

Reactions of first year Indian medical students to the dissection hall experience

Dr Gaurav Agnihotri * Mandeep Gill Sagoo**

* Lecturer, Anatomy department, Govt Medical College, Amritsar, Punjab, India, ** Division of Basic Medical Science, St. George's University of London

Abstract : First year medical students normally experience a variety of emotional reactions and mixed feelings, when they encounter human cadavers. Our study explores attitudes and views of Indian male and female students towards cadaver dissection. We prepared questionnaires to assess whether emotional stress can be diminished and observed changes in feeling and attitude in control and experimental groups. The questionnaires were filled at three times. Questionnaire 1 (assessing attitude) was given to each student before visiting the dissecting room. After the first exposure to cadaver both groups were given questionnaire 2 (including physical and cognitive symptoms). The questionnaire 2 was given again after six weeks. The cumulative data was subjected to statistical analysis. The difference in the rate of anxiety initially and 6 weeks later was significant ($p < 0.001$) in the control group, but not in the experimental group. There was no statistically significant difference in the rate of anxiety between experimental and control group after 6 weeks. We need to prepare mentally and emotionally the students before entering the dissection room so that they are involved and stimulated. Dissection allows haptic appreciation of 3-D anatomy and enjoys student preference. The student-cadaver-patient encounter is paramount.

Key-words: Medical students, emotional stress, cadaver, dissection.

Corresponding Author: Dr Gaurav Agnihotri, C/o Satish Mahajan, House No 44 AB, Lane No.2, Gopal Nagar, Majitha Road, Amritsar, Punjab, India. E mail:anatomygaurav@yahoo.com

INTRODUCTION: Anatomical knowledge remains a cornerstone of medicine and related professions in spite of reductions in the importance, time committed to, and status of anatomical education in modern curricula¹. Dissection reinforces and elaborates knowledge that is acquired in lectures and tutorials. It brings the students to the closest and most comprehensive encounter with human mortality. It helps in developing a spatial and tactile appreciation for the fabric of the human body that cannot be achieved by prosection or computerised learning aids alone.

Dissection of a human body during an anatomy course raises for first-year medical students questions about invasion of privacy, cadaver sources, dying and death². First year medical students normally experience a variety of emotional reactions and mixed feelings, when they encounter human cadavers for the first time³. There are

varying responses as regards their attitudes and views towards cadaver dissection. The present study was conducted to explore further insights into these areas in Indian students. The anatomy dissection laboratory represents a significant emotional challenge to many medical students. 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 observed changes in feeling and attitude in control and experimental groups. As throughout the study male female ratio was maintained at 1:1, the study envisaged to provide an insight into the difference in attitudes and dissection hall experience of the male and female medical students.

MATERIAL AND METHODS: Every year 150 students are admitted at Government Medical College, Amritsar for the MBBS course. The study was

conducted on 300 first year medical students over three years (batch 2008, 2009 and 2010) at Govt. Medical College, Amritsar, Punjab, India. The students were informed about the study and their consent was duly taken. Any chance of participant bias was eliminated by clearly explaining to all participants the objective of the study while obtaining their informed consent. The due approval of the ethical committee constituted at Government Medical College, Amritsar was officially taken before commencement of the study. Each year 100 students (50 males and 50 females) were selected randomly. They were asked to fill questionnaire 1 so as to ascertain their views and attitude with regards to the dissection hall. Each year these 100 students were then divided randomly into two groups of 50 students (25 males and 25 females in each group) each i.e. one experimental group and one control group. The experimental group was mentally prepared for coping with dissection. This group was provided information regarding the source of cadavers, legal arrangements and the reception, disposal and burial of cadavers. This group was also told about the advantages of using dissection for a better appreciation of the three dimensional structure of the human body and understanding of variations. The questionnaires were filled at three times. Questionnaire 1 was given to each student before visiting the dissecting room. After the first exposure to cadaver both groups were given questionnaire 2 which included physical symptoms. The questionnaire 2 was given again after six weeks. The cumulative data of the three batches i.e. 300 medical students (150 in control group and 150 in experimental group) was subjected to statistical analysis.

