



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

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Abstract

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

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

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

Keywords: Challenges, Clinical Education, Iran, Systematic Review

1. Context

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

Thus, the acquisition of essential skills in medical education depends on the quality and quantity of training in clinical settings, and these environments must be con-

tinuously evaluated and monitored to ensure that the professional identity of medical students, interns, residents and fellows is shaped with appropriate clinical education. These groups are not only part of the medical staff and medical care team in the hospital wards, but are also receiving training and learning clinical skills while being exposed to patients (4).

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

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

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

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

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

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

2. Evidence Acquisition

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

In order to achieve the research objectives, we searched the following keywords and their Persian equivalents: "clinical education", "bedside training", "medical education", "clinical round", "ambulatory education", "clinic ed-

ucation", "grand round" and "education in emergency" in national reliable databases such as the Scientific Information Database (SID), the Iranian Institute of Information Science and Technology (Irandoc), the Iranian Journals Database, the Barakat Knowledge Network System and Google Scholar.

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

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

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

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

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

Concerning the review process, the search results of

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

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

2.1. Inclusion Criteria for Research Articles

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

2.2. Exclusion Criteria for Research Articles

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

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

In order to extract data from qualitative studies, all sections related to the results and discussions were studied

several times by the researcher. Then, the sentences related to the challenges and problems were extracted from the text and saved in a separate Word file. These sentences included themes and categories extracted by the first author, the participants' conversations in the results section, and the author's conclusions.

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

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

3. Results

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

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

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

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

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

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

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

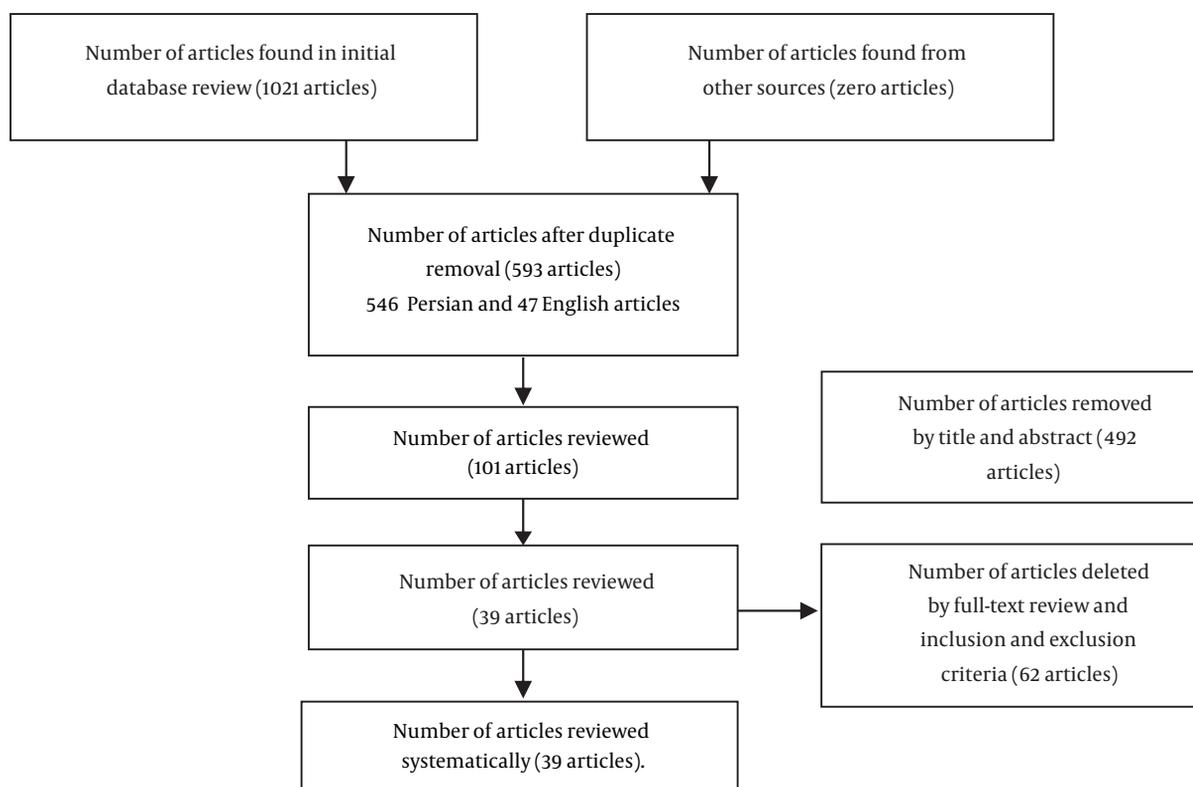


Figure 1. The process of entering articles to the systematic review

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

4. Discussion

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

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

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

4.1.1. Contextual Challenges

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

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

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

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

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

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

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

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

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

equipment (15, 23, 24, 32, 49).

