

MEDICAL STUDENTS' PERCEPTION OF THEIR LEARNING ENVIRONMENT AT A NIGERIAN UNIVERSITY.

¹Ugwu N.I., ²Nwannadi A.I., ³Ugwu C.N., ⁴Oghagbon E.K.

¹Department of Haematology & Immunology, Faculty of Clinical Medicine, College of Health Sciences, Ebonyi State University, Abakaliki, Nigeria.

²Department of Haematology, Benue State University, Markurdi, Nigeria.

³Department of Internal Medicine, Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Nigeria.

⁴Department of Chemical Pathology, Benue State University, Markurdi, Nigeria

ABSTRACT

Background: The medical learning environment is an interactive network of factors that affect the medical student's academic progress and learning outcomes. This study was designed to assess the overall student's perception of their learning environment, identify the weak aspects of the environment, determine the effects of age, gender year of study on student's perception and recommend measures to further enhance students' learning experiences.

Method: This is a cross-sectional study and cluster sampling technique was used to recruit respondents. The Dundee Ready Education Environment Measure (DREEM) questionnaire was applied to medical students of Ebonyi State University Abakaliki, to assess the following areas; student's perception of learning, student's perception of course organizers, student's academic self-perception, student's perception of atmosphere, and student's social self-perception. Completed questionnaires were analyzed with the SPSS software, version 17.

Results: 180 questionnaires were analyzed. The mean global score was 120.4/200 (60.2%). It was noted to be significantly higher in the second year of study than in the fifth year of study. Further analysis of the subdomain revealed that students in their second year of study had significantly higher scores in all the subdomains except in the academic self-perception. Analysis of the individual items in the DREEM questionnaire showed that the students perceived the environment as not being relaxed during lectures, and that there was poor support system for students that get stressed in their course of study.

Conclusion: Students' perception of their educational environment was positive but there was poor support system for students who get stressed. The school management needs to work on some aspects of social factors to improve on the perception and quality of teaching and learning.

Key words: Medical, Students, Perception, Learning, Environment

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INTRODUCTION

The learning environment includes all the academic influences to which students are exposed. These influences include: their learning, teachers, self-perception, atmosphere, and social life. The interplay of all these factors determines the quality of any learning environment. A

supportive learning climate is a critical element of human resource development.^[1] Its assessment, therefore, is essential to the understanding of observed learning outcomes and to plan program for their improvement.^[1,2] Health learning environment is now considered as one of the most important factors determining engagement of medical students.^[3,4] Learning environment in any medical school has also been found to be important in determining students' academic success.^[5] As a result, there is now an increasing interest and concern regarding the role of learning environment

Correspondence to: Ugwu, Ngozi Immaculata
Department of Haematology & Immunology,
Faculty of Clinical Medicine,
College of Health Sciences,
Ebonyi State University, Abakaliki, Nigeria.
Email: ngoziugwu5@gmail.com
Phone: +2348061177100

in undergraduate medical education in the recent years. More so as learning environment has been identified as one of the most important factors determining the success of an effective curriculum.^[3]

Every year hundreds of medical students graduate from Nigerian tertiary institutions, many of whom are employed as doctors. As these students practice, their level of competence is not only a reflection of the educational institution (learning environment) they attended; it is also of utmost importance to all their future patients and the larger community. This is buttressed by the finding that a positive learning environment will lead to increased work satisfaction, achievement and success as a practitioner post-graduation.^[6,7]

Various methodologies have been designed to investigate the educational environments, such as qualitative approaches or the use of questionnaires.^{[8-}

^{10]}The Dundee Ready Educational Environment Measure (DREEM) questionnaire is the most specific tool for investigation of the unique environment experienced by students on medical and healthcare-related courses.^[8] This instrument was developed by an international Delphi panel, and has been applied to a number of undergraduate courses for health professionals worldwide.^[11]

The College of Medicine, Ebonyi was established in Nigeria recently and the desire of its Management Team is to create a conducive learning environment that will climax in the graduation of adequately trained medical doctors. Medical education at the College is a six-year program with the first year spent at the Faculty of Sciences. By the second year, our students commence core subjects of the medical program beginning with Anatomy, Biochemistry and Physiology. Subsequent years, will involve other subjects (Anatomical Pathology,

Medical Microbiology and Parasitology, Haematology and Immunology, Chemical Pathology, Paediatrics, Obstetrics and Gynaecology, Community Health, Surgery and Internal Medicine) with examinations usually written after 3-semester duration of each course until completion of a minimum of six years.

This study was designed to assess the learning environment among undergraduate medical students at the College of Medicine, Ebonyi State, Nigeria using the students' perspective.

