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REFLECTIONS OF MEDICAL STUDENTS' ON CADAVERIC DISSECTION IN PRESENT SCENARIO

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ABSTRACT

Objective: Continuation of cadaveric dissection in era of computer assisted learning is losing its charm in many medical schools worldwide. For the past few years, we were observing that our undergraduates were not able to complete the whole body dissection in time. Therefore, we planned to substitute dissection with demonstration of carefully dissected parts (prosections). The views of students were taken regarding dissection and demonstration of prosections for learning anatomy.

Methods: A questionnaire regarding perception of human cadaveric dissection, preference towards demonstration of prosections for anatomy learning and problems encountered during dissection was distributed to the first year MBBS students (n=243) immediately after completion of first professional examination.

Results: Majority (78%) of students were in favor of performing dissection but only 45% students performed dissection when the chance was given to them. 49% students did not dissect all the allotted regions while 6% students never attempted for dissection. 21% students were not able to complete the given dissection task. Prosection alone was least preferred whereas 50% students voted for both activities. 33% expressed that dissection alone is sufficient.

Students felt that cadaveric dissection helped them in understanding of the subject. They also expressed that shortage of time, mass bunking, lack of supervision by teachers, excessive fat, lack of prior knowledge and irritating formalin fumes are some difficulties which they face while performing dissection.

Conclusion: Dissection should continue to be a cornerstone in learning gross anatomy but only after reframing objectives which are realistic and achievable in given time frame. Prosected parts should be used as an adjunct for teaching and learning in anatomy.

Key Words: Cadaver, Dissection, Prosection, Medical student

INTRODUCTION

Anatomy teaching in medical schools has been traditionally based around the use of human cadaveric specimens.[1] No doubt cadaveric dissection facilitates learning of three dimensional structure of human body through self-discovery and observation, but at the same time it is expensive, time consuming and potentially hazardous. Problems related to the use of human cadaver, teaching methods, resources and time constraints has forced many schools to introduce a shift towards greater use of alternative modalities of teaching gross-anatomy involving cadaveric plastination, non-cadaveric models and computer-based imaging.[2]

For the last 3-4 years, we are providing two cadavers for dissection to each batch (total 8), of 32 MBBS students. Each student gets a chance to dissect some part of every region in rotation. After completion of every region, for revision, prosected specimens are shown to students. In both formative and summative assessments, viva-voce is based on identification of structures on prosected parts. Dissection skill is not assessed at any stage of evaluation. Due to time crunch most of the time dissection task allotted to undergraduates remains uncompleted. This observation led us to think for revising our curriculum. We planned to replace dissection activity with demonstration of prosected specimen. As suggested by Nagar et al. (2012), that opinion of the students need should

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be heard in deciding curriculum, we interrogated our students to give their perception of significance of dissection activity and related problems.[3]

METHODS

A questionnaire regarding perception of human cadaveric dissection, preference towards demonstration of prosections for anatomy learning and problems encountered during dissection was distributed to the first year MBBS students (n=243) immediately after completion of first professional examination. Students' views were recorded and statistically analyzed. Study was approved by the institutional ethical review committee and after explaining the purpose of study consent was taken by students before distribution of questionnaire.

RESULTS

Majority of students (78%) liked to perform dissection and suggested it to be a compulsory activity, but only 45% students performed dissection when the chance was given to them. Nearly half of the students (49%) accepted that they did not dissect all the allotted regions while 6% students never attempted for dissection.

67% students were able to complete given assignments in stipulated time while 21% were not. Given choice between prosections or dissection, prosection alone was least preferred whereas 50% students voted for both activities as teaching modality and 33% expressed that dissection alone is sufficient (Table 1).