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

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

4.1.2. Challenges of Clinical Education Areas

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

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

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

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

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

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

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

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

Other considerations that greatly affect students' learning quality are the problems associated with educational content of the rounds. The content of educational rounds is not of sufficient quality, with less attention being paid to such topics as patient-related social aspects in rounds, critical thinking, physiopathology, differential diagnoses, diagnostic indices, prevention and treatment

indices, and follow-up (14, 20). This has led to a decrease in the educational impact of clinical rounds on students' success in the

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

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

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

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

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

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

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

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

4.1.4. Educational Planning Challenges

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

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

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

Lack of awareness and uncertainty of students' clinical responsibilities (4, 39, 49) and irrelevant tasks (30, 45)

indicate weaknesses in defining students' professional duties. This results in less commitment in interns towards patients. On the other hand, the low level of educational needs assessment (29) and lack of attention to educational needs in planning (21, 32) exacerbate this problem.

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

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

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

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

These objectives are achieved when education manage-

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

4.1.5. Challenges Related to Clinical Teachers

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

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

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

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

side clinical training (65), which is consistent with the results of the present study.

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

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

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

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

4.1.6. Student-Related Challenges

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

appropriate interactions (13 codes).

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

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

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

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

The present study emphasized the need to identify challenges and problems in order to improve quality in clinical medical education. By reviewing articles in the field of medical education, several challenges such as contextual challenges, challenges in clinical education, educa-

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

Supplementary Material

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

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Footnotes

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References

1. Esmaili M, Haghdoost A, Beigzadeh A, Bahman Bijari B, Bazrafshan A. [Personal and scientific characteristics of positive and negative role models among medical educators from the viewpoint of dentistry and pharmacy students in Kerman University of Medical Sciences, Iran]. *Strides Dev Med Educ*. 2013;**10**(3). Persian. e60692.
2. Beigzadeh A, Adibi P, Bahaadinbeigy K, Yamani N. Strategies for teaching in clinical rounds: A systematic review of the literature. *J Res Med Sci*. 2019;**24**:33. doi: [10.4103/jrms.JRMS_460_18](https://doi.org/10.4103/jrms.JRMS_460_18). [PubMed: [31143234](https://pubmed.ncbi.nlm.nih.gov/31143234/)]. [PubMed Central: [PMC6521742](https://pubmed.ncbi.nlm.nih.gov/PMC6521742/)].

