JOGM
Journal of Global Medicine

RESEARCH ARTICLE

Psychological safety in students' clinical learning environment – thematic analysis of open-ended questions and DREEM questionnaire assessment

Constantine Ezeme[1,2], Ebere Ugwu[1], Oluwafunmilayo Soneye[1], Nurudeen Akinbami[1], Naomi Olagunju[1], Olanrewaju Amusat[1,3], Jesse Tanko[1], Habeeb Ogundipe[1], Olukayode Abayomi[1,4], Kenneth Onah[1], Hyginus Ekwuazi[1], Hari Akachuku[1], Olumide Farinre[1], Moshood Adeyemo[1], Adebanji Adeyoju[5], Eme Owoaje[6] and Olufunso Adebola Adedeji[7]*

[1]Department of Surgery, University College Hospital, Ibadan, Nigeria; [2]Department of Surgery, Sheffield Teaching Hospitals NHS Foundation Trust, Shefield, United Kingdom; [3]Department of Urology, Luton and Dunstable University Hospital, Luton, United Kingdom; [4]Department of Urology,Victoria Hospital, Kirkcaldy, Scotland, United Kingdom; [5]Department of Urology, Stockport Hospital, Stockport, United Kingdom; [6]Department of Community Medicine College of Medicine University of Ibadan, Ibadan, Nigeria; [7] Department of Colorectal Surgery, University Hospital of North Durham, Durham, United Kingdom

Abstract

***Introduction*:** The learning environment impacts students' motivation, success and fulfilment, and central to this is the psychological safety of students. Psychologically safe environments lead to collaboration, positive learning experiences and effective practitioners. This study assessed the perception of clinical learning environments of medical and nursing students (NSs) using the Dundee Ready Education Measure (DREEM) and with two open-ended questions (OEQs): their memorable learning experience and the effect of being in medical school on their lives.

***Methods*:** This was a cross-sectional study using validated DREEM questionnaires and two OEQs: 'tell us about a memorable learning experience in medical/nursing school' (MLE) and 'what impact has your time in medical/nursing school had on your life' (IoL). Data were collected from fourth- to sixth-year clinical medical, and first- to third-year NSs. Questionnaire data were analysed using the Statistical Package for Social Sciences. For the OEQs, an inductive approach was used for coding and thematic analysis. Coding was both semantic and interpretive.

***Results*:** One hundred and ninety-three students completed the validated questionnaires. Fifty-seven (29%) and 59 (30%) answered the OEQs MLE and Impact IoL, respectively. Thirty-four per cent of medical and 7% of NSs had a negative response to one of the two OEQs. Six themes emerged from the memorable learning experience question, three of which centred around student-centred teachings and two around emotional responses and psychological safety. '*I reviewed my materials over and over, ate well, put on my best clothes and went to present. It was beautiful*', a third-year medical student. '*The tutor was a great teacher who, when he teaches, students learn*', an NS. There were four themes on the impact on life questions, and these centred around personal development, social awareness, aspirations and psychological safety. '*It has made me see that broken people break others*', a third-year medical student.

The mean total DREEM score was 111 ± 10.2, interpreted as more positive than negative. In only two of the five DREEM domains, perception of the atmosphere and social self-perception were more negative than positive findings. Whilst there was near unanimity about their teachers being knowledgeable, and most students felt teachers were well-prepared for their teaching sessions, complaints about behaviours that adversely affected learning because of their negative impact on psychological safety in the clinical learning environment were very common.

***Conclusion*:** Despite the overall positive picture of clinical learning environments, there are significant areas of students' welfare that need addressing to ensure psychologically safe clinical learning environment. Students' feedback feeding into annual appraisals, and pedagogic courses are means to achieving students-centred learning environments.

Keywords: *clinical learning environment*; *thematic analysis*; *DREEM*; *mixed-method study*; *psychological safety*

To access the supplementary material, please visit the article landing page

Received: 2 September 2024, Revised: 30 September 2024; Accepted: 1 October 2024, Published 14 October 2024

This paper was presented (CE) as an e-poster at the Association for Medical Education of Europe Conference in Glasgow, UK, on 27th – 30th August 2023, and as oral presentation (EU) at the Annual International Symposium of the Ibadan Medical Specialist Group, UK, in Ibadan, Nigeria, on 8th November 2023.

The learning environment is where students operate during their study, and it encompasses the structures, curriculum, socio-economic and the emotional atmosphere [1]. Students intimately interact with the educational environment, and their experience significantly affects the quality of learning [2, 3]. It also impacts their motivation, success and fulfilment, and central to this is the psychological safety of the students. There is evidence that educational environment can be measured and modified, and therefore, the learning environment can be improved, enhancing the quality of the learning process [4].

The Dundee Ready Education Measure (DREEM) is an internationally validated instrument for evaluating the learning environment of medical education and outlines the strengths and weaknesses of institutions based on students' perceptions [2]. Research surveys evaluating the impact of students' perception fall within the 3P (presage, process and product) model proposed by Biggs. This model conceptualises the learning process as an interactive system comprised of three sets of variables: the learning environment and the student characteristics (presage), students' approach to learning (process) and learning outcomes (product) [5].

DREEM questionnaire has been validated and found to be reliable in the assessment of the education environment of medical students and other undergraduate and postgraduate health professional of different cultures and races [6–8]. Some studies have combined questionnaire surveys with thematic analysis of focussed interviews [9] or of open-ended questions (OEQs) [10] of the clinical learning environments with some divergence in the outcomes.

Medical education is currently transforming from a teacher-centric to a student-centric approach, where the teacher's role is to facilitate learning by providing content and a positive learning environment [11]. Modernisation of the medical curriculum and wide diversification of medical students necessitate the need for continued evaluation of the educational environment [12].

The aim of this mixed-method study is to evaluate the clinical learning environment of the medical and nursing students (NSs) using validated questionnaire and thematic analysis of two OEQs.

