



# Exploring Dental Students' Experiences of Clinical Education: A Qualitative Study

Morteza Modami<sup>1</sup>, Bitra Rohani<sup>2</sup>, Mojgan Mohammadimehr<sup>3,4\*</sup>

<sup>1</sup>Dentist, Student Research Committee, Faculty of Dentistry, Aja University of Medical Sciences, Tehran, Iran

<sup>2</sup>Associate Professor, Department of Oral Medicine, Faculty of Dentistry, Aja University of Medical Sciences, Tehran, Iran

<sup>3</sup>Associate Professor, Infectious Diseases Research Center, Aja University of Medical Sciences, Tehran, Iran

<sup>4</sup>Department of Laboratory Sciences, Faculty of Paramedicine, Aja University of Medical Sciences. Tehran, Iran

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**\*Corresponding author:**

Infectious Diseases Research Center, Aja University of Medical Sciences, Tehran, Iran. Tehran, Iran.

Email: m.mohamadimehr@ajaums.ac.ir

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## Abstract

**Background:** Clinical education is the basis of medical education and one of the most important criteria for professional education, which plays a crucial role in consolidating students' learning.

**Objectives:** This study was conducted to explain the experiences of dental students from one of the universities of medical sciences in Tehran regarding clinical training.

**Methods:** This qualitative study was conducted in Iran in 2023 using conventional content analysis. Sampling was performed using purposeful sampling. Data were collected through semi-structured individual interviews, which continued until data saturation. Participants included fourteen final-year dental students from one of the dental faculties in Tehran, Iran. Data were analyzed using the method by Graneheim and Lundman. Lincoln and Guba's criteria were used to ensure the accuracy and robustness of the data.

**Results:** From the data analysis, four categories and ten subcategories were obtained. Categories and subcategories include the skill and ability of the clinical professor (professional characteristics of the clinical professor, professor-student interactions), effective clinical training (professor's educational and teaching ability, the importance of case diversity in better learning, the role of mentoring in learning), weak educational management (inappropriate evaluation, disproportion between the number of instructors and students, inadequacy of facilities and equipment), and a bidirectional learning atmosphere (student motivation and lack of motivation, positive and negative psychological atmosphere).

**Conclusion:** According to this study's findings, it is recommended that the officials of the studied dental school take action to improve the quality of clinical education and enhance student learning by strengthening the advantages and addressing the existing shortcomings and weaknesses.

**Keywords:** Clinical Education; Experience; Dental; Qualitative Study; Student

## Background

Dental education is a complex field that consists of clinical and theoretical education, with an emphasis on gaining the ability to communicate effectively with patients (1). Practical dental courses, including preclinical and clinical training, are essential for developing students' skills in dental education (2). Many dental schools around the world are reforming their curricula to expose students to clinical care as early as possible, maximize the use of active learning strategies, and engage students in dental care to increase clinical

exposure, leading to the competencies needed to provide dental care after graduation (3). Paying attention to and emphasizing the training of skills for students has a significant effect on professional learning in clinical education (4).

The clinical environment is the core of education, and students' feedback on the educational environment is an important factor in the success of education and learning. The World Federation of Medical Education believes that evaluating the educational environment is an important factor in assessing the curriculum and

learning (5). Although students' experience in clinical education is improving, the expectations of students for learning opportunities, acquiring clinical skills, and feeling a sense of belonging and respect are not always fulfilled (6). Potential deficiencies and problems in the implementation process of the dental education program can hinder the realization of the goals of basic and specialized science courses, and the efficiency and professional ability of graduates in this field may face challenges that have harmful social effects (7).

One of the ways to maintain and improve the quality of education is the continuous evaluation of education and its related elements. Evaluation is a research process that uses quantitative and qualitative methods to understand, judge, and improve an educational activity. In order to ensure the usefulness and effectiveness of the clinical environment in learning, the factors of the clinical environment, students, clinical instructors, and department personnel that affect learning outcomes should be identified and evaluated (8, 9). It is important to note that students and professors are the main pillars of clinical education, and examining their opinions can clarify the strengths and weaknesses of clinical environments (10, 11).

