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PERCEPTIONS OF CADAVERIC DISSECTION IN ANATOMY TEACHING AT K. J. SOMAIYA MEDICAL COLLEGE, MUMBAI.

Sharadkumar Pralhad Sawant*

Professor and Head, Department of Anatomy, K.J.Somaiya Medical College, Somaiya Ayurvihar, Eastern Express Highway, Sion, Mumbai-400 022, Maharashtra, India.

ABSTRACT

For years together now, dissection of the human body has been globally considered an essential part of medical training. It is designed to give medical students, a hands on view of the interior of the body. It is a known fact that a good medical or surgical practice can only be achieved, if the foundation on which it is based, is strong. This firm foundation comes from an adequate and very exact knowledge of human anatomy and this can be derived only from learning human dissection. Thus dissection training has remained an important part of medical curriculum.Lately however, this trend has been changing. Anatomists, world over are lamenting about medical students' lack of interest in dissections and its diminishing utilisation in medical studies. Because of high cost of cadavers and shortage of time, some medical schools in Europe and US have abandoned dissection and moved to cadaverless anatomy. However, some persist on cadaver-oriented anatomy to teach basic constructional principles of human body through dissection. The objective of our study was to find out the reasons why some medical students avoid dissections. We started this study with the hypothesis that in spite of the very important role of dissections in understanding human body, relatively little percentage of medical students are getting benefited from it and appreciating cadavers as their first patients.

Keywords: Anatomy, Dissection, Cadaver, Questionnaire, Medical student, Formaldehyde.

INTRODUCTION

The word anatomy is derived from the Greek term 'anatome' that means 'cutting up' Anatomy, the study of the structures of the human body is one of the first, most basic and important subjects studied by medical students when they begin their medical education career. Anatomy teaching in medical schools has been traditionally based around the use of human cadaveric specimens, either taking the whole body specimens for complete dissection or as prosected specimens. The firm foundation comes from an adequate and very exact knowledge of human anatomy and this can be derived only from learning human dissection. Thus dissection training has remained an important part of medical curriculum. In addition, the practice of cadaveric dissection allows students grasp the three -dimensional anatomy and concept of biological variability. Through dissection, students are able to visualize first hand actual structures of the human body. Lately however, this trend has been changing. Anatomists, world over are lamenting about medical students' lack of interest in dissections and its diminishing utilisation in medical studies. The objective of our study was to find out the reasons why some medical students avoid dissections. Over and above, with a large number of private medical colleges mushrooming, and the shortage of cadavers worldwide, the debate regarding significance of cadavers in the teaching of gross anatomy has heated up. A number of medical schools around the world are either completely doing away with dissection in the medical undergraduate curriculum or planning to reduce the hours allotted for dissection. They have begun to introduce a shift towards greater use of alternative modalities of teaching that involve cadaveric plastination, non-cadaveric models and computer-based imaging. In the United Kingdom, the new curriculum at many medical schools include less than two hours of gross dissection per week, USA and Australia are planning the same.

Corresponding Author:- **Sharadkumar Pralhad Sawant** Email: drspsawant@gmail.com

We started this study with the hypothesis that in spite of the very important role of dissections in understanding human body, relatively little percentage of medical students are getting benefited from it and appreciating cadavers as their first patients. This investigation was therefore designed to record students' attitudes to human cadaveric dissection. The objective of this study was to find out the reasons for which dissections are being avoided by majority of the medical students.

MATERIALS AND METHODS

Anatomical dissection remains corner stone of learning anatomy at undergraduate level for first year medical students at the K.J. Somaiya Medical College. Sion. Mumbai. The college has a large dissecting room with necessary facilities and admits 50 medical students per year. The practical session of the Anatomy course consists of 8 hours of regional dissection in a week.

A survey was conducted at K.J.Somaiya Medical College between Dec 2005 and Jan 2015. A structured questionnaire was prepared for this purpose and administered to more than 500 medical students. Students, who had completed at least six months at dissection, were made to participate in the study. Adequate explanation was given to the students about the objective and relevance of the study before they filled out the questionnaire and verbal consent was obtained. They were assured of confidentiality and their name was not recorded to keep anonymity.