3. Beigzadeh A, Bahaadinbeigy K, Adibi P, Yamani N. Identifying the challenges to good clinical rounds: A focus-group study of medical teachers. *J Adv Med Educ Prof*. 2019;7(2):62-73. doi: [10.30476/jamp.2019.44710](https://doi.org/10.30476/jamp.2019.44710).
4. Adibi P, Alizadeh R. [The effects of clinical rounds on patients in internal wards of hospitals affiliated to Isfahan University of Medical Sciences: The viewpoints of clinical care team]. *Iran J Med Educ*. 2007;7(1):15-22. Persian.
5. Zaighami R, Faseleh M, Jahanmiri SH, Ghodsbin F. [Nursing students' viewpoints about the problems of clinical teaching]. *J Qazvin Univ Med Sci*. 2004;8(1):51-5. Persian.
6. Alavi A, Parvin N. [The view point of nursing and midwifery students about characteristics of effective clinical instructors]. *Avicenna J Nurs Midwifery Care*. Persian.
7. Hadizadeh F, Firoozi M, Shamaeyan Razavi N. [Nursing and midwifery students perspective on clinical education in Gonabad University of Medical Sciences]. *Iran J Med Educ*. 2005;5(1):70-8. Persian.
8. Peirce AG. Preceptorial students' view of their clinical experience. *J Nurse Educ*. 1991;30(6):244-50. doi: [10.3928/0148-4834-19910601-04](https://doi.org/10.3928/0148-4834-19910601-04).
9. Ahmadinejad Z, Ziaee V, Morravedgi A. [A survey on student's satisfaction of clinical education and its related factor]. *Iran J Med Educ*. 2002;2:15-6. Persian.
10. Spencer J. Learning and teaching in the clinical environment. *BMJ*. 2003;326(7389):591-4. doi: [10.1136/bmj.326.7389.591](https://doi.org/10.1136/bmj.326.7389.591). [PubMed: [12637408](https://pubmed.ncbi.nlm.nih.gov/12637408/)]. [PubMed Central: [PMC1125480](https://pubmed.ncbi.nlm.nih.gov/PMC1125480/)].
11. Nair BR, Coughlan JL, Hensley MJ. Impediments to bed-side teaching. *Med Educ*. 1998;32(2):159-62. doi: [10.1046/j.1365-2923.1998.00185.x](https://doi.org/10.1046/j.1365-2923.1998.00185.x). [PubMed: [9743767](https://pubmed.ncbi.nlm.nih.gov/9743767/)].
12. Hendry RG, Kawai GK, Moody WE, Sheppard JE, Smith LC, Richardson M, et al. Consultant attitudes to undertaking undergraduate teaching duties: Perspectives from hospitals serving a large medical school. *Med Educ*. 2005;39(11):1129-39. doi: [10.1111/j.1365-2929.2005.02320.x](https://doi.org/10.1111/j.1365-2929.2005.02320.x). [PubMed: [16262809](https://pubmed.ncbi.nlm.nih.gov/16262809/)].
13. Ahmady S, Hosseini M, Homam SM, Farajpour A, Ghitaghi M, Hosseini-Abardeh M. [Challenges of medical education at Islamic Azad University, Iran, from faculty perspective: A qualitative content analysis]. *Strides Dev Med Educ*. 2016;13(2). Persian. e57943.
14. Rohani M, Baradaran HR, Sanagoo A, Sarani M, Yazdani S, Alizadeh HR. [Attitudes of medical students, interns, residents and attending professors toward morning report]. *Razi J Med Sci*. 2016;23(147):115-24. Persian.
15. Salari A, Moaddab F, Rouhi Balasi L, Dadgaran I, Nourisaee A, Pourali H, et al. [Medical interns' satisfaction of clinical education's quality in Rasht hospitals]. *Educ Res Med Sci*. 2016;5(2):97-102. Persian.
16. Jamaazghandi A, Emadzadeh A, Vakili V, Bazaz SM. Quality of bedside teaching in internal wards of Qaem and Imam Reza hospitals in Mashhad. *Electron Physician*. 2015;7(4):1205-13. doi: [10.14661/2015.1205-1213](https://doi.org/10.14661/2015.1205-1213). [PubMed: [26396735](https://pubmed.ncbi.nlm.nih.gov/26396735/)]. [PubMed Central: [PMC4578541](https://pubmed.ncbi.nlm.nih.gov/PMC4578541/)].
17. Iranmanesh F, Hamzei Moghaddam A, Shafa MA. [Evaluation of the quality of teaching in neurology ward, Kerman University of Medical Sciences, Iran, from the point of view of medical students]. *Strides Dev Med Educ*. 2013;10(2). Persian. e60979.
18. Niroumand E, Khazaei MR, Vaziri S, Najafi F, Karami Matin B. [Quality of ambulatory education from the viewpoint of the clinical medical students at Kermanshah University of Medical Sciences in 2013]. *Educ Res Med Sci*. 2014;3(1):3-9. Persian.
19. Fani Pakdel A, Anvari K, Rostami S. [Evaluation perspective of clinical assistants of Mashhad University of Medical Sciences toward educational grant round program]. *Horizon Med Educ Dev J*. 2011;4(4):83-6. Persian.
20. Ala M, Khashayar P, Baradaran HR, Larijani B, Aghae Mybodi HR. [Factors affecting the quality of grand round from the perspectives of stagers, interns, residents and fellows]. *IJDLD*. 2013;12(2):160-6. Persian.
