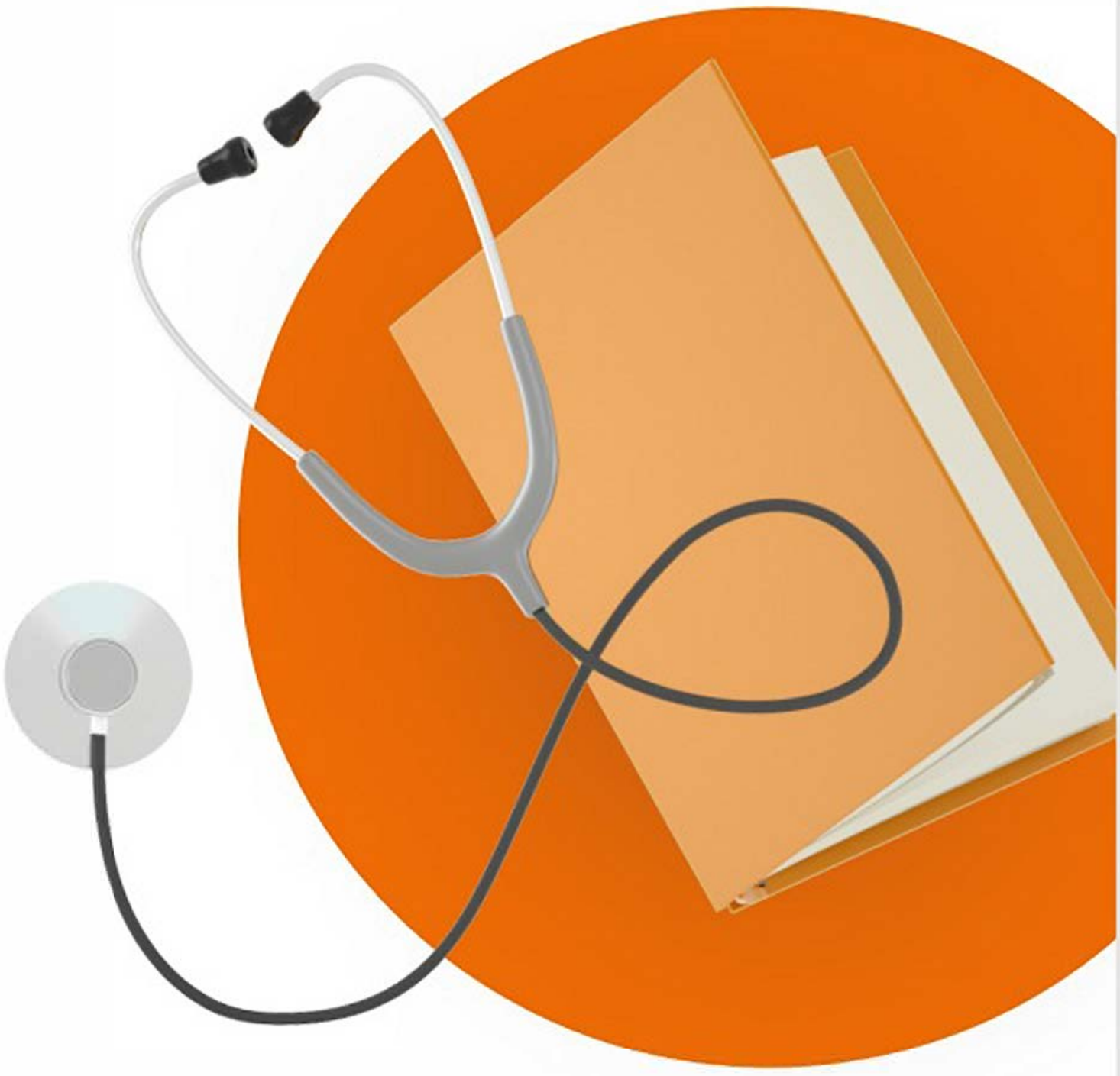
STRIDES in DEVELOPMENT of MEDICAL EDUCATION

Kerman University of Medical Sciences



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VOLUME 17, ISSUE 1, 2020

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.

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This letter should be uploaded online as a word file. The author should state that the manuscript has not been and will not be published or submitted elsewhere. The financial d isclosure s hould b e d eclared. T he l etter m ust include a statement declaring that the study complies with current ethical considerations. Authors reporting experimental studies on human subjects must include a statement of assurance in the Methods section of the manuscript reading that: (1) informed consent was obtained from each patient included in the study and (2) the study protocol conforms to the ethical guidelines of the 1975 Declaration of Helsinki.

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[required for research articles, review articles, case reports]

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- **Discussion:** This should emphasize the present findings and their differences or similarities with other work done in the field by other workers. Emphasize the new and important aspects of the study and the conclusions.
- **Acknowledgments:** All contributors who do not meet the criteria for authorship should be covered in the acknowledgment section. Persons who provided technical help and writing assistance should also be acknowledged.
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➢ Tables in the word file should be separated by page break (each table on a separate page).

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REFERENCES

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:

"Recent randomized controlled trials in primary care showed benefits for patients with depression from increased telephone support, better cooperation between primary care and mental health professionals, and more systematic follow up (7)."

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

If only a part is cited, add the page numbers, and volume number in the case of multi-volume works, at the end of the reference.

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.

If you need to reference a book written by more than six authors, list the first six authors' names followed by "et al" thus:

Cohen J, Brown A, Smith B, Jones G, Murphy M, McKay P et al.

• Standard Journal Article

List the first six authors followed by et al., paper title, journal title

abbreviation, year of publishing, volume number, issue number in parentheses, page range. e. g.

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.

• Online Sources

For all websites references you need to note the date that you accessed the information, and database name or web address (URL). e.g.

Royal College of General Practitioners. The Primary Health Care Team. RCGP website 2003 [cited 2004 Sep 22]; Available from: URL: http://www.rcgp.org.uk/information/publications/information/PDFInfo/21_OCT_03.pdf

REVIEW PROCESS

All submitted manuscripts are subject to peer review and editorial approval. Articles will be sent to at least 2 reviewers. Authors are usually notified within 1-2 months about the acceptability of their manuscript. Once receiving reviewers comments, authors are requested to send the revised article, and a copy of their reply to the reviewers, including the comment and explaining the replies to questions and changes made to the revised version within 72 hours.

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Proofs will be sent to the corresponding author. Galley proofs should be returned within 72 hours from receipt.

TYPE OF ARTICLES

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• Research Articles

Traditional division into sections is required: Title, Keywords, Addresses and which author address for correspondence, Structured abstract, Background, Objectives, Materials/Patients and Methods, Results, Discussion, References and Acknowledgements, Legends for Figures and Tables.

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Authors should report systematic reviews in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement. For Systematic Reviews, the abstract should be subdivided into the following sequential sections:

Context; Data Sources, Study Selection, Data Extraction, Results, Conclusions, and Keywords. Systematic reviews should be 3500-4000 words (abstracts to be structured as above). Consult: The Cochrane Reviewers' Handbook Meta-analysis of observational studies.

• Review Article

In a review article both abstract and text of the manuscript, include following items:

- **Context:** Include 1 or 2 sentences describing the clinical question or issue and its importance in clinical practice or public health.
- **Evidence Acquisition:** Describe the data sources used, including the search strategies, years searched, and other sources of material, such as subsequent reference searches of retrieved articles. Explain the methods used for quality assessment and the inclusion of relevant articles.
- **Results:** Address the major findings of the review of the clinical issue or topic in an evidence-based, objective, and balanced fashion, emphasizing the highest-quality evidence available.
- **Conclusions:** Clearly state the conclusions to answer the questions posed if applicable, basing the conclusions on available evidence, and emphasize how clinicians should apply current knowledge.

• Brief Report

Reports should contain 1000 - 2000 words and should contain a structured abstract of 200 words maximum. Short reports should comprise sections of Introduction, Materials/Patients and Methods, Results, and Discussion with not more than 2 tables or figures and up to 20 references.

• Letters

Letters to the editor will be considered if they give significant comments on recent articles published in this journal or they contain relevant preliminary data providing new insights. Letters need no abstract and must cite the previous article in this journal that is being discussed, and should have no more than 10 references.

LICENSE

Strides in Development of Medical Education

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Strides Dev Med Educ. 2020 December; 17(1):e91356. doi 10.22062/sdme.2020.91356

Review Article

A Comparison of the Psychiatric Nursing Master`s Curriculum in Iran and Canada

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Abstract

Background: One of the most important tasks of a university is to assess weaknesses and build upon strengths. As the education and skill level of psychiatric nursing graduates in Iran is often unpredictable, we hope to improve the current curriculum by comparing it to a successful educational program.

Objectives: This study compared the MSc psychiatric nursing curriculum in Iran with Canada.

Methods: This is a descriptive comparative study conducted in 2018. The required information was collected from the Iran Health Ministry curriculum and Canadian universities offering psychiatric nursing graduate programs. The method used was a Beredy model that includes description, interpretation, neighborhood, and comparison

Results: The University in Canada has been established earlier than Iran. The educational program at Brandon University is focused on community needs. It is possible to complete program on a part- or full-time basis. Some courses are optional.Admission requirements include practical psychiatric nursing care experience and a relevant degree. In Iran the requirements are limited to a bachelor's degree in nursing and an entrance exam. The program primarily focuses on theory, and was only offered on a full–time basis.

Conclusion: The Iran educational program has weaknesses. In order to improve the quality of education, it is suggested students volunteer to have psychiatric nursing care experience. The curriculum should include administration, education, and practice. A more flexible curriculum based on the needs of Iranian society should be offered.

Keywords: Curriculum, Master, Mental Health Nursing, Comparative Study, Canada, Iran

Background

Worldwide, the goal is to preserve and improve health. Therefore, educating people in charge of patient services is one of the basic needs of the healthcare system (1). The task of each educational institution is to educate and aid in the development of students (2). Higher education plays a crucial role in the development of all aspects in a country and plays a vital role in the training of efficient and competent human resources (3). Universities are considered to be the most important educational institutions for training of a country's specialists; they are also tasked with the production of new knowledge and advancement of the advancement of both science and knowledge (2). The study of the weaknesses and strengths, the identification of opportunities and threats, and efforts to improve the situation overall are the most important tasks of universities (2, 4). Medical science education-part of the higher education system- deals with human life, so the health of society depends on the quality of education provided at these institutions (4). Another branch of medical sciences is psychiatric nursing. In this field, if the quality of education is inadequate, it can cause irreparable damage to the health of society. Therefore, it is of utmost importance that the quality of nursing programs be evaluated continuously, and upgraded accordingly (4). The available university programs should be in accordance with the needs of the community (1). Nursing education has been

developing rapidly since the last decade in the world, which not only raises concerns about the quality of education; but has also faced challenges like the competence of graduates, as well as the quality of education and curriculum (3, 4). A "curriculum," in essence, at any university, is about what students should study (5). The curriculum is important in determining the values, goals, and materials of instruction. Specifically, it is a well-designed set of learning opportunities that is introduced by the organization that varies according to structure, performance and experience (1).

The number of graduate programs in psychiatric nursing has grown in the world; and has provided educators and specialist educators in health care settings (6, 7). Each of the universities in Iran has at least one full-time nursing program (8). In Iran, the graduate degree programs in psychiatric nursing began in 1975 (1, 9); however, these programs were deemed ineffective for students (1), thus it was revised in 2013 (9). As individual health needs are dynamic in nature and change over time, a review of the existing nursing curriculum is needed to respond to these dynamic changes (10). We did not find any study on the status of psychiatric nursing care after the curriculum was revised, or any studies comparing mental health nursing curriculum. Using the experience of countries where have rich experience and high-quality education system, and also with localization (4), weaknesses will reduce.

Objective

This study was conducted in order to compare the psychiatric master's degree curriculum in Iran with one that has been deemed successful.

Methods

This research was a comparative-descriptive study conducted at the Islamic Azad University in 2018. In general, a comparative study places 2 phenomena or more together, in order to analyze similarities and differences (11). In the current study, we used the Beredy`s four-stage pattern, which was designed George Z. F. Bereday (1964) (12).

This template is an absolute and abstract method to conduct comparative studies. It identifies four stages, including description, interpretation, juxtaposition, and comparison (3). In the description stage, the gathered research is based on evidence and information... At the interpretation stage, the information collected in the first stage is analyzed. Then, the information is presented to create a framework for comparing similarities and differences in the classification and formulation stage (i.e., juxta stage). In the comparing stage, the similarities/differences, were compared (3, 13-15). So, top-level nursing universities were searched using Google, Google Scholar, and PubMed search engines on a global ranking. We utilized keywords in both Persian and English, which were as follows: Master of Science in psychiatric nursing, curriculum, Canada, Mental health nursing. Brandon University (BU) in Canada was selected based on the ranking of the master's program, having a long history of effective teaching and availability of the required information online. In order to access the information needed, like the curriculums and syllabus of the psychiatric nursing field, we perused specific websites online.

Specifically, we explored the Iranian health ministry website, which supervises and designs education systems. We also examined the websites of Iranian universities that currently have an MSc in psychiatric nursing program. Comparatively, we obtained the relevant graduate curriculum at BU from the university website. Accordingly, the gathered information was arranged in a table format and compared.

Results

The results obtained on elements of the curriculum are noted in Tables 1-3. The curriculum elements include the history of the course, values and philosophy, mission, and vision, goals, expected potential, professional roles and tasks of students, specifications, and structure, of course, conditions of student admission, contents of the master's degree.

Discussion

In this study, the Iranian-Canadian psychiatric nursing education systems were compared in order to improve the overall quality of education.

Typically, a curriculum should be comprehensive, clear, measurable, accessible, directly linked to the vital elements of the organization and written in plain and understandable language.

The mission must answer the following questions:

1. What kind of work and activity is it?
2. Who are our customers?
3. What business will be?
4. What kind of activity should we do? (3 ,5)

The responsibilities of a nurse in the educational program should be designed in accordance with the profession, philosophy, mission and reality.The designed nursing

curriculum should help qualified graduates to improve their abilities for clinical practice (3, 5). The current curriculum in Iran does not address the student's professional interests (5, 22); and focused on the host colleges.

Another point to consider in the psychiatric nursing curriculum of the University of Iran compared to BU is the lack of up-to-date capabilities and facilities and the provision of educational units in different ways... In BU, students can take various courses in an informal setting and use advanced educational technology, while in Iran there are only formal, faculty guided courses offered (9).

Appropriate educational organization goals reflect the mission of that organization (5). The overall objective of the master of psychiatric nursing program in Iran is to train educators and researchers with the necessary skills, supply the necessary human resources at the universities, and achieve professional self-sufficiency; however, the program does not train students in the prevention of mental illness or promotion of community health. Whereas, BU is committed to generating and increasing knowledge,

Table 1. Course History

University	Define course and history
Brandon	The location of the university was founded in 1899, as a Brandon School, a Baptist institution. Dr. John Robbins was appointed (1967) as the Chief of Staff at the University. In the ranking system of undergraduate universities in 2015, it was ranked 16th among the 19 universities (16). It is a member of the Association of Canadian Universities and Colleges, AUCC, ACU Association of Commonwealth Universities, Canadian University Association for CUSID Faculty Debates, and inter-university sports teams (8).
Iran	The first postgraduate degree in Nursing and special branches degree was established in 1999, at four National Higher Education Nursing Midwifery Higher Education Institutes (National University, Medical Center of Iran, Nursing Institute of Firoozgar and Psychiatry, Tehran). At the onset of the Islamic Revolution, the review of nursing master's degree program was approved by two educational programs under the heading of nursing education and management of nursing services. In 1981 Tarbiat Modarres University, non-governmental, and public universities Approved MSc. A revision of the program was completed in 2001 by Shiraz and Mashhad Medical Sciences Universities. In 2012, under the supervision of the Ministry, the program was ready (9). Befor 2012 that was a branch of nursing, after that it became a field=(9).
⊹	**Values, mission, and vision**
Brandon	Vision: Discovery of truth with love and friendship. The university is an opportunity for students and staff to progress. In fostering a comprehensive student culture, it will engage a diverse range of students in research activities as active citizens. With the collaboration of the community, growth and innovation will be facilitated. Mission: We promote education, research, training, and student tuition fees. We train students so that they can be citizens and lead in leadership roles. We defend academic freedom and accountability. We create new knowledge and publish it. We welcome cultural diversity and, in particular, are committed to teaching. We share our skills and experience with a larger community. Values Higher education in the field of education and research, creativity Implementation and innovation, Mental integrity, Ethical performance, Responsiveness, Accessibility of essential resources for student success, Understanding and welcoming our diverse cultural, rich tradition of free education, Academic freedom and accountability , Participation and collaboration with the community-Growth and continuous improvement of the programs and services of the university (17,18).
Iran	Vision: After 10 years, this course will be based on the national and regional standards for people, family and community health and health indicators in the region. Mission: Nurses are trained to be knowledgeable, responsible and committed; so that they use their knowledge and skills to care for psychiatric patients and to protect the family and society on different levels. Values Mankind as a successor to God is dignity, sanctity, honor and dignity, and has comprehensive obligations for the promotion of humanity. Observing social justice and giving same rights to all patients with health care is essential for psychiatric patients. Family and children have a right to participate in their health care decisions. Nursing education programs at this stage are aimed at educating individuals in order to achieve creativity, initiative, competence, self-esteem, self-efficacy and knowledge. The graduates of this section have benefited from their potential for judgment, growth and prosperity in the nursing and human resource industry. These graduates are also responsible, efficient and effective at their occupation (9)
	Strategic Objectives
Brandon	-Upgrade knowledge -Programming of rational, social, cultural development, university members including students, staff, professors -To help improve the community -Creating a lasting love for all students (10,19) Strategic plan: Creating a physical and managerial structure, connecting the theory and practice with tutorials (encouraging researchers).Promoting a student-centered learning environment, A high-quality program (20, 21).
Iran	Teacher training for getting educational and research abilities, , providing the required human resources for Universities of the Country, Achieving professional Self-sufficiency There is no strategic plan (9)
	Conditions of student admission
Brandon	Having a college degree at Brandon University. Having a Master's degree related to psychiatry with a course in research and statistics. If a student is not prepared enough, a pre-requisite course is required. Spend at least 60 hours a day at the University. Have a bachelor's degree in nursing from a Canadian university or a psychiatric nursing certificate. Have at least 1 year of full-time psychiatric nursing experience (17,18)
Iran	Acceptance of entry in accordance with the regulations of the Ministry of Health and Medical Education, which includes: nursing, medical-surgical, children, maternal and neonatal health, community health nursing, psychiatric nursing and general language (all subjects coefficient was 2 except for psychiatric nursing (=4)), having a nursing bachelor`s degree from Iran or abroad with approval of the Ministry of Health and Medical Education (9) The Iranian Nursing Board supervises a master's degree. It is also responsible for university accreditation and the determination of the university's curriculum, and all universities have to comply with the curriculum established by the Ministry of Health. Although flexibility in curriculum is allowed (20)

learning, developing, and upgrading the cultural and social beliefs of college students and university to staff. All of these point to providing service to the community, which are the strengths of BU.

The goals and mission at BU are more consistent. The mission of BU is to educate researchers and global managers to produce and disseminate knowledge. While in Iran, the goal is to educate already knowledgeable and committed nurses, so that they may use their knowledge and skills to maintain and enhance the health of families and society, but is not mentioned the global impact of research and enhancement of community health and attention and respect for cultural diversity. However, it is based on the needs of the society; it does not completely cover all aspects

of the vision

At BU, the vision is to focus on the promotion of science with peace and friendship, and Iran has aimed to equalize and align scientific levels with credible universities. In order to improve the quality, health care organizations, like the WHO- ask for the standards to be upgraded for newly-educated nurses. This is primarily because life today requires educational developments and innovations, especially at universities (2).

The values instilled in Iranian programs are based on the Islamic values of the community. Specifically, they emphasize the development of virtue and human integrity, maintenance of human dignity, the establishment of social justice, as well as attempt to establish a system of meritocracy. Despite the fact that Iran has greater ethnic and cultural diversity, BU places greater significance on ethnic and cultural differences.

Certainly, the curriculum of any discipline is indicative of the relevance of that discipline to the societal needs (21-23). Yamani et al. (2011) have illustrated that health care changes, politics and current sciences are the central features of each curriculum in health care sciences (23). It can be argued that if the quality of higher education is not sufficient, especially in postgraduate courses, then graduates with different academic backgrounds will not be able to carry out their specialized tasks. In this case, the scientific future will not be reliable. The drop in the quality of education in postgraduate programs leads to a shortage of expert human resources, challenges the economic and social development plans of a country, and causes serious problems (24). The professional tasks required for graduation, in both programs, include: the role of care-education, teacher training or mentoring, health education, and management. In Iran, the task of counseling, diagnosis, and prevention for students is considered; whereas, this is not part of the curriculum at BU. Educational courses in the curriculum should be

Table 2. Expected Potential, Professional Roles and Tasks of Students

Brandon	Academic readiness to facilitate the application of knowledge and advanced skills in clinical practice, performance or training, focusing on one of the selected units. Combining this knowledge with research methodology, analyzes the current performance and contributes to innovation in service delivery and policy development. Providing teachers, mentors and role models in order to clinically enhance students and practitioner (8)
Iran	In the role of supportive care: communication, psychological and family counseling assessment skills, interpretation of laboratory results such as electrolytes and hormones, diagnosis, planning for coping skills, i, playing a special role in psychotherapy. As a psychiatric care specialist, counseling skills in the field of psychiatric nursing, educating skills for clients and families, the skill of managing related units. Caring for clients during electroconvulsive therapy, management of anger, relaxing the patient with suicidal thoughts, CPR, monitoring the patient in terms of side effects of medication, helping to cure nutritional disorders. Regarding research: research and publish scientific articles, interdisciplinary coordination (9)
	Specifications and structure of nursing masters courses
Brandon	Can take courses on a part-time (3-4 years) or full-time basis (2-3 years). Courses are broadly presented online with 3 to 2 days of required attendance per year. All students are required to attend the university 2-3days a year to interact with professors and classmates and receive information and resources (19).
Iran	Graduate students must study full-time. The programis2-3 years. Each academic year is comprised of 2 semesters (17 weeks) and a summer term of 6 weeks in compliance with the provisions of Article 4 of this Code. (8)

Table 3. Contents of the Master's Degree

Brandon	A course consists of 18 units: Advanced Psychoanalysis (3 units) - Advanced Philosophy (3 units) - Qualitative Health Research (3 units) - Quantitative Health Research (3 units) -Minimum Psychiatric Nursing (3 units) - Advanced Studies In Psychiatric Nursing (3 units). 6 units are in practice, education and administration fields that are selected on the basis of the title of master's thesis for the needs or student abilities, and are recommended by the supervisor: advanced practice in psychiatric nursing 1, 2 (6 units), administration (Health & Safety Leadership) 1, 2 (6 units); Education (Advanced Nursing Education 1, 2 (6 units) and thesis 9 Units (10,19).
Iran	Consists of 13 theoretical units: ethics-rights and rights in psychiatric nursing (1 unit), Theories Psychiatric nursing patterns and their application (1/5 units), Nursing management (1 unit), Educational methods (1 unit), psychopharmacology (1 unit), Health principles and psychiatric nursing (1 unit), Principles of counseling (semi-unit), Adult psychiatric disorders and psychiatric care (1 unit), Individual psychiatric interventions (1 unit), Group and family psychopathology interventions (1 unit), Psychiatric interventions of children and adolescents (1 unit), Psychiatric disorders of the elderly and psychiatric care (1 unit), Addiction Nursing (half-unit), Emergency (half-unit). Practical (1 unit): Law of Ethics and Rights in Psychiatric Nursing (Half-Unit), Educational Methods (Half-Unit). Apprenticeship (8 units): Theories Psychiatric Nursing Patterns and Their Application (0.5 units), Nursing Management Psychiatric Nursing (0.5units), Psychopharmacology (0.5), Health Principles and Psychiatric Nursing (0.5 units), Nursing Counseling Principles (0.5 units) (Adult psychiatric disorders (1 unit), Individual psychiatric interventions (1 unit), Group and family psychiatric interventions (1 unit), Psychiatric interventional interventions of children and adolescents (1 unit), Psychiatric disorders of elderly and nursing care (0.5-unit), Nursing addiction, Psychiatric Emergencies (half-unit). Internship 6 units Undergoing Lessons: Medical Informatics System (1 unit), Advanced research and statistics Thesis 4 units (9)

consistent with the expected capabilities of the students. In Iran, the required clinical skills include diagnosis, nursing care, counseling, management, and treatment. All of which are not referred to in the university goals. There are also some interdisciplinary coordination capabilities that are not included in the curriculum, but are required. The nursing education philosophy, which is part of community health care, must always be in line with the community needs. One way to achieve this is to make changes to the nursing curriculum (23). Health care needs, change over time (10), so nursing education development should always be aimed at balancing the needs of the health system, with the educational and financial policies of the community (20). The professional duties of students in Iran are in accordance with the needs of the society, but no job position has been defined for psychiatric nursing. Incompatibility of training with community needs, the learners, and nursing knowledge can damage nursing education., MSc course in psychiatric nursing aims to train professional nurse who as a specialist can assess and recognize health status , provideservices to individuals, families and the community, be competent to conduct research, manage and teach. Therefore, it is important to pay more attention to course quality (20).

The nursing master's program focuses mainly on educational units more than practical courses). In spite of various specialized courses, graduates do not have a suitable position in clinics. Although we expect their training to enable them to operate the theoretical knowledge gained, the gap between what is taught in the classroom and the service is the main problem in the field of nursing (20).

At BU it is possible to gain entrance into a master course either by providing a bachelor's degree, a certificate in psychiatric nursing or by having clinical work experience. However, in Iran, students are only eligible for a graduate program after completing a bachelor`s degree in nursing and passing an entrance exam; even psychiatric nursing programs in undergraduate degree have been reduced. Also, unlike BU, the level of English comprehension is not deemed important. Definitely students who are familiar with the English language can study many articles and texts in English (25).

A limited number of major units at BU are similar to Iranian educational content, including ethics, management, and psychopharmacotherapy. Although there are no equivalent courses offered online at BU. The units of quantitative and qualitative research methods are presented separately in 3 units.

In Iran, Master's programs in nursing are responsible for preparing qualified nurses who can act as nursing teachers, clinical researchers, and managers in health care centers (9). In total, there were 43 compulsory and elective units with a focus on teaching (8). However, at BU, there are only 18 theoretical units and 6 units are divided between practice, administration, and education. These are taught separately, and the student chooses the unit based on the thesis and the assessment requirements.

In all of the traineeships at BU, emphasize the use of a conceptual framework in the practice and application of nursing theories, which are considered as strengths. In Iran, the emphasis is on using an evidence-based approach (2).

Finally, in Iran, the 4 units dedicated to a student's thesis solely focus on quantitative methodology; whereas, at BU the 9 units for a thesis can be either quantitative or qualitative. Furthermore, at BU there are a total of 33 theoretical and practical units, and specifically advanced clinical internships includes in ethical issues and theory in accordance with psychiatric nursing context (5). Comparatively, in Iran, the curriculum has neither community-based nursing care, nor prepares students for legal and criminal matters (10). Psychiatric nursing education should provide the ideal conditions for postgraduate students to acquire scientific, human, technical skills, and knowledge in accordance with the community that they will serve in the future (20).

Universities are required to train educators who have the capacity to prevent, treat and promote community health. In order to maximize effectiveness, while in theoretical classes, students must glean the information that they need to be successful in this field; from there, through practice in a clinical settings, students can achieve the required capability (22). Today, nurses are expected to provide holistic care, including meeting the biological, psychological and spiritual needs of patients (26). However, nursing programs in Iran are considered a biomedical field primarily focusing on medical problems. Programs are focused on the transfer of knowledge, skills, and techniques related to the physical care of patients (26). However, BU places emphasizes on the role of clinical, managerial, and educational; research and participation in the development of nursing knowledge, emphasizing interdisciplinary co-operation, the provision of services responsive to cultural values and differences; as well as instruction on how to meet the needs of a community (5, 18). In European countries, nursing is an independent care-based healthcare practice based on theoretical knowledge and research. Specifically, it is based on the ability of the nursing profession to provide a high quality and supportive leadership role (5, 22). While in Iran, nursing education was considered as one of the barriers to the establishment and growth of the nursing profession's respect and dignity (10). Due to the uncertainty of roles in mental health and the lack of standardized services, mental health nursing is growing too slowly (1). The health care system in Canada is not self-governing, and the relationships between the health care systems and university is uncertain (5). Despite the revision of the curriculum in 2013, researchers did not find any study on the quality of the revised curriculum or the status of psychiatric nursing care that were recommended.

Conclusion

The results showed that the curriculum of psychiatric nursing in Iran differs from BU in the following areas: Admission requirements, adapting to the needs of the community, and more emphasis is placed on practice. Based on our findings, we suggest that in Iran, volunteers have mental health nursing care experience and the curriculum should include administration, education, and practice. The BU curriculum is based on community needs

more than in Iran and consequently, it is more effective. Due to the changing health needs of the community and the importance of having well-qualified nurses, we need to develop an education system based on the needs of the community. This will not be achieved without quantitative and qualitative assessments conducted at different levels of nursing education.

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Review Article

Strategies for Clinical Medical Education in Iran: A Systematic Review

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Abstract

Background: In order to improve clinical education, after evaluating the current situation and identifying the shortcomings and problems, it is essential to find strategies to change and improve the situation. This results in planning an efficient clinical education program and achieving the educational goals.

Objectives: This study aimed at identifying strategies for clinical medical education in Iran.

Methods: This systematic review was conducted in 2017 to find strategies for clinical medical education in Iran. Bedside teaching, ward round teaching, ward round, teaching round, training round, grand round, clinical teaching, ambulatory education, and bedside round were the keywords searched in both Persian- and English-language databases. Related articles were carefully reviewed and the key information was extracted. Finally, the data were analyzed in MAXQDA software version 10.

Results: After retrieving the related articles, the title and abstract of 593 papers were reviewed, and after excluding the irrelevant and duplicate ones, full-texts of 101 articles were reviewed based on the study inclusion and exclusion criteria. The strategies for clinical medical education in Iran were classified into five categories including infrastructures, areas of clinical education, educational planning, and clinical teachers and students.

Conclusion: Improving the quality of clinical education and the effectiveness of the educational system depends on the identification of appropriate strategies. The identified strategies pave the way for achieving targeted educational goals.

Keywords: Strategies, Clinical Education, Iran, Systematic Review

Background

One of the most important missions of universities is to train expert human resources demanded by society. For achieving this goal, it is necessary to plan to identify problems, implement programs, and ultimately resolve problems (1). Medical education is a part of the higher education system that deals with human lives. Therefore, paying more attention to its quantitative and qualitative aspects is of great importance.

Clinical education is the heart of medical education and a pillar in educational planning to shape clinical competency in medical students (2, 3). Clinical education is a process in which medical students gradually acquire skills at the patient's bedside, and by using the gained experiences and logical arguments, get prepared to solve the patient's problems (4). This environment plays a pivotal role in shaping the professional identity of students (5, 6) and preparing them as a responsible person to maintain and promote the health of society (7).

According to scientific evidence, although clinical education provides valuable opportunities to acquire clinical knowledge, practice clinical reasoning, improve communication skills, practice history taking and physical examination skills, etc. (8), it is replete with challenges and problems, including limited educational opportunities, large numbers of students, lack of resources, and inappropriateness of the clinical setting to learning. Common problems of clinical education include lack of clear goals and expectations, improper adjustment of training to the level of education,

passive observation instead of active participation of learners, insufficient monitoring and feedback, lack of respecting patients' privacy, and humiliation (2). Studies in Iran show that the clinical education is unfavorable. Ziaee et al., in a study reported moderate or low satisfaction of 85.4% of medical students in the clinical education stage concerning the quality of clinical training (9).

The results of the study by Kojouri on the viewpoints of first-year medical residents on clinical education showed that only 25% of the students were satisfied with the educational program (10). Evidence suggests that although bedside teaching was considered as the main part of clinical education for a long time, it is less popular today; so that bedside teaching is moved away from bedside to discussion rooms and conferences (11). The findings suggest that clinical education should be continuously evaluated and monitored because its promotion requires examining the current situation and identifying strategies for its improvement. Then, by these strategies, more effective training can be offered to train medical students and improve the quality of healthcare services.

To the best of our knowledge, there was no study in Iran on the best model of clinical education in terms of effectiveness, but some studies have identified strategies and provided suggestions for improving the current status of clinical education. Janicik and Fletcher performed a workshop with the participation of 135 medical teachers and offered the best model of bedside teaching. The model consisted of three parts: paying attention to the patient's comfort, centralized education, and group dynamics; each had specific objectives and focused on specific skills for effective clinical training (12). In a similar study, Irby provided an experimental model for the best method of bedside teaching, including identifying knowledge areas, training features, and the clinical reasoning process used by physicians during clinical rounds (13-15).

Objectives: Despite many studies conducted on the clinical education and its problems, there was no comprehensive research on providing effective clinical education and its strategies in Iran. The current study was the first comprehensive research on the identification of strategies for clinical medical education.

Methods

The article is part of a PhD thesis in medical education approved by the Ethics Committee of Isfahan University of Medical Sciences (code number: IR.MU.REC.1396.3.165). It is important to mention that that the authors of this paper reported the challenges of clinical medical education in Iran in another article (16); the current study aimed at identifying strategies for clinical medical education in Iran from March to October 2017.

In the current study, keywords such as bedside teaching, ward round teaching, ward round, training round, teaching round, grand round, clinical teaching, ambulatory education, and bedside round were first searched in Iranian Persian-language databases, including SID, IranDoc, Magiran, and Barakat Knowledge Network System. In addition, PubMed, Cochrane, Embase, Scopus, and Web of Science databases were searched to retrieve English-language articles compiled by Iranian authors. Google Scholar was also searched to expand the searching scope. In order to achieve the study objectives, the terms strategies, solutions, medical student, extern, intern, resident, medical teachers, clinical teachers, and patients were also searched separately or in combination with the keywords, using AND and OR operators in both Persian- and English-language databases.

The sample search strategy for English databases was as follows:

[("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" OR "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 ("solutions" OR "strategies")].

No specific time limit was considered for searching the articles, and searchers were performed by one of the authors with the help of a medical librarian specialist. Two evaluators selected the articles, and discrepancies were resolved by consulting with a third party. In terms of comprehensiveness, the references of all eligible articles were evaluated manually in order to retrieve the eligible ones missed via an internet search. To verify the codes (strategies) extracted from the articles, all the retrieved papers were reviewed in two stages: first, when a list of strategies was prepared as a Word 2017 file; and second, when the coding was performed in MAX Qualitative Data Analysis software version 10.

Articles retrieved from each database were stored in an Excel file (Microsoft Office Excel 2017). Then, the articles were merged, and the duplications were deleted. In the next step, the articles were reviewed based on the title and abstract, and the irrelevant ones were excluded. Then, based on the inclusion and exclusion criteria, eligible articles were selected, their content was analyzed, and strategies for clinical medical education were extracted.

The inclusion criteria were: 1) studies on strategies for clinical medical education; 2) studies performed on clinical medical students in the externship, internship, residentship, fellowship as well as clinical teachers and patients, as target groups; 3) availability of the original research articles and their full-texts in Persian or English language; and 4) studies conducted in Iran and clinical medicine.

The exclusion criteria were: 1) articles presented in conferences and seminars, case reports, short reports, letters to the editor, critique, viewpoint, and review articles as well as those conducted on non-medical students and non-clinical medical teachers. 2) articles that their full-texts were unavailable were excluded.

In order to abstract the papers, one of the authors examined different parts of the articles, including the introduction, results, and some parts of the discussion to make sure of the relevance of the subject of the paper to the research objectives. Results of data classification were

reviewed by one of the authors, and an external observer evaluated coding and classifying.

In qualitative papers, sentences related to strategies, as well as themes and subthemes, were extracted.

In quantitative articles, the strategies identified were based on the items mentioned by the author. All extracted items were stored in a Word file.

In order to analyze the data, the extracted strategies were entered into the MAXQDA software. Each strategy was considered as a code, and all were compared based on differences and similarities. After classification, a relevant title was given to each class (Table 1). The information of the included studies in the systematic review is shown in Table 2. This information includes the name of the first author, study objectives, type of the study, the study methods, the target group, sample size, and the study location.

Table 1. Main categories, categories and sub-categories obtained from the reviewed studies on strategies for clinical medical education in Iran

Main category	Category	Sub-category
Strategies for infrastructures	Improvement of resources and facilities	Necessary infrastructures
		Educational and treatment equipment
		Educational and treatment environment
Strategies for areas of clinical education	Prerequisites for clinical education	Discipline in the clinical setting
		Compliance with rules and regulations
		Preparation
		Acquisition of required skills
		Provision of learning opportunities
	Promotion of clinical rounds	Targeted clinical rounds
		Enhancement of communications
		Enhancement of communications
		Assigning a leader to the round
		Avoiding sporadic debates at the bedside
		Avoiding the use of complicated terms
		Presenting the latest scientific knowledge in rounds
		Ascending participation in rounds
		Separation of teaching and working rounds
		Increasing training time
	Paying more attention to the patient during the round	Decreasing the number of students
		Respecting patient's rights
		Reducing the number and time of visits
	Training at the clinic	Proper planning
		Setting educational goals
		Increasing training time
		Provision of learning opportunities
		Development of ambulatory care centers
Strategies for educational planning	Informing about educational goals Improvement of clinical teaching methods	Setting the minimum of learning
		Setting goals proportional to needs
		Revision of clinical teaching methods
	Informing about professional duties	Determining learning experiences
		Creating a job description
	Improvement of education management	Revision of the curriculum
	Reducing the gap between theory and practice	Promotion of scientific knowledge
		Integration of theoretical and clinical courses
	Continuous clinical monitoring and evaluation	Assessment of goals achievement
		Provision of feedback
Strategies for clinical teachers	Career advancement	Teachers' responsibility
		Teachers' empowerment
Strategies for students	Improvement of professional capabilities	Paying more attention to theoretical training
		Increasing the motivation

Table 2. The information of articles included in the systematic review

Reference	Study Objectives	Study Type	Methodology	Target Group	Sample Size	Study Location
Ahmadi et al., (17)	Evaluation of teachers' perceptions in identifying and thinking about challenges in medical education to improve the achievement of educational goals and the quality of healthcare services	Phenomenology	Qualitative	Clinical teachers	10	Islamic Azad University, Mashhad branch
Rouhani et al., (18)	Identifying the viewpoints of externs, interns, residents, and teachers on the grand round	Descriptive-analytical	Quantitative	Externs, interns, residents, and clinical teachers	237	Iran University of Medical Sciences
Salari et al., (19)	Determining the degree of interns satisfaction with the quality of clinical training	Descriptive-analytical	Quantitative	Interns	106	Guilan University of Medical Sciences
Fani Pakdel et al., (20)	Evaluation of the viewpoints of medical residents on the various aspects of the grand round program and their level of satisfaction with it	Descriptive-analytical	Quantitative	Residents	34	Mashhad University of Medical Sciences
Arabshahi et al., (21)	Identification of training challenges in clinical rounds	Phenomenology	Qualitative	Clinical teachers	9	Isfahan University of Medical Sciences
Jalalvandi et al., (22)	Evaluation of the quality of clinical education	Descriptive-analytical	Quantitative	Externs	119	Kermanshah University of Medical Sciences
Azemian et al., (23)	Evaluation of barriers and facilitators of clinical education and strategies for improving its quality	Descriptive-analytical	Quantitative	Medical students	92	Bushehr University of Medical Sciences
Anbari et al., (24)	Determining the degree of medical students' satisfaction with the clinical education process	Descriptive-analytical	Quantitative	Interns and externs	97	Arak University of Medical Sciences
Anbari and Ramezani (25)	Identifying barriers to clinical education and providing proper strategies	Descriptive	Quantitative	Interns and externs	84	Arak University of Medical Sciences
Sharifi et al., (26)	Determining the quality and quantity of clinical education	Descriptive-analytical	Quantitative and qualitative	Interns and externs	54	Yasouj University of Medical Sciences
Nasri et al., (27	Determining educational barriers and problems and strategies for overcoming the problems	Descriptive-analytical	Quantitative	Interns and externs	72	Arak University of Medical Sciences
Adibi and Alizadeh (28)	Identifying the viewpoint of the care team on the impact of the clinical rounds on patients	Descriptive-analytical	Quantitative	Interns and externs	150	Isfahan University of Medical Sciences
Khorasani et al., (29)	Evaluation of the quality of clinical education from the viewpoints of medical teachers and students	Descriptive-analytical	Quantitative	Interns, externs, residents, and clinical teachers	180	Mazandaran University of Medical Sciences

Zamanzad et al., (30)	Evaluation of the degree of satisfaction with training in clinical departments and its affecting factors	Descriptive-analytical	Quantitative	Interns and externs	77	Shahrekord University of Medical Sciences
Adibi and Anjavian (31)	Determining the viewpoints of patients on bedside round	Descriptive	Quantitative	Patients	100	Isfahan University of Medical Sciences
Mortazavi and Razmara (32)	Evaluation of the degree of medical students' satisfaction concerning teachers' performance, facilities, educational methods, etc.	Descriptive-analytical	Quantitative	Interns and externs	400	Isfahan University of Medical Sciences
Fekri and Sarrafinejad (33)	Evaluation of the status of medical education in three academic departments	Descriptive-analytical	Quantitative	Interns and externs	239	Kerman University of Medical Sciences
Avijegan et al., (34)	Evaluation of the quality of ambulatory education from the viewpoint of medical students to improve the quality of education	Descriptive-analytical	Quantitative	Interns and externs	180	Isfahan University of Medical Sciences
Rezaee and Ebrahimi (35)	Identifying factors influencing the learning of medical students in the clinical setting	-	Quantitative and qualitative	Clinical teachers and residents	184	Shiraz University of Medical Sciences

Results

In the present study, 1021 articles were initially retrieved from databases, and after deleting duplicates, 593 articles were reviewed based on the title and abstract (546 articles in Persian and 47 in English). Of these, 492 articles were excluded, and 101 entered the next step. Then, the studies were reviewed based on the full-text and inclusion/exclusion criteria, and finally, 19 articles were included in the study, of which 16 were in Persian and 3 in English.

The content of the articles was analyzed, and the strategies for clinical medical education were extracted. The study flow chart is shown in Figure 1.

In terms of the type of studies, 15 articles were quantitative (79.0%), two qualitative (10.5%), and two qualitative-quantitative (10.5%). In addition, 13 articles were performed based on the viewpoints of medical students (68.4%), two based on the viewpoints of clinical teachers (10.5%), three based on the viewpoints of students and teachers (15.8%), and one using the viewpoints of patients (5.3%) on strategies for clinical medical education (Table 2).

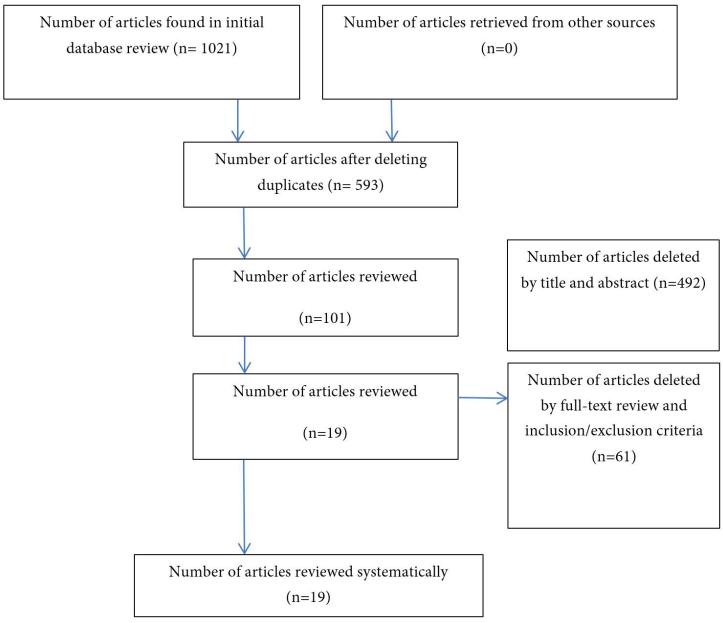

Figure 1. The process of entering articles to the systematic review

Discussion

Strategies for clinical medical education in Iran (153 codes)

Strategies for infrastructures: This category with 18 codes (11.8%) included improvement of resources and facilities (18 codes).

In order to create a suitable learning environment and provide the required infrastructures, first, the available resources and facilities should be examined, and then measures should be taken to strengthen and develop them. Research has emphasized on equipping libraries in terms of variety, number, and up-to-date resources, as well as providing necessary infrastructures such as the internet (26). Along with the development of infrastructures, it is essential to plan for the required educational and treatment equipment; several studies have noted this key point. Improvement of teaching aids (22), provision of medical facilities and equipment for ambulatory care centers (32), periodic evaluation of facilities available in clinics and managing shortcomings (34), provision of equipment required in clinical rounds (21), and the use of appropriate teaching aids (19) indicate the pivotal role of educational and treatment equipment in the clinical setting. In addition to the necessary facilities and equipment, the atmosphere should also be appropriate for learning and teaching. According to studies, improving and standardizing departments and physical spaces and providing a suitable environment for teachers and students to gain clinical experiences (23) to a large extent can maintain the desired atmosphere for teaching and learning. This can be obtained by providing a conducive learning environment for students via assessing the quality of services and improving them. Failure to pay attention to this issue can lead to a significant academic failure in students (36).

Strategies for clinical education: This category had 80 codes (52.2%) and included the prerequisites for clinical education (14 codes), promotion of clinical rounds (39 codes), paying attention to the patient during the round (8 codes), and training in the clinic (19 codes).

In order to establish an effective and efficient clinical education system, some issues should be considered as prerequisites for education. Discipline in the clinical setting is a prerequisite highlighted in different studies. The establishment of discipline and regularity in clinical rounds (26, 33), careful implementation of the internship program during the shift work, and paying attention to working hours and the time students attend the rotations were the topics noted in different studies (21). Implementing rules and regulations (21) and the observance of ethical codes in the clinical setting (23) were also emphasized. It is recommended that teachers prepare students before or at the beginning of the clinical training course. Studies performed worldwide have also emphasized this issue (37, 38), which is consistent with the results of the present study. The prerequisites for education include preparing teachers and students, acquiring the necessary skills before clinical training, and providing learning opportunities; more items were also noted in the reviewed studies, including familiarizing students with the basics at the beginning of the course (19), teaching clinical skills on moulage before externship and internship courses (27), starting the education of basic clinical skills from externship (30), providing educational opportunities for students and assigning different tasks to them, and creating opportunities for students to repeat different clinical skills (23). For a targeted clinical education, both teachers and students should be prepared before the course. Preparation of teachers includes planning for training, setting educational goals for each session, identifying students' learning needs, and choosing a reference. Preparation of students can be performed as a working meeting to express requirements, assign a clear clinical role to each student, and determine educational expectations and goals.