METHODS

This was a cross-sectional study carried out at the College of Medicine of Ebonyi State University, Abakaliki, Nigeria. Cluster sampling technique was used to recruit respondents and each level of study served as a cluster. At each cluster, there was proportional recruitment of respondents based on the total number of students from each level of study. The total population of medical students in second, fourth and fifth year in the College was 293. A sample size determination, with a confidence level set at 95%, suggested a minimum sample size of 166 for this study.^[12] However, 10% (16) was added to take care of attrition, giving a total of 182.

There was application of the 50-item Dundee Ready Education Environment Measure (DREEM) questionnaire to 182 students in their second, fourth and fifth year of study. The first year students were not included in this study because they were in the faculty of science at that level. They also did not have access to the activities in the faculty of Medicine and so are not in a position to make proper assessment of the components of the learning environment with respect to this study; therefore including them will introduce some level of bias. At the time of this study, our third year medical students had finished their

examinations and transitioned to the fourth year and the sixth year students had graduated. Therefore the students who participated in the study were second, fourth and fifth year medical students.

Ethical approval for the study was obtained from the Research and Ethics Committee of Ebonyi State University, Abakaliki. Informed consent was also obtained from the students and the questionnaires were randomly distributed to them.

The DREEM instrument is a validated Likert-type inventory tool which has the advantages of self-administration by respondents and it is useful in the assessment of any component of the learning environment. The validity of this questionnaire in various study populations was assessed by subjecting it to internal consistency and reliability tests through the calculation of Cronbach alpha coefficient. This coefficient measures the average correlation of items in a survey instrument for the purpose of measuring its reliability.^[13] The value of the Cronbach alpha coefficient ranges from 0 to 1; the higher the score the better is the measure of reliability and internal consistency. A study carried out in 1998 indicated 0.7 to be an acceptable reliability coefficient^[14] and this cut-off was applied to our study population. Cronbach alpha coefficient of 0.9 was gotten for our study, using the method described by George *et al.*^[15]

There are five major domains in the DREEM questionnaire with each section specifically measuring an area relevant to the assessment of educational environment. The domains are; students' perception of learning (12 items with a maximum score of 48), students' perception of teaching (11 items with a maximum score of 44), students' academic self-perception (8 items with a maximum score of 32), students' perceptions of atmosphere (12 items with a maximum score 48) and students' social self-perceptions (7 items with a maximum

score of 28). According to the DREEM questionnaire scoring formula, each item can be scored from 4 to 0 (4 = strongly agree, 3 = agree, 2 = unsure, 1 = disagree, and 0 = strongly disagree) by the respondents on a five-point Likert scale. The instrument has a total score of 200, signifying the ideal educational environment as perceived by students.^[16]

The questionnaires were sorted and only the completely and correctly filled ones were used for analysis. Data obtained were analyzed using SPSS (Statistical Package for Social Sciences) software, version 17. Descriptive statistics was used to compute percentages and averages. Student *t* test was used to assess the significance in difference between mean scores, with the point of significance set at $P < 0.05$.

RESULTS

Out of 182 questionnaires, 180 were completed and used for analysis. The mean age of the respondents was 23.5 ± 3.1 years; the age range was 16-36 years, with the modal age at 25 years. One hundred and twenty-six (126) of them were males while 54 were females, this gave a male to female ratio of 2.3:1. The other characteristics of the respondents are as shown in table 1.0

The questionnaire for this study showed high reliability with the calculated Cronbach alpha coefficient of 0.9. The mean global score (MGS) was 120.4/200 (60.2%) which is interpreted as "more positive than negative." The MGS was noted to be significantly higher in the second year of study than in the fifth year of study (133.7 versus 109.4) $p = 0.001$. See table 2.0

Analysis of the subscale revealed that perception of the students in all the five aspects of their learning environment was positive. The interpretation for the SSSP domain was "Not too bad" this means that some aspects of that domain will require improvements. The various scores in the different domains are shown in table 3.0

Further analysis of the subdomain revealed that student in their second year of study had significantly higher scores in all the subdomains except in the academic self-perception. See table 4.0

Analysis of the individual items in the DREEM questionnaire showed that the students perceived the environment as not being relaxed during lectures, and that there was poor support system for students that get stressed in their course of study. See table 5.0

DISCUSSION

This study recorded a global average perception score of 120.4/200 (60.2%), which is interpreted as “more positive than negative” perception of educational environment, according to the scoring mechanism of the DREEM questionnaire.^[17]

