medical universities in the Middle East also suggests that drug and alcohol prevention programs are prioritized in their curricula.

Weill Cornell College of Medical Sciences in Qatar has devoted one of its six public health curriculum priorities to the subject of substance abuse and has set up a separate training center to control alcohol and drug abuse (19). Also, a two-year training course in social medicine and family medicine has been defined at the School of Medicine of Egypt's Ein Al-Shams University that addresses educational issues in the field of substance abuse (20).

Outside of the universities of the region and the Eastern Mediterranean Regional Office (EMRO), in other universities around the world special attention has been paid to training programs on social harms including substance abuse. In the Department of Health, School of Medicine, University of Alabama in the United States of America, more than 10 hours of specialized training in the field of social medicine, behavioral and cultural diseases, and social harms are devoted to substance abuse and ways to handle it (21). In addition to health and community courses at the Medical School of Imperial University in London, short-term three-months summer courses are planned on the subject of social harms, including substance abuse, and applicants can attend these courses and receive the necessary training to control and the fight against drug and alcohol abuse (22).

The role and importance of proper education about the complications and risks of drug abuse have been repeatedly demonstrated in various studies on the causes of addiction. For example, the results of a survey of the causes of addiction in the female population, many respondents considered the main cause of addiction to be false beliefs and lack of awareness of the consequences of drug abuse (23). Also, a study found that among the prisoners who used drugs, most of them cited inadequate and inaccurate awareness of the effects of drugs as the reason for their tendency towards drug abuse (24). Therefore, it can be stated that educating and promoting knowledge on the issues of

substance abuse play a very important role in combating substance abuse in future generations (8, 14, 18). In fact, one of the essential and fundamental ways to reduce the general effects of substance abuse and to save the costs of prevention and treatment at the community level is to educate and increase knowledge about addiction (11, 16, 25), and this issue is more significant among health students and staff, because they are directly involved with the substance abuse phenomenon and addicts in the community (5, 13).

Various studies conducted to evaluate the knowledge of medical students about substance abuse in Iran have shown insufficient awareness and knowledge of students (3, 8, 26, 27). Improving the knowledge and attitude of medical students as custodians of the fight against drug abuse in the society can be very effective in the success of drug abuse prevention programs (6, 7). Therefore, special attention should be paid to the issues of substance abuse and addiction research in order to enhance students' knowledge in this regard, and the number of courses related to these subjects, especially in the medical universities of the country, should be increased to provide more effective and cost-effective prevention and treatment at the individual and community levels.

What is important to consider in educating and preventing substance abuse, especially among the youth, is that giving awareness alone will, in some cases, can increase the tendency toward this problem (28). Therefore, education in the form of scientific methods and with preplanned training programs should be offered in topics such as addiction research.

It should be noted that in the present study, all courses of medical universities in Iran, including optional and compulsory ones, were evaluated, which is among the strengths of this research.

5.1. Limitations

Some courses were not available, especially clinical assistantship, which is among the limitations of the present study. Also, the course titles do not provide a clear overview of what topics are being taught and they are mostly generalized.

5.2. Recommendations

In order to enable medical graduates to expand their preventive activities in the community, and ultimately, to better implement preventive and anti-substance abuse programs and to reduce substance abuse in the community, it is suggested to include the issues of drug abuse and social harms prevention in all public or optional courses of the Ministry of Health (considering the situation in our country which is on the transit path of drugs in the world). It is also advisable to devise interdisciplinary courses to increase students' information about substance abuse. Specialized summer and winter schools for the prevention and treatment of substance abuse in medical universities are also recommended.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

This study was carried out with the financial and spiritual support of the Deputy of Education of Kerman University of Medical for the special mission of addiction knowledge development. We would like to thank Dr. Majid Fasihi Harandi, the Deputy of Education of Kerman University of Medical Sciences, for cooperating with us in conducting this study.

Footnotes

Conflict of Interests: Authors declare no conflict of interest.

Ethical Approval: This study obtained the ethical code of IR.KMU.REC.1398.299 from the Ethics Committee of Kerman University of Medical Sciences.

Funding/Support: None declared by the authors.

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Table 2. Courses Related to the Subject of Drug Abuse Based on Discipline and Degree

Degree	Pathophysiology, Treatment and Pharmacology			Related Factors and Strategies for Drug Abuse Prevention		
	Discipline	The Related Subject	No. of Units	Discipline	The Related Subject	No. of Units
Associate's Degree	Medical emergency	General pharmacology	2	-		
		Mental health and medical emergencies	1			
Bachelor's Degree	Operation room	Medical emergency	2	General Hygiene	Mental Health and Addiction	2
	Physiotherapy	Psychiatry	2	Midwifery	Family and feminine psychology	2
					Principles of epidemiology and fighting diseases	2
					Embryology	2
					Pregnancy and childbirth, abnormal pregnancy and childbirth	2
					Maternal and child health and fertility	2
	Anesthesiology	Symptomatology and physical examination	2	Anesthesiology	Psychology	2
					Sociology and social pathology of women	1
				Nursing	Mental health nursing	2
					Psychiatric nursing	2
		Basic principles of pharmacology	2		Family and individual health nursing	2
					Healthy child nursing	2
		Medical emergency	2		Mental health nursing	2
		Principles and methods of pain management	2			
		Specific pharmacology	2			
	Health information technology	Pharmacology	2	-		
		Specific pathology	2			
Master's Degree	Toxicology	Clinical Toxicology	2	Community Health Nursing	Nursing & Community Health (Vulnerable Groups)	2.5
	Environmental toxicology	Toxicology of the environment in disasters and emergencies	2	Counseling in midwifery	Sociology and Social Pathology of Women	1
	Neonatal intensive care	The principles of neonatal nursing care	3	Psychiatric Nursing	Group and Family Psychiatric Nursing Interventions	2
					Substance Abuse Nursing (From Prevention to Family-Based Rehabilitation)	1
	General surgery	Palliative care and the role of nurse in it	1	Midwifery	Sociology and social pathologies of women	1
	Psychiatric nursing	Psychiatric nursing interventions for children and adolescents	2	Pediatric nursing	Adolescent nursing	4

	Genetics	Behavioral genetics	2	**Neonatal intensive care**	Neonatal nursing	3
				Geriatric nursing	Geriatric nursing 1 (physical and functional disorders)	4
				Epidemiology	Social epidemiology in health	2
MD	**General pharmacology**	Chemotherapy	2			
		Management of toxicity	2			
		Food and diet therapy	3			
	Medicine	Clinical psychiatry education	3	Health psychology		2
				Epidemiology of non-communicable diseases		2
	Dentistry	-	-	Mental illness		1
				Specialized dentistry		2
				Oral and dental health (practical)		1
PhD	**Medical biotechnology**	Biosafety and laboratory principles	1			
	Health education and health promotion	Promotion of youth and adolescent health		2		
				Promoting health and preventing high risk behaviors		2
	Neurology	Neuropharmacology	2	-		
		Neuroscience research methods	4	-		
	Endodontics	Pharmacology	0.5			
	Oral and maxillofacial surgery			Psychiatry		0.1
	Addiction studies: Specialty in Drug Abuse Studies					

Strides Dev Med Educ. 2019 December; 16(1):e88406. doi: 10.5812/sdme.88406.

Published online 2019 November 26. **Research Article**

Effect of Clinical Pathology Course on Attitude and Learning in Medical Students Taking Clinical Laboratory Course in Kerman University of Medical Sciences

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Received 2018 December 29; **Revised** 2019 May 21; **Accepted** 2019 May 22.

Abstract

Background: According to the importance of the clinical pathology for diagnosis, decision making regarding preventive and minimally invasive methods, and treatment follow-ups, it is useful to familiarize medical students with better utilization of laboratory tests before clinical practice and incorporate them into the curriculum.
Objectives: The current study aimed at investigating the quality of education and satisfaction with clinical pathology course among medical students at physiopathology level initiated since 2014 at Kerman University of Medical Sciences for further systematization of the curriculum, and its efficacy in increasing students' knowledge.
Methods: In the current interventional study, medical students at physiopathology level were enrolled and, after making necessary coordination with the Deputy of Education, a one-unit clinical pathology course was added to routine (five-unit) physiopathology course for the students attending the second semester of 2013 - 2014 academic year. Two groups of students attending internship program including 42 subjects that took the clinical pathology course and 42 other ones that did not take the course were consecutively enrolled. A questionnaire was distributed among the subjects in the two groups and the obtained data were analyzed with SPSS version 19.0 using chi-square test.
Results: Overall, the medical students in both groups believed that clinical pathology course was essential for both theoretical and practical education. Most of the students in the two groups perceived that the inclusion of clinical pathology course in physiopathology course was good. Both groups perceived the course as useful for better management of patients in postgraduate studies.
Conclusions: There is no theoretical and applied academic course with rational systematic training objectives in the clinical pathology field for better utilization of laboratory tests. It highlights the need for paying further attention and planning in this field.

Keywords: Clinical Pathology, Learning, Medical Education

1. Background

Appropriate interpretation of laboratory test results is an essential part of medical education, and academic centers play the main role in achieving this goal (1). Regarding the importance of clinical pathology for diagnosis, decision making regarding preventive and minimally invasive methods, and treatment follow-ups, it is essential to familiarize students with this applied science that addresses rational request for a laboratory test, use of laboratory tests to confirm or reject the diagnosis, sampling and sample transfer methods, necessary conditions for laboratory tests, interactions, and occasionally fatal errors (1-3). There are different methods to teach the laboratory sciences to medical students; to ensure taking important educational principles into consideration, medical universities should first set their specific goals and plan for achieving them (3). In recent years, unnecessary repeated requests for laboratory tests and misinterpretation of the test results in medical education centers have inevitably led to misdiagnoses and additional costs, highlighting the importance of further education in this field (4). However, teaching clinical pathology to medical students is neglected in many countries including Iran (5). Insufficient educational facilities in pathology laboratories and mere theoretical education in universities resulted in dissatisfaction among medical students (6), as observed in a study from the United States

(1). Therefore, the selection of effective teaching method as well as time, location, and target group of education in this field is an important challenge in academic centers precluding efficient utilization of laboratory services as reported by Iran Ministry of Health and Medical Education (6, 7). In addition, new sophisticated laboratory techniques make it essential to increase the knowledge of medical students to make the best interpretations of the requested laboratory tests through appropriate training (8).

2. Objectives

The current study aimed at investigating the quality of education in clinical pathology science from the perspective of medical students at physiopathology level. The program was initiated in 2014 at Kerman University of Medical Sciences to increase the capabilities of students with respect to applied laboratory skills.