Table 1: Responses of students for their dissection and prosection choices

Question	Response in %			
	Yes	No	Sometimes	Not Responded
Should dissection be mandatory?	78	5	-	17
Did they perform dissection?	45	6	49	-
Whenever had chance to dissect, able to successfully complete the task	67	21	2	10
Only dissection is sufficient for learning Anatomy	33	52	-	15
Only demonstration of prosected part is sufficient for learning Anatomy	2	83	-	15
Both prosection and dissection are required	50	35	-	15

Students' were asked to express their views regarding role of dissection in learning anatomy and problems encountered during dissection. Majority (80%) of students opined that dissection helps in providing three dimensional understanding of structures while many (73%) correlated it with better retention. Few (45%) also accepted its benefit in making anatomy fascinating and 30% responded that it helps in explaining cross sections in a better way (Table 2). Students quoted many problems associated with task of performing dissection (Table 3). Answers were interpreted and categorized into seven areas of difficulty. Majority (83%) reflected the crunch of time as biggest threat while a minority also expressed the problem of language as one of the barrier in receiving maximum benefit of dissection.

Table 2: Students' views on "how dissection helps in learning anatomy"

S. No.	Views	Response
1.	Seeing in 3-D, helps in better understanding of inter-relations of structures	80%
2.	Better retention of facts and relations	73%
3.	Makes the subject interesting and fascinating	45%
4.	Helps in explaining the cross sectional anatomy	30%

Table 3: Causes for not completing the task/ difficulties faced during dissection

S. No.	Problems encountered in doing complete dissection	Response
1.	Time constraints (shortage of time)	83%
2.	Mass bunking of classes	20%
3.	Lack of proper guidance	43%
4.	Lack of proper knowledge of the part to be dissected	52%
5.	Lack of confidence (need practice)	51%
6.	Troublesome dissection due to excessive fat	21%
7.	Non conducive environment of Dissection Hall	10%
8.	Language problems	9%

DISCUSSION

Reduced contact hours in anatomy and introduction of other areas like imaging, developmental, microscopic, living anatomy etc. has forced us to cut short gross anatomical details from curriculum. Despite of the fact that complete dissection of human body by undergraduates is facing several practical difficulties, our students gave a positive feedback for continuing dissection. Dissection has been recognized as the most universal instrument, which is strongly supported and preferred over other methods for professional training and skill development in becoming medical doctors.[4-7] Majority of students (78%) appreciated the role of touch mediated perception of body and its positive role in understanding human structure and therefore promoted dissection (Table 1). Cadaveric dissection allows students grasp the three dimensional anatomy and concept of biological variability.[8] Dissection is also favored because apart from imparting anatomical knowledge it also offers positive learning opportunities to enhance the skills and attitudes of future doctors like teamwork, respect for the body, familiarization of the body, application of practical skills, integration of theory and practice, preparation for clinical work and appreciation of the status of dissection within the history of medicine.[9] The value of dissection is well recognized by several institutes around the world who reversed their decision to close the cadaveric labs in anatomy and restarted dissection with modifications.[10]

One may argue, if, so than why 55% students did not take the advantage of performing dissection. Different visual and kinesthetic styles of learning among students may help in understanding such discrepancy.[11] Apart from this, we also know that assessment drives learning and because dissection skills are not evaluated at any step of assessment i.e. formative or summative in our setup, so students, though accepted the significance of it but did not exhibit their interest in performing it. However studies suggest that the students who had a cadaver dissection-based learning did better in all aspects of the exams.[12] But some have quoted that students who perform dissection daily, perform better only in practical examinations.[13]

While, interrogating for the causes of non-completion of dissection, apart from time constraint, a list of other problems was also expressed by students (Table 3). Time factor was one of those troubles which was on the top of the list. Not only the task was time consuming but mass bunking by students also added to the crunch of time.As students got less chance to dissect, lack of practice and confidence added up to grave the problems and hence the learning objective was not achieved.Any educational activity, even of highest importance, if uncompleted within stipulated time cannot serve its purpose. According to Woolf (1999), curriculum can only be effective if SMART objectives are set. SMART objectives are those that are Specific, Measurable, Achievable, Realistic, and within a Timescale.[14] During last few years, we were observing that cadaveric dissection assignments were incomplete most of the time and same was reflected by students in the present study so it is a high time to reconsider the dissection activity for learning gross anatomy.[15] Lawrence & William (2006) suggested several redesigned shortened dissection courses in consultation with clinicians to transform traditional dissection courses rather than avoiding them. While redesigning the anatomy curriculum one should ensure that dissection remains a part of learning methodology.[10]

