



Brief Communication

Cadaver dissection: A positive experience among Saudi female medical students



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Abstract

Objectives: The objectives of this study were to evaluate first-year undergraduate female preclinical medical students' behaviours, experiences, and emotions regarding cadaver dissection. The evaluation was performed during the 2013–2014 academic year, six months after starting the dissection course.

Methods: A 14-statement questionnaire was administered to a group of 200 first-year undergraduate female preclinical medical students at the College of Medicine, King Abdulaziz University (KAU), KSA. For each question, the students responded by selecting either “Yes,” “No,” or “Undecided.” Statistical analysis was performed after collection of the questionnaire responses.

Results: The results showed that 90% of the students agreed that cadaver dissection provided the best and shortest way to study anatomy. Also, 89% were excited during their first visit to the dissection room, and 79% were satisfied that dissection of a cadaver was ethically acceptable. The majority of the students (over 90%) declared that dissection of a cadaver was one of the best teaching strategies for facilitating the acquisition of knowledge of human anatomy.

Conclusions: Saudi female first-year undergraduate medical students at KAU showed positive attitudes toward cadaver dissection during their human anatomy course. This study prompts the need for exploration of gender differences in perception regarding cadaver dissection.

Keywords: Behaviours; Cadaveric dissection; Human anatomy; Medical students; Teaching and learning

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Introduction

It is important for medical students and future doctors, especially surgeons, to acquire basic scientific knowledge of human anatomy. Anatomy is considered to be the backbone of all medical sciences.¹ Anatomical knowledge is of critical necessity in clinical examination of patients, diagnosis of diseases, and consultation with other medical personnel.² During recent years, however, the use of human dissection as a teaching and learning tool has come under controversy.³ Nevertheless, as described by recent research, the field of anatomical study currently retains its status as a basic science in various medical schools.^{4,5} The long-term shortage of optimal knowledge of this important science has a potentially large impact on patient safety. The authors have suggested certain measures which offer the potential to change the current status of anatomical teaching. Such proposals include the introduction of topographical

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anatomy in the preclinical medical years, as well as the introduction of surgical anatomy classes at the postgraduate level of study (with dissection being mandatory at each level).⁴ Unfortunately, however, the shift from traditional medical curricula to more modern teaching and learning approaches, such as problem-based learning, has often resulted in the omission of, or a significant reduction in, cadaveric dissections as a method of anatomical learning.⁶

A 2016 study⁷ offered comparative analysis of the effect of a traditional curriculum versus a three-dimensional software-augmented curriculum on anatomical learning outcomes. The study was performed in a semester-long graduate-level course that included both gross anatomy and neuro-anatomy curricula. The results indicated that students performed comparatively better on assessments when curricular material had utilised 3-dimensional (3D) technology in conjunction with lectures and dissection methodologies than did others whose curriculum had not included this technology. Thus, the study indicated that the addition of 3D learning tools can presumably influence long-term retention of gross anatomy content.

Cadaveric dissection is still an important tool for teaching human anatomy to medical students. However, the method remains subject to notable drawbacks such as being expensive, time consuming, and potentially hazardous.⁸ One of the important (and potentially negative) aspects of such dissection among first-year preclinical students is the difference in emotional reactions when students face a human dissection for the first time. The opinions of students towards dissecting a corpse are varied. Interestingly, previous studies of the reactions of preclinical medical students towards the dissection of a cadaver have been conducted in many universities around the globe.^{9,10} In Saudi society, however, no such studies have previously been conducted—among Saudi female medical students. Therefore, the main objective of this study has been to investigate the perceptions of female medical students towards cadaveric dissection after 6 weeks from the commencement of dissection, during the first year of their medical college study programme. Thus, our null hypothesis was that “Saudi female first-year medical students at King Abdulaziz University (KAU) will have negative attitudes towards the dissection of a cadaver in the course of studying human anatomy”.

Materials and Methods

Type and place of study

The current work is quantitative and investigatory. It was carried out in the female section of the Department of Anatomy, College of Medicine, KAU, Jeddah, KSA.

Study population

The population of this study consisted of 200 first-year preclinical female medical students at the College of Medicine, King Abdulaziz University, who had already taken a mandatory course in anatomy as a part of their study program in the 2013–2014 academic year. The student-to-cadaver ratio was 20:1.

Data collection

All 200 female first-year preclinical medical students were involved in this investigatory study. The students personally had performed the dissections. The overall objectives were described to all students, and a questionnaire composed of 14 items was distributed to each of them upon formal receipt of participatory approval. For each question, the student was presented with the option of choosing between one of the three possible responses: “Yes”, “No,” or “Undecided”. The questionnaire provided students with the

Table 1: The following questionnaire items were used in the current study to determine respondents’ attitudes towards cadaver dissection. The total student sample comprised 100 first-year female medical students at King Abdulaziz University, Jeddah, KSA who completed the questionnaire (not counting 100 others who did not complete it).