This level of students' perception, though high according to DREEM estimation is below the report of some previous studies. A study conducted at the School of Medicine, University of East Anglia, United Kingdom, reported a mean global perception score of 71.5%.^[18] Likewise, a mean global perception score of 69.5% and 78.5% were reported in Birmingham^[19] and Turkey^[20] respectively. The high values reported in these studies carried out in developed countries were attributed to the use of student-centered approach and innovative curricula. Similar scores (greater than 61%) have also been recorded in some developing countries. A study conducted in Nigeria^[21] and Nepal^[22] reported a mean global perception score of 69.1% and 65% respectively. This relatively high global score of students' perception of their learning environment has been found to be associated with innovative curricula that emphasizes need for students to take ownership of their learning, unlike what obtains in traditional teaching approach, which is teacher-centred.^[23] The relatively good global mean score (60.2%) reported in

our study may be as a result of the combination of both traditional teaching method and innovative method.

Lower values of mean global perceptions of learning environment than the present study have been reported by some other studies. A study conducted by Buhariet *al*^[24] at Ilorin Nigeria, reported a mean global perception value of 54.2%. Similarly, a study conducted in Iran^[25] and Saudi Arabia^[26] reported a global mean perception value of 49.8% and 53% respectively. The low values reported by these studies have been attributed to the use of traditional system. Reports by some researchers have shown that medical schools operating traditional teaching system usually record perceptions of educational environment scores that are less than 120 (60%)^[27,28]

This global mean score in our study did not differ significantly across the sex and age of the students. However, there was statistically significant difference among second year students compared to the fifth year students. This finding is in keeping with the report of previous studies which has shown that medical students in the lower classes tend to have higher DREEM scores than those in the upper classes. Study conducted among medical students in Iran reported that students in basic medical sciences rated the educational environment more highly than students in the clinical course.^[29] Similarly, study conducted in Northern Nigeria reported that students in lower class have higher perception of educational environment score compared to students in higher class.^[21] The reason adjudged for this is that students at lower class are usually excited at gaining admission to medical school. This trend is a representative of the change in students' perception during the clinical course as reported by previous study.^[30]

In this study, analysis of the subscale revealed that the highest score (71%) was recorded in students' perception of learning

(SPL), followed by Students' Academic Self Perception (SASP) with a score of 66.3% while the lowest score (53.5%) was recorded in Students Perception of Atmosphere (SPA). This finding is in keeping with previous studies.^[2,24] This shows that teaching encourages students to be active learners, and to develop their confidence and competence. However, more attention is needed in the more deficient areas such as SPA to create a more conducive environment for learning.

Consideration of the individual items in the DREEM questionnaire showed that there was poor support system for students that get stressed in their course of study. This has contributed to the low score for Student's Social Self Perception (SSSP) recorded in this study. The complaint by the students of lack of good support for stressed students was also a major factor in the low SSSP score as reported in a study conducted in Zambia.^[31] The low score in SSSP at Ebonyi State University medical school is largely as a result of the teaching method and lack of support system for stressed students. Education in medical profession is associated with much stress.^[32] Students' coping strategies largely determine stress outcome, therefore training the students in coping strategies might be a useful supportive approach.

The low score for Students' Perception of Atmosphere (SPA) recorded in this study is attributable to the fact that students perceived the environment as not being relaxed during lectures. Study conducted in India by James *et al*,^[30] is in keeping with this finding. This projects the stressful medical education schedule and therefore implies that suitable strategies have to be evolved to improve the immediate surroundings of students and provide a more relaxed and comfortable environment for learning. Students at the medical school of Ebonyi

State University have a somewhat positive perception of their educational environment, but their perception of atmosphere (SPA) and social self-perceptions (SSSP) are weak areas requiring further attention. Effective management of the observed shortcomings, especially with the introduction of student-focused education, may lead to marked improvement in the perception of educational environment in the institution.

CONCLUSION

Perception of learning environment among medical students at Ebonyi State University was positive. However, more attention is needed at some weak areas such as non-relaxed atmosphere during lectures and poor support system for students who get stressed. Improvement in these areas will help to address the noted deficiencies in SPA and SSSP. We therefore recommend that more attention should be paid to these areas by Medical education managers at the institution to improve the quality of medical education.

