Impact of location and government funding on medical Students' Perception of Learning Environment in Nigeria

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Abstract

The learning environment in medical colleges impacts on future physicians, hence it should be evaluated to identify and address factors that impede learning outcomes. The objective is to evaluate the impact of geographical location and level of government funding on the learning environment in medical colleges in Nigeria. The DREEM questionnaires were administered to 787 students from 3 northern universities 797 from 4 southern universities. Using SPSS version 20, mean global score (MGS) was determined, and domain scores were compared according to northern versus southern universities, state versus federal funded universities among other factors ANOVA, $p < 0.05$. The male to female ratio for the 7 medical schools was 2:1. Similar ratio was noted for north (2.2:1) and south (1.9:1) population, but MGS and SPA were significantly higher in northern universities compared to the south (56.4% vs. 53.6%, $p = < 0.001$; 25.3 (11.4) vs. 23.7 (9.0), $p = 0.002$), respectively. Conversely, mean SPL was significantly higher in the southern universities (31.2 (7.5) vs. 29.6 (11.1), $p = 0.001$). State funded universities had a higher MGS and SPA compared to the federal's (56.5% vs. 54.5%; $p = 0.006$, 25.7 ± 7.9 vs. 24.1 ± 10.9; $p = 0.008$). But federal universities had higher SPCO and SASP values compared to states' funded (23.6 ± 5.5 vs. 22.7 ± 96.6; $p = 0.008$, 21.8 ± 4.9 vs. 20.5 ± 5.0; $p = < 0.001$). Efforts to improve the learning environment in Nigerian medical colleges should be independent of geographical location and level of government funding of schools[1].

Keywords: Students' perception, geographical location, government funding, learning environment, Nigeria universities

Introduction

Nigeria universities medical students' perception of learning environment is independent of the schools' geographical location and level of government funding.

The learning environment is said to involve the diverse physical locations, contexts and cultures in which the activities of teaching and learning takes place in a university or centre of higher learning.[1,2] Learning environment has been evaluated by various

[1] Study locations in Nigeria include; Benue State University, Makurdi; University of Ilorin, Ilorin; University of Calabar, Calabar; Bayero University, Kano; University of Nigeria, Nsukka; Ebonyi State University, Abakiliki and University of Benin, Benin-city.

investigators using diverse tools at medical and health-related institutions. These studies found a positive association between the learning environment and its outcomes including the students' achievement, happiness, motivation, success, and practice quality of doctors.[2-5] Hence, some authors suggests that fundamental health initiatives of patients' health and safety relies on sound education of health care providers.[6] The World Federation for Medical Education earlier recognised the learning environment as a major factor in the evaluation of medical education programs.[6] This is supported by findings that academic and clinical environment have important influences on the attitudes, knowledge, skills, progression and behaviors of medical students.[7] The accomplishment and contentment of students depends upon their learning environment, hence evaluation of such environment via students' perceptions can guide medical institutions managers and teachers to introspect, devise and incorporate the best teaching strategy for improvement of the educational environment. By using relevant assessment tools, researches are able to assess the whole spectrum of activities, facilities and policies underlying learning in medical schools [8] which may provide detail information on the learning processes. The results of such evaluations have been found useful in the enhancement of students' satisfaction and achievement.[3,4,9]

In order to investigate the factors affecting students' learning environment, especially across many sites, specialties, and student groups, the use of a wide-ranging, valid, and reliable instrument have been utilised.[8,10,11,12] The most widely used contemporary instrument for this purpose is the Dundee Ready Education Environment Measure i.e. DREEM,[8] which was developed by an international Delphi panel in Dundee, Scotland, UK. It is a worldwide, validated instrument that provides medical teachers with diagnostic help to measure the overall state of affairs in the learning environment of their colleges.[13-14] The DREEM questionnaire has been found to be reliable in a variety of settings, by which educational managers can identify limitations and formulate changes in curricula.[4,14,15,16,17] The DREEM was earlier used by us in 2014,[15] and it proved effective in identifying weak areas that need the attention of medical college authority.