21. Arabshahi KS, Haghani F, Bigdeli S, Omid A, Adibi P. Challenges of the ward round teaching based on the experiences of medical clinical teachers. *J Res Med Sci*. 2015;20(3):273-80. [PubMed: [26109975](https://pubmed.ncbi.nlm.nih.gov/26109975/)]. [PubMed Central: [PMC4468233](https://pubmed.ncbi.nlm.nih.gov/PMC4468233/)].
22. Jalalvandi F, Yeganeh N, Shahsavari S, Ghorbani S, Moradi O, Ahmadi S, et al. [Evaluation of medical students' views on the current state of clinical education]. *J Clin Res Paramed Sci*. 2014;2(4):260-6. Persian.
23. Sarchami R, Sarreshtehdari M, Yazdi Z, Sharifi M, Ziaee A, Ovesi S, et al. [Quality of clinical teaching in teaching hospitals of Qazvin from the viewpoints of stagers, interns and residents in 2010-2011]. *J Med Educ Dev*. 2011;5(1):9-16. Persian.
24. Azemian A, Motamed N, Yousefi MR. [Barriers and facilitating factors in learning of effective clinical teaching in Bushehr University of Medical Sciences: Clinical students, point of view - 2010]. *Educ Dev Jundishapur*. 2015;6(1):8-17. Persian.
25. Masoomi B, Dastgiri M. [Medical students' satisfaction about quality of education in Medical Emergency Ward in Isfahan University of Medical Sciences]. *J Isfahan Med Sch*. 2011;28(121). Persian.
26. Ghaffarifar S, Ghojzadeh M, Alizadeh M, Ghaffari MR, Sadeghi-Ghyasfi F. An academic medical center: A customized strategy to overcome the shortcomings of interns' ambulatory education. *Shiraz E-Med J*. 2012;13(3):113-21.
27. Gandomkar R, Salsali M, Mirzazadeh A. [Factors influencing medical education in clinical environment: Experiences of clinical faculty members]. *Iran J Med Educ*. 2011;11(3):279-90. Persian.
28. Anbari Z, Syros A, Godarzi D, Zamani H. [Satisfaction of medical students from the medical education process in externship and internship periods in internal and obstetric wards in Arak University of Medical Sciences]. *J Health Care*. 2009;11(2):33-25. Persian.
29. Anbari Z, Ramezani M. [The obstacles of clinical education and strategies for the improvement of quality of education at Arak University of Medical Sciences in 2008]. *J Arak Univ Med Sci*. 2010;13(2):110-8. Persian.
30. Jamshidian S, Shams B, Changiz T. [Educational challenges in ambulatory pediatrics teaching programs based on the experiences of interns and attends: A qualitative study]. *Strides Dev Med Educ*. 2010;7(2). Persian. e60511.
31. Sharifi B, Ghafarian Shirazi HR, Momeninejad M, Saniee F, Hashemi N, Jabarnejad A, et al. [A survey of the quality and quantity of clinical education from the viewpoint of medical students]. *J Pars Jahrom Univ Med Sci*. 2012;10(2):57-64. Persian. doi: [10.29252/jjm.10.2.57](https://doi.org/10.29252/jjm.10.2.57).
32. Bazazi N, Falahi Nia G, Yavari Kia A, Houshmand B. [Medical students' viewpoints about the quality of education in outpatient clinics in Hamedan University of Medical Sciences in 2007]. *Iran J Med Educ*. 2011;11(2):167-73. Persian.
33. Siabani S, Moradi MR, Siabani H, Rezaei M, Siabani S, Amolaei KH, et al. [Students' view points on the educational problems in medical school of Kermanshah University of Medical Sciences (2007)]. *J Kermanshah Univ Med Sci*. 2009;13(2):162-71. Persian.
34. Nasri K, Kahbazy M, Noroozy A, Nasri S. [The medical education problems and possible Solutions in stagers and intern's view points of Arak University of Medical Sciences, 2006-07]. *J Arak Univ Med Sci*. 2010;12(4):111-21. Persian.
35. Khorasani GA, Mahmoudi M, Vahidshahi K, Shahbaznejad L, Ghafari M. [Evaluation of faculty members' and students' attitude towards ambulatory teaching quality]. *J Mazandaran Univ Med Sci*. 2007;17(58):87-100. Persian.
36. Roodpeyma SH, Salemi H. Medical students' perceptions of their clinical training in the pediatric ward of a teaching hospital, Iran. *Middle East J Family Med*. 2011;9(6):28-32.
37. Zamanzad B, Moezzi M. [Rate of satisfaction and evaluation of medical students (interns and externs) from the quality of clinical education in the Shahrekord University of Medical Sciences-2005]. *Koomesh*. 2007;9(1):13-20. Persian.
38. Adibi P, Anjevan M. [The clinical rounds on patients' bedside in internal ward from patients' viewpoints]. *Iran J Med Educ*. 2006;6(1):15-20. Persian.
39. Zahedi M, Mirmaleki Tabrizi H. [Medical education effectiveness from the viewpoints of medical students of Tehran University of Med-

