Original Article

Study on Post-Traumatic Stress Disorder (PTSD) Among Traumatic Amputated Patients Using DSM-5 Revised Criteria

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Abstract:

Background: Limb amputation is a common surgical procedure done for therapeutic reasons to prevent further deterioration and save lives. ***Objective:*** To assess the level of post-traumatic stress disorder (PTSD) among trauma related amputated patients. ***Methods:*** This cross-sectional study was conducted between January and December of 2016 on 296 amputated patients who were admitted in the National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka, and BDM Hospital and Diagnostic Center, Dhaka, Bangladesh. A semi-structured, questionnaire was developed both English and Bangla (local language) using the variables of the study and validated. Using that tool, face to face interview was taken. The checklists were used to collect their socio-demographic characteristics, information regarding amputation and stress severity and diagnosis of PTSD, collectively termed as DSM-5. ***Results:*** Among 296 respondents, 213(72%) were male and 83(28%) were female. The mean age of the respondents was 32.013±5.35 years. PTSD was found in221 (75%), while the rest 75 (25%) had acute traumatic stressdisorder. Among PTSD patients, 10(50%) with digit amputated, 41(68.33%) of upper limb amputated, 155(77.11%) of lower limb amputated, and 15(100%) of both or multiple limbs amputated respondents. 61% had extreme level of stress. PTSD had significant association with sex, age, habitat, occupationposition and part of limb loss ($P<0.05$). ***Conclusion:*** In our country, PTSD is very common in amputated patients and has significant association with sex, age, habitat, occupation as well as part of limb loss. Multidisciplinary team of health professionals should emphasize on the need of amputees, both physically and psychologically and provide an effective rehabilitation plan.

Keywords: Post-traumatic stress disorder (PTSD), amputated patient, CAPS-5, PCL-5, LEC-5.

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Introduction

Limb amputation is a common surgical procedure performed by orthopedic, general, vascular and trauma surgeons to prevent further deterioration and save lives. However, loss of a limb due to trauma has a devastating emotional impact on a patient, escalating to mental trauma that may be more harmful than that the loss of the limb[1]. We know that in case of organic, tumoral, or infections, amputation is planned; in contrast, in traumatic amputations are unplanned. Thus, there is a certain sequential order regarding risk for developing mental disorders, starting from the immediate reaction to the acute stress disorder leading to and ending with the post-traumatic stress disorder (PTSD). It is mostly related to ones perceived image, which further aggravates the disability[2]. It has profound economic, social and psychological effects[3].

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Post-traumatic stress disorder (PTSD) is an anxiety disorder that can occur following the experience or witnessing of a traumatic event[4-6]. A traumatic event is a life-threatening event such as military combat, natural disasters, terrorist incidents, serious accidents or physical or sexual assault in adult or childhood[5]. PTSD develops in response to traumatic event. About 60% of men and 50% of women experience a traumatic event in their lifetime[7]. Most people who are exposed to a traumatic event will have some of the symptoms of PTSD in the days and weeks after the event. For some people these symptoms are more severe and long lasting. There are biological, psychological and social factors that affect the development of PTSD[8,9].

Due to the differences in indication and pattern of amputation between different countries and even different cities in a country. This study was performed to identify the traumatic events causes amputation, diagnose post-traumatic stress disorder (PTSD), by using DSM-5 published by the American Psychiatric Association (APA) in 2013,[10] and to determine association between socio demographic factors with the development and severity of amputation (part of limb loss).

Methods

This cross-sectional study was conducted between January and December of 2016 on 296 amputated patients who were admitted in the inpatient departments of National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka, and BDM Hospital and Diagnostic Center, Dhaka, Bangladesh. Patients were selected based on the following inclusion and exclusion criteria:

Inclusion criteria:

1) Amputated respondent with traumatic history;
2) Hospital admitted respondent.
3) Respondent will be included irrespective of sex.
4) Respondent's willingness to participate in this study.
5) Day after amputation not more than 6months.
6) Children more than 7 years.