However, the various studies that have assessed the learning environment of medical schools in the literature,[3,4,14,15,18,19] have not evaluated the impact of geographical location of a school within a particular country on learning perception, neither have they looked at the role of level of government funding of schools on such perceptions. The present study is the first to assess the impact of north versus south geographical location of a medical school in any country, and the level of government funding (whether federal or state funded), on students' environment learning perceptions.

In Nigeria, the largely; Muslim northern region and Christian southern region, are thought to differ in their levels of quality education and other related socio-economic factors.[20] This differential education inequality led to various efforts by federal, state and local governments aimed at improving education in the northern part of Nigeria

which has been characterized by dismal performances of poor girl child education and underachieving students' outcomes.[20-22] But this differential education status has never been investigated in relation to medical education in Nigeria.

Student satisfaction which is associated with higher mean global scores of students' perception of learning environment is influenced by engaging activities that emphasise students' centred learning, problem based learning (PBL) and innovative technology.[13,14] These innovative techniques are expensive to implement in many developing countries, and therefore availability of funds for medical schools may be a factor in students' learning perception in Nigeria. The Federal government of Nigeria is said to spend more money funding university education than the State governments.[23] In Nigeria, some investigators have reported that increase in spending by government for education is associated with greater outcome,[24] but this fact has not been demonstrated in medical education which is more costly to fund.[23] An empirical understanding of the role of financing of medical students education in Nigeria in relation to the students' perception of the learning environment may be beneficial to educational managers/proprietors and policy makers in the country.

The aim of this study was to evaluate the impact of geographical location (north versus south) and the level of government funding, on medical students' perception of their learning environment. This may in the future be assessed for its impact on quality of trained doctors in different regions of country

Materials and Methods:

Study locations

Nigeria is made up of geographical north which is comprised of 3 geopolitical zones of North-East, North-Central and North-West. Similarly, the southern region is comprised of South-West, South-South and South-East geopolitical zones. For the purpose of this study, the country was divided in to north and south. Seven medical schools in different Nigeria universities spread across Northern Nigeria region; Benue State University (BSU), Makurdi, Benue State; University of Ilorin (UI), Ilorin, Kwara State; Bayero University (BU), Kano, Kano State, and Southern Nigeria region; Ebonyi State University (ESU), Abakiliki, Ebonyi State; University of Benin (UB), Benin City, Edo State; University of Nigeria (UN), Nsukka, Enugu State and University of Calabar (UC), Calabar, Cross-River State, took part in this project.

Two of these universities (Benue State University, Makurdi and Ebonyi State University, Abakaliki) are state funded, while the rest are funded by the federal government (University of Ilorin (UI), Ilorin, Bayero University (BU), Kano, University of Benin (UB), Benin City, University of Nigeria (UN), Nsukka, and University of Calabar (UC), Calabar). In Nigeria, medical education typically takes 6 years of learning; first year in the Faculty of Science studying general sciences, 2 years for basic medical sciences and, three years in pathological sciences and clinical sciences.

According to records of the National University Commission of Nigeria; the government umbrella organisation that oversees the administration of higher education in the country, there are three categories of university ownership in Nigeria. These are federal funded universities, state funded universities and private ownership universities.[25] Ethical clearance for the study was obtained from the Institution Review Board of the universities concerned. The students from the 7 medical schools involved in the study were briefed on the essence of the project and made aware of their right to either participate or decline the study without any punitive measure taken against them. Once this was clear, the questionnaires were distributed to them during the last few minutes of lectures by the researchers in the different universities. All the participants were given the option of either filling the questionnaires in the class or to take them to their homes and return the filled form the next day to the secretary/research assistant of the lead researcher in each of the universities. Efforts were made to ensure that questionnaire sheets were anonymised so a particular student who completed a questionnaire was not identifiable. This was achieved by not creating space for names or matriculation number on the questionnaire.