- ical Sciences]. *Iran J Med Educ*. 2008;7(2):289–98. Persian.
40. Fasihi Harandi T, Soltani Arabshahi S, Tahami S, Mohammadalazadeh S. [Viewpoints of medical students about the quality of clinical education]. *J Qazvin Univ Med Sci*. 2004;8(30):4–9. Persian.
 41. Hosseinpour M, Behdad A, Samii H. [Assessment of medical interns opinion about education in surgery courses in Isfahan University of Medical Sciences]. *Iran J Med Educ*. 2001;1(3):30–5. Persian.
 42. Ziaee V, Ahmadijad Z, Morravedji AR. An evaluation on medical students' satisfaction with clinical education and its effective factors. *Med Educ Online*. 2004;9(1):4365. doi: [10.3402/meo.v9i.4365](https://doi.org/10.3402/meo.v9i.4365). [PubMed: [28253123](https://pubmed.ncbi.nlm.nih.gov/28253123/)].
 43. Mortazavi SAA, Razmara A. [Medical student satisfaction in different educational locations]. *Iran J Med Educ*. 2001;1(3):51–4. Persian.
 44. Fekri A, Sarafinejad A. [A survey of medical Students opinion regarding the quality of clinical medical education in 3 different educational groups]. *Teb va Tazkiyeh*. 2001;10(1):25–33. Persian.
 45. Karimi Monaghi H, Derakhshan A, Khajedalouei M, Dashti Rahmat Abadi M, Binaghi T. [Lived clinical learning experiences of medical students: A qualitative approach]. *Iran J Med Educ*. 2012;11(6):635–47. Persian.
 46. Avizhgan M, Farzanfar E, Najafi MR, Shams B, Ashoorian V. [Ambulatory education quality in Al-Zahra Hospital clinics in Isfahan, veiw of clerkships students and interns]. *Iran J Med Educ*. 2011;10(5):896–905. Persian.
 47. Esteghamati A, Baradaran H, Monajemi A, Khankeh HR, Geranmayeh M. Core components of clinical education: A qualitative study with attending physicians and their residents. *J Adv Med Educ Prof*. 2016;4(2):64–71. [PubMed: [27104200](https://pubmed.ncbi.nlm.nih.gov/27104200/)]. [PubMed Central: [PMC4827758](https://pubmed.ncbi.nlm.nih.gov/PMC4827758/)].
 48. Haghani F, Arabshahi SK, Bigdeli S, Alavi M, Omid A. Medical academia clinical experiences of Ward Round Teaching curriculum. *Adv Biomed Res*. 2014;3:50. doi: [10.4103/2277-9175.125771](https://doi.org/10.4103/2277-9175.125771). [PubMed: [24627858](https://pubmed.ncbi.nlm.nih.gov/24627858/)]. [PubMed Central: [PMC3949336](https://pubmed.ncbi.nlm.nih.gov/PMC3949336/)].
 49. Rezaee R, Ebrahimi S. Clinical learning environment at Shiraz Medical School. *Acta Med Iran*. 2013;51(1):62–5. [PubMed: [23456587](https://pubmed.ncbi.nlm.nih.gov/23456587/)].
 50. Mosalanejad L, Hojjat M, Badeyepyma Z. A comprehensive evaluation of the quality and barriers of bedside teaching from professors' point of view. *Int J Nurs Educ*. 2013;5(2):233. doi: [10.5958/j.0974-9357.5.2.102](https://doi.org/10.5958/j.0974-9357.5.2.102).
 51. Castiglioni A, Shewchuk RM, Willett LL, Heudebert GR, Centor RM. A pilot study using nominal group technique to assess residents' perceptions of successful attending rounds. *J Gen Intern Med*. 2008;23(7):1060–5. doi: [10.1007/s11606-008-0668-z](https://doi.org/10.1007/s11606-008-0668-z). [PubMed: [18612745](https://pubmed.ncbi.nlm.nih.gov/18612745/)]. [PubMed Central: [PMC2517943](https://pubmed.ncbi.nlm.nih.gov/PMC2517943/)].
 52. Jones P, Rai BP. The status of bedside teaching in the United Kingdom: The student perspective. *Adv Med Educ Pract*. 2015;6:421–9. doi: [10.2147/AMEP.S83407](https://doi.org/10.2147/AMEP.S83407). [PubMed: [26082672](https://pubmed.ncbi.nlm.nih.gov/26082672/)]. [PubMed Central: [PMC4461119](https://pubmed.ncbi.nlm.nih.gov/PMC4461119/)].
