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The Impact of the COVID-19 Pandemic on Clinical Education: A Descriptive Phenomenological Study

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Abstract

Background: The COVID-19 pandemic has affected educational processes and methods. Identifying and sharing educational experiences helps policymaking and educational decision-making and planning to face similar situations at the national and international levels.

Objectives: This study aimed to explore medical students' lived experiences about the effect of the COVID-19 pandemic on their clinical education.

Methods: The main question of the research was, "what were the experiences of medical students from training in the clinical environment during the days of COVID-19?" Therefore, this descriptive phenomenological study was conducted at Mazandaran University of Medical Sciences, Mazandaran, Iran, in 2021. The semi-structured virtual interviews were conducted with 18 medical students. Data were analyzed using Colaizz's method.

Results: Most participants were female (N = 10), and their average age was 23.71 ± 2.06. The essential experiences were related to three themes and 20 sub-themes. Themes highlighted teaching and learning methods, educational planning and management disruptions, and assessment methods. Virtual teaching and learning included virtual journal clubs, conferences, tumor boards, case reports, morning reports, skill labs, small groups, flipped classroom methods, etc. Disruption in educational planning was mainly observed in rounds and significant rotations. OSCE, logbook, and activity in e-learning were the predominant assessments.

Conclusions: Based on the results, three themes were based on medical students' experiences. According to these themes, COVID-19 was an accelerator for shifting the paradigm in Iran's medical education and students' learning and assessment strategies. Therefore, some departments used COVID-19 as an opportunity and adapted to this shift. However, several departments were disturbed in their planning and management. requiring support and training to face similar situations.

Keywords: Education, COVID-19, Students, Medicine, Clinical Education

1. Background

Modern health systems should have expert, capable, and efficient individuals to meet each country's quantitative and qualitative needs. Thus, the universities' mission is empowering students to accept the future major roles of the health system. Medicine is one of the venerable professions essential for all societies. The medical sciences curricula consist of theoretical and practical education to acquire clinical skills (1).

Authorities always consider training students and efficient human staff. Many changes were made to medical education, and several factors affected it during the last century (2). In addition to affecting education, these changes are accompanied by many challenges. Therefore, the challenges and problems in medical education, especially in this century, are undeniable, and the evidence

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shows its global reach. The medical education challenges of Iran are similar to global ones (3). The clinical setting, for example, has variable factors and characteristics, such as clinical professors, patients, students, and others, which is referred to as a challenge (4). Aliafsari Mamaghani and Zamanzadeh indicated that current clinical challenges include students' low motivation, lack of facilities in clinical settings, lack of planning, clinical instructors' weaknesses, and communication issues (5). Tolyat et al. showed that the most challenging factors faced by students in clinical education were educational environment 97 (50%), interpersonal communication 93 (47.9%), and clinical experiences in clinical education 93 (47.9%), respectively (6). According to studies, these challenges have affected the satisfaction of students in clinical education (7, 8).

In addition, the changes in disease and health patterns in society also affect clinical education. The emerging disease of COVID-19 has been one of the biggest changes in recent years. COVID-19 was an emerging disease raised in Wuhan, China, in December 2019 as a new type of coronavirus, affecting many countries' education and training systems (9). Many education systems have shifted from a face-to-face to a virtual one (10). According to the literature, clinical settings and training were significantly affected. For example, Servin-Rojas et al. revealed that some students considered their training inferior to previous generations, and most (82%) considered repeating their final year of clinical training (11). Rashidi et al. stated that from the point of view of rehabilitation students, restricted clinical resources, an inefficient clinical education system, and the personal and professional characteristics of the students were the clinical training challenges during the COVID-19 pandemic (12). Bagheri and Khalajinia showed that the challenges of clinical education during the COVID-19 pandemic were related to the quantity and quality of education, assessment, organizational field, educational equipment and technologies and network and internet, stress, and psychological pressure worry about the professional and career future (13). Based on this study, it is necessary to identify these challenges in each context and environment and to plan for the future.

Since the clinical environment is complex and an important part of medical students' learning, examining the students' clinical education experiences during emerging or re-emerging diseases such as COVID-19 is important. According to studies, educational studies related to the COVID-19 pandemic mainly focused on the challenges of virtual or clinical education. The challenges were primarily influenced by the educational environment and planning of medical schools or the relevant department. However, clinical education experience during the COVID-19 pandemic has included both positive and negative experiences, which are helpful to identify and share for future planning and facing similar situations. This study investigated these experiences differently to extract what the learners experienced and understood in clinical education during the COVID-19 pandemic.

