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Original Article

Emotional impact of cadaver dissection: a survey in a medical college in western Nepal

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Abstract
Objectives: Adverse physical and psychological effects to human dissection have been reported in many studies. In Nepal, the basic science subjects are taught in an integrated manner in the first four semesters of the MBBS course. Studies on the attitudes of medical students towards anatomy dissection are lacking in Nepal. The present study was carried out to obtain information on the present and initial perception of medical students on exposure to anatomy dissection and the association, if any, of the perception with demographic factors. **Methods:** The study was carried out among the first, second and third semester students at the Manipal College of Medical Sciences, Pokhara using the appraisal of life events (ALE) scale in February 2005. Sixty-three first semester, 57 second and 65 third semester students successfully completed the questionnaire and their responses were taken up for analysis. Information on sex, age, nationality, religion, food habits, occupation of parents and selection procedures of respondents was collected. The parameters loss, challenge and threat were measured on first exposure to dissection and at the time of the study. The scores were compared among different categories of students ($p< 0.05$). **Results:** 185 of the 225 students (82.2%) successfully completed the questionnaire. The median initial loss, challenge and threat scores were 2, 19 and 4 respectively. The median present loss, challenge and threat scores were 1, 20 and 0 respectively. The present threat score was higher among second semester students. The initial loss was higher among Indians and the present challenge score was higher among vegetarians. **Conclusions:** The loss and threat score were low compared to that reported in a previous study. The challenge scores were higher than those reported previously. Majority of students considered anatomy dissection as a significant life experience and one which was largely positive. Further studies with a larger student population and in other medical colleges are required.
Key words: Anatomy dissection**,** emotional impact, medical students

The learning of gross human anatomy within a medical curriculum provides education on a number of different levels, emotional as well as intellectual.[1] Students gain knowledge about the human body but they also confront core aspects of their own humanity. It is sometimes claimed that students find working with human cadavers and dissected parts distasteful and even distressing. This has been reported in many studies and it may encourage in appropriate attitudes towards human remains.[2, 3, 4]

A study in Australia had reported adverse physical and psychological effects in 30% of students.[5] Initial cadaver dissection can be experienced as a significant emotional life event by many young medical students, but the majority of students adapt to the situation quickly.[6]

In response to a perceived lack of psychometrically sound instruments to measure the impact of emotionally charged experiences, the Appraisal of Life Events scale (ALE) was developed.[7] The ALE takes into account positive as well as negative emotional appraisals of significant life events.

In Nepal, the seven basic science subjects of Anatomy, Physiology, Biochemistry, Pharmacology, Pathology, Microbiology and Community Medicine are taught during the first four semesters of the undergraduate medical (MBBS) course. At the Manipal College of Medical Sciences, Pokhara, Nepal anatomy dissection occupies around 6 to 7 hours per week. On an average there are 10-12 students per cadaver and each demonstrator is responsible for two dissection tables.

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The present study was carried out to:

a. Collect basic demographic information about the student respondents
b. Obtain information on the respondents' perception of their initial exposure to anatomy dissection and their present perception
c. Note the association, if any, of the perception with demographic and other variables.

Methods

The study was carried out among the first, second and third semester medical students at the Manipal College of Medical Sciences (MCOMS), Pokhara, Nepal. The college admits 150 students to the undergraduate medical course (MBBS) each year. The students are admitted in two batches of 75 students each, in January and August. Seventy five students from the first, second and third semester of the MBBS course were invited to participate in the study. Sixty-three first semester (84%), 57 second (76%) and 65 third semester (86.7%) participated in the study, successfully completed the questionnaire and their responses were taken up for further analysis.

The first semester students were administered the Appraisal of Life Events Scale (ALE) both situational and retrospective recall version four weeks into the MBBS course. The second and third semester were administered the questionnaire four weeks after starting the semesters. Information on the sex, age and nationality of the student respondents was collected. Whether the student had completed a graduate course of study after school and whether he/she had been previously exposed to animal dissection at school was enquired. The religion of the student, food habits, occupation of parents and whether government selected or self-financing was noted.

