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Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_104_20

Challenges and strategies of clinical rounds from the perspective of medical students: A qualitative research

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Abstract:

INTRODUCTION: Clinical rounds provide opportunities for medical students to acquire essential skills to practice medicine in the real world. Although this kind of training is one of the most important components of medical education, it is replete with barriers in its effective implementation. This study aimed to investigate medical students' experiences concerning the barriers and strategies of clinical rounds in Kerman University of Medical Sciences (KMU).

MATERIALS AND METHODS: This qualitative research was conducted on 12 medical students in KMU in 2017. Purposive sampling was used and participants in three grades (stagers, interns, and residents) were selected, and individual semi-structured interviews were conducted until data saturation. The average of the interview time differed among the three batches (stagers, 51 min; interns, 38 min; and residents, 31 min). Content analysis using deductive approach was used for data analysis. MAXQDA version 10 was used for data analysis.

RESULTS: Data analysis yielded the identification of six themes related to the system of clinical education, fields of clinical education, clinical environment, educational program, medical teachers, and medical students concerning the barriers and five themes related to the strategies for clinical rounds.

CONCLUSIONS: Findings revealed a deeper understanding of medical students' experiences. Our investigation identified multiple challenges embedded in our context and strategies to overcome them. As teaching in clinical rounds is invaluable, there is a need to take into account the identified challenges and overcome them. Thus, more effective rounds with higher efficacy toward students' professional development can be implemented.

Keywords:

Medical, qualitative research, students, teaching rounds

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Received: 04-02-2020
Accepted: 13-07-2020
Published: 28-01-2021

Introduction

Medical students acquire medical knowledge, practical skills, values, and ethics during their education through formal and informal training. The most salient part of their education is formed by clinical education. Clinical training is the cornerstone of medical education in which medical students attain clinical knowledge, clinical skills, clinical reasoning, communication skills, and professionalism.^[1,2]

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In undergraduate and postgraduate training, clinical education includes teaching in clinical rounds. In rounding practices, the patient is introduced, physical examination is conducted, and medical records are reviewed.^[3] Although teaching on rounds is considered as one of the most important components of medical education where medical students obtain many clinical experiences, it is fraught with many challenges and obstacles.^[4]

Evidence shows that currently, rounding practices are used less frequently in

How to cite this article: Beigzadeh A, Yamani N, Bahaadinbeigy K, Adibi P. Challenges and strategies of clinical rounds from the perspective of medical students: A qualitative research. *J Edu Health Promot* 2021;10:6.

comparison to the past. For instance, the average duration of teaching at the bedside is between 8% and 19%.^[5] Further, different researches highlight that more emphasis should be tailored at the effectiveness of clinical rounds. A research study in Iran showed that 76% of the patients were dissatisfied of the rounding practice due to lack of conversation with a physician in-charge. In addition, 61% of the patients preferred a reduction in the number of students while 49% preferred a change in the process of clinical round.^[3] In a similar line, other studies in Iran highlight the low quality of clinical rounds^[6] and its unfavorable trend.^[7] Research findings indicate that clinical teaching is replete with challenges such as lack of time for teaching, multiple responsibilities, financial constraints, lack of dignity for education, and research priority to teaching activities.^[8] Studies conducted in other countries have accentuated many challenges embedded in clinical rounds. A study conducted by Seabrook using a qualitative approach showed the most important problems in the clinical environment as lack of definite structure for clinical teaching, time constraints, lack of adequate facilities, insufficient supervision, and lack of support for clinical teaching.^[9] In another qualitative research by Hoffman and Donaldson regarding the clinical environment tensions, findings revealed that the number of patients, time, and multiple roles of the medical team had an effect on the clinical teaching.^[10]

To achieve high-quality teaching, there is a need to identify the challenges as well as the solutions to increase students' satisfaction, provide better services, and augment the effectiveness of teaching. By the same token, as taking care of patients' lives is paramount, the quality of medical education systems must be improved.^[11] Identifying the challenges of clinical education and finding strategies to overcome them are critically important. Thus, situation analysis to find the pros and cons of clinical teaching can be helpful. In this regard, obtaining the perspective of medical students can shed light on the strengths and weaknesses of clinical education in the clinical environment to enhance its quality.^[12]

To the best of our knowledge, there is a paucity of literature concerning the challenges and strategies of clinical rounds from the perspective of medical students, especially in our context. Therefore, due to the importance of clinical rounds in fostering the professional skills of medical students, this study was conducted to identify the challenges and strategies of clinical rounds in Kerman University of Medical Sciences (KMU).

Materials and Methods

This qualitative research was undertaken using content analysis approach in 2017. Content analysis is a method of analysis in which words and certain concepts in

a text are analyzed to abstract, define, and interpret data.^[13] The study sample included medical students in the stagership (2 females, 3 males), internship (3 females, 1 male), and residency (3 males) period at KMU. We recruited medical students as they had close contact with the educational program and were familiar with clinical rounds. Hence, their first-hand experiences could help researchers to identify the challenges and strategies embedded in clinical rounds. Participants were chosen using purposive sampling and voluntarily entered the study. The inclusion criteria were (1) medical students (stagers, in the 5th year; interns, in the 6th year; and residents) in their clinical rotations at KMU and (2) willingness to participate in the study.