Since the qualitative method is a deep approach to discovering and deeply describing life experiences, it makes understanding complex events and phenomena possible. Therefore, this approach was considered helpful for the current study. Qualitative research includes different methods based on the purpose and questions of the survey. Phenomenology, which Husserl founded, is one of these qualitative methods. Phenomenology is essentially the study of lived experience or the universe. Direct access and accurate description of this experience by this approach can lead to a comprehensive understanding consistent with the holistic view of this approach (14).

2. Objectives

Therefore, the study aimed to explore medical students' lived experiences about the effect of the COVID-19 pandemic on their clinical education at Mazandaran University of Medical Science, Iran, in 2021.

3. Methods

This qualitative study used the descriptive phenomenological (qualitative) method to evaluate the essence or essential structure of how phenomena are consciously experienced (15). Therefore, it was appropriate to collect and analyze the medical students' lived experiences about the effect of the COVID-19 pandemic on clinical education quality.

The sample was selected from intern students in the clinical setting, and temporary and exchange students were excluded. The samples were selected by purposive sampling and then by the maximum variation sampling based on sex, age, and clerkship experiences.

3.1. Data Collection Tool and Technique

The data collection method was semi-structured electronic interviews. Therefore, the information sheet was provided to the participants, and they were assured the information they obtained would be anonymously in the form of a general report. The open-ended interview questions were designed by all researchers through a

literature review and consulting with two educational experts. The interview questions were as follows:

1. What are your experiences with the learning challenges during the COVID-19 pandemic?

2. What are your experiences with the educational challenges related to your clinical learning during the COVID-19 pandemic?

3. What strategies were used in clinical departments to overcome or reduce challenges?

4. What solutions do you suggest, based on your experiences, to prevent those challenges?

The following probing questions were asked:

1. Give an example, please.

2. Explain more, please.

3. Why these strategies were effective?

Face-to-face and synchronous online interviews (Skype) were conducted. Synchronous online interviews were scheduled at a time and on a virtual network (Skype) convenient for the interviewees. The average time for each interview was approximately 30 to 40 minutes. The interviews were continued till data saturation. Data saturation is used in qualitative research to determine the sample size, so obtaining feedback from students continued until no new data was received (16). In addition, each interview continued until no new findings were obtained. Finally, the interviews were written and returned to the participant. The interviews were analyzed after final approval.

3.2. Data Analysis

Seven steps of Colaizzi's method were used to analyze the data (15). In the first phase, the recorded statements of the participants are first repeatedly listened to and written word by word on paper at the end of each interview and note-taking, and finally, they are read several times to understand their feelings and experiences. Secondly, the meaningful information and statements related to the phenomenon were underlined after studying all the participants' descriptions, and essential sentences were identified. The third step was extracting the formula concepts; after identifying each interview, one tries to extract a concept from each phrase that expresses the meaning and the basic part of the individual's thought/point of view. After acquiring these concepts, the relevance of the compiled meaning with the main and initial sentences was examined to ensure the correctness of their association. The researcher carefully studied and classified the concepts based on their similarity after code extraction. Thus, thematic categories of concepts were formed. In the fifth phase, the results are combined to describe the phenomenon and comprehensively create more general categories. The sixth provides a comprehensive description of the phenomenon (as clearly and unambiguously as possible). The seventh phase refers to each participant and conducts a single or several interviews. The participants' points of view were asked about the findings, and the final validity of the findings was performed.

Guba and Lincoln's (1985) (as cited by Nha) criteria of transferability, credibility, confirmability, and dependability were fulfilled to ensure the validity and reliability of the current findings (17). In this study, the credibility of the data was achieved by member and peer checking, peer debriefing, allocating enough time to collect data, and prolonged engagement. Confirmability audit, audit trail, and reflexivity are used to confirm the results. Therefore, the researchers examined their background, position, and influence on the research process. In addition, the interviews were sent to several experts through texts along with the themes and reviewed during the analysis. Then, the preservation of documents was observed in all phases of the research. An outside observer and an out-of-court judge ensured a similar understanding of the data (inquiry audit) for reliability. In addition, all the details were recorded and transcribed, and several participants cooperated in all phases, including the confirmation of texts, the interviews, and the extraction of themes. A thick description of the research conditions and context, participants, and data was provided to promote transferability.

4. Results

The data saturation was obtained after 18 interviews. Participants included 18 interns, most of whom had participated in the clinical competency test. Most of the participants were female (N = 10). The average age of students was 23.71 ± 2.06. Three main themes and 20 sub-themes were obtained from the interview analysis. Examining and comparing sub-themes showed that some were associated with the strengths points, and others were associated with the weakness of clinical education during the COVID-19 pandemic. The main themes highlighted teaching and learning methods, educational planning and management disruption, and assessment methods (Table 1).

