Dissection: A Facility for Students' Better Learning and Understanding of Gross Anatomy Theory

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ABSTRACT

Student's performance in gross anatomy is appalling and most schools are considering scrapping dissection to make students happy. Dissection as a traditional method of learning anatomy is the only one that allows students to feel the structures as they learn. We aim to ascertain the method that enhances the students understanding of gross anatomy using questionnaires. The subjects and schools include 150 subjects from Federal University Ndufu-Alike, Ikwo (FUNAI) Ebonyi State, 200 were from Ebonyi State University (EBSU) Abakaliki and 250 subjects from Nnamdi Azikiwe University (NAU) Uli, Anambra State, all in South Eastern part of Nigeria amounting to 600 students. The questionnaires contained close ended questions used to determine which method(s) better enhances their understanding. Most of the students (386.00 ± 3.5) strongly agreed that the best method of teaching and learning gross anatomy is through dissection compared to the number (31.00 ± 2.08) that strongly disagreed. Most of them strongly disagreed (340.67 ± 66.26) to scrapping dissection as a teaching method and 100.00 ± 5.77 disagreed to the suggestion while only 14.00 ± 8.19 strongly agreed and 49.33 ± 25.83 were undecided. Majority opined that the best assessment method is to combine all the other methods with dissection. Some students (290.00 ± 45.09) strongly disagreed that gross anatomy should not be thought without dissection proving it as major vehicle to understanding the course. We conclude that dissection as a traditional means of teaching gross anatomy still remains the best approach for teaching students to learn and retain gross Anatomy.

INTRODUCTION

Gross anatomy is that branch of anatomy that deals with the structures of organs that can be seen and touched with our eyes and hands respectively. It is so vast or voluminous that students are thrown into deep confusion at some point in their bid to understand, memorize and reproduce what they have been thought in the class room theoretically. Learning through dissection is enhanced by feeling the objects being discussed. [1] The purpose of gross anatomy dissection is to aid teaching and learning of gross anatomy. Dissection of cadaver is the only thing that can offer the real feeling of "touch as you learn". [2] The change in students learning culture and the new direction in medical education have actually helped in modifying the role of dissection in teaching and students learning of gross anatomy in our present medical schools. The application of computer tools such as Computer Assisted Learning (CAL) in the teaching of anatomy is one of the issues affecting the current pattern of students learning and understanding. [3] It has not been proved that CAL is a better method of learning than the usual method of dissection. [4-9]

The problem we have in anatomy is that many anatomy teachers did not really pass through the process of dissection so that they can better equip themselves on how to direct the students to encounter or deal with the cadavers as a live human.

These teachers also do not teach the students to learn how to respect the cadavers and pay attention to their confidentiality. [10] There is much debate about how best to teach anatomy in student-centered, problem-based learning (PBL) context [1] Some Anatomists referred to as traditionalist (those who favour teaching human anatomy through dissection of human cadavers) suggests that it is the best way of learning and memorizing [11] while reformers advocate various ways including prosected specimens, plastinated specimens, computer-assisted software and radiological imaging with cadaveric dissection added as a strategy to support students comprehension of anatomy. [12] The main purpose of this article is to show that dissection still remains the best teaching methodology for instructing student in gross anatomy. According to Sugand *et al,* [13] issue like the decrease in skilled anatomy lecturers as well as technicians, maintaining cadaveric facilities and lack of cadaveric donations have contributed in making the debate of how anatomy should be thought more complicated than ever. In 2011, Bekele *et al* [14] reported that several medical schools in the United Kingdom have phased out dissection, but active dissection is still ongoing in the United State, Germany and Africa. Based on the report of Bergman *et al.,* [15] students have strong opinions concerning their anatomical knowledge.

Authors of this paper support that students' opinions should be considered in development of their lecture time table to capture their dissection well and future studies that evaluate the critical factors affecting their learning and understanding of gross anatomy. It is important to note that most studies of dissection as an important way of learning and teaching gross anatomy were conducted in the developed countries with very few studies in Africa and in the South-eastern part of Nigeria and it becomes important to evaluate the students preferred method of learning anatomy in this part of the world. It became vital to evaluate this method in the South-eastern part of Nigeria.

