

## How to decrease the emotional impact of cadaver dissection in medical students

Javadnia F, PhD<sup>1</sup>; Hashemitabar M, PhD<sup>2</sup>;  
Kalantarmahdavi SR, MSc<sup>2</sup>; Khajehmoughi N, MSc<sup>3</sup>

<sup>1</sup> Head of Anatomical Sciences Department, School of Medicine, Jundi Shapour University of Medical Sciences, Ahwaz

<sup>2</sup> Anatomy Department, Jundi Shapour University of Medical Sciences

<sup>3</sup> Clinical Psychologist, Psychiatry Department.

Received: March, 2005

Accepted: June, 2005

### Abstract

**Background.** Teaching anatomy is based on cadaver dissection. Working with cadavers, whether through active dissection or by examination of prosected specimens, constitutes a potential stressor in medical education.

**Purpose.** To reduce the anxiety of the medical students by mentally preparing them before going to the dissection room.

**Methods.** The questionnaires were distributed among 68 medical students. The pre-dissection questionnaire comprised questions related to demographic data and the first encounter with a cadaver. The students were randomly divided into experimental and control groups. The experimental group was prepared psychologically prior to dissection, but the control group entered the dissection room without any preparation. After the first dissection class, all students were surveyed by the second questionnaire which surveyed physical and cognitive symptoms of anxiety, resulting from exposure to the dissection room at the first visit and six weeks later.

**Results.** There was a significant difference ( $p < .05$ ) in the rate of anxiety between experimental and control group in the initial visit. The difference in the rate of anxiety between the first exposure and six weeks later was significant in control group ( $p < .008$ ), while it was not significant in the experimental group.

**Conclusion.** The initial preparation could relatively reduce the rate of stress, so that the experimental group experienced less emotional effects during dissection compared to control group.

**Keyword.** EMOTIONAL IMPACT, CADAVER DISSECTION, MEDICAL STUDENTS

*Journal of Medical Education Spring 2005; 7(1);26-30*

### Introduction

Dissection of the dead human body has been central to medical education since Renaissance (1, 2). Indeed, the Greek roots of the word anatomy indicate cutting up (2), so many anatomists are adamant that dissection is the best way

to learn anatomy (1, 2, 3, 4). Thai students see the cadavers as great teachers and thus attribute a social role and status to it (5). Dyne and Thorndike described dissection as the most universal and universally recognizable step in becoming a doctor (2). Despite recent change to organization of medical curricula, the use of dissection and dissected parts in the study of human anatomy remains a common way in anatomy education (6). The anatomy dissection laboratory represents a significant emotional challenge to many medical students and even found symptoms suggestive of post-traumatic

**Corresponding author:** Dr. F. Javadnia, Anatomical Sciences Department, School of Medicine, Jundi Shapour University of Medical Sciences, Ahwaz, Iran  
Tel: 09161111833  
Fax: 06113332036  
Email: javadnia\_f@yahoo.com

stress disorder (P T S D) in a few students (3, 6, 7). Contact with the cadaver can be highly stressful for some students (8). The majority of students expressed a negative experience, that it is necessary to support them before initiation dissection (9). There is further evidence suggest that after a few days, the dramatic impact of cadaver dissection starts to diminish (10). Nevertheless it is arguable that experience with dissection gives students a better appreciation of the 3-dimensional view of human anatomy, something that is not possible with plastic models, and a better understanding of normal variation in human anatomy (1, 2). The emotional responses of students to the dissected body are more widely reported; several studies suggest that some students suffer stress reactions which significantly impair their learning of anatomy (11, 12). A medical student saying: "the first cut through the skin (of a cadaver) is really bad, but when you get down there and it begins to look like the anatomy book and It doesn't look like a human being anymore, it's not so bad" (3, 10). The students who have experience with the dead body will be better equipped to deal with issues surrounding death and more aware of medical uncertainty, this will make them better clinicians (1). Previous studies showed that the course of gross anatomy has profound effects upon young medical students. So, in order to assess the impact of anxiety and physical symptoms from the experience of dissection room, we prepared questionnaires to see whether emotional stress can be diminished and to see the changes in feeling and attitude in control and experimental groups.

