¹Student Research Committee, Fasa University of Medical Sciences, Fasa, Fars, Iran, ²Department of Medical-Surgical Nursing, School of Nursing, Fasa University of Medical Sciences, Fasa, Fars, Iran, ³Department of Microbiology, Fasa University of Medical Sciences, Fasa, Fars, Iran, ⁴Department of Public Health, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran, ⁵Dentistry Faculty, Azerbaijan, Medical University, Baku, Azerbaijan, ⁶Department of Medical Education, Medical Education Research Center, Fasa University of Medical Sciences, Fasa, Iran, ⁷Department of Medical Education, Shiraz University of Medical Sciences, Shiraz, Iran

Address for correspondence:
Dr. Zhila Fereidouni, Department of Medical-Surgical Nursing, School of Nursing, Fasa University of Medical Sciences, Fasa, Fars, Iran. E-mail: fereidounizhila@gmail.com

Co-corresponding author:
Ali Khani Jeihooni, Department of Public Health, School of Health, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: khani_1512@yahoo.com

Received: 31-08-2023
Accepted: 27-11-2023
Published: 28-12-2024

Explaining the classroom behavior process of medical sciences students: A grounded theory

Yeganeh Moradi¹, Zhila Fereidouni², Abbas Abdollahi¹,³, Ali Khani Jeihooni⁴, Nazanin Poornasiri⁵, Zahra Jokar¹, Samaneh Dehghani¹, Shahnaz Karimi⁶, Mohammad Hasan Keshavarzi⁷

Abstract:

BACKGROUND: Classroom behavior is one of the important variables for the curriculum in the learning path of learners. The aim of this study was to explain the classroom behavior process of medical sciences students.

MATERIALS AND METHODS: In a qualitative study using the grounded theory approach, the classroom behavior of 21 students from different medical fields was assessed. Purposeful and theoretical sampling methods were used. Data collection tools were semi-structured interviews. Sampling was continued until saturation, and data analysis was performed according to the Corbin and Strauss 2015 approach. The study was done from 2020 until 2023.

RESULTS: The results of the data analysis were divided into three main categories (representation scene, behavioral representation, and representation effect) and nine subcategories. The representation scene consisted of the following subcategories: learner features, teacher and teaching features, classroom environment, and educational content. Behavioral representation was the second category and included groupism, the behavioral continuum, and students' expectations. The representation effect was the third category and included academic progress and positive and negative emotions.

CONCLUSION: Students' classroom behavior is affected by various factors. Professors and policymakers of educational programs can strengthen the positive classroom behaviors of medical students in the shadow of learning theories by recognizing, paying attention, and planning to get closer to educating students with professional behavior and performance.

Keywords:

Behavior, grounded theory, medical, sciences, students

Introduction

The acquisition and maintenance of knowledge are described through various learning theories. Learning theories can be divided into three groups: behaviorism, cognitivism, and constructivism. Behaviorism is mainly concerned with the observable and measurable aspects of human behavior. For behaviorists, learning cloud result in a big change in behavior. It emphasizes the role of the environment in changing behaviors and learning. According to cognitive theorists, learning is created in the learners in the form of potentials and is saved in their memory; as a result, whenever the learners desire something immediately after learning or later, they can use those potentials.

Constructivism is a psychological and philosophical view according to which most people construct and shape most of what they learn and comprehend. Constructivism is a learning theory that emphasizes the

active role of learners in knowledge and perception construction[1]. The International Medical Education (IIME) sets out seven skills for medical sciences students, known as the "global minimum essential requirements" (GMER): 1) Professional values, attitudes, behavior, and ethics; 2) Scientific foundation of medicine; 3) Clinical skills; 4) Communication skills; 5) Population health and health systems; 6) Management of information; and 7) Critical thinking and research[2]. The first skill is related to professional values, attitudes, beliefs, and behavior. Behaviors formed in the classroom can have a significant impact on learning and create stress for students and teachers. The behavior of peers in the classroom is so important that it may even cause students to change their reasonable habits to adapt to the classroom formation. Due to the importance of classroom behavior, a student is expected to comply with all academic rules; however, there are abnormalities in student behavior at these levels, and their correction can improve learning and professional behavior[3].