4.1. Highlighting Some Teaching and Learning Methods

One of the main themes that emerged in the study was related to changes in teaching and learning methods. According to this theme, COVID-19 and its conditions highlighted some teaching methods that existed before the COVID-19 pandemic. In the study, participants stated

Table 1. Participants' Experiences with Clinical Education Quality Through the COVID-19 Pandemic

Themes	Sub-themes
Highlighting some of the teaching and learning methods	Teaching in small groups and different locations in some departments
	Holding virtual journal clubs, conferences, tumor boards, case reports, and morning reports by using virtual networks and groups
	Teaching by residents
	Using skill labs for students in some departments
	Using virtual teaching at night
	Using of approach teaching in some departments
	Teaching at medical clinics of professors in other places
	Recording class by camera and giving videos to students for reflecting
	Using the flipped classroom method in some departments for theoretical topics
	Holding face-to-face classes for a quick review and troubleshooting in small groups
Creating disorder in educational planning and management	Closing or reducing the number of days for clinical training (sometimes one day a week for stagers)
	Eliminating some rotations in major departments
	Planning to clinical teaching based on chance
	Schedule overlap in some departments
	Problems related to online classes
	Holding irregular and sometimes poor-quality rounds in some departments
	Lack of practice in physical exam and history taking in some departments
Highlighting some of the assessment methods	Assessing students based on activity and participation in e-learning
	Using logbooks for evaluating
	Using online OSCE in some departments

that with online and face-to-face education integration, some methods contributed more to clinical education, and some were integrated. The mentioned items were reflected in four themes: "Teaching in small groups and different locations in some departments," "holding virtual journal clubs, conferences, tumor boards, case reports, morning reports by using of virtual networks and groups," "using the flipped classroom method in some departments for theoretical topics," "holding Face-to-face class for a quick review and troubleshooting in small groups."

Participant B described his experience, "in one of the departments, online or face-to-face classes were done; we used virtual networks and systems (Adobe Connect/Google Meet) for the virtual section. However, face-to-face class is held for quick review and troubleshooting in small groups."

Participant C said, "Routine conferences such as journal club, morning report, case reports, tumor boards, etc., were held virtually in some departments. I understand that the way we hold classes is changing."

Participant A said, "Small groups were formed in our learning process. Maybe because we should not gather in large groups for our safety. These groups were located in different places of learning. I think it helped me learn more in some departments in that situation."

One of the subthemes that appeared in the theme of "highlighting some teaching and learning methods" was related to "teaching by residents." Teaching by residents is one of the practical approaches to teaching in the form of waterfall teaching that provides the possibility of peer learning. Even though they play an important role in patient care and the health system, they are also adult learners. There were more opportunities for this approach in the COVID-19 pandemic due to the conflict of professors and the lack of regular training rounds. Participant F described his experience, "the students took history and notes, but the rounds were not done regularly; the professor usually did not come for the rounds. The topics were taught by a resident or a fellowship."

Another sub-theme was the "use of approach teaching in some departments." This approach held case-based discussions, and points related to its diagnosis, treatment, and management were stated. Participant D said, "In some of the departments, the days when the round was held, we talked in the class about cases; we discussed those diseases,

and the professors were teaching them."

"Using skill labs for students in some departments" was another sub-theme in "highlighting some teaching and learning methods." Skill lab became more prominent as a safe and secure place to train learners and was included in the educational planning of the departments. Participant A said, "Training in the skill lab, which was part of the program of some departments, was a good experience for me because we practiced skills in small groups without stress."

Another sub-theme was "using virtual teaching at night." This sub-theme reflected that teaching opportunities were available for students at night by using online tools. Participant F said, "Some classes were held online at night. For those who were not on standby, it was a good opportunity. Because we were learning without workplace stress."

Another sub-theme was "teaching at medical clinics of professors in other places." This sub-theme explained that some departments used a place other than the professor's clinic in the teaching hospital for teaching. This experience was pleasant for the students. Participant N said, "Some departments used a place other than the professor's clinic and did not rely only on hospital clinics."

Another sub-theme was "recording class by the camera and giving videos to students for reflection." Reflection is one of the essential skills for lifelong learning and provides the opportunity to improve performance. Participant E said, "Online classes were recorded, and we received the content. I used this opportunity to reflect on my content and performance".

4.2. Disruption in Educational Planning and Management

Another main theme that emerged in the study was related to educational planning and management. This theme showed that the management of educational programs was associated with disorder and disorder.