 53. Yaghoobi T, Saleme F, editors. [Assessment of clinical education problem and improving strategies from the viewpoint of medical student at Mazandaran Medical University 2003-4]. *Proceedings of the 7th National Congress of Medical Education*. Tabriz, Iran. 2005. Persian.
 54. Jaye C, Egan T, Smith-Han K, Thompson-Fawcett M. Teaching and learning in the hospital ward. *N Z Med J*. 2009;122(1304):13–22. [PubMed: [19859088](https://pubmed.ncbi.nlm.nih.gov/19859088/)].
 55. Masic I, Novo A, Deljkovic S, Omerhodzic I, Piralic A. How to assess and improve quality of medical education: Lessons learned from Faculty of Medicine in Sarajevo. *Bosn J Basic Med Sci*. 2007;7(1):74–8. doi: [10.17305/bjbm.2007.3097](https://doi.org/10.17305/bjbm.2007.3097). [PubMed: [17489774](https://pubmed.ncbi.nlm.nih.gov/17489774/)]. [PubMed Central: [PMC5802293](https://pubmed.ncbi.nlm.nih.gov/PMC5802293/)].
 56. Dybowski C, Harendza S. Bedside teaching: General and discipline-specific teacher characteristics, criteria for patient selection and difficulties. *GMS Z Med Ausbild*. 2013;30(2):Doc23. doi: [10.3205/zma000866](https://doi.org/10.3205/zma000866). [PubMed: [23737920](https://pubmed.ncbi.nlm.nih.gov/23737920/)]. [PubMed Central: [PMC3671319](https://pubmed.ncbi.nlm.nih.gov/PMC3671319/)].
 57. Claridge A. What is the educational value of ward rounds? A learner and teacher perspective. *Clin Med (Lond)*. 2011;11(6):558–62. doi: [10.7861/clinmedicine.11-6-558](https://doi.org/10.7861/clinmedicine.11-6-558). [PubMed: [22268309](https://pubmed.ncbi.nlm.nih.gov/22268309/)]. [PubMed Central: [PMC4952336](https://pubmed.ncbi.nlm.nih.gov/PMC4952336/)].
 58. Ramani S, Orlander JD, Strunin L, Barber TW. Whither bedside teaching? A focus-group study of clinical teachers. *Acad Med*. 2003;78(4):384–90. doi: [10.1097/00001888-200304000-00014](https://doi.org/10.1097/00001888-200304000-00014). [PubMed: [12691971](https://pubmed.ncbi.nlm.nih.gov/12691971/)].
 59. Obeidi N, Motamed N. [Comparison of students' and teachers' viewpoints about clinical education environment: A study in paramedical and nursing and midwifery schools of Bushehr University of Medical Sciences]. *Strides Dev Med Educ*. 2011;8(1). Persian. e59621.
 60. Williams KN, Ramani S, Fraser B, Orlander JD. Improving bedside teaching: Findings from a focus group study of learners. *Acad Med*. 2008;83(3):257–64. doi: [10.1097/ACM.0b013e3181637f3e](https://doi.org/10.1097/ACM.0b013e3181637f3e). [PubMed: [18316871](https://pubmed.ncbi.nlm.nih.gov/18316871/)].
 61. Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferencick G, et al. Identifying and overcoming the barriers to bedside rounds: A multicenter qualitative study. *Acad Med*. 2014;89(2):326–34. doi: [10.1097/ACM.000000000000100](https://doi.org/10.1097/ACM.000000000000100). [PubMed: [24362381](https://pubmed.ncbi.nlm.nih.gov/24362381/)].
 62. Force J, Thomas I, Buckley F. Reviving post-take surgical ward round teaching. *Clin Teach*. 2014;11(2):109–15. doi: [10.1111/tct.12071](https://doi.org/10.1111/tct.12071). [PubMed: [24629247](https://pubmed.ncbi.nlm.nih.gov/24629247/)].
 63. Khan IA. Bedside teaching-making it an effective instructional tool. *J Ayub Med Coll Abbottabad*. 2014;26(3):286–9.