Since clinical education and teaching rounds provide countless opportunities for students to acquire clinical competencies and shape their professional identity, improvement of the efficacy of clinical rounds is essential. Research studies have accentuated on the right conditions to increase the quality of clinical rounds. For the targeted ward rounds, the current procedure should be revised, and for changing the current trend, a specific plan has to be developed (20, 28, 31). For achieving the goal, an expert should be assigned to each clinical round in order to evaluate both teachers and students (20). The reduction of sporadic debates in clinical rounds also provides a context to have a targeted education and discuss more practical and applicable aspects or specific points at the bedside (28), through which, by providing new and up-to-date medical information, the latest scientific knowledge in prevention, diagnosis, and treatment arenas is conveyed (18, 20). Also, by increasing the participation of teachers and students and motivating them, suitable learning opportunities can be created. The commitment of all teachers and students to dynamic participation in clinical rounds (20), greater involvement and participation of externs and interns in diagnostic and therapeutic processes (29), attracting the participation of interns, and particularly externs, and allowing them to take patient's history (34), the involvement of teachers and students in bedside teaching processes (21), the involvement of students in training rounds (19), and creating question and answer opportunities for students (23) are the examples for this issue highlighted in some studies. In order to achieve these goals and create a context for more participation, more time should be spent on clinical rounds and attendance of students in the wards (23, 26).

It is recommended that the ward round teaching be conducted according to a specific educational program. This program can be initiated by introducing a clinical case to the students by the teacher and/or presenting the patient's history by one of the students. It is better that the clinical teacher provides further details on the history presented by the student, recounts the key points, and gives appropriate feedback via reminding the positive and negative aspects. It is suggested that the necessary

physical examinations be performed by the teacher in the presence of students. In addition, the opportunity should be provided for the students to repeat and practice, and if necessary, appropriate feedback should also be given to them. All have to be done in a respectful atmosphere with appropriate teacher-student-patient communication. Patient's needs and rights should be specifically considered (20, 23, 28, 30). It is recommended that in bedside teaching, the teacher first introduces himself and others presenting at the patient's bedside. Before teaching, the patient should be informed about the goals and the reason for the students' presence at the bedside. To maximize the patient's participation in the clinical education process, the teacher should consider him as a member of the care team and not as a tool to train the students. Clinical education goals can be better achieved by respecting the patient's rights and obtaining his/her permission.

Proper educational planning and goal setting is a strategy for providing better and more learning opportunities and improving the quality of clinical education. Several studies discussed this issue, considering its high importance. By setting clear goals and assigning topics to ambulatory training in each department (29), and justifying externs and interns before entering the ambulatory settings, as well as benefitting from the cooperation of experienced teachers in the ambulatory care centers (32), a proper plan can be made, according to the conditions and facilities of teaching clinics. The development of ambulatory care centers is also one of the effective strategies for increasing the quality of clinical education. The development and quantitative and qualitative support of public and teaching ambulatory care centers (32) can lead to the provision of an appropriate educational atmosphere with the maximum effectiveness.

Strategies for educational planning: This category had 41 codes (26.8%) and included awareness of educational goals (6 codes), improving clinical teaching methods (7 codes), informing on professional duties (6 codes), improving management (5 codes), reducing the gap between theory and practice (4 codes), and continuous clinical monitoring and evaluation (13 codes).

Determining the students' learning objectives (21, 24, 25) and introducing educational goals at the beginning of each course (26) can lead to the clarification of educational goals. Special attention should be paid in educational planning to the improvement of clinical teaching methods through reviewing the current methods (24, 30) and employing appropriate, up-to-date, and team-based ones (25, 35, 39). In addition to determining the educational goals, the professional duties should correctly and accurately be explained to the students. Providing the students with the lesson plan and explaining their job description at the beginning of the course (27), familiarizing employees with educational activities of students, and determining their scope of activity, as well as informing teachers about students' learning needs, can greatly help to advance the planned goals (23). According to studies, continuous clinical monitoring and evaluation of educational activities (19, 21, 24) and giving feedback effectively and timely to students (25, 27) should be considered at all the stages of clinical training in order to enhance the achievement of goals in an appropriate and planned educational system.

Strategies for clinical teachers: This category had seven codes (4.6%) and included professional and career advancement (7 codes).

The effectiveness of the training provided by the clinical teachers depends on their responsiveness through timely attendance at clinical departments (23) and commitment to proper and adequate training (35). Teachers should be committed to clinical education, which is achieved through prioritizing teaching over treatment, providing organized and systematic education (40), and allocating enough time for bedside teaching (12, 41).

Several studies have noted the lack of teachers' teaching skills in clinical education (8, 42-45); hence, their teaching skills should be developed by planning and holding training courses and up-to-dating their skills and capabilities (17). According to scientific evidence, among factors influencing the success of organizations, human resources is the major one. Clinical teachers who are role models in terms of performance and behavior can play a pivotal role in training the students (46-48).

Strategies for students: This category had seven codes (4.6%) and included improving professional capabilities (7 codes).

Some studies highlighted the empowerment and motivation of students, along with the empowerment of teachers. Paying particular attention to theoretical training by holding educational conferences (23) and creating motivation and appropriate scientific and spiritual support for students (18, 23, 25) provide a good ground for learning. Studies conducted worldwide have pointed issues such as respect for students (40, 42) and creating motivation and paying attention to them in the training process (41, 45), which are consistent with the results of the present study. One of the most important issues in the training process is the participation of students in education. Participation in educational activities increases learning and helps the teachers to identify weaknesses of learners to eliminate them (49). In a study conducted in Iran, retaining the students' dignity and respecting and not discriminating between them were considered as the main characteristics of a capable teacher (50). Therefore, teachers should pay particular attention to such issues.

Conclusion

Identifying strategies for clinical education helps teachers to provide more effective teaching for students. This important issue leads to the improvement of the current situation and promotion of the quality of clinical education, resulting in training the skilled and experienced workforce to provide healthcare services for the community. One of the limitations of the present study is the lack of comprehensiveness of some categories and this can be related to the codes extracted from the articles not comprehensively investigating the strategies

for clinical education. The results of the present systematic review, especially regarding teachers and students, have not the necessary and sufficient comprehensiveness.

Supplementary Material

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

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Review Article

The Challenges of Assessing Medical Educational Policies in Iran: A Systematic Review

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Abstract

Background: Development of problem-solving skills through policy-making and promotion of physician education can be achieved by establishing specific criteria for policy-making and evaluation of educational policies.

Objectives: This study aimed to investigate the challenges of assessing medical education policies.

Methods: In this systematic review, the Sample–Phenomenon of Interest–Design–Evaluation–Research (SPIDER) model was used to extract data. Scientific databases were searched to find articles in Persian or English language, assessing policy-making and policies in the Iranian medical education during 2010-2019. Of 485 domestic and international studies, 447 studies were excluded, based on the title or abstract, and 38 full-text articles were selected for further investigation. Finally, 11 relevant articles were reviewed as the final sample.

Results: The challenges of educational policies in medical education were determined, based on the descriptive content analysis of the reviewed articles. These challenges were classified, based on the policy analysis steps. The main challenges of assessing medical education policies in selected studies were related to setting the agenda, setting policies, policy selection, policy execution, and finally, policy analysis in medical education.

Conclusions: Based on the present results, policy-makers can incorporate the conceptual model of this study, which was based on an established theoretical framework and previous research, in the process of policy-making.

Keywords: Evaluation, Challenge, Policy, Medical Education, Agenda

Background

According to the literature, higher education leads to greater democracy (1). In the past two decades, higher education has only undergone marginal changes to meet the social, economic, and educational needs of the public (2). One of the most influential factors in the output quality of higher education systems is the educational policies of universities (3). Medical graduates, as key elements in the country's health and treatment system, are responsible for meeting the treatment needs of the community in medical centers and hospitals. Therefore, educational policies, designed for these outputs, are undoubtedly of great importance.

The significance of policy-making in education has been highlighted in the literature, considering the nature of decision-making processes in this field (4). Higher education has become an increasingly important phenomenon in many political fields, and interest in higher education policy-making has increased. Therefore, a deeper understanding of the dynamics of higher education policies is a prerequisite for assessing other general policies, considering their integration in the public and private sectors (5). Governments set the assessment policies, assuming that the learners' outcomes are proper measures of national educational achievements. In other words, the presence of well-educated citizens in the community ensures that the country makes progress in the competitive international arena (6).

Policies are interpreted by experts in practice. The policy-makers' intentions and expressions are not always implemented directly or explicitly in an institutional manner. Generally, there is resistance to some policies, as they may be poorly implemented or even inapplicable (7). Educational policies include educational, social, economic, and institutional values, which can determine the progress of an educational system (8). In this regard,

Broadfoot believes that politicians are seeking changes in the assessment method of political decisions about the desired outcomes of education (6). The ideologies and attitudes of policy-makers toward higher education systems are interpreted as visions and missions in upstream documents for higher education institutions (9).

The plan to separate medical education from higher education in Iran was implemented in 1985 following the establishment of a primary healthcare development policy, introduced in 1978 by the World Health Organization (WHO) (10). However, there are concerns today regarding the learning processes in medical education (11). Development of comprehensive programs for higher medical education is an effective way to meet the goals of healthcare quality improvement programs, which have been developed based on upstream documents, such as the Perspective Document of Iran-1404 (12), the comprehensive scientific map of Iran (13), the comprehensive scientific map of health (14), and the health system development program (15).

In recent years, medical education has been ranked the second in priority following healthcare. Consequently, it has been marginalized, despite its significant role in the healthcare system of every country. Meanwhile, attention to medical education can strengthen the country's health infrastructure, reduce healthcare costs, and decrease medical errors, while promoting the country's medical knowledge and introducing the country to the international scientific community (16). Researchers have attempted to identify the challenges of assessing educational policies in medical education, considering the great importance of higher education, especially medical education. Therefore, in the present study, we aimed to review the published studies on this topic.

According to Birkland (2015) (17), policy refers to a set of governmental activities, which are directly applied by the government or its representatives, with significant effects on people's lives. Politics refer to a set of governmental actions that are directly implemented by the government or its representatives and affect people's lives. They represent the best description of the society that everyone desires; therefore, politics are considered ideological (18).

Political science describes and studies specific policies and practices of a government in different fields, such as education and research, health, and agricultural policies, in addition to their various subdivisions (19). In recent years, there has been a growing interest in the role of politics, policy-making, and bureaucratic structure in the outcomes of higher education. Moreover, researchers have highlighted the importance of political economy and political parties, as they have distinct effects on higher education policies; in other words, the preferences of a political party turn into policies as the party rises to power (5),(20),(21).

Policy analysis can enable us to identify common problems, recognize policy opportunities, define policy processes, and find appropriate solutions to implement policies, understand the position of stakeholders (to identify the costs and benefits of the proposed policy), and set up a foundation for establishing appropriate strategies in policy development (22). In Iran, reforms in medical education were initiated in 2015, based on Iran's previous experience of policy-making in higher education. Accordingly, a national program was designed with a futuristic perspective, benefiting from the views of stakeholders in the field of medical education with three major steps, that is, summarizing reliable documents in medical education, developing a comprehensive health education curriculum, and designing packages for medical education reform; this program was implemented in the country's medical universities (23).

There are different approaches to policy analysis. As stated by Weimer and Weing (1989), policy analysis approaches largely depend on the scientific framework and the purpose of analysis (24). Bardach suggested a step-by-step guide to policy analysis. His framework included eight major steps: define the problem, assemble some evidence; construct the alternatives; select the criteria; project the outcomes; confront the trade-offs, decide; and tell your story (25). On the other hand, Collins recommended an eight-component framework, which was derived from Bardach's framework for health policy analysis. The components of this framework were as follows: define the context, state the problem; search for evidence; consider different policy options; project the outcomes; apply evaluative criteria, weigh the outcomes, and make a decision (26). Also, Dunn (1981) suggested that policy analysis should incorporate six steps, which are common in most problem-solving efforts, that is, problem-solving, definition, prediction; prescription; description; and evaluation (27).

Evidence-based policy-making, which is both rational and conscious and considers all aspects of health and medical education, takes precedence over individual-based policy-making. Overall, the use of articles related to health and medical education can be useful for health decision-makers and those supporting these policies. According to these articles and references, policy-makers can make sure that their decisions are made based on the most relevant and available information.

The available information for policy-making must be extracted from a wide range of sources, not only a single research. Also, the quality, validity, and relevance of the evidence to the policy-making problem, as well as the cost of policies, must be taken into account. It is known that systematic reviews have the highest level of validity in a specific context, and their conclusions are less biased (28) . Therefore, in this study, we conducted a systematic review of relevant articles.

Objectives

This study aimed to investigate the challenges of assessing medical education policies using a systematic review of the relevant articles.

Methods

The Sample–Phenomenon of Interest–Design–Evaluation–Research (SPIDER) tool was used in this review to identify the challenges of assessing medical education policies. The reason for choosing the SPIDER framework was its applicability in both qualitative and combined methods. There was no time or language restrictions in selecting the articles. We conducted an extensive search to find potential articles that address our research question (29). The present findings are reported, based on the best-fit framework.

In this review, we searched a variety of domestic (SID, Irandoc, Iranmedex, and MagIran) and international (PubMed, Science Direct, Scopus, PubMed Central, Sage Publications, and Google Scholar) databases, related to medical education and policy analysis. We retrieved articles related to policy-making and policy analysis in Iranian medical education, which was published in one of our searched databases in Persian or English language during 2010-2019. Studies were selected if they included the following keywords: "policy", "policy analysis", "policy challenges", "policy-making approaches", "medical education policies" and "policy-making process in medical education".

The selected articles were analyzed and coded by researchers, using the inductive content analysis method. The results of preliminary studies were combined as components of a whole to address the research question. A comprehensive theory was formulated by incorporating the results of previous studies. A total of 447 studies were excluded from the retrieved domestic and international studies (n=485), based on the title and abstract, and 38 full-text articles were selected for further analysis. Finally, 11 relevant papers were reviewed as the sample of this study (Figure 1).

The included studies focused on higher education policy-making and medical sciences. The themes extracted from the articles were categorized, according to the policy-making process and its stages.

Results

All articles included a clear statement of the aim, design, and method of the study. Our review of the articles showed that they were sufficiently accurate in terms of data analysis and a clear statement of research findings. Data were analyzed using a mixed qualitative method. The selected articles were compared based on the mentioned keywords. Finally, commonalities and differences in policy issues and policy challenges in higher education, particularly medical education, were extracted (Table 1).

According to our literature review, not many studies have investigated the challenges of medical education policy-making in Iran. The articles were abstracted, and challenges of assessing medical education policies, described in previous studies, were reviewed.

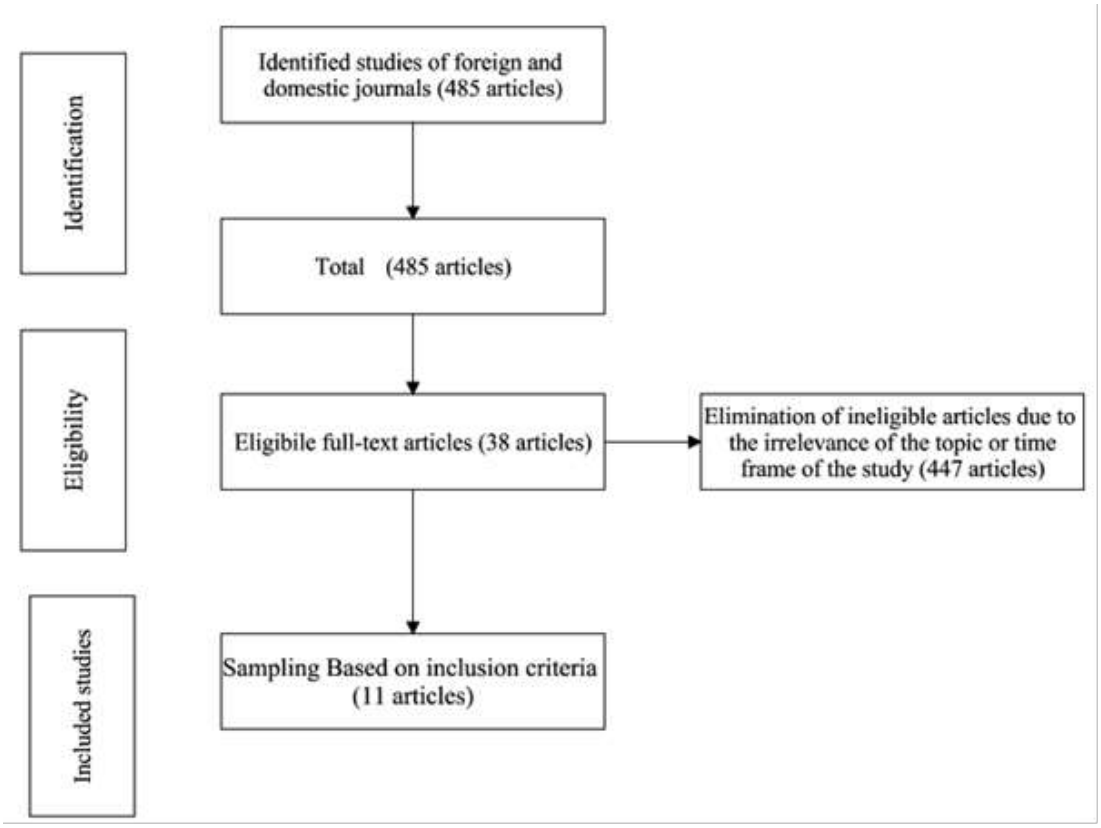

Figure 1. Sampling and flow diagram of the study

Based on the themes extracted from our content analysis, the main challenges of medical education policy analysis were classified into five categories, with an emphasis on the policy-making process. These categories were as follows: 1) agenda-setting; 2) policy formulation; 3) policy selection; 4) policy implementation; and 5) policy analysis. Some challenges in each category are presented below:

Challenges of agenda setting: These challenges are related to the transformation of medical education issues into policy agendas. They can be associated with the multiplicity of institutions and upstream documents in the process of policy-making, lack of attention to the future health status of the country, financial institution support, and lack of databases.

Challenges of policy formulation: These challenges are related to the steps of policy formulation, such as identifying policies and procedures, using upstream documents to design programs, taking advantage of stakeholders' opinions in the field of education, paying attention to diversities in policy formulation, structural barriers to higher education policy-making, and gaps in the knowledge market in terms of knowledge commercialization.

Challenges of policy selection: Some of the challenges associated with policy selection include accreditation of educational institutions and centers, lack of attention to virtual medical education and promotion of professional ethics, slow progress toward third-generation universities, lack of accountable and fair education systems, the undesirable status of higher education in medical universities, and centralized policy-making in the higher education system.

Challenges of policy implementation: Evaluation of policy implementation also has some challenges, such as policy responsiveness, failure to implement health plans in the context of land use planning, lack of environmental participation in the implementation of programs, lack of planning to upgrade the educational infrastructure, and lack of faculty member empowerment to succeed in health programs.

Challenges of policy analysis: In the policy-making process, there are challenges, such as disregard of international standards, lack of planning for international actions, lack of simultaneous assessment and implementation, failure to upgrade the assessment system and monitoring of developmental packages, non-internationalization of medical education, corruption in physicians and discriminatory practices, complaints handling policies, and inattention to the analysis of staff's performance goals after training. The details of the challenges in assessing Iran's medical education policies are presented in Table 2.

The challenges extracted from previous studies were classified based on policy analysis. Table 3 presents the challenges of assessing medical education policy-making.

Conclusions

According to our review, the main challenges of assessing medical education policies were described in 11 articles. The challenges, which were extracted from previous studies, were as follows: 1) evaluation of agenda-setting; 2) evaluation of policy formulation; 3) evaluation of policy choices; 4) evaluation of policy implementation; and 5) evaluation of policy analysis. Policy-makers can explicitly incorporate the conceptual model of this study, which was based on an established theoretical framework and the literature, in the process of policy-making.

Table 1. Articles selected for qualitative content analysis in a systematic review of challenges in assessing medical education policies in Iran

	Author, year	Title
1	Pourabbasi et al., 2018 (30)	Medical education policy-making in Iran; A review of 40 years of experience
2	Malekzadeh et al., 2017 (31)	The process of establishment of territorial agenda and development and innovation in medical education in Iran
3	Kheyri et al., 2018 (32)	Designing an intersectoral collaboration model for implementing spatial planning policy of medical higher education in Iran: Study protocol
4	Bagheri Moghadam and Ahmadi, 2018 (33)	The pathology of governance in Iranian higher education system
5	Barimani et al., 2018 (34)	Study of the status of Iran's higher education knowledge market
6	Mohammadi Tabar, Mohammadi, Rahnoma, and Sepahi, 2017 (35)	Explaining the opinions of nursing and midwifery faculty members on educational and research policies: A qualitative study
7	Kokabi Saghi and Kokabi Saghi, 2016 (36)	Evaluating the implementation of human resource training and improvement policies in medical universities of Iran
8	Kamyabi et al., 2017 (37)	Desirable features of higher education policies with an emphasis on lifelong learning approach: Faculty members' perspective
9	Hesampour, 2016 (38)	Investigating the synergistic barriers of Iranian higher education policy institutions
10	Abbasi and Shirepaz Arani, 2011 (39)	Higher education quality policy-making: Challenges and prospects
11	Rabiee and Nazariyan, 2011 (40)	Factors influencing higher education policies with an approach to Article 44 of the Constitution

Table 2. Challenges of assessing medical education policies in Iran extracted from the selected articles in a systematic review

Number	Medical education challenges
1	Policy responsiveness (30)
2	Inattention to the future health status of the country (30)
3	Use of upstream documents to compile applications (30, 36)
4	Implementation of health plans in the context of land use planning (30)
5	Taking advantage of the stakeholders' opinions in the field of education (30, 35)
6	Attracting environmental participation in the implementation of programs (30, 36)
7	Application of the results of education in research for formulation and implementation of programs (30)
8	Non-separation of the implementation steps of programs at the operational level (30, 36)
9	Adherence to international standards (30)
10	Planning for international actions and simultaneous evaluation and implementation (30, 34)
11	Purposeful interaction between regional universities and the promotion of transformation and innovation in the academic environment (30, 31)
12	Accreditation of educational institutions and centers (31)
13	Upgrading the system of examination and monitoring of developmental packages (31)
14	Internationalization of medical education (30, 31, 34)
15	Attention to virtual medical education and promotion of professional ethics (31)
16	Slow progress toward the establishment of third-generation universities (31)
17	Existence of an accountable and fair educational system (31, 34)
18	Planning to upgrade the educational infrastructure (31, 34)
19	Attention to providing sustainable resources and strengthening the educational infrastructure (31)
20	Empowering faculty members to succeed in health programs (31)
21	Inter-sectoral cooperation for the implementation of higher health education policies and regulations (32)
22	Vertical and horizontal integration (33)
23	Attention to structural barriers in higher education policy-making (32, 33)
24	Confrontation of internal and external governance (33, 38)
25	Lack of databases (33)
26	Gaps in the knowledge market in terms of knowledge commercialization, knowledge internationalization, knowledge commodification, standardization, pervasive corporatization, and competitiveness (34, 37)
27	The unfavorable status of the higher education market in medical universities (34)
28	Adaptation of the medical education curriculum to the needs of the community (34)
29	Attention to the social responsibilities of medical universities (34)
30	Attention to educational and motivational programs for professors, students, and staff of medical universities (34)
31	Attention to the nature of various disciplines in policy-making (35)
32	The policy-makers' knowledge of the working conditions of nursing and midwifery faculty members (35)
33	Unfamiliarity of faculty administrators with higher education management (35)
34	Existence of centralized policy-making in higher education systems (35)
35	Compilation of a comprehensive program for the university staff and affiliated units (32, 36)
36	Review of the functional goals of medical university staff (36, 38)
37	Attention to employment requirements during the informal transfer of employees (35, 36)
38	Discouraging mechanisms of recruiting skilled manpower (36)
39	Transparency of supply and promotion policies and human resources compensation and maintenance (35, 36)
40	Relationship of human resource management plans and goals with the future plans of medical universities (36)
41	Ambiguities of job descriptions and lack of updates (36)
42	Discrepancy between policy-making institutions (lack of inter-institutional coordination) (38, 40)
43	Multiplicity of policy-making institutions and upstream documents (38)
44	Challenges of increasing quantity and financial bottlenecks (39, 40)
45	Education quality (39, 40)
46	Privatization policy for expanding higher education and financial independence of universities (40)
47	Financial institution support and benefits (39, 40)
48	Medical education goals (30, 36, 38)
49	Challenges of corrupt physicians and discriminatory practices (40)
50	Complaints handling policies (30)
51	Determining policies and procedures (30, 32)

Education policy refers to a set of rules and procedures, used to operate an educational system (41). Lazar and Paus (2013) identified three key policy areas, that is, problem identification and definition, goal setting, and tool setting (42). Policy modeling can be defined as a science that supports the analysis of the past (causes) and future (effects) of politics in any society at any time and place by means of research, using various quantitative and qualitative theories and techniques (43).

Table 3. Themes extracted from the systematic review with an emphasis on the educational policy-making process

Themes	Challenges
Assessment of agenda-setting	Multiplicity of policy-making institutions and upstream documents
	Lack of attention to the future health of the community
	Financial institution support and benefits
	Confrontation of internal and external governance
	Lack of databases
	Lack of attention to the social responsibilities of medical universities
	Medical education goals
	Lack of attention to educational and motivational programs for professors, students, and staff of medical universities
	The insufficient knowledge of policy-makers about the working conditions of nursing and midwifery faculty members
	The absence of incentives for elite recruitment mechanisms
Assessment of policy formulation	Identifying policies and procedures
	Using upstream documents to collect applications
	Taking advantage of stakeholders' opinions in the field of education
	Adherence to institutional policies and procedures
	Attention to diversities and their inclusion in policy formulation
	Use of educational outcomes for formulation and implementation of programs
	Structural barriers to higher education policy-making
	Gaps in the knowledge market in terms of knowledge commercialization, internationalization, commodification, standardization, pervasive corporatization, and competitiveness
	Adaptation of the medical education curriculum to the needs of the community
	Lack of attention to various disciplines in policy-making
	Development of a comprehensive program for the university staff and affiliated units
	Transparency of supply and promotion policies and human resource compensation and maintenance
	Relationship between human resources management plans and future goals and plans of universities
	Ambiguities of job descriptions and lack of updates
	Use of upstream documents to compile applications
Assessment of policy selection	Accreditation of educational institutions and centers
	Lack of attention to virtual medical education and promotion of professional ethics
	Slow progress toward third-generation universities
	Lack of accountable education systems
	Undesirable status of higher education market in medical universities
	Centralized policy-making in the higher education system
	Discrepancies between higher education policy-making institutions (lack of inter-institutional coordination)
	Challenges of increasing quantities and financial bottlenecks
	Privatization policy for expanding the higher education system and financial independence of universities
Assessment of policy implementation	Policy responsiveness
	Failure to implement health plans in the context of land use planning
	Lack of environmental participation in the implementation of programs
	Non-separation of program implementation activities at the operational level
	Residents and employees' learning and work environments
	Lack of purposeful interactions between regional universities and discussions about transformation and innovation in the academic environment
	Lack of planning for upgrading the educational infrastructure
	Lack of attention to providing sustainable resources and strengthening the educational infrastructure
	Lack of faculty members empowerment for success in health programs
	Lack of vertical and horizontal integration
	Unfamiliarity of faculty administrators with higher education management
	Disregard of eligibility criteria during informal staff transfer between different units
	Low quality of education at universities
Assessment of policy analysis	Inattention to international standards
	Lack of planning for international actions and simultaneous evaluation and implementation
	Failure to upgrade the assessment system and monitoring of development packages
	Lack of internationalization of medical education
	Challenges of corrupt physicians and discriminatory practices
	Complaints handling policies
	Inattention to the staff performance goals after training

In politics, policy-makers usually pursue different goals and require multiple sources of information and evidence (44).

Joo et al. (2019) emphasized the need for mental health education, training, and teamwork, as well as attention to cultural differences and supervision (45). Breuer et al. (2018) also highlighted the role of education and supervision in promoting health (46). Moreover,

Wakida et al. (2018) indicated the role of knowledge, skills, leadership, and financial resources (47). Similarly, Maconick et al. (2018) confirmed the contribution of education to integrating health (48). In another study, Spagnolo et al. (2018) reported that factors related to policies, social context, and educational characteristics affect the integrity of health programs in bridging the health gaps (49).

Evaluation of policies in important fields, such as medical education, should be based on scientific evidence in the academic community (50). The challenges of setting the agenda and choosing policies can have irreversible impacts on higher education and medical education. Community-based medical education is an educational approach with important features, such as the connection between medical education and future work environment, training human resources tailored to the actual needs of the community, and emphasizing the interplay between medical education and the healthcare system (28).

In policy-making, social interests must be considered. On the other hand, attention to the interests and policies of a specific group could have negative effects on the community in the long term. Challenges related to the implementation and evaluation of higher education and medical education policies are more pronounced in the area of performance, as poor performance will result in public dissatisfaction and low performance. Generally, lack of attention to policy analysis in the field of medical education, which is one of the most important sectors in a country, will squander financial and material capital assets, as well as young irreplaceable human resources. Therefore, it is recommended to pay more attention to the efficiency, effectiveness, and consequences of medical education by considering the social benefits of assessing medical education policies in all stages of setting the agenda and formulating, choosing, implementing, and evaluating policies.

Assessment of policies in medical sciences, which deals with the health of individuals, may determine the decline or progress of a country in the short and long term. If educational policies are formulated, implemented, and evaluated in the light of social welfare and general interest, many challenges related to poor policy-making will be eliminated. This study provided specific examples of practical global and local activities and research to address the challenges of assessing educational policies in medical education and to design appropriate policies, meeting the medical education needs. We can improve the individuals' problem-solving skills through the promotion of policy-making and physician education by establishing specific criteria for policy-making and assessment of educational policies in problem analysis and policy formulation, implementation, evaluation, and review.

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Research Article

Design, Implementation, and Evaluation of a Short-Term Research Skills Training Course for Clinical Faculty Members: A New Experience at Kerman University of Medical Sciences

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Abstract

Background: Several research skills training courses are designed for both faculty members and students in educational and research institutions around the world.

Objectives: The current study aimed to design, implement, and evaluate a short-term research skills training course for faculty members of Kerman University of Medical Sciences.

Methods: The current scholarship study was conducted in three stages, in 2017. The first stage comprised of a comparative study needs assessment, and course design. The training course was conducted with the participation of 30 faculty members and the teaching of 10 experienced professors. Participants were evaluated through practical work and homework. Instructors were evaluated by participants using survey forms. The course was evaluated through interviews with several participants and professors.

Results: After eight months of research and holding 16 sessions (which each took between 2 to 4 hours), a course with three main modules was designed in 2017. Instructors used appropriate teaching methods, including interaction with participants, problem-solving, discussing, teamwork, and practicing at home. According to the results of the evaluation, the content of the course was appropriate for the research activities of participants. Besides, they believed that the instructors were among the strengths of the course.

Conclusion: Certainly, increasing research skills of faculty members will lead to better guidance of assistants and qualitative improvement of research conducted by students.

Keywords: Training; Research skills; Faculty; Medical

Background

Research is one of the most important pillars of sustainable development in all countries, and for this reason, the accuracy of research methods is of crucial importance (1). The increased number of articles and journals in medical sciences indicates the expansion of various researches in the field of medical sciences, in which appropriate data extraction is the prerequisite of application of their results (2). According to the data published by the Web of Science (WoS) database, scientific articles published by Iranian researchers increased

from 983 in 1997 to 49696 by the end of 2017, which indicates a more than 50 times increase. Besides, from 2015 to 2019, the publication of top articles increased by 5 times (3). World Health Organization (2004) emphasized "linking research to practice" in its 2004 report and asked countries to make efforts to transfer the knowledge gained from research (4). Active methods of knowledge transfer intend to influence and implement (5). The quality of research and articles, as well as their influence, should always be considered. In a study, 83 articles published in three scientific journals published in 2011 were examined and several problems, including general writing errors (47.0%), incorrect writing of methods (32.2%), incorrect findings (45.4%), and problems in writing references (25.3%) were identified (6). Certainly, teaching research skills to researchers is an effective way to address such problems.

In this line, special attention should be paid to the responsible implementation of medical research, and the knowledge of researchers concerning this issue should be improved (7). Ethical issues are intertwined with research and should not be considered as a secondary issue. Ethics should guide the research design. Universities should have careful plans and clear guidelines for informing researchers and university professors about such issues and make sufficient efforts to teach the principles of proper research (7). University faculty members, as the main pillar of training specialized personnel, have a crucial role in the advancement of scientific development of the country. Therefore, learning research methods and having a research perspective are important components of faculty members. Therefore, research activities have a large weight in the rating system of faculty members.

Expansion of postgraduate courses and clinical assistantships has resulted in the employment of several young faculty members in universities. This indicates the importance of familiarizing them with the basics of research in developing scientific papers and guiding students about how to conduct proper research. The first step in designing curricula is needs assessment; because identifying problems is the prerequisite of setting goals and determining how to address them.

Objectives

Several studies investigated the educational needs of faculty members, including research conducted at Isfahan School of Medicine (8), Medical Education Development Center of the Kerman University of Medical Science (KMU) (9), and Arak University of Medical Sciences (10), which in all cases a special emphasis is placed on developing skills in using statistical software, writing articles, and strengthening critical thinking. Therefore, in the current study, a short-term research course was held for clinical faculty members to improve their capabilities and to evaluate the impact of the training on the level of research knowledge of participants.

Methods

The current scholarship study intended to design, implement, and to evaluate a short-term research skills training course for clinical faculty members of KMUS who had less than 20 years of experience. Participants were identified, and faculty members with less than 10 years of experience were prioritized. In the first round, 30 faculty members participated. After receiving the ethical code (IR.KMU.AH.REC.1395.4), the study was conducted in three stages.

Designing the Course

This step was performed by conducting a comparative study and needs assessment.

Comparative study

To identify appropriate articles, databases such as Google and Google Scholar as well as websites and databases such as BioMed Central, PubMed, Weily, Education Resources Information Center (ERIC), National Institutes of Health (NIH), and other various databases available in the electronic library of the KUMS were searched for the period of 2005 and 2016. Using appropriate keywords, similar courses, both national and international, were identified and examined. To increase the comprehensiveness of the search, the track citations method was used.

Searching for resources and training programs took about 100 hours, then search results (nearly 248 files) were categorized. The search continued by one of the experts under the patronage of one of the main members of the research team, and with the supervision of two main members of the team, the appropriate studies and documents were identified from mid-August to February 2015.

Needs assessment

This step was performed as a qualitative study in the form of an expression of experiences. After consulting with the research team, experts and experienced individuals were identified using the purposive sampling technique. Written consent was taken to record the semi-structured interview, which took 30 minutes on average. Participants were reassured about the confidentiality of the interviews. Interviews continued to reach data saturation. Nine university professors were interviewed from May to September 2016. Interviews were recorded and transcribed. Then, the content analysis was performed.

Program design

Using the previous similar courses, interviews were conducted. Based on the educational goals, the curriculum of the course, including the number of steps (educational modules) and the duration of each step, was designed. Then, educational titles and sub-titles, educational strategies, major teaching and learning methods, duration of face-to-face training programs and apprenticeship, nominated university professors to join the research team to present the courses, and how to evaluate the learners and its frequency, were determined.

After developing the initial draft, implementation obstacles were discussed in two meetings with the main researchers in December 2016, and the necessary

amendments were made. To finalize the program, two meetings were held with instructors and participants.

Nearly 40 clinical faculty members with 5 to 10 years of experience, who were able to attend classes and declared their interest in participating were selected. Then, based on the participant's opinions, it was decided to hold classes every Thursday from 14:00-16:00. In another meeting that was held with the participation of 30 instructors and 30 faculty members who had a history of research and teaching in this field, the final program was discussed. University professors presented specific curriculums, and after consultation with the research team concerning how to teach and communicate with the participants, how to perform teamwork, and practices, provided their strategies. All opinions and results of the meetings were recorded, and after consulting with fellow professors, on May 12, 2017, the final program was prepared for implementation.

Designing the Execution Plan

Necessary equipment and human and financial resources were reviewed before, during, and after implementing the program. Organizational arrangements and educational space required to implement the course were established in the school of medicine. Two experts working in the school ran all administrators.

By cooperating with the computer experts of the faculty, a special section was developed on the school's website for online registration in the program. Besides, a telegram channel, an e-mail group, and an SMS group were also set up, and letters of invitation from professors were designed.

Experts of the program participated in performing other necessary measures and processes, such as communications with professors, announcing the programs, typing evaluation forms, holding evaluation stages, teamwork, and receiving practices, sending feedback, etc.

After making necessary coordination with instructors, a week before beginning the course, official invitation letters were sent for instructors. Audio files, short films, and photographs were produced from all sessions. After editing, the files were available through the website.

Assessment

Participants' evaluation: based on the educational content, assignments, and teamwork activities of participants were evaluated by instructors.

Instructors' evaluation: using a survey form, participants were interviewed at each session.

Evaluation of the course: using a qualitative study, experiences of participants and instructors were obtained. The interview guide is provided in Table 1. A summary of the experiences is given in the findings section.

Table 1. Interview guide to evaluate the short-term research skills training course for clinical faculty members

Content	How do you evaluate the content of each course?
	Did the content meet your needs?
	Was the practical work enough?
Instructor	Was the instructor sufficiently familiar with the educational content?
	In general, how do you evaluate the instructors?
Place	Was the course venue appropriate?
	Were the facilities tailored to the content of each course?
Timing	Was the timing appropriate?
	Was the timing appropriate to the content of each course?
Open questions	What facilities should have been available?
	Which part was more useful, theory, or practical work?
	Which module had the most useful content?
	Which part of the course you prefer to be repeated, and why?
	Do you prefer an online course or face to face courses?
	What were the strengths and weaknesses of the course?

Results

In the current study, the final program that was implemented, and the results of its evaluation are presented. The results of the comparative study and interviews with experts will be presented in another article.

The program was developed with the participation of key members of the project in four sessions. Based on the results of the review and programs identified by the comparative study, interviews were conducted simultaneously with sessions. At this stage, the content analysis of the interviews was a great help for coordinating executors.

The course was discussed in two meetings of the faculty council in July and August 2016, and some modifications were made. Eventually, the proposed course, including

implementation steps, topics, timing, and proposed instructors, was developed. The course was reviewed in three sessions, held from October to November 2016. Finally, after eight months of research and holding 16 sessions (which each took between 2 to 4 hours), three main modules were designed, in one of the sessions, 30 experts participated. The finalized program is provided in Table 2.

Table 2. Curriculum of the short-term research skills training course for clinical faculty members

	Module	Schedule	Teaching method	Participants' evaluation
Module one	Necessity of research	One session, 2 hours	Panel attended by three professors in three different disciplines	Each participant chosen a research topic, and then developed a research methodology
	Choosing a research topic	One session, 2 hours	Panel attended by two professors.	
	Different types of studies	Three session, 7 hours	Lecture, discussing different types of articles, and presenting similar studies	
Module two	Search strategies and databases	Two session, 5 hours	Lecture, practical work at the computer center	Literature related to the topic were searched. Proposal writing, individually and by teamwork
	How to write a proposal (1), literature review, introduction, and references.	Two session, 3 hours	Lecture, presentation, and practical work	
	Sampling techniques	One session, 3 hours	Lecture, problem-solving, and presentation	
Module three	Ethical considerations	One session, 2 hours	Lecture, presentation and problem-solving	Ethical considerations related to the topic were discussed.
	Statistical analysis and using analysis techniques	Two session, 4 hours	Lecture, presentation and problem-solving	Appropriate statistical tests were chosen
	Determining sample size	One session, 3 hours	Lecture, presenting the required materials	Homework were assigned according to the topic
	How to write an article	Two sessions, 6 hours	Lecture, presenting materials, analysis of essays	Homework by study analysis checklists developed for each topic.

Evaluation of the program

Using a qualitative study and collecting experiences of participants and instructors, the course was evaluated. Participants reported that the course and its content were appropriate to their research activities. Besides, they noted to instructors and the innovative teaching methodology as strengths of the course. Considering that the participants were new faculty members, they expressed their need for continuous participation in such courses, while emphasizing on the time constraints due to involvement in treatment activities as an important barrier that affects the efficiency of the course. On the other hand, they believed that the course should be longer so that more time be allocated to the practical training. Instructors also described the course as useful and effective and believed that by using practical materials, they could draw participants' attention to the use of research skills in guiding learners. The instructors emphasized the continuation of the program and its importance for future faculty members.

Discussion

In the current study, the final course had three modules that were developed in eight months, one meeting per each week. The course content included "Choosing research topic", "literature review methods", "different types of research studies in medical sciences", "ethical considerations of various studies", "how to write different sections of a research proposal", "sampling techniques and determining sample size", "applied statistics" and "how to write an article". In terms of content, there were similarities between our course and the courses that were found through searching in websites and literature. Reputable research institutes place special attention to the training of professors and researchers, continuation of training, and using different designs (for example, Harvard University's distance learning course (11), training course of American Health Institute (12), and the research course designed for pharmacy students (13)).

Harvard University's distance learning course (i.e. "Principles and Practice of Clinical Research (PPCR Course)) is designed to train clinical professors on a weekly basis for six months and contains four modules: "basic principles of clinical research emphasis on the clinical trial, and ethical considerations of this type of studies, biological statistics, practical aspects of clinical studies, and designing various studies (11). The national institute of health of the United States has several training

courses on research skills, one of which was a two-week intensive course for doctoral students in 2014 (12).

A study developed a clinical research course for pharmacy students in the forms of lectures, group discussions, workshops, and presentations to familiarize students with the design and evaluation of research, ethical and legal considerations, and analysis of findings. Using a survey study, the authors evaluated learners' knowledge using three measures related to the research protocol, documenting ethical issues, and presentation and influences of this course on learners' knowledge about research methods and interest of participants in continuing their studies in postgraduate courses. According to the results, those who were participated in these courses were more willing and had more knowledge in this area (13).

In the current study, after holding 16 meetings, a training course with three modules was developed. Then by doing practical work during the sessions, learners were evaluated. The evaluation of the course in the current study was performed by conducting a qualitative study, which, according to the results, using appropriate teaching methods was a strength.

The methodology used in the current study, which is a study of educational development, is published in prestigious domestic journals (14-16).

In a study conducted at Isfahan University of Medical Sciences (IUMS), a teaching course, both theoretically and practically, for histology courses is developed and implemented, and the evaluation revealed higher satisfaction of both instructors and students. Besides, due to flexibility in learning, it led to increased learning (14). In a study conducted by Rashidi and Avijgan at IUMS, an e-learning course was developed for histology courses of medical students. According to the evaluations, the course was successful in increasing the satisfaction of students and professors (15). In another study, a responsive community-oriented course was designed and implemented by the education development center of Shahrekord University of Medical Science Studies (16).

Conclusion

One of the important points of the current study was the emphasis of participants on increasing the duration of practical works and using resources other than audio files of sessions. Also, they asked for repeating the course and holding it as an official course with a participation certificate. Given the results of the participant's evaluation and their final evaluation, it seems that despite all limitations, the objectives of the course are achieved. One of the limitations of the current study was the limited time of participants, which left no option except to hold the course at weekends with limited hours, and despite the emphasis on teamwork and homework, participants could hardly perform homework. Another important limitation is the lack of similar studies that can carefully be used for comparison. Many similar courses of reputable institutions and universities are not available through the internet, but one of the strengths of the current study is implementing the course for clinical faculty members, which is one of the most important points of this scholarship study. Besides, the current study provided a valuable experience for designing and implementing more advanced courses and providing continuous education in this area. Participation of highly experienced professors of the university and using new teaching methods are other strengths of the current study.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=795899].

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Research Article

Comparing the Effect of Role-playing and Lecturing on Learning the Communication Skills Among Health Workers of Kerman Health Centers, Iran

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Abstract

Background: The proper health worker-patient communication is one of the main factors that affect patients' satisfaction and improve healthcare outcomes.

Objectives: The current study aimed at comparing the effect of the two widely used teaching methods, role-playing and lecturing, on learning the communication skills among health workers of Kerman health centers in Iran, 2018.

Methods: The current interventional study included all health workers in Kerman City as the statistical population of whom 120 selected by the census method. Then, they were randomly assigned to three groups of 40 subjects. The first group was trained by role-playing, the second group by lecturing, and the third group, as control, received no training. All the subjects completed the Barton standard relationship communication skills questionnaire before and after the intervention. The data were then analyzed in SPSS software using Wilcoxon test.

Results: The mean age of the subjects was 38.54±8.29 years, and 46.7% of them had a high school diploma; 86.7% were married, and 74.2% were females. Based on the findings, the mean score of communication skills in the role-playing group increased from 2.90 to 4.29 after the intervention, which was statistically significant (P <0.001).

Conclusion: The score of communication skills (i e, verbal, listening, and feedback skills) in the role-playing group was higher than those of the lecturing and control groups. Therefore, it can be concluded that the role-playing method can be useful in teaching communication skills.

Keywords: Role-playing, Lecturing, Communication Skills, Learning, Health Worker

Background

The ability to effectively and constructively communicate with others is one of the characteristics of a healthy and successful individual. Effective communication means that the message is more likely to be conveyed to the audience in a way that can affect him and is followed by his reaction.

The term communication is defined as "exposing to the public", according to the viewpoint of humanities scholars. It means conveying the concept in one's mind to the minds of others (1). Communication skills are referred to as behaviors through which one can communicate with others in a way that can evoke positive behaviors and inhibit negative reactions in them (2).

Different teaching methods are employed in the educational setting, and the most appropriate one is chosen based on the educational subject and the environment. Role-playing is one of the most widely used methods to teach communication skills.

Lecturing is one of the most widely used methods by teachers worldwide. In this method, the lecturer undertakes the main activity of the classroom and teaches various topics in different ways.

Role-playing is a training method that likely affects learners' communication skills. In role-playing, the individual puts himself in the place of others and attempts to behave accordingly. Hence, he learns how to deal with

conditions and problems in that particular situation. The four elements of thinking, emotion, insight, and action are involved in role-playing and increase the effect of role-playing on learning of communication skills.

Lecturing is another factor that likely affects learners' communication skills. This teaching method relies on verbal practices of the lecturer, and learning is performed through listening and note-taking by the learner. Lecturing can be performed as impromptu speaking, memorizing, and preparing. Lecturing is the most effective way to convey information through which the lecturer should benefit from the extensive knowledge and good articulation and present the material to meet the audience's needs (3).

To the best of authors' knowledge, several domestic and international studies are conducted on the effect of the role-playing teaching method on caregiving practices in nursing students and improvement of their communication skills, as well as this method on personal and group performance of learners in improving communication skills (4). Studies on the effect of the group discussion method using lecturing teaching style on academic achievement and communication skills of Isfahan University students (5), lecturing, play, and role-playing methods on the education of nutrition during puberty (6), and two teaching methods of conventional and role-playing on students' skills in counseling (7) also compared two teaching methods, but no research compared the effect of two teaching methods of role-playing and lecturing on communication skills. Also, most of the studies are performed on students, and no one is conducted on health workers so far.

In spite of the high importance of communication skills as a part of the training program of health workers, there are many concerns about weak communication skills, since poor communication by health staff, such as health workers, is one of the major complaints received by health centers in countries such as the United Kingdom (8).

Since health care, education, economics, and mass communication are developing in Iran, it is essential to accurately assess the communication skills to develop and design health promotion and prevention programs. Similar studies may raise the awareness of health workers, officials, and specialists and draw attention to this stratum of society.