Methods

This was a cross-sectional study carried out at the University College Hospital Ibadan, Nigeria, a tertiary teaching hospital. The study population were drawn from the third- to sixth-year medical students and from the first- to third-year NSs. At the end of a voluntary extra-curricular talk, open to all medical students, they were invited to take part in this study. After some students left, questionnaires were distributed to the rest of the group. For NSs, questionnaires were distributed after formal lectures for each year group. For all groups, the questionnaires and OEQs were completed at a single sitting. All answers were anonymous, and all students signed a consent, which was attached to the questionnaires.

The DREEM has 50 questions with five subscales (Students' Perception of Learning, Students' Perception of Teachers, Students' Academic Self Perception, Students' Perception of Atmosphere and Students' Social Self-Perceptions). Each item in the questionnaire is answered in a 5-point Likert scale.

Basic demographic data were collected, and at the end of the survey, two OEQs were asked, '*Tell us about a memorable learning experience in medical/nursing school*' (MLE) and '*What impact has your time in medical/nursing school had on your life*' (IoL). This study was approved by the University of Ibadan and University College Hospital Health Research Ethics Committee, IRB No. 21/0645.

The questionnaire data were analysed using the Statistical Package for Social Sciences. The DREEM domain and total score were presented as mean and standard deviation (SD). Comparative analysis of the scores and the course of study was done using the independent t-test. Qualitative analysis was done for the two OEQs. All answers given by the students were handwritten, and they were then transcribed by this group into Excel spreadsheet and crosschecked by another member for accuracy. All OEQs answers were graded on a 5-point Likert scale (1 = mostly negative, 2 = negative, 3 = neutral, 4 = positive and 5 = mostly positive).

A reflexive thematic analysis was done on the OEQs in the six-steps outlined by Braun and Clarke [13, 14]. After thorough familiarisation with the OEQs answers, an inductive approach was used for coding (OAA) derived from the contents of the students' answers (codes were not set priori). Codes were modified through iterative process and then categorised. Themes were then developed inductively from the coded categories. The initial generated themes were reviewed against the codes and entire dataset and modified to reflect the ordinary meaning of the students' responses. The themes were then defined and named. The dataset was managed using the NVIVO 14 qualitative analysis software. The writing of the thematic report was in accordance with the journal article reporting standards for qualitative primary, qualitative meta-analytic and mixed-methods research in psychology (JARS-QUAL) as applicable [15].

Results

Validated questionnaires

One hundred and ninety-three students completed the validated questionnaires, with 76 (39%) answering one or both OEQs. The mean age of the students was 22.6 ± 2.4 years. Seventy-eight per cent of respondents were medical students and 21.8% NSs. Females made up 54% of the study population. The distribution of the respondents was even across the year groups. The interpretation of DREEM is well described with an overall score of 200 [7, 16].

The mean total DREEM score was 111 ± 10.2, interpreted as more positive than negative (Table 1).

Table 1. Overall and domain mean (SD) scores with interpretation

Interpretation	*N*	Mean	SD
DREEM overall scores			
Poor (0–50)			
Plenty of problem (51–100)			
More positive than negative (101–150)	193	111	10.2
Excellent (151–200)			
DREEM domains			
Students' perception of teaching			
Very poor (0–12)			
Teaching is viewed negatively (13–24)			
A more positive approach (25–36)	193	30.5	6.5
Teaching highly thought of (37–48)			
Students' perception of teachers			
Abysmal (0–11)			
In need of some retraining (12–22)			
Moving in the right direction (23–33)	193	27.3	5.1
Model teachers (34–44)			
Students' academic self-perception			
Feeling of total failure (0–8)			
Many negative aspects (9–16)			
Feeling more on the positive side (17–24)	*192*	*21.1*	*4.5*
Confident (25–32)			
Students' perception of atmosphere			
A terrible environment (0–12)			
There are many issues that need changing (13–24)	*190*	*20.1*	*7.3*
A more positive atmosphere (25–36)			
A good feeling overall (37–48)			
Students' social self-perceptions			
Miserable (0–7)			
Not a nice place (8–14)	*191*	*13.1*	*4.0*
Not too bad (15–21)			
Very good socially (22–28)			

There was no statistical difference in the mean scores between medical and NSs in three of the five DREEM domains, but NSs scored higher 22.9 versus 20.5 (p = 0.002) in the academic self-perception, and medical students scored higher 20.7 versus 17.7 (p = 0.021) in the perception of atmosphere domain. However, despite the statistical differences, both groups' academic self-perceptions were more on the positive side, and both their perceptions of atmosphere were that things needed changing (see Table 1).

Overall, for all students, in two of the five DREEM domains, perception of the atmosphere (20.1 ± 7.27) and social self-perception (13.1 ± 4.0), the mean scores were below half (Table 1). The interpretations were that students' perception of atmosphere was one with many issues that needed changing, and their social self-perception was that their environment was not a nice place. However, the other three domains were more positive (Table 1).

There were mixed answers to questions in the domain of students' perception of atmosphere (Supplement 1). Sixty-two per cent of students disagreed that enjoyment outweighed the stress of studying medicine, and 61% of students found the experience disappointing. Similarly, 39.1% disagreed that the atmosphere was relaxed during ward teaching. Contrary to this, 64% of students found the atmosphere relaxing during seminars or tutorials. Fifty-seven per cent felt that they could ask any questions they wanted, and 70% agreed that there were opportunities to develop interpersonal skills. However, only 46% students found that the atmosphere motivated them as learners.

In the students' social self-perceptions, where the mean score showed that students felt that the environment was not a nice place, the seven questions in the domain were a mixed bag (Supplement 1). Sixty-one per cent of students felt that there was inadequate support system for students who were stressed, but 87% had good friends in their groups. Thirty-five per cent were too tired to enjoy

the course, 35% felt lonely and only 40% felt that their social lives were good.