Therefore, some rotations closed or were eliminated during the peak of COVID-19, especially for stager students. The sub-theme of "closing or reducing numbers of days for clinical training" indicated this issue. Participant A said, "During the peak of COVID-19, departments were almost closed for interns, and sometimes it was one day a week for stagers."

Another sub-theme was "holding irregular and sometimes poor-quality rounds in some departments" in this theme. According to the study participants, clinical rounds provide valuable educational experiences for learners, which are not held for various reasons, such as the lack of professors in some departments. Further, it was held to be scattered and of low quality in several departments. Participant H described her experience, "Clinical rounds were eliminated in some departments. If it was held, it was not accompanied by feedback and active participation of students".

Participant c said, "Because few professors were active in some departments, the educational rounds were of low quality or reduced." Participant G said, "In one department, the professors' round was determined in the educational program, but it is not held completely; only some did rounds."

"Eliminating some rotations in major departments" was another sub-theme. The participants described that these rotations were related to specialized subgroups of the department. Due to the large volume of patients, these departments were assigned to the patients of COVID-19. Participant M said, "Because beds in teaching hospitals were mainly reserved for COVID-19 patients, some rotations in major departments were eliminated."

"Planning to clinical teaching based on chance" was another sub-theme. Due to the distribution of learners in small groups, some learners' attendance at the educational clinic was based on chance and depended on the department's planning. Participant D said, "Some departments were planned so that we were placed in groups A, B, C, and D. Therefore, some groups did not have the opportunity to train in clinics. They mostly worked in places like inpatient or emergency departments."

In the next sub-theme, "schedule overlap in some departments," the simultaneity of implementing educational programs (holding a theory and clinic training class simultaneously) indicated the weakness of education planning and management. Participant A said, "In some departments, students were divided into groups of 2 to 3 members; one or two groups went to the clinic daily. But since the clinic time was overlapping the class, the students who went to the clinic could not attend the class."

"Lack of practice physical exam and history taking in some departments" was another subtheme. Participants stated that teaching practical skills and patient examination was lacking in some departments. These skills are essential for a medical student. Participant l said, "Different methods were used for training. But practical training (such as history taking and examination) needed more attention. This was due to the conditions of the hospital and the type of patients."

The sub-theme of "problems related to online classes" described issues such as poor sound quality irregularities of professors/student's presence. The participant's statements reflected these challenges and disadvantages of virtual education: "Active presence of all professors was not possible in online classes. Students were also absent. That is, the quality of classes in some departments was

low."

4.3. Highlighting Some Assessment Methods

Three sub-themes were placed in this theme, focusing mainly on measurement methods and their susceptibility to COVID-19. They are "assessing students based on activity and participation in e-learning," "using logbooks for evaluating," and "using online OSCE in some departments." Students described that their participation in question and answer and online discussions accounted for an essential part of the grade. Participant A said: "I got a good grade. Because the teacher's criterion was more of our online learning participation, I did well."

The sub-theme of "using online OSCE in some departments" is described as a common experience with the conditions before COVID-19. OSCE is a suitable method for displaying skills and provides a safe environment for measurement in the mentioned conditions. This issue was shown in the statements of participant C, who said, "OSCE was held in most departments. It was interesting that it replaced the theory and hard tests."

Another sub-theme was "using logbooks for evaluating." The students stated that the logbook was also used as an assessment method. But like before, we could not reflect the variety of patients in it. Because most patients were infected with COVID-19, Participant M said, "We complete log books in almost all departments. It was not like before because the variety of patients had decreased. At least we could use it to learn."

5. Discussion

This study aimed to investigate medical students' experiences with the effect of the COVID-19 pandemic on the quality of clinical education. The data analysis showed three themes and 20 sub-themes. The extracted themes were "highlighting some teaching and learning methods," "disruption in educational planning and management," and "highlighting some assessment methods."

5.1. Highlighting Some Teaching and Learning Methods

Investigation of this theme showed COVID-19 led to a re-emphasis on the importance of several educational strategies in clinical education as an opportunity to form small groups. Moreover, the letter "S" of the PRISM training strategy refers to this issue and emphasizes learning activities through smaller groups, locally, if possible, while combining modern technology with independent and open learning techniques (18). However, there were some problems with implementing this method, such as grouping and organizing them in different locations.

The COVID-19 pandemic affected rounds and clinical education. They were also satisfied that their professors from those departments used other university clinics to teach (through their shifts). They said, "It was very good and almost compensated the hospital clinic's lack of time."

Yuen and Xie also stated that elective surgeries and routines were so reduced during the COVID pandemic that traditional learning opportunities were reduced, and many ambulatory clinics were transformed into tele-clinics. In one department, this social distance restricted face-to-face access to clinical instructors. Therefore, they emphasized e-learning in their study (19).

