

Original Article

The prospect of anatomy as a career choice among clinical year medical students in Nigeria

Page | 90

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Abstract

Background: Medical doctors are potential important source of anatomy teachers. The aim of this study was to determine the choice of anatomy as a career option among medical students in a Nigerian medical school

Method: Descriptive survey of second- and third-year medical students using a self-administered questionnaire to assess age, sex, perception of anatomy as a subject, anatomy training experience and choice of anatomy as a career among respondents. Analysis was conducted using the SPSS and statistical significance inferred at $P < 0.05$.

Results: Three hundred and fifty three (85.3% response rate) who completely filled questionnaire were returned and analyzed of which 195 (55.2%) were males and 158(44.8%) were females. Their ages ranged between 18 and 37 years with a mean of 22.4 ± 9.9 years. Although most students agreed that anatomy was an important subject in medical sciences 346 (98%), they had benefited from anatomy training in their clinical classes 320 (90.7%), and the knowledge of anatomy is useful in investigating patients with certain diseases 251 (71.1%), only 22 (6.2%) would choose anatomy as a career. Male students were more likely to choose anatomy as a career ($P=0.026$). Textbooks were the most common 334 (94.5%), while radiological means were the least 23 (6.5%) method employed in learning anatomy.

Conclusion: Anatomy as a subject is perceived positively by clinical medical students, but the choice as a career option is low; attempt at increasing career interest is needful.

Keywords: Anatomy, career choice, gender, medical education, medical students, Nigeria

Résumé

Arrière-plan: Médecins sont potentiel source importante d'anatomie enseignants. L'objectif de cette étude est de déterminer le choix d'anatomie comme une option de carrière parmi les étudiants en médecine dans une école de médecine nigériane

Méthode: Descriptif sondage auprès des étudiants en médecine deuxième et troisième année utilisant un auto-administrés questionnaire aux ânes âge, sexe, perception de l'anatomie comme un sujet, anatomie expérience de formation et choix de l'anatomie comme une carrière chez les répondants. Analyse a été effectuée en utilisant le SPSS et signification statistique inférée à $P < 0,05$.

Résultats: Trois cents et cinquante trois 353 (taux de réponse 85,3 %) rempli complètement questionnaire étaient retournés et analyse de laquelle 195 (55.2 %) étaient les hommes et 158(44.8%) femmes. Leur âge varie entre 18 et 37years avec une moyenne de $\pm 22.4 9.9$ années. Bien que la plupart les étudiants ont convenu qu'anatomie était un sujet important en sciences médicales 346 (98 %), ils ont bénéficié de formation de l'anatomie dans leurs classes clinique 320 (90,7 %), et la connaissance de l'anatomie est utile dans l'enquête sur les patients atteints de certaines maladies 251 (71.1 %), seulement 22 (6,2 %) pourrait choisir anatomie comme une carrière. Les étudiants masculins étaient plus susceptibles de choisir l'anatomie comme une carrière ($P = 0.026$). Manuels scolaires ont été la plus courante 334 (94.5 %) alors que les moyens radiologiques ont été la méthode au moins 23 (6,5 %) employée dans l'anatomie d'apprentissage.

Conclusion: Anatomie comme un sujet est perçu positivement par les étudiants en médecine cliniques, mais le choix comme une option de carrière est faible; tentative à l'intérêt croissant de carrière est needful.

Mots clés: l'éducation médicale Nigéria; anatomie; choix de carrière; étudiants en médecine; genre

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Introduction

Anatomy is an important subject in medical sciences.^[1] The knowledge of structure of the human body from the naked eye appearance (gross anatomy) down to molecular level is fundamental to understanding its function and how both structure and function are modified by disease processes.^[2] A decline and dearth of anatomy lecturers to match the number of medical schools and increasing student populations has been reported in USA and India.^[1-3] More medical schools are springing up in Nigeria.

Medical doctors remain a potential and important source of anatomy teachers.^[1,3] Teaching of gross anatomy to preclinical students by surgeons in the USA provided clinical adjuncts and offered assistance to professional anatomists and anatomy course directors.^[4] Medical doctors also serve as temporary anatomy lecturers to fill the gap of declining medically qualified anatomy lecturers in the UK.^[5] Practical and clinical adjunct to lectures was considered by ~90% of medical students as having the potential of making learning more interesting and easier to remember.^[5]

The choice of career path by doctors is influenced by a number of factors. Career progression, on-call commitment, a teacher as a role model, love of anatomy, and interest in the subject were the top five factors influencing the choice of career among 169 medical students in Dundee.^[6] In addition to personal interest and life style, income also influences the choice of career among medical students.^[7,8] Sanfeh *et al*, reported the influence of gender on career choice.^[9] The interest in a specialty is aroused during training and has an important influence on career choice.^[10]