Informed written consent was granted from the study participants before data collection. After arranging time with participants, a quiet place was chosen to conduct the interviews. Before the initiation of each interview, the objectives of the study and the condition of using data were explained to participants. The final number of participants was determined based on data saturation. Thus, sampling continued until no new information or data were added to the previous obtained data. Totally, 12 interviews were conducted. Interviews were done by one of the members of the research team.

Duration of interviews for each batch was different. The mean of interview time for stagers, interns, and residents was 51, 38, and 31 min, respectively. In this study, to obtain rich data, we used individual semi-structured interviews with open questions from participants. Each interview started with these open questions: "What did you do during a day in the clinical round?," "Could you talk about and express your experiences concerning how clinical rounds are conducted?," "With what challenges and obstacles are you faced during clinical rounds?," "Are there any solutions and what are they?." In addition, the interviewer used probing questions such as "Please explain more" and "Do you want to add anything else?" to obtain more information.

To analyze data, the deductive content analysis approach was used to identify the challenges and strategies of clinical rounds. The analysis framework was based on the previous researches related to the topic under investigation.^[1,4,6] As some of the categories could not be formed based on the deductive framework, we used inductive content analysis as well to form new categories. Data analysis based on the deductive-inductive approach included the following steps:

1. Typing the interviews
2. Perusing each interview line by line
3. Using the analysis framework (matrix) obtained from previous researches

4. Allocating codes and forming categories in the matrix
5. Extracting main categories related to challenges and strategies of clinical rounds in inductive content analysis
6. Classifying data based on the similarities and differences and forming the subcategories.^[14]

Data were analyzed using MAXQDA distributed by VERBI GmbH in Berlin, Germany version 10. Data were gathered during a 5-month period from July 2017 to November 2017. The validity of the data was based on four indicators expressed by Goba and Lincoln, including credibility, dependability, confirmability, and transferability.^[15] Concerning credibility, long engagement with data and allocating enough time to gather data were taken into consideration. In terms of dependability, an external reviewer supervised the data gathering process and approved the results. Regarding confirmability, researchers were neutral in the analysis process and co-researchers reviewed and approved the codes and categories. With reference to transferability, all activities in data gathering and analysis were recorded, and rich description of data was provided.

Ethical considerations including confidentiality of information, anonymity of participants, as well as obtaining written consent form to record the interviews, were taken into account. Having the right to withdraw from participation was another ethical consideration in this study.

Results

In this study, 12 medical students (5 females and 7 males) in which five were stagers (41.7%), four were interns (33.3%), and three were residents (25%) with an average age of 26 years participated. Totally, 870 initial codes were extracted from the interviews. Of the total codes extracted, 609 and 261 codes were related to the challenges and strategies of clinical rounds, respectively. The identified challenges included 16 categories and 48 subcategories. Data analysis revealed six main categories as depicted in Table 1.

Clinical education system

This challenge included structural and systemic problems.

Structural problems

Participants highlighted issues related to defects in infrastructures, lack of space, and limited facilities. One of the residents regarding the infrastructures stated, "The PACS system was implemented to help us see the patients' radiographies. But, it not only has had a benefit but also it has incurred some expenses. At times, we have to take a new radiography." A stager expressed, "The libraries are not

equipped. We cannot take reference books from the library. We must take the PDF of reference books from our teachers or residents." Regarding the space, participants highlighted issues related to shortage of educational space. An intern said, "We have never had a rounding practice in the urology ward as rooms are too small." A stager expressed, "Due to the crowded ward and lack of space, we were taught in the class, we were not at the bedside, and we could not see the patient."

With reference to educational and treatment facilities, participants talked about shortage of beds, lack of facilities such as bandages, clothes, and blankets, as well as the low quality of patients' radiographies. A stager expressed that, "While I am changing the bandage of a surgery patient, all of a sudden due to bleeding, there is a need for clothes, a blanket, and extra bandage, but they are not ready, and it takes time to bring them."

Systemic problems

Majority of the participants were unanimous that medical students preferred to pass medical examinations and receive their certificate instead of learning the necessary competencies as well as clinical experiences and skills. Besides, the priority of patients' treatment to teaching at the bedsides was considered as a challenge.

Fields of clinical education

This challenge had three categories, including problematic clinical rounds, patient role in clinical education, and outpatient clinical education.

Problematic clinical rounds

Among the challenges in this category, crowded rounds due to the presence of multiple students on rounds had the most frequency. The majority of participants articulated that, "A major problem is the attending of 10–15 students in rounding practices." An intern stated, "During a rounding practice, we were supposed to examine a gland in an old woman. We started examining the patient one by one. I was the last person in the row. As I wanted to start examining, she said that she was tired and I could not examine her."