3. Methods

In the current interventional study, 84 medical students at physiopathology level were consecutively enrolled and, after making the necessary coordination with the Deputy of Education, a one-unit clinical pathology course was added to the routine (five-unit) pathology course in the second semester of 2013 - 2014 academic year. Inclusion criteria for the subjects were being a medical student and having interest to participate in the study; the exclusion criteria were failure to complete participation in the study and incomplete data. Two groups of internship students including 42 subjects that took the clinical pathology course and 42 ones that did not take this course were consecutively enrolled. The main topics were selected after consultation with the Deputy of Education and the Department of Internal Medicine, and according to the students' requirements in different clinical areas including knowledge and interpretation of biochemical (liver, gastrointestinal, pancreas, rheumatology, kidney, and pregnancy) tests, urinalysis, body fluid, hematology, and coagulation tests, hemovigilance system and blood bank, and infectious diseases and immunological tests.

Therefore, a program was designed and offered as a 17-session (25-hour) teaching theoretical course using PowerPoint by a pathologist. After completion of the semester, the evaluation was performed by a questionnaire presented by the department and separately administered to the two groups of medical students. The questionnaire included multiple choice questions with four to six options about the time and method of teaching (pathology or clinical practitioners versus basic sciences experts), necessity of assessment, and the effect of clinical pathology course on increasing the knowledge and interest among medical students.

For validity, the pathologists were asked to comment on the questionnaire items and for reliability, the Cronbach's alpha coefficient was calculated at 90%. The study design and objectives were explained to participants in order to encourage them to better cooperate with the study. The data obtained from the questionnaires were analyzed with SPSS version 19.0 using chi-square test.

4. Results

In the current study, 30 male and 54 female students were enrolled with the mean age of 23 years. Regarding the necessity of the course, 31 (73.9%) and 29 (69.1%) subjects respectively perceived it as almost and highly necessary and totally 28 (66%) subjects in each group reported the continuation of this course as necessary. The majority of subjects that completed the course (40.5%) believed that it should be offered at clerkship level (clinical stage) and 38.1% believed that the physiopathology level (pre-clinical stage) is the best time to offer the course. Of the subjects that did not take the course, 59.5% perceived the clerkship level as most appropriate time to offer the course; however, there was no statistically significant difference between the two groups ($P > 0.05$). In addition, 21 (51.2%) and 20 (47.6%) subjects who respectively took and did not take the course believed that the course would be useful for the management of patients, with no significant difference ($P > 0.05$). Both groups perceived that recommendation of reference book has no priority, and there was no significant difference in this regard between the groups.

Nineteen (42.5%) students who took the course and 10 (23.8%) students who did not take the course believed that they needed further training in biochemistry and hematology tests, respectively. The students who took the course reported the clinical specialists (internal medicine specialists, pediatricians, and infectious diseases specialists) as being the better group, in comparison to with pathologists, for teaching [20 (47.6%) versus 17 (40.5%)], while the corresponding rates were, respectively 12 (28.6%) and 21 (50%) in students that did not take the course, yet the difference between the two groups was not statistically significant ($P > 0.05$). The opinions of the two groups regarding the discrepancies of the laboratory tests interpretations during the visit of patients were elicited. Trained and non-trained students believed that 50% and 82.9% of their interpretations were respectively different from those of the other group ($P < 0.05$). Only 21 (50%) subjects who completed the course were interested in being a direct observer or operator in the hospital's medical laboratory.

Among the subjects who did not take the course, 55% believed that the need for laboratory references would be moderate to high mainly due to the interpretation of the laboratory tests results, drug and food interactions with laboratory tests, preparations for tests, and correct sampling; 19 (79.2%) students in this group reported insufficiency of education in the interpretation of biochemical test results and blood transfusion in the medical education (Table 1).

Table 1. Comparison of the Viewpoints of Medical Interns About the Clinical Pathology Course in Kerman University of Medical Sciences Based on the Status of Taking the Course

Variable	Course		P Value
	Taken	Not Taken	
Necessity			0.306
High	18 (42.9)	22 (52.4)	
Moderate	13 (31.0)	7 (16.7)	
Low	11 (26.2)	13 (31.0)	
Efficacy			0.920
High	21 (51.2)	20 (47.6)	
Moderate	12 (29.3)	14 (33.3)	
Low, not interested and no idea	8 (19.5)	8 (19.0)	
Continuation			0.114
High	8 (19.5)	17 (40.5)	
Moderate	19 (46.3)	11 (26.2)	
Low	5 (12.2)	7 (16.7)	
Not interested and no idea	9 (22.0)	7 (16.7)	
Quality			0.621
High	10 (23.8)	14 (33.3)	
Moderate	20 (47.6)	18 (42.9)	
Low and no idea	12 (28.6)	10 (23.8)	
Effects on clinical practice			0.002
High and moderate	21 (50.0)	34 (82.9)	
Low, not interested and no idea	21 (50.0)	7 (17.1)	

5. Discussion

Rational request for clinical tests and their correct interpretation could result in appropriate utilization of laboratory tests and less costs, in addition to better therapeutic and diagnostic outcomes (4). Smith et al., from the United States investigated teaching of clinical laboratory tests (clinical pathology) and reported that approximately all (93%) of the participants attending the clinical laboratory course considered teaching based on a predetermined curriculum as necessary (9). The current study results revealed that in both groups, the majority of subjects perceived this course as necessary with desirable effects on the management of patients in clinical course. It is, therefore, necessary that medical students believe in the necessity of appropriate utilization of laboratory tests, interpretation of their results, and their clinical relevance. The study by Gottfried et al. (10), from the United States recommended a two-week clinical course for the undergraduate medical students.

The study by Smith et al., showed that clinical pathology course should be incorporated in the clinical and preclinical stages (3). Omidifar et al., (5) investigated the efficacy of a 1.5-day applied laboratory workshop for three groups of medical students, consisting of physiopathology (first year), the clinical course and the last year (traineeship), by comparison of the multiple choice question test results before and after the intervention. They suggested an applied course of clinical pathology by clinical pathologists for the students of clinical fields at clerkship stage with other applied rotations. All students perceived simultaneous offering of theoretical and applied courses as necessary, but neither of the groups were interested in using reference books due to low preference for them. Currently, in the majority of universities in Iran, the clinical pathology is taught theoretically with booklets instead of the reference books (6, 7). The study by Smith et al., suggested this course to be incorporated into small focus groups discussing clinical relevance, case-based discussions, and problem-based learning. The study by Talebi et al., (11) demonstrated that despite being old, question-answer method was useful to teach the clinical pathology.

The study by Nikolic et al., revealed that students were not interested in being a direct observer or operator during this course, but presentation of the course in the laboratory and direct contact with the laboratory staff resulted in better learning due to higher motivation (12). The study by Smith et al., (9) showed that the barriers this course faced included lack of sufficient time specified in the clinical curriculum or before clinical stages, and lack of knowledge and interest among physicians. In that study, 78% of the participants were enrolled in this course in the first or second years of medical education and only 19% preferred its inclusion in the clinical course. The majority of the current study subjects in the two groups perceived the clinical stage better than physiopathology stage to offer the course. Therefore, it seems useful to revise the curricula. The most interesting topics were biochemical tests, body fluid assessments, and hematology tests. The study by Smith et al., (3) showed that the main purposes of the

course were relied on chemical and immunological tests, molecular diagnosis, hematology, blood transfusion, and microbiology, which were also incorporated in the one-unit course in the current study. The students who completed the course believed that it is better to be taught by clinical specialists, as compared to pathologists preferred by the subjects that did not take the course; however, the difference was insignificant. This is likely to be due to the fact that pathologists mainly teach theoretical courses, while clinical specialists teach clinical courses. The study by Smith et al., (9) revealed that only 52% of medical education centers had medical lab consulting services and perceived the collaboration of a pathologist and a scientific working group in providing such services as necessary due to lack of sufficient knowledge among non-pathologist physicians.

The advantages of this program included increased knowledge about the use of specific tests in various clinical fields, increased awareness of biological variables, confounding factors, and potential errors in the interpretation of laboratory tests, incorporation of hemovigilance system into the hospital, increased knowledge about appropriate test request, sampling methods and pre-analysis parameters, and encouraging patients to attend clinical laboratories.

5.1. Conclusions

The current study results revealed that there was no modern rational training course for appropriate utilization of laboratory tests; it is therefore essential to drag attentions to these courses and plan for them.

Acknowledgments

The authors acknowledged their gratitude to the Deputy of Education, Kerman University of Medical Sciences as well as the study participants for their cooperation.

Footnotes

Conflict of Interests: The authors declared no conflicts of interest.

Ethical Approval: The study protocol was approved by the Ethics Committee of Kerman University of Medical Sciences (code: IR.KMU.REC.1397.552).

Funding/Support: This research has been supported by pathology and stem cell research center.

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Strides Dev Med Educ. 2019 December; 16(1):e90362. doi: 10.5812/sdme.90362.

Published online 2019 December 30. **Research Article**

The Effectiveness of Group Counseling with Emphasis on Communication Skills on Midwifery Students' Sense of Belonging in Clinical Settings

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Received 2019 February 06; **Revised** 2019 September 04; **Accepted** 2019 September 07.

Abstract

Objectives: This study aimed to investigate the effect of group counseling with emphasis on communication skills on midwifery students' sense of belonging in clinical settings.

Methods: This interventional study with the pre-test - post-test control group design was conducted on 78 midwifery students of Kerman Medical University, who were selected using the census method. Of the total study population, sixty students with low level of mental health were screened using Goldberg's General Health Questionnaire and randomly included in an intervention and a control group. They filled out Belongingness Scale-Clinical Placement Experience (BES-CPE) as the pre-test. The intervention consisted of eight group counseling sessions (two 2-hour sessions per week) with emphasis on communication skills that were held in their faculty. The final sample included fifty-two students filling out the post-test instruments. Data were analyzed using SPSS 22.

Results: There was a significant difference between the groups in terms of total score ($P < 0.0001$) as well as the self-esteem and self-efficacy subscales ($P < 0.05$).

Conclusions: Sense of belonging in clinical settings is required for midwifery students so that they can improve their communicaton skills in such settings. Therefore, it is recommended to include programs in midwifery curricula in order to improve students' sense of belonging with enhancing their communication skills.

Keywords: Counseling, Belonging, Communication, Clinical, Midwifery, Students

1. Background

Midwifery is a medical profession and also a combination of art and science. It requires complex capabilities such as social intelligence, knowledge, creativity, experience, logical perception and critical thinking (1). Clinical training is among the main and vital components of midwifery curriculum. It is considered as the heart of midwifery education, which encompasses about half of the list of courses on midwifery. Clinical experience is essential to learn certain knowledge or skills in practice. Similarly, students' trust in their own professional capabilities is highly important. The main goal in this regard is that students reach the highest level of learning, which is professional qualification (2). A highly fruitful clinical training program aims to graduate highly efficient students (3). A clinical setting and/or curriculum should have sufficient self-efficacy to transfer knowledge and skills to midwifery students. It is a key factor in improving midwifery students' skills in clinical settings (4). Students' compatibility and adaptation with appropriate clinical context as well as efficient interactions between the students with the patients, fellows and colleagues provide a suitable ground for their compliance in clinical settings. In this way, students' sense of belonging in practice is promoted (5) as a major requirement to work reliably in clinical settings (6).

