Original Article

Medical students' perceptions of the learning environment and its implications on teaching and learning: A qualitative study in Nigeria

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Abstract

Background & Objective: With increased interest in understanding the role of the Learning Environment (LE) in effective teaching and learning, this study explores how medical students in Nigeria perceived their LE and its impact on their education.

Material & Methods: A thematic analysis approach was adopted for this qualitative study, using focus group discussion to gather data on students' experiences. Purposive sampling was used to choose participants after considering the representation of different subgroups and genders in the study population. Four focus groups were conducted to ensure data saturation. Each focus group consisted of eight participants, each with at least two females, a ratio similar to what was obtained in the study population. An interview guide based on some concepts of the Dundee Ready Education Environment Measure (DREEM) and other areas of interest was employed to navigate the interviews. An inductive thematic analysis involving a line-by-line examination of the transcripts was conducted to generate codes and identify various sub-themes and themes from the data.

Results: Three main themes were identified. The first theme—pedagogical bedrock includes basic necessities, resource sufficiency, and expectations versus realities. These elements contribute to an effective teaching and learning environment, while their absence impedes learning. The second, the Promoters, encompasses factors in the learning environment that facilitate learning and comprises two sub-themes: the learning atmosphere and social perception. The third theme, Proficiency appraisal, focuses on students' perceived achievement of learning outcomes and the relevance of their learning experiences, incorporating both alignment and strategies.

Conclusion: This research provided a sound understanding of the strengths and challenges in the LE and how these may influence the overall learning outcomes. Focused interventions can ensure an enhanced LE that will ultimately translate to enhanced teaching and learning outcomes.

Keywords: learning environment, teaching and learning, medical education, medical students; Nigeria

Introduction

In recent years, there has been growing interest in and concern about the role of the learning environment in undergraduate medical education. According to Bassaw et al., the Learning Environment (LE) is critically important in determining the success of any medical curriculum (1). The LE is the foundation for effective teaching and learning (2). Broadly speaking, it comprises three components: institutional culture, both formal and informal curriculum elements, and the educational climate (2). These factors collectively contribute to effective teaching and learning and provide the context in which the curriculum operates. The LE is pivotal in determining how well educational programs achieve their objectives or outcomes (3), making it essential for fostering effective teaching and learning across academic programs.

The learning environment incorporates different elements that influence teaching and learning. It encompasses physical, social, psychological, and cultural contexts in which students learn (2, 4). Jamaiah and colleagues, on the other hand, reason that the educational environment can be divided into three parts: the physical environment (facilities, comfort, safety, food, and accommodation), the emotional climate (security, positive methods of reinforcement), and the intellectual climate (learning with patients, teaching and learning approaches, the use of evidence-based and up-to-date knowledge and skills) (3, 5).

The LE encompasses the overall atmosphere and characteristics, including the elements that are rewarded, encouraged, and emphasized, which in turn influence students' behavior and academic achievement (5, 6). A supportive environment can motivate students to work harder and perform better academically (5, 6). Research indicates that medical students' perceptions of their learning environment are linked to burnout, loss of empathy, career regret at graduation, and mistreatment (7). Additionally, the learning environment affects students' satisfaction with their courses, perceived well-being, aspirations, and academic performance (2, 8, 9). Optimizing the medical school learning environment may enhance student outcomes, whereas environments associated with distress can lead to declines in empathy, professionalism, wellness, and academic performance (10, 11).

Studies have shown that academically strong medical students rate their learning environment significantly higher than their lower-performing peers (5). Belaineh and Jamaiah observed that students who perceive their learning environment as conducive are more likely to adopt a deep learning approach and achieve better outcomes, whereas those who see their environment as non-conducive tend to adopt a surface learning approach and perform worse (12). While learning itself is a complex process, it is significantly influenced by students' approaches and the conduciveness of the learning environment (13).