Another issue highlighted was lack of program for rounding practices. A resident said, "Teachers do not tell us about what they are going to teach on rounds to prepare ourselves." An intern expressed, "Only stagers have an educational program. We do not have any teaching rounds. We only attend working rounds." Unclear clinical roles and responsibilities was another challenge. An intern stated, "Our responsibilities are not clear. Interns are students not staff. They see us as staff to do the personnel's tasks not as those who need to receive education." A resident highlighted that, "Interns are involved in unimportant tasks. For instance, they are told to print laboratory results and they only print them without analyzing them."

Table 1: Challenges of clinical rounds from the perspective of medical students at Kerman University of Medical Sciences, 2017

Main category	Category	Subcategory	
1. Clinical education system	Structural problems	Defects in infrastructures Deficiency of educational and treatment space Deficiency of educational and treatment facilities	
	Systemic problems	Dominant priorities	
2. Fields of clinical education	Problematic clinical rounds	Busy rounds	
		Lack of planning for rounding practices	
		Unclear roles and clinical responsibilities	
		Low quality of rounds	
		Holding rounds in classes	
		Simultaneous working and teaching rounds	
		Overcoming specialized education	
		History-taking problems	
		Time of rounding practices	
		Infringing patients' right	
3. Clinical environment	Patient role in clinical education	Lack of patient awareness	
		Patient dissatisfaction	
	Outpatient education problem	Large number of patients	
		Unfavorable patient condition and diversity	
		Lack of essential skills	
		Coincidence with other activities	
		Environmental factors (e.g., lack of light, poor ventilation)	
		Time constraint	
		Crowded and noisy environment	
		Inappropriate behaviors	
4. Educational program	Improper interpersonal interactions	Lack of cooperation	
		Lack of sufficient knowledge	
		Lack of practical skills	
		Lack of clinical reasoning skills	
		Lack of history-taking skills	
		Lack of prescription skills	
		Lack of communication/moral skills	
		Lack of familiarity with medical terms	
		Evaluation problems	Inappropriate evaluation
			Gap of theory and practice
Planning problems	Low quality of theoretical teaching		
	Lack of regular teaching rounds for interns and residents		
5. Medical teachers	Lack of medical and personality competence	Lack of role models	
		Lack of educational responsibility	
		Lack of teaching skills	
		Teaching based on desire	
		High workload	
		Lack of access to teachers	
6. Medical students	Motivation	Lack of motivation in teachers	
		Unprepared for learning	
	Lack of educational readiness	High workload	
		Lack of motivation	
		Fatigue	
		Stress/burnout	

Another problem put forward by the participants was the low quality of rounds. Some of the participants stated that, "Teaching rounds are not effective. We are not taught how to think aloud or learn clinical reasoning skill. Teachers elaborate on theoretical topics at the bedside which are irrelevant to the patient." An intern stated that, "Medical

teachers do not categorize the topics they want to teach to different grades of students." About the simultaneous working and teaching rounds, a stager said, "Medical teachers conduct teaching rounds with working rounds at the same time which I think is not at all effective. Working round is done faster, and a patient is investigated concerning

paraclinical topics. Such topics are not practical for stagers." Overcoming specialized education was another problem. An intern expressed, *"We learn very specialized topics. For me to be a GP and work in a local clinic in the future, specialized education does not help me. If 1 day I have a patient with basic clinical problems, I cannot do anything for him/her and I have to refer the patient to a hospital. We must learn common illnesses like common cold or diarrhea."* Majority of the stagers complained about the history-taking. A stager mentioned, *"The clinical rounds are not based on a clinical reasoning system and students cannot take a history based on this system. Histories taken are too comprehensive, in which all the patient's elaborations, which are irrelevant, are recorded."* Concerning the time of the round, issues such as longer rounds for stagers, variable rounding practices, and shorter rounds for interns and residents were put forward. A stager stated, *"Our rounds are very long. I get a backache and headache, but now I am getting used to it."*

Patient role in clinical education

In this category, different issues were expressed by participants. Concerning patients' rights, an intern declared, *"Some medical teachers do not look at the patient while he/she is talking. They do not care. They angrily say to the patient or his/her companion to be quiet."* Another intern said, *"Rarely, do we see a medical teacher introduce himself or herself to the patient or ask for permission to examine the patient."* Patients' lack of awareness was another problem. A resident said, *"Patients are not justified about the nature of teaching hospitals."* Regarding patients' dissatisfaction, a stager mentioned, *"Patients who are in pain are questioned many times. One time by a stager, one time by a resident, and one time by the staff."* Concerning the large number of patients, an intern highlighted that, *"If you want to learn something, you must follow it yourself. But, owing to the large number of patients and many responsibilities, we cannot find the time to learn."* Participants also elaborated on the diversity of patients. They expressed, *"We have many patients, but good cases are rare. For example, we cannot examine a patient with diarrhea in the ward as such cases are handled in the ambulatory care setting. I am going to be graduated within 2 years, but I cannot manage common illnesses."*

Outpatient education problem

For this problem, lack of teaching in the outpatient setting to learn essential skills was highlighted. An intern said, *"We must visit patients in the ambulatory care setting more in comparison to patients in the ward."*

Clinical environment

This challenge included the aura of clinical environment and improper interpersonal interactions.