The questionnaires were designed to collect social data (age, sex, religion) and their experience about the cadaver (attitude, exposure and feeling), motivation, attitude towards dissection, emotional, medical or religious concerns ,coping strategies used by them and their opinion on the role of dissection in Anatomy learning. Suggestions to improve anatomy teaching were also solicited.

The mean age of the students was 20 years (range 18–22). The subjects' age ranged between 18–23 years with mean and standard deviation of 19.5± 1 years. 280 female students (56%) and 220 male students (44%) participated in the study. Students were asked to fill out a 5 point questionnaire.

RESULTS

The results of 500 valid filled questionnaires were compiled. It was found that 72.4% students were interested in dissection and 42.7% students even found it exciting, but got deterred initially by fear (58.4%), nausea (6.1%), religious beliefs (18.6%). Moral or ethical beliefs (37.6%), emotional reactions (16.2%). Eye irritation (91.8%) and smell of formalin (82.7%) were the major deterrents.

Individual variability in dissection activity was high. It was surprising to note that (78%) students felt dissection was important inspite of the stresses they encountered and (85.7%) preferred dissection over being shown prosected parts. If the cadaver was to be replaced students preferred an artificial model (46%) over audio-visual presentation (25.2%) in the dissection hall.

Majority of the students (67.6) preferred dissection schedules aided by a demonstrator and only 25% were in favour of computer aided learning.

DISCUSSION

It is an established fact that students learn Anatomy from the dead. The use of cadavers for dissection has been identified by some scholars as expensive, time consuming and potentially hazardous. Working with cadavers, whether through active dissection or by prosection, constitutes a potential stress.

Table 1. Dissection Hall Stresses

Dissection Hall Stresses	Yes		No		Neutral	
	No.	%	No.	%	No.	%
Fear	291	58.2	202	40.4	7	1.4
Nausea	33	6.7	466	93.2	1	0.1
Religious Beliefs	93	18.6	290	58	117	23.4
Ethical/ Moral Beliefs	188	37.6	175	35	137	27.4
Emotional Reaction	81	16.2	297	59.4	122	24.4
Eye irritation	459	91.8	26	5.3	15	2.9
Anxiety/Tremors Of Hands	27	5.4	301	70.2	122	24.4
Smell Of Formaldehyde	413	82.7	42	8.4	45	8.9
Asthma	81	16.2	312	62.4	107	21.4
Night Mares	47	9.4	337	67.4	116	23.2
Laziness	43	8.6	411	82.3	46	9.1
Interest	362	72.4	114	22.8	24	4.8
Excitement	213	42.7	238	47.5	49	9.8
Not interested in surgery	114	22.8	376	75.3	10	1.9
Study Load	350	70	125	25	25	5
Progressive Assessment	55	11	380	76	65	13

Table 2. Educational value of Dissection

Educational Value of Dissection	Agree		Disagree		Neutral	
	No.	%	No.	%	No.	%
Importance of Dissection	390	78	92	18.5	18	3.5
Which method preferred						
- Dissection	428	85.7	51	10.2	21	4.1
- Prosection	51	10.2	428	85.7	21	4.1
Feeling if cadaver is replaced by						
- Models	230	46	180	36	60	12
- Audiovisual presentations	126	25.2	324	64.8	50	10

Table 3. Student's suggestions for improvement in their training

Suggestions	Number	Percentage
Provision of more cadavers	17	3.4%
Computer aided learning	125	25%
Dissection aided by demonstrator	338	67.6%
No suggestion	20	4%

In medical schools where cadaveric dissection mainly constitutes preclinical teaching of anatomy, students are exposed to cadavers in the early stages of their training.. The effects of such exposure have been described under the physical (smell, nausea, conjuctival irritation) and psychological (anxiety, stress, emotional trauma, depression). Aspects of dissection, that medical students are reported to find distressing include revulsion at the sight and smell of the cadavers, shock at confronting death, desecration and dismemberment but available evidences suggest that adaptive mechanisms for coping with exposure are triggered soon afterwards in these students.