Measurement of students' perception of learning environment;

This study used the DREEM questionnaire to assess the perception of learning environment by students of the above medical colleges in Nigeria. The questionnaire was only applied to students in their 2nd year to 6th year of medical studies. The first year students were left out of the study because they are considered to be students of the faculty of science of their universities. These first year students do not have access to facilities and personnel in the colleges of health sciences and therefore are unable to correctly assess the learning environment for the purpose of this study.

The DREEM instrument is a validated Likert-type inventory tool which has the advantages of self-administration to respondents and usefulness in assessing a particular learning environment.[26,27] There are five major domains in the questionnaire with each specifically measuring an area relevant to the assessment of the learning environment. The domains are; students' perception of learning; SPL (12 items with a maximum score of 48), students' perception of course organisers; SPCO (11 items with a maximum score of 44), students' academic self-perception; SASP (8 items with a maximum score of 32), students' perceptions of atmosphere; SPA (12 items with a maximum score 48) and students' social self-perceptions; SSSP (7 items with a maximum score of 28). According to the DREEM questionnaire scoring formula, each item in the major domain is scored from 4-0 (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 an overall score of 200, signifying the ideal educational environment as perceived by students.[28] Table 1 show how the overall score and subdomain scores are made and interpreted.

Data analyses of study;

All completed questionnaires from the different study centres were packaged and sent to the coordinating centre at College of Health Sciences, Benue State University, Makurdi for collation and data analyses. The data were analyzed using SPSS (Statistical Package for Social Sciences) version 20. Means and standard deviations were calculated for DREEM total and subscale scores for the entire sample as well as for subgroups identified by the demographic data collected. For dichotomous variables; the mean values of data were compared by gender, year of study, funding level (federal or state) and geographical region of the university (northern or southern part of Nigeria), based on mean global and subscale DREEM score means, using independent T-test. The DREEM scoring formula is shown in Table 1. For variables with more than two factors a series of one-way Analyses of Variance (ANOVA) were used to compare all groups. The study outcome variables measured in a Likert scale of five points, were quantified by using the mean and standard deviation. The point of significance was set at $p < 0.05$.

Results

A total of one thousand five hundred and eighty-four (1584) questionnaires from 7 medical schools in Nigeria were completely filled and analysed for this study. The respondents were made up of 1061 males and 523 females with a male to female ratio of 2:1. Among the 7 universities medical schools, three were located in the northern region of the country. The participants in the 3 medical schools in the north of Nigeria had a total population of 787 students which is made up of 537 males and 250 female (male to female ratio of 2.2:1). The four southern region medical schools have a total participants' population of 797 students made up of 524 males and 273 females (male to female ratio of 1.9:1). This is shown in Table 2.

The reliability of the DREEM questionnaire to the study population was confirmed by its demonstrated high internal consistency which is reflected in a calculated Cronbach alpha coefficient of 0.80. It is accepted that an alpha factor of 0.70 is consistent with valid internal consistency (29). Majority of the total students' population i.e. 33.2% were in their fourth year of study, as shown in Table 3. The MGS did not show any significant variation with age and gender of the students, but students in the second and third years of study had significantly higher MGS than those in the fifth and sixth year of study (118.8 and 115.4 vs 111.7 and 100.7, $p = < 0.001$), respectively.

The national mean global score (MGS) for students' perception of their learning environment in Nigeria was 110/200 (55.0%). This is interpreted as "more positive than negative" perception of an educational environment according to DREEM scoring system. The MGS and the subdomain scores of the various participating northern and southern universities, is shown in Table 3. The mean scores compared in Table 4 shows that the MGS and SPA were significantly higher among the northern Nigerian universities compared to those in the south (56.4% vs. 53.6%, $p = < 0.001$; 25.3 (11.4) vs. 23.7 (9.0), $p = 0.002$), respectively. The values of MGS in both regions'

universities suggest the global perception is more positive than negative, but significantly higher in the north. The lower value of SPA in the south suggests there are many issues that need changing in their universities as a group. The mean score of SSSP in both regions, though not significantly different, shows that the schools are not nice places to study. This may relate more to their social supports for the students, especially in relation to work stress.

