

## Perceptions of medical students undergoing cadaveric training

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### Abstract

**Background and objective:** Anatomy education is a principal subject within international medical and scientific curricula. Evidence based literature suggests that cadaver dissection is highly effective in establishing and retaining anatomy concepts. This study aimed to examine the perceptions of medical students about socio-cognitive aspects of dissection of human body in the Department of Anatomy at the College of Medicine, Hawler Medical University, Erbil. More specifically, the study tried to find out perceptions and level of satisfaction of medical students with engagement factors that improve positive satisfaction in learning.

**Methods:** This is a descriptive cross-sectional study that included 169 first year medical students in the College of Medicine, Hawler Medical University. A self-administered questionnaire was distributed to the medical students during their practical anatomy sessions in the Department of Anatomy.

**Results:** More than half of the students (55%) felt normal on their first exposure to dissection. Almost around half of the students (48.6%) had increased value for fellow humans following cadaveric training. More than 95% of them thought that improvement is needed in the cadaveric training. About 40% of the respondents had a good adaptation to cadaveric training.

**Conclusion:** The traditional dissection laboratory must remain the center for teaching and learning anatomy. It is necessary to examine the curriculum and the mode of teaching. Factors that improve positive perceptions and in learning, like helpful environment and adequate dissection instructors should be thoroughly engaged in the training of our future doctors.

**Keywords:** Perceptions; Medical Students; Socio-cognitive; Cadaveric Training; Dissection.

### Introduction

Cadaveric training is fundamental for all branches of medicine, as it is the essence of surgeons' invasive operations, physicians performing emergency procedures or instructors illustrating theoretical concepts. As the methods of education are undergoing cardinal changes, cadaveric training seems to be fallen and tapering gradually.<sup>1-4</sup> The emotional and socio-cognitive aspects of human dissection are important aspects of professionalism in medical training so should be critically evaluated and assessed. The emotional aspects of

dissection are principal requirements in professionalism which in turn signifies medical integrity and guarantees correct professional conduct.<sup>5</sup> Following the crowding of medical curriculum by experimental sciences in recent time, anatomists rethought what dissecting a human body could offer medical students. Hence, modifications of curricula started by a gradual reduction in dissecting periods to accommodate an alternate increase in the study of other experimental sciences.<sup>6</sup> Several studies have shown that dissection is the best way for medical students to deeply understand the structure of human

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body which makes learning interesting and introduces them to emergency procedures. Having more cadavers reduces the number of students per group and encourages teamwork, familiarization of the body, application of practical skills, integration of theory and practice, preparation for clinical work, and acknowledgement of the status of dissection within the history of medicine.<sup>7-8</sup> The teaching methods adopted are largely based on an institution's internal policies, available resources and individual perceptions. Lack of unified view on a common curriculum has resulted in numerous new curricula to be introduced in institutions, without any prior audit or validation.<sup>9</sup> Considering the necessity of dissection to medical training, various ideas have revived attention to the emotional experience of dissection and provoked a renewed discussion about the relationship between the affective components of learning anatomy and the professional formation of future doctors.<sup>5</sup> Advanced digital teaching methods provide excellent opportunities for prospective concepts and provide an understanding of difficult areas.<sup>10-11</sup> Computerized programs, in addition to decreased cost and labor, allow a sequence of pictures to build up in a very short periods and is reversible and repeatable. Despite these added advantages, computer-generated models are lacking in the variations and pathology of a real human body.<sup>12</sup> Neglecting of the cadaveric training may yield a generation of "incompetent anatomists and healthcare professionals, leaving patients to face severe consequence".<sup>3</sup> Meanwhile, when the modern learners seem to be turning away from dissection towards technology; students and general public still have high regard for the cadaver dissection. A significant majority of the students believe that dissection is very important for understanding of details of anatomy because other methods like computerized learning and palatinate cadavers will not represent the real image of dissected cadaver, making learning interesting and

