ORIGINAL ARTICLE

STUDENTS' PERCEPTION OF THE EDUCATIONAL ENVIRONMENT OF THE MEDICAL SCHOOL IN UNIVERSITY OF CALABAR, NIGERIA

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ABSTRACT

Background: Medical students' learning environment is known to impact the quality of graduating doctors. It is therefore important that such environments are periodically evaluated in order to identify and address factors that may impede the quality of learning and its outcome. This research was aimed at evaluating medical students' perception of their educational environment

Method: This study was an observational cross-sectional study involving 445 medical and dental students of the University of Calabar. The Dundee Ready Education Environment (DREEM) questionnaire which is made of 5 sub-domains was administered and completed by students in their 2nd to 6th year of study during 2015/2016 academic session. The mean global score (MGS) and each domain scores were determined statistically. The mean scores of the domains in each age group and student's year of study were compared using ANOVA. The level of statistical significance was fixed at $p < 0.05$.

Results: The MGS of the students' perception of learning was 57.2% which is more positive than negative perception. The Students Perception of Atmosphere i.e. SPA (45.2%) and Students' Social Self Perception i.e. SSSP (46.8%) had the lowest mean domain scores. Factors responsible for the low scores include students being tense during lectures, and poor social support systems for those that get stressed.

Conclusion: We conclude that the MGS in this students' population could be improved by addressing weaknesses in the SPA and SSSP domains. Effective support system for students who are stressed during study will help in this regard.

Keywords: DREEM Questionnaire, Medical Students, Perception, Learning environment, Calabar.

INTRODUCTION

The learning environment is an important factor that affects learning in the medical school. Hence the World Federation of Medical Education recommends that it should be taken seriously in the appraisal of medical education programs.[1] Leaning environment encompasses everything that happens within the classroom, department, faculty or university-wide. [2] Evaluation of the learning environments (both clinical and academic) holds the key to achieving high-quality students centred curricula. It is known that student's perception of the learning environment has direct relationships to their motivation, satisfaction, and effective learning outcomes. These factors influence lifelong changes in the students' knowledge, attitudes and practices. [3-5]

The evaluation of the medical education environment has been of interest to many investigators. [6-9] Though different researchers have used different methods such as quantitative approaches or questionnaires, to assess the learning environment,[10, 11] the commonest tool used is the Dundee Ready Education Environment Measure (DREEM).[12] The DREEM questionnaire was developed between 1994 and 1996 by the Dephi Panel which consisted of over 100 medical and health educators. The questionnaire has become a universal tool utilised in different societies across the globe for assessment of learning environments, and thus has been refined over time for that purpose. [12, 13]

University of Calabar is one of seven universities established in 1975 as part of the Third National Development Plan, by the Federal Military Government of Nigeria. Its College of Medical Sciences was established during the 1978/1979 session and there are 4 faculties in the College including the Faculty of Medicine. The College of Medical Sciences of the University of Calabar is classified as a second-generation medical school in Nigeria. It is the desire of the College management to create a conducive learning environment for the training of competent medical doctors. The university medical education leading to the award of Bachelors of Medicine, Bachelors of Surgery (MBBS or MBBCh) is a 6-year course and 5 years for direct entry students. We are unaware of any previous studies carried out to evaluate students' perception of their learning environment in the College. This study is probably the first to perform such evaluation. Such a study could expose learning flaws and those areas that will have positive impact for improved learning outcome. Therefore, this study is aimed at assessing learning environment at the College of Medical Sciences as perceived by the students. It is hoped that results of the study will shed light on areas that need improvement for creation of a better learning environment for the medical students.

Subjects and Methods

The study involved the application of the 50-item Dundee Ready Education Environment Measure (DREEM) questionnaire to 500 students of medicine and dentistry in their second to sixth year (200 to 600 levels) at the College of Medical Sciences, University of Calabar, South-South, Nigeria. To avoid bias, the first-year students were excluded from this study since they are usually considered as students in the Faculty of Science and are not assigned to the same accommodations on campus as the rest of the students in higher classes. The total number of medical and dental students (200 to 600 levels) in the College during the 2015/2016 academic session was 593. The students of dentistry were only in 200 and 300 levels due to the recent introduction of the course into the College and were included in the study. Males were 374 and females were 219 giving a male to female ratio of 1.7:1.0. A sample size determination with a confidence level set at 95% and margin of error set at 5% suggested a minimum study population of 234 students for this study.[14]

The study questionnaires were distributed to the students after obtaining ethical approval and student's consent. The Class Representatives was asked to identify those who are registered members of the classes and the questionnaire was administered to all those identified without discrimination. To ensure that all students in the program were included, the researchers worked with the various class representatives who gave information about the most appropriate time to meet all the students. In most cases, they were met during a lecture-free period in their various classrooms. The students were addressed by the researchers who explained in brief the objective of the study. The questionnaires were then distributed to all who were willing to participate. The students completed the

questionnaire in class during a lecture-free period and returned same to the researchers. All the participants recorded their responses for the DREEM scale anonymously.