 64. Holla R, Shrishna M, Unnikrishnan B, Sharma N, Janani S, Thapar R, et al. Facilitators and barriers for bedside teaching in the teaching hospitals of coastal south india. *Asian J Pharmaceut Clin Res*. 2015;8(2):271–3.
 65. Shehab A. Clinical teachers' opinions about bedside-based clinical teaching. *Sultan Qaboos Univ Med J*. 2013;13(1):121–6. doi: [10.12816/0003205](https://doi.org/10.12816/0003205). [PubMed: [23573392](https://pubmed.ncbi.nlm.nih.gov/23573392/)]. [PubMed Central: [PMC3616777](https://pubmed.ncbi.nlm.nih.gov/PMC3616777/)].
 66. Al-Swailmi FK, Khan IA, Mehmood Y, Al-Enazi SA, Alrowaili M, Al-Enazi MM. Students' perspective of bedside teaching: A qualitative study. *Pak J Med Sci*. 2016;32(2):351–5. doi: [10.12669/pjms.322.9194](https://doi.org/10.12669/pjms.322.9194). [PubMed: [27182238](https://pubmed.ncbi.nlm.nih.gov/27182238/)]. [PubMed Central: [PMC4859021](https://pubmed.ncbi.nlm.nih.gov/PMC4859021/)].
 67. Dewhurst G. Time for change: Teaching and learning on busy post-take ward rounds. *Clin Med (Lond)*. 2010;10(3):231–4. doi: [10.7861/clinmedicine.10-3-231](https://doi.org/10.7861/clinmedicine.10-3-231). [PubMed: [20726450](https://pubmed.ncbi.nlm.nih.gov/20726450/)].
 68. Wiseman C. Is patient satisfaction affected by a student? *Clin Teach*. 2014;11(1):62–3. doi: [10.1111/tct.12078](https://doi.org/10.1111/tct.12078). [PubMed: [24405924](https://pubmed.ncbi.nlm.nih.gov/24405924/)].
 69. Gonzalo JD, Masters PA, Simons RJ, Chuang CH. Attending rounds and bedside case presentations: Medical student and medicine resident experiences and attitudes. *Teach Learn Med*. 2009;21(2):105–10. doi: [10.1080/10401330902791156](https://doi.org/10.1080/10401330902791156). [PubMed: [19330687](https://pubmed.ncbi.nlm.nih.gov/19330687/)]. [PubMed Central: [PMC2696474](https://pubmed.ncbi.nlm.nih.gov/PMC2696474/)].
 70. Janicik RW, Fletcher KE. Teaching at the bedside: A new model. *Med Teach*. 2003;25(2):127–30. doi: [10.1080/0142159031000092490](https://doi.org/10.1080/0142159031000092490). [PubMed: [12745518](https://pubmed.ncbi.nlm.nih.gov/12745518/)].
 71. Mazor KM, Stone SL, Carlin M, Alper E. What do medicine clerkship preceptors do best? *Acad Med*. 2002;77(8):837–40. doi: [10.1097/00001888-200208000-00018](https://doi.org/10.1097/00001888-200208000-00018). [PubMed: [12176701](https://pubmed.ncbi.nlm.nih.gov/12176701/)].
 72. Mahoori K, Sadeghi Hassanabadi A, Karimi A, Tabatabaei HR, editors. [The viewpoint of clinical faculty members of Shiraz University of Medical Sciences about the participation of private sector's physicians concerning outpatient education to medical students]. *Proceedings of the 1st National Congress of Ambulatory*. Shiraz University of Medical Science, Shiraz, Iran. 2011. Persian.
 73. Wolpaw TM, Wolpaw DR, Papp KK. SNAPPS: A learner-centered model for outpatient education. *Acad Med*. 2003;78(9):893–8. doi: [10.1097/00001888-200309000-00010](https://doi.org/10.1097/00001888-200309000-00010). [PubMed: [14507619](https://pubmed.ncbi.nlm.nih.gov/14507619/)].
 74. Beigzadeh A, Okhovati M, Mehrohasani MH, Shokoohi M, Bazrafshan A. [Challenges of the bachelor program of health services management: A qualitative study]. *J Health Adm*. 2014;17(5):29–42. Persian.
 75. Fakhari A, Kargarmaher M, Gholizadegan A, editors. [Viewpoint of Interns in medical school about exam method at clinical department].