introducing them to emergency procedures.<sup>7-8,13</sup> However, there are some clear drawbacks of dissection as would be part of any other tool. Physical manipulation of cadavers to obtain diverse viewpoints is usually boring and often, impossible. The active efforts required to reveal structural details can be tardy for students as well as teachers at times, especially when there are students overload and time restrictions. Reduced numbers of "qualified" anatomy instructors,<sup>14</sup> health risks associated with dead bodies,<sup>15-16</sup> extended formalin exposures,<sup>17</sup> and decreased availability of bodies<sup>18</sup> and ethical issues<sup>19</sup> have played directly upon the dissection. Dissection is essentially a one way process and "what has been done cannot be undone". It prevents reconstruction of the structures once they have been cut. Furthermore, ethical and emotional biases and tiresome legal procedures have made it difficult to obtain sufficient human bodies to meet the rising cadaver-student ratio. Student contact with cadavers is important in order to enhance communication and teamwork and may also increase the likelihood of cognitive permanence of anatomical data.<sup>20-21</sup> The aim of this study was to examine the perceptions of medical students about socio-cognitive aspects of dissection of human body in the Department of Anatomy at the College of Medicine, Hawler Medical University, Erbil. More specifically, the study tried to recognize the emotional and cognitive aspects of dissection in terms of students' adaptation to cadaveric training and feeling about fellow humans, to find out the level of satisfaction of medical students in learning and to find out the engagement factors that improve positive satisfaction in learning, like adequate dissection instructors, use of models and computer assisted learning, and provision of more cadavers.

## Methods

### Design, setting and time of the study:

This cross-sectional descriptive study was

carried out in Erbil city. It was conducted during February to June 2014.

**Sample size and sample selection:**

The total number of first year students of the academic year 2013-2014 was 169 students. This study aimed to include all first year medical students who agreed to participate in the study voluntarily.

**Questionnaires:**

A modified self-administered questionnaire in English language was designed and distributed to medical students during their practical anatomy session in the Department of Anatomy<sup>6</sup> (Annex 1).

**Data entry and analysis:**

The statistical package for the social science (version 19.1) was used for data entry and analysis. Appropriate statistical tests for both categorical and numerical variables were used.

**Ethical Consideration:**

The participation in this study was voluntarily and informed consents were taken from those who participated. The

anonymity of the participants has been preserved. The research protocol was reviewed and approved by the Scientific and Ethical Committee of Kurdistan Board for Medical Specialties.

**Results**

A total of 146 students responded to the questionnaire (response rate 86%); 66 males (45.2%) and 80 females (54.8%) with age less than 20 years old constitutes the majority age group (76%). Regarding feelings of the students on their first exposure to dissection; about half of them felt normal (55%) as shown in Table 1. Regarding how cadaveric training has changed their perception about their fellow humans, nearly half of the students (48.6%) had increased value for fellow humans, while about one third (28.8%) felt no effect (Table 2). On whether they needed improvement in their cadaveric training or not, 95.2% of them said “Yes” while 4.8% said “No” (Table 3).

**Table 1:** Summary of report of feeling after first experience.

Report of feeling	Frequency	(%)
Excited/Fulfilled	26	17.8
Normal	80	54.8
Discomfort	21	14.4
Scared	11	7.5
Life is undervalued	8	5.5
Total	146	100.0

**Table 2:** Summary of perception of feeling about fellow humans.

Perception	Frequency	(%)
Humans are learning instruments	24	16.4
Humans should be more appreciated	71	48.6
Humans are like animals	8	5.5
No effect	42	28.8
No suggestion	1	0.7
Total	146	100.0

**Table 3:** Students perception on improvement of cadaveric training.

Do you need improvement in cadaveric training?	Frequency	(%)
Yes	139	95.2
No	7	4.8
Total	146	100.0

Suggestions on what the authorities should do to improve training are summarized in Table 4. Table 5 shows that 59 (40.4%) of the respondents had a fairly good adaptation rate to cadaveric training, while only 14 (9.6%) of them had a very poor adaptation rate to cadaveric dissection.

### Discussion

Teaching of human anatomy is undergoing a major refurbish worldwide.<sup>3,22</sup> A cadaver dissection laboratory allows the first visual and tactile experience of "human body and life" for aspiring future physicians.<sup>23</sup> Dissection prepares the medical students to confidently face the picture of death that is so important in treating life. There is no "short cut" way around it. As stated by Granger, "the cadaver provides an appreciation of human life through an understanding of death and dying".<sup>24</sup> Three-dimensional visualization has the most significant impact on the teaching and learning of gross anatomy and since times

immemorial, the main source of haptic three-dimensional learning has been cadaver dissection. It allows students a first-hand access to the actual structures and three dimensional spatial relationships of the body.<sup>12</sup> The experience of cutting through various layers of the body to discover clinically vital structures is un-parallel. The anxiety level of the students to cadaveric training was quite low, which is noted in the high percentage of the students (54.8%) who were not affected by their first experience of dissection in contrast to a Nigerian study which showed that a high anxiety level among the students (36% excited).<sup>6</sup> This represents large fractions that have totally conditioned their minds towards the type of training required in the medical school. About one-fifth (17.8%) of the students felt excited on their first experience probably established by their senior colleagues thereby making most of them ready to an extent to face cadaveric training. The