In the students' perceptions of teaching, which was positive overall, 75% of students agreed that they were encouraged to participate in teaching sessions. Sixty-four per cent felt that teachings were student-centred, and 74% felt that teaching helped them develop their competence. Seventy-four per cent felt that teaching encouraged them to be active learners (Supplement 1).

In the domain of students' perceptions of teachers, 98% of students agreed that teachers were knowledgeable, and 87% that teachers were well-prepared for their teaching sessions. On the negative side, 29% of students agreed that teachers ridiculed students, 28% that teachers were authoritarian and 46% that teachers got angry in teaching sessions. Only 54% of students agreed that teachers provided feedbacks to students, and 59% that teachers provided constructive criticisms (Supplement 1).

Open-ended question analysis

Thirty-nine per cent (76/193) students answered one or both OEQs, with 57 (29%) answering the memorable learning experience and 58 (30%) the impact on life questions. Only 40 (21%) students answered both questions. Eighteen per cent (14/76) who answered one or both questions were NSs. Sixty-six per cent (50/76) of those who answered were females.

All combined 116 answers were graded on a Likert scale from 1 (very negative) to 5 (very positive). Sixteen per cent (9/57) and twenty-two per cent (13/58) of answers to MLE and IoL were negative (Likert 1 and 2). The 22 (29% of those who answered the OEQs) combined negative answers were unique, as no student answered both questions negatively. Only one of 14 (7%) NSs answered either question negatively, compared to 34% (21/62) of medical students.

Thematic analysis

The generated themes from the two OEQs are described below with selected quotes from MS and NS. All quotations were transcribed unedited apart from truncating for clarity where necessary.

Memorable learning experience

Six themes were identified from the analysis of this question.

1. A new experience
2. Participating and doing something
3. Reinforcement and understanding
4. Teaching that engages
5. Psychological safety
6. Emotional responses

Theme 1: A new experience

The first time some students encountered a new experience was memorable. This included witnessing their first live surgical operations,

'The procedure was an exploratory laparotomy and as a Surgery 1 student, the experience left me in awe'. (MS 27)

For others, the memorable experiences were those who evolved overtime. This included seeing positive outcomes in patients' managements, or ones who expanded their knowledge, or motivated them to further studies, or improved their clinical skills. For many, it was the initial experiences that bookended their pre-clinical years,

'A practical class I had on performing enema (rectal washout). At first, I never thought the procedure will actually help the patient pass out waste but it turned out to be effective and I so much took interest in that procedure'. (NS 410)

'*It felt like an unofficial welcome to medical school considering the time I had spent in preclinical school'. (MS 184)*

'I think my most memorable learning experience so far in medical school was the time I saw a patient on haemodialysis in the renal department. Of all my clinic exposures, this one stuck with me and enlightened me on kidney failure as previously I did not realise it occurred in the young'. (MS 119).

Theme 2: Participation, doing something

This was active participation in learning experiences as opposed to students just being passive recipients of knowledge. It involved learning exposures where students made individual case presentations, worked in groups to answer questions, presented cases and collaborated to make joint learning groups. These active participations in practical sessions provided necessary skills seen by the students as useful for further progressions. Group participations were seen as providing opportunities to develop leadership skills, build confidence, be more expressive, help in retention and, for many, a sense of satisfaction. Just active particiapation reinforced subspecialty interests in some.

'In pre-clinical school, the histology lecturer divided the entire class into groups and gave each group an organ system to study and present as part of our continuous assessment. ……, It was really daunting to work on such a project with 40 other students but as soon as we got some organization going, work flowed smoothly. We studied, prepared power points and worked together as a group to present urinary system histology to the class. I was selected to present the topic to the entire class. …, I reviewed my materials over and over, ate well, put on my best clothes and went to present. It was beautiful. Apart from receiving compliments from my peers, I was greatly commended by my lecturer which gave me a great boost. ……, I learned that teaching others is one of the ways I learn best and I've practiced it ever since'. (MS 113, 3rd year medical student)

Citation: Journal of Global Medicine 2024, 4: 241 - http://dx.doi.org/10.51496/jogm.v4.241

'*Being able to visualise and partake in the client's medical and nursing management in clinical practice has been thrilling, enlightening, educative and yielded increase in confidence'. (NS 374)*

'The very first presentation I did in class. I felt like I was in control and a big part of something. It was nice to share my knowledge'. (NS 380)

'I love surgery and I once had the opportunity to assist in a surgery. I felt quite elated and it reinforced my passion about surgery'. (MS 25)

Theme 3: Reinforcement and understanding

Learning experiences that clarified previously learned topics or made new ones understandable to students were memorable. Experiences brought textbooks to life. Students felt that understanding was associated with emphasising the importance of skill and proper training, topics that become embedded in memory and learning for the sake of interconnection and application. This was felt to be important in understanding the foundation of diseases and helps in understanding future lectures. If fostered interest in some subjects and gave some a sense of satisfaction.

'*We were on emergency ward call. We saw a patient who had the cardinal signs of right heart failure. …., I was amazed that because all the signs which I had previously read about in a textbook were all visible and I could easily tell what was wrong with the patient. It was actually a thing of joy for me because personally I like evidence-based professions and from what I have seen so far in medicine, it relies heavily on evidence'. (MS 20)*

'…., demonstration on mannequins was so impactful that I am pretty sure every student in that class can do CPR even in their sleep'. (MS 32)

'He broke down burns for me and he made sure I understood it. Ordinarily, I do not learn effectively if I'm not sitting down and in a quiet place. However, this was one learning experience that I enjoyed and gained a lot from. He said it, broke it down, repeated and made sure it stuck. It made me feel so good'. (MS 31)

'*The tutor was a great teacher who, when he teaches, students learn…*' (NS 408)

Theme 4: The engaging teacher

Teachers were seen as positive role models. This included those whose teachings were student-centred, and those who delivered understandable teachings tend to give memorable learning experiences to students. Some attributes of student-centred teaching mentioned included constructive feedback, inclusivity, students being visible, passionate teachers, conducive teaching styles, interactive sessions, students' support, respect for students, kindness, attentiveness, positive relationships, and relaxing and friendly teaching environments. Some consultants were described as patient, student-friendly, highly intelligent and always ready to teach.