Sense of belonging has been recognized as the basic psychological requirement of human beings, and is a pre-

requisite for clinical training of students (7). It is also considered as the basic concept of mental health as well as a shared social sense that provides the ground for security and communication (8). Belonging is defined as the sense of being existent and the perception of being valuable for others at different interpersonal levels (9). Among the advantages of belonging are increased self-esteem, self-self-efficacy, and resilience; positive clinical experiences; motivated self-learning; and academic achievement (6, 7, 10). Low self-esteem and job satisfaction along with a high level of anxiety and stress in clinical practice in case of poor general health can be related to the lack of sense of belonging in clinical settings (11-13). It is obvious that sense of belonging leads to enthusiastic concentration on learning for better comprehension as well as to high quality communication with staffs and perception of their supports (14). Students unable to secure belonging learn in clinical settings as outsiders, unfamiliar with the nursing environment (15).

Levett Jones et al. (14) believed that reciprocal respect between staff and faculty members with students in a pleasant environment would promote sense of belonging, learning experiences, self-confidence, self-self-efficacy, motivation and proficiency in students (16). To create positive clinical experiences, it appears necessary to consider all types of reactions and behaviors facilitating or undermining students' sense of belongingness (14).

With these testimonials, communication skills is one of the effective components on the level of clinical belongingness (17). Group counseling is confirmed to improve communication skills (18). Proper ways of listening and talking to colleagues, being assertive and participating in group works and discussions are some aspects of communication skills. Counseling groups help members to find out, evaluate and displace their incorrect behaviors through a mutual, respectful and trustable environment. This climate should remove fear of loneliness and rejection. Thus, individuals can be supported and remain emotionally close to each other (19). The ultimate goal is to train midwifery students as future workers in the healthcare system with a high sense of belonging so that better services could be offered to patients and women during their fertility period. A thorough review of the literature revealed that no interventional studies attempted to promote midwifery students' sense of belonging in clinical settings (17, 20, 21).

2. Objectives

Therefore, the present research aimed to determine the effect of group counseling on midwifery students' sense of belonging in clinical settings, with an emphasis on their communication skills, at the Faculty of Nursing and Midwifery, Kerman Medical University (KMU), Kerman, Iran, in 2016.

3. Methods

This educational-intervention study with the pre-test - post-test control group design aimed to determine the effect of group counseling on midwifery students' sense of belonging in clinical settings with the focus on their communication skills at the Faculty of Nursing and Midwifery of KMU in 2016. After obtaining the ethical code (ir.kmu.rect.2015.556) from the ethics committee of KMU, the recommendation letter was submitted to the head of the faculty. The inclusion criteria were successfully passing at least one clinical course and having low general health based on Goldberg's General Health Questionnaire. Therefore, using the census method, the researcher conducted a meeting with all the midwifery students at KMU. Accordingly, 78 students inexperienced in clinical fields were included in the study. First, the researcher introduced herself and explained the research goals. Then, she asked the participants to complete Goldberg's General Health Questionnaire (22). The questionnaire was used as an inclusion criterion in a bigger research project that aimed to determine students' general health status and enhance it through group counseling with the emphasis on communication skills. As mentioned in the problem statement section, poor general health can be related to the lack of sense of belonging (11-13). Therefore, students with a general health score above 23 (23 is considered as the cutoff score) were excluded from the study whereas those with a general health score of 23 and below were included in the study after obtaining written informed consent. Accordingly, 60 eligible students were randomly placed in an intervention (n = 30) and a control (n = 30) group using a random number table. The students became homogenous in the both groups in terms of year of admission. Moreover, the number of students from each academic admission year was equal in the both groups. Belongingness Scale-Clinical Placement Experience (BES-CPE) (23) was completed by the both groups in the pre-test phase. Figure 1 shows the flow diagram of the study based on CONSORT criteria.

The intervention group received a total of eight group counseling sessions (two two-hour sessions per week) at the faculty, while the control group received no intervention. It is noteworthy that the number of samples in each group was reduced to 26 during the completion of the questionnaire. Finally, 52 samples were evaluated.

The students in the intervention group were asked not to give the educational pamphlets of counseling sessions

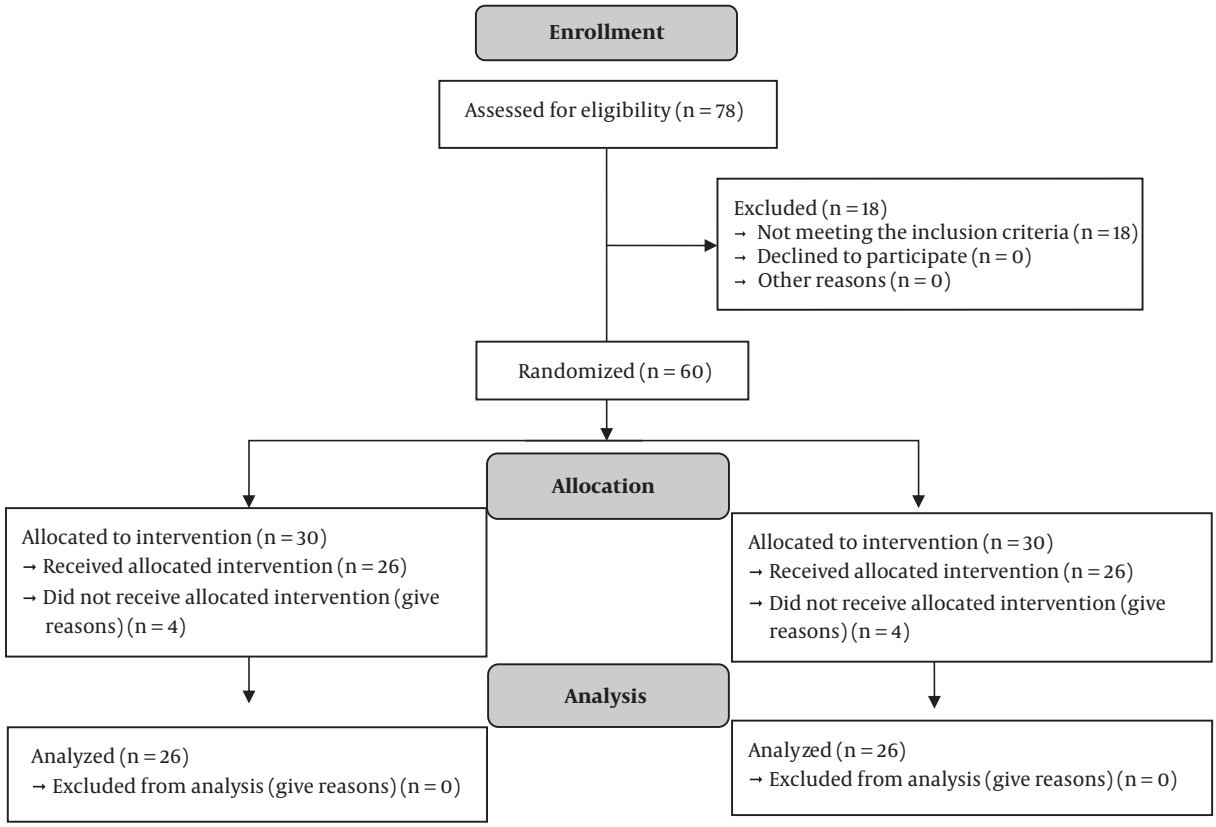

Figure 1. The CONSORT flow diagram of the study

to the students in the control group until the post-test was conducted. However, the education pamphlets were given to the control group students after the post-test in order to consider moral principles. The schedule of the intervention group students was set by the Office of Education so that they could participate in the group counseling sessions. Accordingly, they participated in eight sessions of group counseling with the emphasis on communication skills in order to improve their sense of belonging in clinical settings.

3.1. Materials

1. Demographic variables included age, academic semester, marital status, birth place, place of residence, interest in the field of study and having at least one first-degree relatives in the clinical field.

2. Goldberg's General Health Questionnaire was developed by Goldberg and Hiller in 1979 and consists of 28 items (22). The items 1 to 7 associate with subscale of physical signs, the items 8 - 14 refer to the subscale of anxiety and insomnia, the items 15 - 21 associate with social function disorder and the items 22 - 28 associate with the subscale of depression. The items are scored with 0 and 1 and thus each individual score varies between 0 - 28. To obtain the total score, scores of all the items should be added. The score of 23 and below shows normal general health whereas the score of above 23 shows poor general health. The questionnaire was validated by Taghavi (24) for use in psychological researches and clinical practices.

3. BES-CPE (23) includes 34 items and three subscales of self-esteem (13 items), continuity (10 items) and self-efficacy (8 items) based on Likert scale ranging from 1 (it is never true) to 5 (it is always true). Therefore, the range of scores is between 1 and 170. A higher score shows a higher sense of belonging (23). The validity and reliability of the scale were determined by Hassanvand et al. (7). Accordingly, the reliability of the scale was shown to be r = 0.70 using the pre- and post-test repeatability method. Moreover, the Cronbach alpha value was 0.90 for the total scale, while it was 0.88, 0.75 and 0.84 for the subscales of self-esteem, continuity and self-efficacy, respectively (7). In addition, the content validity of the scale was obtained quantitatively with the content validity ratio being 0.91 and the content validity index being 0.84.

The data were analyzed using SPSS 22. In this regard, a paired t-test was applied to compare the difference between the pre- and post-test mean scores of the two groups and an independent *t*-test was run to find the difference between the mean scores of the two groups, pre- and post- intervention.

4. Results

The final analysis was carried out on 52 students. Table 1 shows the socio-demographic variables of the final sample.

Table 1. The Socio-Demographic Variables of the Final Sample

Variable	Intervention	Control	P Value
Age, y	21.38 ± 1.16	21.26 ± 1	0.63
Semester, No. (%)			0.85
Third semester	7 (26.9)	8 (30.8)	
Fifth semester	13 (50)	11 (42.3)	
Seventh semester	6 (23.1)	7 (26.9)	
Marital status, No. (%)			0.18
Single	22 (84.6)	18 (69.2)	
Married	4 (15.4)	8 (30.8)	
Residency, No. (%)			0.35
Native	17 (65.4)	9 (34.6)	
Non-native	20 (76.9)	6 (23.1)	
Residency status, No. (%)			0.07
Dormitory	21 (80.8)	15 (57.7)	
Non-dormitory	5 (19.2)	11 (42.3)	
Being interested in the field of study, No. (%)			0.63
Yes	24 (92.3)	23 (88.5)	
No	2 (7.7)	3 (11.5)	
First-degree relative with a clinical job, No. (%)			0.99
Yes	11 (42.3)	11 (42.3)	
No	15 (57.7)	15 (57.7)	

Results showed that the mean and standard deviation of age were 21.38 ± 1.16 and 21.26 ± 1 in the intervention and control groups, respectively. Most of the participating students were single (the intervention group = 84.6% and the control group = 69.2%), native (the intervention group = 65.4% and the control group = 76.9%), living in dormitory (the intervention group = 80.8% and the control group = 57.7%), and interested in their fields of study (the intervention group = 92.3% and the control = 88.5%). Moreover, the both groups were homogenous in terms of distribution of background variables and their general health scores (P = 0.69). However, there was a significant difference between the intervention and control groups in terms of total instrument's mean scores (P = 0.006). With regard to sense of belonging, the highest mean score was given to self-self-efficacy (the intervention group = 3.31 ± 0.74 and the control group = 3.85 ± 0.68) whereas the lowest mean score was given to continuity (the intervention group = 2.43 ± 0.61 and the control group = 2.74 ± 0.75) in the both groups.