The LE impacts students' satisfaction with the course, perceived well-being, and aspirations, as well as their academic achievement (2, 8, 9). The understanding of the role the learning environment plays in the success of medical education (particularly in ensuring students' satisfaction and achievement) has stimulated our interest in understanding how medical students perceive the learning environment at Ekiti State University Medical School (EUMS) Nigeria and how this impacts teaching and learning.

Only a few studies in Nigeria have looked at medical students' perceptions of their learning environment (14–16). These studies highlighted several areas requiring significant improvement. However, they all used a quantitative approach, which restricts a deeper understanding of perceptions and attitudes toward the learning environment.

Therefore, this study aimed to gain a deeper understanding of how medical students perceive the learning environment at a State University Medical School in Nigeria during their clinical years. This included identifying perceived challenges in teaching and learning and gaining insights into the strengths and weaknesses of the learning environment and how these factors influence teaching and learning.

Material & Methods

Design and setting(s)

A qualitative study using thematic analysis was adopted for this study. Focus group discussion was used to gather data on students' experiences. The study was conducted among undergraduate medical students in their clerkship (students undergoing their clinical rotations) at the Ekiti State University College of Medicine, Nigeria, between July and August 2018.

Participants and sampling

The study population was all medical students in the clinical years (n = 76) at the Ekiti State University Medical School at the time of the study. The College of Medicine was established in 2010 as a new faculty in a well-established university. Purposive sampling was used to choose participants, considering the representation of different subgroups and genders in the study population. Four focus group interviews were conducted: two from the class, i.e., one from each of the two sub-groups that make up a class. This takes into account the representation of different subgroups and genders in the study population. Each academic year is usually divided into 2 sub-groups (each with different clinical rotations per time), and in all, the two sets of students have four sub-groups. Each focus group consisted of eight participants, each with at least two females, a ratio similar to what was obtained in the study population.

Tools/Instruments

An interview guide (**Table 1**) based on some concepts of the Dundee Ready Education Environment Measure (DREEM) questionnaire (17) was developed to navigate discussions. This incorporates various subscales such as students' perceptions of learning, teaching, academic self-perceptions, atmosphere, and social self-perceptions, to navigate discussions. Additional question covering other areas of interest was added, namely: what are your expectations of an ideal medical school learning environment?

Table 1. Interview guide

1. Understanding the Educational Environment
    - What is your definition of the learning or educational environment?
    - How would you describe the physical, emotional, and social aspects of this learning environment?
    - Do you find the infrastructure?
2. Impact of the Learning Environment on Education
    - How does the learning environment affect teaching and learning at this medical school?
    - Can you identify any positive or negative impacts of the learning environment on your learning experience here?
    - In your opinion, is the teaching and learning approach in this school stimulating or otherwise?
    - Would you describe the teaching approach as student-centered or teacher-centered?
    - How effectively does the learning environment help you develop the competencies needed for practicing as a doctor?
3. Expectations and Reality of the Medical School Learning Environment
    - What are your expectations for an ideal learning environment in a medical school?
    - To what extent are these expectations being met at this school?
    - Do you generally feel confident about passing your exams?
    - Do you often feel well-prepared for your exams?
    - Do you tend to memorize information, or do you take the time to understand it thoroughly?
4. Relationships within the Educational Community
    - How would you describe the relationship between students and lecturers, registrars, and other staff members?

Data collection methods

The overall interview structure was compiled using a series of carefully planned, introductory, transitional, key, and ending questions phrased conversationally as outlined by Krueger and Casey (18). Each focus group interview was audio-taped. The first author served as the facilitator. Each interview session was conducted in a seminar room in the faculty, with each lasting about 75 to 90 minutes.

Before the commencement of the study, a pilot interview was conducted to test the interview guide and get an idea about the duration of the interview and the effectiveness and efficiency of the audio system to be used for recording. Participants in the pilot study were excluded from the main study.

Data analysis

The raw data incorporated the audio recordings made during the interviews. The data were prepared for analysis through verbatim transcription of the audio recordings. Thematic analysis was conducted, which involved a line-by-line examination of the transcripts to identify themes and sub-themes without pre-determined coding schemes.

