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Stress Reaction Symptoms Due to Human Body Dissection among First Year Undergraduate Medical Students

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ABSTRACT

Background

There is a concern regarding the psychological impact of human body dissection among undergraduate medical students. The objective of this study was to assess the prevalence of stress reaction symptoms due to human body dissection among undergraduate medical students and to compare the mean traumatic stress reaction score between different variables of the socio-demographic and clinical profiles.

Methods

This cross-sectional study is conducted among 73 first year medical undergraduate students of Manipal College of Medical Sciences, Pokhara, Nepal. A predesigned proforma was used to collect the sociodemographic and clinical variables of the participants. The Impact Events Scale-Revised (IES-R) questionnaire was administered after one week of the exposure of the students to human body dissection. The respondents scoring 33 and above in the Impact Events Scale-Revised were considered positive for stress reaction symptoms.

Results

The prevalence of stress reaction symptoms was 1.37%. The mean traumatic stress score was high among males, Nepali citizens, urban residents, and non-vegetarian's respondents, if the respondent's parents were from a medical background and who had past exposure to a dead body in reality as compared to other variables, but it was not statistically significant.

Conclusions

There was a low prevalence of stress reaction symptoms among the undergraduate students. The gender, nationality of the respondents, occupation of parents, place of origin, dietary habits, and past history of exposure to dead bodies in reality do not statistically affect the mean traumatic stress score. This study will be beneficial for a small percentage of students who needs psychiatrist support to adapt to the experience of dissection.

Keywords: human body; medical students; Nepal; prevalence; stress reaction.

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INTRODUCTION

The first exposure of the undergraduate medical students to the dissection session is unforgettable. The learning of gross human anatomy within a medical curriculum provides education on emotional and intellectual levels.[1] The prevalence of the traumatic stress reaction gives contradictory findings. The study conducted previously found that the medical students have the traumatic stress reaction after cadaver dissection.[2-6] In contrast, a study reported that most of the first-year medical students found their first visit to the anatomy dissection room exciting and suffered very little or no stress at all.[7] This present study is conducted to add the new findings to this long-standing, debatable issue. The objective was to assess the prevalence of stress reaction symptoms due to human body dissection among undergraduate medical students. The second objective was to compare the mean traumatic stress reaction score between different variables of the sociodemographic and clinical profiles.

METHODS

This cross-sectional study was done among first-year undergraduate Bachelor of Medicine and Bachelor of Surgery (MBBS) students studying at the Manipal College of Medical Sciences situated in the Pokhara Metropolitan in the Gandaki Province of Nepal. The study was conducted at the Department of Anatomy of the Manipal College of Medical Sciences, Pokhara. Ethical approval was taken from the Institutional Review Committee of the Manipal College of Medical Sciences, Pokhara (Ref. No. MCOMS/IRC/553). The verbal and written consent was taken from all the respondents before the start of the study. The anonymity of participants was respected. No specific identifiers, such as the name and registration numbers of the medical students, were collected.

The sample size was calculated by using the formula: Z^2pq/d^2 (Where, Z=z-score value at 95% CI =1.96, n = sample size, p = prevalence 5%,[3] q=95, d= desired level of precision, i.e., 5% for this study). The sample size as per this formula was 73. Hence, this study was conducted among 73 respondents.

The respondents who had given consent for the study were included in this study. The respondents who refused to give consent were excluded from the study. The respondents who had a history of another significant traumatic event in the last one-week, a past history of mental disorder/s, a family history of mental disorder(s), a history of significant medical disorder/s, a history of alcohol or substance abuse/dependence and a past history of exposure to human dissection were also excluded from the study.

The principal investigator had given adequate explanation to the students about the objective and relevance of the study before they filled out the predesigned proforma and questionnaire. A predesigned proforma was used to collect the sociodemographic and clinical variables of the participants. These variables were age, gender, nationality, occupation of parents, place of origin, dietary habits, and past history of exposure to a dead body in reality.