The aura of clinical environment

Topics such as time constraint, coincidence of rounds with other activities, environmental factors, and noisy

environment were also discussed. For the coincidence of rounds with other activities, participants stated that *"Our clinical round interferes with the visit of other attendings. Also, at times, it is done when patients are eating breakfast or the rooms are being cleaned. These things make us lose our concentration."* Regarding environmental factors, some participants expressed that environmental stimuli distract students. Besides, some participants highlighted the crowded ward. *"The number of patients is high and they are with their companion. When the round is in progress, they are talking. Consider that 20 students are supposed to be trained in such an environment."*

Improper interpersonal interaction

Concerning inappropriate behavior, a stager said, *"Some teachers behave badly with the students in front of the patient. It is obvious that students do not know a lot of knowledge-based information. Students should not be asked about these things at the bedside which is with disdain and sneer."* Lack of cooperation from residents, personnel, and patients was mentioned by the participants as well. A stager said, *"I ask a question from a resident, but he doesn't answer. Also, the staff do not let us see patients' medical records."*

Educational program

This challenge included lack of knowledge and skills, evaluation problems, and planning problems.

Lack of knowledge and skills

For this issue, a resident stated, *"Why did you prescribe this medicine? What dosage and why? Why didn't you prescribe this medication to another patient and substitute it with another medicine? These things are critically important for us to learn. But, we are not taught about these issues."* Majority of the participants were agreeable that how to think aloud and clinical reasoning skill is not taught to medical students. An intern mentioned, *"A series of skills such as history-taking, prescription, gynecology examination, and the care provided to pregnant women are not taught to us."* Participants also highlighted lack of communication/moral skills. A resident believed that, *"Communication skills or ethical skills concerning patients are not taught to medical students."*

Evaluation problems

Inappropriate evaluations were expressed by many participants. One of the stagers mentioned, *"Our examinations are theory-based and in the format of multiple-choice questions which we should answer them based on our theory-based knowledge."* An intern said, *"All students are passed, there is no difference between good and bad students. I believe that only two graduates out of 40 are really competent doctors when they graduate."*

Planning problems

In this category, obstacles related to gap of theory and practice, low quality of theoretical teaching, and

lack of education were discussed by the participants. Concerning gap of theory and practice, participants said, *"Level of medical knowledge with clinical work and skills are not the same. There is a big difference between them. A good student with an average GP of 17 or 18 cannot do simple tasks."* Some students complained about the time of classes and believed that afternoon classes (from 12 a.m. to 2 p.m.) are not educationally effective. Concerning the teaching quality, participants expressed, *"Teachers teach us without preparation. In the children ward, we had two attendings. The first attending taught us children's fever. The second attending also taught us children's fever."* Concerning lack of teaching, most of the interns were dissatisfied with this matter. An intern said, *"Internship for me is the period which I have received less training in comparison to stagership."* Lack of paraclinical training was mentioned by the participants as well. An intern said, *"Take away paraclinic from a physician, he can do nothing for the patient. Imagine working in a place without an urologist or a radiologist. You must sort things out for your patient on your own."*

Medical teachers

This challenge had three categories related to teachers' competence, responsibilities, and motivation.

Lack of medical and personality competence

For this issue, participants mentioned lack of role models, lack of educational responsibilities, and lack of teaching skills and teaching based on desire. Regarding lack of role models, improper behavior with students and patients was highlighted. A stager expressed, *"Some teachers are very knowledgeable and well rounded, but they lack ethical standards."* Lack of clinical skills was also taken into account, and participants stated, *"Our teachers are not familiar with educational issues, and they have not participated in medical education courses. They need to pass such courses. It is not true to consider every doctor as a competent teacher."*

Multiple responsibilities

For this issue, high workload and lack of access to teachers were highlighted. Participants stated, *"Teachers due to their managerial posts put less time aside for students, and on this account, we have less access to them."* A stager said, *"The main problem is the excessive workload of teachers. Some wards have extra activities, which are financially profitable for doctors, for example, colonoscopy or angiography. Teachers prefer to do these extra activities, rather than teaching medical students on rounds."*

Motivation

The only identified challenge for this category was related to teachers' lack of motivation. An intern mentioned, *"I feel that teachers are not motivated. They come and visits patients quickly. They do not teach on rounds. Maybe they are tired."*

Medical students

The sixth challenge identified was related to students' unpreparedness, motivational factors, and psychological factors.

