ORIGINAL ARTICLE

Role of dissection in light of students' perceptions

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Abstract

Objective: To observe students' perception of gross anatomy dissection.

Methods: The qualitative study comprised second year medical students of Army Medical College, Rawalpindi, and was conducted in July, 2013. Data was collected over three weeks through quota sampling. Focus group discussions were held with four groups having 15 students each. The sessions were audio-recorded which were transcribed and interpreted.

Results: On the basis of FGDs, four themes were identified: Prossected specimen as an introductory teaching tool; emotional reaction on specimen handling; practical concerns during specimen handling; and experience of learning anatomy. Trends were identified within these broader themes.

Conclusion: There were differences in terms of attitudes and dissection hall experiences of medical students connected with the learning.

Keywords: Cadaver, Dissections, Medical students. (JPMA 64: 1021; 2014)

Introduction

Dissection is an integral part of the medical learning process.[1] It provides a three-dimensional vision of human anatomy through an acumen of different models and cadavers. However, the attitude and preference of students regarding this dissection activity is a subject that reflects utter variation. Many students do not prefer dissection as a patent mode of learning during their basic clinical training. The reasons for change in the approach of medical students during their basic training years are multifactorial.[2] The main contributory factors of this opinion are stress accumulated by the new medical students, as medical education demands a lot of dedication and time, lack of counselling and emotional preparation of students. Some researchers have considered the use of cadavers for dissection in anatomy as time-consuming, extravagance and possibly hazardous.[3] There is no general agreement on the effects of cadavers and whether active dissection or examination of prossected specimens constitute a potential stress.[4] The effects have been both stated as physical, like smell, nausea and irritation, and also psychological, such as stress, depression and emotional trauma.[5] The use of cadavers for dissection in anatomy learning has been identified by some scholars as expensive, time-consuming and potentially hazardous.[6,7] The current study was planned to provide an insight into the difference in attitudes and dissection hall experiences of medical students through focus group discussions (FDGs).[8]

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Subjects and Methods

The qualitative study comprised second year medical students of Army Medical College, Rawalpindi, and was conducted in July, 2013. Data was collected over three weeks through quota sampling. The subjects were divided into four focus groups irrespective of gender and age. 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. Approval was also obtained from the institutional ethics committee.

Each of the four FDGs shad a moderator and an assistant moderator, and each session lasted from 45 to 90 minutes. All the participants (30 females and 30 males) were given alphabetical codes for each FGD to ensure confidentiality in audio recordings and transcriptions. The FDGs were structured around a set of predetermined exploratory questions. The questions were: ***"Do students learn anatomy better with cadaveric dissection than with the plastic models?"***; and ***"Do students have better perception of learning with cadaveric dissection than with the plastic models?"*** The moderator led the discussion, keeping the conversation flowing and taking notes to remember comments. The assistant moderator took comprehensive notes while operating the tape recorder and handling the environmental conditions. The sessions were later transcribed and interpreted.

Qualitative thematic analysis was done through data reduction on the basis of transcriptions, followed by identification of themes and trends and calculation of

their frequencies and percentages. Triangulation of themes and trends was done with their respective frequency of quotes. Finally, conclusions were drawn by adopting a constant iterative process by re-visiting research questions, transcriptions and matrices by a set of researchers by putting each other's interpretation to the test of plausibility, sturdiness and confirmability.

Results

On the basis of FGDs, four themes were identified: Prossected specimen as an introductory teaching tool; emotional reaction on specimen handling; practical concerns during specimen handling; and experience of learning anatomy. Trends were identified within these broader themes. In the first theme, structural differentiation (n=10;31%) was a trend suggesting that ***"it is difficult to study prossected specimen at a very initial stage of gross anatomy course. The plastic models have better structural differentiation because of the colour coding. The same can be done for the prossected model, but it is more time-consuming as the body has to be dissected and then the specific part is cut off to be placed in a glass jar with the preservative."***

Another trend was repetition and revision (n=2;6%) suggesting that ***"a prossected model usually degenerates after a period of time and new model has to be prepared, whereas the plastic model remains a constant source of learning and revision."***

The third trend was handling/preservation (n=4; 12.5%). ***"The prossected model has to be preserved and taken care of properly, so the handling is difficult. The structures can be damaged during the learning procedure. For example, one can damage the vessels or nerve while using forceps. All these reasons make the student hesitant about touching the prossected specimen."***

Table-2: Symptomatic and emotional reaction students.