The analysis followed the six steps outlined by Braun and Clarke (19). These steps are: (i) repeatedly reading the transcribed interviews to become familiar with the text; (ii) generating initial codes for the data, representing the phenomena under investigation; (iii) sorting the different codes into potential themes; (iv) refining these themes; (v) capturing the essence of each theme and determining what aspect of the data each theme represents; and (vi) conducting the final analysis and writing the report.

To ensure the trustworthiness of the data, several strategies were employed: transferability, reflexivity, credibility, confirmability, and triangulation. These methods help researchers demonstrate that the data and conclusions accurately reflect participants' views and experiences. Credibility was strengthened by ensuring the research findings were based on participants' original data and correctly interpreted their views. This was achieved by summarizing their responses after each question. Before the interviews began, the research purpose was clearly explained to participants, and they were informed about the ethical measures in place to ensure their participation and confidentiality.

To guarantee transferability to other contexts or settings with different respondents, a detailed description of the findings and the study context was provided. The sampling strategy was also detailed, and the findings

were compared with existing literature in the study's final report. These strategies also improved the confirmability of the findings. Confirmability was further enhanced by the researcher's reflection on their influence on the findings.

Results

A total of 32 students participated in the four focus group interviews, representing about 40% of the total study population. Sixteen (50%) of each of the 4th and 5th year students took part in the study. This consists of 8 (25%) females and 24 (75%) males with a mean of 25.21 years. Other characteristics are shown in **Table 2**. Sixty-two open codes were extracted from the data, which led to the formation of 7 sub-themes and 3 themes. An example of the method of induction from the participants' statements to the relevant sub-themes and themes is presented in **Table 3**. As shown in **Table 4**, the emerging themes from the data were pedagogical bedrock, the promoters, and proficiency appraisal.

Pedagogical bedrock

The learning environment as pedagogical bedrock was formed from three sub-themes identified in the data, namely: basic necessities, resource sufficiency, and expectation versus realities.

Basic necessities

The participants identified some challenges with the physical components of the learning environment that affect teaching and learning. Although they agreed that there are adequate classrooms and laboratories, they highlighted the need to make these more conducive to learning by providing basic comforts such as air conditioning and cushioned chairs in the classes. Poor supply of electricity was also identified as a major barrier to effective teaching and learning. As one of the participants remarked, "*Yes, it [electricity] is a major challenge; many of our lecture notes are soft copies and are on our devices, which need a constant power supply to be charged; we need electricity to pump water and work in the laboratory*" (G4M4).

** The abbreviation G = Group, M = Male, F = Female e.g., G1M3: Group 1, 3RD Male*

Table 2. Demographic characteristics of the participants

Participants	Gender	Age (years)	Acdemic semeter
Participant 1	Male	23	10
Participant 2	Male	25	10
Participant 3	Female	26	10
Participant 4	Male	25	10
Participant 5	Female	23	10
Participant 6	Male	24	10
Participant 7	Male	23	10
Participant 8	Male	25	10
Participant 9	Female	26	10
Participant 10	Male	25	10
Participant 11	Female	25	10
Participant 12	Male	27	10
Participant 13	Male	26	10
Participant 14	Male	24	10
Participant 15	Male	23	10
Participant 16	Male	36	10
Participant 17	Male	23	8
Participant 18	Male	25	8
Participant 19	Female	29	8
Participant 20	Male	25	8
Participant 21	Male	26	8
Participant 22	Male	25	8
Participant 23	Female	24	8
Participant 24	Male	25	8
Participant 25	Male	24	8
Participant 26	Male	27	8
Participant 27	Male	23	8
Participant 28	Male	25	8
Participant 29	Female	26	8
Participant 30	Female	25	8
Participant 31	Male	21	8
Participant 32	Male	27	8

Table 3. Sample of the main theme, subthemes, initial code, and participant statement

Main theme	Sub-themes	Initial code	Participant statement
The promoters	The learning atmosphere	Relationships between learners and lecturers	"The relationship between lecturers and students here is exceptional and excellent, they relate to us as brothers and fathers, and the gesture I see enhances learning."
	Social perceptions:	Social life	"Our social life is constricted, and our level of exposure is low compared to other institutions."