Methods

The current interventional study conducted in 2018. All health workers of Kerman health centers were considered as the statistical population of the study (n=126), of whom 120 eligible subjects were selected by census sampling (six subjects were excluded due to not attending the meetings) after obtaining the informed consent and providing them with adequate explanations about the study objectives. Required permissions were also obtained from the officials. The project was conducted in Kerman in about two months.

Considering the executive facilities and practical conditions of an educational intervention, the health workers randomly assigned to three groups (two intervention and one control groups). The inclusion criteria were willingness to participate in the study and working in Kerman health centers as a health worker. Lack of unwillingness to cooperate with the project was also considered as the exclusion criterion.

The Barton standard relationship communication skills questionnaire was employed as the data collection instrument, which its reliability were confirmed with the Cronbach alpha coefficients as 0.80 in a study by Safavi et al. (9). The questionnaire consists of 18 items categorized in four sections. The first section includes demographic information (four items about age, marital status, gender, and level of education) The second section includes verbal skills (nine items), the third section, listening skills (four items), and the fourth section, feedback skills (five items). Except for demographic questions, all the items are the self-assessment of communication skills. In terms of scoring, items on verbal, listening, and feedback skills are scored based on a five-point Likert scale (completely disagree = 1, somewhat disagree = 2, I'm not sure = 3, somewhat agree = 4, and completely agree = 5).

To avoid the influence of the groups on each other, the training sessions of the two intervention groups were held on different days, and sessions were held in different health centers. Due to the availability of various training, the most concise and applicable training materials were prepared, and the contents were selected from scientific and valid resources approved by Iran's Ministry of Health and Medical Education, based on the educational goals and learners' level of understanding.

Prior to the intervention, the questionnaire was completed as a pretest by the subjects in the intervention and control groups. The first intervention group received training by the role-playing method and the second group by the lecturing method as four one-hour sessions weekly. The posttest was administered 10 days after the last session, and the questionnaire was completed by the two intervention and one control groups. The data were analyzed in SPSS version 22 (IBM Corporation, Armonk, NY). The results of the Shapiro-Wilk test indicated the non-normal distribution of data. Therefore, nonparametric tests (Wilcoxon and Mann-whitney) were used.

Confidentiality of information and the anonymity of the questionnaires were considered in the study, and verbal consent was obtained from all the subjects prior to the study The researcher tried to respect the participants' rights and consider a break and reception during the sessions. After the completion of the project, the educational content presented in the intervention sessions was also provided for the control group. The present study protocol was approved by the Ethics Committee of the Kerman University of Medical Sciences (ethical code: IR.KMU.REC.1398.301).

Results

Of the 120 health workers of Kerman health centers, 89 (74.2%) were female, 56 (46.7%) had a high school diploma, and 104 (86.7%) were married. The mean age of the subjects was 54.38±8.29 years. There was no significant difference among the three groups in terms of the studied variables (P>0.05).

There was a significant difference between the pretest and posttest scores of the lecturing and role-playing groups (Table 1). According to Table 2, a significant difference was observed in the mean scores of verbal, listening, and feedback skills, as well as the overall score of communication skills, based on gender, level of education, and marital status among the participants, before and after the intervention.

Table 1. The Comparison of the Scores of Communication Skills and its Dimensions Among Health Workers of Kerman Health Centers, Before and After the Intervention

Variable	Group	Mean Score Before the Intervention	Mean Score After the Intervention	P-value
Verbal skills	Control	3.02	3.02	0.655
	Lecturing	2.97	3.16	<0.001
	Role-playing	3.04	4.61	<0.001
Listening skills	Control	2.96	2.96	>0.999
	Lecturing	2.91	3.11	<0.001
	Role-playing	2.75	3.85	<0.001
Feedback skills	Control	3.36	3.35	0.157
	Lecturing	3.07	3.13	<0.001
	Role-playing	2.91	4.46	0.022
Communication skills	Control	3.10	3.10	0.257
	Lecturing	2.98	3.20	<0.001
	Role-playing	2.90	4.29	<0.001

Table 2. The comparison of the communication skills scores and its dimensions among health workers, before and after the intervention based on demographic characteristics

		Verbal skills (Mean)			Learning skills (Mean)			Feedback skills (Mean)			Communication skills (Mean)		
		Before	After	P	Before	After	P	Before	After	P	Before	After	P
Gender	Female	2.98	3.57	<0.001	2.82	3.39	<0.001	3.15	3.65	<0.001	2.99	3.55	<0.001
	Male	3.10	3.66	0.001	3.02	3.96	<0.001	3.32	3.83	0.001	3.14	3.72	<0.001
Marital status	Single	2.90	3.63	0.003	2.82	3.37	0.008	3.32	3.82	0.016	3.00	3.63	0.003
	Married	3.03	3.59	<0.001	2.88	3.48	<0.001	3.17	3.68	<0.001	3.03	3.59	<0.001
Level of education	< High school diploma	2.91	3.73	<0.001	2.82	3.65	<0.001	3.08	3.79	<0.001	2.94	3.73	<0.001
	High school diploma	3.09	3.42	<0.001	2.97	3.32	<0.001	3.23	3.54	0.001	3.10	3.43	<0.001
	Academic degree	2.96	3.76	<0.001	2.75	3.55	<0.001	3.24	3.88	<0.001	2.99	3.75	<0.001

Discussion

The results of the current study showed that the effect of role-playing on the score of communication skills of health workers of Kerman health centers was greater than that of lecturing. The results of different studies on the lecturing method show that compared to other teaching methods, lecturing is less effective in learning. Bahador et al., in a study on the perception of midwifery apprentices of the effectiveness of two teaching methods in child care learning reported that the team-based learning method was more effective than lecturing (10).

Health workers are one of the pillars of the health system and play a pivotal role in the promotion of public health. On the other hand, they need considerable skills in helping and communicating with individuals in the community. Therefore, the development of the communication skills of health workers can play a pivotal role in the improvement of the quality of health care and raising the satisfaction of clients. Implementation of training programs using different and effective teaching methods can significantly improve the communication skills of health workers.

Based on the results of the present study, there was a significant difference between the scores of verbal, listening, and feedback skills, and the overall score of communication skills, before and after the intervention; in other words, the mean scores increased after the intervention.

To the best of authors' knowledge, no similar study was conducted thus far on the three verbal, listening, and feedback skills.

According to the present study findings, there was

no significant difference between the average scores of listening, verbal, feedback skills, and communication skills before and after the intervention in the control group, but the average scores significantly increased in the lecturing and role-playing groups after the intervention. The average score of the role-playing group in the three verbal, listening, and feedback skills were significantly higher than those of the two lecturing and control groups.

Abraham et al., in a study on the effect of educational interventions on learning the communication skills showed that role-playing was an effective method (11), consistent with the results of the present study.

In an intervention study, Ahsen et al., evaluated the role-playing method and concluded that it can have a positive effect on personal and group performance of learners in developing communication skills (12), which was consistent with the findings of the present study as the role-playing method was more effective than lecturing.

The greater effectiveness of the role-playing method can be attributed to the point that through this method, the learners have enough communication with the role-players; they watch the play with excitement and are more involved. As a result, role-playing is more enjoyable and tangible for participants. On the other hand, the uniformity of the content and multiplicity of in-service training sessions reduce the effect of training programs over time, but considering a high potential in shaping a long-term memory for materials, role-playing is still one of the most effective methods in education because of the high importance of communication with clients, especially in the health care setting.

The findings of the study by Zraick et al., (13) were inconsistent with those of the present study. They reported that the role-playing method did not develop students' skills compared with the lecturing method, and attributed the reason to the lack of accurate evaluation and the employment of an appropriate instrument (13). The results of the study by Abedian et al., (14) were inconsistent with those of the present study. Differences among the reported results can be explained by differences in the characteristics of the participants, and the utilization of different instruments and variables. Abedian et al., examined the effect of lecturing and role-playing on the level of awareness increase, while the present study evaluated the effect of lecturing and role-playing on learning of the communication skills (14). However, lecturing may increase the level of awareness and attitude immediately after the intervention, but such changes are not sustainable and may back to the pre-intervention level in the next assessments (15).

Conclusion

The results of the present study comparing the effects of the teaching methods of role-playing and lecturing on learning the communication skills in health workers of Kerman health centers showed that role-playing is an effective method to teach communication skills and is preferred to the lecturing method. Therefore, it is necessary to employ this method more to teach communication and other skills. On the other hand, due to the low score of the health workers in communication skills before the intervention, it seems that effective teaching methods should be employed to develop this skill in health workers that are at the frontline of the health setting in contact with the society.

More attention should be paid to the teaching of communication skills, as a compiled course, in in-service training programs and meetings for health workers and healthcare providers via more effective methods.

Supplementary Material

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

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Research Article

A Survey of Graduate and Postgraduate Students' Perspective on the Use of E-learning Technology in Kerman University of Medical Sciences in 2017

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Abstract

Background: E-learning is one of the new methods of education that helps to increase people's knowledge and performance by using new technologies.

Objectives: The purpose of this study was to investigate the attitude of graduate and postgraduate students of Kerman University of Medical Sciences toward using e-learning technology.

Methods: This cross-sectional study was carried out among graduate and postgraduate students of Kerman University of Medical Sciences in autumn 2017. The data were collected by a researcher-made questionnaire whose validity and reliability was verified ($\alpha = 0.82$). Data were analyzed using descriptive and analytical tests (including t-test, ANOVA, and Spearman correlation) to investigate the relationship between the mean score of e-learning usefulness and students' demographic information in SPSS software.

Results: About 80% of e-learning students found it a good tool for the exchange of information and educational content between faculty and students at different universities and more than 40% believed that e-learning could improve the quality of education. About 57% of the participants were interested in using the technology. More than 70% of the students reported e-learning to be useful. Also, there was a significant relationship between the mean score of the usefulness of e-learning with age ($P = 0.049$), computer use skill ($P = 0.025$), and mobile use skill ($P < 0.001$).

Conclusion: From the students' perspective, using e-learning technology is useful and it saves time and costs and improves the quality of their education. It also makes it easier for students to answer their questions later. Therefore, it may be better to use this technology besides the traditional method to make it more effective.

Keywords: Electronic learning, Online education, Perspective, Students

Background

Lifelong learning is one of the educational priorities of the developed countries (1). Today, one of the most important topics in educating different sciences is how educational centers should prepare students for the society that is increasingly becoming information-oriented (2). Information and communication technologies (ICT) have paved the way for new innovations to deliver lifelong learning and can support teaching and learning in a variety of ways (3). The use of e-learning, which is a new teaching approach, is rapidly expanding (4).

E-learning is an educational course part or all of which is delivered through the Internet or in the online environment using ICT tools such as e-books, videos, links, and text messages (5-7). In the field of health, increased use of the Internet has also provided opportunities for the development of flexible, simple, and interactive education (8-10).

Most countries, for reasons such as increasing demand for education, a shortage of specialist education staff and students, a lack of educational space and limited capacity to accept in-person education systems, are unable to provide extensive education through in-person education (11). Resource-saving is also one of the factors that have led to more attention to e-learning. ICT has facilitated interconnections to educate and expand knowledge and has led educational environments toward virtualization (12); in 2009, the cost of education worldwide was estimated at $ 90 billion, $ 20 billion of which was spent for e-learning (13).

E-learning has some benefits. In this type of training, the student can access classes through the website, listen to lectures, and participate in group discussions at the same time. Training materials may also be provided asynchronously (14, 15). Since the introduction of e-learning, there have been challenges. For example, challenges related to technological issues make students tired and require technical support in learning (15, 16). In collective approaches, if the work is not evenly divided or if there is no agreement on the training methods, it may have a negative effect on the training outcomes (7). Numerous studies have been conducted on the effectiveness of e-learning (17-20). The results of a systematic review and meta-analysis by Lahti et al. showed no significant difference between traditional education and e-learning (20). Therefore, it seems that there is still doubt about the effectiveness of this teaching method.

Based on the results of various researches, a set of students' Perspectives, opinions, and feedback should be considered as part of strategies for implementing and developing e-learning in educational institutions (21, 22). In their research, El Gamal and Aziz found that that adopting e-learning requires a proper understanding of the characteristics of the students, their perspectives, and their various cultural aspects. They believe that e-learning has a more prominent role in graduate students and that they are more in need of e-learning (23).

Therefore, evaluating the students' perspective should be carefully considered before the implementation of e-learning in a country Several studies have also been conducted in this area (24-26).

Objectives

Given that e-learning is practiced at Kerman University of Medical Sciences and that students are experienced in using it, better results can be achieved based on their perspectives. Therefore, the present study was conducted to investigate the perspective of Kerman University of Medical Sciences students regarding the use of e-learning technology.

Methods

This cross-sectional study was carried out in the autumn of 2017 for one month. In this year, the total number of graduate and postgraduate students (MSc and Ph.D.) in Kerman University of Medical Sciences was 850. Thus, students who had completed at least one semester of their studies at this university were recruited using the convenience sampling method.

Data collection was performed electronically without a paper questionnaire. In this way, the researchers referred to the students available in the campus (colleges, dorms, and laboratories) in person and after identifying the eligible individuals and providing clear explanations about the purpose of the project and obtaining their willingness to participate in the study, we sent the questionnaire via email or social media.

In order to ensure maximum community feedback, each participant was asked to share the questionnaire via e-mail with other friends as well as postgraduate students who were outside the campus so that in case of consent, they can participate in the research. Finally, the questionnaire's e-mail address was shared in the classroom and university groups of postgraduate students created on online social networks, and the eligible individuals were asked to participate in the study.

Data were collected using a Self-administered questionnaire researcher-made questionnaire. The validity of the instrument was confirmed by two health information management and medical informatics experts. and the reliability of the questionnaire was calculated Cronbach's alpha (0.82). The questionnaire consisted of three sections. The first section included demographic information (age, gender, the field of study, degree, employment, computer and mobile skills based on participants' perspectives), the second section consisted of 13 specific questions related to participants' perspective on e-learning technology. The third part included two open-ended questions about the other pros and cons of this technology from the participants' perspectives. The questions were rated on a seven-point Likert scale from the lowest level of disagreement (score 1) to the highest level of agreement (score of 7). The questionnaire was designed electronically and its website was provided to all the participating postgraduate students.

Data were analyzed using SPSS.22 (IBM Corporation, Armonk, NY) and descriptive statistics in order to report the frequency and percentages. After examining the normality of the data, t-test was used to determine the relationship between the mean score of e-learning usefulness and gender, Spearman's correlation coefficient to determine the relationship between the mean score of e-learning usefulness and age and ANOVA test to determine the relationship between the mean score of the usefulness of e-learning and skill in mobile and computer use. In cases where ANOVA test was significant, Scheffe post hoc test was used to investigate differences in various groups. A *P*-value of less than 0.05 was considered significant.

In data analysis, the lowest and highest scores of the usefulness of e-learning were 13 and 91, respectively. Then, the difference between these two scores was divided by the number of categories (three categories: low, moderate, and high). According to the calculated category length, the total score of e-learning usefulness was considered as low (13-38), moderate (39-64), and high (65-91). The content analysis method was used to analyze open-ended questions. Thus, all responses to the positive and negative aspects of e-learning technology were individually recorded in a single table. Then, the answers with similar concepts were put together and the frequency of each was calculated.

All the data in the present study were analyzed cumulatively and the confidentiality of participants' information was maintained by the researchers. The present research was derived from the research project code 98000066 approved by the Student Research Committee of Kerman University of Medical Sciences with a code of ethics: IR.KMU.REC.1398.069.

Results

In total, 120 postgraduate students of Kerman University of Medical Sciences participated in this study. The mean age of the participants was 28 years and 55% of them were women. About 84% of the students were Masters's students. More than 35% of the students were also employed. The average level of skill in the use of mobile and computer devices was 52% and 63%, respectively. Less than 25% of the students had ever heard of e-learning technology. About 58% of the students were willing to use e-learning technology concurrently (Table 1).

Table 1. Frequency of participants' demographic and baseline information

Variables		No. (%)
Gender	Female	(55) 66
	Male	(45) 54
Level of education	MSc	(84) 101
	PhD	(16) 19
Employment	Yes	(36) 43
	No	(64) 77
Skill in the use of mobile devices	Elementary	(3) 3
	Intermediate	(52) 63
	Advanced	(45) 54
Skill in the use of mobile devices	Elementary	(8) 10
	Intermediate	(63) 75
	Advanced	(29) 35
Familiarity with e-learning technology	Yes	(77) 92
	No	(23) 28
Willingness to get the type of e-learning	Synchronous	(58) 70
	Asynchronous	(41) 49
	Not willing	(1) 1

According to the findings, 47% of the students believed that e-learning could be more effective than traditional and in-person education, but about 55% opposed the mere use of technology instead of attending classes. About 60% of the participants believed that e-learning can help improve the quality of education. Also, more than 40% of the students stated that e-learning can lead to increased efficiency, productivity, and improved learning. More than 80% of the participants considered e-learning as a good tool for the exchange of information and educational content between professors and students of different colleges and universities. About 57% of the sample also believed that e-learning does not harm the interactive and mutual communication between students and teachers.

On the other hand, 41% of the students agreed that using e-learning may be easier to answer their questions later. About 70% of the participants found e-learning useful and believed it would save time (60%) and reduce costs (80%). About 57% of the students were interested in using the technology. More than 60% of the respondents also stated that they were prepared to adopt and use e-learning technology.

The overall score of the students' perceptions of the usefulness of e-learning was 58.40 ±10.09, which was in the moderate range. As illustrated in Figure 1, 65% of the students have a moderate score regarding the usefulness of e-learning.

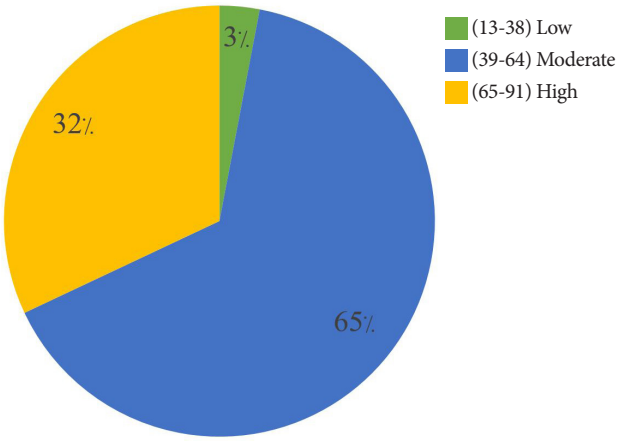

Figure 1. The frequency of the participants' overall score in perceptions of the usefulness of e-learning

Table 2 shows the mean score of students' perceptions of the usefulness of e-learning in terms of demographic and baseline information. Accordingly, there was a significant relationship between the mean score of e-learning usefulness and age (P = 0.049), computer use skills (P = 0.025) and mobile use skills (P <0.001); e-learning technology was found to be more useful for younger students and more proficient in mobile and computer use.

The results of the Scheffe post hoc test also showed that participants with advanced skill levels in using mobile

phones and computers found e-learning technology to be significantly more useful than other participants (with elementary and intermediate skill levels). No significant relationship was observed between gender, educational level, and employment of students and their perspective about e-learning (P <0.050).

Table 2. Mean score of participants' perceptions of the usefulness of e-learning by demographic information

Demographic information		Mean score of the usefulness of e-learning (mean ± SD)	P-value
Age		58.40 ± 10.10	0.049
Gender	Female	56.72 ± 10.42	0.670
	Male	60.46 ± 9.30	
Educational level	MSc	58.79 ± 10.01	0.970
	PhD	56.36 ± 10.50	
Employment	Yes	62.62 ± 8.23	00.140
	No	65.05 ±10.31	
Skill in using a mobile phone	Elementary	44.00 ± 10.53	0.001
	Intermediate	65.44 ± 10.12	
	Advanced	61.50 ± 8.86	
Skill in using computer	Elementary	56.50 ± 12.01	0.025
	Intermediate	56.85 ± 9.75	
	Advanced	62.28 ± 9.39	
Familiarity with e-learning technology	Yes	56.96 ± 9.91	0.850
	No	58.84 ± 10.16	

Based on the findings of the open-ended questionnaire survey, the ability to repeat teaching and recording and access to content at any time or place (10 views), decreased relationship of students and professors with each other, and lack of or delayed response from the professor (8 views) limitations in student troubleshooting and practice, and a definite need for the Internet (5 views), and sometimes diminishing student motivation and lack of collective sense of responsibility (3 views) were some of the advantages and disadvantages of this technology that many students pointed out (Table 3).

Table 3. Positive and negative aspects of using e-learning based on participants' perspective

Advantages	Disadvantages
• Ability to repeat teaching and recording and access to content anytime or anywhere (10 views) • Saving time and money due to reduced commute (6 views), • Accessing and communicating with a larger range of faculty outside and inside the university (5 views) • Diversifying learning methods, retaining more of the content in memory, increasing focus so that the student can use educational content when focused and ready for learning (4 views) • Reducing the need for physical space to hold classes, making individuals more inclined to use different technologies (2 views)	• Decreasing student-faculty relationship with each other and not receiving or receiving late responses from professors (8 views) • Restrictions on student troubleshooting and practice, a definite need for the Internet (5 views) • Sometimes a decrease in student motivation and lack of sense of collective participation and responsibility (3 views) • Lack of proper infrastructure for simultaneous communication, inactivity, fatigue and visual impairment (2 views)

Discussion

The results of this study showed that from the students' perspective, e-learning is beneficial and students expressed interest in using this method. The ability to repeat instruction and access content at any time (which makes this course more flexible) was among the benefits that students noted. On the other hand, the decrease in student and faculty relationships and students' lack of or delayed response from professors were among the concerns of the students.

Most students found e-learning useful and believed that taking classes offline would save time and money. The usefulness and satisfaction with e-learning from the students' perspective have been confirmed in numerous studies (27-29). In a systematic review study, Voutilainen et al. found that e-learning had no significant effect on nursing education compared to traditional education. They argued that the effectiveness of this method depends on many conditions and confounding factors (30).

The meta-analysis of Lahti et al. (20) also confirmed the results of the study by Voutilainen et al. Given that technology infrastructure in our country is not very robust, despite the positive perspective of students, it may cause students' dissatisfaction due to weak infrastructure after applying this method. Therefore, it is necessary to

ensure the provision of appropriate technical requirements and background before applying e-learning.

From the students' perspective, e-learning can improve the quality of education. Yanuschik et al.'s research found that e-learning can improve the learning process by enabling reviewing educational content as well as highlighting the content needed for the student and may lead to improved quality of education. They also stated that the use of electronic courses would increase the efficiency of classroom work. Pre-classroom theory tests make the student not only better at tracking, but also at remembering new materials, and thus answering the teacher's questions better and improving their problem-solving skills (31).

In contrast, Salter et al. in their study reported limited evidence on the effectiveness of e-learning in improving the skills of individuals in the field of pharmacy. Also, there is no evidence that e-learning is effective in enhancing pharmacists' knowledge over the long term (32). These results may be due to the nature of practical work in the field of pharmacy but may be different in disciplines and courses that are more theoretical in nature. The results of one study showed that postgraduate students had a positive view of e-learning and 82% believed that this method was very useful (33). Therefore, the difference can be due to the discrepancy of the educational level in the study population.

In e-learning, a student can access classes through the website, listen to lectures, and participate in group discussions at the same time, depending on their schedule. Training materials may also be provided asynchronously (14, 15). This method allows the student to participate in the session and improve learning with an initial understanding of the teaching material, but lack of face-to-face communication with the instructor may reduce student focus and may be considered a challenge. Therefore, to meet this challenge, it may be better to hold meetings concurrently to reduce the learning challenges while maintaining bilateral communication. Internet-related problems should be considered as well. Other research suggests that the combination of face-to-face education and e-learning offers a more flexible way of teaching (34, 35).

The results showed that students who are more proficient in using computers and mobile phones hold a more positive perspective regarding e-learning technology. Kvasnica, Hrmo (36), and Link and Marz (37) also believe that computer literacy is one of the factors that influence e-learning. The results of the Link and Marz study indicated that in addition to computer literacy, there was a significant relationship between students' perspectives and their age and previous exposure to the computer (37). Therefore, it is necessary to know the level of computer literacy of students before implementing e-learning and to provide the necessary training if necessary.

The present study was conducted at the largest medical university in the southeast of Iran, which also has a virtual education unit. Although the small number of participants is considered as a limitation of the study, we tried to enroll postgraduate students of all fields who participated in the study with complete willingness. It is suggested to conduct this study in other universities and geographical areas, as well as in larger groups students in order to obtain more generalizable results.

One of the limitations of the present study was to investigate the level of computer and mobile skills based on students' personal perspectives. In future studies, it is recommended that these skills be measured using more reliable tools to obtain more reliable results. Another limitation of this study was establishing the reliability of the questionnaire by Cronbach's alpha coefficient, which was better than other test-retest methods to ensure the reliability of the tool. The results of this study can help policymakers in e-learning and non-formal education, university managers as well as e-learning and distance education authorities in different universities. They can decide on the successful implementation of this technology by considering the advantages and disadvantages of this technology and examining the students' willingness, interest and readiness to use it, eliminating the disadvantages or limitations of e-learning.

Conclusions

From the students' perspective, the use of e-learning technology is useful and can save time and costs and improve the quality of education, but using them alone can damage the interactive communication between faculty and students and may also lead to a delayed response to students. Therefore, it may be better to use this technology in the traditional way to make it more effective. It is suggested that this approach be applied to disciplines that are of a theoretical nature to further their effect. E-learning decision-makers and executives at ministry and university levels can consider the benefits and disadvantages of this technology and devise strategies to reduce its limitations and barriers to develop e-learning and produce content for the effective and successful implementation of this technology.

In this study, students' preferences and perspectives toward e-learning and its effectiveness and students' interest and willingness to adopt and use this technology were identified to some extent. It is hoped that the results of the research will be of interest to directors and developers of e-learning and virtual and non-formal education institutions.

Supplementary Material

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

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Research Article

The Relationship of Satisfaction and Usage of Virtual Learning Facilities with Learning Style in Medical, Health and Operating Room Students

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Abstract

Background: Nowadays, several studies have been performed on the factors affecting the effectiveness of virtual education. One of the characteristics of learners is their different learning styles.

Objectives: The purpose of this study was to investigate the relationship between learning style and the level of satisfaction and usage of e-learning facilities in medical students.

Methods: This cross-sectional and retrospective (ex post facto) study was performed among medical, public health and operating room students of Shahrekord University of Medical Sciences in 2017. We redesigned their courses to be delivered in the blended method, so that teachers used a Learning Management System (LMS) in addition to traditional teaching. Information about learning styles was collected using Kolb's questionnaire, satisfaction level evaluated with a researcher made questionnaire and use of e-learning was examined by checking system loggings. Data were analyzed using one-way ANOVA, Tukey's post hoc, Welch's ANOVA and X^2 tests in SPSS software.

Results: Students' satisfaction with e-content in diverging learning style was higher (P = 0.032), but there was no significant relationship between learning style and demographic characteristics and total average mark. Also, there was no significant difference in the amount of using e-learning facilities between different learning style groups (P = 0.256).

Conclusion: It seems that using virtual learning facilities and considering the type of learning style in students can increase their satisfaction.

Keywords: Personal Satisfaction, e-Learning, Learning, Students, Education

Background

From a philosophical perspective, e-learning is based on constructivist and participatory learning approaches and empowers learners to change from being passive learners to active, exploratory and creative ones. Social and fundamental changes in epistemology and cognitive psychology approaches along with advances in hardware and software have increased the ability of educational planners in e-learning (1).

Learning management systems (LMS) are a viable solution to meet the different needs for virtual education in medical universities and have made it possible for individuals to teach easily and at low cost (2-4) regardless of time and space constraints. However, factors such as content security, emphasis on knowledge rather than performance and assurance of participant identity are among the disadvantages of this type of learning (5).

The results of studies show that e-learning has promising effects on the learning of some skills and their application by staff or students (6-8). Research shows that countries such as the US, Canada, UK, Australia and China are leading the way in the implementation of e-learning in medical education. Medical courses (mostly basic sciences) are available online at US medical colleges, including Harvard, Columbia, Boston, and Michigan (9).

Effective efforts have also been made at the universities

of Manchester and Sheffield in the United Kingdom and the medical schools of China (9). In a study, the impact of blended learning was investigated at the University of Munster Hospital in Germany, using a web-based e-learning tool (patient video clips). Results showed satisfaction and increased knowledge of students (10). On the other hand, Shahwardi et al. concluded that students were not satisfied with the quality of e-learning services (11).

Learning styles are one of the topics that can lead to optimal e-learning effectiveness. These styles refer to students' selective ways of learning (12), and are a set of cognitive, emotional, and physiological traits that deal with how the learner collects, organizes, and thinks about information. Awareness of learning style helps learners to improve their learning (13).

In recent years, many scientists have presented their theories on learning styles, and so far, around 21 types of learning styles have been mentioned. One of the most common learning styles that has been the focus of this study is Kolb's learning style (14). By identifying different learning styles, e-learning systems can provide appropriate suggestions and recommendations for teachers and students that can improve the learning process of students (12).

For medical students, knowledge and performance-based learning styles can bring about more success (15). One of the most important benefits of e-learning is the provision of educational services based on the needs of students, which makes it easy for individuals to teach without regard to time and space constraints (16). Therefore, considering the student's central role in the virtual education system, their satisfaction as end customers is one of the top priorities of the system designers and executives and one of the most important factors for its success (17).

Objectives

Due to the increasing trend of using virtual education and the existence of ambiguous aspects as to the effectiveness of learning in medical sciences, we aimed to investigate the relationship of satisfaction and utilization of virtual learning facilities with learning style in medical students in 2017.

Methods

This was a cross-sectional and retrospective (ex post facto) study, and the study participants consisted of 140 students of Shahrekord University of Medical Sciences including undergraduate medical students who entered the university in 2015 and 2016, undergraduate health students who entered the university in 2015, and undergraduate operating room students who entered the university in 2015. The participants were chosen using the census sampling method.

The inclusion criteria included all the students whose instructors had consented to the use of e-learning in the course. The exclusion criteria were absence, not completing the questionnaire at the time of collection of questionnaires and not logging into the Learning Management System (LMS).

Based on the possibility of delivering courses in a blended method and courses instructors being volunteer to do so, courses of Health 1 and 2 from medical curriculum, Common illnesses of children from General Health curriculum and Acquaintance with operating room equipment course from Operating Room curriculum were selected. The blended instructional design was used for the lessons. In the instructional design, we analyzed and set educational goals, instructional context, content, teaching method and the evaluation system. The blended learning lessons were specifically tailored for this project for one semester and information was collected after the end of the semester.

Workshops were held for the faculty members using the LMS and the lecturers were briefed on features of the system and how to use different modules. Students were provided with their usernames and passwords to log in to the LMS. All the sessions were held in person and the instructors only used the LMS as an elective complementary instruction during the semester.

During the semester, the instructors uploaded contents to the LMS, including PowerPoint, PDF and Word files and multimedia e-contents. As there was no obligation to use e-learning part of the course, students' scores were not affected by not participating in this part. The LMS used in this project was a specialized e-learning software for the delivery of asynchronous e-learning at http://lms.skums.ac.ir. Students' personal information such as age, gender, total mean marks, field of study, being local residence of the region, place of residence, marital status, access to appropriate computer and internet and experience in virtual learning were collected using a questionnaire.

Information about learning styles was collected using Kolb's questionnaire and satisfaction data was collected by a researcher-made questionnaire. The LMS report was used to investigate the use of virtual learning environment.

The Kolb Learning Style Questionnaire consists of 12 sentences with four options for each sentence (18, 19). Each option represents one of the four learning modes, namely objective experience, reflective observation, abstract conceptualization and active experimentation. Participants rated their suggested options from a 4 to 1 score (completely, to some extent, slightly and very low) given their learning style.

The sum of the scores of these options is four scores, representing four learning styles, with the first option in each question being the objective learning experience method, the second reflective observation learning, the third abstract conceptualization learning method, and the fourth active experimenter learning method. The pairwise subtraction of these methods (the difference between abstract conceptualization and objective experience as well as the difference between active experimentation and reflective observation) yields two scores on two coordinate axes (considering the final result being negative or positive).

The vertical axis includes objective experience at the top and abstract conceptualization at the bottom and

the horizontal axis includes reflective observation on the right and active experimentation on the left. These two axes form the coordinates of the four quadrants, and the four learning styles in each quadrant are diverging, converging, assimilating and accommodating (18, 19). The reliability of the Kolb Cognitive Styles Questionnaire has been investigated using Cronbach's alpha coefficient in previous studies. Accordingly, the coefficients of objective experience, reflective observation, abstract conceptualization and active experimentation were reported to be 0.65, 0.64, 0.67 and 0.74, respectively (19). In the present study, Cronbach's alpha coefficient of the questionnaire was obtained between 0.71 and 0.82.

Diverging learning style stems from a combination of objective experience and reflective observation. In fact, people with this type of learning style are more likely to see objective situations from different angles. They often prefer to see situations rather than act on them. They like situations that require diverse ideas, and are interested in diverse cultural attractions and information gathering.

Assimilating style is derived from the combination of abstract concept and reflective observation. People with this style of learning have a great deal of accuracy and ability to acquire and understand extensive information and to summarize it. In general, these people are less likely to pay attention to people and are more interested in abstract ideas and concepts.

Converging learning style is derived from a combination of abstract conceptualization and active experimentation. Individuals with this learning style are most capable of practicing ideas and theories. A person with this type of learning style can solve problems and make decisions based on the solutions they find.

Accommodating style also comes from a combination of objective experimentation and active experimentation. People with this style mostly learn through first-hand experiences and enjoy executing plans and engaging in challenging tasks. These people often prefer practical and tangible things to logical analysis (20).

Satisfaction questionnaire consisted of 16 questions rated on a five-point Likert scale (very high, high, medium, low, very low). Exploratory factor analysis was used to examine the construct validity of this questionnaire. At first, Bartlett's sphericity test was performed (P = 0.001) and Kaiser-Mayer-Olkin (KMO) value of 0.812 was calculated, confirming the suitability and adequacy of sample size. Then, using the scree test and examining the amount loaded on each question after using varimax rotation of the samples, only three factors with eigenvalues greater than 1 were determined and finally, 16 questions of the questionnaire were converted into three main factors. The first factor consisted of 8 items on satisfaction and interest in using virtual education, the second factor consisted of 4 items on satisfaction with the LMS and the third factor consisted of 4 items on satisfaction with electronic content, which explained 67% of the variance in total. The reliability of the questionnaire was reported to be 0.92 by examining the degree of internal consistency based on a 20-person pilot study. The content validity of the questionnaire was evaluated by the opinions of 10 experts.

After identifying the three factors of interest in using virtual education, satisfaction with LMS and e-content satisfaction, the relationships between them and students' learning styles were analyzed using One-way ANOVA test. After performing the test and identifying significant relationships, Tukey's post hoc test was used to detect and investigate the significant satisfaction and Chi-square test was used to investigate the differences in qualitative variables in learning styles. The data were analyzed in SPSS software version 23 (IBM Corporation version, Armonk, NY). LMS logs were used to collect information on the number of students using virtual learning facilities, including number of logins, number of text and multimedia content readings, and number of downloads. The present study was approved by the Ethics Committee of Tehran University of Medical Sciences (Ethical codes: R.TUMS.VCR.REC.1396.3408).

Results

The participating students' age ranged from 18 to 25 years. Their mean age was 20.04 ±1.17 years and their total mean score was 15.67 ± 4.20 years.

Frequency distributions of field of study, gender, nativity status, residence status, marital status, computer and Internet access, computer and Internet use (personal or university), experience in virtual courses, and use of university LMS by learning styles are presented in Table 1. The relationship between each style and demographic variable was assessed by the Chi-square test. The findings showed that there was no significant relationship between learning style and field of study, gender, nativity status, residence status, marital status, access to appropriate computer and internet, computer and internet use (personal or university), virtual course experience and use of university LMS (Table 1).

The highest and lowest means of satisfaction and interest in using e-learning were in diverging and assimilating learning styles, respectively. The LMS satisfaction score was the highest in the accommodating learning style, while it was the lowest in the assimilating learning style. Satisfaction with e-content was also highest in the diverging learning style and lowest in the converging learning style (Table 2).

Table 1. Comparison of frequency of learning styles by the participants' demographic variables

Variable		Converging	Diverging	Assimilating	Accommodating	Pearson (Chi-square)	P-value
		No. (percentage)	No. (percentage)	No. (percentage)	No. (percentage)		
Field of study	Medicine	6 (12.0)	4 (8.0)	21 (40.0)	21 (40.4)	3.796	0.704
	Health	1 (6.0)	0 (0)	8 (47.0)	8 (47.1)		
	Operating room	1 (10.0)	2 (18.0)	4 (36.0)	4 (36.4)		
Sex	Female	6 (11.1)	4 (7.4)	21 (38.9)	23 (42.6)	0.504	0.918
	Male	2 (7.7)	2 (7.7)	12 (46.2)	10 (38.5)		
Being the local residence of the region	Native	6 (15.4)	1 (2.6)	17 (43.6)	15 (38.5)	4.198	0.241
	Non-native	2 (5.1)	4 (10.3)	15 (38/5)	18 (46.2)		
Place of residence	Dormitory	(0.7) 4	4 (7.0)	21 (36.8)	28 (49.1)	5.946	0.114
	Non-dormitory	4 (18.2)	(4.5) 1	12 (54.5)	5 (22.7)		
Marital status	Single	8 (10.4)	5 (6.5)	32 (41.6)	32 (41.6)	0.404	0.939
	Married	0 (0)	0 (0)	1 (50.0)	1 (50.0)		
Access to computer and the Internet	Yes	7 (9.6)	5 (6.8)	31 (42.5)	30 (41.1)	0.901	0.825
	No	1 (17.7)	0 (0)	2 (33.3)	3 (50.0)		
Use of computer and the Internet	University	3 (13.6)	2 (9.1)	6 (27.3)	11 (50.0)	3.092	0.378
	Personal	5 (9.1)	2 (3.6)	26 (47.3)	22 (40.0)		
Experience of enrollment in virtual training	Yes	3 (9.7)	2 (6.5)	13 (41.9)	13 (41.9)	0.196	0.978
	No	5 (10.6)	2 (4.3)	20 (42.6)	20 (42.6)		
History of LMS use	Yes	7 (16.3)	3 (7.0)	16 (37.2)	17 (39.5)	3.951	0.267
	No	1 (2.9)	2 (5.7)	16 (47.7)	16 (47.7)		

LMS: Learning management system

Table 2. Comparison of mean scores of satisfaction factors and use of virtual education facilitiesby learning style

Satisfaction factors	Learning style (mean±SD)				F-test*	P-value
	Converging	Diverging	Assimilating	Accommodating		
Interest in e-learning	3.50 ± 0.88	4.12 ± 0.69	2.70 ± 1.01	1.30 ± 3.07	2.126	0.114
Satisfaction with LMS	2.62 ± 0.93	2.66 ± 0.14	2.18 ± 0.75	3.50 ± 0.88	0.817	0.492
Satisfaction with e-content	2.37 ± 1.04	3.33 ± 0.80	2.01 ± 0.63	2.28 ± 0.76	3.580	0.022
Amount of use	18.16 ± 16.50	9.33 ± 2.10	15.23 ± 12.80	8.00 ± 7.10	**1.560	0.256

*test One-Way ANOVA. **test Welch's ANOVA LMS: Learning management system

Satisfaction factors (satisfaction with virtual education, satisfaction with LMS and satisfaction with electronic content) were compared between the four learning style groups using ANOVA test. There was no significant difference in satisfaction with virtual learning and LMS among the learning styles, but there was a significant relationship between e-content satisfaction and students' learning styles (P = 0.02; Table 2).

Significant differences in e-content satisfaction in different learning styles were investigated using Tukey's post hoc test. Accordingly, there was a significant difference in satisfaction with electronic content between the diverging and assimilating styles (P = 0.032) as well as the diverging and accommodating styles (P = 0.018).

The total mean score of students in the converging learning style (15.96 ± 4.90) was higher than other styles. This value was 15.62± 4.70, 15.74 ± 5.83, and 15.70 ±5.30 in the diverging, assimilating and accommodating learning styles, which were not significantly different (P = 0.979).

In order to check the system usage, the number of logins, the number of electronic content readings and the number of downloaded documents were evaluated. ANOVA was also used to determine the amount of system usage difference between students with diverse learning styles. Levene's test was used to test the homogeneity of variances. Welch's ANOVA test was used as the variance

of the distribution of usage value was not homogeneous in different styles (P = 0.036). The results showed that there was no significant difference in the amount of usage of virtual learning facilities in LMS between different learning styles (Table 2).

Discussion

The purpose of this study was to investigate the relationship between students' learning styles (converging, diverging, assimilating and accommodating) and their satisfaction with virtual facilities and the relationship between these styles with the amount of LMS usage in Shahrekord University of Medical Sciences students. The results showed no significant difference in satisfaction with virtual learning and LMS between different learning styles, but there was a significant difference in satisfaction with e-content among students with different learning styles.

Previous research has shown that the use of LMS as a non-synchronous e-learning tool has a significant role in student satisfaction and helps them focus on content (21). It should be noted that in an e-learning environment, many factors affect user satisfaction. These factors can be subdivided into inclusive dimensions, lecturers, courses, technology, system design and learning environments (22). For example, research results show that while content is appropriate, factors such as frequent technical problems, problematic use, and lack of access to electronic equipment can be considered as a cause of students' dissatisfaction with virtual education services (23).

The results of the study by Di Marco et al. showed a moderate relationship between the strategy of using deep learning techniques and the acceptance of the learning model and its satisfaction (24). Another study has demonstrated that the content of an LMS is better suited to support efficient and dynamic learning, and integrating the use of tools with face-to-face learning is crucial for students (25). Al-Neklawy concluded in his research that most students were very satisfied with the impact of blended teaching methods (26). In practical and skill-based discussions, it should be noted that training should be both virtual and in-person in order to achieve student satisfaction and optimal performance (27). On the other hand, learning styles have become a notable educational concept and the number of learners and the variety of educational content must be determined based on the learning style (28).

The results of the study by Ahadi et al. indicated that converging and diverging learning styles were prevalent among nursing students (29). In a study by Pouratashi et al. (30) to investigate the learning styles of agricultural students, the learning styles of female students were identified as converging and assimilating. In the present study, the percentages of accommodating and assimilating learning styles were higher in medical, health and operating room students, but there was no significant difference between different learning styles and each of these fields of study. The results of another study showed that participating in a virtual education course can improve attending students' attitudes towards virtual education in people with different learning styles (31). In the present study, there was no difference in the use of virtual education between learning styles, which was not unexpected as e-learning aims at covering all learning styles.

The present study had some limitations. Given that different lecturers and courses have been studied, teachers' teaching style, their ability to provide educational content, and the nature of the courses may also be confounding factors. On the other hand, sample selection and sample size were limited due to the choice of courses that could be offered in mixed mode, lecturers' cooperation with the use of cyberspace during the semester and training faculty and students on how to use the LMS. Also, due to the high cost of producing multimedia electronic content, the limited production of these contents was another drawback of the present study.

It seems that using e-content and presenting it to students can increase their satisfaction. It is recommended that this study be performed in other environments with larger sample sizes.

Supplementary Material

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

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Research Article

Medical Students' Satisfaction with a Web-based Training Module of Clinical Reasoning

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Abstract

Background: There is a paucity of literature regarding the medical students' perspectives on web-based training of clinical reasoning.

Objectives: This study aimed to describe the implementation of a web-based training course of clinical reasoning for medical students and to evaluate their satisfaction with the program.

Methods: This cross-sectional study was conducted at the Tehran University of Medical Sciences in 2018. Fifty internal medicine interns were consecutively enrolled. The study consisted of two phases. The first phase focused on the development of a web-based training module of clinical reasoning. The second focused on evaluating the trainee's satisfaction with the virtual course. The educational content of the program was prepared by an expert panel and incorporated in a web-based educational tool designed for virtual training purposes. The students' satisfaction with the virtual course was assessed using a questionnaire. Each item of the questionnaire was scored from 0 (0) to 1.5 (100). The content validity of the questionnaire determined by an expert panel, and its reliability was measured.

Results: The mean score of each item of the questionnaire ranged from 77.3 to 85.3 which showed that the participants agreed with the items of the questionnaire. Also, Cronbach's alpha coefficient was excellent in nine items of the questionnaire, good in four items, and acceptable in three items. The intraclass correlation coefficient was also estimated as 0.98.

Conclusions: The participants were satisfied with the web-based training tool for clinical reasoning, used in the present study. The developed questionnaire also showed good validity and reliability for the assessment of trainees' satisfaction with the web-based training module of clinical reasoning.

Keywords: Logic, Distance Education, Assessment, Medical Student

Practical Points:

1. Considering the time constraints of face-to-face education methods in internship programs, it seems reasonable to implement electronic learning approaches to train clinical reasoning.
2. Application of multiple training media, course assessments, and feedback are among the important features of web-based programs for clinical reasoning.
3. According to the present results, the trainees were satisfied with the web-based training tool for clinical reasoning.

Background

Independent medical practice is one of the major concerns in the early post-graduate employment of medical students (1). Some post-graduates believe that training in medical schools does not prepare them for their future role as independent clinicians (2). On the other hand, failure to solve actual clinical scenarios may have serious consequences, such as the patient's death (10). To overcome these pitfalls, training programs have been recently reassessed in medical faculties (3) to improve medical education and prepare clinicians with proper decision-making skills (4).

To improve the medical students' cognitive abilities and clinical reasoning skills, training, and assessment of medical courses have been considered (5). The diversity and complexity of clinical environments oblige instructors to improve the medical students' problem-solving

and clinical reasoning abilities (6). Generally, clinical reasoning is essential for all health professionals to make appropriate clinical decisions. Therefore, the promotion of medical skills training in medical universities has become a necessity worldwide (7, 8).

Medical education authorities emphasize the assessment of clinical reasoning in medical undergraduates (9, 10). Recently, there has been a growing interest in revising the educational content of medical courses for general practitioners by expanding clinical reasoning courses and assessments (11). Since skill training in an actual clinical environment may have multiple limitations, the importance of virtual training programs has been bolded (12). On the other hand, the rapid progress of information technologies in this era has changed the educational design and framework. To develop clinical reasoning courses, factual clinical scenarios are applied in simulation environments, using electronic learning programs (13). Today, technological evolution has resulted in the production of web-based educational programs for clinical reasoning training (14).

An internship is an engaging period for medical students, as they are involved in the patients' medical affairs during both day and night shifts. Considering the time constraints of face-to-face education in internship, it seems reasonable to implement electronic learning approaches to train clinical reasoning. Nevertheless, there is still a paucity of literature on the efficacy and significance of web-based virtual training for interns' clinical reasoning.

Objectives

Considering the importance of clinical reasoning training and assessment, in this study, we aimed to implement a web-based training course of clinical reasoning for medical interns to increase their clinical reasoning skills and also to assess the trainees' satisfaction with the course.

Methods

This cross-sectional study was conducted at Tehran University of Medical Sciences, Tehran, Iran, in 2018. Fifty internal medicine interns, with rotating shifts at a teaching hospital, were consecutively enrolled in the study. They participated in the program for one month and had access to the training course online anytime on any device.This study consisted of two phases. The first phase focused on developing a web-based training module for clinical reasoning, while the second phase focused on evaluating the trainees' satisfaction with the virtual course. The educational content of the course was prepared by an expert panel, consisting of two faculty members of the internal medicine department and two faculty members of the medical education department. The clinical reasoning scenarios presented factual clinical cases, with appropriate complexity for an undergraduate medical student.