'This lecturer gave a very good example that had everyone captivated till the very end. At the end of the story, he linked it to the lecture, and I can say it's one topic I'll never forget'. (MS 195)

'She wanted to make sure we were thinking properly about problems. We usually got a "Mr/Miss X" walk me through your thought process during which she would interject or correct as appropriate. That teaching method made me feel seen as a student and got me excited to solve problems. …., It was active, interactive method and I think it is rather unfortunate that it's not more pervasive in this college'. (MS 208)

'Had an obstetrics and gynaecology tutorial on pre-eclampsia at the labour ward complex. Had a very memorable experience because I was able to learn about abnormal placentation theory with ease. The tutor was also passionate about teaching the topic which made it even more memorable'. (MS 109)

'*I am a person who has never been to the hospital before until the first day…., and it was really scary seeing several sick people. …., I couldn't move close to them. But until one of the staff nurses came and spoke to me. She said there is nothing to be scared of…., With this thinking, I realised that I could move closely to those people…*'. (NS 437)

Theme 5: Psychological safety

There is an overlap between Theme 5 and Themes 2–4 because many of the previously discussed narratives provide psychological safe environments for students. However, this theme looks at the dataset at events that undermine psychological safety of students.

These fall into three categories. Being overwhelmed with workload of a clinical student, these were not usually about specific learning experiences. The sense that time was dragging.

'*Another is during practical exams. I cried a lot and I was so scared I was going to fail but I passed*'. (NS 380)

The second category was the clinical environment and witnessing distressing situations.

'I remember an experience on the ward where a patient died in a situation that should not have resulted in her death if the oxygen men or residents were around'. (MS 200)

'There are not enough resources available for teaching or learning. Lecturers are unnecessarily unfriendly in the teaching environment'. (MS 107)

The third category was directed at teachers, either in individual teaching episodes or as part of a general rumination. These included disproportionate reactions to minor infringement by students, the threats to failure, sidelining students, demeaning and condescension.

'None so far. Lecturers have little or no motivation to teach. Medical students are often sidelined and rendered invisible in the supposed 'learning environment'. (MS 107)

Table 2. The WIFE banner

It was actually a thing of joy for me (MS 20)		It made me feel so good (MS 31)	Bed side teachings are always fun (MS 218)
It's one topic I'll never forget (MS 195)		It makes us more confident in ourselves and more expressive (MS 38)	
I ate well, put on my best clothes and went to present. It was beautiful (MS 113)		Gave me confidence boost (MS 138)	
Always looked forward to it (MS 30)		This boosted my confidence and for this single reason I am not afraid to face my fears (MS 115)	
I was awed when I saw…, (MS 252)		Every student in that class can do CPR even in their sleep (MS 32)	
Made me feel seen as a student and got me excited to solve problems (MS 208)		I was glad I came to the ward round (MS 188)	
I found it quite fulfilling (MS 138)	The experience left me in awe (MS 27)	I felt quite elated (MS 25)	It has been thrilling (NS 374)

'Of course, I have had one or two lectures in UCH which I cannot forget how dramatic the teaching made me remember the topic but this is just a few out of the hundreds of classes we have every day. It stands to be said we are stressed physically and emotionally by quite a number of insensitive majority'. (MS 213)

'…, I met a senior registrar in the unit. I had never met him before this time and I had just come to sign my booklet as I had just completed my call. He started saying condescending things to me. He went as far as saying I could never make a good doctor. He also said it was already late for me to figure things out since I was already in 500 level. This made me cry and it is something I can never forget'. (MS 22)

'The day we were sent out of class for weeks for the use of potty in the hostel and I had to do the learning myself, copy note and had to download you tube videos just to understand well since I never heard the tutor's explanation'. (NS 403)

Theme 6: Emotional response

When it flows excellently (WIFE), learning experience generates expressive emotional responses. These emotional words could either be in the form of descriptors for the experience or the way the experience made them feel or what the experience inspired them to do. Thirty per cent (17/57) of students used positive emotive phrases to describe their experiences (Table 2).

'It made me feel so good' a fourth-year MS 31 describing his feelings after a teaching session.

'I found it quite fulfilling' a fifth-year MS 24 describing his feelings after taking part in a patient's management.

'*I felt quite elated*' a fifth-year MS 25 after assisting in surgery.

'*It was actually a thing of joy*' a third-year MS 20 on seeing patient presenting as read.

'*It has been thrilling*' a second-year NS 374 taking part in patient management.

Impact of medical or nursing school on life

Four themes were generated from the analysis of this question.

1. Personal development
2. Social awareness
3. Aspirations
4. Psychological safety

Theme 1: Personal development

Many medical and NSs felt that being in the university had a profound positive impact on their personal developments and lives. Some found depth of inner strength that they did not realise that they had, and, for some, it made them feel prepared for the outside world. Other positive attributes they developed included resilience, intellectual and social capacity, active thinking, being better at listening and problem-solving skills. It gave them confidence to feel that they could be the best in whatever they chose to do. They developed a good sense of discipline, time management, organisational skills, independent learning and emotional intelligence. Values gained included hard work, empathy, professionalism and a determination of being better versions of themselves.