STATISTICAL ANALYSIS: Comparison of categorical variables was tested using Chi-square and Fisher's exact test and 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 : All the 300 students completed the questionnaires. The mean age of the participating students was 18 years. No statistically significant

difference was found to exist amongst the students of experimental and control group for the items mentioned in questionnaire 1 (Table1).The results of questionnaire 2 including the physical symptoms and cognitive symptoms(lack of concentration) are depicted in table 2.The lack of concentration value was significantly decreased in control group after 6 weeks ($p<0.05$)while there was no significant difference in the experimental group in first and after 6 weeks of exposure to cadaver. The 'anxiety value' arises from summation of all values (physical and cognitive symptoms) mentioned in table 2.The rate of anxiety between experimental and control group was significant ($p<0.01$) in the initial visit. The difference in the rate of anxiety between initial visit and 6 weeks later was significant ($p<0.001$) in the control group, but there was no significant difference between experimental group in first visit and after 6 weeks of exposure to the cadaver. There was no statistically significant difference in the rate of anxiety between experimental and control group after 6 weeks. The present study elucidates that attitudes towards dissection are also influenced by gender. The females were found to be more apprehensive before entering and even after leaving the dissection room scenario as compared to males (Table 3).They are evidently more symptomatic in the dissection room as compared to males (Table 4)

DISCUSSION: Majority of students (83.66%) agreed that actual hands on training on cadaver dissection gave better results than demonstration of prosected specimen and also enhanced learning and confidence in the subject matter. This finding is in consonance with the previous study by Johnson⁴. This indicates that though they consider cadaver dissection as important and indispensable in anatomy learning. However their views on replacing cadaver dissection technique by plastic models, computer assisted training etc in near future were inconclusive. This may be attributed to poor awareness of the students towards use of plastic models and computer assisted training programme in anatomy learning .However, it does indicate that direct experience of human material is required for

“deep” rather than superficial understanding of anatomy.

TABLE I :Questionnaire 1 and student responses

No	Questions	No of “Yes” responses(%)	No of “No” responses(%)	No of “Cannot say” responses (%)
1.	Did you have a pleasant feeling before entering the dissection room ?	181(60.33)	90(30)	30(10)
2.	Have you ever had any fear or stress?	260(86.66)	30(10)	10(3.33)
3.	Did you after your first encounter with the cadaver have recurrent thoughts about the cadaver even when away from college?	270(90)	28(9.33)	02(.66)
4.	Did you experience the formalin odour after your first encounter with the cadaver even when away from college ?	200(66.66)	70(23.33)	30(10)
5.	Did you like to hold the osteology bones the first time you saw them?	180(60)	71(23.66)	49(16.33)
6.	Do you have any apprehension in handling the cadaver directly?	140(46.66)	122(40.66)	38(12.66)
7.	Do you think that dissection enhances the skill of thinking in a logical manner?	270(90)	22(7.33)	08(2.66)
8.	Is cadaver dissection ethically acceptable?	200(66.66)	59(19.66)	41(13.66)
9.	Do you respect the cadaver and regard it with sanctity	210(70)	32(10.66)	58(19.33)
10.	Do you think you can do the dissection with the assistance of your teacher?	221(73.66)	27(9)	52(17.33)
11.	Do you feel anatomy dissection is an important part of medical degree	235(78.33)	21(7)	34(11.33)
12.	Have you ever seen a dead body before?	104(34.66)	186(62)	10(3.33)
13.	Do you feel that interaction with anatomy staff before entering the dissection hall would lessen the emotional impact ?	246(82)	30(10)	24(8)
14.	Does cadaver dissection give better results than demonstration on prosected specimens?	251(83.66)	22(7.33)	27(9)
15.	Should cadaver dissection technique be replaced by plastic models,computer assisted training etc in near future?	100(33.33)	110(36.66)	90(30)

TABLE 2: Number and percentage of symptomatic students in dissection hall

Symptom	Initial visit		6 weeks later		'p'<0.01 for initial visit 'p'<0.001 in control group for difference in rate of anxiety between initial visit and 6 weeks later but not for experimental group.
	Experimental(%)	Control (%)	Experimental(%)	Control (%)	
Nausea	45(30)	52(34.6)	45(30)	39(26)	
Dizziness	3(2)	10(15)	5(7.5)	10(15)	
Weakness	18(27)	19(28.50)	14(21)	10(15)	
Fear	46(30.6)	55(36.67)	23(15.33)	22(14.67)	
Restlessness	28(18.67)	36(24)	32(21.33)	9(13.50)	
Lack of concentration	60(40)	72(48)	56(37.33)	25(16.67)	

It has been reported⁵ that students who had prior exposure to a dead body appeared overly sensitized to the emotional aspects and wanted more contact with anatomy staff to discuss emotional aspects of human dissection. In the present study, 34.66% had seen a dead body before whereas as many as 82% felt that an interaction with anatomy staff before entering dissection hall would lessen the emotional impact. Though a majority have apprehensions regarding handling the cadaver, formalin odour and osteology material, they consider dissection as ethically acceptable and regard the cadaver with sanctity. This is in accordance with student attitudes reported in Manipur⁶, India. The practice of anatomy allows the student to learn how to face upto and adapt his / her emotional reactions and attitudes; this gives human cadaver dissection great importance as an educational strategy and as a professional training tool in technical and emotional skill training.