The educational content included five scenarios related to internal medicine diseases, cardiology, rheumatology, nephrology, hematology, and gastroenterology. Three scenarios were designed, based on the Key Feature and Clinical Reasoning Problem approaches, and the other two scenarios were designed, based on the Puzzle format. The educational content also included the trainees' feedback and false choices in quizzes. The expert panel prepared the educational content in the form of slides and podcasts to introduce the clinical reasoning concept. The content was presented in a virtual course, which was accessible to the trainees prior to encountering the scenarios. The constructed content was uploaded on the Moodle website ("https://...moodlecloud.com").

The educational content was presented in a free web-based program with multiple educational properties. Educational media, including short clips, photos, podcasts, and slides could be uploaded to the program. The web-based program consisted of five quizzes, with scores ranging from 0 to 100. A 15-minute time limit was considered for each quiz, and the trainees could access the quizzes only once. A pilot study was also conducted among 20 trainees to define possible limitations, including web-based system bugs. To facilitate the program and complete the learning cycle, some of the educational content was revised, based on the trainee's primary feedback in the pilot study.

In the second phase, the trainees' satisfaction with the clinical reasoning course and method of learning (including the web-based software) was assessed. For this purpose, a questionnaire was designed by an expert panel in the following steps. In the first step, the expert panel reviewed the literature to determine the main domains for assessing satisfaction with a training module, including web-based training courses. In the second step, the content of the reviewed articles was extracted and analyzed to determine the key factors to be incorporated into the questionnaire. The panel also determined the format (e.g., simplicity and lack of redundancy), order (e.g., prioritizing important items at the beginning of the questionnaire), and a number of questions. An explanation of the aims of the questionnaire was added to the beginning of the survey. In the third step, the expert panel interviewed ten trainees, who participated in the pilot study to determine their demands when using the web-based program.

The questionnaire items were refined, based on the feedback from the pilot study. Finally, an initial draft of the questionnaire, containing 16 items rated on a four-point Likert scale, was prepared. The score of each item ranged from 0 (0%) to 1.5 (100%) in both surveys. If the participant strongly disagreed with the item, the score would be zero; if he/she disagreed with the item, the score would be 0.5 (33%); if he/she agreed with the item, the score would be 1 (66%); and if he/she strongly agreed with the item, the score would be 1.5 (100%).

Moreover, another expert panel evaluated the content validity of the questionnaire by reviewing the content. This panel consisted of three experts in medical education and two experts in informatics, who assessed the content quality regarding ambiguity, duplication, phrasing, and grading of items. The content validity ratio was estimated at 100%. The final version of the questionnaire was uploaded to the

program, and then, a web-based assessment of trainees' satisfaction with the educational program was performed twice during one week after the course.

Data were analyzed in SPSS Version 20 (Chicago, IL, USA). Quantitative variables are expressed as mean and standard deviation (SD). The test-retest reliability of the questionnaire was evaluated by measuring the internal consistency of the questionnaire, using Cronbach's alpha at 95% confidence interval (CI). The intraclass correlation coefficient was also calculated.

Results

Fifty medical interns (21 males and 29 females) participated in this study. The age range of the interns was 24 to 27 years, and the response rate was 100%. In this survey, the range of quiz scores from one to five was 33-92, 31-97, 40-100, 42-94, and 7-100, respectively. Also, the mean (SD) of quiz scores from one to five was 68.15 (0.11), 73.42 (0.13), 74.74 (0.12), 74.07 (0.11), and 47.12 (0.17), respectively. The quiz scores in the virtual course are presented in Table 1.

Table 1. The distribution indices of the participants' scores in the virtual course quizzes

Quiz (score range)	Minimum	Maximum	Mean	Standard deviation
Quiz 1 (0-100)	33	92	68.15	0.11
Quiz 2 (0-100)	31	97	73.42	0.13
Quiz 3 (0-100)	40	100	74.74	0.12
Quiz 4 (0-100)	42	94	74.07	0.11
Quiz 5 (0-100)	7	100	47.12	0.17

The participants' lowest and highest mean (SD) scores of the questionnaire items were 1.16±0.49 (32, 77.3%) and 1.28±0.56 (37, 85.3%), respectively. The Cronbach's alpha coefficient of the items ranged from 0.69 to 0.98 The mean (SD) scores of the trainees in the first and second surveys are presented in Table 2. The reliability and Cronbach's alpha coefficient (95% CI) for each item of the questionnaire are shown in Table 2. The intraclass correlation coefficient was estimated at 0.98.

Table 2. The mean (standard deviation) scores of the participants in the first and second surveys and reliability assessment of the newly developed questionnaire

Questionnaire items	First survey		Second survey		Cronbach's alpha (95% CI)
Application of the program is straightforward.	1.16	(0.7)	1.16	(0.7)	96.80 (94.70-98.10)
I feel confused while using the program.	1.18	(0.75)	1.21	(0.77)	97.10 (95.10-98.30)
I receive the necessary educational points by using the program.	1.28	(0.56)	1.18	(0.68)	78.60 (66.20-86.80)
The examples presented in the program guide help me learn how to use the program.	1.19	(0.52)	1.23	(0.42)	76.20 (62.70-85.30)
I easily find the data in the program.	1.16	(0.49)	1.19	(0.51)	86.20 (77.60-91.60)
The data demonstrated in each page gives me enough information.	1.16	(0.49)	1.16	(0.49)	98.40 (97.30-99.10)
The content of each page is packed and confusing for me.	1.16	(0.75)	1.16	(0.75)	96.80 (94.70-98.10)
I clearly understand all the words used in the program.	1.18	(0.76)	1.21	(0.77)	98.50 (97.50-99.10)
I am confused with the program.	1.28	(0.56)	1.18	(0.68)	88.00 (79.6-92.90)
The program informs me about each activity and shows my location.	1.19	(0.52)	1.23	(0.42)	86.50 (77.10-92.00)
The exit message is shown when terminating activity.	1.16	(0.49)	1.19	(0.51)	92.60 (87.40-95.60)
I can easily find my requested information in the help section.	1.16	(0.49)	1.19	(0.39)	84.80 (74.20-91.00)
I have access to the support section in every page.	1.16	(0.75)	1.21	(0.70)	95.70 (92.70-97.50)
The program improves student-teacher interactions.	1.19	(0.52)	1.21	(0.52)	94.80 (91.20-97.00)
The security of users is well preserved in the privacy section.	1.16	(0.49)	1.21	(0.41)	69.30 (47.80-81.90)
I am generally satisfied with the virtual course.	1.18	(0.76)	1.19	(0.69)	93.70 (89.30-96.30)

If the participant strongly disagrees with the item, the score will be zero; if he/she disagrees with the item, the score will be 0.5; if he/she agrees with the item, the score will be 1; and if he/she strongly agrees with the item, the score will be 1.5.

Discussion

The results of the present study showed that the majority of the participants were significantly satisfied with the virtual course of clinical reasoning. Our results regarding the trainees' satisfaction with the virtual clinical reasoning course are comparable with previous research. In line with our findings, a previous study showed that the application of virtual patient simulation improved the clinical reasoning skills of medical students compared to the traditional learning environment. Also, the students

showed a positive attitude toward the virtual method (15).

Moreover, the application of an immersive patient simulator caused a significant improvement in identifying the proper treatment after using a simulator by third-year medical students. The students described a high level of motivation while using the simulator (16). In this regard, Weiner et al. showed that Web-based Simulation of Patients (Web-SP) is a valuable tool for teaching clinical reasoning to undergraduate oral surgery trainees, as it improves the learning outcomes in comparison with traditional teaching alone. Besides, the students had a positive attitude toward the teaching method (17). In contrast to our study, which indicated the trainees' satisfaction with the virtual course, a previous study showed that virtual collaborative learning (VCL) was as effective as traditional problem-based learning (PBL) in improving the clinical reasoning skills; however, the trainees accepted VCL less than PBL (18). The differences in the results might be partly due to the nature of virtual programs.

To the best of our knowledge, this study presented the first web-based training program for clinical reasoning training at Tehran University of Medical Sciences. A similar web-based program was designed at Tabriz University of Medical Sciences, Tabriz, Iran. Nonetheless, the program used in the present study had some advantages over the mentioned program. First, we were able to upload media, including short clips and images of patients' examinations. Therefore, the trainees could conduct an actual patient assessment rather than merely using books and manuscripts, which undermines the importance of physical examination findings in a clinical setting. Second, the program used in the present study provided feedback for false choices and offered the trainees an opportunity to learn from their mistakes, which had significant educational impacts. In other words, while it was traditionally presumed that assessments only rate the trainees, the current perspective is that providing scientific feedback would increase the training effects (19).

In a previous study, the Lasater Clinical Judgment Rubric (LCJR) model was used to evaluate the nursing students' clinical reasoning skills during simulated patient care scenarios. It was concluded that students need feedback from faculty members throughout the training process to improve their self-appraisal (20). Therefore, the application of media related to clinical reasoning quizzes and appropriate feedback at the end of exams would be an effective approach to improve the training experience.

The web-based design of our program facilitated training and education, since the target population (interns) had on-call shifts, and therefore, had limitations for participation in the classes. In line with our study, the literature suggests the successful application of virtual methods for training clinical skills. In this regard, a web-based unfolding case strategy was used as an electronic learning tool to enhance and evaluate the clinical reasoning skills of medical students (21). Similarly, in a previous study, a research team developed a web-based tutorial environment to improve critical thinking (22).

Another group of researchers introduced a web-based multimedia platform to enhance intraoperative learning and develop clinical reasoning (23). They concluded that the operative video platform, implemented during a surgical clerkship, was independently associated with the improvement of clinical reasoning skills, clinical funds of knowledge, and overall assessment. Parallel to these findings, Badiyepeymaie et al. compared the WebQuest and team-based learning approaches in a mental health course and observed that the students' final scores were higher in the former approach than the latter (24). Meanwhile, a systematic review concluded that virtual reality used for laparoscopic surgery training improved learning in 74% of the included studies and was associated with a higher level of competence in medical practice in 87% of the reviewed articles (25).

In contrast to our study and the literature, a systematic review indicated the paucity of information on the effectiveness of high-fidelity human patient simulation manikins for teaching clinical reasoning skills to undergraduate nursing students (26). Generally, the prospects of virtual education are growing. There are some major factors that influence the success of virtual education. First, the trainers' familiarity with the optimal use of virtual learning facilities and their ability to apply technologies properly should be considered. Also, learner-related factors, including motivation, must be emphasized. Finally, the virtual tool characteristics need to be addressed. It is important to consider these points when comparing the effectiveness of virtual education with conventional methods.

In this study, we constructed and validated a web-based questionnaire for assessing the satisfaction of participants with the virtual educational program. According to our results, the newly developed questionnaire showed good validity and reliability. The calculated Cronbach's alpha was excellent in nine items of the questionnaire, good in four items, and acceptable in three items.

One limitation of this study was the lack of a control group; therefore, no comparisons could be made. We recommend further matched studies to compare the trainers' satisfaction with virtual training and conventional training methods of clinical reasoning skills. It is also recommended to revise the developed questionnaire, based on the feedback of upcoming studies, and assess its reliability in larger cohorts.

Conclusion

The participants were satisfied with the web-based training tool for clinical reasoning. The newly developed questionnaire showed good validity and reliability for the assessment of trainee's satisfaction.

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Research Article

The Use of Different Study Skills by Undergraduate and Postgraduate Students of Kerman Dental School

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Abstract

Background: Different study skills have been developed and introduced, although most learners are apparently unaware of them.

Objectives: This study was conducted to investigate the frequency of using different study skills among undergraduate and postgraduate students.

Method: The study population consisted of 201 undergraduate and 45 postgraduate students of Kerman Dental School in 2016-2017, who were selected using the random stratified sampling method. A questionnaire composed of four questions used to collect data. The questionnaire was a modified version of the one used by Karpiacke et al. The frequency of using different study skills (i.e., re-studying, re-writing, using flashcards, studying in groups, memorizing, teaching content, creating headings, self-testing, highlighting, finding connections, and finding real examples) was asked in the first question. Students' preparation for exams and students' satisfaction with their study skills were asked in the next questions. Data was analyzed using the chi-square test in SPSS23.

Results: Of the 246 participants, 72 (35.8%) undergraduate students and 20 (44.4%) postgraduate students were male. The frequency of using different study skills was the same between the male and female undergraduate students, except for re-writing (P=0.024), studying in groups (P=0.018), and creating headings (P=0.018) which were higher in the female undergraduate students. However, there was no significant difference between male and female postgraduate students in terms of the frequency of using different study skills.

Conclusion: The most and least commonly used strategies by the undergraduate and postgraduate students were re-studying and using flashcards, respectively. Only 30.3% of the undergraduate and 24.4% of the postgraduate students used the self-testing strategy.

Keywords: Study skills, study strategies, students, dental school

Background

Studying is a mental process with its specific principles and conditions. Knowing, using or providing these principles can lead to more efficient learning and higher efficacy. In fact, effective studying depends on the student's interest in the subject and also the skillful use of study strategies (1). Study skills or study strategies are discrete techniques that can be learned and applied to all or most fields of study. Different individuals have various study skills which differ based on their interests, habits, and characteristics. Therefore, it can be claimed that each individual has a unique study skill (2). The quality and quantity of learning are also affected by the general level of intelligence, physical and mental health, and motivation for learning (3). Previous studies in Iran have shown that problems with learning skills and unawareness of them should be considered in the academic failure of university students (4, 5). Study strategies are divided into four categories:

1. Repetition-based: Include the use of flashcards and keywords

2. Cognitive-based: Include studying with friends or in different groups

3. Procedural: Include time management, organizing subject matters, and study programming

4. Metacognitive: Include self-testing to evaluate the level of learning (6)

Study skills are substantial to academic competence, and practical study skills are associated with positive outcomes in an academic career (6).

Different study skills have different effects on increasing learning. It has been shown that highlighting, keyword mnemonics (using keywords and mental imagery to associate verbal materials), summarization, and re-reading are not highly efficient for learning. However, self-explanation, interleaved practice (implementing a study schedule that includes different kinds of materials in a single day), and elaborative interrogation (generating an explanation for why a concept is true) are proven to have moderate efficacy. Moreover, practice testing (self-testing) and distributed practice (implementing a practice schedule that expand study activities over time) have been reported to exert significant effects on learning and long-term retention of data (7). Karpicke and Blunt (8) found out that retrieval practice was superior to re-studying for making inferences and learning scientific knowledge. Clinical decision making depends on sufficient scientific knowledge, which allows retrieval of that knowledge. In a study by Karpicke et al. (9), most students read their notes or textbooks repeatedly but had relatively limited engagement in self-testing or retrieval practice while studying. Mc Andrew (10) also reported that 54.6% of the students of New York University College of Dentistry would not test themselves after reading a textbook chapter.

Objectives

For educational researchers, one way to improve education quality is to have sufficient knowledge about how students attempt to learn. Therefore, the present study was designed to evaluate different study skills used by undergraduate and postgraduate students of Kerman Dental School.

Methods

The present descriptive cross-sectional study was conducted in 2016-2017 on the students of Kerman Dental School. Based on the literature (5) and Cochran's formula with 0.05 level of precision, 204 undergraduates, and all the postgraduate students (n=65) of Kerman Dental School were selected using stratified random sampling. Accordingly, 34 undergraduate students were selected from different years of entrance by randomly selecting student numbers. Data collection was carried out with the use of a questionnaire consisting of four questions, which was a modified version of the one used by Karpicke et al. (9). Test-retest reliability was calculated using intraclass correlation coefficient (ICC). Ten dental students completed the questionnaire. Then, the copies of the questionnaire were coded, and after three weeks, the same students completed the questionnaire (ICC=0.94). Eight different dental specialists and two medical education specialists completed the questionnaire to evaluate its validity. Finally, two questions were revised, and the questions were deemed appropriate concerning their content.

The first question was open-ended, asking the students to select their favored study skills from the list of 11 study skills (re-studying, re-writing, using flashcards, studying in groups, memorizing, teaching content, creating headings, self-testing, highlighting, finding connections, and finding real examples) and order them in terms of frequency of use. In addition, they also had the option to list a strategy not found on the list.

In the second question the students were told to imagine reading a chapter of their textbook for an exam. They were then asked to choose one of the following options after they studied the chapter once:

a) I go back and re-study the whole chapter or some specific parts of it.

b) I try to continue by self-testing (with the possibility of referring to the book again).

c) I use other study techniques.

This closed-ended question aimed to determine whether the students were inclined to use conventional study strategies or more modern strategies.

The third and fourth questions asked the students' opinions about their satisfaction with their study skills and their interest in participating in new study skill courses.

The researcher distributed anonymous questionnaires among the students after one of the noon classes. The researcher provided explanations about the study and its purpose, and asked the students to participate in the study voluntarily. Other random numbers replaced students who did not want to participate in the research. Moreover, all the subjects were reassured that the questionnaire data would remain confidential. Data analysis was performed using a chi-square test in SPSS version 23, and a significant level of 0.05 was considered. The study was confirmed by the Ethics Committee of the Kerman University of Medical Sciences (Code IR.KMU.REC.1395.470).

Results

The total number of the students was 246, consisting of 201 (81.7%) undergraduate students and 45 (18.3%) postgraduate students. Three copies of the questionnaire completed by the undergraduate students were excluded from the study because they were erroneous, and 20 postgraduate students were not willing to participate in the research.

Of the 246 participants in the study, 72 (35.8%) undergraduate students and 20 (44.4%) postgraduate students were male. The frequency of using study strategies by the students and their first priorities are shown in Table 1. The male and female undergraduate students used almost the same study strategies, except for re-writing notes (P=0.024), studying in groups (P=0.018), and creating headings (P=0.018). The percentage of using the three aforementioned strategies was significantly higher in the female undergraduate students compared to their male counterparts (Table 2). However, there was no significant difference between the male and female postgraduate students in terms of the frequency of using different study skills (P>0.05).

The most and least commonly used strategies by the undergraduate and postgraduate students were re-studying and using flashcards, respectively. Moreover, 30.3% and 24.4% of the undergraduate and postgraduate students used the self-testing strategy, respectively.

Table 1. The frequency of the study strategies and their selection as the first priority in the undergraduate and postgraduate students

Study strategies	Frequency(%) of those using this strategy		Total samples	Frequency(%) of those choosing this strategy as the first priority		Total samples
	Undergraduate students	Postgraduate students	Frequency (%)	Undergraduate students	Postgraduate students	Frequency(%)
re-studying	179(89.1%)	40(88.9%)	219(89%)	67(33.3%)	10(22.2%)	77(31.3%)
using flashcards	29(14.4%)	8(17.8%)	37(15%)	2(1%)	0(0%)	2(0.8%)
re-writing notes	120(59.7%)	25(55.6%)	145(58.9%)	10(5%)	1(2.2%)	11(4.5%)
studying in groups	93(46.3%)	9(20%)	102(41.5%)	8(4%)	0(0%)	8(3.3%)
memorizing content	139(69.2%)	26(57.8%)	165(67.1%)	19(9.5%)	3(6.7%)	22(8.9%)
teaching content	60(29.2%)	11(24.4%)	71(28.9%)	2(1%)	1(2.2%)	3(1.2%)
highlighting important points	139(69.2%	39(86.7%)	178(72.4%)	26(12.9%)	15(33.3%)	41(16.7%)
finding real examples	84(41.8%)	34(35.6%)	100(40.7%)	7(3.5%)	3(6.7%)	10(4.1%)
self-testing	61(30.3%)	31(24.4%)	72(29.3%)	1(0.5%)	0(0%)	1(0.4%)
finding connections	84(36.8%)	26(31.1%)	88(35.8%)	4(2%)	0(0%)	4(1.6%)
creating headings	6(31.3%)	31(40%)	81(32.9%)	4(2%)	0(0%)	4(1.6%)

Table 2. The frequency of using three study strategies in the undergraduate students in terms of gender

Strategy	Answer	Male	Female	Total	P
Re-writing	Not used	37 51.4%	44 34.1%	81 40.3%	0.024
	Used	35 48.6%	85 65.9%	120 59.7%	
	Total	72 100%	129 100%	201 100%	
Studying in groups	Not used	47 65.3%	61 47.3%	108 53.7%	0.018
	Used	25 34.7%	68 52.7%	93 46.3%	
	Total	72 100%	129 100%	201 100%	
Creating headings	Not used	57 79.2%	81 62.8%	138 68.7%	0.018
	Used	15 20.8%	48 37.2%	63 31.3%	
	Total	72 100%	129 100%	201 100%	

Using the re-studying strategy was the highest priority among the undergraduate students (33.3%), followed by using the highlighting strategy (12.9%). Moreover, self-testing (0.5%) was the least used strategy as their first priority among the undergraduate students. In the group of postgraduate students, the first priority was highlighting (33.3%), followed by re-studying (22.2%). Interestingly, none of the residents chose to use study strategies, including using flashcards, studying in groups, self-testing, finding connections, and creating headings as their first priority.

Table 3 shows the percentage of students who chose re-studying, self-testing with re-studying, or another strategy to review one chapter of their textbook before an exam.

Overall, 77.6% of the undergraduate students and 82.2% of the postgraduate students reported satisfaction with their study skills. Moreover, 59.5% of all the participants were interested in taking part in courses offering new study skills.

Discussion

Retrieval of information from memory compared to re-studying results in more efficient learning and retention of the subject matter in memory for a longer time. This is

Table 3. The frequency of students choosing re-studying, self-testing (with re-studying), or other techniques as the preferred study strategy before an exam.

Question		Undergraduate students	Postgraduate students	Total
A: I return and study the whole chapter or some specific parts of it		144(71.6%)	38(84.4%)	182(73.9%)
B: I try to continue by self-testing (with the possibility of referring to the book again).	1: Testing for feedback	9(4.47%)	1(2.22%)	10(4.06%)
	2: Practicing to retrieve information	17(8.45%)	2(4.44%)	19(7.72%)
	3: Others	0(0%)	0(0%)	0(0%)
C: I use other study techniques		28(13.9%)	4(8.88%)	32(13%)

called the 'testing effect' (11). Although this phenomenon was reported many years ago, great emphasis has been laid on the numerous advantages of information retrieval practice for learning during recent years (12-15).

The present study showed that the undergraduate and postgraduate students of Kerman Dental School used conventional study strategies such as re-studying textbooks and highlighting important points more than other strategies. These conventional strategies are reported to be used by students more frequently. However, strategies such as self-testing or distributed practice can improve students' success in a wide range of areas (7).

Mc Andrew et al. (10) carried out a study based on 12 variables for study strategies and showed that the most commonly used strategy was re-studying (83.3%), followed by memorizing (71.2%) and highlighting (54.5%). They also reported that using flashcards was the least commonly used strategy (9.1%). These results are similar to those obtained in the present study. Furthermore, the frequencies were similar in terms of strategies such as re-writing notes, teaching the content, memorizing, and highlighting. In another study by Karpicke et al. (9), re-studying was also the most commonly used technique. Moreover, problem-solving and using flashcards were the most commonly used strategies after the re-studying technique. However, contrary to the present study and the study by Mc Andrew et al. (10), finding real issues related to the subject was the least commonly used technique. Furthermore, regarding the self-testing strategy, the present study, and the study by Karpicke et al. (9) yielded similar frequencies. However, in the study by Mc Andrew et al. (10), self-testing was used by almost half of the students. Only 0.5% of the undergraduate students and none of the postgraduate students in our study and Mc Andrew et al.'s study (10) indicated that self-testing was their preferred strategy. A study about students' study skills in Mashhad School of Dentistry showed that 64% of the students never asked themselves a question about the study content; in this context, 28% of the students sometimes asked questions and only 6% of them always asked questions. These are consistent with the results of the present study, indicating that the majority of students do not use the self-testing strategy (2). Mehdinezhad et al. (16) reported that more than 80% of students used superficial study skills that were memory-based and result-oriented. In contrast, students are less oriented to use deep study skills for learning.

The target population in Mc Andrew et al.'s (10) study was second-year dental students. Students of different majors were also involved in the study conducted by Karpicke et al. (9). Therefore, it might be claimed that different study populations and different study fields should be considered while comparing results.

Due to the ease of using the re-studying technique, students might suppose that they have reached the required efficiency of the subject matter, which is above what they have really learned or memorized. However, the information retrieval technique (self-testing) requires more efforts, and the learner's mind is more intensely involved in the process of studying. Thus, students become more aware of their weaknesses and can plan studies accordingly (9). Previous studies have shown that self-testing can deeply enhance students' learning. Testing in the form of a quiz by the instructor in the classroom results not only in the promotion of learning, but also in more profound learning, better retention of information in mind, and further focus on weak points (9, 10, 17).

Unfortunately, only a small number of undergraduate students and even fewer postgraduate students in our study used the self-testing strategy as their first priority. It appears that the students did not believe that self-testing could promote profound learning, or that they were unaware of its potential in leading to success. In fact, dedicating a long time to review and re-study the subject matter(s) and sending them to memory per se cannot improve learning (20). It should be pointed out that using flashcards is somehow classified as a component of the self-testing technique, although students can passively have access to answers (7). However, in the present study, using flashcards was the least frequent technique among all the study techniques for all the subjects.

In a study by Shetty and Srinivasan (19) in India, 43.1% of students always highlighted important information. However, in the present study, the rate of using the highlighting technique was 69.2% by the undergraduate students and 86.7% by the postgraduate students. This rate was higher in our study than in Shetty and Srinivasan's study, which might be due to the academic year of the students, which was different in the studies. Based on available knowledge, highlighting and underlining cannot significantly boost performance and are not efficient for use in high-level tasks requiring inference making (7).

Based on a study by Romanelli et al. (20), the mnemonic strategy had a good effect on studying and promoted the retrieval of essential information. In our study, 36.8% of the undergraduate students and 31.1% of the postgraduate students used the mnemonic strategy. However, in studies

by Mc Andrew et al. (10) and Karpicke et al. (9), 25.8% and 13.5% of subjects used this strategy, respectively. It should be noted that this strategy is currently seldom used by students and instructors. The reason is that the implementation of this strategy requires training and development of keywords, whether by teachers, students, or textbook designers (7).

Regarding the second question about preparing for the exam after reading the relevant content once, 71.6% of the undergraduate students and 84.4% of the postgraduate students selected re-studying the content. However, in studies by Karpicke et al. (9) and Mc Adrew et al. (10), only 48.8% and 25.8% of students selected this strategy, respectively. This indicates the possible role of the field of study and educational level on strategies used for studying. Students' characteristics can also influence their choice of study strategies. For instance, younger students, compared to more advanced students, might have different studying options.

In the present study, 4.47% and 2.22% of the undergraduate and postgraduate students, who selected self-testing in response to the second question, respectively used this strategy to receive a feedback, and only 8.45% and 4.44% of them respectively used it to practice recall. Based on the results of the present study, a majority of students are not familiar with the memory-strengthening advantages of this technique.

In this study, 77.6% of the undergraduate students and 82.2% of the postgraduate students were satisfied with their study skills, and 42.3% of them were not interested in participating in study skill courses. This indicates that a considerable amount of students assume that they use proper learning strategies.

Conclusion

The students in the present study used study strategies, which result in efforts to retrieve information from memory less frequently than conventional techniques such as re-studying and highlighting. University instructors are suggested to make greater efforts to introduce study skills that rely on information retrieval practice. This can result in better learning as well as better retention of subject matters in students' memory.

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Research Article

Comparison of Academic Motivation, Academic Self-efficacy, and Optimism Among First- and Fifth-year Professional Doctorate Students of Kerman University of Medical Sciences, Kerman, Iran

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Abstract

Background: Educational situations greatly affect the mental growth and health of individuals, as well as their psychological resources. Of the psychological resources involved in education, academic self-efficacy, academic motivation, and optimism are noteworthy.

Objectives: The present study aimed at comparing academic self-efficacy, academic motivation, and optimism among professional doctorate students at Kerman University of Medical Sciences, Kerman, Iran.

Methods: A cross-sectional study was conducted on all the first- and fifth-year medical, dentistry, and pharmacy students of Kerman University of Medical Sciences in the academic year 2018-19 as the statistical population, of whom 266 subjects were selected by simple random cluster sampling. Data were collected using the Vallerand academic motivation and the Owen and Froman college academic self-efficacy scales, as well as the life orientation test (Scheier and Carver) questionnaires. MANOVA was used to analyze the data.

Results: Dental students had the highest level of self-efficacy (P=0.007). Also, the mean scores of academic self-efficacy (P = 0.001) and optimism (P = 0.03) were higher among the fifth-year students. On the other hand, in the interaction of the study field with the entry year, self-efficacy was significant (P = 0.001). There was no significant difference in the academic motivation among the students of different study fields (P = 0.16) and according to the entry years. (P = 0.13)

Conclusion: Dental students choose their field of study with more interest, which further maintains and increases their academic motivation during the seven years of academic education. On the other hand, interest in the field of study is one of the variables influencing the maintenance and increase of the self-efficacy construct over time.

Keywords: Academic Motivation, Academic Self-efficacy, Optimism, Medical Students

Background

Knowledge acquisition is considered an essential tool to achieve a better future. Many psychologists consider motivation as an important factor for success in knowledge acquisition (1-3). Motivation is a form of cognition and emotion that persuades people to do something or achieve a goal, and it is like a desire that often leads to deciding to do something and strive over a period of time for obtaining a goal (4). Academic motivation can be defined as the pervasive internal factor that influences an individual to participate in educational activities (5). Although there are many conceptual perspectives on motivation, one of the most popular theories in this regard is the self-determination theory of motivation raised by Deci et al. (6). This hierarchical

model is relied on three kinds of motivation, comprising intrinsic, extrinsic, and amotivation (7). When behaviors are performed for pleasure; intrinsic motivation arises, like when a student studies psychology for the pleasure of learning about human thinking and behavior (2, 8). When behaviors are performed to achieve a goal or reward, not the activity itself; extrinsic motivation arises, like when a student goes to university in the hope of earning a higher salary, not because of the enjoyment of learning itself (9). Amotivation happens when people are not motivated due to not receiving any reward for their behaviors. Therefore, they do not feel any responsibility for the results of their activities (8, 10).

Academic motivation is an important aspect of students' learning and academic achievement, and reasons why some students are involved in learning and success while others experience failure (11, 12). Martin and Steinbeck, in a study on the role of puberty in motivation and academic achievement of students, concluded that motivation plays the most pivotal role in students' academic success (13).

Students who believe that they can perform certain tasks (have self-efficacy), value the nature of learning, experience lower levels of anxiety, use more cognitive strategies, and show more keen on learning which these motivational components play a pivotal role in academic achievement (14, 15). The concept of self-efficacy was first introduced by Bandura and received considerable attention over the past years. In the social cognitive theory of Bandura, self-efficacy means belief in one's own capabilities to organize actions required to attain a goal (16), which is known as a more important predictor of behavior than the individual's capabilities (17). In short, self-efficacy is a key cognitive process accomplished by the individual to organize his living conditions (18). Farajpour et al. showed in their study that self-efficacy scores vary across different disciplines (19).

Optimism is another cognitive variable that plays a pivotal role in education and mental health (20). The primary concept of optimism is developed from the behavioral self-regulation model. According to this model, optimists expect positive results (21); in other words, optimism is characterized by having positive expectations that increase motivation (22, 23).

Different studies are performed to determine the factors affecting the mental health of students of medical sciences universities (24-26). On the other hand, researches are also conducted on the behavioral differences of students of different entry years (27). However, to the best of the authors' knowledge, no study was conducted thus far on the psychological characteristics of students of different entry years. Researches on academic motivation concluded that having an appropriate motivation during the study facilitates learning, increases creativity, and reduces anxiety (28, 29). The low level of academic motivation is one of the problems of Iran's education system, which imposes adverse consequences on the educational, social, and family systems. Self-confidence in personal learning capabilities strongly influences academic motivation and, ultimately, academic achievement. Also, self-efficacy affects stress tolerance. Optimism is also one of the psychological resources that protect students against mental complications. This positive cognitive view reduces the level of stress and depression.

Objectives

Considering the pivotal role of academic motivation, academic self-efficacy, and optimism in the mental health and academic achievement of students, the present study aimed at answering the question: "What are the differences of these characteristics among the students of different fields and entry years?"

Methods

The current descriptive-analytical cross-sectional study was conducted on all the first- and fifth-year professional doctorate students (Medical, Dentistry, and Pharmacy) of Kerman University of Medical Sciences, Kerman, Iran, in the academic year of 2018-19 (N= 450). The sample size was determined 250, using the Morgan table. A simple random cluster sampling method was used. In this way, some courses were selected from those held in December and January for the first- and fifth-year students. Then the questionnaires were completed by the students after obtaining permission from professors and consent from students. Totally, 273 questionnaires were completed, of which seven incomplete ones were excluded, and finally, 266 questionnaires were analyzed. In the present study, the three following questionnaires were used to collect data:

The Vallerand Academic Motivation Scale (AMS): It consists of 28 items scored based on a seven-point Likert scale (from "inconsistent at all" to "completely consistent"), and the score of each item ranges from 1 to 7. The overall score of the scale ranges from 28 to 196. This scale is developed based on the theory of self-determination, includes seven subscales, and measures three types of intrinsic motivation (intrinsic motivation of knowledge, the intrinsic motivation of success, and intrinsic motivation of stimulation), three types of extrinsic motivation (external regulation, introjected regulation, identified regulation), and amotivation (30). Vallerand et al., reported the reliability of the subscales using Cronbach's alpha coefficient as 0.84, 0.85, 0.86, 0.62, 0.84, 0.85, and 0.85, respectively, as mentioned above and the whole scale as 0.71 (30). In the study by Weisani et al., the Cronbach's alpha coefficient for the intrinsic motivation, extrinsic motivation, and amotivation subscales was 0.84, 0.86, and 0.67, respectively (31). Also, the indicators of the confirmatory factor analysis confirmed the fitness of the model.

The Academic Self-efficacy Scale: It was developed by Owen and Froman to measure students' academic self-efficacy (32). The instrument has 33 items scored based

on a five-point Likert scale from very low (1) to very high (5); the overall score of the instrument ranges from 33 to 165. This scale assesses students' academic self-efficacy by items on "asking the teacher to re-explain a concept you did not understand" or "understanding most of what present in the classroom". One item was deleted in the Persian version of the scale due to inapplicability. The study by Saadat et al., reported the reliability of the scale as 0.84 using Cronbach's alpha coefficient (33).

Life Orientation Test (LOT): It was used in the current study to measure optimism. LOT, developed by Scheier et al. (34), is a self-report instrument, and its items are scored from 0 to 4, choosing one of the five options of strongly agree, agree, have no opinion, disagree, and strongly disagree. This test consists of 10 items that measure individuals' differences in optimism. In statistical analysis, four items (2, 5, 6, and 8) are ignored. Besides, items 3, 7, and 9 are scored inversely. The overall score of the test ranges from 0 to 24, the closer to 24, the more optimistic the individual. The internal consistency of the six items was 3.7, which is acceptable. Scheier et al., also reported the reliability of the test as 0.79 by the test-retest method within a 28-month interval, which indicates that the test is relatively stable (34). Hassanshahi translated LOT from English into Persian and reported the Cronbach's alpha coefficient of 0.74 and the test-retest-reliability coefficient of 0.65 for the Persian version (35).

Data on differences among groups of students in terms of the entry year and study field were analyzed using the multivariate analysis of variance (MANOVA) in SPSS version 21 (IBM Corporation, Armonk, NY).

Results

Totally, 266 students were enrolled in the study, of which 161 (60%) were female and 105 (40%) male, with a mean age of 21.50±3.02 years. The demographic characteristics of the participants are shown in Table 1.

One of the assumptions of multivariate analysis of variance is the equality of variance of errors, in which the results of the Leven test indicate that this assumption is observed in the current study. The normality of data distribution was confirmed using the Kolmogorov-Smirnov test (P-value >0.05). The lowest scores of academic motivation, self-efficacy, and optimism were 59, 40, and 7, and their highest ones were 193, 151, and 26, respectively.

In the interaction of the study field with the entry year, only the variable of academic self-efficacy was significant. (Table 2).

The Results of comparing dependent variables (Academic self-efficacy, Academic motivation, and Optimism) based on the year of entry and the field of study are presented in Table 3.

According to the table, there was a significant difference in academic self-efficacy according to the study fields and academic self-efficacy and optimism between the first- and fifth-year students

Dental students had the highest and medical and pharmacy students had somewhat equal scores in academic self-efficacy. On the other hand, in terms of the year of entry, the academic self-efficacy and optimism scores were higher in the fifth-year students than their first-year counterparts (Table 3).

Discussion

Paying more attention to the mental health of students, particularly medical sciences students who are responsible for the health of the community in the future, is of great importance, and identifying its influential factors is helpful. Considering the nature of medial fields and long-term psychological pressures, the psychological features of students of different medical fields, including academic motivation, academic self-efficacy, and optimism, may change. The present study aimed at comparing academic motivation, academic self-efficacy, and optimism among first- and fifth-year medical students of Kerman University of Medical Sciences.

Based on the obtained results, there were significant differences in academic self-efficacy and optimism scores among the first- and fifth-year students of medicine, dentistry, and pharmacy, which was in agreement with the findings of the study by Farajpour et al., indicating that the fifth-year dental students had the highest level of academic self-efficacy (19). In their research, Fattahi et al., concluded that most dental students were interested in their field of study, which increased over time (36). The results of the study by Valizadeh et al., showed that the feeling of self-efficacy affects the organization of lessons and interest in the study field, and enhances them. They also concluded that self-efficacy and discipline in educational situations lead to academic achievement, which in turn increases students' intrinsic motivation and, consequently, their positive feeling and interest in the field of study over time. Since most dental students choose their study field with interest, their intrinsic motivation, and, consequently, academic self-efficacy is maintained or increased over time (37). In general, it can be concluded that since the performance expected from students is an achievement in various fields, including academic and mental achievement, the variable of self-efficacy facilitates this progress.

People with high self-efficacy participate in works and continue striving until the problem is solved. In other words, they consider difficult situations as challenges to success (38). As mentioned earlier, self-efficacy is one's belief in his capability to accomplish a task and attain a goal, which is very much related to optimism in terms of cognitive construction. A positive belief that one can reach his goals has no result other than a positive expectation and optimism, and this positive belief organizes educational conditions that lead to academic achievement. In the present study, the mean scores of academic self-efficacy and optimism were higher among the fifth-year students than their first-year counterparts. When students

Table 1. The frequency of Students Based on the Study Field, Gender, and Entry Year

Entry Year	Gender	Medical Students	Dental Students	Pharmacy Students
2013	Female	34	21	24
	Male	18	9	16
2018	Female	29	19	34
	Male	27	11	24

Table 2. The Results of the Analysis of Variance for the Variables of Optimism, Academic Self-efficacy, and Academic Motivation Based on the Study Field and Entry Year

Group	Variable	Sum of Squares	Degree of Freedom	Mean of Squares	f-value	p-value
Study field	Optimism	23.83	2	11.91	0.88	0.41
	Academic self-efficacy	2952.10	2	1476.05	5.07	0.007
	Academic motivation	2173.49	2	1086.74	1.79	0.16
Entry year	Optimism	64.24	1	64.24	4.75	0.03
	Academic self-efficacy	4602.20	1	4602.20	15.83	0.001
	Academic motivation	1386.31	1	1386.31	2.29	0.13
Interaction of study field with entry year	Optimism	67.40	2	33.70	2.49	0.08
	Academic self-efficacy	5068.64	2	2564.32	8.71	0.001
	Academic motivation	2416.53	2	1208.26	1.99	0.13

Table 3. The Comparison of Academic Self-efficacy, Academic motivation, and Optimism Based on the Study Field and Entry Year

Group		Academic Self-efficacy Mean (SD)	Academic motivation Mean (SD)	Optimism Mean (SD)
Study field	Medicine	81.00(16.85)	125.04(25.51)	15.08(3.85)
	Dentistry	89.00(20.21)	118.95(20.69)	15.80(3.64)
	Pharmacy	80.00(17.38)	119.06(26.36)	15.68(3.58)
P		0.007	0.16	0.41
Entry year	First-year	79.00(16.38)	118.50(23.98)	15.10(3.47)
	Fifth-year	86.00(19.34)	124.91(25.65)	15.88(3.94)
P		0.001	0.13	0.03

are optimistic about the outcomes of their educational activities, the sense of self-efficacy is created or increased. In the interaction of the study field with the year of entry, only the variable of academic self-efficacy was significant. In general, self-efficacy is one of the most important determinants of academic achievement. Huston-Shaikh, in their study, noted the role of self-efficacy in meeting the needs of learning and cognition (39).

In the present study, the academic motivation had no significant differences among the students of different fields and entry years. Academic motivation is influenced by various factors such as environment and goal and is the cornerstone of student achievement (28). It can be concluded that different practical courses and, as a result, the experience of internships and new and unfamiliar environments during the study as a medical student, maintains academic motivation. Also, during the seven years of student life, the practical courses and, consequently, the practical experience from what the student has learned thus far, increase in a real environment, which can prevent the decline of academic motivation.

According to the results of the present study, to promote mental health and academic self-efficacy, as well as positive cognitive beliefs, it is necessary to design and implement regular planning during the study period such as holding more workshops and practical classes. Despite the efforts made, the present study, like other research in the humanities, had some limitations such as the lack of information about the current educational, economic, social, and familial status of the students, lack of control over the mental states of the subjects when completing the questionnaires, and scarcity of domestic and international research sources corresponding to the subject of the study. Since the present study had a cross-sectional design, it is suggested that the longitudinal design be used in future research.

Conclusion

The results of the present study showed that the fifth-

year dental students had the highest level of self-efficacy among the study fields. Most students choose dentistry with interest and, consequently, their motivation and self-efficacy increase over time. Self-efficacy leads to positive expectations and optimism about educational conditions. The results also showed that the mean scores of academic self-efficacy and optimism were higher among the fifth-year students of all fields than their first-year counterparts. Also, academic motivation was not significantly different among students of various study fields and entry years, and practical courses and internships in new environments maintain the initial motivation over time.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=803230].

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Research Article

Radiology as the Most Popular Specialty among Iranian Medical Residents: What are the Influencing Factors in Choosing this Specialty?

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Abstract

Background: Medical residents choose to pursue their careers based on multiple internal and external factors. These factors, in turn, affect not only their personal future but the overall status of the health care system in every region.

Objectives: To determine the factors affecting radiology residents' choice of specialty career choice.

Methods: This research was a cross-sectional study. The statistical population was all radiology residents (N=48) of Ahvaz Jundishapur University of Medical sciences studying during the academic year 2018-2019. The data were collected by a researcher-made questionnaire. The validity of the questionnaire was confirmed by the experts, and its reliability was calculated using Cronbach's alpha ($\alpha = 0.71$). Data were analyzed using descriptive and analytical tests (Mann-Whitney U test) by SPSS version 18.

Results: The mean age of participants was 30.7±2.6 years. The most important factors influencing the choice of radiology specialty were: "Acquiring knowledge and competency for better treatment" (mean 4.18 out of 5), "convenience and lack of emergency" (3.90), and "good career future" (3.88), respectively; While "family and friends' advice" (3.18) and "possibility of continuing education and fellowship" (3.07) were the least important factors. "Higher income" was significantly more important in the specialty choice among male residents ($P< 0.05$).

Conclusion: This study provided valuable information on the factors influencing the choice of radiology specialty. Understanding specific factors that influence decisions to enter the specialty of radiology may provide proper guidance for human resources planners to consider the needs of the community's health system.

Keywords: Medicine, Residents, Attitude, Specialty Selection, Radiology

Background

The specialty of radiology as a career choice is frequently cited as a preferred choice among many medical students in recent years (1-3). In Iran, radiology was considered as one of the most highly competitive medical specialties, and it is the first choice of many best medical students (3, 4).

In some studies, it has been reported that medical students' interest in radiology has been increased. In the study conducted in the UK, it has been reported that the interest in radiology specialty among medical students has risen (5). Hussein J Nayef in Iraq showed that radiology was the top choice of specialty among medical students (6). The increase in radiology preference is probably a multifactorial issue that involves awareness and lifestyle economic factors.

Several studies have reported factors affecting medical students' decisions on their career choices (7). Some of these factors include interest, serving the community and people, income, working hours, lifestyle, and the flexibility of a specialty (8-12). Khosravi, in a review article in 2018, indicated that income and controllable lifestyle have been two critical factors influencing students' career choices (13).

Career choices of medical students usually affect the

distribution of the healthcare force in different specialties across the countries; thus, investigating the causes of the attractiveness of radiology specialties among medical students requires further study. Researchers believed that this shift in the number and distribution of radiology applicants have been associated with the labor market, income, and lifestyle changes (13, 14). Many studies have investigated the reasons for choosing different medical specialties; however, only a few have focused on radiology specialties among residents.

According to the Iranian Ministry of Health and Medical Education, radiology was the first and foremost choice of medical students in 2018 (15). The increasing interest of medical students in radiology has led to intense competition in this field; thus, the reasons for the attractiveness of this specialty need to be clarified. Awareness of motive residents in choosing radiology has implications for the health care system.

Objectives

Since the understanding of motive residents in choosing radiology has implications for the community's health system, we investigated the motivating factors influencing the choice of radiology as a career among residents in Ahvaz Jundishapur University of Medical Sciences (AJUMS), Iran in 2018. Our findings can provide useful information for medical schools and governments about the residents' motives for choosing radiology to balance the number of graduates in the healthcare setting.

Methods

A descriptive-analytical cross-sectional study was conducted on all the radiology residents (n=48) in the medical college in AJUMS, Iran, from August to October 2018. The residents were invited to participate in the study without considering their gender or educational grade. No resident was excluded from this study except those who refused to participate. Data were collected using a researcher-made questionnaire. This instrument was used in a previous study in AJUMS (16). The validity of the instrument was confirmed by six faculty members and radiology residents, and the reliability of the questionnaire using Cronbach's alpha was found to be 0.71. The questionnaire consisted of two sections. The first section included demographic characteristics of the participants (age, gender, marital status, educational grade, and satisfaction status regarding radiology). To measure the satisfaction of the residents, a 5-point Likert question with a numerical value of 1 (lowest satisfaction) to 5 (highest satisfaction) was designed. The second section consisted of 16 specific questions related to factors influencing the choice of radiology specialty and was rated on a five-point Likert scale from the lowest important (score 1) to the highest important (score 5).

Data were calculated by summing up individual scores: "1" for not important at all, "2" for slightly important, "3" for somewhat important, "4" for very important, and "5" for extremely important. In order to summarize the residents' opinions and draw a better conclusion, some of the questionnaire items were merged with respect to their subject. Finally, the questions were summarized in 10 items, entitled "factors influencing the choice of radiology" for easy interpretation (Table 2).

The residents were informed about the study objective and verbal consent was obtained. The samples' anonymity and confidentiality of information were taken into account. The present study was approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences (IR.AJUMS.REC.1397.914).

Data were analyzed by SPSS version 18.0 (IBM SPSS Statistics, Armonk, NY) using descriptive statistics (frequency, mean, and standard deviation) and analytical tests (Mann-Whitney U test) to compare the different groups. The results of the Kolmogorov-Smirnov test indicated the non-normal distribution of data. Therefore, nonparametric tests were used.