- Proceedings of the 7th National Congress of Medical Education*. Tabriz, Iran. 2005. Persian.
76. Vali L, Shokoohi M, Beigzadeh A. [Characteristics of a capable university teacher the viewpoints of faculty members of Health Services Management Department in Iranian medical universities]. *Iran J Med Educ*. 2014;**14**(2):90-100. Persian.
 77. Beigzadeh A, Shokoohi M, Vali L. [Characteristics of a capable university lecturer from the viewpoints of health services management students in Iranian medical universities]. *Strides Dev Med Educ*. 2014;**11**(3):330-41. Persian.
 78. Bahman Bijari B, Zare M, Haghdoost AA, Bazrafshan A, Beigzadeh A, Esmaili M. Factors associated with students' perceptions of role modelling. *Int J Med Educ*. 2016;**7**:333-9. doi: [10.5116/ijme.57eb.cca2](https://doi.org/10.5116/ijme.57eb.cca2). [PubMed: [27743447](https://pubmed.ncbi.nlm.nih.gov/27743447/)]. [PubMed Central: [PMC5116367](https://pubmed.ncbi.nlm.nih.gov/PMC5116367/)].
 79. Razavi Asl M. [Investigate the relationship between economic- social factors and job satisfaction in government agencies and institutions in Dehdasht] [dissertation]. Shiraz: University of Shiraz; 1997. Persian.
 80. Nair BR, Coughlan JL, Hensley MJ. Student and patient perspectives on bedside teaching. *Med Educ*. 1997;**31**(5):341-6. doi: [10.1046/j.1365-2923.1997.00673.x](https://doi.org/10.1046/j.1365-2923.1997.00673.x). [PubMed: [9488854](https://pubmed.ncbi.nlm.nih.gov/9488854/)].
 81. Kern DC, Parrino TA, Korst DR. The lasting value of clinical skills. *JAMA*. 1985;**254**(1):70-6. [PubMed: [3999353](https://pubmed.ncbi.nlm.nih.gov/3999353/)].
 82. Tonesk X. The house officer as a teacher: What schools expect and measure. *J Med Educ*. 1979;**54**(8):613-6. [PubMed: [469909](https://pubmed.ncbi.nlm.nih.gov/469909/)].
 83. Tremonti LP, Biddle WB. Teaching behaviors of residents and faculty members. *J Med Educ*. 1982;**57**(11):854-9. doi: [10.1097/00001888-198211000-00006](https://doi.org/10.1097/00001888-198211000-00006). [PubMed: [7131507](https://pubmed.ncbi.nlm.nih.gov/7131507/)].
 84. Seabrook MA. Medical teachers' concerns about the clinical teaching context. *Med Educ*. 2003;**37**(3):213-22. doi: [10.1046/j.1365-2923.2003.01437.x](https://doi.org/10.1046/j.1365-2923.2003.01437.x). [PubMed: [12603760](https://pubmed.ncbi.nlm.nih.gov/12603760/)].
 85. Hoffman KG, Donaldson JF. Contextual tensions of the clinical environment and their influence on teaching and learning. *Med Educ*. 2004;**38**(4):448-54. doi: [10.1046/j.1365-2923.2004.01799.x](https://doi.org/10.1046/j.1365-2923.2004.01799.x). [PubMed: [15025646](https://pubmed.ncbi.nlm.nih.gov/15025646/)].
 86. Zygmunt DM, Schaefer KM. Assessing the critical thinking skills of faculty: What do the findings mean for nursing education? *Nurs Educ Perspect*. 2006;**27**(5):260-8. [PubMed: [17036684](https://pubmed.ncbi.nlm.nih.gov/17036684/)].
 87. Aghakhani N, Baghaee R, Rahbar N. [Proceedings of the clinical evaluation of students' learning difficulties, Urmia University of Medical Sciences]. *Seminar on Emerging Trends in Medical Education Evaluating*. Mashhad, Iran. 2010. Persian.
 88. Bahmanbijari B, Beigzadeh A, Etminan A, Najarkolai AR, Khodaei M, Askari SMS. The perspective of medical students regarding the roles and characteristics of a clinical role model. *Electron Physician*. 2017;**9**(4):4124-30. doi: [10.19082/4124](https://doi.org/10.19082/4124). [PubMed: [28607645](https://pubmed.ncbi.nlm.nih.gov/28607645/)]. [PubMed Central: [PMC5459282](https://pubmed.ncbi.nlm.nih.gov/PMC5459282/)].

Table 2. Characteristics of the Systematically Reviewed Studies

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

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