The questionnaire for Impact Events Scale-Revised (IES-R)[8] was administered after one week of the exposure of MBBS students to human body dissection to assess the stress reaction symptoms. The English language version was used in this study. This scale was originally validated in the English language (Cronbach's alpha=0.96; construct validity= 0.84).[8] The author noted that the IES-R scale is used to measure PTSD symptoms in many cultures throughout the world.[8] The English language version of the scale was used as all the respondents were studying at the bachelor level (MBBS Level) and have knowledge of the English language.

IES-R is a short, easily administered self-report questionnaire. IES-R contains 22 items and is rated on a 5-point scale ranging from 0 "not at all" to 4 "extremely". The respondents scoring 33 and above in the Impact Events Scale-Revised were considered positive for stress reaction symptoms. The data was entered and analyzed in Epi-info 7 version. The statistical method used was frequency, mean, and the Kruskal-Wallis test. The result was considered statistically significant at p-value<0.05.

RESULTS

The study was conducted among 73 students after one week of first exposure to human body dissection. Only one student scored 41 points on the Impact Event Scale-Revised Scale. Hence, the prevalence of stress reaction symptoms was 1.37%. The mean (±SD) IES-R score was 3.23 (±5.79). The mean age of 73 study samples was 19.86 years with a standard deviation of 1.41 years. The mean age (±SD) of female and male students was 19.54 years (±1.50) and 20.12 years (±1.30), respectively. This mean age difference was statistically significant. (Kruskal-Wallis test value= 4.5675; p-value= 0.03).

Table 1 showed that the majority of the study samples were males, Nepali citizens, from urban areas, and non-vegetarians as compared to other variables. The majority of the respondent's parents were from a non-medical background and do not have past exposure to dead bodies in reality (Table 1).

Table 1. Frequency of socio-demographic and clinical variables of the respondents. (n=73)

Variables	Frequency (%)
Gender	
Female	33(45.21)
Male	40(54.79)
Nationality	
Foreigner	31(42.47)
Nepali	42(57.53)
Occupation of Parents	
Medical Background	14(19.18)
Non-Medical Background	59(80.82)
Place of origin	
Rural	20(27.40)
Urban	53(72.60)
Dietary Habits	
Non-vegetarians	59(80.82)
Vegetarians	14(19.18)
Past exposure to dead body in reality	
Yes	27(36.99)
No	46(63.01)

Table 2 showed that the mean traumatic stress score was high among males, Nepali citizens, urban residents, and non-vegetarian respondents. The mean stress score was also high if the respondent's parents were from a medical background and had past exposure to dead bodies in reality as compared to other variables. However, mean traumatic stress score differences within different sociodemographic and clinical variables tested were not statistically significant (Table 2).

Table 2. Comparison and relationship of mean traumatic stress score between different variables. (n=73)

Variables	Mean Traumatic Stress Score (±SD)	Kruskal-Wallis test value	p-value
Gender			
Female	2.27 (±2.89)	0.2356	0.62
Male	4.02 (±7.32)		
Nationality			
Foreigner	2.90 (±4.44)	0.6825	0.4
Nepali	3.47 (±6.65)		
Occupation of parents			
Medical background	4.78 (±5.26)	2.725	0.09
Non-medical background	2.86 (±5.89)		
Place of origin			
Rural	1.85 (±2.47)	0.6601	0.41
Urban	3.75 (±6.57)		
Dietary habits			
Non-vegetarians	3.38 (±6.08)	0.9869	0.32
Vegetarians	2.57 (±4.46)		
Past exposure to dead body in reality			
Yes	4.03 (±8.20)	0.0784	0.77
No	2.76 (±3.76)		

p-value<0.05 to be statistically significant.

DISCUSSION

The psychological impact of human body dissection has been an area of concern among medical educationists and policymakers across the world for the last few decades. The mean age of the total samples in the current study was 19.86 years. Two different studies conducted in Nepal and Ethiopia showed the mean age of total samples of 19.7 years and 19.5 years, respectively, which is comparable to our study results.[5,9] In our study, the mean age of male and female respondents was 20.12 years and 19.54 years, respectively, and this mean age difference was statistically significant. The study conducted in Ethiopia also found a statistically significant association of the mean age between males and females.[9]