MATERIALS AND METHODS
Study areas
This study was conducted in three (3) Universities that have faculty of Basic Medical Sciences and offer anatomy as course of study. The schools include Federal University Ndufu-Alike, Ikwo (FUNAI), Ebonyi State, Ebonyi State University (EBSU), Abakaliki and Nnamdi Azikiwe University (NAU) Uli, Anambra State, all located in the South Eastern part of Nigeria.

Study Population
This present research involves six hundred (600) medical and paramedical students selected from three higher institutions. The subjects were selected from the schools as follows: One hundred and fifty (150) subjects from Federal University Ndufu-Alike, Ikwo (FUNAI), two hundred (200) subjects from Ebonyi State University (EBSU) and two hundred and fifty (250) subjects from Nnamdi Azikiwe University (NAU). These students (participants) were those that had been in the faculty and have been part of the dissection for at least one full semester and taken examination for at least one semester.

Data collection
The students were called in after a lecture and briefed of their right to anonymity and choice to participation or rejection. They were given about 40 minutes of decision making to either participate or not to participate of which none of them decline to participate instead all of them participated. The questionnaires were administered to them in their classes by the respective facilitators. The questionnaires consisted of 2 sections which include biographical details, small and large group teaching and dissection groups. It contained a close ended questions used to determine which method(s) of teaching gross anatomy better enhances students learning and understanding of the subject matter. The data collected was captured in an excel spreadsheet and analyzed using Statistical

package for Social Sciences (SPSS) version 20.0.

Ethical approval

The ethical approval for the study was obtained from the ethical committee of the faculty of basic Medical Sciences of Federal University Ndufu-Alike Ikwo (FUNAI), Ebonyi State, Nigeria and presented to the various ethical committees of the departments for the schools used in the research.

RESULT

The opinions of some selected students from the faculty of basic medical sciences of three universities such as Federal University Ndufu-Alike, Ikwo (FUNAI), Ebonyi State University (EBSU) Abakaliki and Nnamdi Azikiwe University Uli, Anambra State was taken regarding the best teaching methodology and techniques in gross anatomy with specially framed questionnaire. The result of the administered questionnaire was collated, presented below in tabular format and in chat too for a better understanding.

Table 1.0 showing the responses from the subjects as gather from the questionnaire administered.

S/No	Questions	Responses				
		Strongly agreed	Agreed	Strongly disagreed	Disagreed	Undecided
1	Is cadaveric dissection the best way of teaching and learning gross anatomy?	386.00 ±3.5	147.67 ±2.85	31.00 ±2.08	23.00 ±2.52	42.33± 1.86
2	Gross anatomy can best be thought and learnt through small groups and tutorials.	92.67 ±6.36	90.00 ±5.77	248.67 ±4.67	137.67 ±6.23	34.33 ±7.22
3	The best way to teach and gross anatomy is through lectures and large groups.	22.00 ±12.34	30.00 ±5.77	313.00 ±142.17	70.00 ±5.77	55.00 ±21.80
4	Should dissection be scrapped while students attend lectures alone?	14.00 ±8.19	37.00 ±8.51	340.67 ±66.26	100.00 ±5.77	49.33 ±25.83
5	Should other forms of teaching be combined in except dissection?	36.33 ±13.17	47.00 ±8.89	290.00 ±45.09	103.33 ±8.82	123.33 ±23.33