Lack of educational readiness

Some stagers stated that, *"Students are not prepared for the discussions on rounds in advance. On this account, they do not listen to the teacher. They use their mobile phones instead."* An intern mentioned, *"Due to the high number of patients and their tasks, I do not find the time to study my lessons."*

Motivational factors

For this challenge, some stagers acknowledged that, *"At times, we do not feel like working, we just take the history perfunctory, or we talk with seniors and ask them to tell us the history of the patient."*

Psychological factors

Participants acknowledged that psychological factors that are hindrances for effective teaching are related to the nature of the medicine. A resident stated, *"My hair has gone white within a year. I am not dejected; this is what I have chosen."* Another resident mentioned, *"I cannot remember the last time I did not have stress. I suddenly wake up and remember the things I had to do for my patient."* In a similar line, an intern said, *"I am afraid of the future because I have not been trained skillfully."*

The identified strategies encompassed 13 categories and 41 subcategories. Concerning strategies of clinical rounds, five main categories are extracted as shown in Table 2.

Clinical education system

In this category, participants acknowledged strategies regarding educational space and necessary infrastructures.

Improving structures

Concerning this problem, participants highlighted the issues related to the improvement of educational space and infrastructures. They believed that the lighting of the rooms, ventilation, as well as room hygiene, should be improved. In addition, access to the internet in the hospital, improving the PACS system, and equipping the library were mentioned many times. One resident expressed, *"It is a good idea to establish a network between hospitals to share patients' radiographies via the PACS system."*

Fields of clinical education

This category included strategies related to the planning for clinical rounds, patient role in clinical education, and improving interactions.

Table 2: Strategies of clinical rounds from the perspective of medical students at Kerman University of Medical Sciences, 2017

Main category	Category	Sub-category	
1. Clinical education system	Improving structures	Providing necessary infrastructures Improving educational and treatment space	
	2. Fields of clinical education	Planning for clinical rounds	Priority of teaching to patient care
Determining clinical roles and responsibilities			
Considering a set time for clinical rounds			
Determining the content of clinical rounds			
Choosing the right place for holding clinical rounds			
Step-by-step teaching			
Teaching focused on one patient			
Targeted history-taking			
Providing feedback to students			
Avoiding pointless discussions at the bedside			
Increasing students' participation on rounds			
Holding before and after rounds			
Different teaching and working rounds			
Having more rounds for students			
Reducing the number of students on rounds			
3. Educational program	Patient role in clinical education	Reducing patients' concern	
		Patient awareness	
		Obeying patients' rights	
	Improving interactions	Establishing good relationships	
		Teaching practical skills	
	Skill training	Teaching clinical reasoning skills	
		Teaching prescription skills	
		Teaching history taking skills	
	Teaching common cases	Teaching medical terminologies	
		Teaching common clinical topics	
		Awareness of educational goals	
	4. Medical teachers	Educational planning	Reducing the gap of theory and practice
			Performance-based evaluation
			Educational responsibility
		Improving evaluation methods	Increasing educational skills
Professional development			
Improving knowledge-based competencies		Introducing positive role models	
		Having access to teachers	
		Educational responsibility	
Improving moralities		Giving students the right to act	
		Students' professional development	
		Preparing students	
5. Medical students		Improving educational competencies	Motivating students
			Motivational factors

Planning for clinical rounds

The priority of teaching on rounds was an important issue acknowledged by participants. A stager mentioned, "Majority of the students prefer to learn clinical topics at the bedside as it increases their learning." An intern said, "It is much more effective if a combination of teaching methods be used. For example, integration of videos, animation, and slides accompanied by teaching at the bedside can augment our learning."

Giving roles and responsibilities were also suggested by medical students. Setting the objectives and the expectations at the beginning of rotations, defining the tasks for different grades of students, allocating clinical

roles to residents, and involving students in the care of patients were stated as strategies accordingly. Majority of the staggers stated, "A booklet with the aim of introducing the clinical tasks and duties can be a great help." An intern said, "Teaching by seniors to juniors must be mandatory. Seniors must grade junior students."

Timing of rounds was another important topic. With reference to this topic, strategies such as allocating a definite time for rounds and reducing the bedside round were expressed by participants. An intern mentioned, "The round must have a definite time. There is no need to discuss all topics on the round. We can postpone them to after round debriefing."

Concerning the content of rounds, two suggestions were put forward. They included the determination of educational topics of the round before its initiation and choosing practical topics during the rounds. Regarding the first suggestion, a stager said, *"It is very important for me to know about the rounding practice and its activities in advance. If I know about the topics beforehand, I can prepare myself the night before by searching and reading books."* Another stager about the second suggestion mentioned, *"Irrelevant topics which are for internship period should be postponed. This helps not to waste time and reduce the length of round."* Another strategy was related to the location of the round. Recommendations such as delivering theoretical discussions from bedside to classroom and holding rounds in classes due to the unfavorable conditions of wards were mentioned by the participants. An intern acknowledged, *"It is much better if teachers teach theories in the classroom."*