Table 4. Themes and description of findings

Themes	Sub-themes	Description
Pedagogical bedrock	• Basic necessities • Resource sufficiency • Expectations versus realities	These are factors in the learning environment that enhance effective teaching and learning, the absence of which the students think will impede learning.
The promoters	• The learning atmosphere • Social perceptions	The promoters consist of the social perceptions of the learning environment and atmosphere. These are factors in the learning environment that participants see as enhancements of learning.
Proficiency appraisal	• The alignment • The strategies	The degree to which students perceived they've learned or acquired knowledge, skills, and attitudes that would permit them to practice as doctors after graduating.

Resource sufficiency

Inadequate teaching aids were also identified as a hindrance to effective teaching and learning. These range from audio-visual aids to equipment at the teaching hospital. When available, these were also hampered by the poor power supply. As noted by some of the participants, *"those things they were telling us, we want to see them, we want to touch them; if you have to imagine, definitely you have to memorize" (G4M5*). "*When we are in O&G posting and they were talking about a maneuver, I checked on the internet and the person was doing it with a mannequin; if we had that, we would have understood it better" (G3F2)*.

Expectations versus realities

As discussed by the participants, an ideal medical school should have good physical structures with basic facilities for comfortable teaching and learning. "*An ideal medical school should have well-structured buildings... have basic diagnostic tools such as CT scans and MRIs, a well-equipped teaching hospital, a furnished library with internet access, and the classroom should be stimulating and inviting (G3M5).* Such an ideal medical learning environment should provide an opportunity for exchange programs, both locally and internationally.

The promoters

The promoters of the learning environment constituted the second theme, including aspects in the learning environment that participants saw as facilitators of learning or the absence of which impaired their learning. The two categories that formed this theme were social perceptions of the environment and the learning atmosphere created by lecturers.

Social perceptions

Participants identified some key social issues that they believed would enhance learning. Among such was an opportunity to interact with other medical schools within and outside the country, recreational facilities, the provision of sports facilities, opportunities to engage in debate, organized sports activities with other medical schools, and the engagement in exchange programs. As remarked by one of the participants, *"Our social life is constricted and our level of exposure is low compared to other institutions" (G3M3). "An ideal medical learning environment should provide opportunities to participate in social activities such as sports, quizzes, and seminars, and provide counseling opportunities" (G4M3)*.

Additionally, participants identified the need for the institution to provide an opportunity for financial aid and scholarships to reduce the financial burden on students, particularly indigent students with financial challenges. *"Students can be emotionally disturbed about the various levies which each student is required to pay… some students are threatened to pay such fees during or before examinations, which no doubt will affect such emotionally" (G4F1).*

The learning atmosphere

Virtually all the participants described the relationships that exist between the students and their lecturers as an important contributor to effective teaching and learning. As remarked by one of the participants, "*The relationship between lecturers and students here is exceptional and excellent, they relate to us as brothers and fathers, and the gesture I see enhances learning*" (G3M2). However, a small number discussed the use of derogatory words by some lecturers, particularly when they were asked questions and did not know the answers.

This, they said, inhibits learning as it does not encourage you to think. *"You don't have to wash them down and make them feel like they are never going to know it...by wash down, I mean derogatory way of relating with students"* (G2F2).

Opportunities for active engagement in the learning process and the care of patients were other factors discussed as promoters of learning. *"You learn better when you participate actively… We are encouraged to participate in the management of patients" (G3M3).* However, some members of the groups noted that having several lectures in a day and the afternoon leads to exhaustion and reduces interest in such lectures: *"We have several lectures at a stretch, and by the time you are having the fourth, I'm not gaining anything"* (G3F2).

