

**FUTURE SPECIALIZATION IN ANATOMY: PERCEPTION OF UNDERGRADUATE  
CLINICAL STUDENTS****<sup>1</sup>\*Popoola Sunday Ogunsuyi and <sup>2</sup>Adams Olusegun Timothy**

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**ABSTRACT**

With the declining interest in Anatomy amongst medical graduates, this study was set to audit the perception of undergraduate clinical students on future specialization in Anatomy. Specific objectives: evaluating notions of clinical students on the relevance of Anatomy as a prerequisite for good medical practice; reviewing training institution and place of employment for candidates having interest in anatomy. Study was conducted amongst undergraduate clinical students with a 20-item questionnaire. The options were a 5-point Likert scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree on Anatomy as a subject; Anatomy in pre-clinical phase of medical training; Anatomy in clinical phase of medical training; and Anatomy as future career. Collated data were entered into Statistical Package for Social Scientists to analyze means, frequency and Kendall Coefficient of Concordance and level of statistical-significance was set at  $p < 0.05$ . Out of 80 students, 73 returned the completed forms representing a response of 91.2%. Mean age was  $25.73 \pm 3.12$  with range of 20 to 40 years and male to female ratio was 2 to 1. Perceptions were contained in mega Table 2. Militating factors included failure to acknowledge Clinical Anatomy as an integral component of medical curriculum in all phases; cadaver dissection was perceived a difficult task; and time allocation for anatomy in pre-clinical was not enough to comprehend skills. Students applauded utility of Anatomy in medical practice. Majority preferred studying and practicing anatomy abroad; calling for special audit of teaching and practice of Anatomy by stakeholders.

**KEYWORDS:** Future Career; Clinical Student; Anatomy.**INTRODUCTION**

The sacred, the oldest and the basic medical subject called Anatomy was said to have been pioneered in ancient Egypt at about 1600BC at the treatise of Edwin Smith Surgical Papyrus.<sup>[1]</sup> Human Anatomy started from what happened to be the dissection of legally sacrificed criminals to the modern-day studying of cadaver substitutes and computer appliances. A lot of innovations came from the Greeks in establishing dissection in most schools right from the time of Hippocrates.<sup>[2]</sup> Studentship was regarded as more of discipleship up to the medieval period in Europe during which time there was temporary prohibition of cadaver dissection because it was thought to be an act of blasphemy.<sup>[3]</sup>

The study of Anatomy between the 3<sup>rd</sup> and 12<sup>th</sup> century BC was mainly by reading published books and using animals for dissection as human structures were equated to that of animals.<sup>[4-6]</sup> Mondino de Luzzi made a name by being one of the first set of anatomist to have dissected human body in teaching Anatomy.<sup>[7]</sup> Leonardo made a great impact in anatomic imaging thus making learning easy outside the dissection room.<sup>[8]</sup> Vesalius in 16-17<sup>th</sup> century BC made a new era for Anatomy by his

numerous sacrifices in dissection even outside the domicile country and later got promotion to the position of professor in Anatomy and Surgery.<sup>[6]</sup> In the 16-17<sup>th</sup> century BC, dissection of humans with annotated drawing along with establishment of anatomic theatre were further embraced to improve anatomic education.<sup>[9]</sup> However, with more quests for cadaver, the so-called grave robbery was practiced apart from Burke and Hare saga (1827-1829) and London Burkering in 1831 which finally led to the various pronouncements of anatomic acts to steer the practice of Anatomy in terms of body donation, tissue handling, tissue preservation and embalmment.<sup>[10-13]</sup> Nineteenth century BC witnessed a land-slide progress in the field of Anatomy by the introduction of histology, embryology, comparative anatomy, medical museum and inauguration of females to medical schools.<sup>[14]</sup> Besides, in an attempt to make the study of Anatomy all encompassing, there were technological advancements with the use of computer gadgets, cadaver substitutes, constitution of radio-anatomy and clinical anatomy in 19<sup>th</sup> century BC.