'I feel like it has shaped my life basically. It has given me the purpose and direction required to live one's life. I have engaged in activities that now give me an idea of what I want to do with my life, to a certain extent'. (MS 19)

'I am learning the importance of being a full human being by participating in different activities aside from medicine. I am also learning the importance of teamwork, and collaboration'. (MS 104)

'My time in nursing had a great influence on my ways of life including my dressing, cleanliness, communication, relationships with others. I learnt a lot in nursing school that really motivated me, had impact on my sense of thought and perception of life matter'. (NS 410)

'It has made me very confident. I honestly feel medicine has given me a nice platform for my voice to be heard'. (MS 102)

Citation: Journal of Global Medicine 2024, **4**: 241 - http://dx.doi.org/10.51496/jogm.v4.241

'Nursing school improved my thinking skills and capacity. During the times of emergency occurrences, it has improved my capacity to be able to think about what to do to solve the situation without fear and with confidence'. (NS 437)

'Now, I am able to communicate better and build more profitable relationship with people'. (NS 432)

Theme 2: Social awareness

Exposure to morbidity and mortality, and to the healthcare system in general made students appreciate the importance of preventive medicine. Some convinced their parents and other family members to go for medical check-ups. There was an awareness that symptoms thought to be trivial could be dangerous. Some want to use their skills to help the society at large:

'*My time spent here so far has made me more grateful for life. I see so much sickness and deaths and it makes me appreciate the severe absence of such in the lives of those I hold dear. It has also woken me up to the reality of the struggling health care system here and provoked me to strive for change'. (MS 119)*

'My time in medical school has exposed me to the degree of suffering and illness in the world. Also to the helplessness of doctors sometimes'. (MS 108).

Theme 3: Aspirations

Interactions with colleagues, residents and consultants brought about the awareness of possibilities and opportunities in various aspects of medicine and beyond. These interactions also made some students to develop other interests outside medicine including social activities and entrepreneurships. For some, it raised doubts about continuing in medicine, but for many, they aspired to be the best that they can in the medical field and to serve humanity. Positive role models inspired many aspirations.

'Medical school has taught me that knowledge and experience take time and deliberate effort. Seeing my teachers (consultants and resident doctors) dispense the knowledge they have accumulated over time is inspiring in my journey to becoming the best physician I can be'. (MS 140)

'Now I have a real desire to establish a lasting mark in the health care system by my practice and by the establishment of as many health care clinics as I am able in the future'. (MS 119)

'Service to humanity'. (MS 131)

Theme 4: Psychological safety

The positive effect of time in medical or nursing school revolved around positive role models, mentors with a sense of community, but students acknowledged that these may not be universal. Some of these role models inspired students to greater aspirations and set examples on professional attitudes, and they highlighted the diversity of opportunities.

'I have met some genuinely kind lecturers who have special interest in my success. However, I am a student representative, and this might have given me opportunities that other students do not have'. (MS 120)

'… the student-teacher relationship is nice (well some lecturers, not all)'. (MS 198)

'Another impact is the sense of community here. There is at least one person ahead of you who is willing to make your journey easier, if you ask'. (MS 108)

'It makes me more focussed, to stand on my own and trust God more, it brings the best out of me, it gives me more courage, it brings joy more when caring for patients'. (NS 389)

The negative aspects of psychological safety affected students globally in finances, social, in forging personal relationships and mentally. Some of these were due to the burden of being in medical school itself, and others on external factors not directly related to learning, like the COVID-19 pandemic and doctors strikes actions. Some of the effects of these were loss of interest in medicine, confusion, negativity and feeling of being drawn back and delayed. Some complained about the teaching styles and being geared towards cramming, thus depriving them of abstract thinking. Despite the negative aspect, a few find a positive path in it.

'I am less sociable. I am more depressed but can't do much about it. I rarely find time to enjoy life and its just been hectic; sometimes feelings of disappointment'. MS 25, a 22-year-old 5th year student, but he went on to write, '*But the pride that comes with being a medical doctor/student is still much present and very much to be associated with'.*

'*Socially medical school has prevented me from getting so many friends and has reduced the amount of time I can invest in relationships. Financially, medical school has begun to drain me. Mentally, medical has battered me and strengthened me'.* (MS 44, a 20-year-old 3rd year student)

More specifically to teaching, some students have found the environment to be toxic, which has forced some students to grow up to survive although with battered esteem. For others, despite the toxicity, they go back because they do learn a lot, and it will help them become better doctors. Despite the negativity of individuals, many have examples of others who do good. For others, it has brought reassessment of who they are and infused uncertainties about the future.

'*It has made me see that broken people break others'.* (MS 108, a 21-year-old 3rd year student)

'*I do not want to end up as the consultant (if I end up in clinical medicine, which I doubt), who is mean to students, mean to registrars and senior registrars for no reason. I do not want to end up as a consultant or doctor who berates my students for not knowing the answers to a question, who does not know about the existence of constructive criticism. I do not want to be a perpetrator of the negative cycle in*

medicine where we do bad to others because bad has been done unto me'. (MS 214, a 21-year-old 4th year student)

Discussion

The overall DREEM mean score at 111.4 in this study is in keeping with previous published studies [2, 5, 6, 8, 11, 12, 17–21], which ranged from 98 to 135. Despite the variation in these means, all but two [2, 12] fell within the category of more positive than negative. When teaching staff completed the DREEM inventory in the United Kingdom about the environment that they were responsible for [21], their overall mean score was 144 (more positive than negative), and though their students' overall score was 141, analysis suggested that the teaching staff believed that students were experiencing more positive learning and teaching environments than the students actually were, and they viewed students' social experience as more negative that it actually was [21]. In line with this, despite the uniformity of the DREEM overall mean scores in all these studies, there is a wide variation in the domain scores.

DREEM inventory has been utilised for a variety of reasons [4], but its utility to affect changes is unclear. Whilst it identifies areas of problems in a system, there are no studies reassessing the inventory after changes are made to highlighted deficiencies with an initial assessment. It is difficult to know if the inventory is sensitive enough to pick these up or if it is designed to do so. This was highlighted when two different learning environments, a teacher-centred and student-centred, were compared using the DREEM inventory [22]. The mean DREEM overall scores and all domain scores were not statistically different between the two institutions [22]. It has been put to more practical uses, to identify weaknesses within a learning environment, to conduct an in-depth qualitative study [2] or to be used as a template for an in-depth semi-structured interview for thematic analysis [24].