Conversely, the mean scores of SPL was significantly higher among the southern universities compared to the northern schools (31.2 (7.5) vs. 29.6 (11.1), p = 0.001). Mean SASP was also higher in the southern universities [21.7(5.9)] compared to the north [21.3 (4.9)], but was not statistically significant at p = 0.053. See Tables 4 and 5.

The MGS for State funded universities was noted to be significantly higher than that of Federal universities (56.5% vs. 54.5%, p = 0.006). Similarly, the mean SPCO and SASP were significantly higher among the Federal funded universities compared to the states' [23.6 (5.5) vs. 22.7(6.6), p = 0.008; 21.8 (4.9) vs. 20.5 (5.0), p = < 0.001], respectively. The lower mean SPCO in the states' owned universities reflects the need for retraining of their course organisers. But the mean SPA was significantly higher among the States owned/funded universities compared to the Federal government owned or funded [25.7 (7.9) vs. 24.1 (10.9), p = 0.008]. The level of the perception score in the federal universities implies there are many issues that need changing in their universities, relative to the states institutions. The mean SSSP was also higher among the States sponsored universities compared to the Federals' though not significantly [14.4 (4.9) vs. 13.7 (4.3), p = 0.06]. The levels of SSSP in both federal and states universities are in keeping with the institutions "not being nice places to study", though more so in the federals'. See Table 6.

Analysis of the individual items of the subdomains shows that the highest perception score was the confidence of the students of being able to pass examinations (3.30 out of 4.00), while the lowest perception score items were related to support systems for students who are stressed and have unpleasant accommodation. These had scores of 1.48 and 1.55 respectively. Other items with low mean score are as shown in Table 7.

Discussion

The total number of students (1,584) and the number of medical colleges/universities (seven) involved in this study is the largest to be evaluated in Africa using the DREEM questionnaire for assessment of the learning environment. Globally, this study's population is only second to another done in Bangladesh in 2010 which investigated more medical schools according to literatures available to the authors.(19) This index study which is unique for the Africa continent due to its large participants' may provide useful information for medical colleges and training in Nigeria and other similar countries.

The DREEM questionnaires evaluations of the learning environment provide useful results, not only to the institutions being studied but to other similar ones. Such results can be used as reference for the standardisation of educational environment.(14) Hence the DREEM has been found useful for international comparison of medical schools,(30) where they can benchmark the learning environment in related institutions.

The present study is the first to assess the impact of geographical or regional location of a medical school on students' perception of learning environment. Among the northern universities medical schools, the male to female ratio was found to be 2.2:1, and this was 1.9:1 in the southern universities students. The whole population of medical students in the 7 medical schools studied had a similar male: female ratio of 2:1. This ratio is different from that of most other studies which found higher population of female medical students. In Sudan,(31) the male to female ratio was 1:1.4 and 1:1.5 in an Iranian university study.(2) Another study done in Australia which involved 548 students studying 8 health sciences related courses had the lowest male to female ratio at 1: 3.3.(14) This ratio was 1:1 in the Bangladeshi study(19) and the reason for the higher number of male medical students in this population in relation to the Nigerian medical students is not clear. However, the high male to female ratio in the presently evaluated Nigerian medical colleges is not uniform as it was 1.4:1 at the northern Bayero University, Kano and 1.2:1 at the University of Benin, Benin city in the south of the country. The highest male to female ratio of 5.1:1 was noted at the northern Benue State University, Makurdi.