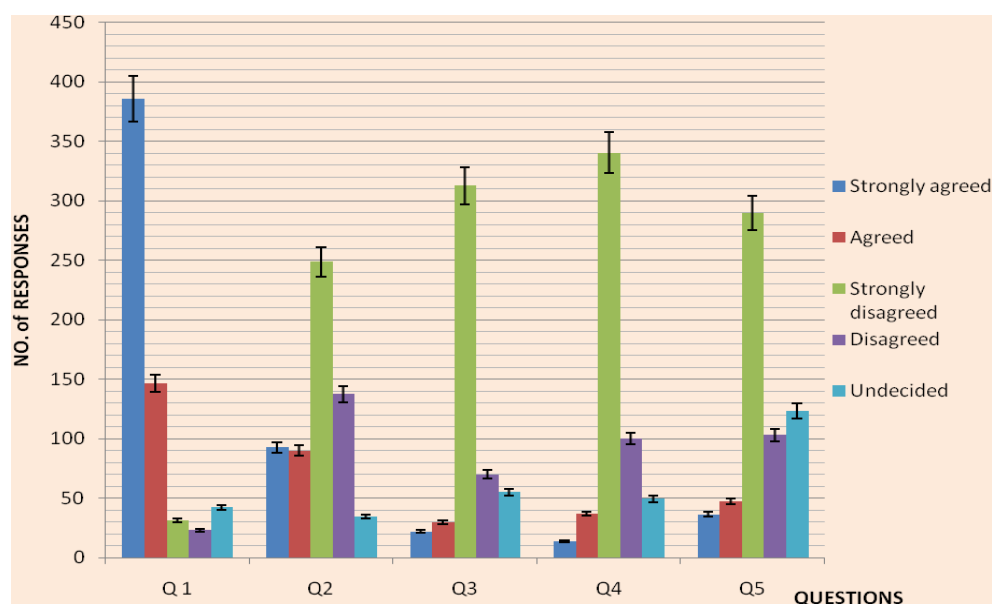*Mean ± SEM
*No of subjects 600.

Fig. 1.0: The chat showing the response of the students/subjects in Mean ± SEM.

DISCUSSION

Over the time, there have been arguments on a better way of effectively teaching gross anatomy [16] and this have generated a lot of controversies as well as caused many scholars to raise their eye brow over the years yet no practical method

has been mapped out to resolve it. In this present research, we consider that cadaveric dissection and the technological resources represent different approaches to learning anatomy to enable students develop necessary practical and theoretical skills they need later in their career. There is a

general notion that lecture method is the best way of communicating or transferring knowledge from the teachers or lecturers to the students. [10] Practical (dissections) have been proved by many to be the best way of transferring knowledge to the students especially in gross anatomy.

As the argument about the best teaching techniques continued, some medical and paramedical (anatomy) schools have replaced their traditional anatomy laboratories with computer rooms [17-19] while some others are actually returning to dissection having understood that it remains the major technique for learning gross anatomy. [20] This debate could actually be a sign of better days ahead in not only the teaching of anatomy and in medical education but also in medical schools across the globe.

In our present study 386.00±3.5 strongly agreed that dissection remains the best way of transferring knowledge. This equally shows that the students learn and retain better what they are taught mostly because they have the opportunity of touching (feeling) what they are being taught. When the number of students that strongly agreed (386.00±3.5) is compared to the ones that strongly disagreed (31.00±2.08), you will understand how highly the students place dissection (practical) in their study of gross anatomy. The students rate dissection so high that they don't want to exchange it for anything. The above result disagrees with the school of thought who believes that dissection is dispensable as reported by. [18,21-25]

The students also supported that dissection should not be tempered with, that is, should not be scraped for any reason whatsoever. This is evidenced in the table above where the students strongly disagreed (340.67±66.26) to the suggestion of scrapping dissection and 100.00±5.77 disagreed compared to only 14.00±8.19 that strongly agreed while 49.33±25.83 are undecided to the suggestion. This is in contrast with the research carried out by, [4] where the stated that the students a scraping

of the traditional anatomy teaching (dissection). Majority of the students (290.00±45.09) strongly disagreed that gross anatomy should be thought without dissection proving that dissection is a major facilitator of students understanding of the course and also supported by 103.33±8.82 who disagreed with the suggestion. This is in agreement with the reports of [26-29] when they stated that "the students maintain that dissection is indispensable in learning gross anatomy. It is also in agreement with the studies comparing the effectiveness of cadaveric dissection versus multimedia programs for learning anatomy which have often supported retaining dissection and using multimedia learning only as a supplement".

CONCLUSION

In this age of exploration wherever one wants to experience new thing especially in computerization, medical schools should also not ignore the students' cry for the real touch and feeling that cadaveric study gives. In this study we conclude that no matter how much of innovation we bring into the class room to teach anatomy, we must not abandon the practical (dissection) aspect of the course. This is because our innovations are meant to improve the students' understanding and not to only make our job easier as some consider. This was prompted by the students' reaction to the questionnaires as discussed above.

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