Studies have shown that medical students rapidly develop a coping mechanism⁷ which enables them to view cadaver dissection as an occupation. The results of questionnaire 2 in first visit and after 6 weeks demonstrated that preparation of students enable them to adapt themselves as soon as they start working in the dissection hall in experimental group but the coping mechanism required at least 6 weeks for reduction of anxiety in non oriented

control group. It seems that mental preparation is a useful method for reducing anxiety. This finding is also supported by other investigators for improving and gaining better advantages of dissection⁸.

Adverse physical and psychological effects to human dissection have been reported particularly in European American and Canadian students⁹. Jewish historical and scholarly writings have addressed the problematic relationship between anatomical dissection for the purpose of medical education and Judaism, which values the wholeness and sanctity of the human body¹⁰. In the dissection theatre, medical students must gain a comprehensive understanding of human anatomy while dealing with their own personal ethical, cultural, and religious views on death and dying. Confronting these issues enhances both personal growth as individuals and professional behavior as future physicians.

Attitudes towards dissection are also influenced by gender. The present study elucidates that females are more apprehensive before entering the dissection room. Only 40 males felt apprehensive whereas 100 females (2.5 times) felt apprehensive about handling the cadaver. Even after leaving the dissection room they found it difficult to withdraw association from the dissection room scenario as compared to males (Table 3).

TABLE 3 Number and percentage of affirmative responses in males and females

No	Questions	Males (%)	Females (%)
1	Have you ever had any fear or stress ?	124(82.66)	136(90.66)
2.	Did you have a pleasant feeling before entering the dissection room ?	125(87.33)	56(37.33)
3.	Did you after your first encounter with the cadaver have recurrent thoughts about the cadaver even when away from college ?	122(81.33)	148(98.66)
4.	Did you experience the formalin odour after your first encounter with the cadaver even when away from college ?	80(53.33)	120(80)
5	Did you like to hold the osteology bones the first time you saw them?	120(80)	60(40)
6	Do you have any apprehension in handling the cadaver directly?	40(26.66)	100(66.66)

They are evidently more symptomatic in the dissection room as compared to males (Table 4). Female: male symptom ratio is 1.96:1(nearly 2 times).The authors have observed over the years that more females fainted in the dissection hall due to weakness and lack of proper appetite before entering the dissection room. Anxiety in female students associated with dissection have also been reported previously¹¹.

TABLE 4 Number and percentage of symptoms in males and females

Symptom	Males(%)	Females(%)	Total
Nausea	33(34.02)	64(65.97)	97
Dizziness	04(30.76)	09(69.23)	13
Weakness	10(27.02)	27(72.97)	37
Fear	32(31.68)	69(68.31)	101
Restlessness	24(37.50)	40(62.50)	64
Lack of concentration	47(35.60)	85(64.39)	132
Total	150	294	444

Tschernig¹² et al reported that emotional issues during human dissection should not be neglected, but addressed repeatedly. The authors feel that more attention should be paid to the first encounter with cadavers and students should be offered the opportunity to discuss their emotions. The students should be advised to prepare mentally and emotionally before entering the dissection room so that they are emotionally involved and stimulated. It has even been suggested that a formal course on death and dying should begin pre-clinically and extended into clinical years¹³.

In the present scenario, in some centers, dissected cadaver-based anatomy is no longer taught. Instead of overcoming the lack of availability of cadavers and addressing the physical and cognitive aspects of cadaveric dissection solutions are being sought by terming cadaveric dissection obsolete. Anatomy teaching to both undergraduate medical students

and medical graduates is in the midst of a downward spiral due to this attitude. The dissection room should not be abandoned when there is evidence of student preference and even trainees who have had minimal exposure to dissections often demand dissection/prosection based teaching at a later date¹⁴.

The dissected cadaver remains the most powerful means of presenting and learning anatomy as a dynamic basis for solving problems. Computer and multimedia should be complementary but not a substitute to dissection. Dissection allows haptic (based on a sense of touch) appreciation of 3-D anatomy unlike any other teaching facility. Dissection has survived the most rigorous test of pedagogical fitness--the test of time. The student-cadaver--patient encounter is paramount. Change in the undergraduate medical curriculum in UK and elsewhere has taken place without any research into the key aspects of knowledge necessary or comparing methods of teaching¹⁵. The core knowledge (at the various stages of medical education) must be established so that standards are not allowed to inexorably decline as more cost-effective solutions are explored.

CONCLUSION : The present study sides with the view that it amounts to imprudence if dissection is avoided citing inconvenience, lack of time/shortage of cadavers and initial student attitude and stress. In fact during the short stay in first professional itself students are smart enough to realize the value of dissection and adapt accordingly. We need to prepare mentally and emotionally the students before entering the dissection room so that they are involved and stimulated.

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