At this juncture, it is substantive to credit all modern anatomists worth emulating including: Henry

Williamson Gray, the Father of Modern Anatomy who was said to have revolutionized Anatomy and Surgery by his numerous elaborate transformations on publication, dissection, curation and teaching amongst others.<sup>[15]</sup> Daniel John Cunningham, a physician, zoologist and anatomist made great impact in publishing dissection manuals, anatomic teaching and surgical practice.<sup>[16]</sup> Raymond Jack Last who was once into military was amongst the notable men in Anatomy and Surgery by his contributions towards the simplification and understanding of comparative and applied Anatomy.<sup>[17]</sup> As at present, Gunther von Hagens, pioneered plastination as one of the best methods of tissue preservation and embalment in anatomic sciences apart from his 'Body Worlds' collection as a great remark, even though, it may appear controversial in some domains.<sup>[18,19]</sup>

The curriculum in most medical schools is divided broadly into pre-clinical and clinical trainings. Anatomy is recognized as a basic medical science along with physiology and biochemistry, and all are taught in the pre-clinical phase. Albeit, regulation of what are indoctrinated in pre-clinical years varies from one institution to another within a country and may differ amongst countries, *Homo sapiens loquens* is the only surviving specie and sub-specie of humans and Anatomy is virtually the same kind and unique amongst the *Homininis*.<sup>[20, 21]</sup>

In career-development, the choice of specialization in any of the fields of medical sciences may either be nurtured while passing through or after completion of undergraduate training. A study carried out in Pakistan to investigate motivations of students in choosing medical profession and their attitudes toward their future profession reported a disappointment amongst some students and the need for assistance from career counselor was advised.<sup>[22]</sup> In the UK, similar study towards General Surgery was concluded by suggesting resolution to potential disincentives in order to attract robust recruitment.<sup>[23]</sup> In India, positive attitude of medical student towards Anatomy was recorded but only a few of them were ready to pursue postgraduate training in Anatomy.<sup>[24]</sup> In the Kingdom of Saudi Arabia, re-designing of gross anatomy curriculum to more of practices in Clinical Anatomy was favoured as a way forwards.<sup>[25]</sup> A cohort study in Kenya indicated the exciting attitude of medical students towards Anatomy. However, only very few of the students were willing to take it up at the postgraduate level and suggestion was then made on the need to place more emphasis on pre-dissection training and counseling to make the experience better for future specialization in Anatomy.<sup>[26]</sup> Career choice in Physiology was conducted in the United Arab Emirates in 2014: only few medical students were observed to be interested in the basic medical sciences worldwide and the need to address apathy towards these subjects in the medical curriculum was suggested as a critical matter for policy makers.<sup>[27]</sup>

The aim of this study was to audit the views of undergraduate clinical students on the choice of Anatomy as future career. Specific objectives were: assessing factors militating against Anatomy as a choice in future career; evaluating the notions of clinical students on the relevance of Anatomy as the basis for good medical practice; reviewing training institution and place of employment for candidates having interest in Anatomy.

## MATERIALS AND METHODS

The study was conducted amongst undergraduate clinical students of Ekiti State University (EKSU), Ado-Ekiti, Nigeria. Undergraduate medical training is 6 years course with 3 years pre-clinical phase in the university and 3 years clinical phase in the teaching hospital. The 500 level students in their second clinical year posting participated in this study. A self-administered semi-structured questionnaire was generated from available indexed journals with Section A (socio-demographic profile) and section B (opinion on future career in anatomy).<sup>[24, 26, 27]</sup> Section A was a 20-item self-explicit part seeking the opinions of individual clinical student on future specialization in Anatomy. The options were graded on a 5-point Likert scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The essential issues covered in the questionnaire were: Anatomy as a subject; Anatomy in pre-clinical phase of Medical training; Anatomy in clinical phase of medical training; and Anatomy as a future career. Questions were made simple for maximal compliance and were structured in a manner to address the specific objectives. An approval was obtained from the institution's ethics and clearance committee after conduction of a pilot study involving 10 students. The students participated within a week voluntarily without any inducement. Collated data were entered into Statistical Package for Social Scientists (SPSS version 21) software for analysis which included means, frequency and Kendall Coefficient of Concordance (KCC). Level of statistical significant was set at  $p < 0.05$  to either accept or reject null hypothesis. Results were represented in words, tables and figures using Microsoft office software.

## RESULTS

Out of 80 clinical medical students, 73 returned the completed questionnaires representing a response of 91.2% (see appendix).