A previous study in Nigeria reported only 1.5% of preclinical medical students desirous of taking a career in teaching anatomy.^[7] In India, although medical students understood and noted the usefulness of anatomy to their training, 30% indicated interest in anatomy as a career if options of research and job opportunities were made available.^[6] The choice of career is affected by interest aroused during training and evolves during training;^[10] nevertheless, doctors are now encouraged to choose a career path at an early stage in medical training.^[11]

Clinical year medical students who have successfully

completed anatomy courses should have received maximal potential for arousal of interest in anatomy as career choice. Moreover, current exposure to clinical practice affords them the opportunity of a more objective comparison in contrast to their pre-clinical counterparts.

This study was conducted to determine the choice of anatomy as a career option among clinical year medical students in a Nigerian medical school.

Materials and Methods

The survey was conducted among consenting second-year and third-year clinical medical students of the College of Medicine, Obafemi Awolowo University, Ile-Ife. This college runs a 3-year preclinical course for medical students; in the second and third year of which human anatomy is taught. Only students who had successfully completed the anatomy course along with other basic medical sciences can proceed to clinical course that runs for another 3 years. Second- and third-year clinical students had successfully completed human anatomy course and commenced clinical medicine training at least within the last 2 and 3 years, respectively, from the study period. They had been exposed to all preclinical basic medical sciences and most clinical sub-specialties. First-year clinical students were excluded from the study because they passed anatomy within 3 months of the study and were not deemed to have had enough clinical exposure to make informed choices about career options in the medical sub-specialties.

A structured self-administered questionnaire was distributed to consenting second- and third-year clinical medical students to assess their age, sex, perception of importance of learning anatomy to clinical medicine, perception of preclinical training in anatomy, and the choice of anatomy as a career option. Previous failure necessitating a re-sit examination or repeat of anatomy class was used for gross assessment of performance in the human anatomy course. Identification through numbering or names was excluded from the questionnaire that was distributed to the students by a clinical II year medical student to ensure anonymity of the respondents.

Data were imputed into SPSS version 13, analyzed, and presented in simple frequency. Variables were

compared using the chi-squared test and statistical significance inferred at $P < 0.05$.

Results

A total of 353 second- and third-year clinical medical students returned filled questionnaire out of the total number of 414 students representing 85.3% response rate. 195 (55.2%) were males while 158 (44.8%) were females and their ages ranged between 18 and 37 years with a mean of 22.4 ± 9.9 years.

Most students agreed that anatomy was an important subject in medical sciences 346 (98%), they had benefited from anatomy training in their clinical classes 320 (90.7%), that teaching anatomy gives as much satisfaction as treating patients 218 (61.8%), and that the knowledge of anatomy is useful in investigating patients with certain diseases 251 (71.1%). However, only 22 (6.2%) would choose anatomy as a career in post-graduation [Table 1]. Male students were more likely to choose anatomy as a career than female clinical medical students ($P = 0.026$).

A majority of the students 297 (84.1%) had enjoyed their preclinical anatomy training, while 53 (15%)

did not. 91 (25.2%) had a resit or repeat during their preclinical anatomy training while 262 (74.2%) did not.

Comparison of students perception of anatomy in relation to gender showed more females agreeing that anatomy was a difficult subject to understand and retain ($P < 0.001$), did not enjoy the anatomy course ($P = 0.001$), and more likely to have had a resit or repeat examinations in anatomy ($P = 0.012$) when compared to their male counterparts [Table 2].

A previous experience of resit or repeat examination in preclinical anatomy course did not significantly affect the choice of anatomy as a career option ($P = 0.446$) [Table 3].

Learning was mainly through textbooks and atlases in 94.5%, lectures in 42.8%, and rarely through audio-visual devices (22.1%) or radiologic studies (6.5%). Table 4 shows the commonly used method of learning anatomy during pre-clinical anatomy training among students by gender. A higher percentage of female medical students learned through reading textbooks/atlas ($P = 0.033$) and during anatomy lectures ($P = 0.014$) compared to their male counterparts.