Comparative results were obtained on the mean scores of the students in the both groups in terms of sense of belonging in clinical settings before and after counseling. Accordingly, it was shown that a significant increase of the score was observed in the intervention group after counseling, but not in the control group. Moreover, comparative results were obtained on the mean scores of the sub domains of sense of belonging in clinical settings before and after counseling in the both groups. It was revealed that all the domains of sense of belonging in clinical settings significantly increased in the intervention group (Table 2).

Since the intervention and control groups were not homogenous in terms of the mean score of sense of belonging prior to the intervention, "pre-post mean of paired difference" was used to compare the mean scores of the pre-post intervention total scores and subscales. Further, the comparison of "pre-post mean of difference" in the both groups showed that there was a significant difference between the groups in terms of total score as well as the self-esteem and self-efficacy subscales. However, there was no significant difference between the groups in terms of the continuity subscale (Table 3).

The results also indicated that there was no significant relationship between the demographic variables and also no significant difference between the pretest with post-test mean scores. Moreover, the intervention was shown to have no significant effect on the sense of belonging in terms of demographic variables (P value was 0.92 for age, 0.58 for academic semester, 0.35 for marital status, 0.28 for living status and 0.53 for interest in the field of study).

5. Discussion

The present study aimed to determine the effect of group counseling on students' sense of belonging in clinical settings with the focus on communication skills. The results indicated that the mean score of students' sense of belonging in clinical settings was higher in the control group before counseling than in the intervention group. The mean of scores in the control group was similar to that in the study of Levett Jones et al. (11), McKenna et al. (25) and Dabirifard et al. (26). Data analysis showed that the sense

Table 2. Comparison of the Subscales of Sense of Belonging in Clinical Settings Before and After Counseling in the Both Groups

Sense of Belonging	Intervention (Inter)		Control (Con)		Statistical Results			
	Pre-Intervention	Post-Intervention	Pre-Intervention	Post-Intervention	T (Inter)	P	T (Con)	P
Self-esteem	3.07 ± 0.61	3.54 ± 0.44	3.51 ± 0.73	3.65 ± 0.51	4.8	0.0001	1.06	< 0.29
Continuity	2.43 ± 0.61	2.78 ± 0.65	2.74 ± 0.75	3.03 ± 0.6	3.01	0.006	1.77	< 0.088
Self-efficacy	3.31 ± 0.74	3.9 ± 0.44	3.85 ± 0.68	3.9 ± 0.45	- 4.34	0.0001	0.54	< 0.59
Total score	2.88 ± 0.52	3.38 ± 0.48	3.34 ± 0.6	3.43 ± 0.42	6.46	0.0001	0.98	0.33

Table 3. Comparison of the "Pre-Post Mean of Scores' Difference"

Belongingness	Intervention	Control	T	P Value
Self-esteem	0.46 ± 0.49	0.13 ± 0.64	2.06	0.04
Continuity	0.36 ± 0.61	0.24 ± 0.68	0.62	0.53
Self-efficacy	0.59 ± 0.69	0.05 ± 0.54	3.08	0.003
Total	0.49 ± 0.38	0.09 ± 0.46	3.39	0.001

of belonging score significantly increased in the intervention group after counseling, but not in the control group. In a similar vein, Levett-Jones et al. (14) showed that the improvement of communication skills had a positive impact on nursing students' sense of belonging. Moreover, in consistent with the current study, previous research applying different methods was successful to enhance sense of belonging (21, 27, 28).

This central concept should be considered by medical teams during their communication with students in clinical settings (14). Providing a suitable setting where midwifery students have a sense of belonging can facilitate effective clinical learning (29, 30) toward achieving professional qualifications required for employment. High quality clinical training, which enhances sense of belonging, provides a safe academic environment for nursing and midwifery students and staff (25, 31).

As shown in the study, prior to holding the counseling sessions, the highest and lowest mean scores respectively belonged to the domains of self-efficacy and continuity in the questionnaire. This was similar to the study of Dabirifard et al. (26), which evaluated sense of belonging in clinical settings among bachelor nursing students. The high score of self-efficacy shows that students intend to do efficient practices that improve their sense of belonging in clinical settings (26). Self-self-efficacy is the intermediary between individuals' knowledge and behavior and it also associates with professional qualification. The strong sense of self-self-efficacy leads to more efforts in obtaining achievements and higher performance (32).

Some previous research showed a positive strong relationship between students' communication skills with their self-esteem, sense of belonging and responsibility (28, 33). Mahdavi et al. (2008) reported that responsibility increased students' self-esteem. They believed that increasing self-esteem could lead to the development of planning ability and occurrence of targeted behavior proportional to the problem (34). Douglas Coatsworth and Conroy (35) believed that empirical interventions (psychological education) could have the strongest effects on increasing self-esteem of youths (35).

The literature review revealed no similar study on the concept of sense of belonging in clinical settings. Only some studies with other interventional techniques and various sample size measured interventional effect on sense of belonging in the academic environment. Borzabadi and Araghieh (2015) in their study indicated that students' sense of belonging in schools increased by encouraging and motivating them to have this sense (27). In the study of Abolqasemi et al. (36), the use of the Jigsaw collaborative learning method had a significant positive effect on increasing sense of belongingness among students and enhancing their social interactions. These studies focus on the influence of efficient interventions on sense of belonging.

Concerning the valuable role of clinical training in education of midwifery students and the necessity of its high quality, it is highly important to promote students' sense of belonging in clinical settings.

5.1. Conclusions

Emphasizing communication skills in group counseling had an effective role in enhancement of students' sense of belonging, especially in the subscales of self-esteem and self-efficacy. Therefore, running sessions and

workshops before or during clinical practice can improve performance, basic skills and proficiency of students.

5.2. Limitation of the Study

Some of the students were reluctant to attend the counseling sessions, which led to the decreased number of participants receiving the intervention. Moreover, genetic, personality and individual differences had influences on the pre- and post-test results.

Acknowledgments

We would like to thank all students at the Faculty of Nursing and Midwifery, KMU, who participated in the study. We would also like to appreciate the Vice Chancellor for Research at KMU for supporting the study.

Footnotes

Authors' Contribution: Mahnaz Saadatbakht: writing the first draft, Atefeh Ahmadi: writing the second and above drafts, Ali Mehdizadeh Zare Ansari: management of the counselling sessions, Mansooreh Azizzade Forouzi: management of the first draft, Yunes Jahani: bio statisticas consultant

Conflict of Interests: There is no conflict of interests.

Ethical Approval: Ethical code (ir.kmu.rect.2015.556) took from the Ethics Committee of Kerman University of Medical Sciences (KMU).

Funding/Support: The Deputy of Research Kerman University of Medical Sciences supported this study.

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Strides Dev Med Educ. 2019 December; 16(1):e90940. doi: 10.5812/sdme.90940.

Published online 2019 December 29. **Research Article**

Standardization of the Persian Version of the Academic Commitment Scale

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Received 2019 February 23; **Revised** 2019 October 04; **Accepted** 2019 October 14.

Abstract

Background: Academic commitment as a new specialized issue has attracted the attention of educational researchers. Despite of the conducting relevant studies, it was more considered by Human-Vogel and Rabe. Their designed research tool has not yet been used in Iran.
Objectives: The purpose of this study was to investigate the factor structure and reliability of this tool in Iranian learners.
Methods: The primary tool consisted of 30 items and 5 dimensions (students' satisfaction with their studies, level of commitment, investment, quality of alternatives, and meaningfulness). In this cross-sectional study, 449 pre-university students of Bandar Abbas city were selected through multi-stage sampling. Data were analyzed using AMOS and SPSS software. Confirmatory factor analysis was used to examine factor structure. Cronbach's alpha coefficient and Gottman and Spearman-Brown split-half coefficients, were used to test the reliability.
Results: After examination the validity of the tool, five items were excluded and finally a questionnaire including 25 questions was obtained. Beta coefficients were greater than 0.4. Model fit indices, including root mean square error of approximation (RMSEA), Comparative fit index (CFI), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normed fit index (NFI), incremental fit index (IFI), and Tucker-Lewis index (TLI) were obtained 0.04, 0.95, 0.91, 0.90, 0.90, 0.95, and 0.94, respectively, indicating the fitness of this five-factor tool. A Cronbach's alpha coefficient of 0.87, a Gottman's split-half of 0.65, and a Spearman-Brown split-half of 0.68 were obtained, indicating the appropriate reliability of the instrument.
Conclusions: Based on the results, the final version of the tool seems to be suitable for assessing academic commitment in Iranian learners in the Iran educational systems.

Keywords: Academic Commitment, Learner, Iran, Questionnaire, Persian

1. Background

The term "commit" or "commitment", in Webster's dictionary is defined as a promise of something or an individual (1) and, according to the Liuo's definition, expectations, personal benefits, ethical issues, sacrifice and loyalty. Commitment has been defined as having a feeling, purpose and direction in life (according to Curtis) as well as a belief in the importance and prominence, interesting, meaningfulness and valuable aspects of life's activities (based on Kobsa's definition) (2). In a study, commitment was identified with three dimensions, including effort investing, a strong sense of involvement, and a complete focus on one's activities (3).

Academic commitment refers to one of the dimensions, including school bonding (4, 5), or individual's psychological investment in the activities of a school or university (6), or the learner's view of the importance and usefulness of the university or to achieve individual educational goals (3).

Commitment is a kind of purposeful fundamental feeling or sense of interconnectedness that is the most essential and most comprehensive source of resistance to any kind of stresses (including educational stress) (7). In addition, is also one of the dimensions of psychological hardiness in Kobsa's theory that indicates that the committed person has realized the value and meaning of who he is and what he is doing (8).

Academic commitment was first conceptualized in terms of percentage of practical effort and time devoted to educational and scientific activity (9); however, Human-Vogel argued that the time and effort put into practice by a learner rarely represents the range that needs to be taken

into account for academic commitment during his or her education (10). The results of recent studies have shown that time and effort are more accurate descriptions of practical motivation (9), which Human-Vogel has defined it more as a consequence of commitment (10).

