

## Factors that affect medical students' performance in Anatomy in the University of Nigeria

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### ABSTRACT

**Background:** Much attention has been drawn to the area of medical education in contemporary times with the aim of developing effective teaching strategies in our medical schools.

**Objectives:** To identify the problems encountered by students in the study of Anatomy and suggest ways of enhancing their performance in the subject.

**Materials and Methods:** Three hundred structured, pretested self administered questionnaires were applied to medical students of the Faculty of Medical Sciences, University of Nigeria Enugu Campus (UNEC), who had spent at least two years in the medical school. Data analysis was by SPSS version 15.

**Results:** Of the 300 questionnaires, 201(67.0%) were correctly filled and analysed. One hundred and three (51.2%) of the respondents were females, 163 (81.1%) were aged 21 to 30 years and 105(52.3%) had spent more than two years in the medical school. One hundred and eleven (55.2%) believed that dissection followed by audio-visual aids 101(50.3%) offered students adequate exposure to the learning of anatomy. One hundred and eleven, (55.2%) also implicated overcrowding as a major cause of students' aversion for dissection leading to inadequate exposure to the subject and the resultant poor performance. One hundred and seven (53.2%) believed that the preparatory period for 2<sup>nd</sup> MBBS exams should be extended so as to offer students adequate exposure to laboratory specimens.

**Conclusion:** Over-population causes inadequate exposure of students to anatomical specimens and thus affects their performance negatively.

**Keywords:** Anatomy, factors, problems, students' performance

### **INTRODUCTION**

In the pre-clinical school, medical students are instructed in the basic medical sciences which include anatomy, biochemistry and physiology. The speculation that students' pass rate is lower in anatomy than in biochemistry and physiology has been faulted by studies from Enugu<sup>1</sup>, Ile-ife<sup>2</sup>, and Ibadan<sup>3</sup>, among others. In some medical schools, students pass rate has been shown to be actually higher in anatomy than other basic medical sciences.<sup>1</sup>

Nwoha<sup>2</sup> reported that non-active participation in dissection sessions contribute a

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great deal to the failure in anatomy as recorded in the 2<sup>nd</sup> MBBS professional examinations. Obikili et al<sup>1</sup> attributed the failure in anatomy during the 2<sup>nd</sup> MBBS professional examinations to overpopulation in some schools. Khan, et al<sup>4</sup> attributed poor performance in basic medical science examinations to poor attendance to class activities. Most of these findings were based on observations from the academic records of the students.

In this study, we examined the students' account of the problems they encounter as they study anatomy in the pre-clinical

classes. This is an effort towards enhancement of teaching/learning practices in the subject of anatomy – the backbone of medical practice. To identify the students' problems, we looked into the various methods they employ in their study of anatomy and the problems they encounter. Their responses helped in the diagnosis of their problems as a veritable tool to making useful suggestions towards a lasting solution to the problems.

### METHODOLOGY

The study population included students of the Faculty of Medical sciences, University of Nigeria Enugu Campus who had spent at least two years in the medical school. The two years excluded their 1<sup>st</sup> year during which the students took courses in biology, chemistry, physics and general studies. All students who had spent the two years but deferred their 2<sup>nd</sup> MBBS Professional Examinations for any reason and have not taken the Mock 2<sup>nd</sup> MBBS Professional Examinations were excluded in this study because they have not taken enough assessment tests to be able to supply the answers to some of our questions. Three hundred (300) structured, pretested, self-administered questionnaires were administered to the students immediately after an examination to ensure that most of the students were around.

### RESULTS

Of the 300 questionnaires, two hundred and one (201) representing 67.0% were correctly filled and returned, 27 (9%) were not returned while 72 (24%) were either incorrectly filled or mutilated and were not analysed. The data were entered into the computer and were analysed using the statistical package for social sciences, SPSS software version 15.

Of the 201 analysed, 103(51.2%) were females, and 98 (48.8%) were males. One hundred and sixty-three (81.1%) were

aged between 21 and 30years, 35(17.4%) were less than 20years old, while 3(1.5%) were above 31years of age. Eighty-nine (44.3%) had spent 2years, 87(43.3) 3years, 15(7.5%) 4years, and 3(1.5%) 5years in the pre-clinical school respectively. Seven (3.5%) of the respondents did not indicate the number of years they had spent in the medical school.

One hundred and thirty-one (65.2%) studied both alone and in small groups, 62(30.8%) studied only alone while 8(4.0%) studied only in small groups. One hundred and eighty-one (90%) devoted more time to anatomy than other pre-clinical sciences, 13(6.5%) devoted equal time to all the subjects and 5(2.5%) devoted more time to either physiology or biochemistry (Table1).

Table 1: Relative time devoted to the private study of the basic medical science subjects

Relative time	No. of students	Percentage %
More time to anatomy	181	90.0
More time to Biochemistry	3	1.5
More time to Physiology	2	1.0
Equal time to all	13	6.5
No response	2	1.0
<b>Total</b>	<b>201</b>	<b>100</b>

One hundred and fifty-nine (79.1%) allocated 3hours or more to the private study of anatomy, 24(11.0%) allocated 2hours to private study while 6(3.0%) allocated only 1hour to private study of anatomy (Table 2). On the instructional methods that offer students adequate exposure in anatomy, a total of 153(76.1%) favoured dissection, audio-visual aids or both (Table 3). On why some students avoided dissection, 111 respondents (55.2%) implicated overcrowding. Others implicated bad

cadaver (12.3%), laziness (10.0%), and poor environment, formalin odour, absence of demonstrators etc. (40.3%).