On average, the participants felt that most of the teaching and learning experiences in the school were student-centered. However, they described the preclinical phase as being more teacher-centered. As highlighted by some of the participants, "*I feel the clinical aspect encouraged me to want to learn more... the pre-clinical was not easy (G3F1); stimulating! It has to do with the lecturer" (G2F2).*

Proficiency appraisal

This refers to the extent of learning and consists of two themes, namely constructive alignment and the strategies adopted in acquiring these skills.

The alignment

This refers to the degree to which students perceived they learned, or acquired skills and knowledge that would permit them to practice as doctors after graduating. The students believe that despite all limitations, they are acquiring knowledge and skills that will make them practice as doctors as well as compete favorably with their peers from other institutions. The relationship between the students and the lecturers was described as one of the factors facilitating learning. The majority of the lecturers were approachable, and that allowed students to clarify things or ask questions. The low student-to-lecturer ratio also allowed better student engagement: *"The lecturer-to-student ratio is highly advantageous as we can learn better... we can stand shoulder high with colleagues from other institutions" (G1M2).*

The strategies

This represents the approaches adopted by students in acquiring knowledge and skills. The students believed that they had more of a deep approach to learning than a superficial one. When the participants were asked to rate the extent to which they adopt various learning strategies, they reported that in about 60–70% of the cases they engaged in deep learning in the clinical stage compared to 30–40% during the basic medical sciences years; however, the extent also varied depending on the subject.

Discussion

This study explored medical students' perceptions of their learning environment, their views on what constitutes an ideal medical learning environment, and their impact on teaching and learning. Participants identified the adequacy of basic facilities such as classrooms, laboratories, seminar rooms, and accommodation for clinical students as strengths of their learning environment, especially in comparison with other university faculties. However, they noted inadequacies in essential facilities such as audio-visual aids, laboratory equipment, and teaching aids, which are crucial for optimizing teaching and learning. This observation is consistent with findings by Osarenren-Osaghae and Irabor (20), who assessed the availability and adequacy of human and material resources for teaching and learning skill-based courses in Nigerian public universities. Their report indicated that these resources were below the minimum standards recommended by the National Universities Commission. This issue may be even more pronounced in newer medical schools like EUMS, contributing to delays in program accreditation. The lack or inadequacy of teaching aids can limit the quality of teaching and influence the approach to teaching and learning (21, 22). Studies have shown that the availability of teaching aids such as audio-visuals, clinical skill laboratories, and simulation-based learning (SBL) facilities provides a cost-effective means of achieving educational goals (23, 24).

Additionally, the participants recognized irregular electricity supply as a major challenge to effective teaching and learning in their learning environment. In today's world, most of the teaching and learning engagement involves the use of computers, audio-visuals in the classroom, equipment in the laboratories, as well as other devices to demonstrate some procedures, all of which depend on electricity for effective utilization. Besides, the availability of electricity also allows for the provision of lighting, which enables longer studying/classroom hours at learning institutions (25).

Participants identified some important social issues that impact teaching and learning in this learning environment. Of note was the cordial relationship between the students and their teachers. This kind of student-teacher relationship was identified by the participants as a factor that enhances learning, as it allows them to approach their teachers and ask questions or clarify things from them. The fact that this is a new medical school with fewer students per class may also have encouraged such close interaction between the students and their teachers. Such high-quality student-teacher relationships are essential in improving students' intrinsic motivation to learn and ensuring favorable learning outcomes (26, 27), as well as in the formation of professional identity and the negotiation of feedback (28).

Conversely, the positive aspects of the social environment were overshadowed by negative perceptions, particularly the lack of leisure opportunities. The social environment in this medical learning setting was described as "constricted." Tempski et al. noted that harsh social realities and limited time for leisure and relationships negatively impact medical students' quality of life and learning outcomes (29). This issue seems prevalent not only in this specific environment but also in most medical learning environments in Nigeria (14-16, 30), indicating that the participants' experiences may not be unique to this relatively new medical school. This highlights the need to create a medical learning environment that fosters healthy social interaction and extracurricular activities.