Zaba Naz et al. (2021) conducted a study to compare dental students' opinions about the clinical education system and identify its advantages and disadvantages. The results showed that students experience a good mix of clinical learning opportunities but are not involved as part of the healthcare team, and their time is wasted on many non-clinical activities. Therefore, changes are needed in the current education system (12).

Qaraei et al. (2015) conducted a study on educational problems from the perspective of students of Mashhad Dental School in 2015 through a group discussion with them. The results showed that the majority of the problems faced by students were due to a lack of adequate training. Students were dissatisfied with the state of the library and pointed out that the evaluations were not standardized. They also stated that there was no proportion between the number of students and the faculty (13).

Oderinu et al. (2024), in a study investigating the perceptions of dental students, pointed to results including teacher characteristics, physical facilities, perceived inadequate supervision of teaching, and lack of appropriate feedback on performance (14).

Identifying the status of clinical education and the factors affecting it can help eliminate or correct weaknesses, improve the achievement of educational

goals, train skilled individuals, and provide higher-quality care services. Since no study has been conducted on the clinical status of dental students at the University of Medical Sciences, the researchers decided to depict the factors affecting students' clinical learning through a qualitative study based on the students' real experiences. Regarding students' opinions as one of the beneficiaries of education, it can be effective in identifying the status of education in clinical environments. This study was conducted with the aim of explaining the experiences and understanding of dental students from clinical training in one of the dental schools in Tehran, Iran.

### Objectives

This study was conducted to explain the experiences of dental students from one of the universities of medical sciences in Tehran regarding clinical training.

### Methods

**Study design:** This research is a qualitative study using a conventional content analysis approach. It was conducted in 2023 in Tehran, Iran.

**Study participant/sampling:** Participants included 14 dental students from one of the dental schools in Tehran. Sampling was done purposefully. The participants in the study were final-year dental students, all male and between the ages of 25 and 27. The main researcher selected participants from among the final-year students who met the conditions to enter the study. The inclusion criteria were passing the clinical units and the willingness of individuals to share their experiences. Refusal to record the interview was also considered an exclusion criterion.

**Data collection:** Individual, face-to-face, semi-structured interviews were used to collect data. The duration of the interviews varied from 25 to 45 minutes. Interviews continued until data saturation, which occurs when no new data are obtained from the interviews, leading to the repetition of previous codes (15). Before the interview, the purpose of the study was explained to the participants, and informed consent was obtained. The time and place of the interview were coordinated with the participants, and the interview was conducted face-to-face in a calm environment. The interviews were conducted by the first author, who was a final-year dental student and had completed a training course in qualitative research methods, under the supervision of an expert from the research team. All interviews were recorded with the consent of the participants. Before the first interview, interview questions were prepared and approved by all the authors during several discussion

sessions. The interview began with general questions such as "Tell us about your experience of clinical training," "Please describe a challenge you faced in clinical training," and "Describe an experience you were satisfied with in clinical training," then continued with probing questions such as "Please explain more" and "What do you mean?" based on the previous response to clarify the details and ambiguities and increase the depth of the interviews.

**Data analysis:** The content of each recorded interview was transcribed verbatim. In order to ensure the correctness of the transcribed content, the recorded audio was listened to again. The interviewing and data analysis processes were done simultaneously. The data analysis was performed using the conventional content analysis method based on the Graneheim and Lundman method (2004) (16). The steps are as follows: 1) transcribing the conducted interviews and reviewing them several times to achieve a correct understanding of all the implemented items, 2) extracting meaning units and classifying them under the title of primary codes, 3) summarizing and categorizing the primary codes under the title of subcategories, 4) sorting the subcategories by comparing the similarities and differences in the categories, and 5) choosing the appropriate title under the main theme that can cover the categories.