Mean age was  $25.73 \pm 3.12$  and the age range was 20 to 40 years while male to female ratio was 2 to 1 (Table 1). In Table 3: Kendall's Coefficient of Concordance (KCC) revealed a p-value greater than 0.05; hence, the null hypothesis was accepted meaning that there were no significant differences amongst the items in Q1, 3, 4, 9 and 15 at 95% Confidence Interval (CI).

Table 4 shows a p-value less than 0.05. There was no need to accept null hypothesis meaning that Q7, 10, 12 and 13 are interdependent.

In Table 5, p-value is not significant according to the set value. Null hypothesis is hereby accepted proving the fact that Q2, 5, 6, 8, 11 and 14 are similar.

In Table 6, p-value is greater than 0.05 and null hypothesis is accepted meaning that there is no significant differences among Q16, 17, 18 and 19.

In Table 7, p-value is equally not significant making null hypothesis to be accepted with no significant dissimilarity between Q3 and 20.

## Appendix

**Table 1: Sociodemographic profile (n = 73).**

Parameter	Frequency (%)
<b>Age Range</b>	
20-24	29 (39.7)
25-29	36 (49.3)
30-34	7 (9.6)
35-39	0 (0.0)
40-44	1 (1.4)
<b>Gender</b>	
Male	49 (67.1)
Female	24 (32.9)
<b>Religion</b>	
African Tradition Religion	2 (2.7)
Christianity	62 (84.9)
Islam	9 (12.3)
<b>Ethnicity</b>	
Yoruba	69 (94.6)
Igbo	2 (2.7)
Others	2 (2.7)
<b>Marital Status</b>	
Single	66 (90.4)
Married	7 (9.6)
<b>Parental/Guardian Influence</b>	
Medical	29 (39.7)
Non-medical	44 (60.3)

**Table 2: Opinion on future career in anatomy (n = 73).**

Q	Parameter	Strongly disagree f (%)	Disagree f (%)	Neutral f (%)	Agree f (%)	Strongly agree f (%)
1	Anatomy is an important subject of medical sciences?	1 (1.4)	0 (0.0)	2 (2.7)	12 (16.4)	58 (79.4)
2	Studying Anatomy is relevant and beneficial in clinical years?	1 (1.4)	0 (0.0)	3 (4.1)	15 (20.5)	54 (74.0)
3	Anatomy as a discipline has been neglected within the medical field?	14 (19.2)	28 (38.4)	20 (27.4)	5 (6.8)	6 (8.2)
4	Every good clinician requires a sound knowledge of Anatomy?	1 (1.4)	0 (0.0)	3 (4.1)	26 (35.6)	43 (58.9)
5	Lack of clinical knowledge in Anatomy makes the subject uninteresting?	1 (1.4)	12 (16.4)	8 (11.0)	36 (49.3)	16 (21.9)
6	Rather than applauding anatomical sciences, clinical students should concentrate on clinical sciences?	5 (6.8)	19 (26.1)	28 (38.4)	16 (21.9)	5 (6.8)
7	Anatomy was easy to study on my own in those days of pre-clinical?	4 (5.5)	21 (28.8)	9 (12.2)	31 (42.5)	8 (11.0)
8	Continue incorporating Anatomy in evaluating patients is more relevant if taught as an integrated curriculum with other clinical specialties?	2 (2.7)	8 (11.0)	22 (30.1)	31 (42.5)	10 (13.7)
9	Only a limited knowledge of Anatomy is required for satisfactory medical practice?	10 (13.7)	36 (49.3)	7 (9.6)	12 (16.4)	8 (11.0)
10	In pre-clinical, dissection was preferred to other aspect of Anatomy?	4 (5.5)	21 (28.8)	23 (31.5)	17 (23.2)	8 (11.0)
11	Continue teaching and explaining the concepts of Anatomy to clinical students will give as much satisfaction as treating patients?	2 (2.7)	11 (15.1)	10 (13.7)	43 (58.9)	7 (9.6)
12	It was difficult to understand and retain Anatomy in those days?	3 (4.1)	32 (43.8)	10 (13.7)	24 (32.9)	4 (5.5)
13	Time allocation of two years for teaching Anatomy in pre-clinical is not enough?	4 (5.5)	20 (27.4)	23 (31.5)	22 (30.1)	4 (5.5)