Table 2: Daily private time allocated to the study of anatomy

Study Time (Hrs)	No. of Students	Percentage (%)
>4	24	11.9
4	79	39.3
3	56	27.9
2	24	11.9
1	6	3.6
Not indicated	12	6.0
<b>Total</b>	<b>201</b>	<b>100.0</b>

Table 3: Instructional methods that offer students better exposure in anatomy

Method	Frequency	Percentage
Dissection	61	30.3
Audio-visual	54	26.9
Dissection and audio-visual aids	38	18.9
Others	48	23.9

Majority of the respondents, 86(42.8%) considered gross anatomy the most difficult, followed by embryology 42(20.9%) and histology 26(12.9%) (Table 4). Thirty eight, respondents (18.9%) rated them equal in difficulty.

Table 4: Areas of anatomy considered most difficult by students

Area	Frequency	%age
Gross anatomy	86	42.8
Embryology	42	20.9
Histology	26	12.9
None	38	18.9
Gross anatomy & Histology	2	1.0
Gross Anatomy & Embryology	3	1.5
No response	4	2.0
<b>Total</b>	<b>201</b>	<b>100.0</b>

One hundred and seven (53.2%) suggested that the duration for preparation for 2<sup>nd</sup> MBBS professional examinations should be extended by six months, 20(10%) suggested additional two credit hours while 5(2.5) suggested increase in both duration and credit hours. Most of the respondents believed that large volume of work, lack of teaching aids, bad teaching methods and fear of the subject due to the scare inculcated in them by senior students, all militated against the performance of students in anatomy examinations.

## DISCUSSION

Previous studies on the factors that led to poor performance in anatomy implicate non-active participation in dissection<sup>2</sup>, poor attendance to class activities<sup>4</sup> and overpopulation.<sup>1, 5</sup> in this study, we found out that 65.2% of the respondents studied anatomy both alone and in small groups. This method is good in that such difficulties that one cannot challenge in private studies with one's limited horizon can be attempted or even overcome when different persons come together in group discussion with different approaches. The group study will also challenge the members of the group with the additional zeal to acquire a more in-depth knowledge of each topic allotted for discussion thereby enhancing performance.

About 53.2% of the respondents believed that the 18 months preparatory period in anatomy for 2<sup>nd</sup> MBBS professional examinations is not sufficient because of the large volume of work, lack of teaching aids and the need for more practical exposure, among others. This finding agrees with the earlier report<sup>2</sup> which suggested that active participation in dissection will enhance good performance in anatomy. Meanwhile the students' feeling that the time allotted to preparation

for 2<sup>nd</sup> MBBS examinations in anatomy is inadequate is hinged on inadequate exposure to practical specimens, lack of teaching aids, besides large volume of work. That is to say that measures that will improve active participation would result in better performance in anatomy rather than the extension of time as felt by the respondents. The responses also implied that overcrowding is a major cause of students' avoidance of dissection because of unfavourable student-cadaver ratio. This unfavourable situation may have caused students to view the inactive moments at dissecting rooms as a mere waste of time. Overcrowding, also, results in inadequate exposure.

The greater than 3 hours private time allocated to daily study of anatomy by 79.1% of the respondents may not be as fruitful because the students will exhaust themselves trying to memorise the theories of what they may have spent less time and energy to observe and feel practically.

The instructional methods that may offer the students adequate exposure to anatomy were also investigated. Over 76% of the respondents suggested that dissection, audiovisual aids, and both dissection and audiovisual aids are good instructional modes. Nnodim et al<sup>6</sup> recommended prosection as a viable method of studying gross anatomy in institutions with unfavourable student-cadaver ratios. The use of audiovisual aids in addition to dissection and prosection can enhance performance because it offers exposure to a wider population of students at a given time.

The emphasis on dissection/practical exposure to gross anatomy cannot be overemphasised. Gross anatomy forms a greater bulk of work in the study of anatomy. Moreover, over 40% of the respondents said that gross anatomy was

the most difficult area in anatomy followed by embryology and histology. Among the problems enumerated by the respondents were dislike for and fear of anatomy and the scare that senior students instil in them which leaves many with negative notion and feeling of self defeat even before the examinations.

From our findings, the problems that militate against good performance of students in anatomy were x-rayed from the students' point of view. It borders summarily on inadequate exposure to practical facilities and teaching aids. The inadequacies so observed cannot be separated from overcrowding<sup>1</sup> with the resultant unfavourable cadaver-student ratio.<sup>6</sup> Non active participation<sup>2</sup> and poor attendance to class activities<sup>4</sup> can be the consequences of overpopulation in the classroom.

Reduction in the number of students admitted into the medical schools may solve the problem of overcrowding and enhance adequate exposure to practical specimens thereby enhancing the chances of good performance. But it may aggravate the dearth of medical personnel thereby further reducing the doctor-population ratio in accordance with the recommendations of the World Health Organisation (WHO).<sup>7-11</sup>

Moreover, there is usually excessive pressure on the administrators of medical schools in the country by the increasing number of applicants into the medical schools. Albeit, the demands cannot be effectively met without an all embracing measures which will put into consideration the demand for medical personnel as well as the quality of training.

It has been shown that rapid increases in the enrolment into medical schools without a corresponding increase in

facilities have led to a deterioration of the standard of medical training<sup>5</sup>. To avoid this, medical schools should limit their admission to the number that their facilities can adequately accommodate. Then, the university authorities should as a matter of priority improve on the status of our medical schools by providing the required infrastructure including state of the art facilities that will increase exposure and contact with laboratory specimens. The government on her part should assist the universities through adequate funding.

Efforts should also be made by anatomy teachers to improve on their methods of teaching so as to meet up with the current challenges.

### CONCLUSION

Relative overpopulation causes inadequate exposure of students to laboratory specimens in Anatomy which is more of a practical oriented subject. The inadequate exposure to laboratory specimens militates against students' performance in Anatomy.

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