Item No.	Particular Question	No. of Responses		
		Yes (%)	No (%)	Undecided (%)
1.	Did you find your first visit to the dissection room to be exciting?	90	8	3
2.	Did you experience any stress at the beginning of the dissection?	36	63	12
3.	Did you experience emotional shock upon first being exposed to the cadaver?	43	51	7
4.	Did you have any fear of touching the cadaver directly?	42	50	9
5.	Did you complain of excessive stress and anxiety immediately before and during dissection?	25	69	7
6.	Did you ever think that the cadaver you dissected was once a living human being similar to yourself?	83	14	4
7.	Did you ever experience any kind-heartedness and regard for the cadaver you dissected?	91	7	3
8.	Did you believe that you could perform the dissection with the help of your teacher?	86	11	4
9.	Did you believe that dissection potentiates thinking skills in an orderly manner?	78	8	15
10.	Did you see dissection as providing the best method for learning anatomy?	91	5	5
11.	Did you think that the dissection of a cadaver is ethically acceptable?	80	8	13
12.	Did you believe that plastic models, computer-based training programmes, etc. can substitute for dissection of cadavers in future?	32	59	10
13.	Did you find that participating in cadaver dissection provides more opportunities to develop professional skills than does the observation of prosected specimens or demonstrations of professional dissections?	84	6	11
14.	Did you think dissection is still a valid means of studying anatomy?	91	4	6

opportunity to provide information about their first visit to a dissection room. It asked whether the student experienced emotional shock and other feelings, including anxiety and stress, upon initial exposure to the cadaver. It asked whether students engaged in mental preparation before the dissection; or whether they felt sympathy for the deceased and respect for the cadaver. It also asked whether students had prior experience with a dead body, and whether the dissection had an impact on their coping mechanism. It asked whether students favoured possible alternatives to cadaver dissection, such as replacing that methodology with one involving manipulation of plastic models or virtual dissection using a computer-assisted training programme. Lastly, it asked whether students viewed actual cadaver dissection as being of indispensable importance.⁹ All of the questions in the questionnaire were answered by students. Questionnaire responses were then collected for subsequent data analysis.

Statistical analysis

Data analysis and statistical description of replies to each question was conducted using SPSS (Statistical Package for the Social Sciences) Version 20.0. The results were discussed in light of the available literature.

Results

Only 100 (50%) out of 200 students answered the questions. Thus, only 100 questionnaires were analysed. These questionnaires are shown in Table 1. Respondents were all Saudi first-year female students of the medical college. The students' mean age was 21 ± 2 years. The responses of students' attitudes towards cadaver dissection are shown in

Table 1. The total 14-item questionnaire scale is shown in Figure 1.

A three-point Likert scale was used to collect data from the respondents. Positive-key items are items that are phrased such that an agreement with the item represents a relatively high level of the measured attribute. Each is rated on a three-point scale (Yes = 3, Undecided = 2, No = 1). Negative-key items are also phrased items so that an agreement with the item represents a relatively low level of the measured attribute. Reverse scoring was applied to the negative items (questions 2, 3, 5, 6, and 16). Validity testing was used for understanding the inter-item correlations. Reliability test analysis was used to assess the consistency of the test results; and Cronbach's alpha coefficient was determined to measure internal consistency.

The results obtained after the data analysis demonstrate that 90% of the student respondents agreed that the dissection of a cadaver provides the best and most direct means of studying anatomy. 89% showed excitement during their first visit to the dissection room, and 79% said that the dissection of a cadaver is acceptable from an ethical point of view. A vast percentage of the students (over 90%) certified that the dissection of a cadaver is one of the best and most indispensable methods of studying human anatomy. Also, 85% declared that they need a teacher to help with dissection. Based on all of the data, and according to the Likert scale index, we can acceptably conclude as correct our experimental hypothesis, "Saudi first-year female medical students of the College of Medicine, KAU, have a significantly positive attitude towards the dissection of a cadaver in the learning of human anatomy. Therefore, we reject our null hypothesis that "Saudi female first-year medical students of the College of Medicine, KAU, have negative attitudes towards the dissection of a cadaver in the study of human anatomy."

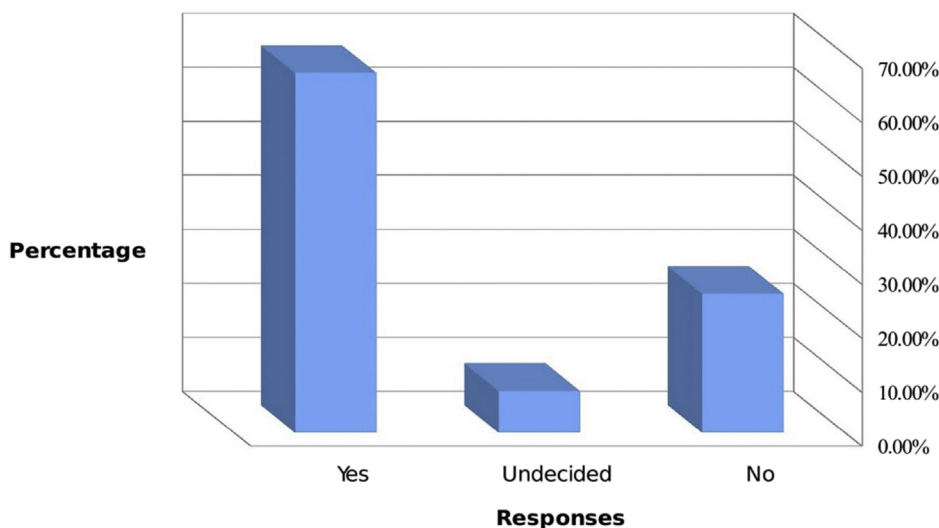


Figure 1: The aggregate responses to all 14 items in the submitted questionnaire are presented above. Analysis was performed using SPSS. A three-point Likert scale was used in collecting data from the respondents. Positive-key items are items that are phrased so that an agreement with the item represents a relatively high level of the measured attribute, which is rated on a three-point scale (Yes = 3, Undecided = 2, No = 1).