Symptoms	No of Students	Percentage
Smell	22	68%
Sight	02	6%
Touch of specimen	04	13%
Risk of infection	07	23%
Interest & anxiety	10	31%
Excitement & disgust	16	50%
Curiosity	02	6%
Fear	03	9%
Nausea	01	3%

The last trend was conceptual learning (n=7; 22%).

"Prossected specimen teaching does give a very clear idea of how the human body looks like in reality, and the conceptual learning is possible in medicine as it's the human body one has to deal with."

In the second theme, three trends were noted. The excitement of anatomy (n=11; 34%) is experienced by the undergraduates as most of them have never seen a dissected body or a cadaver. They feel different from students of other professions.

The second trend was ***'interesting experience'*** (n=18; 56%). The students noted that they were taking the first step towards the medical profession and the experience

Table-1: Themes identified by the students.

S. No	Themes	Trends	Groups			
			I	II	III	IV
1.	Prossected specimen as an Introductory Teaching Tool	Structural differentiation	7	3	3	6
		Repetition & Revision			1	
		Handling Preservation		2	3	2
		Conceptual Learning	1	3	1	
2.	Emotional Reaction on Specimen Handling	Excitement	6		2	3
		Interesting	2	4	2	2
		Disgust		1		1
		Anxiety	1	2	1	1
		Fear				
		Ethical Issue				2
3.	Practical Concern	Touch	4			
		Smell	5	5	1	7
		Risk of Infection		2	3	1
		Eye Irritation		1	1	2
4.	Learning Experience of Anatomy	Powerful	8	7	7	8
		Not a Powerful		1		

was interesting for them.

Feeling of anxiety, disgust and fear:

The students noted the third trend to be their feeling of anxiety, disgust and fear. They had never seen a cadaver or dissected specimen so some of them felt disgusted (n=3; 9%), some were anxious (n=4; 12.5%) while going to the dissection halls and such fear among those with weak nerves made it impossible to adapt to such an environment. They were fearful (n=3; 9%) and had nausea (n=1; 3%) while coming to the dissection hall. Ethical issues were also pointed out by some of the students (n=2; 6%).

Within the third theme, four trends of practical concerns were identified by the students. According to them, the first was 'touch' (n=6; 19%).

It is usually difficult to touch the dead body and dissect its different parts as all this is not a normal routine. Therefore, ***"touching of cadavers does give anxiety and disgust as touch is the strongest sensation of the human body,"*** they said.

Smell (n=15; 47%) of the dead degenerated body was found nauseating and the one preserved in formalin added to it. The sense of smell and taste are associated, which, the students said, made it worse. They added that some of them had even changed their eating habits like avoiding meat because of the strong association of smell and taste.

The risk of infection (n=7; 22%) was also pointed out. The cadavers are usually not properly preserved, degeneration starts and small insects can be seen residing in different parts of the dead tissue. All this can be a source of infection, which was a major practical concern, and so was eye irritation (n=6;19%). ***"The prossected specimens are preserved in formalin, which is an eye irritant, and the effect depends on the level of sensitivity of students."***

The fourth and the last theme was experience of learning anatomy, and the students called it a ***"powerful experience"*** (n=19; 59%) (Table-1 and 2).

Discussion

Medical students normally experience a variety of emotional reactions and mixed feelings when they encounter human cadavers for the first time. Lack of appropriate infrastructure, i.e. less cadavers and more students, poor quality of cadavers, limited number of models, improper demonstration plans, lack of appropriate lectures prior to the exercise, and a lack of staff to motivate the students for learning more are also contributing factors. The environment of the dissection hall is laden with persistent odour of the cadavers and their preservatives like formaldehyde having known toxic effects like nausea, conjunctival irritation and even emotional impact like depression amongst the students.[9]