**Trustworthiness and rigor:** In this study, four criteria (credibility, dependability, confirmability, and transferability) were used to ensure the trustworthiness and reliability of the data (Lincoln and Guba, 1986) (17). After the initial coding, and to ensure the credibility of the findings, the methods of member checking, immersion, and prolonged engagement with the data were used. To ensure the accuracy of the data, the opinions of the professors on the research team and two professors outside the research team, who had experience in conducting qualitative research, were used in the process of interviews, initial coding, and conceptual classes (peer check).

**Ethical considerations:** Ethical considerations were observed in conducting the research. The objectives and nature of the research were explained to the participants, and informed written consent was obtained from them to participate in the research. All participants were assured that their personal information would remain confidential.

## Results

Based on the analysis of the findings from the students' interviews, two main themes, including the strengths and weaknesses of clinical education, were

identified, with four categories and nine subcategories (Table 1).

### The skill and ability of the clinical professor

#### *Professional characteristics of the clinical professor:*

The participants in the study stated that the professors were often conscientious and guided and helped the students in learning the material. However, sometimes there were professors whom they did not always have access to. One of the students stated in this regard: "...the professors were very good in terms of science and literacy; they were available and provided us with any questions and guidance we needed. Of course, there were a few professors who were not always available and did not show much motivation to teach the students." (p.4)

**Professor-student interactions:** In this regard, the experiences of the participants showed that treating students respectfully, professors' good manners, and professors' patience in answering questions facilitate the process of clinical education. Of course, in some cases, the clinical professor had a non-scientific approach to the students, or sometimes the students were faced with harsh professors, which was not a pleasant experience for them. One of the students said: "...Despite the stress we had because of the anxiety of presenting work, the professors had a good relationship with us, they gave us peace, especially during work, if we did well, they gave us a lot of approval, they gave us confidence, and this made us continue our work well..." (P.2)

#### **Effective clinical training**

This category includes three subcategories: the professor's educational and teaching ability, the importance of case diversity in better learning, and the role of mentoring in learning.

**Professor's educational and teaching ability:** Some of the participants stated that the professors in the clinical departments were trying to teach scientific and practical points and transfer experiences to the students, and by providing appropriate explanations, questions and answers, and student participation, they helped facilitate better learning of educational materials. Of course, some professors were not like this, and the students faced challenges with these professors. One of the students said: "I had a good training experience in many departments.

For example, the last patient I saw, was a case of CL (crown lengthening) for comprehensive treatment, which the professor explained to me very well in detail and answered the questions completely, and we learned good

things and the professor explained the clinical points in detail." (P.9)

#### **The importance of case diversity in better learning:**

Some students participating in the study stated that in most clinical departments, they had the experience of encountering different cases and patients, and the professors selected various cases to enhance student learning. Of course, in a few departments, there was a lack of patients and a lack of case diversity, which created challenges in learning practical cases in the relevant department. In this regard, one of the students stated: "...for example, department of oral medicine was one of the best clinical departments, the number of patient loads was high, and the professor gave a full explanation for each patient, and we understood the educational materials well..." (P.5); "...absence of patients was one of the learning challenges in some cases..." (P.14); "Our challenge was mostly the challenge of the patient, and we were in dire straits in terms of lack of the patients, and because of this, we could not see some of the cases that we should have seen." (P.8)

**The role of mentoring in learning:** A professional relationship in which an experienced and knowledgeable person (mentor) helps another person (mentee) improve and develop their knowledge and skills in a professional field. Students believed that technicians play an important role in clinical education alongside professors. "...The relevant technicians explained the materials very well to us and were always available and we could solve our problems with them..." (P.9); "Preclinic assistants were good in terms of providing the equipment and dealing with the students..." (P.8)

#### **Weak educational management**

This category includes three subcategories: inappropriate evaluation, disproportion between the number of instructors and students, and lack of educational facilities and equipment.