Review of previous literature reveals that there are varying responses with regards to the attitudes, emotions and views of medical students towards cadaver dissections. Another study also showed that interest and excitement had increased as dissection progresses, while fear and nausea decreases. More research in anatomy education is necessary to counter-balance emotional arguments about dissection with scientific evidence.

The leading factors which make the dissecting room stressful were the chemical odour and eye irritations. These can be improved by a better ventilation system and safety measures.

In our survey, majority of students considered dissection as important and this finding, supports a study done by Izunya et al ,which showed 90% of respondents considered cadaver dissection as important and indispensable in the study of human anatomy. The manual skills learnt in the dissection room are essential in almost every branch of medical profession. Moreover, dissection has been considered as essential requirement in learning three-dimensional aspect of human anatomy and has remained a universally recognizable step in becoming a doctor.

In almost all religions, dissection is permitted as an exception for the sake of seeking knowledge for future doctors. Even in Islam using the bodily parts of a dead person is permissible for the students of medicine who do so as a way of training. Nonetheless, people still have varying beliefs on dissection. In our study 18.6% students admit that they didn't perform dissections because of religious beliefs. According to Winkelmann et al, those students with ethical concerns regarding dissection tend to spend less time with active dissection, although not less time with prosection. In our study, 37.6% declared dissection as unethical. Most of us in all religions/cultures grow up learning to respect the dead bodies. It is therefore, natural for some students to consider dissection as unethical.

No interest in surgery and motivation for dissection was the reason quoted by 22.8% of students. Collins recommended demonstration of prosected cadavers instead of dissection for those students not contemplating a surgical career.

About 8.6% said that they have no solid reason of avoiding dissection except laziness. According to Dotinga spending 2-3 hours dissecting tissues is considered time consuming and too much work.

Few demonstrators aiding dissection, mean longer waiting times for students even if they are interested. About 67.6% of the surveyed students suggested increase in the number of demonstrators who can spearhead dissections and provide motivation, drive and strictness, where required, to help students overcome their inhibitions.

In some medical schools, computers are now used as an adjunct to dissection, enabling students to see before they do. However, tools like interactive multimedia resources, models and specimens have not replaced students' perceptions about the importance of dissection.

About 78% students in our survey thought that dissection is the best teaching and no computer can give you hands-on experience to clearly understand the

functional relationships between intricate parts of the body and despite the best innovations; models cannot simply substitute for cadaver dissection. We agree with the study in which authors tried to compare effectiveness of cadaver dissection with computer resources and found that the traditional teaching group obtained better results than the technologically supported group.

According to Pabst due to the great variability in the number of teaching hours, type of teaching methods, previous qualifications of medical students, number and qualification of demonstrators and several other parameters it is impossible to assume one experiences in institutions and/or country to be valid for another'.

Our study reveals that for majority of the students their perception about the importance of dissection was positive; cadavers were perceived as an excellent resource for learning anatomy.

In our study students were almost unanimous that dissection provided them with a three-dimensional perspective and deepened their understanding of anatomical structures.

Interestingly, increased availability of innovations used in teaching anatomy, such as interactive multimedia resources, models and specimens have not diminished the importance of dissection in the eyes of the medical students

CONCLUSION

Our study showed that chemical odour and eye irritations were the leading factors which create discomfort in the dissection room even though anatomical dissection by itself was not considered as a stressor. Majority of the students preferred cadaver dissection than prosection and opposed its replacement by other methods of learning. Medical students are depriving themselves of this extremely effective learning tool–dissection–for various inhibiting reasons Thus, instructors are recommended to adequately prepare students mentally and emotionally before the commencement of the dissection session for an exciting and stress free anatomy learning though dissection. . Medical colleges need to take cognizance of these inhibiting factors and make efforts to address these

Competing Interests

The author declares that he has no competing interest.

Authors' contributions

SPS draft the manuscript, performed the literature review & SR assisted with writing the paper.

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