The DREEM MGS for the northern universities was significantly higher than the value of the southern universities (56.4% vs. 53.6%) as shown in Tables 3 & 4. These are similar to the 55.0% MGS of the total universities evaluated in this study. The above scores, according to the scoring formula for the DREEM questionnaire show in Table 1, are interpreted as the students perceiving the institutions to be "more positive than negative". They are similar to the 57.0% in the Sudan study (31) and the 56.7% obtained in an Iranian study.(2) Though the MGS at the northern and southern Nigerian universities differ significantly, they are scored equally by the DREEM questionnaire. However, it is significant in the country to note the difference in scores. Consistent with studies in developed countries which operate majorly student-centred learning institutions, an Australia study involving 8 medical science courses had a MGS of 68.7%.(14) Similarly, a high MGS of 78% was reported at a Scandinavian College of Chiropractic Medicine, Sweden(32) and 71.5% at the School of Medicine, University of East Anglia, in the United Kingdom.(33) The MGS obtained in developed countries health institutions are higher than those obtained in the present study and other developing countries; Sudan and Bangladesh.(2,31) The relatively higher MGS of students' in the developed countries listed above has been associated with adoption of innovative curricula, problem-based learning (PBL) and student-centred teaching model, as opposed to the traditional teaching approach that is sometime charactertised by reduced student-teacher interaction.(13,34)

Some medical schools in Iran; 49.8% (18) and Saudi Arabia; 51%,(8) recorded lower scores than is presently reported. It is known that medical schools operating traditional teaching system that is characterized by teacher-centered learning, absent or low use of PBL and poor innovative curricula, commonly have MGS less than 60.0%.(13,34) This position is reinforced by the work of Kiran and Sean,(35) which observed that institutions with innovative curricula reports higher DREEM scores. Therefore the learning perception scores in Nigeria; whether in northern or southern region universities, can be used to initiate change and improvement in learning environment in medical schools in the country and similar developing countries. This is important given that high score of students' perception has also been observed in some developing countries. Some studies done in Nepal(7) and Malaysia,(36) reported MGS of students' perception of learning environment of 65% and 61%, respectively. As shown in Table 4, three medical colleges in this Nigerian population; one in the northern region and two in the southern region had MGS of 60% - 64%. These relatively high scoring Nigeria universities medical colleges are spread across both regions of the study (North-west; BUK, South-east; ESU and South-south; UB), suggesting that high MGS in Nigeria is not restricted to either region of the country. Therefore, the widely reported differential in socio-economic indices such as education and health between northern and southern Nigeria(20,21,23) do not apply to medical students' perception of their learning environment.

Importantly, this study found that the state funded universities had a significantly higher MGS than the federal funded ones, as shown in Table 4. This was an unexpected result giving that the federal funded universities have more funds than the states, and university lecturers in Nigeria prefers employment at the federal funded universities. As shown in Table 4, the mean SPA score of State funded universities was significantly higher than that of the federal funded institutions. The borderline value of 24/48 (50%) score in SPA among the federal universities may be responsible for the lower MGS in them (see Table 3). At this level, the SPA result indicates that there are many issues that needs changing at the federal universities. The University of Nigeria, Nsukka (19.8/48; 41.3%) and University of Calabar, Calabar (23.8/48; 49.6%) have SPA scores consistent with "many issues need changing", moreso at the former.

A look at the individual items in the SPA sub-domain shows 5 items had ≤ 50% score as shown in Table 6. These include concerns relating to; 'the atmosphere is relaxed during teaching', "the atmosphere is relaxed during lectures", "I find the experience disappointing" and "The enjoyment outweighs the stress of studying medicine". The first two listed items with poor scores in the SPA domain are related to teaching activities. The present authors suspect these weak items can be improved by faculty re-training, use of PBL and other innovative teaching methods that increase positive interactions between students and teachers.(4,35) If the concerning issues of SPA are successfully addressed, they may have beneficial impact on the national and regional perception scores of the Nigerian medical colleges.