In the last decade, multiple learning environments have been assessed with the DREEM inventory in Nigeria [5, 18, 19, 20, 22, 23], and the findings across them were similar. Overall DREEM scores, perception of teaching and of teachers, and academic self-perceptions were more positive. With students' perception of atmosphere, two [5] studies, including this study, answered that the environments had many issues that needed changing, and in one study [20], it was graded a terrible environment. In students' social self-perception, in six studies [5, 18, 19, 20 22], including this study, it was graded not a nice place.

In this study, 98% of students agreed that teachers were knowledgeable, and 87% agreed that they were well prepared for their teaching sessions. However, in the important aspects of learning, giving feedback, only 54% of students agreed that teachers provided feedback, and 59% agreed that they provided constructive criticisms. The importance of giving feedback and constructive criticisms is reinforced in the thematic analysis of the students' responses to memorable learning experiences in Theme 4, as being some of the features of the 'engaging teacher'. These features are essential in a teacher to motivate students, to keep their attention and to improve assimilation of information and understanding [3]. Constructive feedback on performance is a vital part of teaching and contributes to an environment that is safe for students to identify their lack of knowledge without the threat of humiliation [3].

In this study, the safety of the environment is further compromised by 29% of students, agreeing that teachers ridicule students, 28% agreeing that teachers were authoritarians and 46% agreeing that teachers get angry in teaching sessions. In all three scenarios mentioned earlier, less than half of students disagreed with the assertions. Teachers created an atmosphere of respect by endorsing the learners' level of knowledge.

As it is generally accepted that the frequency of uncommon events is 0.1–1%, 1–10% for common events and greater than 10% for very common events, despite the students' unanimity in agreeing that teachers are knowledgeable, and overwhelming majority that the teachers were well prepared for their teachings, complaints about teachers' actions leading to psychologically unsafe learning environments were very common. This was well summarised by MS 213,

'Of course, I have had one or two lectures in UCH which I cannot forget how dramatic the teaching made me remember the topic but this is just a few out of the hundreds of classes we have every day. It stands to be said we are stressed physically and emotionally by quite a number of insensitive majority'.

Suffice to say that in Themes 5 of MLE and 4 of IoL, there were other factors that contributed to students' psychological challenges that were outside the control of individual teachers. These included students' workload, the effect on social life and preventable patients' deaths from poor resources.

As student MS 213 alluded to, learning involves a lot of emotions. There were positive emotional responses to memorable learning experiences by 30% of students in Theme 6 of MLE (Table 2). Descriptor words or phrases of memorable learning experiences included joy, feel good, fun, unforgettable, confidence boost, awe, gladness, fulfilling, elation, thrilling and anticipation. At its most visceral was the description by a third-year medical student, MS 113:

'*In pre-clinical school, the histology lecturer divided the entire class into groups and gave each group an organ system to study and present as part of our continuous assessment. …, It was really daunting to work on such a project with 40 other students but as soon as we got some organization going, work flowed smoothly. We studied, prepared power*

Citation: Journal of Global Medicine 2024, **4**: 241 - http://dx.doi.org/10.51496/jogm.v4.241

points and worked together as a group to present urinary system histology to the class. I was selected to present the topic to the entire class. …, I reviewed my materials over and over, ate well, put on my best clothes and went to present. It was beautiful. Apart from receiving compliments from my peers, I was greatly commended by my lecturer which gave me a great boost. …, I learned that teaching others is one of the ways I learn best and I've practiced it ever since'.

On deeper assessment of MS 113's response, he described active students' participation in their learning, organisational skills, cohesion and group working. There was support from the teacher with great commendations. Despite the difficulties of the project, the sense of achievement from their hard work was palpable, he was recognised by his peers to present and he ate well and was in his Sunday best for the presentation. He described this learning experience as beautiful, and he made a self-discovery that teaching others was the best way to learn. To the student, it was a very special occasion. It highlighted how a teacher can affect the well-being of a student, motivate and enhance learning.

Contrast this to the response of a 4th year medical student, MS 214, '*I do not want to end up as the consultant (if I end up in clinical medicine, which I doubt), who is mean to students, mean to registrars and senior registrars for no reason. I do not want to end up as a consultant or doctor who berates my students for not knowing the answers to a question, who does not know about the existence of constructive criticism. I do not want to be a perpetrator of the negative cycle in medicine where we do bad to others because bad has been done unto me*'. This response speaks for itself, but the positive interpretation is that MS 214 aspires to break the chain of retaliatory behaviours. It is unclear if his profound negative experiences contributed to his doubts about working in clinical medicine.

Emotions influence various cognitive processes involved in the acquisition and transfer of knowledge and skills. Emotions influence how individuals identify and perceive information, how they interpret it and how they act on the information available in learning and practice situations [25]. In a focussed ethnographic study of medical and NSs, a supervisor can convert negative emotions felt by students' incongruity between their cognitive capability and an assigned task into a positive one, and this leads to successful learning [26]. Mild and acute stress facilitates learning and cognitive performance, whilst excess and chronic stress impairs learning and is detrimental to memory performance [27]. Many other negative consequences occur owning to over activity of the hypothalamus-pituitary-adrenal axis, which results in both impaired synaptic plasticity and learning ability [27].

Psychological safety in a learning environment is defined as a shared belief that the team is safe from interpersonal risk taking. These interpersonal risks include open communication, voicing concerns, asking questions and seeking feedback without judgement [28]. To achieve this, you need good teachers. Excellent teaching is characterised by inspiring, supporting, actively involving and communicating with students, and it transcends ordinary teaching. What makes a great teacher depends less on medical knowledge and formulating learning objectives, and more on inherent, relationship based, non-cognitive attributes [29].