Although the student-teacher relationship was described as excellent by most participants, a few of the participants still highlighted the issue relating to bullying or the use of derogatory language by some of their teachers. According to Wood, bullying and harassment are common occurrences in all organizations, with higher rates in healthcare institutions (31). Such behavior has significant effects on the psychological well-being of the person being bullied or harassed, particularly in the choice of future career, performance, and retention within the profession (31, 32). As noted by Berryman, a large proportion of students encounter what they perceive as bullying or harassment, and such behavior may harm students' learning and well-being (33). Therefore, medical teachers need to understand the deleterious effects harassment and bullying may have on teaching and learning.

One of the key strengths of this learning environment, as noted by the participants, was the opportunity for active involvement in patient care. They attributed this to the relatively small number of students involved. Active participation in the learning process has been shown to facilitate learning (34). This may be specific to a young medical school like this due to the Medical and Dental Council of Nigeria's restriction on student intake to a maximum of 50 students. This underscores the need to develop a medical curriculum that provides opportunities for students' active participation in patient care during their clerkship.

The findings from this study also underscored the need for medical teachers to be equipped with various strategies that will allow for the active participation of students rather than being passive receivers of knowledge, which is typical of didactic lectures. As noted by the participants, as the day progresses, they become bored and hardly gain anything from lectures. This calls for the need to equip medical teachers with basic effective approaches to facilitate teaching and learning and various approaches to ensure an active classroom. Ensuring active engagement will encourage students to engage in deep learning and reduce the adoption of superficial approaches to learning commonly adopted by most students as they advance in their medical education (35).

Students perceived the learning environment provided by the institution as falling short of their ideal expectations. This was attributed to the absence or inadequacy of key factors previously mentioned. Similar studies investigating students' satisfaction with their medical learning environment in developing countries like Nigeria have reported below-average satisfaction (36, 37). Students' perceptions of their learning environment significantly impact the achievement of learning outcomes, highlighting the need for continuous evaluation and improvement to maximize teaching and learning engagement. Additionally, adopting various teaching methods that promote active student engagement is crucial to reducing boredom and loss of interest associated with repeated didactic lectures.

This study was conducted at a single center, a relatively new medical school with its unique characteristics, which may limit the generalizability of the results to different settings. However, comparisons with findings from similar settings suggest that perceptions of the learning environment might be consistent across different contexts. There was also a possibility that students may have emphasized positive aspects in an attempt to please the interviewer. This risk was mitigated by assuring participants of the confidentiality of their

responses and clearly explaining the main objective of the interview to all participants.

Conclusion

The findings of this study highlighted key strengths, weaknesses, and challenges in a relatively new medical learning environment in a developing economy with limited facilities. Key strengths included a good student-teacher relationship, a low student-teacher ratio that allows for close relationships with peers, registrars, and teachers, and better student engagement in patient care. However, significant weaknesses and challenges were also identified, such as inadequate teaching aids and essential hospital equipment, a negatively perceived social environment, and an irregular supply of electricity, all of which were believed to negatively impact teaching and learning.

Given students' perceptions of teaching and learning, medical educators must be equipped with active teaching methodologies that enhance student engagement and ensure the achievement of learning outcomes. Additionally, to reduce exhaustion or burnout and improve student engagement, opportunities for social interaction should be integrated into the medical curriculum.

Ethical considerations

Written informed consent was sought and obtained from each participant. Participation in the study was voluntary. Participants were anonymized in data analyses. Ethical approval was sought and obtained from the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences, Stellenbosch University, with reference number S18/03/060, and the Research and Ethics Committee of the Ekiti State University Teaching Hospital, with reference number A67/18/08/003. Ethics principles and guidelines were followed throughout the study.

Artificial intelligence utilization for article writing

Artificial intelligence was not utilized in writing this article except for language editing.

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Conflict of interest statement

None

Author contributions

AO formulated the research idea. Both IC and AL helped in refining the ideas. AO and AL performed the analysis and interpreted the data. AO drafted the initial manuscript, while both IC and Al were involved in refining the manuscript. All authors approved the final manuscript.

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Data availability statement

Data for this study is available upon reasonable request to the corresponding author.

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