**Inappropriate evaluation:** Evaluation is an important component of any educational process. It is one of the key aspects of educational activities, providing the opportunity to determine strengths and weaknesses based on the results. The participants pointed out the inappropriateness of academic tests and clinical grading, as well as the lack of proper feedback. In this regard, one of the students stated: "...one of the problems was the taste of the professors' grading in some of the departments in such a way that one professor evaluates a student's clinical work as good, but another professor does not evaluate the same work as good, and the grading criteria changes..." (P.4); "It is better for clinical professors to be

above the students' heads when the student is working on the patient in the clinical department, and check the work step by step and tell the student the problems of the work at the same time." (P.1)

**Disproportion between the number of instructors and students:** The proportion of faculty members to students is of particular importance. The student-to-faculty ratio affects the working conditions of academic staff and the quality of student-teacher interactions, which in turn influences students' academic achievements. Most of the study participants mentioned the lack of professors in clinical departments. Participant 13 said, "The shortage of professors was felt in all departments, and sometimes we had to wait for the professor to come and check the patient, and it took a lot of time."

**Inadequacy of facilities and equipment:** The participants pointed to the lack of consumables, the lack of tools in some situations, the damage of equipment and facilities in some clinical departments, and the failure of some units. In this regard, one of the students said: "...one of the challenges is the low quality of some of the materials used in the faculty, and some of the materials that are past their use-by date, cause the quality of our work to go down..." (P.6); "...In some clinical departments, we didn't have healthy tools sometimes, some of the turbines were broken, the dental units were not working well. There was also a lack of equipment at the prosthesis clinic." (P.5); "Another problem was the lack of advanced facilities and not using them. For example, rotary could be used in endo. At least professors would teach us to get familiar, or they could have used newer bands and more up-to-date tools in the restorative department and endo departments, there was no apex locator, they did not teach the students how to determine length or use the rotary device and rotary files and the students learned by themselves." (P.7)

#### **Bidirectional learning atmosphere**

This category includes two subcategories: students' motivation and lack of motivation, as well as positive and negative psychological atmosphere. Some of the participants in the study stated that they were eager and interested in learning, while others expressed reluctance to learn some materials. Some students expressed stress and worry about doing practical work correctly, while others felt relaxed and confident about performing it. Emotional support for students and encouragement to learn were among the aspects mentioned by the students. Of course, they also said that the professors blamed the students for some of their working conditions. In this regard, we refer to the statements of some students

participating in the study. "... Some departments were strict and it made a person feel discouraged and not motivated enough to learn from that department and just want to pass that course..." (P.4)

"... In some clinical departments, less stress was applied to the student, and this less stress made the student do the work easier and better. The student got a good feeling about the lesson given by the professor, self-motivation. We were motivated and encouraged to learn and perform proper treatment due to less stress..." (P.1)

## Discussion

This qualitative study was conducted with the aim of explaining the experiences of dental students regarding clinical training in one of the Iranian dental schools. Analyzing the experiences of the participants led to the extraction of four categories: "the skill and ability of the clinical professor," "effective clinical training," "weak educational management," and "bidirectional learning atmosphere." The skill and ability of the clinical professor included two subcategories: professional characteristics of the clinical professor and professor-student interactions. Clinical environments are key places for medical students to learn, especially dental students. Clinical professors and educators must possess specific skills in the fields of knowledge, communication, and work, as well as in evaluation, and know how to use them effectively. The professor's up-to-date scientific knowledge, responsibility, conscientiousness, respectful treatment of students, and good manners were among the codes related to the experiences of the students in the study. In line with the present study, the results of Reising et al.'s study showed that the instructor's ability to transfer knowledge, professionalism, and enthusiasm are key characteristics that affect the clinical experience (18). Tang and colleagues believe that having professional ethics, a supportive spirit, up-to-date information, respect for others, and appropriate appearance are the most important characteristics of an effective instructor in teaching students (19).

