Research Article

Perception of value and effectiveness of cadaveric dissection in human anatomy teaching among undergraduate and surgical post-graduate students in the university of Nairobi

Abstract

Background: Over the years medical educational approach to the teaching of anatomy has been centered on the use of cadaveric dissection or prosected specimen. However, there is currently a worldwide debate on the value and duration of dissection as a teaching tool in Human Anatomy. Therefore, it was important to determine what the students felt about cadaveric dissection and evaluate its value as a teaching method in learning anatomy.

Objective: To investigate the perception of undergraduate and postgraduate medical and dental students towards the value and effectiveness of cadaveric dissection in the teaching of Human Anatomy at the University of Nairobi.

Methods: A cross sectional descriptive study was conducted. Questionnaires were distributed among undergraduate and postgraduate medical and dental practitioners in the University of Nairobi. The data collected was analyzed using SPSS (Statistics Package for Social Sciences) and presented in tables and graphs

Results: Out of the 107 students sampled, 73.33% were against a reduction in cadaveric dissection because it provides 3D perception of the human body (76.36%) and it assists in relating pathology to the relevant anatomy (70.91%). The students who preferred a reduction in cadaveric reported that it was too time consuming (90%) and felt that the time should be allocated to the clinical sciences (45%). Majority of the post-graduate students sampled thought that learning anatomy was relevant to their current profession (70.67).

Conclusion: The results demonstrate that students perceive cadaveric dissection to be a valuable tool that should remain at the core of learning anatomy.

Keywords: cadaveric dissection, human anatomy teaching, perception

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Introduction

Dissection of human cadavers has a long tradition.[1] It has forged the path for modern anatomical knowledge and plays a vital part in the education of medical students.[2] Cadaveric studies continue to generate valuable discoveries even though fundamental anatomy has mostly been established.

There has been a drastic shift seen in medical training around the world. The traditional subject-based teaching where preclinical basic sciences are taught separately from clinical sciences is beginning to be replaced by a more integrated problem-based method of instruction which use living patients' cases as a learning source to incorporate fundamental and clinical science.[3] Diverse approaches including edifying teaching lectures, practical sessions based on models and cadaveric dissection, information technology (IT) models and radiological images and interactive computer-based software are increasingly being incorporated into the teaching of anatomy.

The medical curriculum includes numerous subjects that must be covered in adequate depth, within a limited timeframe. Therefore, there is a need to adapt a method of instruction that is acceptable, effective and efficient. Dissecting cadavers in anatomy instills respect and empathy among medical students towards both the living and deceased (ref). It gives students the real feel of the tissues, muscles, nerves and vessels deepening their appreciation and understanding of anatomy of the body. However, quite a few potential disadvantages

have been cited including increased expenses, time intensity, the need for lecturers who have credible skills, and the emotionally taxing character of cadaveric dissection potentially causing major psychological stress among medical students.[4] Prosected specimens are an alternative to the dissection of cadavers. Although the physical manipulation of tissues with prosection is less compared to dissection, students learn equally well.[5]

Technology based learning has also been incorporated into the curriculum. Students are increasingly obtaining information through technology and can easily use multimedia assets.[6] Therefore, some are vouching for time allocated to cadaveric studies to be reduced and for universities to move on to more modern methods of teaching. However, there is no scientific proof as to which method of teaching is more effective; the traditional cadaveric or the more modern technology-encompassing methods.[5]

Several studies in the world have been carried out to review the importance of traditional cadaveric learning in comparison to the more modern digital learning. However, there has been no conclusive report as to which one is preferred by both students and lecturers. Published research carried out on this topic in Kenya is limited hence there is inadequate data on the perceived value of cadaveric studies among students in the study of anatomy. Therefore, the objective of this study is to obtain feedback from medical and dental students on their perceived value and effectiveness of dissection as a mode of instruction in Human Anatomy.

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Materials and methodology

Study design

A cross sectional descriptive study was conducted among medical and dental students in the University of Nairobi.