**Table 4:** Summary of suggestions for improvement in cadaveric training.

Suggestions	Frequency	(%)
Provision of more cadavers	42	30
Conducive learning environment and employing more demonstrators	40	29
Use of models and Computer assisted learning	25	18
Improve on preservation techniques	21	15
No suggestion	12	1

**Table 5:** Adaptation rate of the students to cadaveric training.

Rating	Frequency	(%)
Excellent	26	17.8
Fairly good	59	40.4
Poor	34	23.3
Very poor	14	9.6
I don't know	13	8.9
Total	146	100.0

discomfort felt by the small percentage (14.4%) of respondents could be attributed to the irritating smell of the fixatives used and the seemingly unfriendly environment.<sup>6</sup> Only 5.5% were induced by their sight to think that life is undervalued through dissection at that initial stage and may not have evaluated the importance of dissection in their training. On whether cadaveric training has affected the way they perceive humanity and life, 48.6% of the study participants were of the opinion that dissection has increased their value for life. This is important in the recent arguments on certain ethical and professional issues like criminal abortion, mercy killing etc, 5.5% felt that dissection made them look at humans as special animals and 16.4% felt that every human is a potential instrument of anatomical learning. However, such perceptions could negatively impact on some ethical and medico-legal considerations whereby patients are taken as learning apparatus for acquisition of medical knowledge. About 60% of the students thought that there is a need for improvement in cadaveric training. This figure is less than the figure of a study conducted in Nigeria which revealed that 90% of the students think that improvement is needed in their training.<sup>6</sup> This could be attributed to the fact that our students have low knowledge about the new techniques which have been newly introduced in this discipline. The greater percentage of the students (30%) suggested providing more cadavers to improve training. This suggestion conforms to another study which noted that more cadavers reduce number of students per group and encourages teamwork, respect for the body, familiarization of the body, application of practical skills, integration of theory and practice, preparation for clinical work, and acknowledgement of the status of dissection within the history of medicine.<sup>6,8</sup> A high percentage of the students (29%) suggested improved comfort within the dissecting environment with the provision of room furnishings like

air-conditioners, odor control agents and employment of more instructors for guidance during dissection. More students still prefer the use of cadavers (30%) to outright use of models and computer assisted learning (18%) in their training. Therefore, constant inculcation, directions and redirections should be encouraged during orientation and reorientation programs for the prime values of life to be sustained in anatomy and medicine. About 15% of the students suggested improvements in preservation techniques used on the cadavers by provision of extra-large preservation tanks to avoid compression of the stored cadavers and if possible, using less irritating fixatives and voiding the purchase of battered bodies can help sustain preserved bodies, as these bodies are near decay before they are brought to the medical schools for use. The students self-rating on adaptation rate were encouraging and 40.4% adapted fairly well while 17.8% felt they adapted excellently. The rest felt they had poor and very poor adapting abilities/skills and may be related to the level of student attrition. This study was conducted in only one medical school. The sample size may appear small and may not be generalized to all medical schools in Kurdistan. Nevertheless, the study center mirrors a typical Kurdistan setting and as such measures recommended here should be applied to all schools. Future research directions include the impact of the cognitive and affective aspects of students' responses to dissection on their academic performances and post-graduate aspirations.

## Conclusion

The dissected cadaver remains the most preferred means of presenting anatomy compared to the use of models and computer assisted learning. Most of the students are found to have good adaptation rate for the cadaveric training with low anxiety toward cadaver. Provision of more cadavers and a better preservation

are the major factors that improve student's satisfaction. In Iraq and most developing countries, there has been a steady fight to increase funding in universities. Therefore, medical schools should seek funding to help alleviate the physical and infrastructural problems that handicap training in anatomy. Such funds should be used to provide more cadavers, employ more instructors, provide modern computer assisted learning processes to supplement dissection and initiate small group, problem based learning that ultimately improves training quality of our future healers and teachers. Dissection can also be used as an opportunity for independent, self-directed learning where student groups can voluntarily dissect at their own convenient times. This innovative approach will help to overcome the student overload and time constraint issues.

#### Conflicts of interest

The author reports no conflicts of interest.

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