Human-Vogel and Rabe developed a comprehensive model of academic commitment, which in fact, was a developed model of commitment investment (11). The Rusbult commitment investment model, as the oldest model of marital commitment, was first developed to examine commitment in romantic relationships. According to this model, couples' commitment to each other depends on three interrelated factors, such as "marital satisfaction, marital investment, and marital alternatives" (4).

Given the revealed background by the investment theory in studying romantic relationships, this theory can be used in studies on student's progress or academic burnout (11).

Studies have shown that this theory is not just an interpersonal theory, but can also be extended to other fields to help clarify the limits and external boundaries of this model (9). Human-Vogel and Rabe developed this model to use in educational field and added two dimensions of the meaningfulness of education and the level of commitment (11).

Academic commitment is a new field of research. Commitment as a research structure and concept has been examined mainly in the communication or organizational areas, however studies on education are limited and has only recently been studied comprehensively (9).

Human-Vogel stated that there is a great deal of research into the role that commitment plays in organizational management and marketing, However, there is no comprehensive and comprehensive research on the sustainable practical motivation of students in educational settings (10).

Human-Vogel and Rabe believe that most of the conducted global studies on academic commitment have limited to the learners' essential commitments (according to the rules and conditions of higher education), commitment to the individual reports, commitment to the completion of education, and the organizational commitment-related issues of higher education staff (11).

The relationship between academic commitment to academic achievement (12-16), academic motivation (13, 17) and positive achievement emotions, including pleasure, hope, and pride (18) and academic vitality (17) highlights the importance of this issue, however this concept has not even been explored in these studies as a multi-dimensional concept and structure, but it has considered as one of the dimensions of school bonding or one of the dimensions of psychological hardiness.

Studies on academic commitment (in the broad sense) in Iran, similar to global studies, are very limited. For example, searching for first 100 records in Google as well as the Persian Scientific Information Database (SID) has resulted in less than 5 articles entitled "Comprehensive commitment among all learners (medical sciences universities, students of other universities and majors, and school students)", in which academic commitment was limited to commitment to homework (16, 18) or it was considered as a one-dimensional subscale. Therefore, it seems that multidimensional studies on academic commitment are needed in medical education in Iran. The lack of an approved research tool is one of the limitations of conducting comprehensive research in this area. Among global studies, conducted before Human-Vogel and Rabe research, there has been no tool for comprehensive measurement of academic commitment. In Iran, also, there has not yet been a tool to measure academic commitment comprehensively.

2. Objectives

The present study was conducted to standardize the academic commitment scale (ACS) among all students, including medical education students, students of other universities, pre-university students, and high school students.

3. Methods

This descriptive- analytical cross sectional study was carried out on 499 pre-university student of Bandar Abbas in 2017 - 2018. The studied population, in terms of age and status, as those who were about to enter the university was very close to the university students, especially medical students; however, it was also similar to the high school students. In fact, due to the subjects' status (between university and school), the result of the present study can be used in medical education, in higher education, and in high school students.

The sample size was estimated 480 students. To determine the sample size in structural equation modeling research, Kline proposed at least 5 people per factor and optimally 20 people per factor (19). According to Garver and Mentzer, a sample size of above 200 subjects in structural equations modeling represents a good statistical power for data analysis (20). Of the questionnaires received, 449 questionnaires were analyzed.

Multistage sampling was performed. Cluster sampling and then stratified random sampling were used. After making coordination with the Bandar Abbas Education Organization, the students' number was provided based on

the district, field of study and school type and the ratios of each were calculated. This ratio was also observed for the selected sample, so that in each Education Organization district, the needed sample size in the experimental sciences was calculated in public schools, special schools, and non-public schools. This sample size was also calculated for the mathematics and humanities.

First, in each educational district, the list of available schools was prepared, based on the type of school (public, non- public, and special schools). Then, some schools from each district were randomly selected. In the next step, the list of students according to their field of study was obtained from the school principal of the selected schools.

Based on the initial sample size calculated for each class, students were randomly selected (using Excel software).

The Human-Vogel and Rabe (2015) ACS was used as the research tool, which consists of 30 questions and 5 subscales (11).

The first subscale (level of commitment) assesses the likelihood that the subject will be able to continue his education until the end (without failing).

The second subscale (satisfaction) assesses the subjects' satisfaction with his studies and education.

The third subscale (size of investment) measures the amount of investment by students in their studies. In other words, how much time the student spent studying and how much effort he had made.

The fourth subscale (the quality of alternatives) assesses respondents' perceptions or possibly their preference to choose other alternatives to the university or school.

The fifth subscale (meaningfulness) indicates to what extent learners experience their education meaningfully and can be examined in several areas as follows:

(a) How their identities are formed by their studies, (b) how identity expression can enhance learners' motivation for university education at university, and (c) the degree, to which a university education supports student's identity expression.

The minimum score obtained in the initial questionnaire is 33 and the maximum is 165 (11).

ACS was first used on 259 students at the College of Engineering in South Africa and its validity and reliability were reported at an appropriate level. Its fit indices in this study were at the optimum level and its reliability using Cronbach's alpha coefficient for levels of commitment, the quality of alternatives, satisfaction, meaningfulness and size of investment was calculated 0.90, 0.68, 0.90, 0.91, and 0.90, respectively, which all indicate its appropriate overall reliability (11).

In the present study, ACS by Human-Vogel and Rabe was used for the first time in Iran and for Iranian students. The items of ACS were first translated. To assess the scale validity, its translation was provided to one of the university professors and after confirmation, it was translated to English by another faculty member and matched with the original questionnaire. The two English texts were appropriately matched (the original text and the first English translation).

Content validity ratio (CVR) and content validity index (CVI) and medical education experts' views were used to assess content validity. Questions 5, 6 and 22 (CVR = 0.75) and questions 9 and 13 (CVR = 0.63) were excluded (questions 5, 9 and 13 showed a CVI of less than 0.70). Questions with 0.79% CVI $\leq$ 0.70 were modified and revised by experts. Finally, 25 questions remained (CVR = 0.86 and CVI = 0.89).

The researcher referred to the preschool and the questionnaires were distributed. Initial explanations were provided to the students and they were informed about the ethics of the research, including confidentiality of information, no need to write a name and surname, voluntary participation in the study and being free to withdraw from the research. Also, the ethics code (IR.HUMS.REC.1398.228) was obtained from the University Ethics Committee. To increase the respondents' willingness to participate in the study, a gift was given to each subject.

Data were analyzed using Excel 2010, AMOS 22 and SPSS 18 software (version 18, SPSS Inc., Chicago, IL). To investigate the factor structure of the ACS in terms of confirmatory factor analysis and also to evaluate the adequacy of the model,

Goodness of fit index (GFI), adjusted goodness of fit index (AGFI), root mean square error of approximation (RMSEA), comparative fit index (CFI), 2x, and degree of freedom were used. Before entering data to the model, the assumptions of using AMOS software (including normality of data, the lack of multivariate outliers, and multiple linearity) were also examined. Reliability was also measured using Cronbach's alpha coefficient and Gottman and Spearman-Brown split-half.

4. Results

Of 499 pre-school female students in Bandar Abbas, 61.9% were studying in public schools, 19.9% in non-government schools, and 18.2% in other types. There were 53.7% of students in experimental sciences, 22% in mathematics and 24.3% in humanities.

Among the questions answered, the highest and lowest averages were found for question one, of the level of commitment dimension and question 17, of the investment dimension (Table 1).

To analyze the data, the assumptions to use AMOS software were examined. Normality is one of the assumptions

Table 1. Mean and Range of the Persian Version of Academic Commitment Questionnaire Scores and Its Dimensions

Dimension, Items	Score Range	Mean ± SD
Level of commitment		
Question 1	1 - 5	4.77 ± 0.53
Question 2	1 - 5	3.80 ± 1.01
Question 3	1 - 5	4.50 ± 0.71
Question 4	1 - 5	4.52 ± 0.80
Total dimension	4 - 20	22.11 ± 2.65
Satisfaction		
Question 5	1 - 5	4. 08 ± 0.90
Question 6	1 - 5	4.14 ± 0 81
Question 7	1 - 5	4.19 ± 0. 84
Question 8	1 - 5	3.41 ± 1. 06
Question 9	1 - 5	3.68 ± 0. 99
Total dimension	5 - 25	31.02 ± 5. 08
Quality of alternatives		
Question 10	1 - 5	3. 07 ± 1. 26
Question 11	1 - 5	3. 11 ± 1. 22
Question 12	1 - 5	3. 65 ± 1. 10
Total dimension	3 - 15	9. 82 ± 3. 02
Investment		
Question 13	1 - 5	3.67 ± 1.06
Question 14	1 - 5	2.93 ± 1.11
Question 15	1 - 5	3.02 ± 1.12
Question 16	1 - 5	3.33 ± 1.06
Question 17	1 - 5	3.42 ± 1. 09
Total dimension	5 - 25	16.37 ± 4.29
Meaningfulness		
Question 18	1 - 5	3.65 ± 1.09
Question 19	1 - 5	3.92 ± 0.92
Question 20	1 - 5	3.62 ± 1.04
Question 21	1 - 5	3.79 ± 1.04
Question 22	1 - 5	3.65 ± 0.98
Question 23	1 - 5	3.60 ± 1.03
Question 24	1 - 5	3.42 ± 1.11
Question 25	1 - 5	3.86 ± 1.02
Total dimension	8 - 40	33.25 ± 6.90

in using structural equation modeling.

After deleting outliers, the critical ratio, skewness, and kurtosis showed normal distribution of data (for all dimensions, critical radio absolute value was less than 2.58). The absence of multivariate outlier data was also investigated (Mardia multivariate kurtosis coefficient = 2.36 and critical radio = 2.49). In the present study, there was no multiple linearity [tolerance of greater than 0.10 and variance inflation factor (VIF) of less than 10 were obtained] (Table 2).

In the present study, in order to determine the validity of the academic commitment scale, a confirmatory factor analysis was performed using AMOS software on the factors of this subscale (Figure 1). Accordingly, the academic commitment subscale of all items had a good factor load in performing confirmatory factor analysis, meaning that all standard coefficients were above 0.4. In other words, all items were significantly loaded on one factor (academic commitment) ($P < 0.001$).

The results of Table 3 showed that this model had a relatively good fit. Model fit indices in confirmatory factor analysis indicated that the model good fit (Table 3).

Cronbach's alpha coefficient, Gottman's split-half and Spearman-Brown's split-half were used to determine the reliability of the academic commitment scale (Table 4). Accordingly, academic commitment scale and its subscales

Table 2. Assessing Multicollinearity of Academic Commitment Dimensions

Dimensions of Academic Commitment	Tolerance	VIF
Meaningfulness	0.62	1.61
Investment	0.68	1.46
Quality of alternatives	0.72	1.39
Satisfaction	0.44	2.29
Level of commitment	0.76	1.31

Abbreviation: VIF, variance inflation factor.