### Material & Methods

A quasi-experimental study was conducted on 90 first year medical students at Jundi-Shapour University of Medical Sciences in 2003-2004. The questionnaires were filled out at three different times and settings. Questionnaire No.1 was given to each student before visiting the dissecting room, which comprised questions related to demographic information of the respondents, any pervious exposure to dead

bodies and varying degree of fear or stress in the students. Students were then randomly divided in two experimental (n=31) and control (n=37) groups. The experimental group was mentally prepared for coping with dissection and was provided by information regarding: (1) source of cadavers and the process of fixation and legal arrangements including the reception, disposal and burial of cadaver; (2) the advantages of using dissection for a better appreciation of the three-dimensional picture of human body and understanding normal variations. The students in control group went to the dissection room without any preparation. After the first exposure to cadaver, both groups were surveyed by questionnaire No.2 which included physical (nausea, dizziness, weakness, restlessness) and cognitive (lack of concentration) symptoms of anxiety based on Back Anxiety Inventory (BAI) that asks the students to express their feeling/emotional responses in the first visit and after six weeks of exposures to dissecting room. Physical symptoms were reported as "not at all/vague/moderate/bad/very bad" and these gradations were assigned numerical values from 0 to 4. Stress was recorded on a numerical scale from 0 to 4; i.e.0 represents "no stress" and 4 "very stressful" (4).

Categorical variables were tested and compared using Chi-square and Fisher's Exact Test. In the case of paired data, the Willcoxon Signed Ranks Test was used. For comparing anxiety between experimental and control group, Mann-Whitney test was used.

### Results

From 90 students only 68 completed questionnaires. The uncompleted questionnaires were excluded from our study. The results of questionnaire No.1 showed that the 18 students were male (26.5%) and the rest were female (n=50, 73.5%), with a mean age of 18.5 years (ranged between 17-22).

There was no statistically significant difference found amongst the students of experimental and control group in: having fear or stress

previously; seeing a dead body before; having any unpleasant feeling while entering the dissection room for the first time; and having stress for going to dissection room before initial cadaver dissection (Table 1). The results of questionnaire No.2, including the physical symptoms (nausea, dizziness, weakness, restlessness, fear) and cognitive symptom (lack of concentration) are shown in Table 2. The lack of concentration value was significantly decreased in control group after six weeks ( $p<.05$ ) while there was no significant difference in lack of concentration in experimental group in the first and after six weeks of exposure to cadaver. Thrate of anxiety was statistically different between experimental and control group ( $p<.01$ ) in the initial visit.

The difference in the rate of anxiety between initial visit and six weeks later was significant ( $p<.01$ ) in the control group, but there was no such difference in the experimental group. Distribution of anxiety rate among the experimental and control groups are shown in Figure 1. There was not a statistically significant difference in the rate of anxiety between experimental and control group after six weeks.

## Discussion

Previous studies demonstrated that challenging events exist for the first year medical students in dissecting room, which have a great impact on their education. Attitudes towards cadaver learning were explored by the statement 3 in questionnaire No.1. Some students in both groups had an experience of seeing a dead body before entering the dissection room. This is in accordance with the studies of Horne et al and Nnodim who reported the stressful reactions in first year medical students who encounter with a cadaver for the first time in dissecting room. Horne et al reported that although 62% had had prior exposure to a dead body, but it was necessary to prepare them more for the dissection experience by discussing over anatomy stuff (11). Nnodim found that 40% of students had seen a dead body before and also found that it was more likely for female students to report distress caused by work in dissecting room (15). Anxiety in female students due to dissecting room work also was found by other studies (9, 13, 15). Nevertheless, it has been

**Table 1.** Percentages of responses to the questionnaire No.1

		Experimental group N (%)	Control group N (%)
Age	17	1 (3.2)	3 (8.1)
	18-20	30 (96.8)	33 (89.2)
	21-22	0	1 (2.7)
Sex	Female	24 (77.4)	26 (70.3)
	Male	7 (22.6)	11 (29.7)
Have you ever had any fear or stress till now?	Yes	28 (90.3)	34 (91.9)
	No	3 (9.7)	3 (8.1)
Had ever seen a dead body before?	Yes	10 (32.3)	14 (37.8)
	No	21 (67.7)	23 (62.2)
How do you feel now that you want to enter the dissecting room for the first time ?	Pleasant	18 (58.1)	15 (40.5)
	Unpleasant	7 (22.6)	9 (24.4)
	Without any feeling	6 (19.3)	13 (35.1)
Do you feel stressful now you want to enter the dissection room?	Yes	13 (41.9)	15 (40.5)
	No	18 (58.1)	22 (59.5)

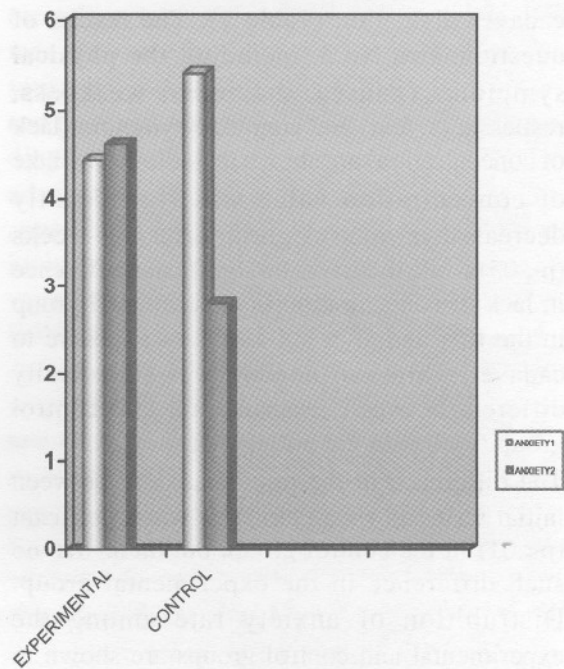
that students rapidly develop a coping mechanism that enables them to depersonalize cadaver dissection (10).