Table 1. The frequency of the demographic data and satisfaction rate of radiology residents

Variable		No. (%)
Gender	Male	21(46.7)
	Female	24(53.3)
Marital status	Single	15(33.3)
	Married	30(66.7)
Educational grade	1	14(31.1)
	2	12(26.7)
	3	12(26.7)
	4	7(15.6)
Accepting radiology as which choice	1st	40(88.9)
	2nd	5(11.1)
	3th	0(0.0)
	4th and more	0(0.0)
Satisfaction status	Very low	0(0)
	Low	1(2.3)
	Moderate	10(22.2)
	High	23(53.6)
	Very high	9(21.9)

A p-value < 0.05 was considered significant.

Results

Forty-five percent of the residents completed the questionnaires (response rate of 93.7%, 45/48). The mean age of the participants was 30.7±2.6 years; twenty-four (53.3%) residents were female, and 30 (66.7%) were married. More than three-fourths of the participants (88.6%) reported radiology as their first choice, and more than two-thirds (73.8%) were highly satisfied with the admission and education in radiology (Table 1).

Respondents were asked to rank factors that influenced their radiology specialty. "Acquiring knowledge and competency for better treatment", with a mean of 4.18±0.87 (out of 5) was ranked first among all the respondents, followed by "convenience and lack of emergency" with a mean of 3.90±69 and "good career future" with a mean of 3.88±0.98. The factors that were considered less important were "the possibility of continuing education and fellowship" and "family and friends' advice" with a mean of 3.05±0.81 and 3.14±1.17, respectively. A summary of these findings is shown in Figure 1.

Comparison of factors influencing the choice of specialty showed that there is a significant difference in terms of income between male and female residents. (Table 2). The mean score of males was 3.95±0.740, and the mean score of females was 3.50±0.72 (*P*= 0.04). Comparison of the opinions of single and married residents also showed a significant difference in the mean score of 'high income' between single and married residents. The mean score of single and married residents regarding the factor of 'high income' was 3.40±0.83 and 3.87±0.86, respectively (*P*= 0.04).

Discussion

The findings of this study, which was done to identify the residents' motives of choosing radiology, showed that three top factors influencing the residents' choice of radiology

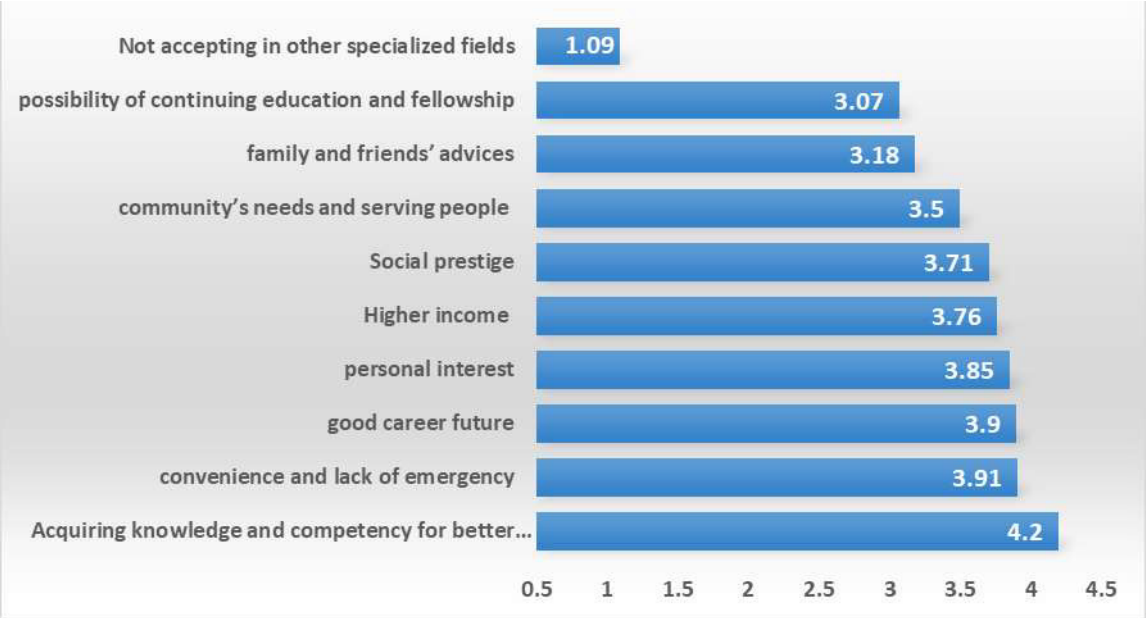

Fig 1. The mean score of Factors influencing residents' decision in choosing radiology

Table 2. Comparison of the Factors influencing residents' decision in choosing radiology by sex

Category/factor	Gender		P
	Male Mean (SD)	Female Mean (SD)	
Improving knowledge and the treatment modality	4.05 (1.03)	4.30 (0.75)	0.40
Convenience and lack of emergency	4.00 (0.73)	3.83 (0.61)	0.32
Good career future	3.72 (1.07)	4.04 (0.93)	0.37
Personal interest	3.78 (1.31)	3.91 (0.95)	0.98
Higher income	3.95 (0.74)	3.50 (0.72)	0.04
Social prestige	3.44 (1.15)	3.91 (0.99)	0.15
The need for community and serving people	3.46 (0.85)	3.53 (0.80)	0.91
Family and friend's advice	2.97 (1.08)	3.35 (1.32)	0.29
Possibility of continuing education and fellowship	2.94 (1.43)	3.17 (1.19)	0.75
Not accepting in other specialized fields	1.10 (0.31)	1.09 (0.29)	0.84

were "Acquiring knowledge and competency for better treatments", "convenience and lack of emergency", and "good career future". These findings are partly consistent with the results of previous studies (17-19).

Acquiring knowledge and competency for better treatments, identified as the most important factor in choosing radiology in this study, has been also recognized as one of the most important factors in choosing radiology in other studies (9, 17). This indicates the residents' devotion to their career, which should be highly admired, as it reflects their commitment and professionalism, as well as dedication to providing high-quality services to patients. In a previous study in the US, Arleo (2016) reported that medical students considered intellectual challenges in medical knowledge and patient care as important factors in choosing radiology (9). Moreover, assessment of Canadian medical students' motives in choosing radiology by Zener (2016) showed that increasing knowledge is the second most important factor in choosing this specialty (17); this finding is in part consistent with the present study, which indicated the physicians' professional attitude towards treatment and commitment to fulfill their responsibilities towards their patients.

In this study, "convenience and lack of emergency", which can reflect the individual's lifestyle, was introduced as the second most effective factor in choosing radiology. Controllable lifestyle, which has been recently identified in many studies as a key factor in choosing a medical specialty (7), is not only important in medicine but also in other specialties and fields. In studies conducted in Australia (2010), the US (2018), and France (2017), controllable lifestyle was reported as one of the major factors in choosing radiology (18-20). This finding is highly consistent with the results of the present study and indicates the importance of this factor in choosing radiology around the world.

Moreover, Dorsey et al. reported that up to 60% of medical students' career choice is associated with factors of controllable lifestyle and income (7). According to their study, a controllable lifestyle is strongly influential in the specialty choice among both male and female physicians. Since radiology is associated with a better lifestyle in comparison with other fields, it provides an opportunity for physicians to balance their work and family life. In fact, one of the main reasons for medical student's inclination towards radiology is the flexibility of this career, which has been the subject of many studies in recent years worldwide (17, 20, and 21).

The factor of "good career future", which was the third reason for choosing radiology, is one of the main concerns of educated people around the world. All University graduates expect appropriate job opportunities and good income; this issue has also been noted in many previous studies as an important factor (7). It is in line with the findings reported by Lei Feng in US (2003), who reported job opportunities as the third most important factor in choosing radiology (21). In most studies, job opportunities after graduation have been identified as one of the priorities for medical students in choosing a career around the world (7, 14).

In the present study, three factors of personal interest, income, and prestige were not very important for the radiology residents; this finding is contrary to some studies, highlighting the significance of these factors for residents. In studies by Zener (2016), Ram (2018), and Feng (2003), the factor of income was one of the three most important reasons in career choice; this finding is not in accordance with the findings of the present study and may be due to differences in the cultural, social, and economic features in different communities (17, 19, 21).

The finding of this study showed that the community's needs and serving people were of very low importance in choosing radiology. The low level of residents' attention to the community's needs and serving people is a very important issue, which cannot be overlooked. The medical students' inattention to the community's need in choosing their field of specialty may have negative effects on the quality and quantity of workforce required by the community's health system, leading to an insufficient workforce in certain fields of specialty. These findings were somewhat unexpected. Khosravi, in a review article in the US in 2018 showed an increase in the percentage of students matching into the high-income controllable lifestyle than low-income controllable lifestyle specialties over 24 years. It is believed that the lifestyle influence on specialty choice may be representative of the larger societal trend for medical students than other factors (13).

The factor of family and friends' advice was not highly important in choosing radiology, which reflects the independence and autonomy of residents in choosing their field of specialty. Similarly, the importance of this factor was reported low in most previous studies (7, 14, 21), which is in accordance with the findings of the present study and indicates the residents' independence in choosing the specialty.

In the current study, the least important factor in choosing radiology was the possibility of continuing education and fellowship. In Iran, the radiology job opportunity is not saturated yet, and most graduate residents are employed by the private sector, with a high rate of income and more convenient conditions. Moreover, some radiology fellowships are associated with considerable inconvenience and distress for the radiologist, which usually prevents them from continuing their studies. Therefore, fellowships are not very important for radiology residents, and this factor is clearly insignificant in choosing the field of specialty. In another study, Feng in the US (2003) showed that residents who are employed by the private sector are less likely to pursue academic education (21). These radiologists mostly spend their time on therapeutic issues outside the academic environment; this is partly consistent with the results of the present study.

The present study also considered gender differences, which might affect choosing radiology. In terms of gender differences, the only significant difference was attributed to the factor of income, which was more important

for male residents. A few recent studies on Canadian (2016) and French (2017) radiology residents have also reported similar findings, underlining the importance of financial issues in men's decision-making (17, 20). Overall, considering the importance of men's role in family income, financial issues are more important for men than women. Although several studies have reported lifestyle and convenience as important factors in females' choice of radiology specialty (17, 20); in our study, there was no significant difference in terms of lifestyle and convenience between the two genders. The discrepancy between the findings may be due to differences in cultural and economic features of different communities or the small number of samples in the present study.

Research on the factors influencing the choice of specialty in all countries can help health system officials and policymakers. Applying a large number of students for specialties, such as radiology and dermatology, and not welcoming specialties, such as emergency medicine and anesthesia, which have been observed in Iran in recent years, is one of the most important issues in medical education (3, 4, 22). Certainly, identification of the students' motivations for choosing these specialties provides valuable information for health system policymakers.

This study had several limitations. It was done in a single medical school, and the sample size was small. Therefore, caution should be taken in generalizing the results of the study. Nevertheless, more studies with a larger sample size in other areas are needed to clarify and confirm the influential factors in choosing a radiology specialty. Despite these limitations, since this study was carried out for the first time in a large university in Iran, the results can be useful for medical universities and health planners to help medical students choose their field of career.

The finding of this study showed that the most common reasons for choosing radiology were "acquiring knowledge and competency for better treatments", "convenience and lack of emergency", and "good career future". This study provided valuable information on the factors influencing the choice of radiology specialty. Understanding specific factors that influence decisions to enter the specialty of radiology may provide proper guidance for human resources planners in the healthcare system to consider the needs of the community's health system.

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Research Article

Patients' and Physicians' Viewpoints on Interns' Professional Outfit: A Survey in an Iranian Teaching Hospital

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Abstract

Background: A person's appearance and his/her adherence to the dress code standards are essential in the medical profession.

Objectives: This study aimed to investigate patients' and physicians' viewpoints on interns' professional outfits.

Methods: This is a cross-sectional study, with the participation of patients and physicians of general departments in a teaching hospital of Kerman University of Medical Sciences in 2018. The patients and physicians were selected through convenience and census method, respectively. To examine the participants' perspectives on the professional dressing, six schematic images, three for males (1, 2, 3) and three for females (A, B, C) were designed. Data were collected through a structured interview in this way, the schematic images were displayed to the participants and they were asked to express their perspective using a series of questions. Data analyzed using SPSS version20.

Results: Totally, 381 patients and 34 physicians participated. The majority of the Participants preferred the professional outfit A for female interns and the professional outfit 1for male interns in response to questions regarding the knowledge, responsibility, patient-care, hygiene, reliability of diagnosis and treatment of diseases, giving emergency consultations, the possibility for discussing sexual and psychiatric problems, as well as life problems. The physicians and patients had the same perspective except for the item about knowledge. ($P<0.05$).

Conclusion: Our study shows that the outfits of physicians were considered by the participants in forming an effective relationship between the doctor and the patient, and the amount of patients' trust.Therefore, training interns for dressing professionally and complying with the necessary standards should be considered.

Keywords: Professional Outfits, Hospitals, Physicians, Patients, Profession

Background

A person's appearance and his/her adherence to the dress code standards are essential in the medical profession. The very first encounter of physicians and patients, both verbally and non-verbally, plays an important role in forming their relationship. Thus, as society grants special privileges to the medical society, it has certain expectations from them. Patients expect physicians to have a decent appearance, as well as an especial outfit, the one that represents respect and formality in their relationship with the patients (1).

It was in the late 19th century, that the white uniform was chosen to be the physicians' professional outfit. This may be due to its symbol of scientific credibility, sincerity, and morality (2). In a study conducted in 2012, based on literature review and content analysis, 23 factors were

derived for trust in the patient-physician relationship. As a result, the author states that the trust between physicians and patients can be analyzed through three dimensions: from the patients' perspective, the physicians' perspective, and the third, from the perspective of the patient-physician relationship. The author believes that without knowing these factors and discerning them, one cannot analyze or seek through the actual materialization of trust (2).

On the other hand, the appropriate appearance characteristics are the elements that increase trust toward the health service providers, since, the posture and behavior of physicians mean a lot to the patient and his/her family (3). Human interactions will be more efficiently executed through trust, and the existence of trust in the patient-physician relationship leads to the autonomy of the patient and getting his/her informed consent for the basis of the medical interventions on medical ethics principles (2). A doctor's dress code is not just for the protection from microscopic beings, but it also is a symbol of qualification and the position of a physician (4).

Furthermore, a study was conducted in 2011 on the views of interns and residents of three hospitals in Tehran based on the 5 dimensions of characteristics of appearance, the professional outfit, makeup, accessories, and keeping personal hygiene by medical students. It turned out that being trained for using the professional outfit is an important measure to be taken toward the promotion of the standards of the dress code for the students, the codification of which will be of great help to this purpose (5).

Numerous studies have shown that patients consider the outfit of a doctor as a criterion of his/her qualification, as well as an indicator of his/her professional abilities. Therefore, the patients' satisfaction with medical services is affected by the physicians' professional appearance (6, 7). In a study in 2008 about the views of psychologists and the psychology assistants toward the effect of physical appearances on comforting patients to communicate, they found that paying attention to the appearance of the psychologist and how they address the patients' need according to their characteristics will improve the patient-physician relationship significantly (1).

As a result, informing medical students from their professional role, and their position as the representatives of the medical society leads to future adoptions of professional behavior and medical ethics principles and to educate the future professionals in the field of medicine in the country, as well as having the development of respect for this sacred profession. This important notion will bring about a suitable perspective and a professional ethical performance of the students during their training time in academic centers. To plan for adopting the necessary measures, we should consider the views of stakeholders on the underlying approaches, so that we end up having more precise schemes for this realm.

Objectives

This study aimed to examine patients' and physicians', currently working in a teaching hospital of Kerman University of Medical Sciences, viewpoints on the issue of "interns' dressing style."

Methods

A descriptive-analytic cross-sectional study was carried out at Kerman University of Medical Sciences (KMUS), Kerman province in southeastern Iran from May to September 2018.

Figure 1. The schematic images of female interns' professional dressings.
A: hijab, no-makeup looks, long and loose uniform, cotton pants, orthopedic shoes
B: hair out, without makeup, short and tight uniform, tight and bright pants, sport shoes
C: hair out, with makeup, short and tight uniform, short and tight jeans, sport shoes

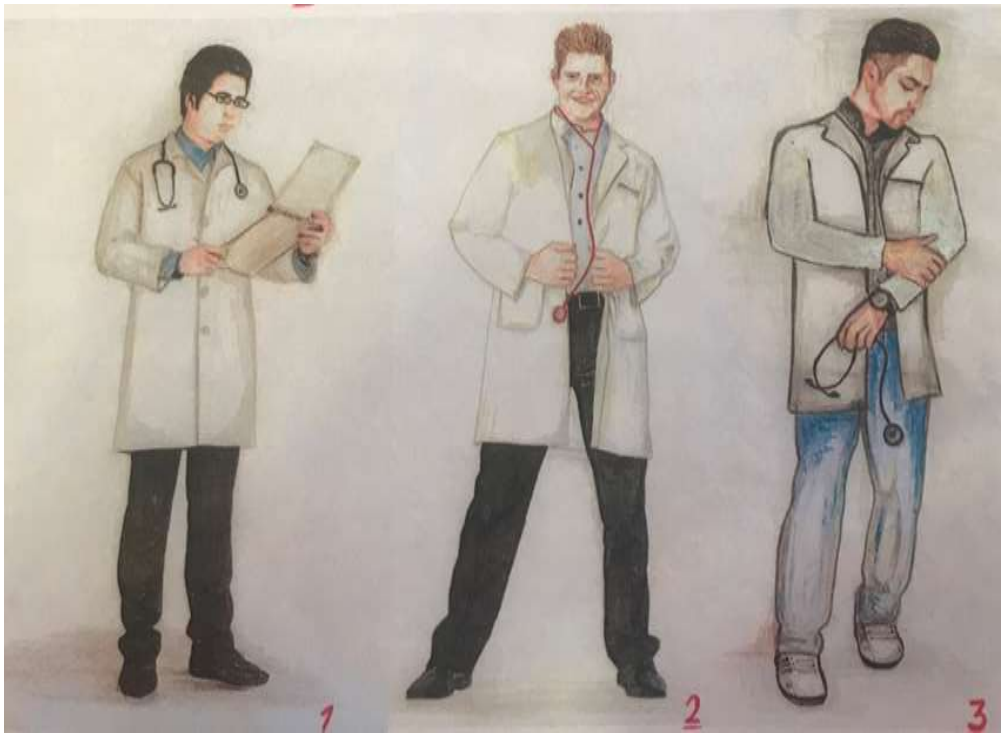

Figure2. The schematic images of male interns' professional dressings.
1: ordinary hairdressing, standard dress with closed buttons, cotton trousers, orthopedic shoes
2: special hairdressing, standard dress with open buttons, casual pants, orthopedic shoes
3: special hairdressing, short dress with open buttons, jeans, sport shoes

The statistical populations were all patients, who have been admitted to the internal medicine, surgery, pediatrics, and gynecology departments during the study period and all physicians working in these departments.
The patients (n=381) and physicians (n=34) were selected through convenience and census method, respectively. Inclusion criteria for the patients were age equal to or more than 18 years and informed consent to participate. Patients could not be interviewed for example; patients with visual or auditory disorders, psychiatric disorders who were not able to cooperate, and patients who needed special care were excluded. Physicians entered the study after oral consent, regardless of their work experience.
In this study, schematic images were designed by an expert to examine the patients' and physicians' perspectives on the interns' professional dressing in the clinical setting. Some schematic images were designed based on the academic dressing codes, what is usually observed in the male and female interns' professional dressings at the Iranian academic clinical setting, Iranian medical students' dress code, and literature reviews (1, 5, 8, 9). Also, we used different body imaging to show dress types that were prohibited in Iranian medical students' dress code. The designed images were discussed and revised according to our expert panel and finally, six schematic images, three for males (1, 2, 3) and three for females (A, B, C), extracted and printed in color to use for the upcoming interviews (Figure 1, 2).

Data were collected through a structured interview by a trained interviewer (A medical student at the final stages of the internship). Then, the schematic images were displayed to the participants and they were asked to express their perspective on the images using a series of questions (eleven for the patients, and eight for physicians). Questions were based on the review of similar literature (8, 9, 10). In the first five questions (No.1,2,4,5,8), the participants were asked to express which intern, respect to his/her dressing is more knowledgeable, responsible, reliable, and has careful attention to the patients and observance of the sanitation principles.
In the next five questions (No. 9,10,11,12,13), the participants expressed which interns, according to his/her dressing style, they preferred to talk with him/her about their therapeutic plan, psychiatric, sexual, and life problems or to have emergency counseling. The questions about life, sexual, and psychiatric problems were asked only from the patients. The last question (No. 11) asked about which of the interns, the participants felt uncomfortable with. It took about ten to fifteen minutes to complete each interview. The participants' responses were recorded in an anonymous form. Furthermore, the researcher obtained verbal consent from participants and assured them of privacy and confidentiality. The ethics committee of Kerman University of Medical Sciences approved this study. (IR.KMU.REC.1396.1100).

Data were analyzed by SPSS version19 (SPSS Inc., Chicago, IL, USA) using the chi-square and Fisher exact test. The significant level was set as 0.05.

Results

The mean age of the patients and physicians were 34.4±11.2 and 40.0 ±2.8 years, respectively. The majority (56.2%) of the patients were female.

Figure 3 shows the frequency of the patients' perspective on the male interns' professional dressing. Accordingly, among the three male interns' professional dressings, the patients expressed that the male interns with professional dressings similar to the image one, had more knowledge (81.4%), responsibility (81.4%), reliability (83.2%), careful attention to the patients (75.6%) and observance of the sanitation principals (63.8%). The patients expressed that they prefer to talk to male interns with professional dressings similar to the image one about their therapeutic plan (82.4%), psychiatric (74.0%), sexual (69.0%), and life (73.0%) problems and to have emergency counseling (79.5%) with him. The least (8.1%) discomfort was reported with this dressing style.

Figure 4 shows the frequency of the patients' perspective on the female interns' professional dressing. Accordingly, among the three female interns' professional dressings, the patients expressed that female interns with professional dressings similar to image A, had more knowledge (67.7%), responsibility (59.6%), reliability (68.5%), careful attention to the patients (53.0%) and observance of the sanitation principals (41.5%). The patients expressed that they prefer to talk to female interns with professional dressings similar to the image one about their therapeutic plan (64.6%), psychiatric (58.8%), sexual (58.5%), and life (65.1%) problems and to have emergency counseling (61.9%) with him. The least (7.3%) discomfort was reported with the female dressing style B.

The frequency of the physicians' perspective on male and female interns' professional dressing was just like the patient's perspective except for item one (which intern is more knowledgeable?). Accordingly, 88.6 percent of the physicians and 71.9 percent of the patients believed that the male interns with professional dressings similar to the image one is more knowledgeable. This difference was statistically significant. (P=0.007) Also, 73.3 percent of the physicians and 46.9 percent of the patients believed that the female interns with professional dressings similar to image A is more knowledgeable which had a statistically significant difference (P=0.002).

Discussion

According to the results, the importance of paying attention to the professional appearance of the medical students as well as instructing them in this field was demonstrated, and it turned out that physicians and patients who participated shared identical ideas. In fact, they chose outfit number one for the male and outfit "A" for female interns, while answering the questions were about responsibility, patient care, hygiene, trustworthiness, the probability of initiating a negotiation or seeking counseling with the intern about the therapeutic plans and the emergency issues.

According to the selected features of dress code in the current study, the outfit number one for male interns, and outfit A for female interns, it seems that in our society the professional dress code and its standards are acceptable as

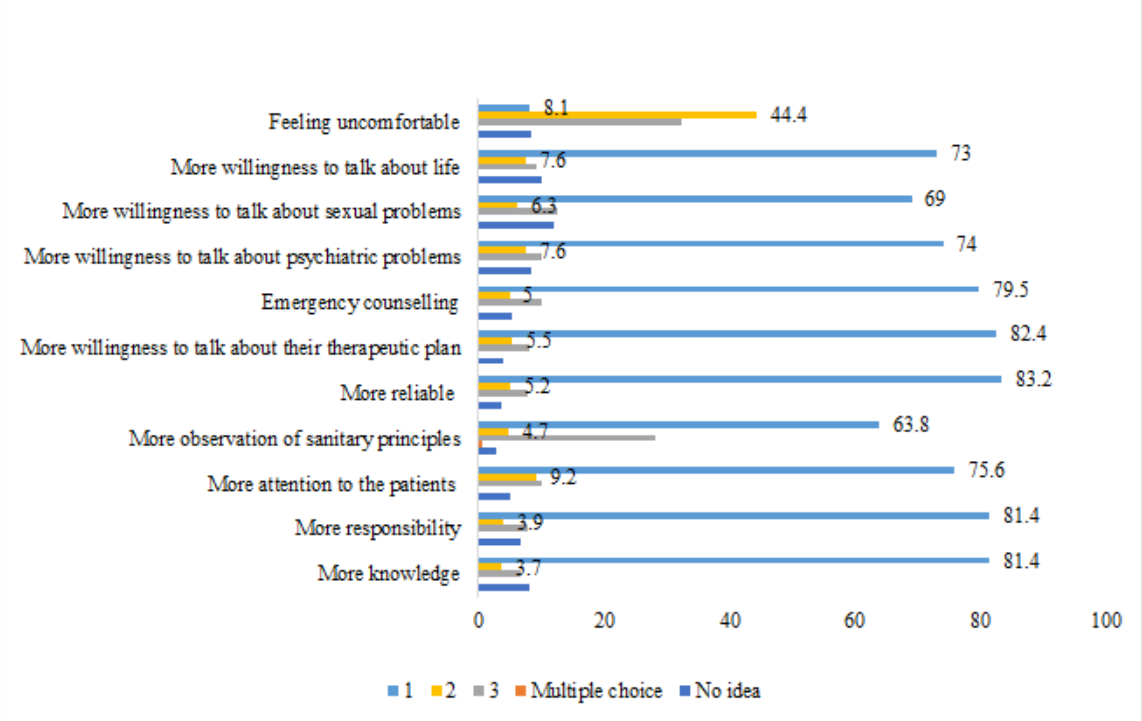

Figure 3. The frequency of the patients' perspective on male interns' professional dressing: A teaching hospital, Kerman

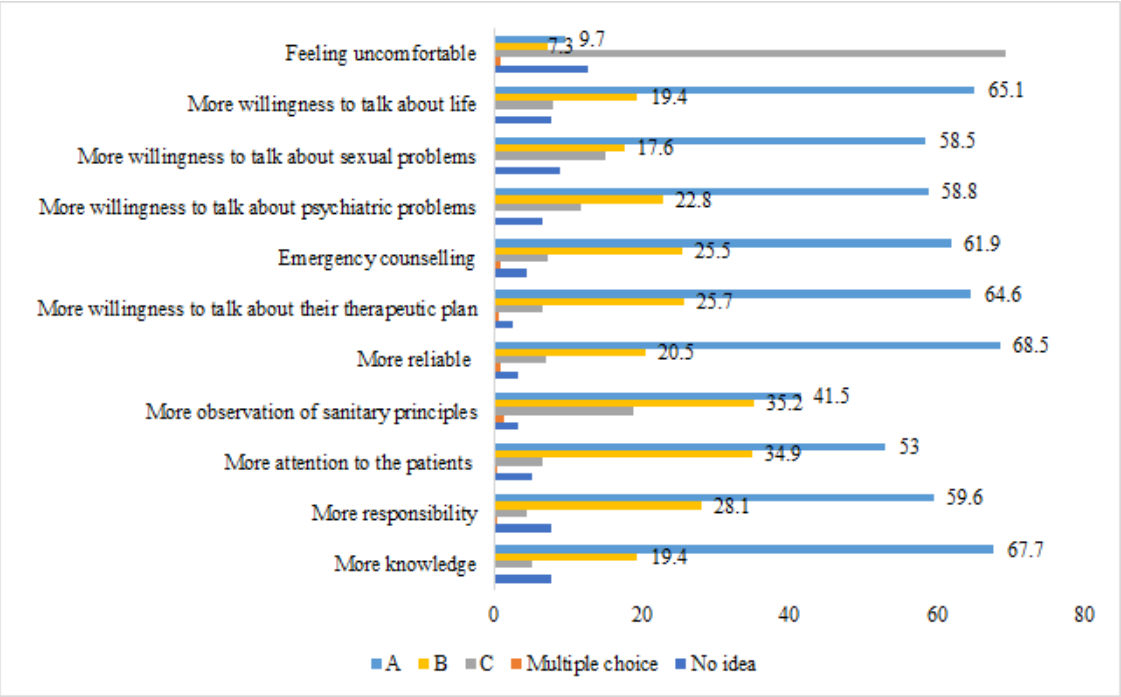

Figure 4. The frequency of the Patients' perspective on female interns' professional dressing: A teaching hospital, Kerman

long as they are based on the dominant culture of the society. Patients and physicians conceive the qualification and the professional performance based on the dress code of male and female interns. In choosing outfit number one for male and outfit A for female interns, a high percentage of the patients associated them with higher knowledge ability, while a lesser percentage of physicians had chosen these outfits. This notion is obvious that the professors have a different sort of assessment toward the level of knowledge and information of the interns. The point to be made here is that these results show how a special kind of professional dress code can acquire the trust and approval of the patients to the extent that they believe a person with a decent professional outfit possesses a higher level of knowledge.

On the other hand, in expressing their discomfort with the presented outfits, the patients and the physicians shared the same opinion in choosing outfit number 2 for males and outfit C for female interns', so the conception of improper appearance was the same between the patients and physicians. Importantly, this shows that the two groups consider social norms through the same framework.

The results of our study comply with that of the other studies in different societies (14, 15, 16).

In a study that was conducted in Japan, the researcher showed patients prefer professional white coats for physician dressing and they believed that this appearance influences their satisfaction (7). The results of this study are in agreement with our results.

In the survey in the University Hospital Zurich, the researchers used photographs of male and female physicians dressing and investigated the patients' perception of physicians outfits in five domains similar to our study and showed that they preferred white coat dressing for physicians (6).

In a study, the doctors wore four different uniforms for clinical consultation with the patients. This study showed that patients preferred the white coat because this dressing played an important role in existing trust in the patient-physician relationship (17).

In a study by Petrilli was conducted in ten academic centers in the US, with the use of questionnaires with pictures asking about the patients' opinions about the effect of physicians' dress codes, 4062 patients participated, 53% of who mentioned that the physicians' dress code affect the treatment process and that most of them preferred the white uniform (8).

In research by Yonecura in 2013, in Brazil, the researcher analyzed the patients', physicians' and medical students' viewpoints about the physicians' outfits by using pictorial questionnaires. This study showed most of the patients, as well as physicians and medical students, preferred the white uniform, as it showed more knowledge ability, trustworthiness, caring for patients, hygiene, responsibility, as well as the probability of discussing the treatment plans, emergency consulting, and talking about the life, psychiatric and sexual problems (9).

Another study in five different parts of Japan concluded that a doctor's outfit is not only a way of protecting against microscopic agents, but it is also the symbol of qualification and position. The study by Kurihara, et.al reported that 70% of the participants believed that the outfits of physicians had affected their trust toward their physicians. Since most of the previous studies were conducted in one hospital or

clinic, the results may be reflective of the culture of one specific environment and its effect on the patients (4).

In South Carolina, 400 patients participated in a study about the effect of the physicians' dress code and decency of appearance on the degree of trust a patient has toward his/her doctor, 76.3% of the patients preferred the white uniform, derived by a pictorial questionnaire (10).

In the study by Batias in 2014, in Saudi Arabia, the patients' views on the male physicians' outfits, and with the use of a pictorial questionnaire, 311 patients participated, most of whom preferred the white uniform for the usual examinations and the treatment process, they also preferred the national white outfit of Saudi Arabia for expressing their sexual, psychological problems, as well as the life problems (11).

Conclusion

Our study shows that the outfits of physicians were considered by the participants in forming an effective relationship between the doctor and the patient, the amount of patients' trust, and generally the ease and accuracy of treatment. The long white uniform, orthopedic shoes, and the no-makeup- look were selected for the best female look. Therefore, using an appropriate professional outfit based on outfit number one for men and outfit A for women were accepted by the patients and physicians. One point to be noted here is that the results of this study were in line with most of the studies conducted in different societies and cultures. This shows a similar perception of the physicians' professional dress code in different societies. However, it seems that more emphasis should be put upon the use of the professional dress code of interns, who are the country's future physicians, in educational and healthcare centers, so the interns will be aware of their professional role, and the effect it will have on their relationship with the patients.

Limitation

There were several limitations to this study:

1-There were a limited number of outfits for male and female interns, which was, on one hand, due to the limitation in choosing the proper dress code for the educational and health care environments. Therefore, our painter used different body imaging to show dress types that were prohibited in Iranian medical students' dress code.

2-The preparation of the hand-drawn pictures was bound with problems, and it may also affect the patients' perception of the selected outfit.

3-Researchers could not use real-life pictures to demonstrate facial makeup and dress types and chose to use hand-drawn pictures complying with community norms.

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Research Article

Assessing the Viewpoint of the Faculty Members and Graduates of Kerman University of Medical Sciences Toward Interprofessional Education and Interprofessional Teamwork

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Abstract

Background: interprofessional education (IPE) is an educational method, in which students learn two or more specific professions together, from each other, and about each other IPE for health students has been proposed as an alternative to conventional teaching methods.

Objectives: The aim of this study was to investigate the viewpoint of faculty members and graduates of Kerman University of Medical SciencesregardingIPEand interprofessional teamwork and determine the characteristics affecting their views on IPEand interprofessionalteamwork

Methods: This cross-sectional study was done on faculty members and graduates of various fields of medical sciences working in Kerman in 2018.Samples were selected by quota sampling method. To collect data, questionnaires of "Attitude TowardsInterprofessional Health Care Teams" and "Attitude Towards Interprofessional Education" were used. Data were analyzed using SPSS software.

Results: More than 90% of the participants had a good attitude towards teamwork and IPE.There was no significant relationship between work experience and attitude towards teamwork (P = 0.15), but there was a significant and inverse relationship between work experience and attitudes about interprofessionallearning (r = -0.43, P =0.007).Those working in non-governmental jobs showed a better attitude towards teamwork and interprofessional learning (P <0.001).

Conclusion: Determining the views of faculty members and graduates of Kerman University of Medical Sciences regarding IPE and its influencing factors is helpful for educational planning and development of educational programs in various fields.Also, for better planning, educational needs explained by these people should be considered.Planning and developing an educational program in this regard can lead to improving the quality of health services.

Keywords: Interprofessional Education, Interprofessional Teamwork, Perspective, Faculty Members, Graduates

Background

Health care and health-related services, due to their complex and extensive nature, require the use of skilled people in various fields.The treatment and health of the patient is a multifaceted phenomenon;therefore,a person with special expertise cannot be expectedto do the entire process of recognizing and treating the disease.Careful patient care depends on a cohesive team of health care professionals, in which individual team abilities are developed in interaction with others (1). Teamwork in health brings positive outcomes for the patient when the team members know each other and understand the mutualrole (2). Therefore, in order to increase therapeutic and diagnostic efficiency, it is necessary to develop professional knowledge, in which all specialists are trained to work in professional teams (3). The skills required to perform duties in a professional team must be acquired during formal training (5, 4).

Inter-professional collaboration is of great benefit to patients and members of the treatment and care team and has become a necessity in training students.This seemingly obvious need for collaboration is often overlooked in the

training of health care professionals, both in their initial training and in their later careers.The current educational system in the fields related to care, diagnosis, and treatment, often with an emphasis on over-specialization, creates an obstacle to mutualcooperation (7, 6).

Interprofessionaleducation (IPE) allows two or more professions to interact with each other and work together to improve mutualwork and the quality of care (8). There are several practical and organizational barriers to IPE, including costs, planning, scheduling, adopting an appropriate approach to evaluate the results, resistance from administrative and organizational staff, etc.; however,one of the most important obstacles to cultural irreconcilability is the different professions that must work together (9).

Perhaps in this type of education, the mutual cooperation of faculty members from different fields, such as medicine, nursing, physiotherapy, nutrition, etc. will be used to educate students; however,it should be noted that each professor has been trained and worked in educational systems, in which IPEhas not been used; thus,a paradox of using IPEas a tool to overcome differences and using such people for education arises (10). In developing countries, the three barriers of resource constraint, curriculum, and attitudes and stereotypes are significant (11).

Schmitt and Gilbert believe that there are many challenges to IPE, much of which depend on the socialization of professionals in different professions. Some of these challenges include attitudes toward other disciplines and professions and prejudice against one's own discipline and stereotypes about different professions. Some even believe that it is a kind of profession-centrismthat exists among professionals who act like ethnocentrism;that is, experts in each field consider their field and profession superior to others (12).

Some studies on educational systems usinginterprofessionalcurricula have shown thatthe attitude of faculty members, physicians, and health care workers towards this method of education is one of the main challenges for its implementation (13).Various values and attitudes present among faculty members (such as rejection and understanding of members of other professional groups)arethe major obstacle to interprofessional education and learning.Farra et al. concluded that in developing countries in the Middle East and North Africa, there are significant challenges to IPEand interprofessionalteamwork.One of the most important barriers in these countries is stereotypes and negative interprofessional attitudes.Some medical disciplines in these countries are considered to be more important and superior stereotypes than others; thus,the role of students, faculty, and staff in other health care disciplines is not considered.Lack of familiarity of faculty members and graduates with the interprofessional concept and its requirements, prerequisites, and goals is another challenge for usingIPE in countries where this method of education is currently used (14).

Objectives

The main objectives of the present study were to investigate the attitudes of faculty members and graduates of Kerman University of Medical Sciences towards interprofessional work and IPE, identify the characteristics of faculty and graduates that can influence their views on IPE and interprofessional teamwork, and also identify their needs for IPEand interprofessional teamwork.

Methods

This cross-sectional and descriptive-analytical survey was conducted on 348 faculty members and graduates of various fields of medical sciencesfrom October to February 2017.

The sample size was calculated based on the Morgan table.

In the present study, faculty members and medical staff in medical fields (general and specialized), nursing, midwifery, and other paramedical professions (occupational therapy, physiotherapy, etc.) were selected by quota sampling. Accordingly, the list of people employed in the mentioned fields and by type of employment was obtained from Kerman University of Medical Sciences, Social Security, and other medical centers, such as military hospitals, etc. samples were selected based on the number of people in each group and the sample size.Inclusion criteria included graduation at the time of the study, employment, and willingness to participate in the study.

The research tool was a multi-part questionnaire.The first part included demographic information, such as age, gender, field and place of work (public, private, or both), and work experience.The second part was the Attitudes Toward Health Care Teams Scaleby Heinemann et al. (15) and the Attitudes Toward Interprofessional Learning Scale by Parsell and Bligh (16).

Attitudes TowardInterprofessional Learning Scale: This scale was first designed by Parsell and Bligh in 1999 with 19 questionsand is scored on a five-point-Likert scale(totally agree to totallydisagree) and scores are ranged from 1 to 5 with a total score from 19 to 95 (16). The reliability of the questionnaire was assessed byParsell et al. using Cronbach's alpha coefficient and obtained 0.90 and its validity was evaluated by experts in various fields (17).Since then, many researchers have used this questionnaire to conduct their research (18). This scale is also standardized in Persian (19).Cronbach's alpha coefficient for the scale in the present study was 0.71.

Attitudes Toward Health Care Teams Scale:This scale was first developed by Heinemann et al. and consisted of 21 items scoring on a six-point Likert scalefrom totally agree to totallydisagree with scores ranging from zero to 5.A higher score indicates a more positive attitude (15). This questionnaire was first translated and translated back by two people fluent in English and Persian.The validity of the questionnaire was assessed using content and face validity methods. This scale was provided to10 experts in medical education working in different therapeutic fields and they were asked to commenton the appearance

and meaning of the options and their appropriateness, andthen in a meeting, these comments were applied in the questionnaires [content validity ratio (CVR = 0.83), content validity index (CVI)=0.89].

In order to evaluate the reliability of the questionnaire, the test-retest method and the determination of internal correlation were used.Accordingly, the questionnaires were distributed among 30 people involved in education from different disciplines.They were asked to repeat their identities for retesting by assigning a two-digit code and an English letter.Cronbach's alpha coefficient was confirmed ($\alpha = 0.81$).The reliability of the scale through the test-retest method and intraclasscorrelation coefficient (ICC) was significant (0.86)of $P < 0.05$.

Given that part of the present study was related to the need assessment of IPE, a 15-itemquestionnaire was designed based on the opinions of faculty members, familiar with the topics of medical education. Some items are listed below.

- Addingsome aspects of the skills of each field to the curriculum of all related fields
- Using teaching by skilled students in each field to students in other fields
- Basic training of teachers in each field to get acquainted with IPE
- Strengtheningthe decision-making skills of students in each field

The questionnaire was rated on a Likert scale from "not necessary at all" to "absolutely necessary" and scores ranged from 1 to 6. The validity and reliability of the questionnaire were confirmed.In order to determine the reliability of the questionnaire, the internal correlation method was used and the obtained Cronbach's alpha coefficient was 0.92.To determine the validity, face validity method (CVR = 0.71 and CVI = 0.76).

In the end, 3 questions were asked about the attitude towards the position of physicians in the treatment team. In this regard, some key items that address the leadership role of physicians were examined.

- The doctor has the right to change the treatment plan provided by the care team
- The final decision should always be made by a doctor
- The doctor is legally responsible for the treatment
- The questions were answered on a five-point Likert scale (from totally agree to totally disagree) and the scores for the items ranged from 1 to 5. To determine the validity of the questions, the qualitative face validity method was used and the experts identified the questions in accordance with the objectives.The internal reliability method was used to measure reliability and Cronbach's alpha coefficient was 0.731.

All data were analyzed by measures of central tendency and dispersion using t-test, ANOVA, and Pearson correlation test by SPSS software version 19 (version 19, SPSS Inc., Chicago, IL).

Results

Of a total of 381 participants, 61% were female and 39% were male. The mean age of participants was 39.90±10.66 years. Those working in medicine accounted for 39.7% of the respondents and the field of about 8.6% wasthe pharmacy, 29.9% nursing, 6.9% midwifery, and 14.9% paramedical fields. Of the total participants, 21.6% were faculty members and 48.9% working in non-governmentalmedical jobs andthe rest were working in governmentaltherapeutic jobs. In more than 90% of the samples, there was a good attitude towards teamwork and IPE.

The mean scores of attitudes towards interprofessional teamwork, IPE, and needs assessment for IPE based on the characteristics of the respondents are shown in Table 1.

Table 1. Mean scores of attitudes towards teamwork, interprofessional learning, and needs assessment for interprofessional education based on participants' characteristics

Variable		Attitude towards teamwork		Attitudes about interprofessional learning		Needs assessment forinterprofessional education	
		Mean± SD	P-value	Mean± SD	P-value	Mean± SD	P-value
Gender	Female	76.51 ± 5.47	0.55	75.70 ± 5.57	0.300	62.73 ± 5.65	0.04
	Male	76.28 ± 6.02		70.64 ± 6.36		61.36 ± 6.48	
Field of study	Medicine	76.09 ± 5.98	0.68	70.74 ± 6.50	0.100		0. 77
	Pharmacy	76.13 ± 4.88		71.34 ± 3.85		62. 26 ± 5.31	
	Nursing	72.26 ± 6.14		69. 41 ± 6.60		62. 64 ± 6.8	
	Midwifery	78.09 ± 3.37		72.77 ± 3.61		61.79 ± 5.19	
	Paramedical	77.23 ± 5.83		71.80 ± 4.69		63.38 ± 6.45	
Occupation	Faculty	74.78 ± 7.49	0.001	69.89 ± 8.53	0. 001	61.62 ± 7.44	0. 51
	Governmental jobs	75.35 ± 6.67		68.56 ± 6.33		62.09 ± 5.87	
	Non-governmental jobs	77.84 ± 3.50		72.40 ± 3.41		62.57 ± 5.38	
Work experience	Less than 5 years	77.28 ± 3.97	0.15	72.10 ± 4.12	0. 01	62.62 ± 5.40	0. 40
	5-10years	75.75 ± 6.28		69.15 ± 5.91		61.15 ± 5.31	
	10-15years	76.41 ± 6.94		70.44 ± 7.67		62.44 ± 6.99	
	Over 15 years	76.60 ± 6.09		70.16 ± 6.38		62.09 ± 6.62	

The results of one-way ANOVA showed that there was a significant difference between attitudes toward teamwork in terms of job status;that is, attitudes were different in different occupational groups.This difference was observed between faculty members and those withnon-governmental jobs as well as between those withgovernmental jobsand non-governmental jobs (P = 0.001).

Based on the results of the one-way ANOVA, the length of work experience can affect attitudes toward interprofessionallearning and lead to different results (P = 0.001).

In women, there was greater agreement on the need for educational change in line with IPE.There was no significant relationship between age (P = 0.191) and interprofessionallearning (P = 0.170) with the attitude towards teamwork.

The relationships between attitudes towards interprofessional teamwork, attitudes towards IPE, and educational needs assessments forIPEare shown in Table 2.

The relationship between key items of physicians' leadership role and demographic variables was assessed, which was discussed below.

There was no significant difference between men and women in agreeing with the statement "the doctor has the right to change the treatment plan provided by the care team".Pearson correlation showed no significant relationship between this item and the age of the respondents (r = 0.02). The results of one-way ANOVA showed that there was a significant difference between this item and the field of study (P = 0.001). Based on the results of this test, a significant difference was observed between the attitudes of different occupational groups towards this item (physician has the right to change the treatment plan provided by the care team). This difference was significant between faculty members and those withnon-governmental jobs as well as between those withgovernmental jobs and non-governmental jobs (P = 0.02). Those withnon-governmental jobs showed higher agreement with this statement. Those with different work experience showed different levels of agreement with this statement. This difference was observed between groups with 5 to 10 years of experience with those with 10 to 15 years, and also between those with 10 to 15 years of experience and more than 15 years.In both comparisons, individuals with 10 to 15 years of work experience scored higher on average (P = 0.003).

The results showed that the mean score of the item "the doctor should always make the final decision" did not differ by gender.Also, no significant relationship was observed between this item and the age of the participants. The results of one-way ANOVA showed that different fields of study did not differ in terms of response to this item.Based on the test, different occupational groups had different attitudes toward this item.This difference can be seen between faculty members and those withnon-governmental jobs as well as between those withgovernmental jobs and non-governmental jobs (P = 0.001). Faculty members were more likely to agree with this item than those withgovernmental jobsand those withgovernmental jobsthan those withnon-governmental jobs.The results of one-way ANOVA showed that the group with less than 5 years of experience and those with 1 to 15 years of experience on one side (the group with 10 to 15 years of experience agreed more),and also those with less than 5 years of experience and the group with more than 15 years of experience (the group with more than 15 years of experience had higher agreement) in terms of agreement with this item had a significant difference (P = 0.01).

The results of the t-test showed that there was no significant difference between men and women in terms of responding to the item "physician is legally responsible for treatment".Pearson correlation test showed that the relationship between this item and the age of the respondents was not significant (r = 0.15). Based on the results of the one-way ANOVA test, no significant difference was observed between the different fields in terms of response to this item.

The results of one-way ANOVA showed that there was no significant difference between different jobs and work experience in terms of agreement with this item.

Discussion

IPE is one of the new educational methods, which its efficiency has been confirmed in various studies.This educational approach can be effective in improving the quality of patient care (5). In the present study, more than 90% of the participants had a good attitude towards teamwork and IPE and there was no difference in the positive attitude towards the need for teamwork and IPEbetween different fields of study.