This study found that the majority of the study samples were males, Nepali nationals, from urban areas, and non-vegetarians as compared to other variables. The majority of the respondent's parents were from non-medical backgrounds, and the majority didn't have past exposure to dead bodies in reality in the present study. The study conducted in Eastern Nepal noted that the majority of the study samples were male, from urban areas, and had past exposure to dead bodies in reality.[5] The prevalent study samples in the study conducted in Ethiopia were males and urban area residents.[9] Two studies conducted in New Zealand found a high percentage of study samples in female, urban residents and past exposure to dead bodies in reality.[10,11]

The prevalence of stress reaction symptoms in the current study was 1.37%. The other study conducted in Eastern Nepal found a prevalence of 8%.[5] The study conducted in the USA found that 5% of students suffer from symptoms suggestive of post-traumatic stress disorder (PTSD).[3] An Australian study reported that 30% of students are having adverse physical and psychological effects.[6] Two different studies from New Zealand noted the prevalence rate of 9% and 10%.[10,11] The study conducted in Ethiopia found that 4.1% of the subjects were highly stressful, 70.1% were mildly stressful, and 25.9% were not at all stressful.[9] One study from Ireland noted that 80% of students had very little or no stress on their first visit, and 2% of respondents rated their stress levels as high.[12] The study from India reported that most of the first-year medical students found their first visit to the anatomy dissection room exciting and suffered very little or no stress at all.[7] The mean score in the current samples of the population was 3.23. Another study conducted in Eastern Nepal showed the mean score of 13.43.[5] Two studies conducted in New Zealand found the mean scores of 12.89 and 15.1 respectively.[10,11]

Our study found that the mean traumatic stress score was high in males as compared to females, but it was statistically insignificant. The study conducted in Eastern Nepal also found similar findings.[5] However, the different studies showed high scores in females.[10,11,13] Another study conducted in Ethiopia found no association between gender and anxiety.[14] In the present study, the mean traumatic stress score was high among Nepali students as compared to foreign students, but the relationship was insignificant. Another study conducted in Eastern Nepal also showed the same finding.[5]

This study found that the mean traumatic stress score was high among students from urban origins as compared to rural origins, and this relationship was statistically insignificant. Similar findings were also noted in the two studies conducted in Eastern Nepal and New Zealand.[5,11] In our study, the mean traumatic stress score was high among non-vegetarian students as compared to vegetarian students and was statistically insignificant. One study conducted in Nepal found that the initial and present challenge score (by using the appraisal of life events scale) was significantly higher among vegetarians compared to nonvegetarians.[15] The mean traumatic stress score was higher among students who had past exposure to a dead body in reality than among the students who didn't have exposure to a dead body in reality, and this relationship was statistically insignificant. Another study also noted the high mean stress score in the participant who was severely traumatized with previous exposure to dead persons.[10] However, the study conducted in Eastern Nepal and New Zealand found a high mean stress score among the students who had not been exposed to a dead body in the past as compared to those who had exposed, and the relationship was statistically insignificant.[5,11] This finding could be explained by the fact that the past traumatic memories may have increased the respondent's emotional sensitivity to death.[10] The study conducted in Ethiopia found a statistically significant association between prior exposure to a dead body and anxiety.[14] This difference in the study findings in the different studies mentioned above might be due to socio-cultural differences between different countries, different geographical characteristics, scientific progress, methodological differences, different coping mechanisms, other

past traumatic memories, and new trends in medical education.[5,16]

Limitations

This study has few limitations. Other events, such as the recent changes in the student's life due to changes in their home environment, might have affected the result of this study. The other confounder, like stress from the recent exposure to other basic science subjects, was also not measured. The cross-sectional type of this current study does not check the direction of the effect and does not measure causality. The next limitation is that this study was conducted in one medical college only. Further large-scale, case-control, and analytical design studies are needed before generalizing the findings of this study.

CONCLUSIONS

The prevalence of stress reaction symptoms after one week of exposure to human body dissection was low. Gender, nationality, occupation of parents, place of origin, dietary habits, and past history of exposure to a dead body in reality do not statistically affect the mean traumatic stress score. Medical educators need to take care to identify and support the individual students having stress reaction symptoms. It is recommended that faculty should prepare students mentally and emotionally before the commencement of the dissection session. Future studies are warranted to address the limitations of the current study and also to study the coping mechanisms used by medical students for dissection sessions.

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