Table 1: Clinical medical students' perception of anatomy

Statements	Agree (%)	Neutral (%)	Disagree (%)	Total
Anatomy is an important pillar of medical sciences	346(98)	6(1.7)	1(0.3)	353
I have benefited from the preclinical learning of anatomy in my clinical years	320(90.7)	27(7.6)	6(1.7)	353
The knowledge of anatomy can be useful in investigating patients with certain diseases	251(71.1)	51(14.4)	51(14.4)	353
Anatomy career has a low status within the medical profession	104(29.5)	101(28.6)	148(41.9)	353
Teaching anatomy gives as much satisfaction as treating patients	218(61.8)	78(22.1)	56(16.1)	353
I will like to take up anatomy as a career after graduation	22(6.2)	83(23.4)	248(70.3)	353

Table 2: Gender and perception of medical students about anatomy

Perception/experience in preclinical anatomy	Male		Female		Total		P-value
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	
Anatomy is difficult to understand/retained	37(18.9)	158(81.1)	58(36.7)	100(63.3)	95(26.9)	258(73.1)	<0.001
Enjoyed preclinical anatomy course	42(21.5)	153(78.5)	14(8.9)	144(91.1)	56(15.9)	297(84.1)	0.001
Had a resit or repeat in anatomy course	40(20.5)	155(79.5)	51(32.3)	107(67.7)	91(25.8)	262(74.2)	0.012

Table 3: Influence of performance in anatomy on choice of anatomy as a career option

Performance	Anatomy as career choice			Total
	Yes	Neutral	No	
No anatomy resit/repeat	18(6.9)	66(25.2)	178(67.9)	262(74.2)
Had anatomy resit/repeat	4(4.4)	17(18.7)	70(76.9)	91(25.8)
Total	22(6.2)	83(23.5)	248(70.3)	353(100)

Table 4: More commonly employed methods for learning anatomy

Common learning methods	Yes		No		Total		P-value
	Male (%)	Female (%)	Male (%)	Female (%)	Yes (%)	No (%)	
Anatomy textbook/atlas	180(92.3)	154(97.5)	15(7.7)	4(2.5)	334(94.6)	19(5.4)	0.033
Radiological films	13(6.7)	10(6.3)	182(93.3)	148(93.7)	23(6.5)	330(93.5)	0.90
Computer aided	43(22.1)	35(22.2)	152(77.9)	123(77.8)	78(22.1)	275(77.9)	0.98
Anatomy lectures	72(36.9)	79(50)	123(63.1)	79(50)	151(42.8)	202(57.2)	0.014

Computer aided: learning with use of compact discs, internet, or other multimedia

Discussion

In the College of Health Sciences, Ile Ife, anatomy is taught in the first and second year out of the total required 5 years of medical training as gross anatomy, embryology, histology, and introduction to medical genetics. Anatomy is an important subject in the medical training curriculum. In this study, 98% of 353 clinical students agreed that anatomy was an important subject in medical sciences, and its immense contribution during their clinical rotations was attested to be 90.3% of the medical students. Similar high positive response rate was reported among Indian medical students.^[1] Anatomy encompasses many aspects of the morphological basis of medicine and provides a structural framework for the development of clinical logic.^[2,12] The clinical relevance of anatomy remains highly rated among medical students globally;^[1,13] the same is noted in this study.

In spite of the positive disposition to and understanding of the importance of anatomy in medical training, only 6.2% of students will consider anatomy as a career option after graduation from medical school. In the medical profession, non-clinical teaching specialties are opted for only by a very few students.^[14] In a previous study among preclinical students in Nigeria, only 1.5% considered anatomy as a possible career option.^[7] It is possible that the increase in percentage of student willing to take anatomy as a career is due to their exposure to clinical rotations that could have afforded them the opportunity of noting the importance and relevance of anatomy to clinical practice in comparison with the other study conducted on preclinical students. Moreover, the teaching of introduction to medical genetics in the preclinical anatomy curriculum may be contributory to the increasing number. Anand *et al.*, recorded up to 30% of their students willing to take anatomy as a career option, which was considered low for the need among Indian medical schools.^[1] Clinical specialties especially surgery and obstetrics and gynecology tended to be more attractive to interns in Lagos.^[14]

Students' approaches to learning anatomy are driven by many factors and perceptions like the curriculum,

assessment, previous educational experience, and the influence of staff and fellow students.^[15] Textbook/atlas of anatomy and anatomy lectures were the most common mode of learning anatomy by students in this study, while radiology was the least common. While these traditional means of learning are age long and very useful, introduction of radiological and computer-assisted learning methods may arouse student interest in the subject and enhance performance. Our finding is similar to a study in Auckland, New Zealand, that reported traditional means of textbooks/atlas as the most commonly used method of learning and radiology being the least.^[16] Moreover, with the recent advances in medical practice viz three-dimensional radiologic investigations and minimal access surgeries, the requirement for medical anatomists is likely to be on the increase.^[1,2] Teaching anatomy enables the medical doctor refresh his knowledge of anatomy, a subject that is indispensable in providing a basis for examination of patients, interpretation of imaging, and safe conduct of basic interventional procedures.