To achieve better educational results, mental preparation was applied for the medical students in the experimental group. The results of questionnaire No.2 in the first visit and after six weeks demonstrated that preparation of students enables them to adapt themselves and to start learning in dissecting room as soon as possible. But this coping mechanism and accommodation to dissecting room needed six weeks to develop in non-oriented control group. It seems that mental preparation is a useful method for reducing anxiety and it saves six weeks, which could constitute a wasted time due to anxiety, lack of concentration and other emotional events. This finding is supported by other investigator (6, 11, 13), so in order to improve and gain better advantages of dissection, we have to prepare the students mentally and emotionally before entering the dissection theatre.

**Acknowledgements**

Special thanks to all the students that took part in this study; and also grateful thanks to Mrs Azadeh Saki who helped us conduct and

**Figure 1-** Comparison between the rate of anxiety in the first week and six weeks later in the experimental and control groups.



complete the statistical analysis.

**References**

1. Parker LM. What's wrong with the dead body?

**Tabel 2.** Level of physical symptoms suffered by students in anatomy theatre

Symptom	Initial visit		6 weeks later	
	Experimental N(%)	Control N (%)	Experimental N(%)	Control N (%)
	Nausea	9 (29)	12 (33)	9 (29)
Dizziness	4 (2.9)	6 (16.2)	6 (19)	6 (16.6)
Weakness	8 (25.8)	8 (22)	6 (19)	4 (11.11)
Fear	10 (32)	14 (37.8)	5 (16.2)	6 (16.6)
Restlessness	6 (19)	9 (24)	7 (22.5)	5 (13.9)
Lack of concentration	12 (38.7)	18 (48.7)	11 (35.5)	6 (16.6)

- Use of the human cadaver in medical education. *Med J Australia* January 2002;176(2): 74-76.
2. Mclachlan J, Bradley P, Searle J, Bligh J. Teaching anatomy without cadavers. *Med Educ* 2004; 38: 418-24.
  3. O'carroll RE, Whiten S, Jakson D, Sinclair DW. Assessing the emotional impact of cadaver dissection on medical students. *Med Educ* 2002; 36:550-554
  4. Snelling J, Sahai A, Ellis H. Attitudes of medical and dental students to dissection. *Clin Anat* 2003; 16:165-172 .
  5. Winkelmann A, Culdner FH. Cadavers as teachers :the dissecting room experience in Thailand. *BMJ* 2004; 329: 18- 25.
  6. McGarvey MA, Farrell T, Conroy RM , Kandiah S, Monkhouse WS . Dissection: a positive experience. *Clin Anat* 2001; 14(3):227-30 .
  7. Weeks SE, Harris EE , Kinzey WG. Human gross anatomy: a crucial time to encourage respect and compassion in students. *Clin Anat* 1995; 8(1):69-79 .
  8. Cahill DR, Leonard RJ. The role of computers and dissection in teaching anatomy: a comment [editorial]. *Clin Anat* 1997; 10:140-141.
  9. Charlton R, Dovey SM, Jones DG, Blunt A. Effects of cadaver dissection on the attitudes of medical students. *Med Educ* 1994; 28(4):290-295 .
  10. Dinsmore CE, Daugherty S, Zeitz HJ. Student responses to the gross anatomy laboratory in a medical curriculum. *Clin Anat* 2001 May;14 (3):231-6.
  11. Horne DJ, Tiller JW, Eizenberg N, Tashevska M, Biddle N. Reactions of first year medical students to their initial encounter with a cadaver in the dissecting room. *Acad Med* 1990; 65:645-646.
  12. Jones DG. Reassessing the importance of dissection: a critique and elaboration .*Clin Anat* 1997; 10:123-127
  13. Abu-hijleh MF, Hamid NA, Moqattash' ST, Harris PF, Heseltine GF. Attitudes and reactions of Arab medical students to the dissecting room. *Clin Anat* 1997; 10:272-8.
  14. Mitchell BS, Stephns CR. Teaching anatomy as a multimedia experience. *Med Educ* 2004; 38:911-913 .
  15. Mitchell BS, Mccrorie P, Sedgwick P. Student attitudes towards anatomy teaching and learning in a multiprofessional context. *Med Educ* 2004; 38:737-48.