Setting: The study was done at the University of Nairobi in three campuses; chiromo campus, Kenyatta National Hospital (KNH), and dental school where the undergraduate and postgraduate medical and dental students study and do the cadaveric dissection in their first years respectively. The preclinical classes for all of the students are carried out in chiromo campus while clinical years of medical students are done in KNH and dental students at dental school.

Study population: The sampling population was the undergraduate and postgraduate medical and dental students in the University of Nairobi. Only those who consented to the study were included.

Sampling method: Simple random sampling was used select students doing anatomy in Chiromo campus, undergraduate and postgraduate students in KNH and dental school. Sample size was calculated to be 101 students.

Data collection and analysis

The data was collected using a self-administered questionnaire that included demographic information and questions about whether they felt cadaveric dissection should be reduced and the possible reasons for this.

Data collected was analyzed using SPSS (Statistics Package for Social Sciences) and presented in detailed tabulated and graphical form.

Ethical considerations

The proposal was submitted to the Kenyatta National Hospital and University of Nairobi ethics, research and standards committee for approval. Permission was sought to collect data from the relevant authorities from Department of Human Anatomy at the University of Nairobi was done.

Results

Demographic characteristics

A total of 75 participants responded to the questionnaire (75% of the calculated sample size), and among these 40 (53.3%) were male and 35 (46.7 %) were female (Figure 1). The youngest participant was 19 years while, the oldest was 55 years and majority of the participants ranged from the age 22 to 29 years. There were 48 undergraduates and 27 postgraduate students. Most undergraduate students were female and the majority of the postgraduate students were male (Figure 2). The undergraduate students who participated were dental and medical from levels 1 to 6.The postgraduates were those who were pursuing careers in surgical specialties like Oral and maxillofacial , Orthopedic, General, Reconstructive and Plastic, Pediatric and Neurosurgery.

When asked if time allocated for cadaveric dissection should be reduced from the curriculum; 73.3% of the participants were against the idea, while, 26.6% were in support of it. Majority (76.4%) (of those who supported cadaveric dissection expressed the following reasons, it provided a 3 Dimensional (3-D) perception of the human body, followed by 70.9% who felt helped to relate anatomy to pathology, and 63.64% expressed it assisted in making medical diagnosis while in 61.82% it enhanced memory . The least ones were of the opinion it

promoted teamwork (36.4%), developed the skill of following complex instructions(36.4%) provided tactile perception(34.6%) and added a humane component(14.6%) while still maintaining a relation to death and in keeping with main objective of learning discipline (Figure 3). As per the relevance of dissection to their current profession, of the 101 participants 70.7% found it beneficial, 28% gave it a comment of average and 1.3% a waste of time. For the proponents of dissection it was fundamental in teaching Anatomy with 74.3% were in agreement, however, 25.7 % denied regarding its pivotal role.
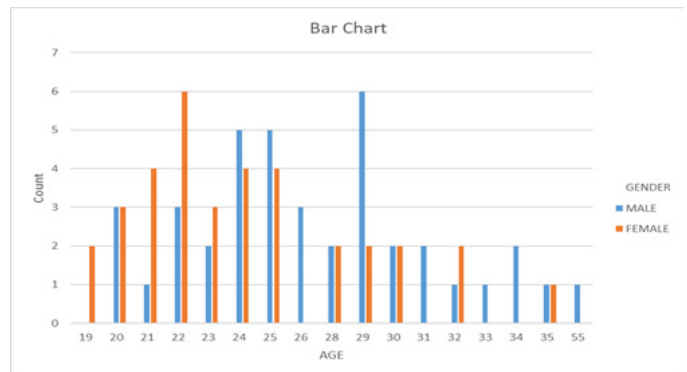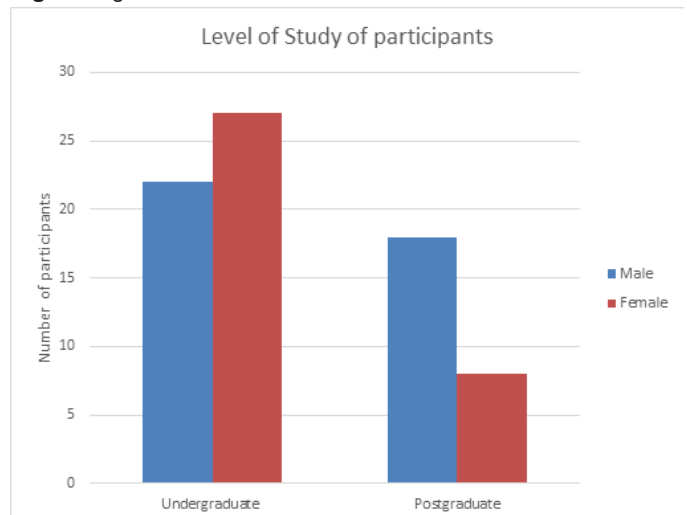