Gender plays a role in choice of career after medical school;^[7,9,16,17] with the continuous increase in the percentage of women in the medical schools, the issue of gender cannot be overlooked. Significant differences existed in this study with more females finding anatomy difficult to understand and retain, not enjoying the course and having resit/repeat anatomy exams. The reason for this difference is not immediately clear but considering that females were also less likely to choose anatomy as a career, the issues are worthy of further investigation.

Anatomy as a subject is perceived positively by clinical medical students, but the choice as a career option is low. Increasing the use of radiological methods and computer-assisted methods in learning anatomy may increase students' interest in the subject. Further studies on the reasons for the noted differences in the perception and performance of females in anatomy course will enable modifications to effect a change.

References

1. Anand MK, Raibagkar CJ, Ghediya SV, Singh P. Anatomy

as a subject and career option in view of medical students in India. *J Anat Soc India* 2004;53:10-4.

2. McCuskey RS, Carmichael SW, Kirch DG. The importance of anatomy in health professions education and the shortage of qualified educators. *Acad Med* 2005;80:349-51.
3. Willan PL, Whitmor I, Humpherson JR. Career progress of temporary lecturers in anatomy: A surgical success story. *Clin Anat* 1998;11:50-4.
4. Seyfer AE, Welling D, Fox JP. The value of surgeons teaching anatomy to first year medical students. *Bull Am Coll Surg* 2007;92:8-14.
5. Odunkoya KA, Bello JA, Ayorinde EO. Medical students view on the method of teaching pharmacology at the Lagos State University College of Medicine, Nigeria. *Niger Q J Hosp Med* 2007;17:100-7.
6. Ranta M, Hussain SS, Gardiner Q. Factors that inform the career choice of medical students: implications for otolaryngology. *J Laryngol Otol* 2002;116:839-40.
7. Oyebola DD, Adewoye OE. Preference of preclinical medical students for medical subspecialties and basic medical sciences. *Afr J Med Med Sci* 1998;27:209-12.
8. Newton DA, Gravson MS, Thompson LF. The variable influence of lifestyle and income on medical students' career specialty choices: Data from two US medical schools, 1998-2004. *Acad Med* 2005;80:809-14.
9. Sanfey HA, Saalwachter-Schulman AR, Nyhof-Young JM, Eidelson B, Mann BD. Influences on medical students career choice: Gender or generation. *Arch Surg* 2006;141:1086-94.
10. Ohaeri JU, Akinyinka OO, Asuzu MC. The specialty choice of clinical year students at the Ibadan Medical School. *Afr J Med Med Sci* 1992;21:100-8.
11. Doshi J, Carrie S. A survey of undergraduate otolaryngology experience at Newcastle University Medical School. *J Laryngol Otol* 2006;120:770-3.
12. Monkhouse WS. Anatomy and the medical school curriculum. *Lancet* 1992;340:834-5.
13. Pabst R. Teaching gross anatomy: An important topic for anatomical congresses and journals? *Surg Radiol Anatomy* 1994;16:1-2.
14. Schumacher CT. Personal characteristics of student choosing different type of medical career. *J Med Educ* 1964;39:278-88.
15. Smith CF, Mathias H. An investigation into medical students' approaches to anatomy learning in a systems-based prosection course. *Clin Anat* 2007;20:843-8.
16. Insull PJ, Kejriwal R, Blyth P. Surgical inclination and anatomy teaching at the University of Auckland. *ANZ J Surg* 2006;76:1056-9.
17. Cayley WJ, Schilling R, Suechting R. Changes in themes over time from medical students journaling. *World Med J* 2007;106:486-9.

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Appendix 1: Sample of questionnaire administered

Kindly spend few minutes to read through the questions/statements below and answer by ticking the appropriate options. Thank you

Age years	Sex (male)	Clinical Year - 2 nd
		-3 rd

A. Perception about anatomy

Statements	Agree	Neutral	Disagree
1. Anatomy is an important pillar of medical sciences			
2. I have benefited from the preclinical learning of anatomy in my clinical years			
3. The knowledge of Anatomy can be useful in investigating patients with certain diseases			
4. Anatomy career has a low status within the medical profession			
5. Teaching anatomy gives as much satisfaction as treating patients			
6. I will like to take up anatomy as a career after graduation			

B. Experience at preclinical anatomy learning

	Yes	No
7. Anatomy was difficult to understand/retained		
8. Enjoyed preclinical anatomy course		
9. Had a resit or repeat in anatomy course		
10. Common method I employed in learning anatomy		
a. anatomy textbooks/atlas		
b. radiological films		
c. computer aids		
d. anatomy lectures		