The SPCO levels did not show any significant regional difference in this study. Its levels are barely moving in the right direction according to the reported mean values in Northern versus Southern universities (see Table 3). However, the difference in SPCO in federal universities versus states' was significant with the value in the state universities consistent with their teachers or course organisers in need of retraining. See Table 3. Similar to the SPA subdomain, the SPCO had 4 items with less than 50% score and most of these relate to teacher handling of their interactions with students (see Table 6). The subdomain score for SPCO in three of the medical college was "in need of retraining". The students' complaints about their course organisers/teachers include; course organisers/teachers ridicule the students, teachers provide poor feedback to the students, teachers get angry in teaching sessions, and students irritate course organisers. Still the Nigerian medical students scored the teachers high in content knowledge, effective communication and use of clear teaching examples among other positive comments. Therefore proper faculty re-training in the identified troubled areas will go a long way to improving SPCO. The advocated trainings should be those that emphasises the adoption of student-centered learning model, problems based learning (PBL) and other innovative teaching curricula/technology.(4) Such faculty training and retraining may go a long way to improving perception of course organisers in these Nigeria medical colleges and thus should be encouraged. Similar training has been canvassed in the area of giving feedback to students; whether positive or negative feedbacks, and that they should be given in timely and sensitive manner.(4)

The mean score for the SSSP subdomains in Northern and Southern universities is consistent with them considered as "not a nice place to study". Similar comparison in the federal versus state funded universities shows higher but non-significant SSSP level in state universities. This implies that the students of federal universities are less satisfied with their SSSP and more likely to describe their learning environment as "not a nice place". Some of the concerning issues for the students in this subcategory are; there is no good support system for students who get stressed, students are too tired to enjoy the course, and their unpleasant accommodation. These additional sources of pressure on the medical students can affect their achievements, satisfaction and successes including future practice as a physician (4). Similar weaknesses in SPA and SSSP sub-domains have earlier been reported by Nahar et al.(19)

The combination of concerning factors in SPA and SSSP mentioned earlier may be responsible for their being "too tired to enjoy this course". Being "too tired to enjoy this course" is a common observation in studies that used the DREEM to assess the learning environment.(4,7,8) It is thought that this low value of SPA and SSSP possibly reflects work overload which is related to the volume and content of the formal curriculum.(4) Hence Veerapen and McAleer in 2010 suggested reduction of the medical curriculum, even though it is debatable to which extent the curriculum size can be decreased without compromising outcome competencies. The authors of the

present study do not think curriculum reduction should come before addressing other identified areas affecting SSSP scores. Nevertheless, it is agreed that the amount of academic work in medical schools contributes to the stress of learning and thus decreases the course enjoyment. The unpleasant accommodation which is a concern among the Nigeria medical students, especially in southern and federal universities, can be addressed by increased funding and better management of the facilities. This can help in reducing the strain inhibiting the enjoyment of the medical school and thereby improve the low SPA and SSSP scores.

The problems of stress, tiredness, lack of good stress support and poor accommodation have also been identified in other students' populations.(37) These factors have been related to observed mental health issues said to be posing significant problems for many college students.(38) Using the Beck depression inventory and Beck anxiety inventory in Egypt, students of the faculty of medicine were found to have approximately 44% and 58% prevalence of anxiety and depression, respectively (39). A similar study in Nigeria found that 23.3% of medical students had depression, with affected students more likely to smoke cigarettes.(40)

These are pertinent issues that should be evaluated and not be allowed to compromise the quality of the learning environment in medical colleges nor the quality of life of the students as they train to become future physicians in our medical colleges. Therefore, particular attention should be paid to the factors that engender needless stress and other concerns of the Nigerian medical students; whether in the northern or southern regions and whether federal or state funded universities. By so doing, the poor scoring items of the DREEM noted in the learning environment could be improved, thereby increasing national or regional MGS in Nigerian medical college.

Conclusion

A more positive MGS in northern Nigeria medical schools was associated with a higher SPA score compared to the southern institutions. Conversely, a higher SPL score was found in the southern medical schools compared to those in the north. Similarly, a significantly higher MGS and SPA were found in the state funded universities than in the federal funded schools. But the SPCO was higher in federal universities compared to the states' universities. Irrespective of the geographical location or level of government funding of Nigeria universities medical schools, the mean score of SSSP suggests that the social environments obtainable in the schools are not nice. While the federal universities may need to improve SPA, the state universities will do well to pay more attention to SPCO and SASP. The managers of Nigerian universities may need to adopt students' centered learning modality, PBL and innovative teaching techniques in their medical colleges. Such steps in addition to retraining of teachers and provision of social supports for students could help in improved MGS as observed in the advanced countries' medical colleges.