The DREEM instrument is a Likert-type inventory tool which has the advantage of self-administration and it is useful in assessing learning environment. Its validity and reliability have been attested to in a range of various cultural contexts.[10, 12] There are five major domains in the questionnaire with each area specifically measuring various areas relevant to the assessment of education 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' Perception of Atmosphere (12 items with a maximum score of 48) and Students' Social Self Perception (7 items with a maximum score of 28). In accordance with the DREEM questionnaire scoring formula, each item is scored from 4 to 0 (4 = Strongly agree, 3 = Agree, 2 = Unsure, 1 = Disagree, 0 = Strongly disagree) by the respondents on a five-point scale. The instrument has an overall score of 200, signifying an ideal educational environment as perceived by students. The questionnaires were then sorted to identify those that were correctly and completely filled, and these were included in the study. Incompletely filled questionnaire were excluded from the study. The questionnaire for this study showed high reliability in the study population as demonstrated by the calculated Cronbach alpha coefficient of 0.87.

Ethics: Ethical clearance was obtained from the Health Research Ethics Committee of the University of Calabar Teaching Hospital UCTH/HREC/33/404

Statistics: Data obtained were analysed using Statistical Package for Social Sciences (SPSS) version 20.0. The mean global score (MGS) and each domain scores were determined using Statistical Package for Social Sciences (SPSS) version 20.0. The mean scores of the domains in each age group and student's year of study were compared using ANOVA. The point of statistical significance was set at $p < 0.05$.

Results

A total of 500 questionnaires were distributed to participants. Of these, 470 (94.0%) were returned out of which, 445 (89%) were selected and included in the statistical analyses. The 25 (5.3%) excluded questionnaires was largely due to incomplete information provided by responders. A total of 75% (445/593) of the student's population participated in the survey. Mean age of the participants was 23.9±3.9 years; the youngest was 17years and the oldest was 39 years. Two hundred and ninety-two (292) of the students were males while 153 were females with a male to female ratio of 1.9:1.0. These are shown in Table 1.0.

The mean global score (MGS) for the students' perception of learning at this Faculty of Medicine was 114.4/200 (57.2%). According to the DREEM questionnaire scoring formula, grading interpretation of the MGS are; 0-50 Very Poor, 51-100 Plenty of Problems, 101-150 More Positive than Negative, and 151-200 Excellent. Students aged 33-40 years had a significantly higher MGS compared to younger age groups. Participants' sex and year of study did not impact significantly on the MGS as shown in Table 2.

Analyses of the sub-domains of the DREEM questionnaire revealed that the students mean scores in their perception of learning, perception of course organizers and academic self-perception, were positive. The scores for perception of the atmosphere and social self-perception were weak in line with DREEM questionnaire scoring formula. These are shown in Table 3.0.

Analysis of the individual components in the Students' Perception of Atmosphere (SPA) and Students' Social Self-Perception (SSSP) domains shows the areas of concerns to the students. They perceive the learning environment in the following manner; being tensed during lectures, the stress of the program outweighed the enjoyment, there is poor support system for students that get stressed and that their accommodation was unpleasant. See Table 4.0 A&B.

Discussion

The mean global score (MGS) from this study for the University of Calabar Medical school of 114.4/200 represents a score of 57.2%. According to DREEM questionnaire interpretation, this score