14	A lot of clinical cases can be solved easily using knowledge gained in Anatomy?	1 (1.4)	5 (6.8)	16 (21.9)	39 (53.5)	12 (16.4)
15	Anatomy is necessary for understanding the presenting symptoms and signs of patients?	1 (1.4)	9 (12.3)	18 (24.7)	37 (50.7)	8 (11.0)
16	I would like to take up Anatomy as a career path?	6 (8.2)	22 (30.1)	28 (38.4)	16 (21.9)	1 (1.4)
17	I prefer studying abroad assuming I take up Anatomy as a career?	3 (4.1)	13 (17.8)	21 (28.8)	20 (27.4)	16 (21.9)
18	I will like to practice abroad in case I specialize in Anatomy?	3 (4.1)	14 (19.2)	27 (37.0)	17 (23.3)	12 (16.4)
19	In case I study Anatomy, I prefer practicing in government rather than private institution?	0 (0.0)	8 (11.0)	30 (41.1)	26 (35.6)	9 (12.3)
20	Summarily, Anatomy should be viewed as a profession rather than just a basic medical science?	4 (5.5)	6 (8.2)	25 (34.2)	27 (37.0)	11 (15.1)

**Key:**

Q Question

F frequency

**Table 3: Anatomy as a subject.**

Anatomy as a subject	Q1	Q3	Q4	Q9	Q15	Kendall's Coefficient of Concordance
Mean Rank	1.70	4.16	2.01	3.95	3.17	0.583

**Table 4: Anatomy in pre-clinical phase of medical training.**

Anatomy in pre-clinical phase	Q7	Q10	Q12	Q13	Kendall's Coefficient of Concordance
Mean Rank	2.33	2.53	2.64	2.51	0.013

**Table 5: Anatomy in clinical phase of medical training.**

Anatomy in clinical phase	Q2	Q5	Q6	Q8	Q11	Q14	Kendall's Coefficient of Concordance
Mean Rank	1.84	3.50	4.57	3.90	3.68	3.52	0.284

**Table 6: Anatomy as future career.**

Anatomy as future career	Q16	Q17	Q18	Q19	Kendall's Coefficient of Concordance
Mean Rank	3.10	2.27	2.46	2.16	0.168

**Table 7: Anatomy as a profession.**

Anatomy as a profession	Q3	Q20	Kendall's Coefficient of Concordance
Mean Rank	1.82	1.18	0.513

**DISCUSSION**

Planning for the time yet-to-come is better commenced right from the present in preparation for a particular creativity or purpose in life. This study was conducted amongst the founding undergraduate clinical students of the new college of medicine. The goal of this research was to audit the beliefs of the students on appreciation of standard anatomical studies in generating knowledge from the dead ones (cadavers) to better the lots of the living. The response rate of 91.2% in this study could be likened to 96.2% of Karau's finding and were quite appreciable.<sup>[26]</sup> These were unlike 75.7% and 84.4% in a similar work towards 'physiology as a career' and 'dissection culture of medical students' respectively.<sup>[27,28]</sup> However from afore-mentioned, the least figure from

Physiology in all the four studies somehow demonstrated the interest of students more towards Anatomy.

In the socio-demographic profile (Table 1), all the students were young adult with mean age of 26 years. This stage of life is an adventurous one in which the youths tend to agitate about their future and the reflection of this study is expected to tally with reality. Notwithstanding, there were more males in this study to previous studies in which females dominated.<sup>[26,27,29]</sup> From the logical levels of analogy, it then meant that these other medical training institutions were admitting more of female genders than male counterpart since the reasons for this disparity were not given. Irrespective of the religious affiliation, the age of the married female students were younger than that of the male counterparts

thereby proving the assertion that typically in our locality females do marry earlier than males. Above one-third (39.7%) of respondents had parents/guardians who were engaged in medically-related professions while 60.3% had parents/guardians who were not involved in medical practice. The influence of parents/guardian's profession on the choice of future carrier could not be clearly demonstrated; nevertheless, it is well known that most non-medically oriented parents/guardians often see Medicine as a dignified profession and thus encouraging their children/wards into a carrier in medical sciences.