Limitations of study

The present study provides useful insight into the training environment as perceived by medical students in 7 different universities guided by similar curriculum and regulations, in Nigeria. However, there were only two state funded universities compared to the 5 funded by the federal universities. Another observed limitation is the fact the number of participants varied considerably between the universities with some levels or year of study not recording participants in some of the universities.

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References

[1] Aghamolaei T, Fazel I. Medical students' perceptions of the educational environment at an Iranian Medical Sciences University. BMC Med Educ. 2010; 10: 87

[2] Ahmed S. Public and private higher education financing in Nigeria. European Scientific Journal. 2015; 11: 92-109.

[3] Al Rukban MO, Khalil MS, Al-Zalabani A. Learning environment in medical schools adopting different educational strategies. Educ Res Rev. 2010; 5(3):126–129.

[4] Al-Ayed IH, Sheik SA. Assessment of the educational environment at the College of Medicine of King Saud University, Riyadh. East Mediterr Health J. 2008; 14: 953–9.

[5] Al-Hazimi A, Zaini R, Al-Hyiani A, et al. Educational environment in traditional and innovative medical schools: a study in four undergraduate medical schools. Educ Health (Abingdon). 2004; 17(2): 192–03.

[6] Aniebue PN, Onyema GO. Prevalence of depressive symptoms among Nigerian medical undergraduates. Tropical Doctor. 2008; 38(3): 157-158.

[7] Arzuman H, Yusoff MS, 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): 40–47

[8] Bakhshialiabad H, Bakhshi M, Hassanshahi G. Students' perceptions of the academic learning environment in seven medical sciences courses based on DREEM. Advances in Med Educ and Pract. 2015; 6: 195–203.

[9] Beiter R, Nash R, McCrady M, Rhoades D, Linscomb M, Clarahan M, Sammut S. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. J Affective Disord. 2015; 173: 90–6.

[10] Brown T, Williams B, Lynch M. The Australian DREEM: evaluating student perceptions of academic learning environments within eight health science courses. Int J Med Educ. 2011; 2: 94–01

[11] Buhari M A, 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; 33(2): 141-145.

[12] Darma MR. Access to Quality Primary Education in Northern Nigeria : Transforming Public Underachieving Schools to High Achieving Schools Using Social Business Theory. IOSR Journal of Business and Management (IOSR-JBM). 2015; 17(7): 66-81

[13] Demirören M, Palaoglu Ö, Kemahli S, Özyurda F, Ayhan IH. Perceptions of students in different phases of medical education of educational environment: Ankara University Faculty of Medicine. Med Educ Online. 2008; 13: 18.

[14] Dimoliatis ID. The Dundee Ready Education Environment Measure (DREEM) in Greek: how it should be used and preliminary experi¬ence in Greek medical educational environment. Arch Hell Med. 2010; 27(3): 509–21. Greek.

[15] Edgren G, Haffling AC, Jakobsson U, McAleer S, Danielsen N. Comparing the educational environment (as measured by DREEM) at two different stages of curriculum reform. Med Teach. 2010; 32: 233–8.

[16] Feletti GI, Clarke RM. Review of psychometric features of the Medical School Learning Environment Survey. Med Educ. 1981; 15(2): 92–6.

[17] Global Partnership for Education Report; Nigeria. 2018. https://www.globalpartnership.org/country/nigeria.

[18] Hammond SM, O'Rourke M, Kelly M, Bennett D, O'Flynn S. A psychometric appraisal of the DREEM. BMC Med Educ. 2012; 12: 2.

[19] Ibrahim MB, Abdelreheem MH. Prevalence of anxiety and depression among medical and pharmaceutical students in Alexandria University. Alexandria J Med. 2015; 51: 167–73.