Regarding teaching focused on one patient, issues such as teaching especial practical skills on one patient at the bedside and patient-based education rather than theory-based education were stated by the participants. An intern regarding the first issue said, *"One of our teachers asked us to bring the sonography machine at the bedside to learn better."* A stager concerning the second issue said, *"There must be more time allocated to patient-based education."*

Targeted history-taking based on the patient's problem, taking history for a limited number of patients, and improving the quality of histories taken were mentioned many times by the participants. A stager said, *"The length of histories should be reduced and replaced with more educational time."* Giving feedback on the histories to students was also highlighted. A stager acknowledged, *"Elaborations by the teacher on the history read by the student in terms of what algorithms did you use is practical."*

Participants mentioned that to increase students' participation on rounds, there is a need to involve them, provide opportunities for them to answer questions, and discuss with them the plan of the care. An intern expressed, *"Although I have finished the internal rotations, but I still remember many things as I learned them at the bedside visiting the patients."* Another suggestion was related to briefings and debriefings before and after the round. An intern said, *"Rounds must be at the bedside, but before and after the rounding practice, the teacher and students can get together to discuss related topics."*

Participants declared that working rounds and teaching rounds must be separated. In this regard, choosing an attending for each rounding practice, not holding the two rounds at the same time, and managing them were stated. In addition, to increase the number of rounds,

some participants believed that as patient encounter is important, more emphasis must be on teaching rounds.

Patient role in clinical education

For this category, issues related to reducing patients' concern, patient awareness, and patients' rights were highlighted. Participants stated that, *"When present at the bedside, we should talk gently with the patient and establish a good rapport."* A stager mentioned, *"Teachers use medical terms at the bedside when they teach us in order not to make the patient worried."* Participants believed that patients need to know about their medical problems and the medical team must explain to them in lay language. In addition, the plan of care and justifying the patients concerning the nature of educational hospitals must be explained to the patients. Regarding patients' rights, an intern declared, *"We had a teacher who cared for patients and treated them with grace. He asked for permission before any examination and justified the patient for why we had gathered at the bedside."*

Improving interactions

This category included respecting the patient and establishing good rapport with the patients as well as the students. A stager mentioned, *"When a teacher behaves well and answers even the silliest questions, you are more motivated. This kind of teacher has both the knowledge and the ethical standards."*

Educational program

This category included skill training, teaching common cases, educational planning, and improving evaluation methods.

Skill training

Participants highlighted teaching of practical skills (e.g., physical examination and patient management), clinical reasoning skills, prescription skills, and history-taking skills. Some stagers believed that, *"Examining the patient at the bedside and seeing his radiographies are the main components of the rounding practice."* Another stager acknowledged, *"It is important to learn specific physical exams in each rotation. Teachers must mock the physical exam and we should do it individually."* Concerning the clinical reasoning skill, one intern expressed, *"If we learn clinical reasoning, then we can understand physical examination and history-taking better and how to conduct them. I think it is much better if we learn clinical reasoning by films, animation, and games."* A stager concerning prescription skills mentioned, *"Knowing different medicine, dosage, and side effects of each drug is important. Ambulatory care setting is a good place to learn prescription skills."* By the same token, providing opportunities to learn how to write a prescription or request laboratory tests as well as radiology request under the supervision of the medical teacher were highlighted. Regarding history-taking, a stager declared, *"The medical teacher should diagnostically correct our history-taking problems."*

Teaching common cases

Teaching medical terminology and common clinical topics were highlighted by the participants. One stager stated, "Teaching specialized medical terminologies without purpose is not practical. It is much better if we learn them based on the relevant topics." Concerning common cases, a stager said, "Challenging patients must be taught in rounding practices." An intern mentioned, "In internship period, we need to have a protocol for very important and must to learn topics." Teaching core topics was another issue suggested by the participants. One stager said, "Teachers must tell important and key points to us. For instance, in the gastroenterology ward, liver and spleen examination is important to learn." Participants believed that ambulatory care setting is an ideal place to learn common cases. They stated that, "Patients with common diseases such as the flu or common cold are admitted in the outpatient. We can learn more future-related topics in the ambulatory care setting."

Educational planning

For this category, making patients aware regarding the educational objectives and reducing the gap between theory and practice were highlighted. Concerning the latter issue, an intern stated, "What really has an effect on me is knowing the plan of my day in the hospital." In terms of the former issue, a resident said, "Knowledge and experience must be up to date. Even experience is more prominent than knowledge. We learn different ailments in theory. But, we prefer to learn the things in practice which have relevancy to our future."

Improving evaluation methods

For this category, participants highlighted performance-based evaluations. An intern expressed, "I believe that clinical skills and patient encounter are needed to be evaluated rather than theoretical knowledge."

Medical teachers

This category included strategies related to the improvement of knowledge-based competencies and moralities.