Positive classroom behaviors can affect learning by creating perseverance, self-regulation, prudence, social intelligence, and hope in the learner, leading to the achievement of educational goals[4]. Behaviors can affect the learning environment, and if inappropriate, the behavior can disrupt the natural process of the class and prevent the class from achieving its goals of teaching and learning[3, 5]. Classroom harassment will have a significant impact on the professional performance of students and teachers, and this will affect the career prospects of students, especially medical students, and consequently the quality of their service to patients[6].

The different behaviors of medical students have become a challenge in college classrooms. Given their role in maintaining and promoting community health, it is important to study the behavior of medical students[6, 7]. In the literature review of Iranian medical sciences, you rarely come across studies that have analyzed classroom behavior in depth with a qualitative method and led to the presentation of a model. Therefore, the purpose of this study was to explain the classroom behavior process of medical sciences students.

Materials and Methods

Study design and setting

Grounded theory is a methodological approach for qualitative research that allows researchers to interpret a process and its components based on the data derived from the participants' experiences[8]. This study is aimed at investigating the classroom behavior process during 2020–2023. To this end, the qualitative research method based on the grounded theory approach was taken into account as the most effective[9]. In this study, the research environment was all the classrooms of students of medical sciences at Fasa University of Medical Sciences.

Participants and Sampling

All students of different medical fields at Fasa University of Medical Sciences were the population of this study. In this study, purposive sampling was done to discover the desired concepts. Twenty-one medical students who met the inclusion criteria, had no mental or physical disorders, and were willing to participate in the study were studied. Participants were purposefully selected from among medical students who had attended classes for several semesters and had a wealth of classroom information. Theoretical sampling was also used to collect more data. Sampling continued until data saturation and theory development.

Data-collection tool and technique

In this study, we used semi-structured interviews with open-ended questions. All interviews were recorded verbatim. In addition to the interviews, class observation and field notes were used to collect information, complete the process, and establish inter-class relationships. Memos were performed at all stages, from data collection to data analysis.

The interview started with open-ended questions. Here are some examples of interview questions: "Describe your experience attending class." "Explain your relationship with the teacher." Explain your relationship with your classmates." "What are your challenges in the classroom?" "What threatening behaviors are present in your classroom?" "What is the consequence of classroom behavior for you?" "What is the effect of classroom behavior on you?" Next questions were selected according to the answers of the participants to previous questions to clarify the interview process and cover the objectives of the research. If necessary, each participant was interviewed again. The duration of each session was 60–90 minutes. At the end of the interview, open-ended questions were asked, such as, "Is there anything you would like to add?"

To keep in touch with the participants' data and feelings, the transcripts of the recorded interviews were recorded verbatim at the earliest opportunity. After transcribing the recorded text and performing the initial analysis, the obtained information was used to prepare the next interview questions. To maintain reflectivity in the research process, reflective notes were made, and the researcher also recorded observational experiences. In addition, writing notes, observational notes, and methodological notes were done to accurately interpret the data as expressed by the participants[10]. The interviewers were a number of university members who had received the necessary trainings to create a more

friendly relationship with the participants. In this study, data analysis was performed based on the Corbin and Strauss (2015) approach. This approach includes the following steps: identification of concepts, taking textual data and breaking it up into discrete parts (open coding), drawing connections between codes (axial coding), selecting one central category that connects all the codes from analysis and captures the essence of research (selective coding), concept development and description of the dimensions and characteristics of concepts, data analysis for the background, introduction of the process to the analysis, and composition of classes.