Table 2. Relationship between attitudes toward interprofessional teamwork, interprofessional learning, and educational needs assessment for interprofessional education

	Number	Correlation coefficient	p-value
The relationship between attitudes towardinterprofessionalteamwork and attitudes towardinterprofessional education	336	0. 652	0. 001
The relationship between attitudes towardinterprofessional teamwork and needs assessment forinterprofessionaleducation needs	336	0. 399	0. 001
The relationship between attitudes in towardinterprofessional education and needs assessment forinterprofessional education needs	336	0. 526	0. 001

Also, there was no significant relationship between work experience and attitude towards teamwork.Those withnon-governmental jobs had a better attitude towards teamwork and interprofessional learning.Most non-physician subjects believed that it is up to the physician to lead the team and make the final decision.

The ability of medical staff to work together as a team is very important in improving performance and reducing errors, but in some studies, nurses complained that doctors did not consult them (20). In fact, it seems that some members of the team are not interested in agreeing with other members.In another study, 22.1% of physicians were reluctant to discuss the situation of their patients with nurses and 36.0% did not believe in asking nurses for advice on medical issues.In a study conducted by Jasemi et al.,although 0.78% of the nurses considered the interaction with the physicians to be satisfactory, about half of them stated that the physicians did not consult them about the patients (21). The reason for the difference in attitude in different researches, apart from the conditions of implementation, can also be due to the time of the present study.In recent years, with the development of the field of medical education, in which a large number of physicians and other medical professionals are trained as postgraduates, attitudes about teamwork and IPEhave improved.Barrere and Ellis emphasized that the attitude of individuals is one of the factors influencing interprofessional communication, which can be influenced by education and familiarity with this factor (22).

In the present study, there was no significant relationship between work experience and attitude towards teamwork, but there was a significant inverse relationship between attitudes toward interprofessionallearning and work experience.In some studies,the work experience was not effective in attitudes toward teamwork (11), whereas,in some others, the duration of workexperience affects the person's attitude.This finding is also observed in the research byBarrere and Ellis indicatingchangingattitudes over time (22). Another study examined the relationship between work experience and the attitudes of physicians and nurses toward interprofessional collaboration and concluded that physicians with more work experience had a more positive attitude toward interprofessionalcollaboration;however, oppositeresults were obtainedin nurses so that by increasing work experience, they gained a more unfavorable attitude toward interprofessional collaboration (23).

The reason for this difference in various studies can be due to the fact that at the beginning of work, there is insufficient attention and knowledge about the importance and position of medical jobsin other related professions, which can beadjusted by passing time and more familiarity with the work of other professions.Some studies on creating a negative attitude of nurses towards interprofessional cooperation over time have shown that not paying attention to the role of nurses and the views of the medical system or society lead to a negative attitude among nurses (21). It seems that encouraging medical staff to study medical education as a postgraduate course can be very effective in bringing these perspectives closer together.

According toJasemi et al., gender was effective in attitudes toward teamwork and women had more positive attitudes than men (21); whereasin the present study, gender was not associated with attitudes toward interprofessional teamwork and IPE. However, among women, there was a higher agreement on the need for educational changes in line with IPE.Curran et al. reported thatgender was an effective factor in the attitude of faculty members (24). Various studies have not provided a reason for the better attitude of women in this field, but it may be due to their greater desire to experience newer cases in their careers.Further qualitative further studies are recommended to indicate the reason.

Because faculty members have different preferences for IPE based on their personal characteristics or field of specialization,planning at the national level should be done to obtain a synergistic effect regarding IPE.Professors should also be confident in their knowledge and ability to facilitate different groups of interprofessionallearners.The university should help empower professors in this field through the process of developing in-service training programs.

One of the most important challenges in IPE is the role of physicians in their work network and other members of the clinicians.The existing values and attitudes of students in different fields are an important obstacle to using this method of education (9). This relationship is defined in some societies as a pyramid of power and in some societies, based on complementary roles (24).

In order to examine the attitudes of individuals toward IPE, some key items that address the leadership role of physicians were examined.Interestingly, there was no significant relationship between individuals' field of study and attitudes toward theconsidered items.In fact, some non-physician subjects believed that it was the physician who led the team and made the final decision. Another interesting point was that the faculty members agreed more with the first two items than the others.The existence of this view, which can be interpreted in relation to the power pyramid in clinicians, makes physicians prevent from interacting properly with other members of the treatment group.On the other hand, other people, believing that the final decision is made by the doctor, do not make much effort to change their position as an active member in the treatment of patients.

The work experience of the respondents also showed an interesting relationship with these items. People with 10 to 15 years of work experience were more agreed with these views. This suggests that work experience and gaining experience or better job opportunities can lead to higher self-esteem.

Similar studies have shown that although in many cases, nurses valued their profession, they indicated the great importance of physicians in leading the treatment team (21). This may be due to a comprehensive ability of physicians, or the view that diagnosis and treatment are

the only issues that matter to patients.In Iran, because medicine, pharmacy, and paramedicalfields are educated separately, this may be more pronounced.

According to the role theory, in healthcare professional teams, there is a traditional hierarchy of roles headed by physicians (9). The findings of the present study also showed that different occupationsbelieve in the special roleof the physicians in the management of the treatment team.

It has been shown that the barriers to IPE, in addition to structural and organizational conflicts, organizational support, specializations in college, and different assessment methods and learning needs are associated with changes in people's attitudes toward IPE, for example, prejudices and stereotypes (13).

Although university faculty members were expected to have a more positive attitude toward teamwork,in the present study, it was observed that employees working in the private sector had a better attitude about teamwork. In addition, tees groups had a better attitude toward interprofessional learning. This observation should be highly considered because it seems that thenot so positive view ofthe people in charge of educationand are expected to have more positive views in this regard, can disrupt IPE.Therefore, it is strongly recommended that planners and administrators of educational issuesconsider factors affecting IPE, such asan emphasis on learning theories,changes in teachers' attitudes,and teaching the benefits of this methodtoeducators.

To achieve these goals, like any other educational approach, special and principled attention should be paid to the theoretical foundations and factors affecting the teaching-learning processes.JafaeiDalooeiet al. examined the pros and cons of this issue and emphasized that a change in the educational approach to interprofessional learning could lead to better performance (25). Studies have shown that there is still a limited understanding of the effectiveness of IPE, which is due to two factors: "heterogeneity of IPE interventions and methodological limitations of IPE studies" (26).

It should be noted that the norms and general cultures of the educational environment are very important in shaping future values and attitudes. Therefore, paying attention to correcting attitudes towards IPE hidden curriculumis crucial.

Barriers to IPE initiation can be examined at different levels of the organization, and in addition to the cases mentioned above, decision-making at intermediate and macro levelsshould also be considered.These include medical universities, the Ministry of Health, and the government cabinet, which understand the value of IPEand the sense of commitment to its implementation, such as providing resources.

Conclusion

According to the results of the present study, despite the need for IPEand a positive attitude towards teamwork and IPE,it seems that solutions are considered to make the graduates of each field more familiar with the role of other fields in the care team.Changes in training programs in each field with emphasis on IPEand in-service training courses with an emphasis on the role of each member of the medical staffwill enable them to play an effective professional role and improve the quality of patient care with more cooperation.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804440].

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Research Article

The Effect of Virtual Education with a Problem-Based Approach Using Virtual-Small Groups on Academic Achievement and Participatory Learning in Midwifery Students of Islamic Azad University, Jahrom Branch, Iran

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Abstract

Background: The formation of small groups and education with an active learning approach is among the basics of problem-based learning (PBL).

Objectives: The present study aimed at determining the effect of the PBL approach with virtual-small groups on academic achievement and participatory learning in midwifery students of Islamic Azad University, Jahrom Branch, Iran.

Methods: The present interventional study was performed on 50 midwifery students of Islamic Azad University, Jahrom Branch, studying at internal and gynecologic surgery course in the academic year of 2018-19. The subjects were randomly assigned to the intervention and control groups. The intervention and control groups underwent PBL and the conventional methods, respectively. The academic success of the participants and the active and collaborative learning was assessed. Data were analyzed using the Mann-Whitney U and Wilcoxon tests in SPSS.

Results: There was a significant increase in the mean score of academic achievement in the intervention group compared to controls ($P < 0.05$). The active and collaborative learning (ACL) score of the intervention group was above average and significantly higher compared to the control group ($P=0.03$).

Conclusion: PBL virtual with small groups, in addition to academic success, affects ACL. This technology can be used for educational purposes, such as participation and interaction in small groups in the PBL.

Keywords: Virtual Education, Problem-based Education, Academic Success, Active and Collaborative Learning

Background

Virtual learning environments (VLE) allow teachers and learners to form their learning communities. In such environments, teachers and learners communicate via computers using the words and images shared (1). Lecturing is currently considered the dominant teaching method used by teachers in VLE. Although electronic (e)-learning supports and even boosts existing methods, such as lecturing (2), problem-based learning (PBL) is one of the most active student-centered teaching techniques through which students form small groups and are triggered to learn through the search for resources and group interaction; learning occurs as a result while they try to analyze the problem. In fact, the scientific situation is provided by designing a scenario for the learners as problems, which they should strive to solve by searching for evidence and sources, group analysis, and ensemble reflection (3, 4).

Social media is popular for students to share information and knowledge and express their feelings. These networks enable students to exchange videos, text messages, images, and knowledge. They also allow students to improve their educational processes, which in turn increases ensemble knowledge (5). The use of social networks only for entertainment and recreation and non-educational and academic purposes adversely affect

students' academic achievement and, consequently, lead to low grades (3).

Using virtual-small groups in VLEs facilitates the application of the PBL approach. Virtual networks operate based on online community formation, bringing Internet users with common interests or characteristics together. Such networks are a kind of social media, enabling a new way of communication and information share on the Internet (6).

Although social media may have a negative impact on students nonetheless, they can serve as a useful resource if used appropriately (5).

Many pieces of research are conducted on the utilization of PBL in training medical students. Likewise, Kojouri et al., in a study on the effectiveness of collaborative learning in PBL, concluded that it could be implemented in small groups (7). The study by Nouhi et al. on participatory learning experiences using PBL in nursing students showed that considering a wide range of intrinsic and extrinsic concepts, dimensions, factors, and conditions affecting PBL and benefits, it can play a pivotal role in nursing education system. Also, their results indicated the lack of skills required for applying PBL (8). Active learning cannot be guaranteed only by lecturing and one-way communication in e-learning. The use of the PBL approach forms a multidimensional communication between students and the teacher. Under such circumstances, where the formation of face-to-face groups is not possible or faced with various problems of time and space coordination, the use of small groups in the virtual network provides the opportunity of a wide range of activities for group members to achieve academic goals.

Objectives

The present study aimed at determining the effect of the PBL approach with virtual-small groups on academic achievement and active and collaborative learning (ACL) in midwifery students of Islamic Azad University, Jahrom Branch, Iran.

Methods

An interventional study was performed on 50 midwifery students who were studying at internal and gynecologic surgery course in the second semester of the academic year 2018-19 at the Islamic Azad University, Jahrom Branch. The subjects were entered into the study by census method and randomly assigned to the intervention and control groups based on the list of students (n=25 in each group).

The data collection instrument contained demographic information, including age, gender, marital status, nativity status, and total grade point average (GPA). Also, two questionnaires were used for evaluating academic success and Active Collaborative Learning (ACL). The questionnaire used to evaluate students' academic success contained 20 items on internal and gynecologic surgery contents and its score ranged from zero to 20. Using the Koder-Richadorson reliability (KR20) formula, the internal consistency of the questionnaire was evaluated. The reliability of it was calculated as 0.9 which was obtained using pretest and posttest in both groups. Before the intervention, the questionnaire was distributed among the subjects. Then, both groups were retested simultaneously after six weeks.

Active and Collaborative Learning (ACL) was assessed using the National Survey of Student Engagement (NSSE). This seven-item scale is scored based on a five-point Likert scale (from very high (5) to very low (1), and its total score ranges from 7 to 35. The reliability of NSSE was assessed by Cronbach's alpha coefficient (α=0.7), and its validity by the content and face validity (9).

First, the study protocol was approved by the Ethics Committee of Kerman University of Medical Sciences, and a letter of introduction was obtained from the university to submit to the Islamic Azad University, Jahrom Branch. The research team attempted to collect data from the intervention and control groups using trained individuals. First of all, a pretest was taken from both groups based on their baseline knowledge. Also, the ACL questionnaire was distributed among the participants in both groups, and their scores were calculated. The training was provided for the intervention group using the PBL approach, but it was lecturing in the control group. The educational topic in both groups was preeclampsia and placental abruption. For this purpose, the educational content in the control group was provided as virtual for three weeks by lecturing.

Second, the training program was performed online in the intervention group in the same period of three weeks, using the five-step modified PBL method (MPBL), by forming virtual-small groups. The intervention group was divided into three small Internet-based (WhatsApp) subgroups (n=7 in each). In the MPBL implementation, The researcher was with the students as a facilitator. The educational content was provided to the students as a scenario in the form of a story. After interacting, determining, and extracting the educational goals under the guidance of the teacher, the groups were given one week to search, gather information, and study individually on the goals. The next step was presentation and group discussion, summarizing, presenting electronic content and video clips on educational topics. Finally, the post-test on the educational content was taken simultaneously in both groups. The ACL questionnaire was also distributed in both groups. The mean scores of academic achievement and ACL in both groups, before and after the intervention, were analyzed in SPSS version 20 (IBM Corporation, Armonk, NY).

In addition to teaching method differences in the control and intervention groups, since first the control group (first half of the semester) and then the intervention group (second half of the semester) received training, the possibility of information exchange and contact between the group was minimized. Besides, virtual-small groups were formed by the researcher in the intervention group, and the possibility of adding more members were controlled. According to the results of the Kolmogorov-

Smirnov test, the data had non-normal distribution. The Wilcoxon and Mann-Whitney U tests were used for inter and intragroup comparisons in SPSS version 20.

Results

In total, 50 midwifery students of Islamic Azad University, Jahrom Branch, studying at internal and gynecologic surgery course, participated in the present study. The mean age of students was 21.43 years, and all were female.

Table 1 shows the demographic characteristics of the participants. Accordingly, there was no significant difference between the intervention and control groups in terms of demographic variables (P >0.05).

Before the intervention, there were no significant differences in the academic success scores between the intervention and control groups (P = 0.28), indicating the homogeneity of the groups (Table 2). A comparison of the mean score of academic success in both intervention and control groups before and after the intervention showed that the learning score in the intervention group was significantly higher than that of the control group (P = 0.02).

The results indicated a significant increase in the mean score of ACL in the intervention group at a 95% confidence interval level (P <0.05) (Table 2).

The posttest ACL score was 31.83 ±4.94 in the intervention group, which was higher than the average (17.5) and significantly higher than the score (24.30 ± 3.60) in the control group.

Discussion

Ensemble learning and activity in small groups is an important part of learning in the PBL approach. The learning process starts with posing a problem, and learners in 5-10 groups acquire the knowledge needed to solve it through working on it. The teacher also plays a role as a facilitator in the learning process. In this method, gaining knowledge and the result of working on the problem are substantial (10).

The present study aimed at determining the effectiveness of e-learning with the PBL approach using virtual small groups in two variables of academic achievement and ACL in students. The results showed a significant increase in the mean learning score (academic success) of the intervention group. Likewise, the study by Saeedinejat and Vafaei Najjar showed that distance education programs were effective in the academic success of the intervention group (11). In a study on the effect of social media on the academic achievement of engineering students of Maiduguri University, Borno State, Nigeria, Fori concluded that social media sites do not affect academic performance (12). Likewise, Madaiah et al., in a study on medical students, reported that those who used virtual social networks had lower academic performance than their peers who did not (13). This difference could be expected due to the non-purposeful use of virtual networks related to educational content in the present study.

In the present study, the mean posttest ACL score was significantly higher in the intervention group than the controls, so that there was a significant difference in active and collaborative learning in students undergoing the PBL approach with virtual-small groups. Brindley et al., in research conducted by the University of Maryland College and the University of Oldenburg, aiming at creating effective groups of online educational collaboration (15 groups) in the basic sciences course in distance learning program reported that the online classrooms could make a significant difference in student collaboration with group learning projects through whole-class or small groups

Table 1. Comparison of Demographic Characteristics of the Study Groups

Variable		Intervention	Control	P
Age (yr.), Mean±SD		21.14 ± 2.76	21.72 ± 23.58	0.70
Marital status(N)	Single	17	19	0.83
	Married	4	6	
Place of residence(N)	Native	13	14	0.82
	Non-native	11	8	

Table 2. Comparison of the Mean Scores of Academic Success and Active and Collaborative Learning based on the groups and time of the assessment in Midwifery Students of Islamic Azad University, Jahrom Branch

	Intervention (n=25) Mean±SD	Control (N=25) Mean±SD	t*	P
Academic success score (Pre-test)	11.0 ± 3.26	12.0 ± 6.99	258.5	0.28
Academic success score (Post-test)	18.0 ± 2.17	14.0 ± 5.68	125.5	0.02
Active and collaborative learning score (Pre-test)	13.26 ± 3.41	14.22 ± 3.52	222.1	0.22
Active and collaborative learning score (Post-test)	31.83 ± 4.94	24.30 ± 3.60	156.5	0.03
Active and collaborative learning score in the intervention group	Pre-test	13.26 ± 3.41	-941.1	0.04
	Post-test	31.83 ± 4.94		

discussions (14).

The study by Akbari Bourang et al., on the quality of e-learning in Iranian universities, based on curriculum orientations and teachers' experiences, showed a significant relationship between e-learning experience and e-learning quality in paying attention to personal differences, facilitating cooperation between students, providing feedback, and evaluation (15).

Nohi et al., in a research on collaborative learning experiences on PBL in nursing students, concluded that there was a wide range of intrinsic and extrinsic concepts, dimensions, factors, and conditions affecting PBL, which considering the advantages of this approach, can play a pivotal role in the nursing education system. They also highlighted that the lack of skills required performing MPBL (8).

In other studies, aimed at making the PBL method more efficient, it was combined with Internet technology for web-based education of computer games and various computer programs, and compared to controls receiving PBL in the classroom, the intervention group undergoing a combination of PBL and computer technology had better performance (17, 16).

The results of the research show that assigning students to small groups using the PBL approach can be very effective because it is a student-centered method, and its success is relied on student activity, teamwork, information exchange, training problem-solving skills, and critical thinking (7).

Baghcheghi et al., comparing collaborative and traditional learning methods in terms of communication skills of nursing students, concluded that collaborative learning is an effective method to improve and enhance communication skills in nursing students, especially the interactive ones (18).

Ganji and Tavakoli concluded that due to the role of Internet addiction in academic motivation, its usage if not managed might be associated with negative consequences, such as decreased academic motivation (19). The facilitator role of the teacher, providing the ground for more interaction between the teacher and the student, the active collaboration of students through self-directed learning, and group collaboration in virtual learning are emphasized by experts (20-23, 8, 5). The use of the PBL method, while maintaining the role of the teacher in virtual education, provides good educational opportunities for most students to work with virtual-small groups and increase ensemble knowledge. The utilization of social networks is popular among students to share information, knowledge, and also express their feelings. They also enable students to exchange videos, text messages, images, and knowledge (2).

The idea of using social software in e-learning with common features such as decentralization, ease of interface design, interactive nature, content production with the active collaboration of user, and greater transparency in information circulation, triggered new advancements in e-learning (20, 23). On the other hand, the use of social networks as entertainment and recreational applications, in non-educational and academic ways, by students can have negative impacts on their academic achievement (3). Therefore, the directed application of this technology in the curriculum to increase the collective synergy and control its negative consequences is essential.

Conclusion

The use of the PBL approach in virtual-small groups, in addition to academic success, affects the active collaboration of students. Based on the obtained results, the use of virtual small groups in PBL, use of modern technologies in virtual networks through searching for content, and engaging students in analyzing the problem through facilitating group interaction can persuade students to more collaborative education and improve their knowledge and abilities.

Although the sample size was small and attempts were made to control information exchange between groups, they were the limitations of the present study. It is recommended to perform similar research in larger sample sizes.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804875]

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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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Abstract

Background: It seems that by improvement of communication skills among midwifery students, their sense of belonging in medical setting increases.

Objectives: The current 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 pretest-posttest control group design was conducted on 78 midwifery students of Kerman University of Medical Sciences, in 2016. The participants 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 pretest. 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 posttest instruments. Data were analyzed using SPSS 22.

Results: There was no significant difference in terms of demographic factors between two groups. 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 ($p<0.05$).

Conclusion: 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 by enhancing their communication skills.

Keywords: Counseling, Belonging, Communication, Clinical, Midwifery, Students

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 prerequisite 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 (9, 11, 12). 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 (13). Students unable to secure belonging learn in clinical settings as outsiders, unfamiliar with the nursing environment (14).

Levett Jones et al. (2008) 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 (15). To create positive clinical experiences, it appears necessary to consider all types of reactions and behaviors facilitating or undermining students' sense of belongingness (13).

With these testimonials, communication skills is one of the effective components on the level of clinical belongingness (16). Group counseling is confirmed to improve communication skills (17). 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 (18). 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 (16, 19, 20).

Objectives

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 University of Medical Sciences (KUMS), Kerman, Iran, in 2016.

Methods

This interventional study with the pretest-posttest control group design was conducted on midwifery students of Kerman University of Medical Sciences, in 2016.The participants were selected using the census method. The inclusion criteria were successfully passing at least one clinical course and having low general health based on Goldberg's General Health Questionnaire.

After obtaining the ethical code (ir.kmu.rect.2015.556) from the ethics committee of KUMS, the recommendation letter was submitted to the head of the faculty. Therefore, the researcher conducted a meeting with all the midwifery students at KUMS. Accordingly, 78 students didn't attend clinical fields were included in the study, yet. First, the researcher introduced herself and explained the research goals. Then, she asked the participants to complete Goldberg's General Health Questionnaire (21). 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. 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 the random allocation. The students became homogenous in the both groups in terms of year of admission. Belongingness Scale–Clinical Placement Experience (BES–CPE) (13) was completed by the both groups in the pretest 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 to the students in the control group until the posttest was conducted. However, the education pamphlets were given to the control group students after the posttest 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.

Demographic data including age, academic semester, marital status, birth place, place of residence, interest in the field of study and having at least one first-degree

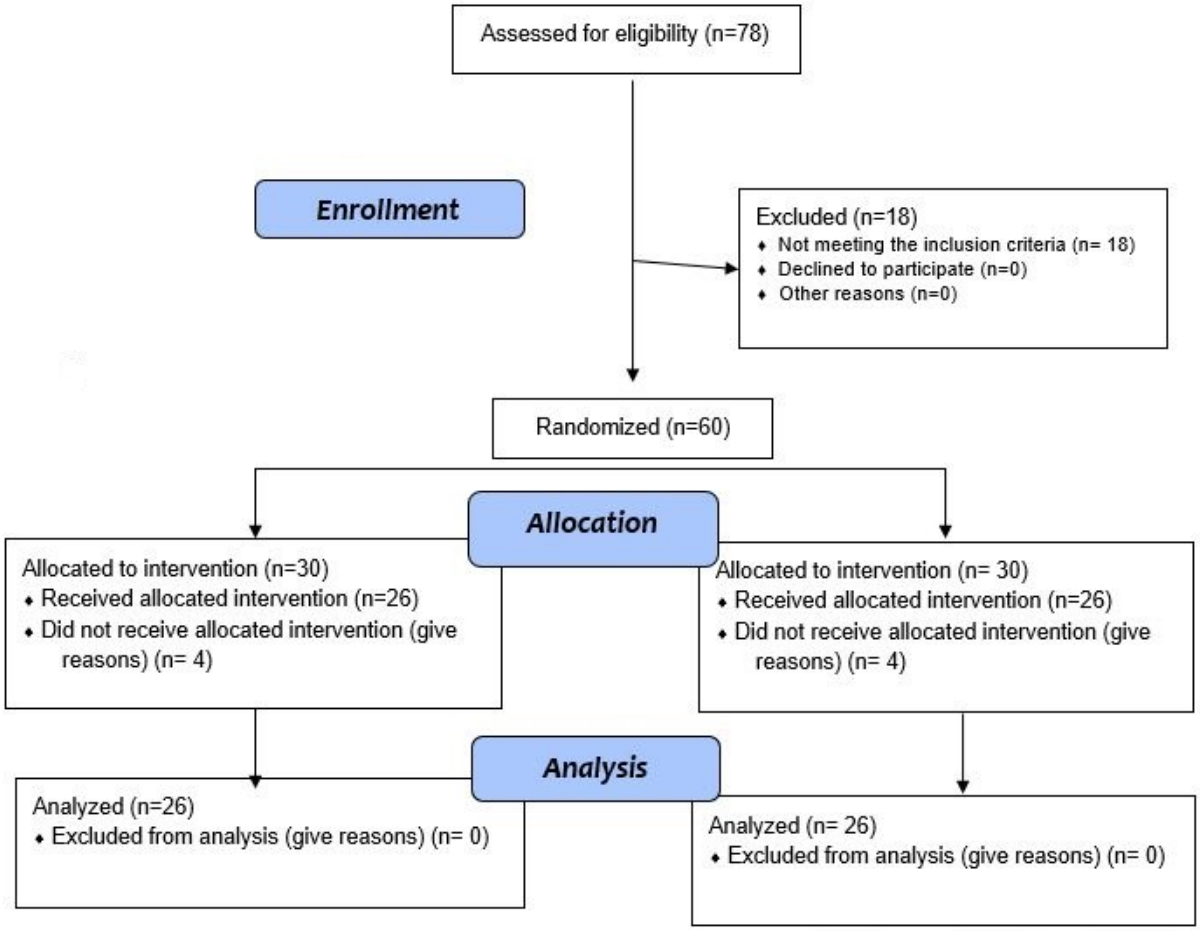

Figure 1. Flow diagram of the Study

relatives in the clinical field, recorded.

Goldberg's General Health Questionnaire and Belongingness Scale–Clinical Placement Experience (BES–CPE) used for data collection.

Goldberg's General Health Questionnaire was developed by Goldberg and Hiller in 1979 and consists of 28 items (21). 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 (2001) for use in psychological researches and clinical practices (22).

Belongingness Scale–Clinical Placement Experience (BES–CPE) 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 (13). The validity and reliability of the scale were determined by Hassanvand et al. (2014). Accordingly, the reliability of the scale was shown to be icc=0.70 using the pre- and post-test repeatability method. Moreover, the Cronbach alpha coefficient 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.

Results

The final analysis was carried out on 52 midwifery students. Table 1 shows the socio-demographic data of the participants.

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 subscales of sense of belonging in clinical settings before and after counseling in the both groups. It was revealed that all the subscales 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 "pre-post mean of scores' difference". Considering low number of participants in the intervention group, the intervention was shown to have no significant effect on the sense of

Table 1. The comparison of socio-demographic data of the intervention and control group

Variable	Intervention Group	Control Group	P
Age (year) Mean ±SD	21.38±1.16	21.26±1	0.63
Semester N (%)			
Third semester	7 (26.9)	8 (30.8)	
Fifth semester	13 (50)	11 (42.3)	0.85
Seventh Semester	6 (23.1)	7 (26.9)	
Marital status N (%)			
Single	22 (84.6)	18 (69.2)	0.18
Married	4 (15.4)	8 (30.8)	
Residency N (%)			
Native	17 (65.4)	9 (34.6)	0.35
Non-native	20 (76.9)	6 (23.1)	
Residency status N (%)			
Dormitory	21 (80.8)	15 (57.7)	0.07
Non-Dormitory	5 (19.2)	11 (42.3)	
Being interested in the field of study N (%)			
Yes	24 (92.3)	23 (88.5)	0.63
No	2 (7.7)	3 (11.5)	
First –degree relative with a clinical job N (%)			
Yes	11 (42.3)	11 (42.3)	0.99
No	15 (57.7)	15 (57.7)	

Table 2. The comparison of the scores of sense of belonging subscales before and after counseling in the both groups

Sense of belonging	Intervention		Control		Statistical results
Sub scales	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	
Self-esteem ***Mean ±SD***	3.07±0.61	3.54±0.44	3.51±0.73	3.65±0.51	T(inter*)=4.8 P=0.0001 T(con**)=1.06 P<0.29
Continuity ***Mean ±SD***	2.43±0.61	2.78±0.65	2.74±0.75	3.03±0.6	T(inter)=3.01 P=0.006 T(con)=1.77 P<0.088
Self-efficacy ***Mean ±SD***	3.31±0.74	3.9±0.44	3.85±0.68	3.9±0.45	T(inter)= - 4.34 P=0.0001 T(con)=0.54 P<0.59
Total score ***Mean ±SD***	2.88±0.52	3.38±0.48	3.34±0.6	3.43±0.42	T(inter)= 6.46 P=0.0001 T(con)=0.98 P=0.33

*inter: intervention, **con: control

Table 3. Comparison of the "pre-post mean of scores' difference" in belonging and its subscales

Belongingness	Intervention (Mean ±SD)	Control (Mean ±SD)	T	P
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

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).

The results also indicated that there was no significant relationship between the demographic variables and "pre-post mean of scores' difference". Considering low number of participants in the intervention group, 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).

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 mean of scores in pre-test was similar to that in some studies (23-25). Data analysis showed that the sense of belonging score significantly increased in the intervention group after counseling. In consistent with this research, Levett-Jones et al. showed that the improvement of communication skills had a positive impact on nursing students' sense of belonging (13). Moreover, in consistent with the current study, previous research applying different methods was successful to enhance sense of belonging (20, 26, 27).

Providing proper clinical setting should be created by faculty members during their communication with students in the educational field (13). Providing a suitable setting where midwifery students have a sense of belonging can facilitate effective clinical learning (28, 29) 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 (24, 30).

As shown in our study, prior to holding the counseling sessions, the highest and lowest mean scores respectively belonged to the self-efficacy and continuity subscales. This was similar to the study of Dabirifard et al. (20), which evaluated sense of belonging in clinical settings among bachelor nursing students. The high score of self-efficacy shows that students believed in their efficient clinical practices (25). Self-efficacy is the intermediary between individuals' knowledge and behavior and it also associates with professional qualification. The strong sense of self-efficacy leads to more efforts in obtaining achievements and higher performance (31).

Some previous research showed a positive strong relationship between students' communication skills with their self-esteem, sense of belonging and responsibility (27, 32). Mahdavi et al. reported that responsibility increased students' self-esteem. They believed that increasing self-esteem could lead to the development of problem solving and decision making abilities when any problem happens (33). Coatsworth and Conroy believed that empirical interventions (psychological education) could have the strongest effects on increasing self-esteem of youths (34).

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 in their study indicated that students' sense of belonging in schools increased by encouraging and motivating them to have this sense (26). In the study of Abolqasemi et al., 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 (35). 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.

Conclusion

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.

Limitation : Some of the students were reluctant to attend the counseling sessions, which led to the decreased number of participants receiving or completing the intervention.

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Research Article

Peer Teaching: A New Step to Improve Education, Learning and Student Satisfaction

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Abstract

Background: In peer teaching, students act as both teachers and learners. Peer teaching can be a useful way to learn courses in interdisciplinary fields of study.

Objectives: The purpose of this study was to investigate the viewpoint of health information technology students about learning through peer teaching.

Methods: This cross-sectional study was conducted in 2017 at Kerman University of Medical Sciences. Undergraduate students in the health information technology department using the peer teaching method participated. Data were collected using a self-administered questionnaire. The questionnaire consisting of 42 questions assesses students' attitudes toward peer teaching. It consisted of two categories: "learning improvement" and "students' satisfaction with the peer teaching." Data were analyzed using SPSS software.

Results: A total of 52 students participated in the study. Regarding learning improvement, the mean score of development of individual skills, improvement of students' learning, and improvement of peer performance were 3.43 ±1.05, 3.34 ±1.08, and 3.37 ±1.03, respectively. In terms of student satisfaction the mean score of interaction between learner and teacher, knowledge transferred to the student, and the class conditions were 3.52 ±1.10, 3.31 ±1.09, and 3.21 ±1.15, respectively. Students who attended more in peer classes were more satisfied and their learning improved ($P<0.05$). There was no significant relationship between age, gender, and the number of passed semesters with students' satisfaction and learning ($P>0.05$).

Conclusion: From the students' point of view, peer teaching can improve their learning. Also, the students were satisfied with the training provided by their peers. Peer teaching can be a complement to the teacher-centered method by providing a positive experience.

Keywords: Peer Teaching, Peer Learning, Evaluation, Satisfaction

Background

Training is a complex process, which when it is underestimated, can lead to the loss of human resources and waste facilities. Therefore, the development of education and making changes in its process requires knowledge of the education process and awareness regarding new educational methods (1). The conventional method of education in universities is the professor-oriented method. In this method, all the subjects are explained by only one speaker (teacher) and are received and memorized by the student. Therefore, the student does not participate in the teaching process (2). Although using this method, a large amount of data in a short time are presented, but its effect on the development of the mind, motivation, and changing attitudes is much less than new teaching methods; it also wastes human resources and facilities. Therefore, the use of alternative teaching methods seems necessary; because using new methods, makes learning more sustainable and effective learning, and makes students motivated and interested in learning (3). One of these methods is peer teaching (4).

Peer learning is one of the models of learning and teaching and a kind of educational methods, in which people from the same social groups who are not professional teachers, help each other in learning and learn themselves (6, 5). This method has been less used in formal education, although its use in higher education and medical sciences is increasing (5). There are different methods for teaching and learning through peers (6). Peers can be identical or at higher levels regarding the educational level or experimental experiences. For example, in the peer-to-peer method, students starting university in the same year teach

each other (8, 7). The benefits of this method are as follows: increasing self-confidence, increasing presentation skills (9), teamwork, responsibility, developing critical thinking skills (10), improving students' test scores (11), increasing the opportunity to ask and answer questions and solve problems. It is a useful method to prepare students for their future role as medical educators (12).

Various studies have examined peer teaching. Bucknall et al. examined the peer performance evaluation model and attitudes toward evaluation, at Bringham University in the United Kingdom and a peer-to-peer teaching model was performed in the basic sciences, and senior students taught their undergraduate students. This training was compared with the training by faculty members in an experimental study using a control group. The results showed that the peer teaching process was acceptable to many students. Compared with faculty members, peer training was valid and learning outcomes were the same (13). Brannagan et al. examined the effect of peer learning experiences on nursing students in a clinical laboratory on 179 first-year nursing students and 51 third-year nursing students. Students were divided into two groups in three semesters. A group of students was trained by third-year students and the control group was trained according to the conventional method (14). Brannagan et al. concluded that peer training enhances clinical skills and the successful experience of nurses while working and changes their attitudes (14).

In a qualitative study by Zarifnejad et al., to explain the experiences of nursing students participating in the complementary group training by peers for physiology, students who had the experience of participating in physiology with peer teaching methods were interviewed. The results showed that educational institutions and universities should pay more attention to student-centered teaching methods, such as peer teaching; because the use of these methods can complement the teacher's teaching by providing a positive experience and lasting and deep learning (15).

Kimyai et al. conducted a study to investigate the effect of peer group training on learning practical skills of dental students in the restorative preclinic and showed that the scores and practical skills of students in the intervention group (peer teaching) were the same as students who received conventional education (10).

Peer teaching is applicable in interdisciplinary fields where students need to learn different skills, of which health information technology is presented in medical universities. Graduates will be able to take charge of the management of the health information technology unit of all institutions providing health care and play a role in creating and managing health information systems using information technology. For this purpose, students must learn various sciences, such as computer, medical terminology, information management science, etc. However, the headline provided by the Ministry of Health does not meet all the training needs of these students. Also, due to the large volume of content and time limit, teachers do not have enough time for comprehensive explanations and further practice in the classroom. For example, a health information technology expert must be competent to address the needs of technology-related hospital staff and software and hardware problems. Therefore, students in this field need to receive various types of training they need. Thus, the Department of Health Information Sciences of Kerman University of Medical Sciences to meet the educational needs of students decided to use the capabilities of graduate students in medical informatics who had various specialties, such as software engineering, hardware engineering, etc., to employee health information technology in the education of undergraduate students. To the knowledge of the researcher, no study has yet been conducted in Iran to examine students' attitudes toward education by their peers.

Objectives

The purpose of this study was to investigate students' views regarding learning through peer teaching and to measure their satisfaction with peer teaching.

Methods

This cross-sectional (descriptive-analytical) research was conducted in Kerman in 2017. The study population consisted of undergraduate students in health information technology department. The peer teachingpeer teaching was carried out in October 2015 in the Department of Health Information Sciences of the Faculty of Management and Information Science. Necessary coordination was made with the professors by the head of the department. Health information technology students who had started the university in 2015 participated in the introduction meeting and an initial agreement was reached between the students and the department and the peer teachingpeer teaching method was introduced to the students.

The inclusion criteria were taking the considered courses in the current semester, regular attendance at classes held by professors, and willingness to participate in research. To do peer teaching, the master's degree students in medical informatics, those who had the necessary scientific qualifications and we able to hold a training course were selected. These students were selected according to criteria, such as obtaining a score higher than 17 in the considered courses, a history of peers teaching, and willingness to cooperate. Also, the students should have good communication skills and be able to transfer their gained knowledge and manage the class. After making coordination with one of the professors of the department, the instruction and the duration of the class were provided to the selected students, and then the content that the peers had prepared for presentation in class was approved by the professor.

After preparing the content and approving it for the class, the head of the department made needed coordination with the undergraduate students, and then the class was held at the considered time and day. All undergraduate students who took courses should attend the classes held by the peers. Therefore, to participate in

classes held by peers, sampling was not done and all eligible students could participate in the provided training class. In the classes, peer students taught the intended subjects to the students and then solved the exercises and gave more examples. Due to the free time of peer students, it was possible to ask and answer questions and solve problems outside of class, through communication channels, such as email and the social media platform (Telegram group).

Medical informatics students also participated in some workshops. Information to participate in these training workshops was provided through the Telegram group.The Telegram group was created by the Department of Health Information Sciences only for informing students about the workshops and identification of other students willing to participate in the workshops.

The peer teaching process was evaluated by peers when it had been used in six semesters. A questionnaire consisting of 42 questions (two parts) was used to assess students' point of view on learning improvement and to measure their satisfaction with peer teaching. The questionnaire was a researcher-made questionnaire. The first part of the questionnaire was students' demographic information (age, gender), and the second part had two categories including learning improvement and satisfaction with peer teaching. The learning improvement category consists of three sub- categories: student learning improvement (14 questions), peer performance improvement (3 questions), and student's individual skills development (10 questions). Students' satisfaction with peer teaching was examined in three sub-categories, including classroom atmosphere and conditions (4 questions), knowledge transferred to the student (8 questions), and the interaction between learner and teacher (3 questions). At the end of the semester, students participating in classes and workshops willing to answer the questions completed the questionnaire. The questionnaire was scored on a five-point Likert scale (completely disagree = 1, disagree = 2, no idea = 3, agree = 4 and completely agree = 5). The minimum score for learning improvement was 27 and the maximum score was 135. In terms of student satisfaction with peer teaching, the minimum and maximum scores were calculated as 15 and 85, respectively. The average score of each category was between 1 and 5. In order to calculate the average of the sub-categories, first, the average score for each question was calculated. Then, for each sub-category, the average score of its questions was added and divided by the number of questions (11). To check the content validity, it was approved by two specialists experts in medical informatics. The reliability of the questionnaire was confirmed by the marginal homogeneity test (r = 0.89).

In order to investigate the relationship between demographic variables and the two categories (learning improvement and student satisfaction), chi-square test was used. Data were analyzed using SPSS software version 24 (version 24, IBM Corporation, Armonk, NY).

Results

In total, 63 undergraduate students in health information technology department were trained by 5 postgraduate students. Of the students trained, 52 undergraduate students participated in the evaluation, of which 44 cases were female and 8 cases were male with a mean age of 21.00 ±2.25 years. The average length of peer teaching was 14.5 ± 9.5 hours and the maximum length of peer teaching was 32 hours. Demographic characteristics of the participants are given in Table 1.

Table 2 shows the mean scores of learning improvement and and student satisfaction categories and their sub-categories. From the students 'point of view, the most important factors leading to the learning improvement of students' were the appropriate speed of teaching, motivating students, engaging in the learning process, and the desire to continue education. Regarding the improving peer performance, more than half of students (69.2%) believed that peer teaching can increase the responsibility of students, which is effective for their future careers. Also, peer teaching develops individual skills and strengthens skills, such as self-confidence (69.2%), encouraging students to take responsibility in learning (63.5%), and adopting and improvement of critical evaluation skills (59.6%).

Students showed a high level of satisfaction with their relationship with peers; 44.2% of the participants agreed and 19.2% strongly agreed that peer teaching increased interactions among students.

Using peer teaching, students received answers to their educational problems in the shortest possible time, 30.8% of students agreed and 13.5% of them strongly agreed with this issue. Overall, 69.3% of the students were highly satisfied with the friendly and comfortable atmosphere of the class, in which they could ask their questions and receive the answers. The lack of taking the class seriously by some students made more than half of the students dissatisfied (57.5%). Regarding the satisfaction with peer teaching, 53.8% of students were highly satisfied with the level of difficulty and comfort of the subjects presented by their peers considered according to the level of understanding of students.

Table 1. Demographic characteristics of health information technology students participating in peer teaching

Variable	Mean ± SD	
Gender	Female (44 students)	Male (8 students)
Age (18 to 29 years)	12.75 ± 2.24	22.63 ± 3.66
Number of semesters (1-8)	4.32 ± 2.66	4.65 ± 2.47
Time spent in class (1-30 hours)	14.39 ± 10.54	13.75 ± 12.66

Table 2. The mean scores of learning improvement and satisfaction with peer teaching

Category	Mean ± SD
Learning Improvement	
Development of individual student skills	3.43 ± 1.05
Improvement of student learning	3.34 ± 1.08
Improvement of the peer performance	3.37 ± 1.03
Learners' satisfaction with peer teaching	
Knowledge transferred to the student	3.31 ± 1.09
Interaction between learner and teacher	3.52 ± 1.10
Atmosphere and conditions of the class	3.21 ± 1.15

Students' satisfaction (42.8%) with confidence in the accuracy of the presented information was at a low level, which can negatively affect their learning.

The results of the chi-square test showed that students who attended more classes in peer classes were more satisfied and their learning was improved (P= 0.001); whereas there was no significant relationship between age, gender, and the number of spent semesters with students' satisfaction and learning improvment (P = 0.08).

Discussion

The results of the present study showed that from the students' point of view, peer teaching leads to an learning improvement. Also, the students were satisfied with the training provided by their peers. The results showed the role of peers in teaching interdisciplinary fields of study. In general, peer teaching had a positive effect on various educational-personality aspects of students and peers as teachers.

In a study carried out by Stone et al. , researchers investigated the effect of peer teaching on nursing students and selecting an effective method for learning. They showed the special role of learning from peers in nursing graduate students and peers had a great effect on increasing learning and improving knowledge (16), which was consistent with the findings of the present study. The results of the present study showed that providing explanations by the teacher at the level of students' learning ability, leads to the improvement of learning by peers. The same as our findings, Hanson et al. concluded that peer teaching could lead to a better understanding compared with the teacher due to the same intellectual level in learner and peer (17).

According to the results of the present study, one of the effective factors in promoting learning by peers is the involvement of students in the process of education and enthusiasm to continue their education. In line with the finding of our study, the results of Speyer et al.'s research showed that students gain a good insight into their performance by peer evaluation, which leads to student participation in the teaching process (18). From the perspective of students participating in the present study, peer teaching leads to increasing student responsibility, motivating students, and involving them in the education process. In this regard, the results of study by O'Keefe et al. showed that students' relationships with peers can result in cooperation and mutual trust and overcome participants' concerns (19).

The results of the present study showed that students were highly satisfied with peer teaching, which can be due to the free time of the peer student that makes it possible to solve problems and answer students' questions in many situations outside of class. Also, students' communication with peer students is not limited to the university, and students can receive answers to their educational questions outside the university and classroom through social network platforms, such as Telegram from peer students.

Ross and Cameron concluded that using peer teaching, the student can ask their questions and receive answers and it also increases students' self-confidence (20). In the present study, participants believed that peer teaching increased their self-confidence. Communication between students and their peers was not limited to the university environment and they could establish communication through social networks. Therefore, they can increase interactions, and peers can solve problems and answer students' questions in the shortest time. Also, the use of social networks to transfer information and making coordination in holding workshops, makes it easy to transfer the information. It also makes students able to receive information about the place and time of the class and the subjects presented during the semester.

One of the factors that lead to students' dissatisfaction with peer teaching was the uncertainty about the accuracy of the subjects presented by peers. The same as our findings, O'Keefe et al. also reported concerns about the strict supervision of peer student teaching by medical professors; thus, professors were reluctant to use peer teaching (19). However, in the present study, the peers were highly experienced in the presented courses. For courses, such as data structure and programming, we used undergraduate computer engineering students who had sufficient knowledge regarding the content of the course. For courses, such as medical terms, graduate students in paramedical and health information technology were employed.

Limitations

The present study had two limitations. It was not mandatory to complete the questionnaire; thus, we lost some samples. The lack of participation of peer students in the final exam was another limitation. It is suggested that to increase students' motivation and take the class

seriously, a share of the final grade of the course should be allocated to the peer student who is doing the teaching process. Also, in order to increase the motivation of the peer student, it is better to issue a certificate of participation in teaching, which will help enrich their resumes for their future careers.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804467].

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Conflict of Interests: All authors have no potential conflicts of interest.

Ethical Approvals: All students were assured that their answers remain confidential and only for research purposes. The present research was approved (IR.KMU.REC.1398.446) by the ethics committee of Kerman University of Medical Sciences.

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Research Article

The Relationship between Psychological Hardiness and Academic Enthusiasm and Vitality in Students of Arak University of Medical Sciences

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Abstract

Background: Psychological hardiness as a protective factor plays an essential role in how students face academic challenges. Paying attention to academic enthusiasm and vitality due to their strong impact on various aspects of students' academic life is of great importance.

Objectives: The aim of this study was to investigate the relationship between psychological hardiness and academic enthusiasm and vitality in students of Arak University of Medical Sciences.

Methods: This descriptive-correlational study was conducted in 2017-2018 on 341 students of Arak University of Medical Sciences selected by stratified random sampling based on gender. Data were collected using the Ahvaz Hardiness Inventory (AHI), Academic Enthusiasm Inventory developed by Fredricks et al., and Academic Vitality Scale. Data were analyzed using SPSS software.

Results: There was a negative and significant relationship between psychological hardiness and academic enthusiasm (r=-0.17, P=0.002) and vitality (r=-0.38, P=0.001). Also, a positive and significant relationship was observed between academic enthusiasm and academic vitality (r=0.15, P=0.008). There was a significant difference between the mean scores of academic vitality of male and female students.

Conclusion: In order to increase the quality of academic life of medical students, it is essential to teach the components of psychological hardiness, academic enthusiasm, and academic vitality to students.

Keywords: Psychological Hardiness, Academic Enthusiasm, Academic Vitality

Background

Academic life is one of the most important periods of a person's life that affect an effective education and learning (1). Psychological hardiness is one of the personality traits that is considered as a moderator of stress (2). It is derived from existential psychology (3). Kobasa believes that psychological hardiness is a personality trait, by which a person can effectively solve individual challenges and stresses and is used as a source of resistance and as a protective shield in the face of stressful life events (4). Psychological hardiness consists of three components: commitment (the opposite of self-alienation), control (the opposite of helplessness), and struggle (the opposite of feeling threatened or feared). Psychological hardiness is a protective factor that affects how learners face academic challenges, lack of preparation, and other traumatic experiences (5).