Improving knowledge-based competencies

This category included educational responsibility, educational skills, and professional development. Regarding the first item, these issues were expressed by participants: putting time aside for teaching and allocating more time for rounds and teachers' commitment to teaching. An intern said, "Those teachers who care for teaching not only train students in terms of knowledge and practical skills but also act as a role model." Participants believed that to improve educational skills, teachers must have organized teaching. A stager mentioned, "Clinical rounds and theoretical lessons need to be integrated." For professional development, a resident

expressed, "A certificate in medical education must be a mandatory part for recruitment."

Improving moralities

This category included strategies related to positive role models and access to teachers. An intern believed that, "Teachers must teach us the knowledge and the ethical standards. I must learn from my teacher the commitment, responsibility, virtue, and knowledge." A resident mentioned, "If we have an influential teacher, the resultant would be more motive to work and learn more." An intern regarding access to teachers said that, "If we have an educational attending in internship and stagership period and we have access to them, it would be very rewarding."

Medical students

This category included strategies related to improving educational competencies and motivational factors.

Improving educational competencies

Giving responsibility to students was one of the suggestions stated by the participants. A stager said, "It is a good idea if senior students teach us instead of the medical teacher. In this regard, our evaluations would be formative and the senior students learn better." An intern mentioned, "Teachers must make students responsible for part of their learning by asking them to search for the topics to be discussed on clinical rounds." Participants also highlighted issues related to their freedom to be involved more in learning. An intern said, "When I take the patient's history and this medical history is used in the next processes of the patient's treatment, I would try to do my job perfectly." In addition, preparation before the rounding practice and being ready for the topics on rounds beforehand were mentioned by the participants. An intern stated, "Preparation plays a pivotal role. We need to learn clinical reasoning skills first and then be involved with patients on rounds."

Motivational factors

For this category, the majority of the participants believed that an incentive system needs to be incorporated to make students active. A resident expressed, "Virtual reality, films, or games may captivate students more." Another resident said, "If students are motivated, the quality of rounding practices would improve."

Discussion

In this study, we identified the challenges and strategies of clinical rounds from the opinions of medical students. Data analysis revealed that teaching on rounds is replete with many challenges. These challenges were classified into different categories mainly related to medical teachers, students, and patients as the major components of clinical teaching. In addition, educational system, the arena of clinical education,

and educational programs were also highlighted by the participants.

The first challenge was related to the clinical education system. Infrastructures were also highlighted in the studies conducted by Nasri *et al.*,^[16] Arabshahi *et al.*,^[17] and Niroumand *et al.*^[18] In some studies, lack of personnel (nursing staff and faculty members) was mentioned as infrastructure problems,^[19] but we did not identify such a problem in our study. Our findings are in line with the studies done concerning inappropriate educational space.^[5,17] Furthermore, many studies have been done regarding lack of educational and treatment facilities.^[16-18,20] In terms of systemic challenges, similar results were highlighted in the studies by Arabshahi *et al.*^[17] and Gandomkar *et al.*^[8] In a study, the priority of research to teaching was put forward.^[21] Similar strategies concerning the clinical education system were identified in other studies.^[22,23]

The arena of clinical education was the second challenge in the present study. One of the most important problems in which majority of the students had a complaint was related to the crowdedness of the rounds, due to the presence of multiple students on rounds. Other studies have highlighted this issue as well.^[7,24] Lack of planning for clinical education,^[24] unclear clinical roles and responsibilities,^[12,25] low quality of rounds,^[6,7,22] simultaneous working and teaching rounds,^[17] and specialized education^[8,21,26] were similar results in other studies. With reference to the role of patients in clinical education, infringing patients' rights,^[3,4,5,17] patients' dissatisfaction of clinical rounds,^[7,27] large volume of patients,^[4,19] patients' bad condition, and lack of diversity^[8] were expressed by the participants. For ambulatory care setting problems, our results are consistent with the findings of a study which highlighted lack of prescription skills in medical students.^[21]

In terms of strategies for clinical rounds, participants had an emphasis on the priority of teaching at the bedside. This finding corroborates with the result of another study.^[28] Participants believed that before the rounding practices, the roles and clinical responsibilities for different grades of students, as well as the objectives and expectations, must be defined. These results are in line with other studies.^[5,29] To increase the effectiveness of clinical rounds, there is a need for a definite timetable,^[29] prior preparation,^[24,27] and structured teaching. Other strategies included teaching of practical skills and history-taking to medical students that were accentuated in different research studies.^[29,30] Other strategies encompassed giving feedback,^[4,19,28] respecting the patient,^[7] establishing a good relation with the patient,^[31] and introducing the medical team to the patient,^[1] and asking for permission from the patient.^[2]

The aura of clinical education was the third challenge in the present study. Factors such as crowded and noisy environment,^[5,17,19,31] poor ventilation,^[17] and interruption during the rounding practice^[5] were cited in other studies which are consistent with the present study. In other studies, issues such as improper interpersonal interactions were identified as one of the challenges of clinical rounds.^[7,17] A study also considered lack of patients' cooperation with students as an obstacle.^[31]