Data analysis was performed at the same time as the first interview. The text of the interviews was read several times. The main sentences were coded based on what the participants said. The codes were categorized based on similar concepts. Next, the first codes and categories were compared, and similar items were merged. By constantly comparing the codes, the new categories were put together according to their common focus. The storyline was used to clarify the main and central categories. Categories were continuously compared to ensure distinction between them. By focusing on the context in which the phenomenon occurred and the items controlling the phenomenon, the main variables and processes between the data were identified. MAXQDA software version 15 was used for data management[11].

The Guba and Lincoln criteria were used for data accuracy and rigor. Credibility was determined by considering different sources (the triangulation view includes time, method, and source). Member check and prolonged engagement of the researcher with the study process, as well as continuous data examination increased the data credibility. For confirmability, the researcher operated completely impartially (bracketing) by agreeing on codes and topics, reviewing interviews and codes, and continuously submitting work reports to two expert teachers and multiple observers during the study. To ensure dependency, the researcher implemented the interview as quickly as possible and re-examined the entire data with an external reviewer or debriefing of colleagues. Finally, for transformability, interviews were conducted with different participants (maximum variance of sampling) by using different terms and topics.

Ethical considerations
The Ethics Committee of Fasa University of Medical Sciences approved the study (research code: 99121; ethical approval code: IR.FUMS.REC.1399.163). The interviews were conducted individually, taking into account the environmental conditions and time, the tolerance and willingness of the participants, and in a suitable place without environmental interference

factors. At the beginning of each interview, the purpose of the study was explained to the participants.

Results

The study population consisted of 21 students of different medical sciences, including 14 men and seven women, and their average age was 21.6 years. The results are presented in Table 1.

The results of the data analysis were divided into three main categories and nine subcategories indicating the process of students' classroom behavior: representation scene, behavioral representation, and representation effect. The representation scene, the context of this process, behavioral representation as a strategy, and the representation effect as a consequence of this process were considered. The central category was called "In Search of Respect and Interactive Teaching." Based on these results, the classroom behavior of medical sciences students was found to be an interactive, complex, and dynamic process, and different aspects of individual, family, social, economic, and cultural factors affected it. The results of the three main categories and nine subcategories are presented in Table 2.

Representation scene
The first category was the representation scene, which included four subcategories. This category comprised the factors influencing the formation of classroom behavior. This category included four subcategories:

Table 1: Reporting of demographic data of medical students

Participant	Age	Gender	Time (y) of entrance	Field of study
1	22	male	1401 (2023)	medicine
2	20	male	1401 (2023)	nursing
3	22	male	1399 (2021)	medicine
4	21	female	1400 (2022)	nursing
5	24	male	1399 (2021)	laboratory science
6	22	female	1399 (2021)	laboratory science
7	21	female	1400 (2022)	laboratory science
8	20	male	1400 (2022)	laboratory science
9	20	male	1401 (2023)	anesthesiology
10	21	male	1399 (2021)	medicine
11	23	male	1400 (2022)	medicine
12	21	male	1400 (2022)	medicine
13	25	male	1400 (2022)	medicine
14	22	female	1399 (2021)	nursing
15	24	female	1399 (2021)	nursing
16	22	female	1401 (2023)	nursing
17	20	male	1401 (2023)	anesthesiology
18	20	male	1400 (2022)	medicine
19	21	male	1400 (2022)	laboratory science
20	21	female	1400 (2022)	nursing
21	21	male	1400 (2022)	anesthesiology

Conceptual model of classroom behavior of medical students.