[20] International standards in medical education: assessment and accreditation of medical schools' educational programmes. A WFME position paper. The Executive Council, The World Federation for Medical Education. Med Educ. 1998; 32(5): 549–8.

[21] Kiran V, Sean M. Student perception of the learning environment in a distributed medical programme. Med Educ Online. 2010; 15: 5168.

[22] Kumar R, Kumar S, Kumar A, Roy V, Roy C. Analyzing the Dreams Coming True for Young Undergraduates of DMCH, Laherisarai, Darbhanga using DREEM Score. International Journal of Recent Trends in Science and Technology 2013; 6(2): 60–3.

[23] Marshall RE. Measuring the medical school learning environment. J Med Educ. 1978; 53(2): 98–04.

[24] McAleer S, Roff S. AMEE Education (Dundee). Part 3: A practical guide to using the Dundee Ready Education Environment Measure (DREEM). In: Genn JM, editor. Dundee, UK: Association of Medical Education in Europe; 2002. Guide No. 23: Curriculum, environment, climate, quality and change in medical education: a unifying perspective.

[25] Miles S, Leinster SJ. Medical students' perceptions of their educational environment: expected versus actual perceptions. Med Educ. 2007; 41(3): 265-2.

[26] Mirghani H, Elnour M. The academic environment and approach to learning effects on academic performance among Sudanese medical students. MedEdPublish. https://doi.org/10.15694/mep.2017.000037.

[27] Nahar N, Talukder HK, Khan TH, Mohammad S, Nargis T. Students' perception of educational environment of medical colleges in Bangladesh. BSMMU J. 2010; 3(2): 97-02.

[28] National University Commission, Nigeria List of Nigerian universities, 2017. http://nuc.edu.ng/nigerian-univerisities/private-univeristies/

[29] Nunnaly JC. Psychometric theory New York: McGraw-Hill; 1978.

[30] Nurumal MS, Rogayah J, Hafizah A. A study of learning environments in the Kulliyyah (Faculty) of nursing, International Islamic University Malaysia. Malaysian journal of Medical Sciences. 2009; 16(4): 15–24.

[31] Obi CU, Ekesiobi SC, Dimnwobi SK, Mgbemena EM. Government education spending and education outcome in Nigeria. Int J Econs Finance and Management Sci. 2016; 4(4): 223-234

[32] Palmgren PJ, Chadratilake M. Perception of Educational Environment Among Undergraduate Students in a Chiropractic Training Institution. J Chiropr Educ. 2011; 25(2): 151–163.

[33] Roff S, Mc Aleer S, Hardeen R, Al-Qahtani M, Ahmed A, Deza H, et al. Development and validation of the Dundee Ready Education Environment Measure (DREEM) Med Teach. 1997; 19: 295–299.

[34] Roff S, McAleer S, Ifere OS, Bhattacharya S. A global diagnostic tool for measuring educational envi ronment: comparing Nigeria and Nepal. Med Teach. 2001; 23: 378-382.

[35] Roff S, McAleer S. What is educational climate? Med Teach. 2001; 23(4): 333–334.

[36] Roff S. The Dundee Ready Education Environment Measure (DREEM)-a generic instrument for measuring students' perceptions of undergraduate health professions curricula. Med Teach. 2005; 27: 322-25.

[37] Rothman AI, Ayoade F. The development of a learning environment: a questionnaire for use in curriculum evaluation. J Med Educ. 1970; 45(10): 754–9.

[38] Umar HM, Ismail R, Abdul-Hakim R. Regional Inequality of Educational Attainment in Nigeria. British Journal of Economics, Management & Trade. 2014; 4(3):420-430.

[39] Veerapen K, McAleer S. Students' perception of the learning environment in a distributed medical programme. Med Educ Online 2010, 15: 5168.

[40] Zawawi AH, Elzubeir M. Using DREEM to compare graduating students' perceptions of learning environments at medical schools adopting contrasting educational strategies. Med Teach. 2012; 34(1): S25–S31.