The opinion of clinical medical students represented their idea in which some degrees of confidence were established based on what they experienced while in pre-clinical phase of training and what they are now deductively reasoning about in clinical phase. Anatomy as an important subject of medical sciences(Q1) was expressly applauded by 79.4% of respondents who strongly agreed and while 16.5% agreed. They treasured utility of anatomy as an indispensable 'path' for furthering acquisition of useful knowledge in evaluation of patients in clinical phase. The 2% that was neutral represented those very few candidates yet to make up their minds while the 1% who strongly disagreed should be considered a great aberration to popular belief. A similar response towards agreement had earlier been reported in 2004 by Anand.<sup>[24]</sup> The relevance of anatomy in clinical phase had a total of 94.5% by strongly agreed and agreed to prove the utility of anatomy at this stage of the training. Unfortunately, the same candidate who did not believe in anatomy as an essential medical subject was the one who also strongly disagreed to relevance of anatomy in clinical phase of training. Neutral group of course was yet to form a solid opinion rather than sitting on the fence.

At the clinical phase, the medical students have a better exposure to patients; interact with doctors, senior colleagues and other hospital staff. With these, appropriate in-depth knowledge of pre-clinical and clinical values can be appraised including the knowledge of Anatomy in making diagnosis, treating patients and follow-up measures. Majority of the students in Q3 of Table 2 was on disagreement scale to 'Anatomy as a discipline has been neglected within the medical field'. This was to prove the fact that there was still some degree in continuity of anatomy as 'Clinical Anatomy' in the clinical phase of the training. Those students who appeared neutral might switch to either positive or negative side towards the graduating year of training. Those who agreed and strongly agreed to this assertion might have gotten the mind-set for high-standard which was not realistic with the limited facility in developing nations like ours; thereby believing that anatomy was not well-structured to be referred to as a discipline. In another vein, recognition of anatomy in all aspects of medical training would encourage many of the students towards appraising the sound knowledge of anatomy needed by all clinicians. This popular belief was in

tandem with the statement that anatomy encompasses many aspects of geo-morphological basis of medical practice by providing a structural template for development of principles of managing patients.<sup>[30]</sup>

Clinical Anatomy was said to be an integral course in Anatomy right from the pre-clinical phase; it was for this reason clinicians were encouraged to teach Anatomy. Besides, time allotted to Anatomy and other basic medical sciences were said not to be enough to make these subjects encompassing for students to appreciate the values in them.<sup>[27]</sup> In our own setting, lack of enough finance for facilities and other essential syllabuses might be undisputed apart from the distance between the affiliated teaching hospital and the university housing the Department of Anatomy that needed a running cost amongst other limitations as similarly earlier alluded to by Anand.<sup>[31]</sup>

The assertion on whether clinical students should concentrate on clinical sciences rather than applauding Anatomy (Q6) was dicey in the sense that about one-third (38.4%) appeared neutral while 32.9% and 28.7% were on the disagreement and agreement scales respectively. At this stage of their training, it was unfortunate having learned Anatomy dispassionately through the rigor of dissection they still did not realize the utility of Anatomy learned in the pre-clinical as a mirror to the clinical subjects. However, it was thereby envisaged that a better decision would be taken at the postgraduate level. One then wondered the same opinion was equally taken by students on physiology in a study conducted earlier by Bryant.<sup>[27]</sup>

The group of students who believed Anatomy was easy to study while at the pre-clinical phase (Q7) added up to 53.5%. On the other hand, the group that disagreed totaled 34.3%. With the greatest percentage in favor of this assertion, it could then be ascertained that Anatomy as a subject or course to an extent was self-explanatory with students utilizing the available laboratory specimens and relevant texts.

A significant percentage of the respondents had preference for continuing incorporation of Anatomy in evaluating patients to be more relevant if taught as an integrated curriculum with other clinical specialties (Q8). This group of students might have experienced the fact that the time allotted to teaching Anatomy in pre-clinical phase in medical curriculum was not adequate. Anatomy by virtue of its usefulness should be formally incorporated into clinical phase, perhaps, as a course entitled: Clinical Anatomy; which is usually referred to as relevant Anatomy by Surgeons and Physicians. With this measure students would be further geared up in dealing with human structure to enhance logical evaluation of patients.