Table 1.0: Demography of the students

Characteristics of the students		Number	Percentage
Age (years)	16-21	67	37.2
	22-27	94	52.2
	28-36	19	10.6
Gender	Male	126	70.0
	Female	54	30.0
Year of Study	200 level	53	29.4
	400 level	71	39.5
	500 level	56	31.1

Table 2.0: Influence of age, gender, and year of study on the mean global scores

Parameter	MGS	Percentage	p-value
Age (years)			
16-21	125.4	62.7	0.106
22-27	114.2	57.1	
28-36	117.7	58.9	
Gender			
Male	120.4	60.2	0.159
Female	116.5	58.3	
Year of study			
200 Level	133.7	66.9	0.001*
400 Level	113.7	56.9	
500 Level	109.4	54.7	

Key: MGS-Mean global score, *significant

Table 3.0: Scores in the DREEM subscales and their interpretations

Subscale	Score	Percentage	Interpretation
Students' perception of Learning	34.1/48	71.0	A more positive perception
Students' Perception of Course Organizers	24.8/44	56.4	Moving in the right direction
Students' Academic Self Perception	21.2/32	66.3	Feeling more on the positive side
Students Perception of Atmosphere	25.7/48	53.5	A more positive attitude
Students' Social Self Perception	15.1/28	53.9	Not too bad*

*Weak

Table 4.0: Influence of age, gender, and year of study on the subdomain scores

Parameter	SPL	SPCO	SASP	SPA	SSSP
Age (years)					
16-21	35.3	26.3	21.4	26.5	15.8
22-27	32.3	22.9	19.9	24.8	14.2
28-36	33.4	24.4	21.3	26.1	12.3
p-value	0.119	0.070	0.323	0.780	0.271
Gender					
Male	34.5	24.2	20.8	26.1	14.7
Female	32.1	24.7	20.5	24.6	14.6
p-value	0.074	0.372	0.495	0.114	0.972
Year of study					
200	37.8	27.9	21.8	28.9	17.1
400	32.1	23.3	20.2	24.1	14.0
500	31.4	21.6	19.8	23.7	12.9
p-value	0.000*	0.000*	0.176	0.004*	0.001*

Key: SPL-Student's Perception of Learning, SPCO-Student's Perception of Course Organizers, SASP-Student's Academic Self-Perception, SPA -Student's Perception of Atmosphere, SSSP -Student's Social Self Perception .
*significant

Table 5.0: Mean scores of the individual items in the DREEM questionnaire

Questions/Items	Mean score (out of a maximum of 4)
1. Students' Perception of Learning	
i. I am encouraged to participate in teaching sessions	3.11
ii. The teaching is often stimulating	2.97
iii. The teaching is student centred	2.69
iv. The teaching helps to develop my competence	3.14
v. The teaching is well focused	2.90
vi. The teaching helps to develop my confidence	3.07
vii. The teaching time is put to good use	2.72
viii. The teaching over emphasizes factual learning	2.48
ix. I am clear about the learning objectives of the course	2.88
x. The teaching encourages me to be an active learner	3.12
xi. Long term learning is emphasized over short term learning	2.58
xii. The teaching is too teacher centred	1.82
2. Students' Perception of Course organisers:	
i. The course organisers are knowledgeable	3.08
ii. The course organisers espouse a student centred approach to teaching	2.38
iii. The course organisers ridicule their students	1.15
iv. The course organisers are authoritarian	2.00
v. The course organisers appear to have effective communication skills with students	2.45
vi. The course organisers are good at providing feedback to students	2.25
vii. The course organisers provide constructive criticism	2.24
viii. The course organisers give clear examples	2.48
ix. The course organisers get angry in teaching sessions	1.67
x. The course organisers are well prepared for their teaching sessions	2.61
xi. The students irritate the course organisers	1.43
3. Students' Academic Self-Perception	
i. Learning strategies which worked for me before continue to work for me now	2.49
ii. I am confident about passing this year	3.44
iii. I feel I am being well prepared for my profession	3.04
iv. Last year's work has been a good preparation for this	2.38
v. I am able to memorize all I need	2.91
vi. I have learned a lot about empathy in my profession	3.00
vii. My problem solving skills are being well developed here	3.20
viii. Much of what I have to learn seems relevant to a career in healthcare	2.60
4. Students' Perceptions of Atmosphere	
i. The atmosphere is relaxed during teaching	1.75*
ii. The course is well timetabled	2.37
iii. Cheating is a problem in this course	1.98
iv. There are opportunities for me to develop interpersonal skills	2.50
v. I feel comfortable in teaching sessions socially	2.45
vi. The atmosphere is relaxed during seminars/tutorials	2.07
vii. I find the experience disappointing	1.56
viii. I am able to concentrate well	2.35
ix. The enjoyment outweighs the stress of studying medicine	1.67
x. The atmosphere motivates me as a learner	2.17
xi. I feel able to ask the questions I want	2.55
5. Students' Social Self Perceptions	

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