The students were asked to rate their perceptions of the anatomy dissection environment at present and at the time of joining using a six-point Likert-type scale. The statements were grouped into six categories: Initial loss, initial challenge, initial threat, present loss, present challenge and present threat. The scores in these six categories were compared among different categories of students. The Mann-Whitney test was used for dichotomous variables and Kruskal Wallis test for the others. A p value of less than 0.05 was taken as statistically significant.

Results

A total of 185 students successfully completed the questionnaire and their responses were taken up for further analysis. Sixty-three of the 75 first semester students (84%), fifty-seven of the 75 second semester (76%) and 65 of the 75 third semester students (86.7%) participated in the study. The overall response rate was 82.2% (185 of the 225 students).

The distribution of the students according to demographic characteristics and semester of study is shown in Table 1. The median initial loss score was 2. The median scores for the parameters initial challenge and initial threat were 19 and 4. The median present loss and challenge scores were 1 and 20; the median present threat score was 4. The distribution of the parameters, loss, challenge and threat on initial exposure to dissection and at the time of the study among the three semesters of students are shown in Table 2. The present threat perception was significantly higher among the second semester students ($p = 0.012$).

Table 1. Distribution of student respondents according to demographic characteristics

Characteristics		Number of Students (% of total)
Sex	Male	104 (56.2%)
	Female	81 (43.8%)
Graduation	Graduate	13 (7%)
	Nongraduate	172 (93%)
Nationality	Nepalese	73 (39.4%)
	Indians	97 (52.5%)
	Srilankans	12 (6.5%)
	Others	3 (1.6%)
Exposed to dissection at school	Yes	102 (55.1%)
	No	83 (44.9%)
Religion	Hindu	143 (77.4%)
	Buddhist	21 (11.3%)
	Others	21 (11.3%)
Food habits	Vegetarian	38 (20.5%)
	Non Vegetarian	147 (79.5%)
Occupation of father	Doctor	53 (28.6%)
	Others	132 (71.4%)
Occupation of mother	Doctor	26 (14.0%)
	Housewife	132 (71.4%)
	Others	27 (14.6%)
Method of selection	Government selected	42 (22.7%)
	Self-financing	143 (77.3%)

Table 2. Distribution of loss, challenge and threat on initial exposure to dissection and at the present time among the different semesters of students

Parameter	**Median Score**		
	Semester of study		
	I	II	III
Present loss	1	1	0
Present challenge	21	20	20
Present threat	0	2	0
Initial loss	2	2	3
Initial challenge	19	18	19
Initial threat	3	4	4

Table 3. Distribution of the parameters according to the demographic characteristics of the students

Characteristics		Parameter (Median Score)					
		Present loss	**Present challenge**	**Present threat**	**Initial loss**	**Initial challenge**	**Initial threat**
Sex	Male	1	20	1	3	18	4
	Female	0	21	1	2	19	4
Graduation	Graduate	0	23	1	0	21	2
	Nongraduate	1	20	1	3	18	4
Nationality	Nepalese	1	19	1	3	18	4
	Indians	1	21	1	2	20	3
	Srilankans	2	16	1	2	17	3.5
	Others	0	17	0	1	15	10
Exposed to dissection at school	Yes	1	20	1	3	19	4
	No	1	19	0	2	18	3
Religion	Hindu	1	21	0	3	19	4
	Buddhist	2	17	2	2	17	4
	Others	0	16	2	1	18	4
Food habits	Vegetarian	1	22	0.5	3	21	3
	Non Vegetarian	1	19	1	2	18	4
Occupation of father	Doctor	1	20	0	2	20	4
	Others	1	20	1	3	18	4
Occupation of mother	Doctor	1	20.5	0	3	18.5	4
	Housewife	1	20	1	2.5	19	4
	Others	1	17	0	2	18	4
Method of selection	Government selected	1	20	1	4	18	5
	Self-financing	1	20	1	2	19	3