Hildebrandt made a tangible historical documentation on Anatomy.<sup>[32]</sup> While reviewing the beginning of Anatomy



in the USA, he alluded to the fact that for good quality control of medical institutions, Anatomy remained the main subject, even though, most schools focused on learning through lecturing than dissection by students. The idea of Physicians/Surgeons being teachers of Anatomy was equally applauded in America. In our own setting, Surgeons and Physicians from the teaching hospital were incorporated to pre-clinical phase to teach basic Anatomy and Physiology respectively in order to bridge communication gaps between the two phases of undergraduate training for the best interest of students and to encourage their futuristic interest in the basic medical sciences. Although majority of the students (63.0%) disagreed on the assertion (Q9) that only a limited knowledge of Anatomy was required for satisfactory medical practice, it might be somehow amazing that up to 27.4% of students had preference for the assertion rather than remained neutral (9.6%). However, the equation would continue to get better by the time the students take their last postings in Surgery and Medicine before graduation.

The students' affirmation on cadaver dissection being preferred to other aspects of Anatomy in pre-clinical phase (Q10) was dicey in the sense that 34.3%, 34.2% and 31.5% represented the disagreement, agreement and neutral scales. This matter would be better addressed when students graduated and just about commencing postgraduate training for interested candidates. By then, most of them would have had enough experience to either embrace Anatomy because of mandatory dissection exercise or choose another field somehow not too related or required less knowledge of Anatomy. The excitement of dissection at inception of medical studies according to some local documentations should be a drive to students loving Anatomy because of dissection.<sup>[33-35]</sup> Contrarily, the local work of Nnodim reported over 75% of upset amongst the students.<sup>[36]</sup> Concisely from the two opposing views, students in this present study was really sandwiching the two opposing mixed views of the past local evaluations in different regions of Nigeria.

A significant number of students believed that continued teaching and explaining the concepts of Anatomy to clinical students would give as much satisfaction as treating patients (Q11). The other opposing view totaled 17.8% and the neutral group of 13.7% might represent those students whose apathy to Anatomy would not make them think of anatomical sciences for postgraduate training. At this stage of undergraduate training it was expected that continuous understanding the various structures of the body as enshrined in Anatomy would be considered important in explaining the pathological basis of most diseases encountered in the clinics. In comparison with similar assertion on Physiology, majority of students did not also support the teaching of this other basic medical science according to Karau.<sup>[26]</sup>

The cognitive process of acquiring skill or knowledge may come by interest of the concerned candidates with curiosity irrespective of adverse factors. Many of the students (47.9%) disagreed that Anatomy was difficult to understand and retained in pre-clinical phase (Q12). The 10.7% who appeared neutral, perhaps, might join the majority by the time of graduation having known the utility of anatomy in clinical practice. With the level of understanding by graduation year, many of the students would have cast aside bias and be willing to appreciate the utility of Anatomy and readiness to take it up as future subject of specialization since over 79.4% had earlier strongly applauded Anatomy in Q1 of questionnaire format.

By simple arithmetic evaluation, 32.9%, 35.6% and 31.5% represented the disagreement, agreement and neutral scales respectively on the time allotted to teaching anatomy in pre-clinical phase (Q13). The medical schools in Nigeria run a 6-year curriculum with 3 years for pre-clinical phase in which Anatomy is included along with other basic medical sciences. There is no doubt that the scope of Anatomy is wide. It is revered with a lot of practical sessions apart from clinical and radiological portions in undergraduate training in which students mandatorily will have to visit clinics and radiology departments of the teaching hospital. In view of all the learning challenges, Anatomy should be allotted more time if not half of the period in pre-clinical phase to encourage professionalism of the subject and entice the doctors-to-be in career decision making. Similar suggestion was equally given in time past and the need to re-evaluate undergraduate medical curriculum by increasing the time allotted to Anatomy was favoured.<sup>[24]</sup>

The clinical years had modified the students in the sense that majority of them supported the assertions: A lot of clinical cases can be solved easily using knowledge gained in Anatomy; and Anatomy is necessary for understanding the presenting symptoms and signs in patients (Q14 and Q 15). With these beliefs, any challenges influencing the advancement of utility of Anatomy in medical training should be handled from all perspectives to encourage many more Anatomists in the field. This should include early research opportunity for the young ones and financial reinforcement in purchasing essential materials. In our own system, the non-governmental organizations, philanthropists and other stakeholders should be cheerfully encouraged by the university and hospital communities to do the needful to support government in provision of necessary equipment and other modern facilities as alluded by Attaur-Rasool and colleagues.<sup>[29]</sup>