Table 3. Model Fit Indices in Confirmatory Factor Analysis of the Persian Version of Academic Commitment Scale

Fit Indicators	Value
χ^2	623.66
P value	≤ 0.001
Degrees of freedom	353
χ^2/**degree of freedom**	1.77
goodness-of-fit index	0.91
adjusted goodness-of-fit index (AGFI)	0.90
normed fit index (NFI)	0.90
goodness-of-fit (GFI)	0.95
incremental fit index (IFI)	0.95
Tucker-Lewis index	0.94
root-mean-square error of approximation (RMSEA)	0.04
Root mean square residuals	0.06

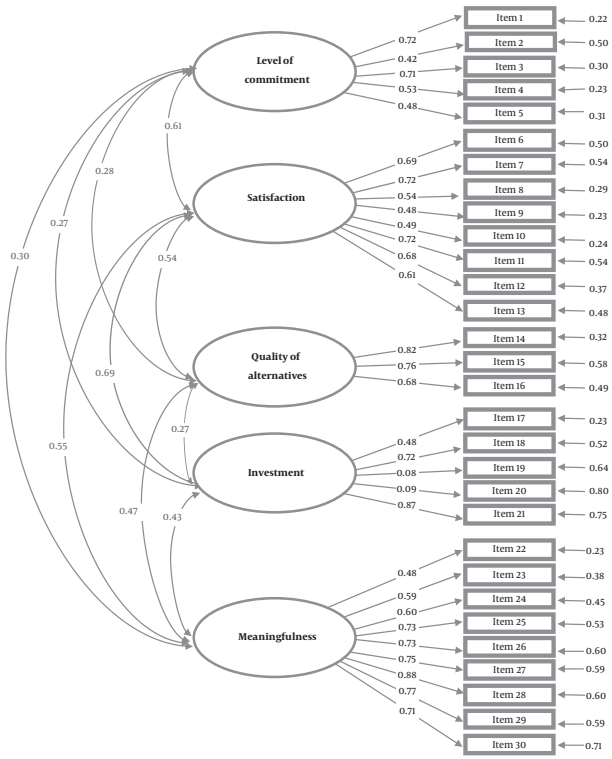

Figure 1. Beta coefficients (factor loadings) of the academic commitment scale

had relatively good reliability coefficients.

5. Discussion

The results of the present study showed that the Persian version of the Human-Vogel and Rabe Academic Commitment Questionnaire with some modifications has an acceptable validity and reliability. Also, B coefficients and model fit indices were acceptable, which is consistent with the results of the Human-Vogel and Rabe study.

In the present study, the χ^2 ratio to df and the RMSEA were more appropriate (lesser) than the Human-Vogel and Rabe research (11). The Cronbach's alpha coefficient was used for reliability of the academic commitment questionnaire in studies by Human-Vogel and Rabe (11), and Viljoen (9), which was slightly better than the present study. Also, the reliability of the meaningfulness dimension in the present study was equal to that of Viljoen (9).

Some differences were found between the original version of the ACS and the standardized version by Viljoen (9). In Viljoen's research, the quality of alternative was asked with two questions and one of the items was omitted from the questionnaire items (9), but in the present study, based on CVI and CVR coefficients, all three items remained in the Persian questionnaire. In contrast, five items were excluded from its Persian version.

In general, the results of the present study can be explained by the theory of Human-Vogel and Rabe (11).

Human-Vogel and Rabe using commitment investment model, measured student satisfaction with study, long-term stability in study (commitment level), the level of investment by university students or students (investment), alternative competitive strategies (quality of alternatives) and the level of felt individual importance by their commitment to study (meaningfulness). Their results showed that the meaningful academic commitment can be predicted in terms of students' satisfaction with studies, time and practical investment, the quality of the alternatives to study, and a clear and distinct perception by the person (11).

On the other hand, Human-Vogel and Rabe regarding the theoretical explanation of academic commitment stated that academic commitment is theoretically related to the principles of self-regulation and student interaction.

Self-regulation theories often emphasize behavioral aspects of goal-directed behavior, whereas learners' interaction frameworks focus on behavioral indicators related to academic achievement, such as time spent on task performance and the quality of their effort (11).

In addition, the meaningfulness dimension in the present study can be explained by the psychological theory developed by Kobsa. In his view, one of the characteristics of a stubborn person is strong feelings of commitment to his activities (15). An individual with high commitment believes in the importance of value and meaning in who he is and what he does. Accordingly, he is supposed to find a meaning in his activities and arouse his curiosity (7).

Investment dimension is explained by a part of the "school bonding" theory. This theory is a multidimensional construct consisting of the components, including power, commitment, belonging, and belief in the rules (7). The commitment component in school bonding theory refers to the individual's psychological investment in school activities; however the commitment to the present study subject is broader and can be explained by the power component. The power component in this theory refers more to the student's behavioral relationship with the school, and it is measured based on time students spend on school-related behaviors (3, 7).

In general, the reliability and validity coefficients of the modified version of the tool were acceptable and can be theoretically explained by available theories.

5.1. Limitations and Suggestions

The main limitation of the present study, like the other studies using questionnaires, was the unwillingness of the

Table 4. Reliability Coefficients of the Persian Version of Academic Commitment and Its Subscales

Scale	Number of Questions	Cronbach's Alpha	Spearman-Brown Split-Half	Gottman Split-Half
Academic commitment	1 - 25	0.87	0.68	0.65
Level of commitment	1 - 4	0.70	0.69	0.69
Satisfaction	5 - 9	0.81	0.73	0.73
Quality of alternatives	10 - 12	0.80	0.77	0.65
Investment	13 - 17	0.87	0.85	0.83
Meaningfulness	18 - 30	0.90	0.87	0.86

participants to answer the questions.

It is suggested that the present study be conducted on the university student and particularly, on Iranian medical education student.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Acknowledgments

This article was extracted from a Ph.D. thesis in educational psychology. We would like to thank the Education Organization of Hormozgan province and Bandar Abbas districts, as well as the principals of girls' high schools and all the students who contributed to this study.

Footnotes

Conflict of Interests: It is not declared by the authors.

Ethical Approval: IR.HUMS.REC.1398.228.

Funding/Support: It is not declared by the authors.

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Strides Dev Med Educ. 2019 December; 16(1):e84664. doi: 10.5812/sdme.84664.

Published online 2019 August 19. **Letter**

The Shortage of Emergency Medicine Residents; A Serious Alarm for the Iranian Ministry of Health and Medical Education

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Received 2018 September 26; **Revised** 2018 December 12; **Accepted** 2018 December 17.

Keywords: Emergency Medicine, Residents, Shortage

Dear Editor,

Emergency medicine is one of the world's newest academic disciplines in recent decades (1). This discipline was established in Iran several years ago and its importance in the community is gradually increasing (2). Emergency medical services play a key role in providing health care services. In recent years, the role of emergency medicine specialists was quantitatively and qualitatively studied in Iran, in the light of its emergence and in spite of some disagreements made at the beginning of its establishment in the Iranian universities. Today, it is well documented that in the Iranian emergency rooms, by the presence of emergency medicine specialists in the treatment system, providing medical services to patients is significantly improved and the waiting time to access services remarkably decreased. By the reduction of patient's waiting time, and time to determine the patient's status and destination in the hospital, further emergency beds are available for possible admissions and emergency rooms are prepared for future admissions (3), in addition to economical savings and other benefits (4). Officials and deputies of the Iranian Ministry of Health always emphasize on the importance of attracting and educating emergency medicine specialists according to the needs of the country in their interviews and forms of need assessment (5). Despite this emphasis and the needs of the country, studies and experiences in Iran show that the procedure of admission and training of emergency medicine specialists is very worrying and critical, therefore, selection of this discipline has a very low priority for applicants (6) and emergency medicine has the highest rate of withdrawal among residents compared to other disciplines. Many emergency medicine residents are over 35 years old and apply for this discipline with low motivation and energy, while the essence of this discipline requires younger, more motivated and energetic individuals.

Research findings suggest that disciplines such as emergency medicine and surgery have lower priorities for applicants due to their stressful nature, increased workload, and the disruption of lifestyles and work life. However, such factors are not limited to Iran and other countries in the region and the world have also the same conditions (6, 7). Nevertheless, a worrisome issue is the release of alarming figures by the Iran Medical Council authorities indicating that more than 11000 medical graduates in recent years did not refer to register and get license from this organization; in other words, they abandoned medicine or immigrated. In addition, 15000 physicians who registered and were licensed by the Iran Medical Council are involved in other businesses, and since 2014 the immigration rate of physicians with different specialties increased 38 times (8). Moreover, shocking figures released by the Iranian Ministry of Health after announcing the results of residency entrance exam, which showed that 305 city-disciplines had no applicants including the emergency medicine, and more than 6000 applicants accepted in the residency entrance exam of 2018 preferred to wait for the next turn, immigrate, or even continue their education in general practice (9). In addition, to the best of authors knowledge, a large number of admitted applicants did not refer to register or withdrew from university at the beginning of the course, to such an extent that some universities registered only two or three emergency medicine residents that is far less than the nominal and actual capacities of the universities. If the same status is observed in the residency entrance exam on March 2018, which is not unexpected, departments of emergency medicine might be inactive in most universities.

If the same condition is observed in the residency entrance exam, which is not unexpected, departments of emergency medicine might be inactive in most universities. Major causes of unwilling for choosing emergency medicine among young doctors are causes including very low allowance for residents that is inappropriate to their dignity (since they are mostly married and have children,

but are not authorized to work in any medical centers except those designated by the Ministry of Health, based on notarized commitments), the large number of referrals and admissions to educational hospitals, very low and poor quality welfare facilities for residents in most universities, reduced quality of education due to enormous number of patients, inappropriate and imbalanced capacity of some disciplines to the real needs of the community, and ultimately, uncertain job prospects with delinquency, along with other existing factors cause the doctors not to register for residency entrance exam or not show interest to educate in such disciplines, especially the emergency medicine. Due to population growth, establishment of new hospitals and emergency centers, lifestyle changes in the Iranian society, recent catastrophic events and even terrorist attacks in Iran, and early burnout and lower retirement age in emergency medicine compared with other disciplines such as radiology and non-surgical ones, the need of the country for motivated, well-educated, young physicians familiar with emergency situations, crisis management, and crowded emergency rooms are multiplied.