The characteristics of the learner, the teacher and teaching method, the classroom and university environment, and educational content were the underlying factors of classroom behavior. Behavioral representation was the medical student's strategy. Medical students in classrooms first developed groupism, and these groups were the source of the continuous formation of polite or non-polite behaviors. The medical students also had some expectations. The representation effect was a consequence of students' classroom behaviors and included academic achievement and positive and negative emotions. In every behavior they showed, students were in search of respect and teacher-interactive teaching methods. In search of a student's respect and teacher-interactive teaching methods, this was the main medical student's expectation.
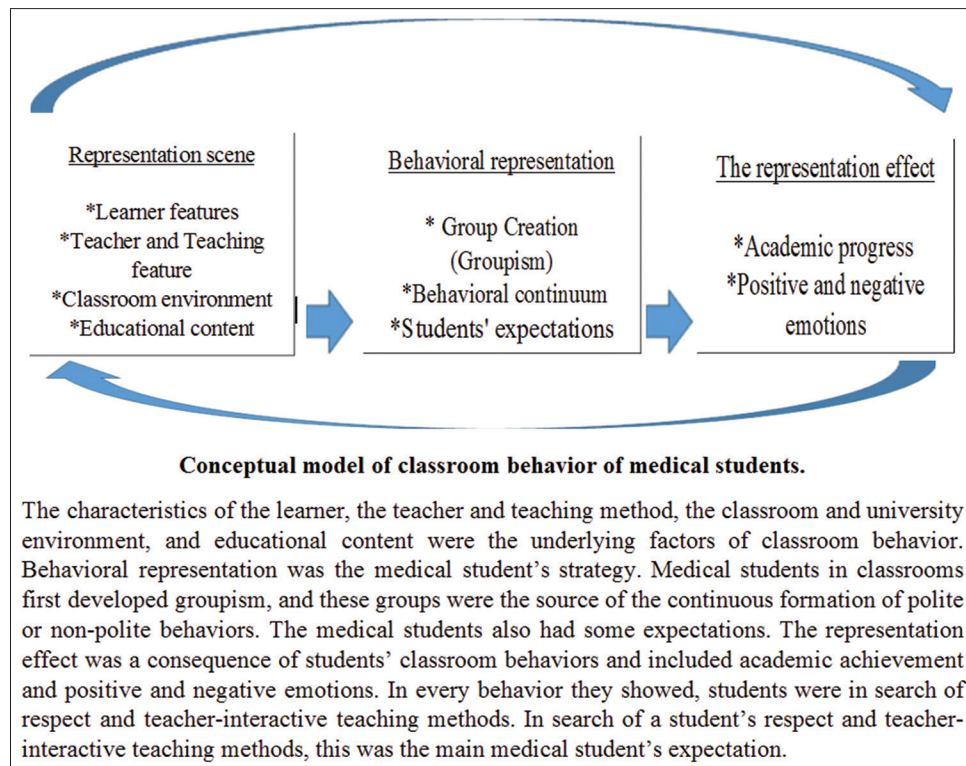
Figure 1: In search of respect and interactive teaching model

Table 2: Three main categories and nine subcategories of the classroom behavior process of medical sciences students

Category	Subcategory
1. Representation scene	1-1 Learner features
	1-2 Teacher and teaching features
	1-3 Classroom environment
	1-4 Educational content
2. Behavioral representation	2-1 Groupism
	2-2 Behavioral continuum
	2-3 Students' expectations
3. The representation effect	3-1 Academic progress
	3-2 Positive and negative emotions

learner features, teacher and teaching features, classroom environment, and educational content.

Learner features

The results showed that physical, psychological, cultural, social, spiritual, and economic characteristics of learners; their interest and prospect for courses and universities; their future career and social status in the future, from the students' point of view, influenced their classroom behavior. Ignorance of the rules can affect the behavior of students in the classroom. In the subcategory of learner features, the participants stated:

"I go to bed late at night, so it's very difficult to get up at 7 a.m. and present in the classroom." (3rd participant, medical student, male).

"I had never been interested in studying before, I just came to university to get an educational degree or a good position in society." (17th participant, anesthesiology student, male).

"Let's imagine that I've got a bachelor's degree or that I've passed this course. What will happen? At the end, we are all unemployed; we have no motivation." (5th participant, laboratory science student, male).

"When we come to the university, we get acquainted with the opposite sex, and very suddenly we are in a new situation. It is not like that in other countries; even if the conditions are not prepared, they teach students what to do." (3rd participant, medical student, male).