Discussion

The present research was conducted to evaluate the attitudes of Saudi female preclinical medical students toward cadaver dissection during their course of study in human anatomy.

An analysis of the questionnaires revealed that a vast majority of the students (90%) identify dissection of a cadaver as being of critical importance in the learning of human anatomy. Similar results have previously been reported by other investigators in other medical schools, in studies addressing the relationship between medical students and cadaver dissection.¹¹ Likewise, it has been observed that manual skills learnt inside the dissection hall are essential and of compulsory necessity in the medical profession.¹¹ Moreover, it has been reported that dissection is an essential tool in the learning of anatomy—particularly the three-dimensional aspect of human anatomy.¹² Additionally, in another study regarding the best method for teaching anatomy, 91% of students agreed that dissection of a cadaver is still the preferred way for studying human anatomy.¹³ This finding replicated those of other studies.^{12–14} In the current study, only a minority of the respondent female students (36.6%) agreed that “dissection of cadaver can be substituted by plastic models, computer-based training programmes, etc. in the future.” (Future research might investigate whether this percentage might be altered if the students had already been exposed to or provided with access to plastic models and computer-based training programmes for learning anatomy, and whether they felt they had garnered practical knowledge from each.) For now, the current findings strengthen the idea that dissection continues to be viewed by medical students as the best method for teaching anatomy, and of even greater value than computer-aided programs would be. The students’ exposure to cadaver dissection remains an important component of medical education.¹²

Interestingly, a high percentage of the students (81%) agreed that actually dissecting the cadaver as part of their training results in a more favourable outcome than would merely viewing demonstrations of prosected specimens and potentiates their understanding of essential content (as defined by the objectives of the course). Likewise, 77% of the students agreed that dissection “potentiates” (enhances) thinking skills in an orderly (logically ordered) manner. These findings are in conformity with the results obtained from previously conducted studies on the attitudes towards cadaver dissection in Nigeria and cadaver dissection’s role in anatomy learning in India.^{9,15}

The present study also showed that 98% of the responding students found their first visit to dissection room to be very exciting, while the minority (25%) suffered very little or no stress during dissection. Moreover, more than 50% of the students claimed to have demonstrated no emotional reaction upon primary exposure to a human cadaver. In consistency with this result, many researchers have reported that a majority of first-year preclinical medical student respondents showed excitement and interest during their first visit to the dissection hall. One of the earlier studies reported on students’ initial encounter with a cadaver in the dissecting room, also supports this finding.¹⁶ On the other hand, a small

percentage of students still report human dissection to be a traumatic experience.¹⁷ Moreover, a recently conducted study among medical, dentistry, and pharmacy faculty showed that a medium level of anxiety was detected among the students during their primary exposure to cadaver.¹⁸

In summary, the current study indicated that most of the Saudi female first-year medical students exhibited excitement during their first visit to dissection. Moreover, many of the students (a large percentage) think that dissection of human body is one of the best methods for understanding the human anatomy.

Conclusions

In general, Saudi female first-year undergraduate medical students at the College of Medicine, KAU have positive attitudes toward cadaver dissection in the learning of human anatomy. A majority of the students are of the view that dissection is vital and consider it to be the best method for the study of human anatomy. Most of the students found their first visit to the dissection room to be exciting. Moreover, majority of the students agreed that they would prefer to perform dissection with the assistance of their teacher.

Further evaluation on a larger population of study is warranted. Additionally, medical schools’ curricula should place great emphasis on the importance of cadaver dissection in the learning of anatomy. Hence, no other teaching-learning method should displace or even substitute for dissection. We also recommend, within the medical curriculum, the inclusion of courses on emotions and how to manage them. Furthermore, evaluation of gender differences in behaviour and emotional response towards cadavers is recommended.

Conflicts of interest

The authors have no conflicts of interest to declare.

Ethics and informed consent

This work has been approved by the Biomedical Ethics Research Committee, Faculty of Medicine, King Abdulaziz University, Jeddah, KSA.

Authors’ contributions

All the authors actively contributed in carrying out the study. NA Rajeh and LE Badroun conceptualized the study design. AK Alqarni, BA Alzhrani, BS Alallah, SA Almgh-rabi and LA Almalki actively participated in the study under the supervision of NA Rajeh and LE Bardoun. NA Rajeh prepared the draft manuscript and revised it. LE Badroun also assisted NA Rajeh in drafting the manuscript.

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