When trainee doctors got a formal structured teaching course on how to teach, they outperformed consultants in clinical teaching of medical students as evaluated with validated SFDP-26 (Stanford Faculty Development Program-26) and CTEQ (Clinical Teaching Effectiveness Questionnaires) questionnaires in a major teaching hospital in the United Kingdom [30]. Analysis of 507 of the SFDP-26 questionnaires completed by 266 third- and fifth-year medical students in medicine and surgery comparing trainees' and consultants' teaching over 2 years showed that the trainees did better than consultants in seven of eight SFDP-26 domains: learning climate, control of session, communication of goals, promoting and understanding of goals, evaluation, giving feedback and global teaching effectiveness [30].

This was similar to the findings in another UK study, which found that house officers were more effective than consultants in teaching medical students in emergency medicine as assessed by SFDP-26 in six of its eight domains [31]. To emphasise these findings, 31% of third-year medical students were neutral or disagreed that consultants were essential to their clinical programs compared to 15% who answered the same about trainees, and for fifth-year medical students, it was 30 and 11%, respectively [30]. Student feedback on teaching practice is a valuable improvement tool that opens up dialogue around teaching and learning and gives teachers insights into the unique experiences of their students. It allows teachers to reflect on information about their practice and identify areas for professional development [32].

There is more to teaching than expertise and knowledge [29–31], and it is the non-cognitive skills that determine the clinical effectiveness of teachers and provide safe psychological learning environments [28–31]. In addition, there is the need to be able to deconstruct performance on a clinical task and articulate the detailed steps to facilitate learning by novices and advanced beginners [33]. Most clinical teachers have not been trained to teach, and therefore reconcile their identities as teachers with their identities as clinicians in a hierarchical social setting where patient care and research are prioritised above teaching [34].

In recognition of and to address these issues, the UK General Medical Council (GMC) wrote in its guidance on undergraduate teaching that, '*Being a good teacher*

and role model is not innate and the skills and attributes can usually be acquired'. It expanded on this, stating that not everyone is naturally good at educating others, and strengths may lie elsewhere, in research or direct clinical care. It then advises that teachers and trainers in academic and/or clinical settings be selected for these roles. It recommended that appointments to teaching positions be made based on aptitude and competence instead of clinical experience alone, and that consultants and postgraduate trainees involved should have dedicated time within their job plans and career pathways to meet their educational responsibilities and development [35].

Conclusion

Despite acknowledging that teachers were knowledgeable and were well prepared for their teaching sessions, and that majority of teachers delivered student-centred teaching, this study showed that there were very common complaints of behaviours and teaching methods that undermined a psychologically safe clinical teaching environment. Literature shows that students' feedbacks that go into appraisals improve teaching, and as most teachers are not taught how to teach, pedagogic courses should be a prerequisite or criteria for continuing education.

Acknowledgements

We thank the Provost of the College of Medicine, University of Ibadan, Professor Olayinka Omigbodun for supporting this project.

Conflict of interest and funding

There is no conflict of interest. There was no funding for this project.

Authors' contributions

Concept and design of this project and its follow-on – OAA and EO. Collection of data – All except EO. Transcription of written answers – All except AA, EO and OAA. Paper writing – CE and OAA. Paper review – AA and EO.

References

1. Roff S, McAleer S. What is educational climate? Med Teach 2001; 23: 333–4. doi: 10.1080/01421590120063312
2. Ojuka D, Aseta F, Githambo B, Wambua B. Medical students' perceptions of the medical education learning environment at the University of Nairobi: II. A qualitative study. Ann Afr Surg 2021; 18(2): 103–8. doi: 10.4314/aas.v18i2.8
3. Hutchinson L. Educational environment. BMJ 2003 Apr 12; 326(7393): 810. doi: 10.1136/bmj.326.7393.810
4. Miles S, Swift L, Leinster SJ. The Dundee Ready Education Environment Measure (DREEM): a review of its adoption and use. Med Teach 2012; 34: e620–34. doi: 10.3109/01421 59X.2012.668625
5. Okoye O, Ezisi C, Ezepue F. Evaluation of the learning and teaching environment of the Faculty of Medical Sciences, College of Medicine, University of Nigeria, Enugu Campus. Niger J Clin Pract 2017; 20(8): 958. doi: 10.4103/njcp.njcp_ 414_16
6. Arzuman H, Yusoff MSB, Chit SP. Big Sib Students' Perceptions of the Educational Environment at the School of Medical Sciences, Universiti Sains Malaysia, using Dundee Ready Educational Environment Measure (DREEM) Inventory. Malays J Med Sci 2010; 17(3): 40.
7. Roff S, McAleer S, Harden RM, Al-Qahtani M, Ahmed AU, Deza H, et al. Development and validation of the Dundee Ready Education Environment Measure (DREEM). Med Teach 2009; 19(4): 295–9. doi: 103109/01421599709034208
8. Vaughan B, Carter A, Macfarlane C, Morrison T. The DREEM, part 1: measurement of the educational environment in an osteopathy teaching program. BMC Med Educ 2014 May 20; 14(1): 99. doi: 10.1186/1472-6920-14-99
9. Mbakaya BC, Kalembo FW, Zgambo M, Konyani A, Lungu F, Tveit B, et al. Nursing and midwifery students' experiences and perceptions of their clinical learning environment in Malawi: a mixed-method study. BMC Nurs 2020; 19: 87. doi: 10.1186/ s12912-020-00489-4.
10. Salamonson Y, Everett B, Halcomb E, Hutchinson M Jackson D, Mannix J, et al. Unravelling the complexities of nursing students' feedback on the clinical learning environment: a mixed methods approach. Nurse Educ Today 2015; 35(1): 206–11. doi: 10.1016/j.nedt.2014.08.005
11. Patil AA, Chaudhari VL. Students' perception of the educational environment in medical college: a study based on DREEM questionnaire. Korean J Med Educ 2016 Sep 1; 28(3): 281–8. doi: 10.3946/kjme.2016.32
12. Kaneez M, Muhammad S, Zaidi J, Bhatti HW, Ijaz H, Fatima M, et al. Proceedings of the International Conference on Medical Education (ICME 2021). 2021. Available at https://doi.org/10.2991/assehr.k.210930.008 [cited 12 July 2024].
13. Braun V, Clarke V. Thematic analysis. In: Cooper H, Camic PM, Long DL, Panter AT, Rindskopf D, Sher KJ, eds. APA handbook of research methods in psychology. Vol 2. Research designs: quantitative, qualitative, neuropsychological, and biological. Washington DC; American Psychological Association; 2012, pp. 57–71.
14 Braun V & Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? Qual Res Psychol 2021; 18(3): 328–52. doi: 10.1080/14780887.2020.1769238
15 Levitt HM, Bambert M, Creswell JW, Ford DM, Josselson R, Suarez-Orozco C. Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: the APA Publications and Communications Board task force report. Am Psychol 2018; 73(1): 26–46. doi: 10.1037/amp0000151
16 McAleer S, Roff S. PART 3: a practical guide to using the Dundee Ready Education Environment Measure (DREEM). In: Genn JM, ed. AMEE education guide no. 23, curriculum, environment, climate, quality and change in medical education- a unifying perspective. Dundee, UK: Association of Medical education in Europe; 2001, pp. 29–33.
17. Ezomike UO, Madubogwu CI, Azuike EC. Evaluation of the educational environment of a new medical school in southeast Nigeria. Niger J Clin Pract 2020 Oct 1; 23(10): 1462–9. doi: 10.4103/njcp.njcp_221_20
18. Buhari MA, Nwannadi IA, Oghagbon EK, Bello JM. Students' perceptions of their learning environment at the College of