Figure 1 Age and Gender Distribution.

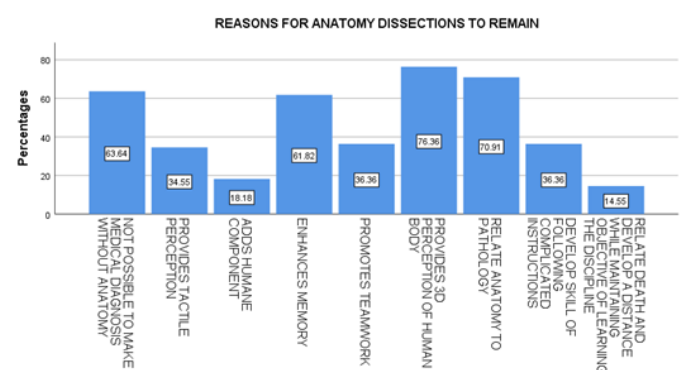**Figure 2** Gender and Graduate level of participants.

Figure 3 Participant reasons for Cadaveric dissection.

Among those who wanted time allocated to cadaveric dissection to be reduced, 90% felt that it was time consuming and 45% would have rather the time spent for clinical services instead. Among the

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reasons expressed by opponents of cadaveric dissection were: risk of spread of infectious diseases (10%), fear of the fixative may be harmful to the human body (35%), this mode of learning was non-humanistic (25%) and therefore clinically irrelevant (20%. There was a 5% of the student population who felt that if the some medical schools were teaching without cadaveric dissection then we should be to do the same (Figure 4). Other methods of learning Anatomy that the study population vouched for was small group learning (52.1%), use of prosected specimens (50.9%), computer aided learning (49.1%), problem-based learning (35.6%) and use of books (13.7%) (Figure 5).

The participants were asked to rate each surgical sub-specialty in terms of the depth of teaching anatomy necessary for that sub-specialty. A score of 1-10 was used; 1 being the least while 10 being the maximum. Five sub-specialties were scored and the averages were as follows: Surgery (8.4), Medicine (6.6), Radiology (6.5), Dentistry (5.8) and Anesthesiology (5.8), indicative how important the teaching of Anatomy was for Surgeons compared to the other specialties.
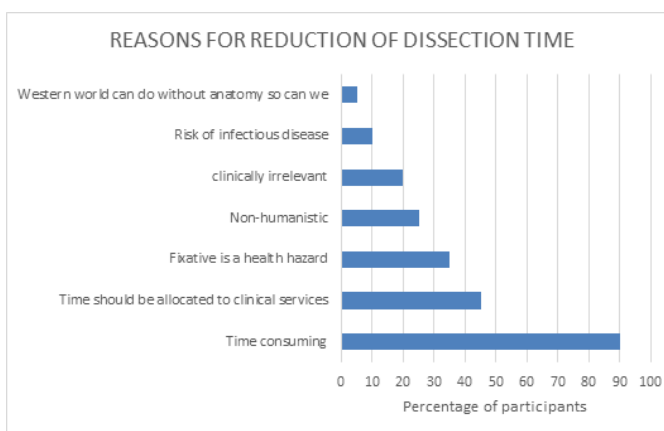