Academic enthusiasm is one of the key factors that affect students' success (6) and reflects the quality of the effort a learner makes regarding purposeful educational activities to directly play a role in achieving the desired results (4).

Linking student behaviors (including study habits, participation with peers, interaction with faculty members, time spent on activities, and enthusiasm) and the university condition (including experiences by the first-year students, academic support, the university environment, peer support, educational approaches, etc.) are factors that

result in enthusiasm in students and success (7). Academic enthusiasm is a multidimensional structure. It involves the use of cognitive and metacognitive strategies in learning. Motivational enthusiasm (emotional) consists of three components of feeling, value, and emotion and includes loving the educational environment and interest in university-related activities. Behavioral enthusiasm includes active presence with enthusiasm in the educational environment (4).

The results reported by Safari et al. showed that there is a significant relationship between psychological hardiness and academic enthusiasm. Therefore, it can be assumed that by an increase in psychological hardiness, the desire to study also increases (4). Jalilian et al. also concluded that there is a positive and significant relationship between academic enthusiasm and psychological hardiness (5). Although no international (outside Iran) studies were found to examine the relationship between psychological hardiness and academic enthusiasm, numerous studies on psychological hardiness have confirmed its impact on various academic subjects. Crust et al. found that psychological hardiness has a positive effect on academic achievement and increases the level of education (8). According to Kamtsios and Karagiannopoulou, components of psychological hardiness have positive effects on doing assigned tasks, purposeful learning of learners, and coping with academic failures (9).

Academic vitality is another factor influencing academic achievement, which reflects academic resilience in the context of positive psychology (1). Martin and Marsh defined academic vitality as the pervasive ability to deal with academic barriers and challenges (10). Academic vitality is a simple and useful way to understand and conceptualize students' mental health during education (11). Psychological factors are predictors of vitality, of which academic enthusiasm can be mentioned (12). Azimi et al. concluded that academic enthusiasm can positively predict academic vitality (13). Jalilian et al. also showed that both psychological hardiness and academic enthusiasm can predict academic vitality (5). Also, Sadri Damirchi et al. indicated that psychological hardiness has a positive and significant effect on the predictive power of students' academic vitality and the commitment dimension has more predictive power (14). Gasiewski et al. concluded that academic enthusiasm improves academic performance and increases learners' participation in positive academic activities (15). Also, Baker et al. found that there is a positive and significant relationship between academic enthusiasm and academic performance (16). According to Yarahmadi et al., the educational vitality training program is effective on academic performance, academic enthusiasm, and academic vitality. In other words, the implementation of this program can increase the mean score of these three dependent variables (17).

Objectives

Medical students face several academic and job stresses daily that endangers their mental and physical health and also affects their academic performance. Therefore, Different dimensions of students' educational status should be examined. Identifying the factors affecting the academic achievement and performance of students creates a suitable approach for planning, development, and evolution of educational programs, by which the best possible results can be obtained for both the desired educational development as well as for the students. The aim of this study was to investigate the relationship between psychological hardiness and academic enthusiasm and academic vitality among students of Arak University of Medical Sciences.

Methods

This descriptive-correlational study was conducted in 2017-18 on students of Arak University of Medical Sciences. Sampling was done by stratified random sampling. After coordination with the Vice-Chancellor for Education, the total number of students studying (3055 students) was obtained. Then, the total number of students in each faculty was determined based on gender (Faculty of Medicine: 1136 students, Faculty of dentistry: 210 students, Faculty of Paramedical Sciences: 322 students, Faculty of Rehabilitation: 187 students, Faculty of Health: 407 students, and Faculty of Nursing and Midwifery: 793 students). Using Morgan and Krejcie formula, the number of questionnaires that should be distributed in each faculty and according to gender among students was determined. (Faculty of Medicine: 127 questionnaires, Faculty of dentistry: 23 questionnaires, Faculty of Paramedical Sciences: 36 questionnaires, Faculty of Rehabilitation: 21 questionnaires, Faculty of Health: 45 questionnaires, and Faculty of Nursing and Midwifery: 89 questionnaires). Finally, 341 students from six faculties (medicine, dentistry, nursing and midwifery, paramedical sciences, health, and rehabilitation) were selected according to gender. The inclusion criteria were willingness to complete the questionnaire voluntarily and with complete satisfaction. Reluctance to continue cooperation and failure to complete the questionnaire were also considered as exclusion criteria.

Three questionnaires were used to collect data as follows:

Ahvaz Hardiness Inventory (AHI): This questionnaire has 20 items and each item has four options (never: zero, rarely: 1, sometimes: 2, most of the time: 3) and was designed and validated by Kiamarsi et al. (18). The scores range from zero to 60, which is obtained from the sum of the total scores. A score of 0 to 20 indicates high psychological hardiness, a score of 20-40 indicates moderate psychological hardiness, and a score of 41-60 was considered low-level psychological hardiness. It should be noted that those who obtain a lower score or a score close to zero, have higher psychological hardiness and higher scores or scores close to 60 reflects a lower level of psychological hardiness. Therefore, the maximum score of the questionnaire is 60 (minimum psychological hardiness) and the minimum score is zero (maximum psychological hardiness). In the AHI questionnaire, questions 1 to 9 as-

sess commitment, questions 10 to 16 assess control, and questions 17 to 20 measure fighting. The designers of the scale reported the reliability coefficients using test-retest and Cronbach's alpha as 0.84 and 0.76, respectively. The validity of the scale was calculated by concurrent validity using the general anxiety scale, depression questionnaire, and Maslow self-efficacy questionnaire and the obtained coefficients were 0.65, 0.67, and 0.62, respectively (18). Safari et al. also reported a total reliability of 0.69 (4).

Academic Enthusiasm Scale: This scale was first developed by Fredricks et al. and has 15 items, which measures the subscales of behavioral (questions 1 to 4), emotional (questions 5 to 10), and cognitive (questions 11 to 15) enthusiasm. The answers are scored between 1 and 5 (never to forever). The minimum and maximum scores and the cut-off point of the whole scale are 15, 45, and 75, respectively, and the higher the subject's score, the greater the academic enthusiasm. The designers of the scale reported its reliability coefficient as 0.86 (19). The validity of this questionnaire was confirmed in the research by Abbasi et al. and the total reliability was 0.66 (7).

Academic Vitality Questionnaire: Dehghanizadeh and Hossein Chari developed this questionnaire according to the Academic Vitality Scale designed by Martin and Marsh (4 items) with 9 items. This questionnaire is scored on a five-point Likert scale (from strongly disagree (1) to strongly agree (5) and its score is obtained by summing the scores of the items. Therefore, scores range between 9 and 45. A score of 9-21 indicates low academic vitality, a score of 22-33 indicates moderate academic vitality, and a score of 34-45 indicates high academic vitality. The validity of the scale was confirmed by the confirmatory factor analysis and reliability was obtained by Cronbach's alpha coefficient (0.80) and test-retest (0.73) (20). The reliability of the Academic Vitality Questionnaire was reported to be 0.83 in the study by Veiskarami and Yousefvand (21).

The present study approved by the ethics committee of Arak University of Medical Sciences (Ethics code: IR.ARAKMU.REC.1396.66). The schedule of classes was obtained from the officials of the Education Administration of the six faculties to distribute the questionnaires at the appropriate time. The questionnaires were then distributed by the researchers among the students of the faculties and in the classroom (the classes were randomly selected and necessary coordination was made with professors). First, the purpose of the research was explained and after obtaining their consent and assuring the students to keep personal information confidential, they participated in the study voluntarily and with full consent. In order to comply with ethical considerations, the student's name and surname were not asked.

Pearson correlation coefficient test was used to determine the degree of correlation between research variables and the Independent t-test was used to determine the difference between mean scores (between both genders). Finally, the data were analyzed by SPSS software version 23 (version 23, IBM Corporation, Armonk, NY).

Results:

Out of 341 questionnaires distributed, 320 questionnaires were analyzed and 21 questionnaires were discarded due to no complete responses (response rate: 93.84%). Of students who entered the analysis, 185 students (57.9%) were female and 135 students (42.1%) were male. Demographic characteristics of the participants, including gender, marital status, residence status, and faculty are presented in Table 1. Most of the participants were in the age group of 18 to 20 years.

The mean score of psychological hardiness of students was 25.99 ±13.21 and was at a moderate level. The mean score of students' academic enthusiasm was 40.52 ±8.66 and below the average. Also, the mean score of participants' academic vitality was 29.13 ± 8.69, and at a moderate level. The mean score of psychological hardiness, academic enthusiasm, and academic vitality by subgroups are presented in Table 2.

There was a significant negative correlation between the mean score of psychological hardiness and academic enthusiasm and academic vitality so that by an increase in psychological hardiness, students' academic enthusiasm increased. There was a poor positive correlation between the mean score of academic enthusiasm and academic vitality so that by an increase in students' academic enthusiasm, their academic vitality also increased (Table 3).

Table 1. Demographic characteristics of the participants

Variable	Groups	No. (%)
Gender	Female	185 (57.9)
	Male	135 (42.1)
Marital status	Single	284 (89.0)
	Married	36 (11.0)
Residence status	Dormitory	183 (57.1)
	Inhabitant	137 (42.9)
Faculty	Medical	105 (32.9)
	Dentistry	28 (8.8)
	Nursing and Midwifery	95 (29.7)
	Paramedical Sciences	34 (10.6)
	Health	37 (11.5)
	Rehabilitation	21 (6.5)
Total		320 (100)

According to Table 4, there was only a significant difference between the mean score of academic vitality according to gender; thus, male students had higher academic vitality than females.

According to the multiple linear regression model, there was no significant relationship between psychological hardiness (dependent variable) and academic enthusiasm, gender, and age (P <0.05), however, there was a significant relationship between psychological hardiness and academic vitality (P <0.05). According to Table 5, by an increase in academic vitality, psychological hardiness score decreased by 0.6. Accordingly, by increasing psychological hardiness of students, their academic vitality also increased.

Discussion

The aim of this study was to investigate the relationship between psychological hardiness and academic enthusiasm and academic vitality of students of Arak University of Medical Sciences. The results showed that there was a significant negative relationship between psychological hardiness and academic motivation so that by an increase in psychological hardiness (lower scores), students' academic motivation increases. This finding was consistent with the results of studies by Safari et al. on students of Birjand University of Medical Sciences (4), Jalilian et al. on high school students in West Azerbaijan province (5). Also, the results of Malekpour et al. research conducted at Alborz University of Medical Sciences showed that psychological hardiness has a direct effect on academic achievement (22).

Mazloom et al. conducted a study on the students of Payame Noor University in Ahvaz and concluded that there is a positive and significant relationship between

Table 2. The mean score of psychological hardiness, academic enthusiasm, and academic vitality by subgroups

Variable	Groups	Psychological hardiness Mean (SD)	Academic enthusiasm Mean (SD)	Academic vitality Mean (SD)
Gender	Female	25.70 (12.97)	41.23 (7.14)	27.65 (8.89)
	Male	26.37 (13.56)	40.31 (9.11)	31.10 (8.04)
Marital status	Single	26.37 (13.33)	41.06 (7.95)	29.23 (8.73)
	Married	23.00 (11.97)	39.68 (8.08)	28.37 (8.01)
Residence status	Dormitory	25.55 (12.54)	40.82 (7.81)	29.16 (8.27)
	Off-campus students	26.58 (14.07)	40.89 (8.31)	28.96 (9.30)
Faculty	Medical	23.65 (12.31)	40.58 (7.73)	28.82 (9.40)
	Paramedical Sciences	30.11 (12.98)	43.42 (6.50)	30.28 (7.68)
	Rehabilitation	35.52 (10.29)	41.16 (6.37)	27.50 (9.39)
	Dentistry	27.25 (13.23)	39.96 (9.36)	29.53 (8.39)
	Nursing and Midwifery	23.77 (13.79)	40.30 (8.85)	29.63 (8.28)
	Health	28.55 (12.61)	41.21 (7.46)	27.68 (8.63)
Total		25.99 (13.21)	40.52 (8.66)	29.13 (8.69)

Table 3. Correlation coefficients between subjects' scores in psychological hardiness, academic enthusiasm, and academic vitality

Variables	Psychological hardiness	Academic enthusiasm
Academic enthusiasm	r=-0. 17 P=0.002*	--
Academic vitality	r=-0. 38 P=0.001*	r=0.15 P=0.008*

Table 4. The comparison of the mean score of psychological hardiness, academic enthusiasm, and academic vitality based on gender (independent t-test)

Variables	Females Mean (SD)	Males Mean (SD)	t	P-value
Psychological hardiness	25.70 (12.97)	26.56 (13.44)	-0.56	0.57
Academic enthusiasm	41.23 (7.14)	40.24 (9.12)	1.07	0.28
Academic vitality	27.65 (8.89)	31.14 (8.05)	-3.53	*0.001

*P<0.01.

Table 5. Results of Multiple linear regression regarding psychological hardiness (dependent variable) and academic enthusiasm, academic vitality, age, and gender (independent variables)

Regression parameters	B	Beta	t-value	P-value
Constant value	47.84	-	9.70	0.001
Academic enthusiasm	-0.17	-0.10	-1.92	0.05
Academic vitality	-0.58	-0.37	-6.73	0.001
Age	-0.69	-0.04	-0.82	0.41
Gender	2.36	0.08	1.60	0.11

psychological hardiness and students' academic performance and psychological hardiness predicts students' academic performance (23). Also, Crust et al. found that the presence of psychological hardiness has a positive effect on academic achievement and increases educational progress (8). Kamtsios and Karagiannopoulou concluded that the components of psychological hardiness have positive effects to deal with tasks, purposeful learning of learners, and coping with academic failures (9), which is consistent with the findings of the present study.

Psychological hardiness, as a protective factor, affects how students face academic challenges, lack of preparation, and other undesirable experiences. Students with a high level of hardiness are able to maintain their motivation, perseverance, and effort at a high level despite obstacles and difficulties, and as a result, have a high academic performance. In general, it can be inferred that people with high hardiness, even if they are not interested in an activity, such as acquiring knowledge, use strategies to turn these activities into more positive ones and enjoy doing them. They are committed and struggling, and control over the events around them due to the characteristic of psychological hardiness in studying and acquiring science and knowledge (4).

Based on the results of the present study, a negative and significant relationship was observed between psychological hardiness and academic vitality so that by an increase in psychological hardiness (lower scores), students' academic vitality increases. This finding was in line with the findings of Sadri Demirci et al. (14) and Jalilian et al. (5).

The results of Karagiannopoulou and Kamtsios research showed that the commitment dimension acts as a single entity against stressors (24). Subramanian and Vinothkuma i concluded that psychological hardiness leads to a greater sense of self-esteem in individuals and ultimately leads to their resistance to the stresses of work and study and increases their vitality (25). The results of these two studies (25, 24) were consistent with the findings of the present study.

Hardiness, as a personality trait, creates a certain inner attitude in students that affects the way they deal with various life issues. It makes them realistic and high-minded facing psychological pressures. Fighting makes them able to consider even unpleasant events as an opportunity to learn, not a threat to safety. This type of coping with difficult and unpleasant events prevents or shortens the negative consequences of stressful events and, as a result, provides the background for mobility, interest, and academic vitality in learning. Hardiness is not only effective in maintaining health, increasing performance despite stressful situations, and quality of life but also it causes stubborn people not to consider themselves victims of change and, on the contrary, to consider themselves the determinants of the results of change (14).

Another finding of the present study was a positive and significant relationship between academic enthusiasm and academic vitality so that with an increase in students' academic enthusiasm, their academic vitality also increases. This finding is in line with the results of research by Jalilian et al. (5) and Azimi et al. (13), which showed that there is a positive and significant relationship between academic enthusiasm and all its dimensions, and academic enthusiasm can positively predict academic vitality. This is also in line with the results Casuso-Holgado et al. who concluded that academic enthusiasm was a positive factor in students' academic achievement (26). Academic enthusiasm is one of the psychological precedents affecting academic vitality (27), which is an important mediator of academic achievement, social behavior, and continuing education (28). Given that academic enthusiasm is a multidimensional structure, including cognitive, enthusiasm, and behavioral dimensions, on the one hand, the cognitive dimension makes students to use several cognitive and metacognitive strategies in the learning process. On the other hand, the behavioral dimension increases learners' efforts, perseverance, and asking for help from others to do homework. The enthusiasm dimension also increases the educational environment for students leading to the growth of their cognitive enthusiasm for academic and scientific activities, protects students from negative situations, such as fatigue and burnout, and ultimately results in academic vitality (13).

According to the results of the present study, only the academic vitality was associated with gender, and the academic vitality score of male students was higher than female students, which was consistent with the results of Sadeghi and Khalili Geshnigani (29) and Martin and Marsh (10). Male students are more capable of dealing with academic barriers and problems and are more resilient to academic stress and challenges, especially in medical sciences, in which persevere in pursuing a goal, positive attribution about himself (considering positive consequences of behavior related to his ability and effort), and enduring problems are needed (29).

One of the limitations of the present study was the use of the correlational methodology. Therefore, the obtained relationships cannot be considered as causal relationships. Self-reporting was used to collect data and samples were limited to students of Arak University of Medical Sciences, which limits the generalization of the results. Lack of studies on the relationship between the studied variables as well as the lack of appropriate and comprehensive literature are other limitations of the research. However, the findings of the present study can be used to address the lack of information resources in this field. Also, conducting research on students in other fields of study and other cities and comparing their results with each other or with the results of the present study can lead to useful results and is suggested.

Conclusion

Students of medical universities and health-related fields are one of the most important groups of students and graduates in Iran; because these students deal with the physical and mental health of the people. Therefore, paying attention to the factors affecting the knowledge and

academic achievement of this group is one of the necessities of all universities of medical sciences. According to the results of the present study, there was a significant relationship between the studied variables. Also, the psychological hardiness and academic vitality of students of Arak University of Medical Sciences was at a moderate level, and below than moderate level in terms of academic enthusiasm. Therefore, identification of the psychological aspects of students and their reactions to specific situations can act as a powerful teaching aid tool and lead to increased learning; because it can increase the performance and level of mental health of students despite experiencing stressful and stressful situations. On the other hand, academic vitality, which is one of the most important factors affecting the health of the educational context of the educational system in each country, can be used as part of positive academic thinking programs to improve positive academic characteristics, especially academic enthusiasm, which is an important mediator of academic achievement and continuing education. Student enthusiasm is an important goal of education in the university and in the classroom in general, and in academic assignments in particular; because it leads to social and cognitive growth and academic achievement. Therefore, paying attention to academic enthusiasm is very valuable and important not only because of an educational goal but also because of its logical relationship with educational outcomes. Thus, it is suggested to consider training courses for medical students who should pass a stressful and long-term educational process.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804435].

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Research Article

Time Management and Metacognitive Strategies in Graduate Students of Kerman University of Medical Sciences

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Abstract

Background: Time management and metacognitive strategies are the most important academic skills of students to achieve scientific success.

Objectives: The current study aimed at comparing the effect of the two widely used teaching methods, role-playing and lecturing, on learning the communication skills among health workers of Kerman health centers in Iran, 2018.

Methods: This descriptive-analytical cross-sectional study was conducted in 2019 on 322 graduate students. The time-management questionnaire developed by Britton and Tesser and the Metacognitive Awareness Inventory Schraw and Dennison were used to collect data. Data were analyzed using descriptive statistics (frequency, mean, and standard deviation) and Pearson correlation coefficient and Multivariate Linear Regression by SPSS software.

Results: The mean score of time management in students was 5.24±32.41 (14-70) and the mean score of metacognitive strategies was 11.56±148.97 (52-260), which showed the -moderate level of students regarding these factors. A positive and significant relationship was observed between time management and metacognitive strategies (P <0.050).

Conclusion: Time management and metacognitive strategies of graduate students of Kerman University of Medical Sciences is at a moderate level. Due to the relationship between time management and metacognitive strategies, it is recommended to pay attention to metacognitive components in teaching and learning methods. It is also suggested to plan for the creativity and innovation of these students to use their ability to achieve organizational goals.

Keywords: Time Management, Metacognitive Strategies, Graduate Students, Kerman University of Medical Sciences

Background

An individual's success in achieving his goals depends to a significant extent on the effective use of time (1). Time management refers to those skills and abilities that lead to optimal time control by the individual. Such a person often does his activities on time without a delay (2). The view indicating how people decide to use their time forms the core of time management theory (3). Time management represents the presentation of scientific and effective methods of saving time and controlling it to achieve greater success in work and life and includes goal setting, and identifying and observing priorities (4). Time is considered a strategic source for advancing human goals and aspirations (5).

Studying the behavior of successful and effective people shows that time has played an irreplaceable role in their success and it has been considered before doing their tasks. They also try to manage time by eliminating useless and irrelevant activities. In this regard, Misra and McKean believe that good time management reduces stress (6). Kelly (7) and Laurie-Ann and Hellsten (8) stated that time is important for students because it helps productivity. Some believe that successful time management is a key factor in success in life, including success in work and education (9). Therefore, considering time management in students causes them to learn better and more appropriately and

use metacognitive skills.

The relationship between metacognition, as a common concept in education, is associated with the learning process. Researchers and educational experts are widely interested in the type and level of knowledge of learners, which requires the emphasis of educational systems on metacognitive education and how to learn so that learners can think independently in dealing with various issues (10). Metacognitive strategies are of great importance in order to achieve an effective educational system and using these strategies increases learning ability. Using metacognitive strategies, the learning process is completed ineffective methods are identified. Therefore, people have become strategic learners (11). Each learning strategy aims at affecting the learner's inspirational and emotional status, how to select, organization, or incorporating newly obtained information (12). The results of Pintrich and DeGroot's research showed that learners who engage cognitively in their homework perform better than learners who are reluctant to use these strategies. Also, metacognitive strategies and consistency in homework are the best predictors of academic achievement (13). In this regard, Izawa believes that effective time management is one of the basic factors in learning (14).

Objectives

The necessity of having these strategies are of great importance for graduate students who are going to play important roles, such as being managers, teachers, and researchers in the society in administrative, educational, and research positions in the future. Accordingly, the present study was conducted to investigate time management, creativity and metacognitive strategies.

Methods

This descriptive-analytical and cross-sectional study was done in 2019 to investigate time management and metacognitive strategies in graduate students of Kerman University of Medical Sciences. The statistical population included 224 Ph.D. and 717 students with master's degree studying in the faculties of medicine, pharmacy, management and information, Iranian medicine, nursing and midwifery, dentistry, and health. Using Equation (n=sample size, α = %05 (type I error), d = 0.8 (maximum permissible error), σ = 7.33 (Standard deviation),322 students were determined to participate in the study. (15)

$$n=\frac{Z_{1-\frac{\alpha}{2}}^{2} * s^{2}}{d^{2}} = \frac{(1.96)^{2} * (7.33)^{2}}{(0.8)^{2}} = 322$$

The multi-stage sampling method was used. According to the frequency of master's (77%) and Ph.D. (23%), respectively 245 and 77 students were selected. Each faculty was considered as a cluster. Then, according to their proportion in each faculty, the number of samples was determined. In the next step, they were randomly selected (a draw from the list of students provided by the Education Administration of the faculty) from each faculty and entered the study.

The data were collected using two self-administered questionnaires. Time management was assessed by the 14-item time-management questionnaire developed by Britton and Tesser and scored on a five-point Likert scale from never (score 1) to forever (score 5) with a minimum score of 14 and a maximum score of 70. The Cronbach's alpha coefficient for the whole scale was reported 0.77, and also 0.81 and 0.48 for the short-term and long-term planning subscales, respectively (16). The scale was translated by - Sevari and after administration on students of Payame Noor University of Ahvaz, the alpha coefficient of 0.72 was obtained. Also, the validity of the structure was confirmed (17).

The Metacognitive Awareness Inventory (MAI) developed by Schraw and Dennison was used. This scale includes 52 items and measures distinct factors, including two basic dimensions of metacognition (knowledge and regulation) as eight - subscales. Knowledge includes three subscales of "declarative, procedural, and conditional ", and factors related to the regulation of cognition include five subscales sub-factors of "planning, information management strategies, monitoring, debugging strategies, and learning process evaluation". Internal consistency of the scale has been reported between 0.88 and 0.93 (18). In Iran, Delavarpour reported the correlation coefficient of the two general dimensions of knowledge and regulation of cognition as 0.86 and 0.95, respectively. MAI is scored on a five-point Likert scale, from one (strongly disagree) to five (strongly agree). Also, the lowest and highest scores of the whole questionnaire are 52 and 260, respectively (19).

The Kolmogorov-Smirnov test was used to evaluate the normality of the data, and to examine the relationship between variables, Pearson correlation coefficient, and Multivariate Linear Regression were used. The data were analyzed by SPSS software version 22 (version 22, IBM Corporation, Armonk, NY).

The present study was approved by the ethics committee of the Vice Chancellor for Research and Technology of Kerman University of Medical Sciences (IR.KMU.REC.1397.511).

Results

In the present study, 322 students participated, of whom 72.7% were female and 52.8% were married. Also, 45.3% of the students had a retired father and 55.6% had a housewife mother. In terms of education, 74.8% of students' father and 67.7% of students' mother had educational level equal or higher than diploma. The age of the father (84.5%) and mother (55.0%) of most of them was 50 years and older.

First, the normality of the data was checked using the Kolmogorov-Smirnov test and due to the normal distribution of data, parametric tests were used. Based on the objectives of the study, first, the average scores of time management and metacognition strategies were calculated, and then the quartiles were determined. Based on the obtained data, the scores were in the third quartile, which means that in the present study, the average scores in both variables were moderate level and in the same direction

(Table 1).

To investigate the relationship between time management and metacognitive strategies, the Pearson correlation coefficient was used, which was statistically significant (r = 0.36, P = 0.0001). Also, the results showed that there was a positive and significant correlation between the dimensions of these variables (P> 0. 0. 500) (Table 2).

Regarding the relationship between time management and individual characteristics, the results of univariate linear regression analysis showed that there was a significant relationship between age and time management score. The mean score of time management in the age group of 29-38 was lower than the age group of 18-28 years and over 38 years, (P = 0.009). The results of univariate linear regression analysis showed that there was no significant relationship between gender, educational level, marital status, and parents' education, occupation, age and time management score. Regarding the effect of individual characteristics on metacognitive strategies through Linear Regression analysis, no significant relationship was observed (P <0.05).

Discussion

The results showed that the mean score of time management in graduate students is at a moderate level. The results of some relevant studies confirm the findings of the present study.

Sohrabi et al. reported a moderate level of time management in students. They also stated, students can manage their time through their education by strengthening their inner abilities and time optimization (20). Tamanaifar and Ghasemi assessed time management skills in students and concluded it is at a desirable level. They also reported that individual time management skills are the key to success in various aspects of life, including success in work and education. The individual skills for time management are an important factor in academic achievement (21). The results of Hamzah et al. at the University of Utara, Malaysia showed a desirable level of time management in the students, which makes students more successful (22). It to make graduate students pay more attention to their time and schedule their activities. Given the students' educational background and academic experiences, these results are expected.

The results showed that the mean score of metacognitive strategies was at a moderate level. Ghomi et al. investigated the relationship between metacognitive strategies and academic performance in students of Qom University of Medical Sciences and reported a moderate level of this variable in students (23). Safari and Mohammad Jani examined these strategies in Islamic Azad University, Marvdasht Branch, and reported skills (24), which is not consistent with the results of the present study. The discrepancy between the results can be due to the samples and the geographical region because the present study was conducted on graduate students of a public university with high educational and research background than undergraduate students of Islamic Azad University.

The results Baradaran et al. indicated that medical students had a desirable level of metacognitive strategies and also, being aware of planning and purposeful approaches in learning explain the academic achievement of medical students more than other metacognitive strategies (25). Graduate students seem to be more skilled due to the research- and student-centered methods of educational methods. Yang and Bai investigated the use of metacognitive strategies by Ph.D. students at Australian universities and found that students have a wide range of these strategies to improve learning efficiency and facilitate the development of their competencies; however, these skills need to be planned, monitored, and evaluated (26).

A limited number of studies have studies published in Iranian or international journals and scientific databases have addressed the correlation between the studied variables in this study. Due to the direct and significant relationship between two variables, with the increase of metacognitive strategies among graduate students, time management also increases. In their study, Imani et al in Takab University, reported a direct relationship between metacognitive strategies and time management (11), which is consistent with the results of the present study.

Table 1. Central tendency and dispersion of time management and metacognitive strategies of the scores of graduate students

Variable	Min number	Max score	Mean ± SD	First quarter	Second quarter	Third quarter	Fourth quarter
Time management	14	70	32.41 ± 5.24	14	28	42	56
Metacognitive strategies	52	260	148.97 ± 11.56	52	104	156	208

Table 2. Relationship between the dimensions of time management and metacognitive strategies in graduate students

		Metacognitive strategies dimensions							
Time management dimensions		Declarative knowledge	Procedural knowledge	Conditional knowledge	Planning	Information management strategies	Monitoring	Debugging strategies	Learning process evaluation
Short-term	r	0.16	0.19	0.26	0.34	0.13	0.27	0.19	0.18
	P	0.04	0.10	0.001	0.001	0.15	0.001	0.001	0.01
Long-term	r	0.23	0.23	0.18	0.30	0.13	0.16	0.35	0.17
	P	0.001	0.001	0.010	0.001	0.16	٠0.03	0.001	0.02

It seems that the optimal use of time in learning and studying by students can be influenced by their used approaches. Study strategies are methods and techniques that help them how to study effectively, leading to an increase more confidence and pleasure . Also, the use of metacognitive strategies helps learners to manage and control their time effectively (27).

In the present study, there was a positive relationship between students' age and time management and also between metacognitive strategies and time management. Because graduate students, especially Ph.D., are older than other students, the obtained results are not far from expected. Also, because of the methods, by which graduate courses are presented and also the student-centered courses, graduate students should plan for their projects and assignments and make the most of the available time. Hence, the use of metacognitive strategies is more common. In relevant studies, these issues have not been addressed.

Conclusion

The results of the present study showed that time management and metacognitive strategies were at a moderate level. Because the statistical population included graduate students, the results were expected. Therefore, it is suggested that planning for innovation and using their potentials of these students be considered because they are the country's elite. Finally, it is suggested that the present study be conducted on undergraduate students, as well.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804238.

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Reaserch Article

Developing a Model for Empowerment of Faculty Members in Islamic Azad University: A Qualitative Study

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Abstract

Background: Faculty members are one of the most valuable vital factors of the universities. Therefore, paying attention to their empowerment is an inevitable necessity.

Objectives: The purpose of this study was to develop a model for empowerment of the faculty members of the Islamic Azad University.

Methods: Th s qualitative study was conducted using the grounded theory approach. Using the purposive sampling method, 13 faculty members of Islamic Azad University were selected and subjected to semi-structured interviews. Strauss and Corbin method was used to analyze the interviews in three stages of open, axial, and selective coding.

Results: Based on the obtained data, 11 main categories, and 29 subcategories were extracted as dimensions and components of the empowerment of the faculty members. The dimensions of the conceptual model of research were formed considering causal conditions, axial phenomena, contextual factors, intervening factors, strategies, and consequences.

Conclusion: Considering the position of faculty members in the development and effectiveness of the universities, it seems that the results of the present study can be useful in promoting the capabilities and competencies of faculty members.

Keywords: Empowerment, Faculty Member, Effective Factors

Background

In today's business world, in which competition is rapidly increasing, the principles of excellence have also changed (1). Empowerment is a strategy for the development and prosperity of an organization (2) and the staff is the main factor for empowerment (3). Thus, organizations have gradually realized the importance of empowerment of their employees by providing opportunities to participate in the decision-making process and independence (4); because unqualifi d employees will not be able to meet organizational challenges, adapt to complexities, and keep up with changes in innovations (5). Empowerment is inevitable (6). Lack of effective employee empowerment programs is associated with negative results, such as huge differences between employees in the organization, uncoordinated personnel systems, the stress in the workplace, reduced employee creativity, reduced organizational commitment of employees, and reduced job satisfaction and performance (7).

Although many organizations have paid considerable attention to their human resources considering empowerment (8), there is no consensus on how to defi e, conceptualize, or measure it (9). The term "empowerment" often has positive implications (10). The World Bank defi es empowerment as the process of increasing the capacity of an individual or group to make targeted choices and turn those options into desired actions and outcomes (11). Empowerment in education means that all faculty members are given the opportunity to participate in the decisions that affect them (12). Empowerment of professors also refers to a set of activities that an educational institution performs in order to prepare its faculty members to play their professional roles (13). Although the diversity in literature regarding empowerment has strengthened

its content, it has also led to a lack of integration and a comprehensive model of empowerment (14). In summary, the literature on empowerment is divided into two theoretical perspectives of "socio-structural empowerment and psychological empowerment" (15). The difference between the two perspectives is that the former is to understand the conditions of employee empowerment in the workplace, while the latter is a psychological reaction to such conditions (16).

Implementing empowerment programs can help improve organizational agility (17).

It should be noted that the success of any empowerment program highly depends on the conditions and requirements and its proper implementation (18). Th s is especially important for service organizations where employee performance is a determinant of the more growth of the organization (19). Higher education institutions are of great importance for each country because of their role in socio-economic development and being human resources (20). Thus, due to the rapid changes in the higher education environment and the pressures of global competition, many universities have focused their attention on humans as a factor to achieve excellence and success (21). Faculty members, as the most valuable part of a university (22), are an integral part of each educational system and the quality of their work largely depends on their dynamism in this system. Thus, the capability of faculty members directly affects academic performance in higher education (23).

Despite much research on staff empowerment, faculty empowerment has not been extensively studied. For example, the results of a study by Abdollahi and Heydari to investigate factors related to faculty empowerment showed that two factors of participatory management and enrichment are related to empowerment (24). Gholifar et al. also concluded that organizational culture, professional skills, and organizational-managerial fi lds have a positive and signifi ant effect on faculty empowerment (25).

Also, Rahimi et al. also concluded that several strategies affect the capability of faculty members in the workplace, including access to opportunities, information, support, and resources. Effective motivation along with a sense of worth and effectiveness can facilitate the path of empowerment, in which the existence of effici t management based on democratic principles and participation can be very helpful (26). Sadri et al. reported "promoting motivational factors, information and being up-to-date, and the participation of faculty members in educational decisions" as three main factors for faculty members' empowerment (27).

In another study, Rahmani and Ezzati concluded that the reward system, participatory management, role modeling, professional growth, and trust-building are the factors affecting the empowerment of faculty members according to management specialists; however, from the Islamic point of view, in addition to the mentioned factors, the realization of human dignity and business ethics of managers are also considered among the factors affecting the empowerment of faculty members (28). The results of Meng and Sun research showed that there is a high positive correlation between psychological empowerment and job attachment among faculty members (29).

Objectives

Summarizing the studies conducted on empowerment shows that although the effective factors for empowerment have been considered by researchers in signifi ant studies, there is no paradigm model, including causal, contextual, and interfering factors, strategies, and consequences to empower faculty members in Islamic Azad University. Therefore, considering the existing gap, the present qualitative study was conducted to develop a model for empowerment of faculty members of the Islamic Azad University.

Methods

Th s qualitative study was conducted with a grounded theory approach. The statistical population consisted of faculty members of the Islamic Azad University with high information regarding the research objectives and criteria, such as expertise in management who had conducted relevant studies and written books and articles and were selected using a criterion-based purposeful sampling method. Semi-structured interviews were used to collect data.

The interview was conducted by asking five questions about causal, contextual, and interfering factors as well as strategies and consequences related to faculty empowerment. The interview lasted between 44 and 70 min, and the recordings were transcribed verbatim. The number of participants also increased according to theoretical saturation until no new views were expressed by them (after 13 interviews, theoretical saturation was obtained).

Strauss and Corbin methods were used to analyze the interviews in three stages of open, axial, and selective coding. Thus, the recorded interviews were reviewed line by line, and conceptualized and categorized, and then based on the similarity, conceptual relationship, and common features between open coding, concepts, and categories (a category of concepts) were identified.

In axial coding, the initial codes and commands created in open coding were compared and the codes with similar concepts were combined and the related categories formed a common axis., This stage consisted of six categories: "axial category, causal conditions, interfering conditions, governing context conditions, strategies, and consequences". In selective coding, the axial category was selected and its relationship with other categories was examined. Then, the final model of the research was drawn and the axial concept was shown to be related to other concepts. To ensure the validity of the research, two methods of review by members and peer review were used.

The present study was approved (Ethics code: IR.IAU.

KHUISF.REC.1399.067) by the Research Ethics Committee of Islamic Azad University, Isfahan Branch (Khorasgan).

Results

In the present study, 13 management faculty members 13 faculty members in the fi ld of management (8 men and 5 women) who were familiar with faculty empowerment issues were subjected to semi-structured interviews and most of them had more than 11 years of work experience. During open coding, by analyzing the data, 134 concepts were identifi d and classifi d into 29 sub-categories. Then, 11 main categories were extracted from the sub-categories. The categories obtained from the previous step were linked during axial coding as causal, contextual, interventionist, strategies, and consequences categories. The fi dings of the open and axial coding steps are presented in Table 1.

Based on the obtained relationships, the concepts obtained from open and axial coding were linked to each other in the selective coding stage and refl cted as a model, which is shown in Figure 1.

Causal factors related to faculty empowerment can be divided into the following three main categories.

Personal factors: According to the experts' views, the empowerment of faculty members is more related to the individual's situation. They considered personal factors necessary in the realization of empowerment because they lead to a move towards empowerment. "Decreasing job motivation can have a negative effect on the performance of the individual and the organization," said one interviewee. Th s leads us to empowerment. "In fact, faculty members are empowered to seek new skills that will restore their previous passion."

Management factors: A faculty member believed: "Unfortunately, most university leaders do not involve colleagues in activities. "Many do not allow their colleagues to take responsibility and think that they are not responsible." Another participant stated: "Managers should have a positive view of faculty empowerment and give them a chance to prove themselves. "Th s view results in empowerment of the university." The analysis of the interviews shows the fact that the attitudes and behaviors of managers are important towards empowering their subordinates. Faculty empowerment programs cannot be implemented without the support of managers.

Job-related factors: Many participants in the present study believed that job complexity and job requirements are effective in empowerment. According to one expert: "Job challenges have increased signifi antly compared with the past. The more challenging the job, the more capable people must be. In the past, activities, such as teaching due to different reasons, such as the lack of technological factors, have not been as challenging as they are now. "Therefore, faculty members are expected to be able to use these technologies."

"Many universities in the current competitive environment need empowerment to achieve organizational goals. For example, the competition between the Islamic Azad University and public universities is one of these issues. "Educating capable employees is especially important in knowledge-based jobs."

Also, the analysis of participants' opinions showed that changing the organizational environment and changing professional tendencies are the most important factors effective in moving towards empowerment.

Table 1. Findings of the open and axial coding process related to the empowerment components of university faculty members

Axial coding	Open coding		
	Main category	Sub-categories	Concepts
Causal factors	Personal factors	Feeling of inefficiency	The feeling of job incompetence, lack of mastery over the work, lack of control over the work
		Feeling of lack of progress	Decreased job enthusiasm, feeling confused about your career, career plateau, lack of job control, unclear career path
		Job boredom	Job routine, feeling useless, not meeting job expectations
		Tendency to improve job quality	The tendency to be different in the job, job satisfaction, tendency to job confidence, clear path and goal, tendency to competitiveness, occupational entanglement, job perfectionism
	Management factors	Management attitudes	Irresponsibility, feeling inexperienced, job overload
		Management behaviors	Avoiding the transfer responsibilities, no participation of colleagues, the resistance of managers for outsourcing model, reluctance to enter colleagues his area of responsibility, lack of job security, managerial control
	Work- and profession-related Factors	Job Complexity	Variety of job skills, continuous job changes, challenging jobs
		Job requirements	Linking jobs and technology, the competitive environment of jobs, the knowledge-oriented nature of today's jobs
Contextual factors	Organizational environment Change	Organizational Learning	Learning as a valuable phenomenon, management commitment to empowerment and learning, management system vision, desire to change people's behavior
		Knowledge environment	Existence of open space and experimentation, desire to create and produce organizational knowledge, the existence of knowledge capacities
	Changing professional tendencies	Dynamism	The tendency to be productive, desire for competence, personal growth, desire for professional independence, desire for self-regulation, responsibility, and accountability
		Intention to Remain	Capability, intention to remain, control over the future, commitment to change and continuous growth, adaptation to extra-organizational change

Table 1. Findings of the open and axial coding process related to the empowerment components of university faculty members (continued)

Axial coding	Open coding		
	Main category	**Sub-categories**	**Concepts**
Causal factors	Environmental changes Legal-developmental contexts	Environmental competitiveness	Increasing competition structures, pressure groups, lack of resources, selection of the right professors
		Market and customer changes	Changes in customer preferences, customer diversity, increasing the range of customer expectations
		Technology-driven environment	Increasing working speed, the accuracy of technological environments, technology-related skill changes
		Supporting internal laws	The emphasis of the national Services on improving Skills, special incentives, providing approaches to attract participation, the formation of specialized empowerment committees, the need for people to have per capita education
	Management factors Individual	Modification of the general structure	Minimization of government and organizations, General agility, change in the concept of job security
		Motivating	Promoting the motivation to dominate, promoting the motivation to influence, promoting the motivation of competence, managing personal knowledge, creating the belief in the change in work, promoting the motivation of self-determination
	Work- and profession- related Factors Managerial-organizational	Psychological Empowerment	Feeling of self-sufficiency, promoting a sense of self-independence, promoting a sense of effectiveness, promoting a sense of meaning
		Development and improvement approach	Assignment of management roles to another person, assignment of controlling roles, assignment of coaching skills, providing of practical training, preparation of experimental situations, comprehensive training, supportive regulation, performance-oriented payment, focus on self-management strategy
Contextual factors	Organizational environment Change	Inclusive participation	Consultation on tactical decisions, participation in goal setting, participation in vision development, participation in organizational success, participation in strategic decisions, emphasis on the formation of labor councils, promoting the system of organizational suggestions, forming quality improvement groups, developing competencies through experience sharing
		Tendency to group	Forming self-governing teams, forming problem-oriented teams, forming job negotiation teams, creating a knowledge system base, forming knowledge teams in the organization, forming discussion groups
	Environmental changes	Environmental competitiveness	Increasing competition structures, pressure groups, lack of resources, selection of the right professors
		Market and customer changes	Changes in customer preferences, customer diversity, increasing the range of customer expectations

Organizational environment change: The environmental factors governing organizations are changing rapidly. Therefore, organizations must make changes in order to survive. Organizational learning and the knowledge environment play an important role in moving towards empowerment because they increase the capabilities of the organization against these changes. "For successful empowerment, learning must be considered a valuable phenomenon and the head of the university must be committed to empowerment and learning," said one expert. "We also need to provide a context for professors to be willing to produce and create knowledge."

Changing professional tendencies: Today, the professional tendencies of faculty members have changed in order to achieve success, career advancement, and not losing their job position. Dynamics and a desire for perseverance help people achieve a wide range of skills and abilities. "Due to the desire for competence, there is a need for more empowerment," said one faculty member. People usually prefer jobs that increase their competencies. "On the other hand, a strong desire to stay in the organization makes people work harder to succeed and develop their abilities." The analysis of the interviews showed that the two categories of "environmental change and the legal context of development" play an effective role in requiring the empowerment of faculty members as intervening factors.

Environmental change: A faculty member said: "With increasing competitiveness, universities can no longer have a weak elective system for hiring people. For example, if a post is to be given to people, it is important, to be honest. "Therefore, by choosing the right professors, fewer costs are imposed on the university."

"Implementing empowerment programs requires considering changes in customer preferences. Th s leads to providing appropriate services according to their needs. "Students today have different needs than in the past." "Despite new technologies, the skills needed for jobs

have changed," said another participant. "For example, searching for resources today is a skill that stems from a technology-driven environment." From the participants' point of view, environmental changes have severely affected educational organizations, especially universities. Therefore, the empowerment processes of the faculty members in the university should be highly considered to make them prepare for competition.

Legal-developmental contexts: In this category, the fi dings indicated that supportive internal laws and general structure reform can accelerate the implementation of empowerment strategies of the faculty members so that they should increase their job skills and abilities, and also organizations are required to formulate and design appropriate rules and mechanisms to empower faculty members.

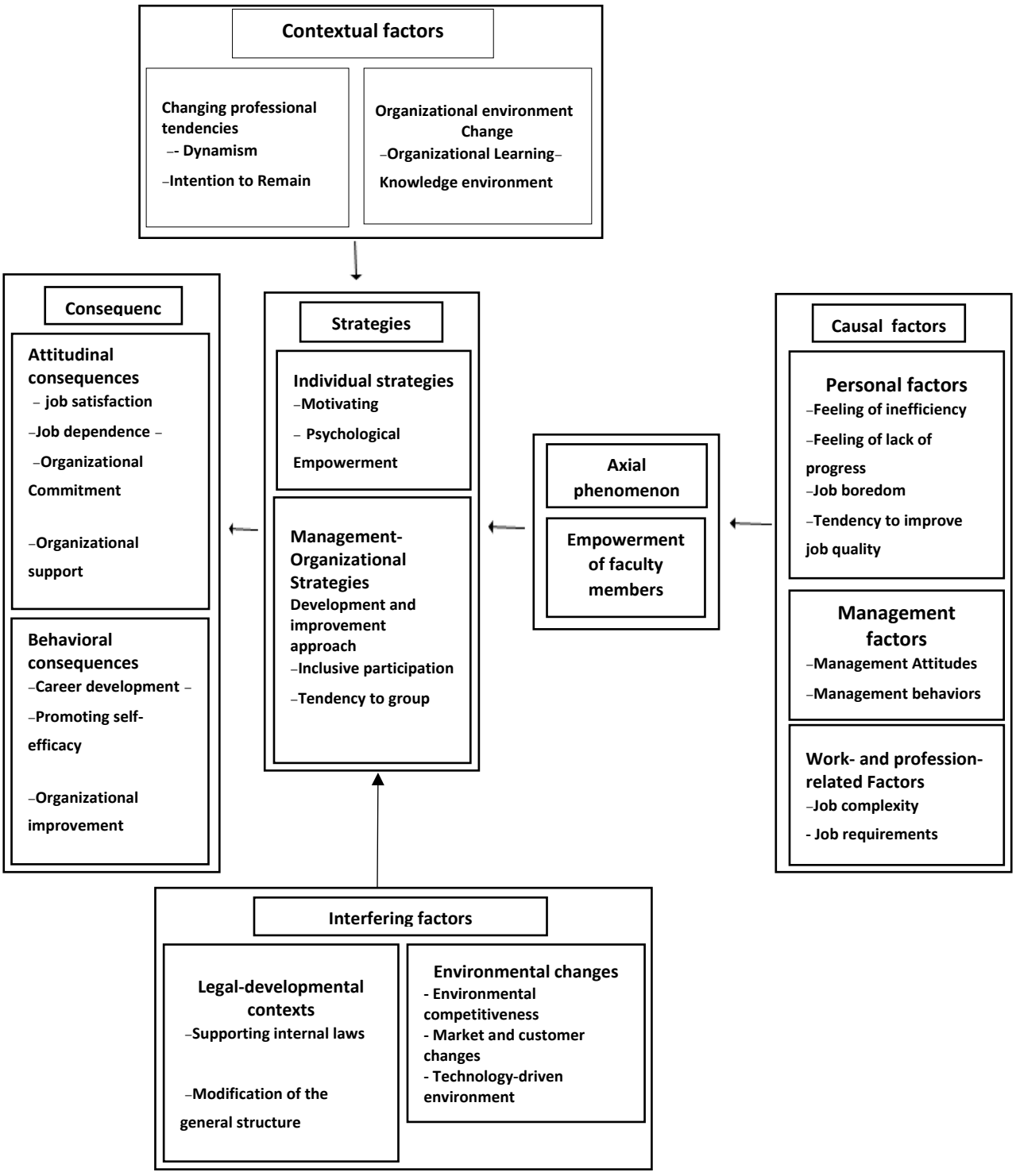

Figure 1. The Paradigm model of empowerment of the faculty members

"Facilities per capita and considering budget to support faculty empowerment programs are factors influencing the implementation of empowerment programs," said one faculty member. According to one of the key experts: "One of the most important management issues in universities today is agility that occurs in both the individual and an organization. Agility in both areas requires the empowerment of the individual and the organization. "Universities must be agile against changes and be able to change on time and use opportunities."