Teacher and teaching features

According to the participants, the classroom behavior of students is greatly influenced by the behavior of professors and teachers. The components of how to interact, plan, teach, and observe justice; students being respected by the teacher; and even the appearance and cover of the teacher affected the classroom behavior of students. The way the teacher plans, teaches, and interacts with the students was among the most influential factors affecting the students' classroom behavior.

When the teacher preserve the students' honor and used more interactive teaching methods, their behavior become more positive, vice versa. In the subcategory of teacher and teaching features, the participants stated:

"In education, the problem I see is the one-sided behavior of the teacher. Education should be bilateral; both sides, the teacher and the students, should play a role together. I find this a problem in the entire world education system, let alone our university, which means more one-way interaction." (11th participant, medical student, male).

"Another thing that is important is the knowledge of the teacher. I think we trust the professors who are more knowledgeable, and we listen more to what they say." (10th participant, medical student, male).

"The teacher's complete mastery and proficiency of the subject, the teacher's timely presence in the classroom, the teacher being a role model, having a lesson plan, teaching and evaluation, determining resources, supporting student learning, and having educational interactive methods are important factors. I experienced myself: It is very important when we go step by step with the teacher, the teacher who has put energy into and has taught well the lessons and also takes the exam well. We love him, we respect him, and we study well, and vice versa." (6th participant, laboratory science student, female).

Classroom environment

Among the factors affecting student behavior are the educational environment and the prevailing atmosphere. In the subcategory of classroom environment, the participants stated:

"A professor has definitely taught students older than us before he came to our class, so the students in our class researched the teacher from the perspective of senior students. They ask the seniors, What kind of teacher is this teacher? How does the teacher teach? Even if he is the best teacher, the students in the higher courses say that this teacher is not good; the same word is not good, it fits in the students' minds, and they react according to the same word." (8th participant, laboratory science student, male).

"For example, I say in the morning, which starts at 8 o'clock, but for example, at noon, give more time after lunch, because after lunch, the brain does not work at all; all the blood is in the stomach. We are very sleepy. For example, now that it is Ramadan, we are fine after the time of our former dining predecessor; although our energy is low, we do not sleep unless we have insomnia." (4th participant, nursing student, female).

Educational content

According to the students, the content of the training is also effective in their behavior in the classroom; the non-applicability of the courses, their lack of interest in the content, the large volume of content, the incoherent and inconsistent content taught by the teacher, and the uncertain source of the exam all contribute to decreasing their motivation and paying attention to the lesson in the classroom, followed by inappropriate behaviors in the classroom. In this subcategory, the participants stated:

"A question that always occupies our minds when we are reading a lesson is: What is the use of this lesson in our lives? For example, if I say that I read a lesson well, it will be useful for me in clinical or some other lesson is very useful in my life to be careful to learn this, but a series of lessons in my opinion have no effect on life." (4th participant, nursing student, female).

Behavioral representation

Behavioral representation was the second class and strategy of this process. The second category had three subcategories. The behavioral demonstration category included student behaviors and expectations in the classroom and consisted of the following subcategories: groupism, continuity of behavior, and student expectations.

Group creation (Groupism)

At the beginning of the class, students formed special groups based on individual differences, cultural and educational perspectives, and the importance of the lesson, the class, and the teacher. Participants often divided the class into assiduous and non-assiduous students. Each of these groups had specific characteristics. In the subcategory of groupism, the participants stated:

"A person in the classroom becomes average people who are around; students who do not study well form a group. These students tend to sit in the back row of the class. I am the same; I like to go and sit at the end of the class. And not to be in the presence of a professor, to work and play with my mobile phone, and vice versa." (11th participant, medical student, male).

Behavioral continuum

The behaviors that students displayed in the classroom were recorded on a continuum. The research team called this behavioral continuum the range of class receptionist and polite behaviors to class escapist (elusive) and impolite. Class receptionist and polite behaviors included being on time; choosing the right place to sit in the classroom; respecting the classroom and the teacher; listening, concentrating, and participating in class discussions; and participating in questions and answers. In this subcategory, the participants stated:

"I arrive in class on time, respect the class and the teacher, and participate in discussions, answering questions." (21st participant, anesthesiology student, male).