Opinion on choosing Anatomy as a career (Q16) was germane to this study in which 38.4% and 38.3% were on disagreement and neutral scales respectively while the least (on agreement) was 23.3%. Earlier, it was established in this study that majority of the respondents

were in love with Anatomy and appreciated the utility of the subject in clinical practice. Controversially, Karau and colleagues registered 40.0% on neutral scale and 41.3% in supporting Anatomy for future specialization and majority recommending it for their colleagues.<sup>[26]</sup> In all, the suggestions made by calling for immediate interventional measures to increase career interest in Anatomy in the light of expansion of medical training should be unanimously adopted to increase the number of Anatomists most especially in our medical schools. All hands should also be on deck by the various stakeholders in provision of essential facilities and incentives for staff encouragement, most especially, in cadaver dissection which was considered a sacred part of Anatomy and or Surgery.

With regard to opinion of respondents on the matters related to Anatomy and abroad (Q17 and Q18) it was discovered on the average that majority were in support of studying and practicing Anatomy abroad while those who stayed neutral were more than those on the disagreement scale. These confirmed some forms of challenges at local level militating against interest in Anatomy, perhaps, internal audit would be appropriated to evaluate the system and proffer the way forwards. Solutions would include: provision of essential facilities, review of Anatomy curriculum, refining learning and working environment, and upliftment of job opportunity for Anatomists amongst others. In Michigan, Hildebrandt had a good documentation on the futuristic career development in Anatomy while alluding to 'development of Anatomy and anatomical teaching since Mall' in his write-up.<sup>[32]</sup> Leadership role and diversion of Anatomy not just at the tissue level but much more equally at the cellular and molecular stages along with new innovations in cadaver dissection to explain physiological and biochemical functions embroidered Anatomy as a relevant discipline. These developments were providing effective knowledge acquisition and financial supports for Anatomists. Honestly with advancement in technology, our students now have good access to the internet; reading through these advanced measures might have prompted the majority in preferring studying and practicing Anatomy abroad.

Albeit many of the respondents (47.9%) were on the agreement scale of practicing Anatomy in government sector (Q19), 41.1% who stayed neutral was also relatively significant while 11.0% quite disagreed. There are some emerging private medical institutions in Nigeria with modern facilities. However, it is a known fact that in this part of the globe government work goes with some packages for retirement cadres compared to the non-existing pension scheme in private sectors. With time, those who were neutral would form an opinion with the recent partnership system being encouraged between private and government sectors in order to bridge the gaps on welfare packages.

Arithmetically, 52.1% of the respondents were in support of Anatomy being considered a profession (Q20). This group of respondent with pass mark might have treasured the various divisions of Anatomy being utilized in pre-clinical, clinical and postgraduate levels in medical, pharmaceutical, nursing, laboratory and other allied institutions. With all these components and subdivisions, the sacred, the oldest and the basic medical subject called Anatomy that took effect right from ancient Egypt at about 1600BC at the treatise of Edwin Smith Surgical Papyrus should be formally categorized as a profession.<sup>[1]</sup> Unofficially, heralding this position of professionalizing Anatomy is currently being canvassed by the Anatomical Society of Nigeria (ASN): the highest professional body in the country.

## CONCLUSION

This study investigated the judgment of undergraduate clinical students in a newly emerging medical institution for early determination of future career in Anatomy. Factors militating against choice of Anatomy were numerous which included failure to formalize 'Clinical Anatomy' as an integral component of medical curriculum from pre-clinical to clinical phase; cadaver dissection was perceived a difficult task; and time allotment for the teaching of Anatomy in pre-clinical phase was not adequate to comprehend the skills. The students on the average acknowledged the indefatigable utility of Anatomy in medical practice. On the review of training institution, majority preferred studying and practicing Anatomy abroad which called for total auditing of present facilities, curriculum review, overhauling of studying and working environment and robust job opportunity for Anatomists.

## Disclosure of possible competing interests

There were no competing interests.

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