In the present study, the proposed strategies were proposed in two main categories that, along with underlying and intervening factors, can help empower faculty members.

Individual category: According to the participants, motivation is the productive and guiding factor of behavior. Motivating faculty members towards empowerment is one of the most important and basic strategies to achieve organizational goals. The purpose of implementing the motivational strategy is to create the necessary conditions for empowerment, promotion of motivation, an increase of self-suffici cy, and elimination of conditions that cause feelings of powerlessness and inability. For example, one interviewee stated: "People enjoy working when they do something on their own. "Faculty members need to feel that they can be decisive." Another participant also believed: "If faculty members feel important in their organization, they will do their best. "Increasing the sense of effectiveness creates empowerment in these individuals."

Management-Organizational category: One of the categories that most participants suggested to empower faculty members was the managerial-organizational strategy. Participants believed that university administrators should always be able to create new opportunities for faculty members because faculty members need to grow and progress. In this regard, one of the experts acknowledged that "Changes in education is important in the empowerment of faculty members so that the training is changed from the theoretical state to practice in the university. "Also, multi-skill training should be considered." "The university is required to establish supportive regulations in order to enhance the faculty members' abilities. "For example, providing incentives, such as study opportunities ...". Another participant said that "Managers should consider extensive participation and group tendency in the organization to achieve employee empowerment. "Therefore, participation and teamwork refl ct the active role of employees in the empowerment process."

Examining the interviewees' perspectives shows that empowerment of faculty members has consequences that can be categorized into two categories: attitude and behavior.

Attitude: When people accept empowerment as an unavoidable necessity, they do their best to achieve the goals of the organization. Empowered employees have a positive attitude and evaluation of aspects of their work environment. "Being empowered brings a sense of respect," said one participant. " Empowered faculty members feel satisfi d because they are doing the right activity and progressing in their work." In this regard, another participant stated: "Faculty members who consider the organization as their supporter, establish a kind of emotional connection with their organization. "They do not separate themselves from the organization and improve their performance to compensate for the support of the organization." Another interviewee stated: "When the university cares about the empowerment of faculty members, they feel more attached to their job "and like to stay in this position and they are also less likely to leave their jobs and feel empowered by their jobs."

Behavioral: By implementing empowerment programs, employees can achieve behavioral outcomes, such as job development, self-efficacy, and organizational improvement. One of the key experts in this regard stated: "The continuous growth of faculty members in the empowerment process will lead to the transfer of new authorities and responsibilities, which did not belong to them before, and they become a reference and act more professionally." "When faculty members become empowered, they gain more confide ce in themselves and their abilities," said one interviewee. They have a sense of worthiness because they have higher skills than their colleagues."

"Having empowered faculty members at the university increases the organization's competitiveness. They react quickly and agilely while facing dynamic and complex environments and surpass others, and fi ally, the position of the organization is stabilized and the sustainability of the organization is guaranteed."

Discussion

The aim of this study was to develop a model for the empowerment of faculty members in Azad University. Based on the analysis of the interviews, the causal factors affecting the empowerment of faculty members were individual factors (feeling of inefficiency and lack of progress, job boredom, and desire to improve job quality), management factors (management attitudes and management behaviors), and work-related factors (job complexity and job requirements). The results showed that these factors are essential for the empowerment of faculty members and empowerment provides the ground for eliminating negative emotions and improving the job quality of faculty members by creating a positive attitude and increasing knowledge and skills. These results are consistent with the findings of studies by Abi Hassanpour et al., who showed that there is a positive and significant relationship between psychological empowerment and self-efficacy (30). Also, the results of studies by Ghalei et al. (12) and Nursalam et al. (31) indicating the essential role of quality of working life programs in increasing human resource empowerment, were consistent with the present study.

Empowerment contexts for faculty members also included changing the organizational environment

(organizational learning and knowledge environment) and changing professional tendencies (dynamism and tendency to stay in the job). The environmental factors that govern universities are changing rapidly. Therefore, managers should provide a learning environment for faculty members and try to strengthen the knowledge-based environment.These findings were consistent with the results of research by Moradnia et al. and Sina and Khaleghi Rostami , indicating the importance of organizational learning in empowerment(32,33). Knowledge management was one of the categories mentioned by Hassani and Sheikh Ismaili (34), Abualoush et al. (35), and Amir Ghodsi and Bonyadi Naeini (36).

From the perspective of the participants of the present study, two categories of environmental change (environmental competitiveness, market and customer change, and technology-oriented environment) and legal-developmental contexts (supportive internal laws and general structure reform) are among the interfering factors that have not been directly addressed in studies.

These factors include individual strategy (motivation and psychological empowerment) and management-organizational strategy (development and improvement approach, inclusive participation, the tendency to group). In this regard, Khorasani and Zamani Manesh concluded that job motivation has a positive effect on empowerment (37). Also, the results of this section are in line with the findings of Gholifar and Gholami who showed a positive and significant correlation between management -organizational factors and empowerment (38) and the results of Dahou and Hacini study, in which decision-making ability had a positive effect on employee empowerment (39). Similarly, Karamzadeh concluded that effective education has a strong and significant relationship with empowerment (40). Employee empowerment leads to significant attitude (job satisfaction, job dependence, organizational commitment, and organizational support) and behavioral (job development, self-efficacy promotion, and organizational improvement) consequences. Our results considering Job satisfaction were consistent with the findings of Aldaihani (41), Idris et al. (42), and McNaughtan et al. (43) and those on job dependence were in line with the results of a study by Sarboland (44).

Conclusion

Given the importance and the position of faculty members in the development and effectiveness o f universities on the one hand, and the existence of rapid change, on the other hand, it is necessary that Universities should take effective s teps t o enhance t he c ompetencies and abilities of faculty members, which considering the studied factors in the present study can be helpful in this regard.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804439].

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Research Article

The Relationship Between Self-Regulated Learning Components and Achievement Motivation in Students of Islamic Azad University, Tehran Medical Branch

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Abstract

Background: It is nearly a century that psychologists strive to identify the predictors of academic achievement.

Objectives: The present study aimed at investigating the relationship between self-regulated learning, achievement motivation, and academic achievement, and obtaining results to create appropriate strategies to increase motivation and improve learning in students to help them with academic achievement and empowerment.

Method: The present cross sectional study was conducted in the academic year of 2016-2017. A total of 190 students of Islamic Azad University, Tehran Medical Branch, were selected by the convenience sampling method and completed the motivated strategies for learning (MSLQ) and achievement motivation questionnaires. Data were analyzed using the Pearson correlation coefficient in SPSS.

Results: There was a significant relationship between achievement motivation and the components of self-efficacy, intrinsic goal orientation, help-seeking, and time management ($P < 0.001$). Students getting higher scores on MSLQ also got higher scores on self-efficacy, time management, and intrinsic goal orientation ($P < 0.001$).

Conclusion: According to the study results, to empower medical students in academic achievement, their self-efficacy, time management skills, and goal orientation should be improved.

Keywords: Self-Regulated Learning, Achievement Motivation, Medical Students

Background

Improvement of the educational status of students is one of the goals of higher education systems. Achievement motivation is one of the major issues, which should be considered in medical education. It is one of the critical social motivations and personality traits, varying across individuals, and certain behaviors can be predicted accordingly (1). Paying attention to the education and empowerment of medical students is of great importance for training proficient physicians. Psychological characteristics, motivations, and emotions are among the internal factors in learning, and the external ones include environmental stimuli, teaching methods, study methods, educational equipment, etc. (2). According to reports, the use of self-regulatory strategies for better learning is a type of learning by which an individual, instead of relying on teachers and mentors, drives himself to learn (3). Self-regulated learning strategies show how one can control, transform, and regulate performance (4).

Self-regulation is a set of active and categorized steps by which learners can accurately set learning goals and monitor their cognition and behavioral motivations (5). Researchers classified motivation into various forms, including primary versus secondary, intrinsic versus extrinsic, social, and achievement (6). Among factors investigated by learning professionals, self-regulated learning is considered a variable related to achievement motivation and motivational beliefs. Self-regulation includes inclusive activity in terms of motivation, cognition, metacognition, and behavior for better and more learning (3). Therefore, self-regulation can be examined in behavioral, cognitive, and metacognitive domains (5). Utilization of these strategies varies across individuals (6); it maintains motivation in performing academic tasks (even for difficult ones) and,

as a result, academic achievement (7).

The achievement motivation is the driving force to achieve goals, which determines the amount of effort and probability of achieving them (8), as well as part of social needs, including the desire to achieve high standards, competition, and overcome obstacles (9). The achievement motivation is the passion and desire for success (10), which determines whyness and howness of learning motivates (11). The results show that achievement motivation and learning are related to educational environments, indicating the effect of external factors on achievement motivation (12). Likewise, Jafarian et al., found in a study that teacher action in the classroom, student achievement motivation, and self-regulation are among the factors affecting student academic performance (13). Their findings highlighted a relationship between effective teaching, self-regulation, achievement motivation, and academic performance in which the highest correlation was observed between achievement motivation and effective teaching and the lowest between academic performance and self-regulation (13). Teachers can increase students' academic achievement by better managing the classroom, applying effective teaching methods, empowering achievement motivation, and training in self-regulated learning strategies.

Objectives: To the best of authors' knowledge, limited research is carried out in this regard on medical students. Given that medical students pass more difficult courses and study for a longer course than other disciplines, maintaining motivation and applying appropriate learning strategies during the study can be very beneficial. Therefore, the present study aimed at investigating the relationship between self-regulated learning components and achievement motivation in the medical students of Islamic Azad University, Tehran Medical Branch, Iran.

Methods

The present analytical, cross sectional study was performed in the academic year of 2016-2017. A total of 190 students of Islamic Azad University, Tehran Medical Branch, were selected by the convenience sampling method. The inclusion criteria were: studying medicine at the study site and age below 35 years. Data were collected by questionnaires.

Motivated Strategies for Learning Questionnaire

This 81-item instrument was developed by Pintrich et al. (1991). MSLQ items are scores based on a seven-point Likert scale (from "It is not true for me" (1) to "It is true for me" (7). The overall score ranges from 81 to 567. MSLQ consists of two parts of motivational strategies and learning strategies (14).

Motivational strategies include three components of value, expectancy, and emotion. The value has three scales of intrinsic goal orientation (four items), extrinsic goal orientation (four items), and task value (six items). The expectancy includes two scales of controlling learning beliefs (four items) and self-efficacy (eight items), and the emotion includes a test anxiety scale (five items).

Learning strategies consist of two components of cognitive and metacognitive learning and resource management strategies. The cognitive and metacognitive strategies have five scales of rehearsal (four items), expansion (six items), organizing (four items), critical thinking (five items), and metacognitive self-regulation (12 items), and resource management strategies, four scales of time and study environment management (eight items), effort regulation (four items), peer learning (three items), and help-seeking (four items). Pintrich et al., reported Cronbach's alpha coefficients of 0.93, 0.80, 0.69, 0.46, 0.64, 0.80, 0.79, respectively, for self-efficacy, test anxiety, rehearsal, expansion, organizing, critical thinking, and metacognitive self-regulation subscales, and 0.78 for the whole scale (14). The MSLQ validity assessment in Iran by Cronbach's alpha coefficient was 0.88, 0.85, 0.54, 0.79, 0.70, 0.74 and 0.79, respectively for its components (15). The instrument validity was also confirmed in the present study by experts. Cronbach's alpha coefficient was 0.94, 0.91, 0.89, 0.97, 0.92, 0.94, and 0.95, respectively for the components and 0.96 for the whole scale.

Achievement motivation questionnaire: This 50-item instrument was developed by Bahargava (1994). The items are incomplete sentences with three options; any correct response is given 1 point, and finally, the sum of the scores (from zero to 50) is compared with the norm table containing five motivational categories of high (≥23), above average (19-22), medium (17-18), below average (14-16) and low (≤13). The validity of the Hindi and English versions of the instrument is reported 0.78 and 0.91, respectively. In Iran, the reliability and validity of its Persian version were 0.87 and 0.80, respectively (16). In the present study, Cronbach's alpha coefficient of the instrument was 0.60.

Data were analyzed using the Pearson correlation coefficient in SPSS version 17 (SPSS Inc., Chicago, IL). The ethical principles in the research, issued by the Islamic Azad University, Tehran Medical Branch, were observed in the present study (ethical code: 95484). The questionnaires were anonymous, and the information remained confidential. Informed consent was obtained from all participants, and the minimum risk was also observed.

Results

In total, 190 students participated in the present study. The mean age of the subjects was 21.70 ±5.99 years (ranged from 18 to 32); 104 were females (54.74%) and 86 males (45.26%). Table 1 shows the mean scores of MSLQ components and achievement motivation.

Among the MSLQ components, the highest and lowest mean scores belonged to organizing and test anxiety, respectively. The mean score of achievement motivation was 102.10. The correlation between achievement motivation and self-regulated learning strategies and its components is shown in Table 2.

There was a significant correlation between achievement motivation and intrinsic goal orientation, self-efficacy, time management, and help-seeking ($P < 0.001$).

Table 1. Mean Scores of the Self-regulated Learning Strategies Components and Achievement Motivation

Variable	Component	Mean±SD
Self-regulated learning strategies	Test anxiety	13.10±3.82
	Self-efficacy strategy	42.63±12.68
	Learning beliefs control strategy	20.79±6.07
	Task value strategy	26.83±7.30
	Extrinsic orientation strategy	20.72±5.95
	Intrinsic orientation strategy	21.84±14.67
	Help-seeking strategy	18.19±4.97
	Peer learning strategy	13.64±3.04
	Effort regulation strategy	18.24±50.09
	Time management strategy	40.19±11.32
	Self-regulation strategy	51.54±11.65
	Critical thinking strategy	23.63±5.86
	Organizing strategy	78.63±8.63
	Expansion strategy	28.96±7.14
	Rehearsal strategy	16.95±4.87
Total score	-	391.54±77.38
Achievement motivation	-	102.10±8.21

Table2. Correlation of Achievement Motivation With Self-regulated Learning Strategies and its Components

Main Variable	Self-regulated Learning Strategies and Components	Correlation	P-value
Achievement motivation	Intrinsic goal orientation	0.21*	0.030
	Extrinsic goal orientation	0.06	0.950
	Task value	0.19	0.050
	learning beliefs control	0.12	0.210
	Self-efficacy	0.22*	0.020
	Test anxiety	-0.07	0.440
	Rehearsal	0.01	0.900
	Expansion	0.05	0.550
	Organizing	0.01	0.960
	Critical thinking	0.05	0.600
	Metacognitive self-regulation	0.05	0.590
	Management of time and study environment	0.49*	0.001
	Effort regulation	0.12	0.210
	Peer learning	0.16	0.110
	Help-seeking	-0.26	0.007
	Total score	0.37	0.001

*P-value <0.001

Also, a significant correlation was observed between achievement motivation and self-regulated learning strategies (P <0.001); that is, those with higher scores on the achievement motivation scale had a higher intrinsic goal orientation. There was a significant correlation between achievement motivation and time management. Accordingly, those with higher scores on achievement motivation were more successful in time management. Also, those with higher scores on self-efficacy were more motivated to achieve and less likely to seek help.

Discussion

The results of the present study showed a significant correlation between self-regulated learning strategies and achievement motivation in medical students. If a student studies only to pass a course due to fear of rejection, he

is motivated in self-regulated learning (17). Motivation had a correlation with self-regulated learning, indicating that the application of self-regulated strategies has a motivational origin; that is, the degree of self-regulation depends on motivation. The results of a study showed that with increasing students' motivation, their studying and academic performance improved (18). Given this finding and the fact that academic achievement in medicine is crucial, determining student motivation and presenting strategies to improve it can guarantee academic performance improvement.

There was a significant correlation between the components of self-regulated learning strategies and achievement motivation. These results were consistent with those of previous research (19-22). According to the theory raised by Pintrich et al. (14), and the results of the study by Zimmerman and Martinez-Pons (23), self-regulated students are far superior to their peers in education. Also, evaluation of self-regulation and goal setting training for students indicated that self-regulation leads to improved achievement motivation, and self-regulation can be considered an academic skill that improves academic achievement. Training learning strategies, studying, and metacognition strategies improved the motivation of female students (24). There was a significant relationship between the application of learning strategies and academic achievement (25), as well as cognitive reading strategies, studying habits, metacognition, and students' motivation (26).

According to the results of the present study, four components of self-regulated learning strategies, including self-efficacy, intrinsic goal orientation, peer help-seeking, and time management, had a significant correlation with achievement motivation. Self-efficacy is one of the important components of maintaining and promoting students' motivation that plays a pivotal role in studying a course. Learners, with a greater sense of self-efficacy, make better use of time and energy in education, which in turn motivates them to achieve their goals (27). Rabbani and Yousefi also concluded in a study that learners with higher self-efficacy examine and regulate their motivations with more sensitivity (28). Also, Pintrich highlighted a significant relationship between self-regulated learning strategies and motivational components (29). The study by Khurshid et al., on the relationship between study skills and academic achievement (30), also confirmed the present study findings.

The present study results showed that intrinsic goal orientation is one of the important and effective factors in achievement motivation. Students who are self-regulated in setting their educational goals are academically more successful because they set goals based on intrinsic criteria and naturally spend more time and energy on achievement. According to the results of the study by Hassanzadeh and Mahdinejad Gorji, students with intrinsic goal orientation had more self-confidence. They were more focused on activities to achieve the goal, and external factors did not much affect their performance (31). The findings of Wolthers et al. (32), were consistent with those of the present study.

According to the present study results, peer help-seeking had an inverse and significant relationship with achievement motivation, similar to previous studies' findings (34, 33). The study by Ghadmapour and Sarmad showed that with increasing achievement motivation, peer help-seeking increases (35).

Time management was another component that had a positive and significant relationship with achievement motivation. The results showed that individuals vary in time management and optimal use of their time. Learners with more control over their time, applying time management and time planning techniques, expected more achievements, in turn, prevents them from doing unnecessary tasks, which brings positive emotional knowledge to them and maintains their achievement motivation at a high level. Omidvar et al., found that the time management subscale increases achievement motivation (36). Time management has a positive and significant relationship with academic achievement by increasing achievement motivation (37). To explain this finding, those who have more achievement motivation have better time management and higher academic motivation. Hence, the individual does his best to make the most of his time, accompanied by a high achievement motivation. A review of the literature showed the relationship between these two variables, the components of self-regulated learning strategies, and achievement motivation.

Atashkar et al., concluded in a study that there was a positive and significant relationship between the mean scores of achievement motivation and academic satisfaction. There was a significant difference between the academic satisfaction of medical and dental students and between the motivation of dental and pharmacy students. Moreover, there was no significant difference between students' academic motivation and academic satisfaction in gender and discipline. The dentistry students were more motivated and satisfied than those in other disciplines, such as medicine and pharmacy (38). The study by Rostami and Aliabadi reported that the academic achievement motivation of most agricultural students was below average.

Path analysis showed that among the effective cognitive and metacognitive strategies, planning, organizing, repeating, and practice strategies had the most, and learning, control, and monitoring strategies the least effects on students' academic achievement motivation (39). Training self-regulated learning strategies had a positive effect on academic achievement motivation, and self-regulation a significant relationship with learning disabilities (40).

One of the limitations of the present study was the use of the convenience sampling method, which affected the generalizability of findings. The utilization of self-report questionnaires was another limitation of the study. It is suggested to perform longitudinal studies while applying observation or interview techniques for data collection.

Conclusion

The results of the present study showed that by empowering self-regulated learning components, such as self-efficacy, time management, and goal orientation, the self-motivated learning skill is improved in students, ultimately leading to increased achievement motivation.

Supplementary Material

Supplementary material (s) is available here [To read supplementary materials, please refer to the journal web-site and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804441]

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Research Article

Assessing the Reflection in Learning Ability of Nursing Students: Psychometric Properties of Reflection in Learning Scale

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Abstract

Background: Reflection plays an important role in in-depth learning. Reflective ability must develop among students of medical sciences.

Objectives: The aim of this study was the psychometric assessment of the Reflection in Learning Scale and evaluating this ability among nursing students.

Methods: This descriptive-analytical cross-sectional study was conducted on nursing students of Shahid Sadeghi University of Medical Sciences (Yazd, Iran) in 2019.The participants selected by census. The research was conducted in two phases. In the first phase, the validity (qualitative and quantitative methods), Confirmatory factor analysis and reliability of Reflection in Learning Scale were evaluated. In the second phase, the reflection in learning was assessed using this tool. Data were analyzed using descriptive and analytical tests by SPSS software.

Results: The content and face validity of the scale were confirmed. Internal consistency of the instrument was 0.92 using Cronbach's alpha coefficient and ICC of 0.90 determined. Confirmatory factor analysis revealed acceptable indices: goodness of fit index =0.89, standardized root mean square residual (SRMR) = 0.06, root mean square error of approximation = 0.18. Learners' reflection ability with a mean score of 4.37 ± 1.04 was at a moderate level.

Conclusion: The Persian version of Reflection in Learning Scale is a valid and reliable tool and can be used to assess reflection abilities in learners. Nursing students' reflection ability was at a moderate level. Therefore, planning to assess reflection ability in nursing education by the tool is recommended.

Keywords: Reflection Ability, Learning, Validity, Reliability

Background

One of the concerns of medical education systems is obtaining professional qualifications by learners to act properly in their future career (1). Today, professional competence is defined as a complex and multidimensional construct that includes dimensions beyond technical skills. Regarding obtaining different skills, obtaining technical skills along with non-technical skills, such as lifelong learning, performance-based learning, and adherence to the excellence principles are emphasized (2). Therefore, in addition to gaining clinical competencies, learners are expected to develop their decision-making and lifelong learning skills through using problem-solving, critical thinking, and reflection. These skills help learners to improve their skills in their future careers (3).

Reflection is one of the basic skills in medical students and plays an important role in gaining clinical competencies (4). Reflection ability was first introduced in 1933 by John Dewey (1). Reflection in learning used by medical fields was used in the late 1990s in the United Kingdom and the United States. Reflection means thinking about an experience purposefully to analyze performance and judge strategies for improving performance, knowledge development, and attitude (5). According to cognitive and human ism theories, reflection in learning is one of the methods for deep learning (6).

The steps of reflection as an educational strategy which combines or links action and thought (7) includes goal setting, structure explanation, learning atmosphere, feedback, and evaluation (7). Reflection isdefined as doing something by a person and thinking about this activity. The skill of reflection regarding our actions and critically analyze them to promote professional activity improves clinical competence and self-confidence among students

(9, 8). In addition, the use of reflection increases students' self-awareness and their ability to use thinking and patient care strategies (7). In addition, this skill leads to improved reasoning, problem-solving, critical thinking, and lifelong learning skills that facilitate decision-making in complex and challenging situations (7). The results of Pai research showed that self-reflection during practical training effectively improves the clinical and thinking abilities of nursing students and reduces their work stress (10). Therefore, it is necessary to monitor the students' skill of reflection and plan to improve it.

The Accreditation Council for Graduate Medical Education (ACGME) defines performance-based learning as one of the core competencies, during which the learner should be able to use his experiences to learn and develop individual and professional skills by developing mental skills, such as self-awareness, self-regulation, reflection ability, and critical thinking (2). In medical science systems, where learning takes place mainly in educational and work environments, it is more important to develop reflection ability. The learning cycle for the learner is completed in workplace-based education when the learner is able to complete the stages of the experiential learning cycle with the acquired skills (11). The skill of reflection is helpful in guiding the learner during the process of experiential learning. This is especially important in nursing, which is often based on workplace-based education. Therefore, acquiring high levels of mental skills, such as reflection ability, is essential among nursing students (13, 12).

Objectives

Although the development of mental skills, such as the reflection ability has received special attention in medical education programs, this requires serious attention in the process of planning and implementing curricula in various fields. The use of valid tools in assessing skills, such as the reflection ability can be used to provide feedback to learners and plan for the development of this skill among learners. A review of conducted relevant studies showed that in Iran, there is no reliable tool to measure the reflection in learning. Therefore, the present study was conducted to evaluate the validity and reliability of the Reflection in Learning Scale and to determine the reliability skill among nursing students of nursing schools affiliated to Shahid Sadoughi University of Medical Sciences.

Methods

This descriptive-analytical cross-sectional study was conducted in two phases. In the first steps, the psychometric properties of the Reflection in Learning Scale, including its validity and reliability were examined. In the second phase, the reflection ability of nursing students in Shahid Sadoughi University of Medical Sciences was evaluated using the Reflection in Learning Scale.

The study population in the first phase included the experts in medical and nursing education (n = 24) and nursing students (n = 27) to assess the validity and reliability of the tool. In the second phase, 100 nursing students who were studying in nursing schools affiliated to Shahid Sadoughi University of Medical Sciences were selected by the census method. The Reflection in Learning Scale consists of 14 items. The instrument was first developed by Sobral and its validity and reliability were confirmed. (Cronbach's alpha = 0.81). The scale is scored on a seven-point Likert scale from never (score 1) to always (score 7).The total score of the scale is calculated from the average score of 14 questions per person. Then, the refection level is classified into three levels: poor (1 to 2.99), moderate (3 to 4.99), and strong (5 to 7) (14).

Step1: Validation and Reliability of the Scale:

The First place, the scale was translated into Persian separately by two experts fluent in English. The text of the two translated versions was compared, and a Persian version of the scale was prepared. In the next step, the back translation was done by a fluent English translator and the Persian translation of the scale was translated to English. In the last step, the Persian version of the tool was finalized by comparing it with the original version of the scale by a person fluent in both English and Persian.

In the next step, the face and content validity of the scale were examined qualitatively and quantitatively. Delphi method was used for qualitative assessment of the content and face validity from the experts' perspective. Accordingly, along with the scale, the consent form and Delphi implementation guide were provided to the experts. They were asked to rate the items of the scale in terms of the level of difficulty (difficulty in understanding phrases and words), degree of appropriateness (appropriateness and the proper relationship of the phrases with the purpose of the scale), and ambiguity (possibility of misinterpretations or inadequacies in word meanings).Two weeks after conducting the first round of Delphi technique, the opinions of experts were noted. The researchers then added all the suggestions to the initial scale in a separate column (confidentiality of the information was regarded), to confirm the contents, the comments were sent back to the experts, and they were asked to provide additional comments on the scale items (second round of Delphi technique).

Two weeks later, comments were recorded, analyzed, and sent for the third round, but no new comment was provided. Then, quantitative content validity indices, including content validity ratio (CVR) and content validity index (CVI) were examined. In order to determine the CVR, the experts were asked to examine each item on a three-point scale (necessary, useful, but not necessary, and not necessary) (15). The minimum CVR value was determined based on the Law she table. CVI is a measure of the relevance of each item in the scale, which was assessed on a four-point Likert scale (very relevant, relevant, somewhat relevant, and irrelevant) (16). The construct validity of the scale was assessed using confirmatory factor analysis (CFA). Internal consistency was assessed using Cronbach's alpha and a reproducibility test was performed using the Intraclass correlation coefficient (ICC). In the test-retest method, each participant completed the scale at an interval of two weeks.

Step 2: Assessment of the Reflection in Learning

In order to assess the reflection in learning ability, nursing students in the schools affiliated to Shahid Sadoughi University of Medical Sciences were selected by census. In this step, 100 nursing students voluntarily participated and completed the scale.

Descriptive statistics indices (mean and standard deviation) were used to determine the reflection level of learners. Pearson correlation test was used to determine the relationship between reflection scores and demographic variables and field of study. One-way analysis of variance (ANOVA) and Independent t-test were used to examine the differences between groups. Also, the least significant difference (LSD) post-hoc test was used to compare the level of reflection of the groups with each other. The data were analyzed by SPSS software version 19 (version 19, SPSS Inc., Chicago, IL) and AMOS software version 22.

Results

A total of 24 experts in medical and nursing education participated in assessing the qualitative and quantitative validity of the Reflection in Learning Scale. The demographic information of the participants is presented in Table 1 according to the qualitative and quantitative measurement of the validity and reliability of the scale. All participants confirmed the content and face validity of the scale. The results of CVR showed that all items obtained values higher than 0.49.Regarding CVI, all items obtained values higher than 0.79 and remained on the scale. Finally, the quantitative and qualitative validation of the scale with 14 items was confirmed. In addition, 27 nursing students participated to assess reliability. The internal consistency of the tool (Cronbach's alpha coefficient = 0.92) and reproducibility (ICC = 0.90) was confirmed. The construct validity of the scale was assessed using the CFA method and approved (moderate) with the following values: goodness of fit index (GFI)=0.89, standardized root mean square residual (SRMR)=0.06, root mean square error of approximation=0.18, $\chi 2/df=1.78$.

In the second stage, the participants consisted of 100 nursing students, including 57 women (57%) and 43 men (43%) with a mean age of 22± 3years.According to the academic year, 21 students (21%) were freshmen. Of the rest, 30students (30%), 26 students (26%)and 23 students (23%)were in their second, third and fourth year. The mean score of the learners' reflection ability (4.37 ± 1.04) was at a moderate level. The mean score of each item is presented in Table 2.

The results of the present study showed that the mean score of reflection ability based on gender was not significantly different (P = 0.14); however, it was significantly different in terms of the academic year (P = 0.006) (Figure 1). The results of the LSD test showed that the score of first-year nursing students was significantly lower than other scores. (P <0.05). According to the LSD results, the score of reflection in first-year nursing students was significantly lower than the others. The score of first-year students was significantly lower than second-year (P = 0.04), third-year (P = 0.001) and fourth-year students (P = 0.03).

Table 1. Demographic characteristics of the participants in the first stage of the study (Assessing the validity and reliability of the Reflection in Learning Scale)

Demographic information		Qualitative validity	Quantitative validity	Reliability
Field of study, No. (%)	Medical education	3 (33.33)	5 (33.33)	-
	Nursing	6 (66.67)	10 (66.67)	27
Age, (year) mean ± SD		36 ± 6	34 ± 6	22± 3
Gender, No. (%)	Male	5 (55.56)	5 (33.33)	13 (48.15)
	Female	4 (44.44)	10 (66.67)	14 (51.85)
Total		9	15	27

Table 2. Mean scores of items of Reflection in Learning Scale of nursing students of Shahid Sadoughi University of Medical Sciences

	Items	Mean ± SD
1.	Carefully planned my learning tasks in the courses and training activities of the medical program	4.30±1.58
2.	Talked with my colleagues about learning and methods of study	4.40±1.52
3.	Reviewed previously studied subjects during each term	3.44±1.27
4.	Integrated all topics in a course among themselves and with those of other courses and training activities	3.91±1.38
5.	Mentally processed what I already knew and what I needed to know about the topics or procedures	4.28±1.42
6.	Been aware of what I was learning and for what purposes	4.61±1.33
7.	Sought out interrelations between topics in order to construct more comprehensive notions about some theme	4.60±1.24
8.	Pondered over the meaning of the things I was studying and learning in relation to my personal experience	4.92±1.27
9.	Conscientiously sought to adapt myself to the varied demands of the different courses and training activities	4.55±1.32
10.	Systematically reflected about how I was studying and learning in different contexts and circumstances	4.47±1.21
11.	Mindfully summarized what I was learning day in, day out in my studies	4.44±1.59
12.	Exerted my capacity to reflect during a learning experience	4.43±1.37
13.	Diligently removed negative feelings in relation to aims, objects, behaviors, topics or problems pertaining to my studies	4. 31±1.51
14.	Constructively self-assessed my work as a learner	4.56±1.23

The score of reflection ability in second-year students was significantly higher than the scores of the first-year students (P = 0.040) and lower than third-year students (P = 0.030).There was no significant difference between the scores of second- and fourth-year students (P = 0.05). The score of third-year students was significantly higher than the scores of first-year students (P = 0.001) and second-year students (P = 0.030), but this difference was not observed between the scores of the third- and fourth-year students (P = 0.520).

Discussion

The reflection ability is an essential skill that plays an effective role in the deep learning process and the improvement of learners' professional competencies. The results of the present study showed that the reflection ability of nursing students was at a moderate level. Because in nursing is performance-based learning and the use of mental skills are necessary, the education system should be highly considered for the development of these skills. Based on the obtained results, the Reflection in Learning Scale is a valid tool and can be used to assess the reflection skill.

The learner through therapeutic care can improve his/her professional performance using reflection on experiences and learnings. In other words, reflection increases learners' capacity to critically analyze and review past experiences (17) and effectively improves learners' self-regulation, diagnosis, critical thinking, and performance (19, 18). Clinical experiences, self-reflection, and work stress are recognized as predictors of students' clinical competencies (10). Therefore, the clinical competence of learners can be improved by creating opportunities for learners to gain experience and development of their reflection skills. According to our results, the reflection skill of the students was at a moderate level; thus, planning to improve this ability among learners seems necessary.

Based on our results, reflection in senior students was significantly higher than in first-year students. This can be due to how the person learns based on experience gained through education. The findings of Aukes et al. confirm the upward trend of learners' reflection skills through education; however, the use of an experimental learning approach can increase the improvement of their reflection ability (20), which was consistent with the results of the present study. The findings of Embo et al. showed that there was a significant relationship between reflection ability and performance of nursing learners during the academic years (21). Therefore, in accordance with the expected abilities thorough education, it is necessary to design and implement an appropriate plan for the development of reflection skills in the education process.

The reflection on an individual's performance during and after activities enables the learner to reflect on their experience and learn from their experiences, which reduces the gap between theory and practice (22).

The results of the present study showed that the learners' scores in "thinking about the meaning of what they have learned and experienced, making a link between different concepts and understanding the objectives of the subjects" were higher than other items. Learners also rated their performance at the lowest level in applying cognitive learning strategies, such as reviewing previous information and creating meaningful cognitive structures. Cognitive strategies refer to actions, by which the learner prepares new information to link or combine with previously learned information and store it in long-term memory (learning). These strategies are classified into three general categories: "repetition or review, expansion, and organization."One of the important cognitive strategies is the semantic extension, which is defined as adding meaning to new information to relate it to previously learned information. In other words, the learner makes a link between what he already knows and what he intends to learn, which is done by adding more details to the new information, creating examples, and inferring about it (23).

Learners do not seem to be good at cognitive strategies, including reviewing and applying what they have learned. This can be due to individual and systemic reasons. Lack of training on mental skills and cognitive-metacognitive learning strategies and unwillingness to use them can affect the results. In addition, systemic problems, such as overemphasis on technical skills, neglecting non-technical and mental skills in teaching different fields of medical sciences, and no use of active teaching-learning methods can affect the results of self-assessment. A development in nursing education requires a review of the teaching methods of the traditional system of nursing education (7).

Given that it is important to encourage learners to think by practical strategies (7), it seems that planning is necessary to develop the reflection ability of nursing students. Interventional studies are recommended to investigate the effect of using cognitive and metacognitive strategies as well as reflection skills. The present study was a descriptive cross-sectional study. It is suggested that longitudinal research be conducted in the future. In addition, the limited number of students in the present study limited the generalizability of the results.

Conclusion

In the present study, the reflection ability of nursing students was assessed at a moderate level. In this regard, planning is needed to develop this ability in the studied faculty. The psychometric properties of the Persian version of Reflection in Learning Scale was approved; thus, it can be used to assess learners' reflection skills.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=804768].

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Letter to Editor

New Option of Virtual Education in Corona Days: Flipped Classroom

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Keywords:
Virtual Flipped Classroom, Flipped Classroom, Virtual Education, Traditional Education

Letter to editor,

Nowadays, the COVID-19 pandemic has resulted in an unprecedented interruption of traditional education in the universities and educational centers. Consequently, traditional education has switched to virtual education during COVID-19.

Despite virtual education, experienced teachers still have a positive attitude toward traditional education. In traditional education, which is teacher-centered, plenty of information is transferred to the students in a specified time (1), while, nowadays, in a virtual atmosphere, a new educational environment has been created based on person-centered education (2). In a virtual atmosphere, students usefully prefer to use devices such as mobile, computer, and so on, and can have more convenient access to information (2).

Therefore, to improve the standard of education and increase the learning quality in a person-centered approach in a virtual atmosphere, it is important for the teachers to become familiar with a new approach of virtual education (2). Also, the acquisition of necessary skills will help the students to study independently and participate actively in the learning process (2).

It is doubtful if we can fulfill all the needs of students in the virtual education system as we could with face-to-face interactions in the traditional method.

It seems that the flipped classroom education strategy can facilitate the student learning process during the coronavirus crisis (3, 4)

The flipped classroom is a new educational approach that reverses the traditional education method (3). In this method, at first, the students receive digital educational materials provided by the teacher at home. Then, teachers and students engage in classroom activities to discuss and solve the problems (3, 4).

Today, in the coronavirus crisis, the virtual flipped classroom is used. Virtual flipped classroom activities can facilitate e-learning education under technology (2, 5).

As part of the virtual flipped classroom-based educational strategy, the first activities will take place outside of the classroom, in the form of asynchronous e-learning educations, while the second part of the activities will take place inside of the classroom, in the form of synchronous e-learning educations such as web conference, video conference, and virtual classroom (5).

Asynchronous e-learning education is a type of education that involves teachers and students participating in the process of teaching and learning separately. Synchronous e-learning education is a type of education that involves both teachers and students to participate in the process of teaching and learning simultaneously.

This educational approach enables you to get students to do their assignments on time, can facilitate face-to-face meetings, and thereby letting you partially compensate for the flaws caused by the lack of traditional face-to-face meet-

ings (4, 6). Also, in the first activities of the virtual flipped classroom (outside of the class activities), students learn study material at their own pace (6).

The main drawback in the flipped classroom is time management (4). Flipped classroom uses a variety of teaching and learning approaches to help the teachers to manage the time to solve the students' problems (4).

It is believed that there is no specific method for a flipped classroom. Each flipped classroom is unique and requires planning based on specific goals (7), and the differences between students lead to different teaching-learning approaches. Students are free to select a desirable approach. This model of education promotes an active learning atmosphere for the students. Of course, teachers' feedback plays an important role in this regard (7).

Therefore, it seems that in a flipped classroom, cardinal skills such as critical thinking, creativity, communications, and collaboration will develop (7, 8). An appropriate level of cooperation between teachers and learners takes place. Quality of learning will be improved, and by acquiring motivation, the students take higher responsibility for their learning (4). Under this condition, students' participation will be improved, which will be helpful in increasing motivation (7, 8).

Therefore, proper perception of these conditions, which is accompanied by proper selection of the educational strategy in the universities, facilitates active learning opportunities for students (4).

Under such conditions where virtual education is used, the organization of a flipped classroom can improve the quality of virtual learning to a desirable level.

As a result, in the coronavirus era, by disseminating the pedagogical approach, teachers and learners can gain enough experience in the flipped classroom-based educational strategy that can be applied in the post-corona era as well.

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Letter to Editor

Construction of a New Professional Identity in Medical Education: A Trend to the Future in Iran due to a Basic Reform in Education and Expectations

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Dear Editor

The goal of teaching in medical sciences is to warrant increasing the number of people with professional identities. Teaching medical professionalism within a theoretical field is a means to achieve a goal. The foundations of identity development stipulated in educational psychology, and other related fields have been recently applied to evaluate the process, in which specialists attain their professional identities (1).

Moreover, professionalism must be taught to enhance the performance of physicians in increasingly complex healthcare systems (2).

All medical universities have been actively involved in establishing and implementing structured programs of teaching and assessing professionalism to undergraduate and postgraduate students (1, 3).

The commonly stated educational objectives in medial universities are to ensure the acquired cognitive base of professionalism, internalize the medical profession in students, and consistently consider professional behaviors in practice.

Finally, it is clear that the establishment of a professional identity needs to support the objective to develop educational strategies, and also to change traditional curricula in medical sciences and operate a reform in this regard (4-6).

According to some evidence, making changes in medical education procedures and the medical curriculum in Iran requires the following measures:

1. Making organizational changes in educational policies to protect the hidden dimensions of education
2. Making changes in non-standard professional practices to meet the ethical needs
3. Reviewing and discussing medical errors in patients' cares
4- Need to more attention to interpersonal communication and team working
5- Development of diseases specified non infectious(cardio vascular / cancer,….) and changing personal attitudes from influencing the patient care
6-Providing theoretical support; implementing a clinical curriculum according to patients' and day care centers' needs
7-Maintaining patient confidence in the healthcare system and tracking it up to the point of action
8. Providing rapid growth of technology and using it in diagnosis and treatment of diseases in the digital age
9. Using features of the current era students, entitled

"Millennium III", and their ability to solve problems; providing multi-tasks, self-confidence, and the chance to acquire skills related to professional life; having interest in teamwork

10. Creating multiple and sometimes contradictory identities or misleading identities in professionalism

11. Making a main change in basic sciences with accountable training; integrating professional education in main courses in the form of parallel courses or longitudinal themes in medical courses

Given the above-mentioned issues, a new professional identity needs to be defined for future medicine in Iran. This identity must-have features as follows:

- Paying more attention to ethical professionalism and medical ethics in relation to patient care, diagnosis, and treatment
- Paying more attention to communication skills and the patient and healthcare team interpersonal relationship
- Paying more attention to the reduction of medical errors due to their impact on the diagnosis and treatment processes
- Promoting individual and professional identities of students and reducing the impact of social networking on their social isolation, which is critically important due to the emergence of social technology in Iran
- Enhancing students' adaptation to modern education and replacing traditional and school education with modern education
- Mastering the bulky and up-to-date content of scientific references and resource management in the use of the Internet and social networking
- Creating a scientific link with the world's scientific scholars and developing cross-border and network-oriented communications in learning and disseminating scientific information.
- Providing more interaction with up-to-date technologies for the diagnosis and treatment of diseases and their proper use in professional life
- Empowering medical students with skills required for professionalism, such as greater resilience with impulses, life-long learning, and commitment to medical professionalism
- Changing teaching strategies for adult education and training and preparing students for future accountable careers
- Strengthening the leadership of professors in the form of modeling and role models and developing practical patterns in theory and practice

Based on the aforementioned issues, it appears that medical students and their professors should alter their traditional mindsets about medicine and have a broader view of the medical profession with a new professionalism and a challenging but bright future. Medical plans and curricula should be reviewed and modified in accordance with the changes made in medical education so that they perform more effectively with the formation and internalization of professional identities. Therefore, our students have better feelings, ability to think, and professionalism. Moreover, in the field of medical science, we can train physicians so that they become more professional, ethical, and accountable in the future.

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letter to Editor

Art in Teaching Professional Behaviors and Values to Medical Students

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Dear editor

The primary purpose of medical ethics education is to prepare qualified physicians, who can improve the community's health while respecting the patients' rights and values (1). To improve the professionalism of medical students and physicians, basic components of professionalism (e.g., communication skills and ethics) and professional characteristics (e.g., accountability, altruism, professional excellence, and moral behavior) should be taken into consideration (3). In other words, ethics education attempts to communicate the governing virtues and values related to physicians' interactions with patients, colleagues, and community (2).

First and foremost, administrators and authorities of educational institutions should openly advocate for professional training and professional commitment; this ensures the success of related programs. Second, the etymological features of professionalism (historical roots, definitions, values, attributes, behaviors, and responsibilities) should be explicitly explained. Third, the learning environment should be in coordination with the objectives of the institution and professional regulations. Also, institutions should act based on their professional and organizational values, such as accountability, impartiality, honesty, integrity, and service, as their behaviors can influence the individual behaviors of learners and physicians.

Finally, faculty members in charge of professional training should be respected by academic members with professional qualifications and values. Generally, the primary purpose of education is to internalize the concepts of professional commitment and behavior in medical students and physicians (4, 5). Since the purpose of education is clearly to internalize values in learners, instructors are required to show effective performance in this area. However, problems and challenges of professional ethics education have been discussed in multiple studies. It is still unclear which method is the most effective one for medical ethics education (2). In a previous study, the authors examined the medical ethics curricula of undergraduate students and evaluated educational practices. It was shown that educational curricula are becoming more student-centered, requiring the students' active participation. Previous studies support the use of student-centered methods in teaching the concepts of professional ethics, and it is recommended to involve students in the learning process as much as possible (6).

In another study, the researchers believed that the researchers believed that integration of adult education principles, such as the development of a targeted curriculum, training in accordance with the student's educational level, attention to the educational environment, use of student-centered methods, and ultimately use of multiple methods in an educational program, is effective in teaching medical ethics (7).

In another study performed in 2016 in Tehran

University of Medical Sciences, a new educational method, outside the medical ethics curriculum, entitled "Medical students' ethics", was implemented. In this study, 335 students from the fields of medicine, dentistry, nursing, and pharmacological sciences were recruited. Different methods of medical education were used in combination, including theater-based presentations, large group discussions, and use of multimedia. Both pretest and posttest analyses were carried out to evaluate the effectiveness of these methods. In this study, the students' satisfaction with the applied method for teaching medical ethics was also determined. In this program, which integrated different educational methods, such as theater-based presentations and storytelling, ethical analysis was found to be appealing to students, and pretest-posttest analyses indicated a clear improvement in the students' knowledge and attitudes (8).

Moreover, the use of artistic practices, such as painting, has been evaluated in teaching some medical concepts, such as cardiac function (9). Another study evaluating the relationship between medicine and art confirmed this association. Overall, many studies have highlighted the link between medicine and art and have emphasized the value of art in improving our understanding of individual characteristics. The connection between medicine and art is very important, as it improves the ethical understanding of physicians and increases their sensitivity and empathy for patients. Medicine is not only a science used for disease prevention and symptoms alleviation but also a form of art helping the physician recognize the individual experiences of patients to propose suitable treatments (10). Therefore, it seems that art practices, such as such as poem, theater, film, guide students to rethink their ways of learning and introduce them to professional behaviors and values. In this method, learners can actually understand, characterize, and express ethical behaviors and virtues, rather than only discuss a subject; this can lead to the internalization of values and behaviors in a profession.

Undoubtedly, the teaching of values and concepts related to professional commitment in medical classrooms requires the use of different methods. Achievement of educational goals in this field requires the learners' great contribution to the educational process, allowing them to actively learn the concepts of professionalism in medicine and observe the principles of professionalism.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open http://sdme.kmu.ac.ir/jufile?ar_sfile=803229].

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