means "a more positive than negative" perception of an educational environment. The MGS from this study centre is higher than the value obtained when we performed a similar evaluation at the medical school of University of Ilorin, Ilorin, Nigeria with a score of 54.2%.[9] Universities of Ilorin and Calabar in Nigeria are funded by the Federal government of Nigeria, but are located in different geographical zones of the country. While the University of Calabar is in the South-south geopolitical zone, University of Ilorin is in the North-central. The MGS in this study is however lower than those reported in India (58.5%),[15] Turkey (59.0%),[16] and in another Nigerian study at University of Ibadan, Nigeria (59.0%).[10] This could be perceived to mean that there are better learning environments in those universities. The University of Ibadan, Nigeria as one of the oldest university is expected to have relatively better teaching and learning facilities than most second-generation federal universities in Nigeria. It may therefore not come as a surprise if students of the University of Ibadan have a higher rating of their teaching environment than their counterparts in the University of Calabar—one of the second-generation universities owned by the Federal Government of Nigeria. However, this study the MGS score (57.2%) was found to be higher than results from Saudi Arabia (51.0%) [17] and Bangladesh (55.0%). [18] Some reasons advanced by the authors were that the system did not allow the students to take elective modules and the teacher was the main source of information. This may have been affected by the availability of information technology around these areas at the time considering that these were older studies. The scores indicate that the social support system is worse at the King Abdul Aziz University of Saudi Arabia (0.8 vs. 1.5) that in the University of Calabar medical school. This is in spite of the more pleasant accommodation provided for students of Abdul Aziz University [17] than what is obtainable at the University of Calabar medical school as reported by the students. Some studies in Western Europe have recorded very high MGS as shown by one from Sweden (78.0%)[19] and the other from the United Kingdom (71.5%).[20] It is thought that MGS of 60.0% and above in medical education environment is associated with the use of innovative curricula that are student-centered, as opposed to the traditional method of teaching which is teacher

centered.[21-22] Therefore the MGS in this study which is less than 60% may indicate the need for a revision in the curriculum and the adoption of a student-centred modality of teaching.

It was observed in this study that students from 33-40 years of age had significantly higher MGS compared to younger age groups. The reason for this difference is not clear. A possible reason is the maturity of the students in the 33-40 age brackets, their prior experiential learning including life experiences. The MGS did not vary significantly with the year of study of the students. This observation is in contrast to what some authors had previously reported in which students in the second year of study had significantly higher MGS than students of higher classes. [23-25] The higher MGS in lower years of study was attributed to possible excitement and euphoria of being admitted into the medical program which is a highly competitive process in Nigeria and globally. As this euphoria decreases with advancing years of study and complexity of the courses, the stress of the medical program weighs in and shapes the perception of the students. Nurumal et al [26] noted that this euphoria is also responsible for the higher MGS in the final year of study compared to that of the fifth year. This is thought to be due to the excitement of the final year student being close to the end of study unlike the lower level students.

These students' positive perception of their learning, perception of course organizers and their academic self-perception, but weak in perception of the atmosphere and social self-perception are similar to what was reported in India,[27] and in Sweden.[28] It is known that medical students are usually optimistic about the course, its objectives and the ability of the training to develop their competences. Therefore, these positive sub-domains can be further improved at the University of Calabar medical school for improved MGS. Drawing from the reports of medical schools with much higher MGS,[19, 20] increased participation and student-centered teaching, alongside use of innovative techniques, will help to increase positive perception by the students of their learning environment.

The areas of concern including SPA (45%) and SSSP (46%) should be addressed to move the ratings from weak to positive perception. Analyses of these sub-domains show the concerns of the

students, to include a tense atmosphere during lectures, the overwhelming stress of the program, poor social support system for students who are stressed and an accommodation considered unpleasant among other reasons. In order to improve these sub-domains, the managers of the medical school may need to improve the teaching environment to reduce the factors contributing to perceived tension during lectures and associated decreased enjoyment of the program by the students. This may include the provision of comfortable seats, air-conditioned classrooms or at least fans, projectors and other teaching and learning enhancing gadgets. It will also be appropriate for the managers to introduce social programs that assist burnt-out students and improve on hostel accommodations for better living and resting space for the students.

Conclusion

Though the MGS of students' perception of learning environment at the Faculty of Medicine, University of Calabar, Nigeria appears to be as positive using the DREEM questionnaire, the value is indicative of lack of an innovative curriculum and the absence of student's centered teaching approach. The weaker sub-domains of the questionnaire are SPA and SSSP, and when these are effectively managed by the faculty authority in addition to the adoption of innovative teaching techniques, the MGS of the faculty may be markedly improved. It is our conviction that our findings in this pilot study will serve as a basis for future studies on student's perception of their learning environment. Improvement on areas identified by the participants as needing attention should be undertaken.