In the current study, the students believed that the constructive interaction between the professor and the student can have an important impact on the educational process. In line with these results, the study by Mohammadimehr and Mirmoghtadaie showed that one of the important issues in students' success in learning is paying attention to and supporting interactions between students and professors. It is necessary to provide a suitable platform for creating and

supporting these interactions (20). The interaction between the teacher and the student leads to the improvement of the learning experience (21). Viktorov and Hogan noted that the professor's characteristics required to achieve effective teaching include a positive and friendly personality and focused interaction with students, which is consistent with the themes obtained in the present study, including effective interaction with students and continuous supervision (22).

Consistent with the findings of this study, the category of effective clinical training included three subcategories: the professor's educational and teaching ability, the importance of case diversity in better learning, and the role of mentoring in learning. Most of the students stated that effective teaching in some educational departments led to better learning. In line with the findings of the present study, the results of the studies by Galli et al. and Sagsoz et al. showed that collaborative learning methods and group discussions, compared to the traditional method, result in better learning with higher motivation in students (23, 24). Munna and Kalam (2021) stated that the effectiveness of teaching means evaluating the effectiveness of the measures taken to achieve the predetermined goals. Effective teaching should be regular, motivating, and arouse students' interest (25).

Based on the results of this study, weak educational management includes three subcategories: inappropriate evaluation, disproportion between the number of instructors and students, and inadequacy of facilities and equipment. According to the students' point of view in the present study, unfair grading, lack of appropriate criteria in grading, grading according to the professors' preferences, and not providing feedback to students lead to inappropriate evaluation. In line with the results of the present study, the results of Ahmad Mehrabi et al.'s study (2020) at Shahid Beheshti Dental School indicated that professors' lack of attention to giving feedback to students after each evaluation and the application of professors' personal opinions in grading students' performance were among the weak points of the educational and evaluation program (26). The results of the present study also indicated a lack of consumables, a lack of tools in some situations, and damaged equipment and facilities in some clinical departments. In this regard, Foroughi et al.'s study (2023), by examining the views of students at Babol Dental School, showed that the physical equipment of the departments and materials needed by the students in each department were in moderate to good condition.

However, considering that the quality of dental treatments and clinical training is highly dependent on high-quality equipment and materials, there is still a need to improve and update the physical equipment and materials needed by students (27). Researchers have highlighted the importance of the learning environment and learning resources as important factors that influence teaching and learning (28, 29). In addition, lessons learned from the COVID-19 pandemic, advanced facilities, and the use of new technological devices and simulation-based training should be incorporated into the training program of dental students (30).

Based on the results of the present study, one of the categories was a bidirectional learning atmosphere. The learning environment, as one of the main components of academic success and student satisfaction, has received special attention from policymakers in the field of medical education in recent years (31). The clinical environment includes all cognitive, cultural, social, psychological, emotional, educational, and motivational factors (32). In the present study, some of the participants stated that they were motivated, relaxed, and had a good feeling about learning, while others were unmotivated and stressed. The atmosphere governing education can strengthen positive behaviors toward educational improvement by creating motivation (33). In line with this study, the results of Basudan et al.'s (2017) study at King Saud University School of Dentistry showed a high incidence of depression, anxiety, and stress among dental students and the importance of providing support programs and implementing preventive measures to help students, especially those who are more susceptible to these psychological conditions (34).

The participants in the study stated that some of the clinical departments had a favorable and safe learning environment. According to the results of other studies, a psychologically safe environment can calm students' minds and thus increase learning. The findings of Honaramiz Fahim's study showed that the perception status of medical and dental students in clinical courses at Shahed University is in a semi-desirable condition regarding the educational environment (33). Today, attention is being paid to the importance of the effect of the educational environment on students' learning, and the quality of the educational atmosphere is known as an important indicator of the effectiveness of educational programs (29, 35, 36). One of the things to consider in order to improve health services in clinical

environments is to strengthen creativity and increase innovation among students, faculty members, and employees (37).

The findings of the present study were obtained from the experiences of students at one of the dental schools in the capital of Iran. Due to the qualitative nature of the research, they may not be generalizable to other dental schools. It is also possible that the participants did not disclose all the information due to considerations such as fear of the faculty officials and administrators. Of course, the researchers tried to reduce this limitation by assuring the participants that the information would not be disclosed.