Under the current conditions of the Iranian health system involving different sectors of the health system, the Ministry of Health, in addition to all these problems that require fundamental infrastructures to be solved, requires serious and practical short- and long-term strategies to address the needs of the country to emergency medicine specialists; the people in contact with many residents, general practitioners, and medical students suggest policy-makers of the Ministry of Health to double the allowance of emergency medicine residents, modify emergency medical tariffs, or realize residential tariffs for emergency medicine specialists (to guarantee future career opportunities), specify more time off for emergency medicine residents than their counterparts in other disciplines, allocate short-term two days or more holiday monthly in order to reduce work pressure in case of admitting residents at optimum level, permit working at non-educational hours in private sectors for emergency medicine residents, and set a regular dress for emergency medicine resident throughout the country to increase job acceptance, allocate more advantages and higher priorities for the selection of places in the post-graduate program of serving the community, and agree to reduce the registration capacity of so-called "luxury" disciplines such as radiology, skin, etc., in order to persuade the students with higher grades to study in this discipline. In addition, it should be noted that the knowledge of medical students in internship and previous courses is low and insignificant in many universities; training and informing students regarding the emergency medicine discipline should be considered by managers and policymakers. It should be noted that the budget allocated to persuade residents to this discipline is peanut in comparison with those of specialties. Finally, it is emphasized that such short-term strategies should not ban middle-and long-term planning for the modification of the residency system.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

Conflict of Interests: It is not declared by the authors.

Funding/Support: It is not declared by the authors.

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Strides Dev Med Educ. 2019 December; 16(1):e88559. doi: 10.5812/sdme.88559.

Published online 2019 August 18. **Letter**

Backpack; a Tool for the Self-Assessment of International Communication Skills of Faculty Members

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Received 2019 January 01; **Accepted** 2019 January 27.

Keywords: Self-Assessment, International Communication, Competancy

The rapid pace of change in the world has prompted organizations to adapt themselves as quickly as possible to the various social, technological, economic, environmental and political changes in the environment. The need for such a keen adaptation in organizations such as universities of medical sciences, due to their special nature and role, becomes highly important. One of the most important examples of such adaptations in universities is to update faculty members' capabilities and competencies to showcase their best performance in the university.

In general, the skills and competencies required for a medical university faculty member can be divided into two groups of specialized and general skills and competencies. In many cases, the emphasis of the university and the educational system is on the strengthening of the more specialized skills. The purpose of strengthening specialized skills is to update and complete the skills related to the specialized field.

General skills are areas that are not limited to specific occupations and apply to a wide range of works like the skill of team working, communication, cultural intelligence and etc. One of the essential general qualifications required for faculty members is the strengthening of international skills, which has been also mentioned in the Packages for Reform and Innovation of Medical Education (1).

Indeed, one of the requirements of our medical universities is to strengthen the international communication skills of faculty members and students. To strengthen this skill, it seems necessary to use appropriate methods and mechanisms. In this regard, one of the most important methods is to provide an opportunity for faculty members to self-assess the mentioned skills. Self-assessment involves a wide range of mechanisms and techniques through which individuals can measure the learning processes with specific criteria (2).

Considering the importance of self-assessment of international communication skills, this capability has been designed and implemented in the backpack system. To prepare this system, the following phases were followed:

A) Reviewing various international communication skills, in both Persian and English

B) Interviewing eight experts in related fields including education (medical education, general education and public education), English language, international relations, and communication skills in order to strengthen the results of the review and customize them according to the country's conditions.

C) Asking for ideas of some faculty members residing abroad through e-mail, to complete the model.

D) Classifying the required skills in the form of the four main categories of verbal, nonverbal, individual and cultural recognition skills.

E) Loading the selected content for each skill and its subset on the portal, including related explanations, educational videos, training courses and appropriate books for each skill.

And) designing self-assessment tests for each skill by conducting a review study and interviewing experts in

each field

The most important capabilities of the international communication skills backpack were as follows:

• The ability to self-assess the capabilities of establishing international communications

• Identification of the strengths and areas of improving international communications

• Provision of educational content to enhance international communication skills

• Creation of a platform for content sharing to strengthen international communications capabilities

The backpack system is designed to identify and strengthen the international skills of faculty members, with emphasis on two areas of self-assessment and training to respond to this need. In this system, training and strengthening of international skills are presented in the four categories of individual skills, verbal skills, non-verbal skills and culture recognition. In the individual skills area, personal growth has been considered as one of the essential requirements for any effective communication, including international communication. The components of personal growth include self-confidence, speech, stress control, and eloquence.

In the verbal area, English language skills are increasingly being emphasized as an international language and, given the importance of some other languages in the world, it seems that in the future, teaching of some other languages is essential. In the non-verbal area, the importance of body language has been addressed. Ultimately, the inseparable part of successful international communication, in face-to-face or impersonal terms, is the recognition of cultural and behavioral differences that are mentioned in the cultural recognition section.

The backpack has provided a set of necessary skills as minimums for international communications. The backpack objective is to strengthen such skills in faculty members to face the least challenges in their academic communications and to have the best performance as a representative of the academic field of the country at the international level.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

Conflict of Interests: It is not declared by the authors.

Funding/Support: It is not declared by the authors.

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Strides Dev Med Educ. 2019 December; 16(1):e88547. doi: 10.5812/sdme.88547.

Published online 2019 November 3. **Letter**

Web-Based Learning in Internal Medicine: The First Step in Electronic Clinical Education of the Department of Internal Medicine

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Received 2019 January 01; **Accepted** 2019 January 27.

Keywords: Web-Base, Educational Site

Dear Editor,

The internet created new situations in the educational arena and the application of the appropriate internet infrastructure for new electronic (e)-learning and computer-based learning methods is welcomed in recent years; however, the process and tool of knowledge transfer shifts toward e-learning-teaching. According to the provided definition, virtual learning is a new learning method with many advantages (1).

A great change is observed in the evolution of education and distance learning alongside the shifting from written texts to educational television. The distance learning was first launched in Europe and desirably welcomed (2).

Unlike other distance learning methods, e-learning provides a unique experience of simultaneous application of three teaching methods of traditional, visual, and audio. Another unique feature of this teaching method provided by the advancement of technology is the greater efficiency of education and audience not from a particular region or country, but throughout the world. In addition to the gradual conversion of traditional education to e-learning, the costs of publishing and distributing educational programs are significantly declined (3).

One of the undeniable benefits of virtual education is the evaluation. In this type of training, evaluation is performed more quickly, and a shift to self-evaluation, considered as an important educational goal, is developing here. The learners can have a better understanding of their achievements through self-evaluation, which definitely affects their promotion (4).

In a study conducted by Anna Kho et al., on the employment of mobile phones for medical education and the satisfaction of students and residents put the result on the Medline database from 1993 to 2004, about 60% - 70% of medical students and residents used their mobile phones or other digital devices for educational or patient care purposes and the level of satisfaction was high; however, the level of satisfaction is attributed to the experience and skill of the learners in using such devices (5).

Results of a study by Auguste et al., on the development of an internet-based communication system for residency training programs showed that the internet is an effective and easy-to-use learning tool with low cost to educate residents, and owing to the rapid advancement of science, the content can be renewed by spending a low cost (6).

In recent years, given the many benefits of e-learning, there is a strong tendency toward knowledge transfer, especially in the medical field. E-learning, in addition to being very accessible and enabling many learners to use it with no need to attend training sessions, causes a much lower cost on educational systems and has the ability to update easily with low cost and high speed .Also, if learners do not learn a part of the content, they can go back to it at the right time and learn it. Due to the extensiveness of educational areas in internal medicine and to the best of authors' knowledge, there is no comprehensive reference to provide all of these fields electronically to the learners, the professors of the Department of Internal Medicine, Kerman University of Medical Sciences, decided to launch an educational site aimed at educating the learners in all of these areas.

A specific definition is provided for each of the contents of the site containing educational videos, OSCE (objective structured clinical examination) questions, multiple-choice questions, diagnostic and therapeutic approaches, and semiology. All of the contents were first provided and compiled by the professors according to the students and residents needs and then were uploaded

following the review and quality confirmation by a group of professors. A feedback questionnaire scored based on a five-point Likert scale was designed to assess the satisfaction of learners at five levels from very weak to excellent.

Although the site is recently launched and still not informed to the learners extensively, there were a lot of contacts across the country with about 35,000 visitors. In addition, the site is at the initial stages of content loading and completion, and its contents are regularly updated. The survey box placed on the homepage, evaluating visitors' viewpoint by five questions, provided a desirable feedback. Please visit the site at http://www.kmu.ac.ir/fa/eduimd.

According to the many benefits of e-learning, and on the other hand, given the widespread knowledge of internal medicine and the difference in level of learners from students to interns and residents, there is a need for a reference to provide materials related to this field of study. Therefore, this site can be a very useful instrument for this purpose. Surveys conducted by professors, residents, and students indicated that along with their satisfaction with the content of the site, the manner of presentation and variety of contents were widely welcomed.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

Conflict of Interests: None declared by the author.

Funding/Support: None declared by the author.

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Strides Dev Med Educ. 2019 December; 16(1):e90987. doi: 10.5812/sdme.90987.

Published online 2019 November 4. **Letter**

Lack of Clinical Leadership Competency in Continuing Education

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Received 2019 February 24; **Accepted** 2019 April 28.

Keywords: Clinical Leadership, Leadership Competencies, Continuing Education

Dear Editor,

The landscape of medical knowledge is changing constantly. On average, 50% of medical knowledge becomes obsolete in every four to five years (75% in every eight to ten years). Continuing education is considered a general principle in the healthcare system. This concept has been recognized globally since 1974. In Iran, it was first integrated experimentally in 1990 and officially approved in 1996 (1).

The role of physicians in the health system is very important. Physicians are the main decision-makers in the health system, and their knowledge and attitude determine what services, in what form and at what expense, should be delivered to patients. The 2012 General Medical Council guidelines on health leadership and management particularly describe the physician's responsibility to be more than merely "a good specialist". The notion of "five-star doctor", which involves a combination of clinical skills and behavioral and managerial abilities, has been described in the clinical management literature (2).

In examining the effectiveness and challenges of continuing education, numerous structural and executive problems have been described, such as non-updated training, dysfunctional training, disease-oriented education rather than patient-centered education, and failure to perform educational needs assessment. However, recently, changes have occurred in continuing education, and educational plans have improved significantly due to changes, such as integration of online tutorials, increase in audience access, flexibility of different learning styles, and use of multimedia tools, which have created different scenarios in the context of continuing education.

On the other hand, an important and neglected problem in the context of educational programs, which requires serious review, is the lack of managerial training and clinical leadership competencies in physicians. Although the philosophy of continuing education is to promote physicians' professional skills, including clinical, managerial, social, and ethical skills, But it is very one-sided in practice and deals only with the clinical specialty (3). A question that arises is when to use continuing education to promote qualified clinical leaders.

In multiple studies, most medical students and physicians stated that management skills cannot be attained over time based on experience; on the other hand, they emphasized on the importance of training. In the medical training curriculum of Iran, no educational content has been designed for management competency training. Considering the nature of continuing education, lack of well-trained physicians and managerial issues are common after graduation (4). Generally, continuing education should be result-driven rather than process-oriented.