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Table 1.0: Demographic Characteristics of Participants

Characteristics of the students		Number n=445	Percentage
Age (years)	17-24	284	63.8
	25-32	135	30.3
	33-40	26	5.8
Sex	Male	292	65.6
	Female	153	34.4
Year of Study	200 level	117	26.3
	300 level	106	23.8
	400 level	88	19.8
	500 level	76	17.1
	600 level	58	13.0

Table 2.0: Association between Some Socio-Demographic Variables and Mean Global Score of Learning Perception compared using ANOVA

Parameter	MGS/200	Percentage	p-value
Age (years)			
17-24	110.0	55.0	
25-32	117.5	58.8	
33-40	124.3	62.2	0.040*
Sex			
Male	111.7	55.9	
Female	113.6	56.8	0.141
Year of study			
200 Level	111.0	55.5	
300 level	112.0	56.0	
400 Level	111.5	55.8	
500 Level	115.3	57.7	
600 level	111.3	55.7	0.854

Key: MGS-Mean global score, ANOVA = Analysis of Variance, P≤0.05 is considered significant

Table 3.0: Mean scores in the DREEM questionnaire subscales and their interpretations

Subscale	Score	Percentage	Interpretation
Students' Perception of Learning (SPL)	30.1/48	62.7	A more positive perception
Students' Perception of Course Organizers (SPCO)	24.1/44	54.8	Moving in the right direction
Students' Academic Self Perception (SASP)	22.0/32	68.8	Feeling more on the positive side
Students Perception of Atmosphere (SPA)	21.7/48	45.2	There are many issues which need changing*
Students' Social Self Perception (SSSP)	13.1/28	46.8	Not a nice place*

*Weak

Table 4.0 A: Mean Scores of Individual Item in the DREEM Questionnaire Sub-Domains

Items	Average scores
1. Students' Perception of Learning (n-445)	
i. I am encouraged to participate in teaching sessions	2.8
ii. The teaching is often stimulating	2.5
iii. The teaching is student-centred	2.3
iv. The teaching helps to develop my competence	2.7
v. The teaching is well focused	2.4
vi. The teaching helps to develop my confidence	2.7
vii. The teaching time is put to good use	2.3
viii. The teaching over emphasizes factual learning	2.4
ix. I am clear about the learning objectives of the course	2.8
x. The teaching encourages me to be an active learner	2.8
xi. Long term learning is emphasized over short term learning	2.5
xii. The teaching is too teacher centred	1.9
2. Students' Perception of Course organisers (n=445)	
i. The course organisers are knowledgeable	3.0
ii. The course organisers espouse a student-centred approach to teaching	2.3
iii. The course organisers ridicule their students	1.8
iv. The course organisers are authoritarian	2.1
v. The course organisers appear to have effective communication skills with students	2.3
vi. The course organisers are good at providing feedback to students	2.0
vii. The course organisers provide constructive criticism	2.1
viii. The course organisers give clear examples	2.5
ix. The course organisers get angry in teaching sessions	1.9
x. The course organisers are well prepared for their teaching sessions	2.4
xi. The students irritate the course organisers	1.7

Key: *Scores < 2.0 are considered significant except for questions 1xii, 2iii, 2x, 2xi, 4ii, 4vii, and 5ii where scores >2.0 are considered significant.*

Table 4.0 B: Mean Scores of Individual Item in the DREEM Questionnaire Sub-Domains

Items	Average Score
3. Students' Academic Self-Perception (n=445)	
i. Learning strategies which worked for me before continue to work for me now	2.2
ii. I am confident about passing this year	3.5
iii. I feel I am being well prepared for my profession	2.8
iv. Last year's work has been a good preparation for this year's work	2.6
v. I am able to memorize all I need	2.1
vi. I have learnt a lot about empathy in my profession	2.8
vii. My problem-solving skills are being well developed here	2.8
viii. Much of what I have to learn seems relevant to a career in healthcare	3.2
4. Students' Perceptions of Atmosphere (n=445)	
i. The course is well time-tabled	2.1
ii. Cheating is a problem in this course	1.7
iii. The atmosphere is relaxed during lectures	1.5*
iv. There are opportunities for me to develop interpersonal skills	2.4
v. I feel comfortable in teaching sessions socially	2.4
vi. The atmosphere is relaxed during seminars/tutorials	2.1
vii. I find the experience disappointing	1.5
viii. I am able to concentrate well	2.3
ix. The enjoyment outweighs the stress of studying medicine	1.4*
x. The atmosphere motivates me as a learner	2.0
xi. I feel able to ask the questions I want	2.3
5. Students' Social Self Perceptions (n=445)	
i. There is a good support system for students who get stressed	1.5*
ii. I am too tired to enjoy this course	1.5
iii. I am rarely bored on this course	2.0
iv. I have good friends in this course	2.6
v. My social life is good	2.2
vi. I seldom feel lonely	2.1
vii. My accommodation is pleasant	1.2**

Key: *Scores < 2.0 are considered significant except for questions 1xii, 2iii, 2x, 2xi, 4ii, 4vii, and 5ii where scores >2.0 are considered significant.*