### Conclusion

This study was conducted to explain the experiences and understanding of dental students regarding clinical education in one of the dental schools in Iran. The findings of this study showed that the experiences of dental students were categorized as "the skill and ability of the clinical professor, effective clinical training, weak educational management, and bidirectional learning atmosphere." The participants expressed professional characteristics of the clinical professor and professor-student interactions as experiences related to the skill and ability of the clinical professor. Based on the results of the students' experiences in this study, the professional characteristics of the clinical professor and professor-student interactions were related to the experience of the clinical professor's skill and ability. In contrast, the professor's educational and teaching ability, the importance of case diversity in better learning, and the role of mentoring in learning were related to the experience of effective clinical training. According to the results of this study, weaknesses in student monitoring and evaluation, disproportion between the number of instructors and students, and inadequacy of facilities and equipment were associated with the experience of weak educational management. In addition, students' motivation and lack of motivation, along with the positive and negative learning atmosphere, were related to the experience of a bidirectional learning atmosphere. Based on these results, managers, educational officials, and clinical professors at the studied faculty can provide a more suitable context for clinical training and more effective learning for dental students by strengthening the positive aspects and addressing the challenges and negative points identified in the students' experiences. In this regard, supporting mechanisms, creating a

collaborative atmosphere in student activities, establishing appropriate interpersonal relationships in clinical environments through positive feedback, encouraging rather than criticizing, building self-confidence in students, implementing new methods of clinical education, and paying attention to the role model are recommended.

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**Table 1.** Categories, subcategories, and primary subcategories

Categories	Subcategories	Primary subcategories
The skill and ability of the clinical professor	Professional characteristics of the clinical professor	Teacher availability, cooperation with students, appropriate guidance for students, effective effort to educate students, professor's up-to-date scientific knowledge, professor's responsibility, professor's conscientiousness, professor's motivation in teaching, lack of access to some professors, and lack of motivation in a few professors
	Professor-student interactions	Respectful treatment of students, the good manners of the professors, professors' patience in answering questions, unscientific treatment of students in some cases, and hot-tempered professors in some situations
Effective clinical training	Professor's educational and teaching ability	Teaching scientific and practical tips, good teaching and training, professor's emphasis on transferring experiences to students, full teaching and detailed examinations, giving suitable explanations to solve students' problems, browsing the contents with questions and answers, better learning by holding a seminar, emphasis on discussion in student learning, involving students in teaching and learning, ineffective training in some cases, and inappropriate demonstrations
	The importance of case diversity in better learning	Appropriate number and variety of patients, allowing the student to see different cases, increasing students' experience by seeing more cases, and lack of patients and cases in some situations
	The role of mentoring in learning	The effective cooperation of the instructor in the training process, coach availability, appropriate explanations of educational materials by the assistant, effective guidance to the student by the instructor and assistant, good teaching of the material by the instructor and assistant, and lack of cooperation from assistants in some situations
Weak educational management	Inappropriate evaluation	Unfair grading, lack of appropriate criteria in grading, grading according to the preferences of professors, and not giving feedback to the student
	Disproportion between the number of instructors and students	Few professors in the departments and a lack of assistants compared to the number of students in the departments
	Inadequacy of facilities and equipment	Lack of some consumables, lack of tools in some situations, damaged equipment and facilities in some clinical departments, and failure of some dental units
Bidirectional learning atmosphere	Student's motivation and lack of motivation	Student's enthusiasm and reluctance to learn, the student's good feeling toward the lesson and the teacher, peace and worries for the student, the student's fears in some situations, and stress on students
	Positive and negative psychological atmosphere	Emotional support for students, understanding students, encouraging students to learn, destruction of students in critical conditions, strictness and a dry educational atmosphere in some conditions, the student's feeling of peace in asking the professor, giving calmness and self-confidence to the student during performance, and student discouragement in some situations