Some studies reported psychological as well as physical reactions and suggested better preparation of the students with a follow-up discussion of their experiences with academic staff before starting the dissection.[10] However, studies related to the anxiety levels of the students are scant in number. Nevertheless, the anxiety experienced by the students and their feelings of empathy are important in terms of being effective in serving the community, ethical behaviour[11] and their professionalism. The emotional issues during human dissection should not be neglected or over looked, but addressed repeatedly. More attention should be paid to the first encounter of the students with cadavers and students should be offered the opportunity to discuss their emotions. Emotional stress from dissection does tend to take its toll on the health of a small percentage of students who might experience nightmares. In fact, there is a possibility that it instills fear in students that, consequently, leads them to even not attending dissection periods altogether. The changing patterns need to be evaluated and researched to establish the effectiveness of dissection-based learning. Pre-sensitisation and proper conditioning of students prior to entering the dissection hall may be beneficial, in addition to enforcement of this practice under guidance from teachers. The embalming solution, formalin, is very volatile and irritating. The stench of the rotting human body is unbearable along with the intolerable sight of the dissected parts, especially for the beginners. It consumes a lot of time for the learners to get used to the idea of dissected human body and get accustomed to even holding them in hands for study purposes. Majority of the students try to avoid touching the dissected human body parts in the early phase. Some researchers reported that 1% of the students experienced disturbances including sore eyes and nausea. It is not possible to generalise their results on one common scale or state the superiority of one methodology over another. Many students take up the dissection willingly as a new learning experience. On the contrary, large numbers find this procedure agonising and unnecessary. The majority, who stay away from the dissection table, rely totally on the books and online sources to familiarise themselves with the basics.[12] Cadaver dissection and its importance for teaching gross anatomy have often been favoured.[13] Recent bereavements for some students may accentuate anxiety and is probably the inciting factor. Females usually suffer from more psychological and emotional stress on

exposure to cadavers, though many are apt at coping up well. A minority of students sometimes also disapproves of this learning process on moral and ethical grounds and rather propagates respect for the human body which they feel is an ignored aspect in dissection.

The morality aspect of the dissection activity on human bodies need to be addressed pertinently and on a priority basis. New techniques and alternatives are to be introduced in medical schools in order to prevent needless dissections of both human cadavers and animals, which is seemingly unacceptable to the majority of medical students. Versatility should be introduced by reshaping the framework of medical teaching. The students who do not feel comfortable can either resort to an alternative or can be counselled to understand the modalities and make the best of their opportunities.

Conclusions

The study provides an insight on the perception of dissection, and the symptomatic and emotional reactions students experienced in dissection hall in the local settings of a medical college.

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References

1. Gregory JK, Lachman N, Camp CL, Chen LP, Pauline W. Restructuring a basic science course for core competencies: An example from anatomy teaching. Med Teach 2009; 31: 855-61.
2. Sugand K, Abrahams P, Khurana A. The anatomy of anatomy: A review for its modernization. Anat Sci Educ 2010; 3: 83-93.
3. Lufler RS, Zumwalt AC, Romney CA, Hoagland TM. Incorporating radiology into medical gross anatomy: Does the use of cadaver CT scans improve students' academic performance in anatomy? Anat Sci Educ 2010; 3: 56-63.
4. Adesunloye BA, Aladesanmi O, Henriques FM, Ivonye C The preferred learning style among residents and faculty members of an internal medicine residency program. J Natl Med Assoc 2008; 100: 172-5.
5. Granger NA, CallesonD. The impact of alternating dissection on student performance in a medical anatomy course: Are dissection videos an effective substitute for actual dissection? Clin Anat 2007; 20: 315-21.
6. Aziz MA, McKenzie JC, Wilson JS. The human cadaver in the age of biomedical informatics. Anat Rec 2002; 269: 20-32.
7. O'Carroll RE, Whiten S, Jackson D. Assessing the emotional impact of cadaver dissection on medical students. Med Educ 2002; 36: 550-4.
8. Marks SC Jr, Bertman SL, Penney JC. Human anatomy: A foundation for education about death and dying in medicine. Clin Anat 1997; 10: 118-22.
9. Horst WK, Helmut W, Robert L, Snipes JP, Friedrich P, Gabriele RE, et al. The dissection course - necessary and indispensable for teaching anatomy to medical students. Ann Anatomy 2008; 190: 116-22.
10. Rizzolo LJ, Rando WC, O'BrienMK, Haims AH, Abrahams JJ, Stewart WB, et al. Design, implementation, and evaluation of an innovative anatomy course. Anat Sci Educ 2010; 3: 109-20.
11. Rajkumari A, Singh Y. Body donation and its relevance in anatomy learning: A review. J Anat Soc India 2007; 56: 1-6.
12. Cahill KC, Ettarh RR. Attitudes to anatomy dissection in an Irish medical school. Clin Anat 2009; 22: 386-91.
13. Older J. Anatomy: a must for teaching the next generation. Surgeon 2004; 2: 79-90.