"I'm totally focused in the classroom." (16th participant, nursing student, female).

"I choose the front of the class, maintain the dignity of the class, and listen to the teacher." (12th participant, medical student, male).

"In some classes that are not attractive, everyone works with the phone and does not listen. I was personally watching the

movie; the others were working with the phone or were doing the work of the next class." (7th participant, laboratory science student, female)

Students' expectations
Students also talked about their expectations of the class. In the subcategory of students' expectations, the participants stated:

"We want professors to protect our dignity; don't judge us only by grades; value our human dignity; and not teach with just a few old PowerPoints. We want animation, questions and answers, group discussions, lessons in small groups, and more new teaching methods." (10th participant, medical student, male).

The representation effect
The effect of the play was the third category, as were the consequences of this process. The third category included two subcategories. The effects of the play included the following subcategories: academic progress and positive and negative emotions [Figure 1].

Academic progress
Classroom behaviors affected the students' academic achievements. All students believed that classroom behavior affects learning, grades, academic rankings, and even future job positions and that the more positive and polite classroom behaviors are, the better the learning, grade, rank, and future job positions, and vice versa. In this subcategory, the participants stated:

"When you are interested in the class, it makes you listen more, learn better, and take the exam better; you become a better doctor in general. Indifference also makes you not listen, and 10 years later the result will become clear in the cosmetic surgery that you had done." (12th participant, medicinal student, male).

Positive and negative emotions
Classroom behaviors created positive and negative emotions in students; class receptionist students with positive behaviors were calmer and less anxious during the exam and even long after the exam, but students with impolite classroom behaviors suffered from anxiety and worry at the time of the evaluation and even afterward. In the subcategory of positive and negative emotions, the participants stated:

"Those who had fun during the semester reproached themselves on a night before exams, and those who sit in front of the class, because their most important job is to study and do it in the best way, feel better and better." (11th participant, medical student, male).

"In classes, when I participate, I listen and take my exam better; that lesson is more popular with me, and this even affects my choice of specialty." (12th participant, medical student, male).

Discussion
The aim of this study was to explain the process of classroom behavior of medical students and to present a process and conceptual model. The first category was considered to reflect the characteristics of the learner, the teacher, the environment, and the educational space. This category was the precursor to classroom behavior. It included physiological factors related to the student, such as breakfast, lack of hunger[12], and adequate sleep[13]; psychological factors such as stress[14], anxiety, and depression[15]; and interest in the field of study, including factors that affect the behavior of students in the classroom. A study by Ming Chiu *et al*.[16] also suggested that cultural, social, and economic factors and even gender inequalities can affect students' behavior in the classroom. According to a 2017 study by Barnhoorn *et al*.,[17] the characteristics of medical students, including gender and ethnicity, influence students' professional behavior. According to the study by Behnamfar *et al*. (2015)[18], a positive attitude toward the field of study and career prospects can affect the performance and behavior of students.

In a way, students with a positive attitude toward their field of study are less conditioned than others and are more compatible with their professional problems. In addition, according to the participants, ignorance of the rules governing the classroom and the university atmosphere can affect the behavior of students in the classroom. Research shows that professors have a potential impact on their students' academic success and even their future lives. One of the characteristics of an effective class is the existence of a professor who, in addition to having organized knowledge, can communicate effectively with students. Kumari *et al*.[19] noted that medical students believe that good professors are professors who have the ability to communicate well with students and have the right knowledge in their teaching; in addition, they are accessible, interested, and inspiring professors. David (2016) found that lecturers and faculty teaching programs focusing on academic performance, attitude, and student studies are effective[20].