The present study showed some educational methods, such as journal clubs, morning reports, case reports, and conferences, which could be implemented virtually among most clinical departments, showing their high flexibility. Furthermore, the opportunity was to combine learning with common educational software (such as Navid, LMS, Google Meet, WhatsApp, etc.). Students were satisfied with those classes where teachers spent more time teaching questions through questions and answers. Al-Balas et al. showed that "the teacher's role" and "sufficient time" for education were significantly associated with students' satisfaction (20).

The other point that can be extracted from the participants' statements was the departments' variety of teaching and learning methods, which led to some advantages, such as leaving the teacher free to choose his teaching method or toolkit, but there were newer challenges due to the lack of clear department procedures and orders and tried to use all educational formats. Finally, the quality of some methods was very high, and others were low, which caused student dissatisfaction. Therefore, new key educational strategies and learning enhancers are needed instead of incompletely emphasizing different methods. Mahmood's study showed several factors that can promote e-learning during the COVID-19 pandemic. They include getting learners' feedback and providing flexible teaching and assessment policies. Recording online lectures and using teaching assistants is also helpful (21).

5.2. Disruption in Educational Planning and Management

The theme of "disruption in educational planning and management" was another finding of the current study, identifying significant weaknesses and threats. Managing and leading clinic training and disorder or reducing clinic training days have been among its essential issues. Therefore, there is a need to pay more attention to this dimension in training. Thus, setting up an ambulatory training center and using AMEE Guide No. 26 may be helpful (22). Salimi and Fardin classified

the COVID-19 virtual educational challenges into micro, medium, and macro. They proposed the lack of managers' strategic thinking and educational planners was one of the macro-level challenges (23). In addition, Yuen and Xie explained that perhaps the essential learning to overcoming a crisis is not clinical facts but leadership soft skills, innovation to adapt, and team building (19). The sub-theme of "problems related to online classes" was also emphasized in most published studies worldwide. Heng and Sol cited technology infrastructure and digital competency as one of the critical challenges of e-learning in COVID-19 (24). A study by Aboagye et al. revealed the "accessibility issues" as the most crucial challenge of virtual classes. Furthermore, other issues were also shown, such as the students' unpreparedness for online classes during COVID-19 (25).

5.3. Highlighting Some Assessment Methods

The current study's findings showed that the assessment criteria were changed after the COVID-19 pandemic. Paying attention to comprehensive activities and tasks, educational logbooks have increased more than before, relying not only on tests. In other words, COVID-19 was an opportunity to feel the need for educational assessment standards, which educational experts proposed. The Rezaei study indicated relying on an assessment method in both conditions before and after the COVID-19 pandemic reduces the validity of the assessment (26).

5.4. Limitation

While the study's results provide valuable data, the lack of exploring the faculty members' experience and graduated students was the limitation of the current study. Therefore, it was suggested that the faculty members' experience and graduated students be explored in future studies.

5.5. Conclusions

The current research findings highlighted three main themes: "Highlighting some teaching and learning methods, disruption in educational planning and management, and some assessment methods." Medical education and self-directed learning strategies are undergoing a paradigm shift. However, clinical education during the COVID-19 period in all departments did not have the desired quality. The results were more favorable, mainly in the departments where the principles of medical education were used to the optimum extent. Therefore, some departments used COVID-19 as an opportunity and adapted to this shift. However, several departments were disturbed in their planning and management. Therefore, there is a need to pay more attention to holding educational workshops and continuing medical education programs for graduates and students who have experienced the COVID-19 pandemic. It is recommended to explore the experiences of graduates (who are currently working and have experienced the COVID-19 pandemic during their clinical training) and AMEE guides and published studies for educational planning in this field.

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Footnotes

Authors' Contribution: A. Z., P. K., I. M., and S. M.: Methodologist, original researcher, and data analysis; M. Gh.: Main assistant researcher, original author, literature review; Sh. S., A. B., and M. K.: Assistant researcher, literature review, and data gathering.

Conflict of Interests: The authors report no conflicts of interest.

Data Availability: The data presented in this study are uploaded during submission as a supplementary file and are openly available for readers upon request.

Ethical Approval: This research is approved by Mazandaran University of Medical Sciences Research Deputy (design code: 7793; ethics code: IR.MAZUMS.REC.1399.319). All methods were performed under the relevant guidelines by the Declaration of Helsinki.

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Informed Consent: After orally coordinating with the participants and sending the information sheet to them, written informed consent was provided by all participants.

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