Some researchers believe that the challenge of management is the most fundamental challenge of the 21st century. This issue is becoming more and more important in healthcare organizations because of the great importance of public health in the community. Drucker believes that "if you educate managers, everything will be right" and that "leaders are made and not born", as consensually agreed upon in the management world. Based on this concept, competency-based training was developed. Design of competency-based training programs includes three basic steps: (1) design of a competency model; (2) identification of educational needs; and (3) implementation of management development plans (5).

Competence development involves a cluster of knowledge, skills, abilities, and behaviors required for career success .Continuing. Training in systematic vision, clinical integration, and performance improvement have essential weaknesses.

Continuing education programs can be successful only if they engage doctors via strategic planning and landscape design of hospitals. Therefore, it is necessary to

change a process-centered approach to a result-oriented one so that continuing education becomes a strategic asset.

Overall, it is necessary to benchmark top medical universities in the world. Continuing education programs for physicians' management and leadership development should be practical and provide appropriate feedback. .Despite the progress of the world's top medical schools due to the incorporation of leadership training and development programs in medical education, Iran has a poor status in this area. In the post-graduation period, the main training of physicians is done through continuing education, while there is no option for leadership training, thereby creating a large gap (2, 3).

To improve the performance of healthcare organizations, it seems that training of effective management methods, management of globalization and multiculturalization, development of problem-solving skills, crisis management, managerial skills in human resources, business management, and introduction of economic issues and strategic planning, and understanding operational planning and other management topics can be effective. Therefore, it is important for decision-makers to consider the abovementioned issues in the future.

Footnotes

Conflict of Interests: None declared by the author.

Funding/Support: None declared by the author.

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Strides Dev Med Educ. 2019 December; 16(1):e91834. doi: 10.5812/sdme.91834.

Published online 2019 November 28. **Letter**

Transformational Packages in Medical Sciences Education; the Importance of Roadmap

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Received 2019 March 27; **Accepted** 2019 April 28.

Keywords: Education, Roadmap, Transformational Packages

Dear Editor,

The existence of an effective health service delivery system is closely linked to the status of medical education. Although we have seen significant breakthroughs in the field of medical education in recent decades, the system has also faced challenges over the past few years and these challenges have necessitated reforms in this area. In this regard, the Ministry of Health and Medical Education of Iran started the transformation program of the medical education sector in 2014 (1).

Implementing medical sciences education packages can be a good response to environmental changes. These packages will affect all stakeholders in the field of higher education. Therefore, along with the positive effects of their proper implementation on these stakeholders, if not properly implemented, they can be regarded as unsuccessful reforms and have devastating effects on the medical education of the country. In addition, at a larger scale, reform has always been one of the signs of success or failure of governments, and in future, packages will also be used as a criterion for judging the performance of the government in the field of health higher education.

Although the educational transformation program is presented in separate packages to medical universities and this helps them to be better implemented, because of some of their features, their implementation has its own complexities.

Educational development packages cover a wide range of audiences, including students and faculty members, and vary greatly in function. These packages fall into the different content-based, process-based, output-driven, contextual, and monitoring groups. Various departments of the Ministry of Health and Medical Education and the universities of medical sciences of the country have been introduced as implementing units of packages. The level of interventions of these packages also varies and encompasses different academic, regional, national, committee and international levels (2).

The interventions needed to implement educational packages vary with respect to implementation period, and some of them such as infrastructure have a short-term vision, and some, such as future studies, have a longer-term vision.

Iran's Higher Education Transformation Program is one of the health reform programs, and considering the challenges of such reform programs in the country can help better implement these packages. The following strategies appear to have a serious impact on the better deployment of packages.

The need for a comprehensive roadmap: A roadmap is one of the future studies tools which is a method of discovering and describing a desirable future and explaining the way to achieve it in a simple and understandable language for the organization. Roadmap is a powerful tool for supporting plans and provides the information, processes and tools needed. Roadmaps are compiled to identify and remove implementation constraints (3). As a result, the tool is expected to create the desired outlook, identify and build new capacities and capabilities, and take advantage of opportunities in the future. Also, with this approach, problems and failures due to the future conditions of the packages can be identified and resolved.

Obviously, for the proper formulation of roadmap packages, requirements such as top management's commitment to roadmap development and implementation, use of training experts' expertise, use of appropriate roadmap frameworks, use of appropriate criteria for roadmap selection and empowering package stakeholders are essential in delineating the roadmap (identifying the process, determining the stimulants, as well as identifying and analyzing alternatives and selecting from among them).

Another requirement for package roadmaps is to make the necessary map modifications based on a forward-looking approach. Being aware of future opportunities and threats both nationally and internationally and making the necessary changes will make the packages sustainable and cause the safe implementation of the plan. Observing variable factors such as training budget, new training needs and human resources status and making the necessary changes during implementation will have a significant impact on the success of the packages.

In addition to the importance of developing and following a proper roadmap, it seems that removing and reducing some of the common barriers to implementing health reform programs in the country through the following strategies is essential.

Coherence in concepts and strategies: Usually large-scale and upstream programs and the related strategies are formulated by policy makers, and although operational body participation is one of the requirements for such documents, its contribution to the formulation of the final version and the choice of words and phrases are not very significant. Therefore, the synergy between the ministry and the universities must be strengthened by certain mechanisms.

Strengthening teamwork and limiting isolated activities: To effectively deal with changing environmental conditions, the need to mobilize the power, knowledge, skills and expertise of all staff in teamwork is increasingly felt. This inter-team collaboration should be strengthened between different stakeholder groups, including ministries, districts and universities.

Creating opportunities for sharing knowledge and successful experiences: Perhaps one of the capabilities of this project is to identify successful experiences of universities in the field of medical sciences education and introduce them to other medical universities, which requires a rigorous program for using this potential.

Maximum participation of stakeholders: One of the most important features of a successful reform program is maximum stakeholder involvement during the process. It is, therefore, important to engage all the stakeholders, especially the faculty members and students, in this program in a variety of ways.

Interdepartmental coordination: Given that varying levels of cooperation such as ministries, districts, universities, and units within the university are responsible for implementing the package, accurate coordination between these units is essential and can prevent many re-workings. Sometimes the goals set forth in some development packages are in conflict with the current approaches and policies of the deputy of education of the respective ministry; for example, packages encourage universities to design interdisciplinary courses, while the policies of higher education expansion council do not necessarily abide expanding disciplines.

Educational transformation packages are a turning point in the field of medical sciences education in the country and all stakeholders should identify the operational barriers to make them more effective. In this regard, it seems that designing a comprehensive roadmap for the implementation of such packages along with enhancing dimensions such as synergy, teamwork, participation, program flexibility due to environmental changes and coordination among different stakeholders can boost the impact of these packages.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

Conflict of Interests: None declared by author.

Funding/Support: None declared by author.

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Strides Dev Med Educ. 2019 December; 16(1):e97918. doi: 10.5812/sdme.97918.

Published online 2019 October 5. **Letter**

Depression Among Pharmacy Students in Nigeria: Is It a Neglected Issue?

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Received 2019 September 07; **Accepted** 2019 September 15.

Keywords: Depression, Pharmacy Students, Pharmacy Education, Nigeria, Mental Health

Dear Editor,

Depression is the foremost cause of disability and contributes very significantly to the disease burden worldwide. Globally, the incidence of depression and depressive symptoms has been on the rise in recent years (1). Depression has also been discovered to be the most potent single risk factor for attempted or accomplished suicides (2). This mental state cuts across all races, age groups, genders and professions. Worldwide, depression and anxiety symptoms are revealed to be common among university students. This has affected qualities of life and academic achievement over the years (3). Speaking of pharmacy education globally, the mental state of pharmacy students has been an important issue to be considered as it is very likely to be affected by a number of stressors which could lead to a series of outcomes personally and professionally (4). A recent study carried out on 164 students in the Faculty of Pharmacy in Alexandria University revealed that 29.3%, 20.1% and 28% students suffered from mild mood disturbance, borderline clinical depression and moderate depression respectively while 3% suffered from severe depression (5). Furthermore, from a research carried out on 433 undergraduate pharmacy students in Pakistan, the prevalence of depression observed in male and female students was 59.49% (51.40% - 67.22%) and 64% (58.91% to 68.86%) respectively for a 95% confidence interval (6).

Globally, studies on the mental health literacy of adults are on the increase. However, there has not been a corresponding interest in the mental health literacy of the youth in Nigeria (2). A few studies carried out on Nigerian youth in tertiary institutions in recent years have shown that depression is a major global mental health challenge among youth in Nigeria today. A recent study carried out in Ahmadu Bello University in Nigeria revealed that according to the patient health questionnaire scoring system using a cut off score of five, 58.2% of students were suffering from depression with 37%, 15.7%, 3.9% and 1.6% having mild, moderate, moderately severe and severe depression respectively (7). A previous study carried out in western Nigeria using the Centre for Epidemiologic Studies Depression scale showed a prevalence rate of 25.2% and 7% for moderate to severe depression and severe depression respectively (7, 8) Another study showed a prevalence of depression of 8.3% among Nigerian university students with 5.6% of them having mild-moderate depression and 2.7% having severe depression (8). From the studies above, it is clear that depression is not uncommon among Nigerian undergraduates and, as a matter of fact, it is a mental health challenge beckoning for attention.

It is important to note that while these studies project depression among Nigerian university students, they provide no information about Nigerian pharmacy students in particular. Pharmacy education in Nigeria has undergone series of changes and development over the years. As at April 2019, there are more than twenty pharmacy schools in Nigeria accredited by the Pharmacists Council of Nigeria. Pharmacy schools in Nigeria have been known to always train future pharmacists for competence nationally and internationally. Reports from literature have also shown that Canadian and Nigerian pharmacy graduates ranked the highest in the Foreign Pharmacy Graduate Equivalency Examination in the USA (9). This lends cre-

dence to the quality of training received by Nigerian pharmacy students.

The school performance of students in the medical fields are affected by numerous factors ranging from stress, examinations anxiety to poor sleep quality (10). With the aforementioned facts, it can be safely said that; in the midst of quality and rigorous training will be environmental, individual, economic and social factors that would impact on mental health positively or negatively. However, there is still no extensive study on depression peculiar to pharmacy students in Nigeria at the moment.

Could it be said that depression among Nigerian pharmacy students is hence a subject matter that has been neglected over the years? With no specific journal article evaluating depression among pharmacy students in Nigeria, little or nothing is known about how an average pharmacy student in Nigeria copes with the stressors and rigours pharmacy school puts him/her through. General studies carried out in Nigerian universities have demonstrated significant levels of depression among university students. However, there is no study peculiar to pharmacy students. It will be beneficial to have data on this topic for the purpose of advancing knowledge in this important aspect of mental health and formulating and implementing policies to favour pharmacy education in Nigeria.

Footnotes

Conflict of Interests: None.

Funding/Support: None.

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