Many studies were in line with the present study and showed that the environment and educational environment, including structured education, support systems, course content, classmates, and new technologies, affect the learning and behavior of students. In their study, Finn *et al*.[21] examined the relationship between class size and student participation in the classroom and emphasized the idea that students' classroom environment influences student behavior. Participants in this study showed that both the physical characteristics of the class and the number of students

present, the arrangement of class chairs, and the beauty of the environment affect their behavior, including their participation in the class process. Other factors influencing classroom behavior were how university officials treated students, students' preconceptions about professors, the classroom, and the time and duration of classes.

Behavioral representation was the second category and strategy of this process. The behavioral display category included student behaviors and expectations in the classroom and consisted of the following subcategories: groupism, continuum of student behavior, and expectations. In this study, group orientation meant the formation of two prominent groups of students as one of the classroom behaviors. Students' shared attitudes, cultures, perceptions, and feelings in the classroom and subsequent social goals may underlie the behaviorism of medical students. Of course, no research was found to be exactly consistent with this finding, but Barry and Wentzel (2006)[22] found that the behavior of a friend influences the pursuit of another person's social goals.

On the behavioral continuum, positive behaviors included timely class attendance, attention[23, 24], focus[25], participation[26], respecting the teacher, classroom, and classmates. In this study, student behavior was placed on a continuum of positive to negative behaviors. Most researchers in this field have examined the disrespectful behaviors of medical students and compared the perceptions of professors and students toward disrespectful behaviors[27]. However, educational systems should pay attention to the fact that in a classroom, encountering positive and negative behaviors is inevitable and conduct more research.

Using the results of such research in the future, it is possible to institutionalize positive behaviors, reduce negative behaviors, and create a suitable teaching-learning environment. The results of the research of Hosseini-Nezhad *et al.*[28] in 1995 showed that despite the fact that unprincipled behaviors are observed in universities, university students consider it a sacred place and consider the observance of ethical standards as one of their duties. Not only does improper behavior appear, but it can also cause convulsions in the educational atmosphere[29]. By satisfying the needs, wants, and expectations of learners, it is possible to provide the groundwork for the emergence of positive behaviors, which will develop and improve the educational system, professional training, and pivotal ethics[30].

The results showed that positive classroom behaviors lead to academic achievement, positive emotions, and a better career future. The results showed a more positive student behavior occurs in classes where their professors maintain students' respect and use modern and interactive teaching methods. The result about interactive teaching in medical education was consistent with the results of Verma *et al.* (2021)[31], Begum *et al.* (2020)[32], Azizi and Khatony (2019)[33], Khodaei *et al.* (2022)[34], and Kusmiati *et al.* (2023)[35].

Strengths and limitations

The presentation of the model of classroom behavior of medical sciences students was one of the strengths of this study. The present research is the first study with a qualitative approach carried out to investigate classroom behavior from the perspective of medical students in Iran, which can provide useful information for policymakers and educational managers. A variety of sampling and selecting different courses for students was another strength of this study. Educated policymakers and professors can help strengthen the positive classroom behaviors of medical sciences students by respecting them, planning, providing comfort facilities, and being up-to-date.

This research also had its limitations. This study is the result of interviews conducted on the classroom behavior of medical students in one university; therefore, results may not be generalizable. This research was conducted with different science students; it would be better in the future to conduct this research based on a specific discipline.

Conclusion

Students showed more positive behavior in classes when their professors maintained students' respect and used modern and interactive teaching methods. Therefore, policymakers, educational planners, and professors are advised to always be diligent in maintaining and respecting students, to master new and interactive teaching methods, and to use these methods more. Efforts in this area will promote positive and polite classroom behaviors. Promoting positive and polite behaviors will help students acquire ethical and professional principles and will lead to the training of qualified professionals.

Ethical considerations
The present study had an ethical code number IR.FUMS.REC.2020.163 from the Vice Chancellor for Research at Fasa University of Medical Sciences, Iran. Informed consent was obtained from the participants.

At the beginning of the interviews, the purpose of the research was explained to the participants each time. All participants were assured that all information and documents related to the interview (recorded and documented) will be kept strictly confidential.

Financial support and sponsorship

Conflicts of interest

There are no conflicts of interest.

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