The distribution of the parameters according to different demographic characteristics is shown in Table 3. The present loss was significantly higher among non-graduates compared to graduates (p=0.03). The initial loss was significantly higher among Indians compared to other nationalities (p = 0.035). The present challenge score was significantly higher among vegetarians compared to non-vegetarians (p = 0.035). The initial score was higher among government selected students compared to the self-financing ones but the difference was not statistically significant (p= 0.056).

Discussion

Cadaver dissection in anatomy learning assaults the perception, held by many, of a life of immortality.[8] There is a shocking awareness that death is inevitable and results in the disappearance of self. It is an issue all prospective doctors must face and is an important argument for the continuation of anatomy dissection. [8] An American study has suggested four ways in which human gross anatomy students can reinforce respect and compassion in students.[9] First, encourage respectful language in the dissection hall. Use the term 'donor' instead of 'cadaver'. Second, provide the students with the actual name, age, history and likely cause of death of the donor so that they appreciate the donor as having been once a living human being. Third, prompt students to explore feelings and discuss topics stimulated by the experience of dissection. Fourth, at the conclusion of the dissection course hold a memorial ceremony, as a positive closure to an emotionally and intellectually intense course.[9]

At MCOMS, we have an international student body with students from Nepal, India, Sri Lanka and from other countries. The students join the MBBS course after completing twelve years of schooling.

The students have to study the subjects of Physics, Chemistry and Biology at the twelfth standard level. In many schools, students have to dissect animals during their Biology course. A few students had joined the MBBS course after pursuing a graduate course of study.

We had assessed the parameters loss, challenge and threat, on initial exposure to dissection and at present. The present threat perception was significantly higher among second semester students. This is difficult to explain as the second semester students have been in the institution for a longer period of time compared to the first semester. The present loss was significantly higher among non-graduates. The graduates were more emotionally mature and those who had taken up Biology as a main subject may have been exposed to repeated animal dissection during their graduation. However, we did not enquire about the main subject of graduation and graduation had no effect on the initial loss scores.

The initial and present challenge scores were significantly higher among vegetarians. Eating meat and exposure to the killing of animals among non-vegetarians may have contributed. This was however, not explored in the present study.

The process of dissection is widely perceived to give students an important three-dimensional view of human anatomy, and also reinforces and elaborates knowledge acquired in lectures.[10,11] Integration of anatomy in a whole organism has also been asserted as a virtue.[12]

The loss and threat scores among our students were low compared to that reported in a previous study.[6] The challenge scores were higher that that reported previously.[6] The present loss and threat scores were lower than that on initial exposure to dissection while the challenge score had increased. An American study had shown that third- year medical student's assistance had significantly diminished the negative physical and emotional reactions to the dissection experience.[13] Assistance from senior students could be considered as a means of reducing stress in our institution. Assistance from faculty members of the Department of Anatomy and discussion on the issues raised during dissection could be considered. The majority of students consider anatomy dissection as a significant life experience, but one that is largely regarded as positive. A study conducted at the BP Koirala Institute of Health Sciences, Dharan had shown that students considered neuroanatomy as the most interesting and clinical anatomy as the most useful among the various subdivisions of anatomy.[14] They were of the opinion that dissection helped them the most in learning the subject.

Our study had a number of limitations. Different semesters had been in the institution for a varying period of time. The initial exposure to dissection had occurred at different time intervals. Recall bias may have had an influence on the retrospective ALE scores of the second and third semester students. The factors causing stress and the student attitudes towards anatomy and dissection were not explored in the present study. Some of the subgroup had low number of respondents and this may have affected the results. Further students with a larger student population and in other medical colleges in Nepal are required.

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