Unavailability of trained teachers during dissection hours to guide undergraduates was also among the highlights. To develop autonomy and competence in any skill, a healthy interaction between trainee and supervisor is necessary. As first year students are not much confident in performing dissection, their need of trained and skilled teachers during the whole period of dissection cannot be overlooked. Many researchers also stated that a good number of students expressed their learning difficulties, while performing dissection.[16-18] Though, these students were not of low intelligence but they needed psychological and practical support, which can be provided by experienced and trained teacher. Problem of lack of guidance during dissection can be solved to a certain extent by putting projection screens in Dissection Hall to display dissection procedures and various steps. A proper Post-Graduate program in Anatomy is also demand of hour, as some gap between trainee and trainer can thus be narrowed down. And last but not the least, experienced faculty should continue to be among young students to share knowledge, despite of their busy schedule of administrative responsibilities.

Students also admitted that sometimes they did not read the subject and come unprepared, so due to lack of proper knowledge they were unable to complete the assigned task. Few students experienced language problem. As the medium of instruction/teaching is mostly English in medical schools, the students from rural background face difficulty in understanding subject. To alleviate this problem MCI, in its 2015 vision, has suggested starting of foundation course, in which English language course is incorporated for those who wish to study.

In many of the previous studies, students' reaction towards cadaveric dissection has been associated with adverse emotional reactions and mixed feelings but none of our student in the present study quoted any anxiety, fear or emotional problems.[2,19] Also very few of our students expressed the inability to perform dissection due to irritating formalin fuels. Probably, as the study was conducted at the end of first year, may be by this time they were acclimatized to the dissection hall environment and did not appreciate the above factor as one of the major problem.

Several studies, based on students' feedback and assessments suggested the use of carefully prosected parts for learning gross anatomy, as a replacement of dissection, for first year medical schools.[20,21] Those who favor prosection based curricula opined that one should start with visually simplified fundamental lines and symmetrical patterns and build up to the more complex organization in order to facilitate learning of spatial relationships.This theory can be best practiced in anatomy by studying carefully crafted prosections. During dissection one begins with complex structure and reduces it in the process, and hence defeats the law of learning. Student learning is not dependent on performance of a full dissection. It is the sum of instructions, involvement, interaction, self-assessment and testing of one's newly acquired knowledge. If simplified, educationists feel that student may obtain a multisensory experience and learn structures and relationships from an interactive exploration of carefully prepared prosected cadavers.[22]

If we analyze impact of performing dissection during first year of medical training on practice, an observational study predicted that performing dissection does not have much influence on the performance of medical students.[23] This prompted us to think over for replacing dissection with prosected part demonstration, but majority of our students did not favor it.

50% students felt the need of both, dissection as well as prosection, suggesting that a single tool is not sufficient. Dissection and prosection both should be continued. As effective time for performing dissection is actually less, stress should be on essential anatomy only.Post graduates in anatomy and other surgical specialties should be actively involved in fine dissection and preparation of prosected specimen.

To sum up, the study suggested that though dissection is a time consuming process and the students were not able to complete it in stipulated time but it should not be completely replaced by prosection. Based on the feedback an effort was made to reframe the dissection schedule of undergraduates for future batches.

CONCLUSION

Dissection should continue to be a cornerstone in learning gross anatomy but only after reframing objectives which are realistic and achievable in given time frame. Prosected parts should be used as an adjunct for teaching and learning in anatomy.

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