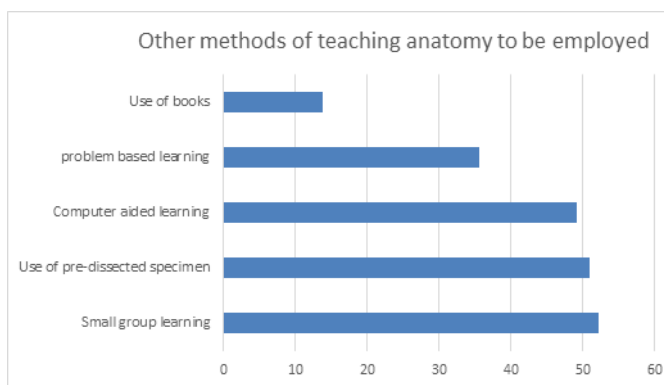**Figure 4** Reasons against Cadaveric Dissection.

Figure 5 Graph showing other methods of teaching anatomy to be employed.

Discussion

Cadaveric Dissection for understanding Human Anatomy still hold a pivotal role as is shown by this study as popular method of teaching the subject. In this study, most of the participants (73.3%) were against the reduction of cadaveric dissection in the teaching of Anatomy similar to were to a study conducted in Griffith University where, the majority of the students were not in favor of the proposition that the dissection program should be eliminated (84.9%) and most of them (68.7%) were satisfied with the time allocated for dissection.[7] Another study in Ghana stated that most of the students held positive perceptions about the usefulness of cadaveric dissections in the teaching and learning of anatomy.[8] However, not all studies similar

to this research reported similar findings. Ghazanfar et al., stated that students with access to dissection rated it to be less useful in comparison to computer-based programs and live surgeries.[9]

Granger et al., stated that dissection is the key in the training of a medical student as it helps the student to develop the 3D awareness of the human body in both visual and tactile ways.[10] Similarly, the present study found that majority of the participants against reduction of cadaveric dissection claimed this method is beneficial as it provides a 3D perception of the human body (76.4%) and that it provides a tactile perception of the tissues and organs of the body (34.5%) thus should remain in the teaching of anatomy. Dissection is important in building interpersonal skills such as the ability to work in a team. Granger et al., says this virtue is significant because it establishes a routine by which the students continue to work in later years as clinicians.[10] Similarly, in this study, 36.4% of respondents said it is advantageous as it promotes teamwork since dissection in the University of Nairobi is done in groups. Previous studies in the UoN by Hussein et al have reported that the bonding of the dissection team helps foster coping with distress of the dissection laboratory as well as stress of first medical students.[11] In the current study, quite a number of the participants (18.2%) perceived this experience of human cadaveric dissections as a means of enhancing respect towards the human body, giving it a humane component. This observation supports Weeks et al.'s consideration that benefits of a dissection program may include the opportunity to develop a relationship between student and cadaver donor which has been coined to be a model of clinician-patient relationship at the very early stages of a developing medical student.[12] Hence the emphasis that cadaveric dissection should be the ideal tool in the teaching of anatomy as expressed by our study population.

Conclusion

The findings of this research demonstrate that cadaveric dissection is a valuable tool in the teaching of anatomy. The students' survey indicates that it is very beneficial in their course and should be the backbone tool in the teaching of anatomy as it facilitates 3D perception of the human body and aids one to relate pathology to the relevant anatomy ultimately guiding medical diagnosis. This research shows that cadaveric dissection should therefore not be reduced rather it should be the core mode of learning anatomy supplemented by lectures, computer aided learning, problem based learning and the use of books.

Acknowledgments

None.

Conflicts of interest

The authors declare no conflicts of interest.

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