The fourth challenge was related to the educational program. Findings show that medical students do not have sufficient medical knowledge, clinical skills, and clinical reasoning skills. This finding is consistent with the results of other studies.^[4,5,17] Challenges related to the gap of theory and practice were stressed in the studies conducted by Jalalvandi *et al.*^[32] and Siabani *et al.*^[26] Several studies have indicated inappropriate evaluations.^[1,6,16,17,26] In terms of strategies, similar studies have emphasized on the awareness for educational objectives,^[17,22] which is in line with the present research. Other researches stressed the teaching of medical terminologies^[17] and choosing interesting patients with high educational value^[2] in rounding practices. Participants, especially interns, emphasized training in ambulatory care setting. As a general practitioner's job is directly related to the training in outpatient, lack of planning can have detrimental effects on students' learning. Therefore, teaching students in the ambulatory care settings is an ideal strategy accordingly. Stagers complained about long histories that they had to write for each patient. Concerning this issue, interns and residents were not agreeable with stagers and they believed that writing complete histories is one of the necessities of learning.

The fifth challenge was related to medical teachers. In this category, issues including negative role models,^[33-35] lack of sufficient skills for teaching,^[4,5,18,22,27,31] inaccessibility to teachers,^[27] teaching based on desire,^[26,27] and lack of motivation^[5,21,24] were also expressed in other studies. High workload and different teacher responsibilities^[1,4,17] were mentioned in other researches which are in line with our investigation. Suggestions such as creativity in teaching, reducing research duties, and providing a competitive atmosphere were expressed in the literature,^[5] but our participants did not mention them. Studies conducted by Ahmadi *et al.* and Beigzadeh *et al.* have emphasized the faculty development programs.^[2,20] Concerning the commitment and teacher responsibilities, our findings are consistent with the results of studies conducted by Azemian *et al.*^[23] and Mosalanejad *et al.*^[36] It is highly important to mention that the identified strategies may work well for educational responsibilities of medical teachers and these strategies cannot be incorporated into their clinical responsibilities. Faculty members as the main pillars in the educational system

have a very salient role in the quality of higher education system. Thus, by knowing their favorable characteristics, the quality and effectiveness of the educational system can be improved.^[37,38]

The last but not least challenge was related to students. Students, especially interns and residents, considered multiple responsibilities as the most important challenge. This issue has been highlighted in other studies.^[1,5] By the same token, students' motivational factors,^[1,8,20,21] lack of previous preparedness,^[17] and stress^[21] were mentioned in different studies. In a study using the Delphi technique in three rounds, reasons behind students' lack of participation were identified. Among the identified reasons, motivation played a pivotal role.^[39] Challenges such as doing harm to the patients due to stress in examination skills and not obeying organizational rules were not identified in the present study, but these challenges were mentioned in other researches.^[4,17] In terms of strategies, literature indicates issues related to motivating students in clinical decision-making,^[2] considering students as a part in decision-making,^[2] and providing opportunities for practicing physical examination under the supervision of the teacher.^[2,30] Strategies such as considering a time for discussion at the end of the rounding practice^[2] and asking students to come up with a treatment plan^[29] were not mentioned by our participants.

Conclusions

Clinical rounds as a cornerstone of medical education are a planned process in which a healthcare team performs clinical examinations to get important information for a clinical impression.^[40] In this regard, their effectiveness is upon the identification of challenges and finding strategies to overcome them. Evidence indicates that attitudes and expectations of main stakeholders may force higher education to move toward establishing evaluation systems that are able to report the quality of the infrastructure, processes and outcomes.^[41] Findings showed that medical students considered teaching on rounds very important as clinical skills are learned from patients' encounter at the bedside. The study conducted by Yamani *et al.* showed that in addition to getting familiar with patient care principles, other professional qualifications such as interaction with patients, students, and colleagues were important issues.^[42] Based on the identified obstacles and the strategies, policymakers, teachers, and those involved in the clinical teaching can better plan for the learning of medical students. Hence, medical students can better learn clinical knowledge and skills. Further, communication and interaction between the medical team and patients can improve. Consequently, patients as the main recipients of care would be more satisfied if rounding practices are done with such considerations.

One of the limitations of this study is the participation of medical students in educational hospitals affiliated to KMU. Besides, students' unwillingness to participate in the study was another limitation. We suggest conducting similar qualitative researches in other medical universities. We also recommend designing studies based on the identified challenges. Our study is a basis for more researches accordingly. Detailed explanation and rich description of the findings are the advantages of our study.

Acknowledgment

We wish to thank all the medical students who participated in this study. It should be noted that we obtained a code of ethics (IR.MU.REC.1396.3.165) from Isfahan University of Medical Sciences.

Financial support and sponsorship

This article is part of a PhD thesis at Isfahan University of Medical Sciences with code number 396165. The entire project was financially supported by the Vice Chancellor of Research at Isfahan University of Medical Sciences. In addition, the National Center for Strategic Research in Medical Education supported it financially with code number 960215.

Conflicts of interest

There are no conflicts of interest.

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