Medicine, University of Ilorin, Southwest, Nigeria. West Afr J Med 2014 Apr 1; 33(2): 141–5.
19. Omoniyi-Esan GO, Naidoo N, Fatusi AO. Medical and dental students' perceptions of the learning environment during anatomic pathology placement at Obafemi Awolowo University, Ile-Ife, Nigeria. West Afr J Med. 2022 Sep 1; 39(9): 896–901.
20. Olusanya AA, Babarinde TO, Aladelusi TO, Akinmoladun VI, Arotiba JT. Dental residents' perception of learning environment: experience of a Nigerian training institution. Ann Ibadan Postgrad Med 2019; 17(2): 145–52.
21. Miles S and Leinster SJ. Comparing staff and student perceptions of the student experience at a new medical school. Med Teach 2009; 31(6): 539–46. doi: 10.1080/01421590802139732
22. Odole AC, Oyewole OO and Ogunmola OT. Nigerian physiotherapy clinical students' perception of their learning environment measured by the Dundee Ready Education Environment Measure Inventory. Int J High Educ 2014; 3(2): 83–91. doi: 10.5430/ijhe.v3n2p83
23. Ogun OA, Nottidge TE and Roff S. Students' perceptions of the learning environment in two Nigerian medical schools offering different curricula. Ghana Med J 2018; 52(3): 116–21. doi: 10.4314/gmj.v52i3.2
24. Malomo AO, Kafayat BA, Adeolu AA, Adeleye AO, Balogun JA, Badejo OA, et al. Postgraduate students' perception of the educational environment of a wet lab training in Neurological Surgery Division, UCH, Ibadan. Clin J Nurs Pract 2019; 3: 064–9. doi: 10.29328/journal.cjncp.1001020
25. McConnell MM, Eva KW. The role of emotions in the learning and transfer of clinical skills and knowledge. Acad Med 2012; 87(10): 1316–22. doi: 10.1097/ACM.0b013e3182675af2
26. Jakobsen F, Musaeus P, Kirkeby L, Hansen TB, Morcke AM. Emotions and clinical learning in an interprofessional outpatient clinic: a focused ethnographic study. J Interprof Care 2019; 33(1): 57–65. doi: 10.1080/13561820.2018.1514372
27. Tyng CM, Amin HU, Saad MN, Malik AS. The influence of emotion on learning and memory. Front Psychol 2017; 8: 1454. doi: 10.3389/fpsyg.2017.01454
28. Hardie P, O'Donovan R, Jarvis S and Redmond C. Key tips to providing a psychologically safe learning environment in the clinical setting. BMC Med Educ 2022; 22: 816. doi: 10.1186/s12909-022-03892-9
29. Sutkin G, Wagner E, Harris I, Schiffer R. What makes a good clinical teacher in medicine? A review of the literature. Acad Med J Assoc Am Med Coll 2008; 83(5): 452–66. doi: 10.1097/ACM.0b013e31816bee61
30. Poon H, Ahmad MF, Lowry D, Saedon H, Thompson NA, Adedeji OA. Two-year longitudinal observational study of junior doctors as clinical teachers: the Associate Clinical Teaching Fellow Program. J Global Med 2021; 1(2): e43. doi: 10.51496/jogm.v1.43
31. Iblher P, Zupanic M, Karsten J, Brauer K. Can today's house officers teach effectively? An assessment in undergraduate emergency training. Eur J Emerg Med 2015; 22(3): 215–8. doi: 10.1097/MEJ.0000000000000142
32. Mandouit L. Using student feedback to improve teaching. Educ ActionRes2018;26(5):755–69.doi:10.1080/09650792.2018.1426470
33. Snell L. The resident-as-teacher: it's more than just about student learning. J Grad Med Educ 2011; 3(3): 440–1. doi: 10.4300/JGME-D-11-00148.1
34. Cantillon P, Dornan T, De Grave W. Becoming a clinical teacher: identity formation in context. Acad Med 2019; 94(10): 1610–8. doi: 10.1097/ACM.0000000000002403
35. General Medical Council. Developing teachers and trainers in undergraduate medical education. General Medical Council; 2011. Available from: https://www.gmc-uk.org/-/media/documents/Developing_teachers_and_trainers_in_undergraduate_medical_education_guidance_0815.pdf_56440721.pdf [cited 11 December 2023].

***Olufunso Adebola Adedeji**
Department of Colorectal Surgery
University Hospital of North Durham
Durham
UK
Email: oaa@funade.com