Exclusion criteria:

1) Mentally unsound people;
2) Non-traumatic amputated patients;
3) Severely ill patient who will be unable to take part in the interview;
4) Child under 7 years.

Convenience sampling technique was followed. After fulfilling the eligibility criteria,a total of 296 amputated respondents were taken in the study.Informed written consent was taken from the respondent before interview. Privacy of the respondents was ensured, and interview was not disclosed to any unauthorized person. Complete assurance was given that all information provided by the respondent will be kept confidential. A semi-structured questionnairewas developed both English and in Bangla (local language) using the variables and specific objectives of the study from the patients by face-to-face interview. It contained questions related to their socio-demographic characteristics, information regarding amputation and PTSD checklist (as follows):

1. A checklist was used to collect the Trauma related information ofamputated patients by LEC-5 (life event checklist -5).[11] A single indextrauma was identified in an individual;
2. Then, Criteria A was used for applicability of PCL-5 and CAPS-5;[12]
3. After met the Criteria A, PCL-5 was used to provisional diagnosis andassess PTSD severity;
4. After provisional diagnosis, CAPS-5 (Past Week, Past Month and Worst Month Versions where applicable) was used for clinical diagnosis.

However, before data collection, pre-testing of the questionnaire and checklist were used in the in-patient unit of PRIME Orthopedic Hospital, Dhaka, Bangladesh. According to the finding of pre-testing necessary modifications were in the questionnaire and checklist.

Data were analyzed by Statistical Package for Social Science (SPSS) version 24.0. For descriptive statistics, means, standard deviation and ranges for categorical data were calculated as required. Data were presented in frequency table. For inferential statistics, chi-square($\chi 2$) test was done to analyze association of PTSD with different parameters.

Results

The mean age of the respondents was 32.013±5.35 years.Among 296 respondents, 128 (43.3%) were from the age group 20-29 years while about 52 (17.5%) of them were from the age group

Table 1. Socio-demographic characteristics of the participants (N=296)

Variables	Frequency	Percentage
Age group		
7-19	50	16.85
20-29	128	43.3
31-49	52	17.5
50-59	48	16.2
60 and above	18	6.1
Mean age	32.013±5.35	
Sex		
Male	213	72
Female	83	28
Habitat		
Rural	172	58.1
Sub-urban	46	15.5
Urban	78	26.4
Education		
Illiterate	75	25.3
Self-educated	6	2
Primary	97	32
Junior Secondary	38	12.8
Secondary	47	15.9
Higher Secondary	21	7.1
Graduate	12	4.1
Occupation		
Unemployed	11	3.7
Student	50	16.9
Housewife	46	15.5
Transport Driver andHelper	37	12.5
Day Labourer	51	17.23
Industrial Worker	51	17.23
Business	34	11.5
Civil Service	16	5.4
Marital status		
Married	152	51.34
Unmarried	144	48.65
Income level		
<10000 BD Taka (Lower income group)	87	29.39
<25000 BD Taka (Lower middle income group)	170	57.43
<50000 BD Taka (Uppermiddle income group)	28	9.46
>50000 BD Taka (High income group)	11	3.71

30-49 years, 50(16.85%) were child and adolescents and 48 (16.2%) from 60 years and above. 213 (72%) were male and 83 (28%) were female. Most of the respondent 172 (58.1%) came from Rural area, 78 (26.4%) from urban area and rest were from sub-urban area 46 (15.5%). Most of the respondent 97 (32%) completed primary education. The remaining 25.3% were illiterate, 15.9% were completed secondary education, while 12.8%, 7.1%, 4.1%, and 2% were completed junior secondary education, higher secondary, graduate studies, and self-educated respectively. By occupation, industrial worker 11 (3.7%), 51 (17.23%), whereas 50 (16.9%), 46 (15.5%), 37 (12.5%), 51 (17.23%), 51 (17.23%), 34 (11.5%) and 16 (5.4%) were unemployed, students, housewives, transport driver and helper, day labourer, industrial worker, businessman, drivers, in civil service respectively. 152 (51.35%) were married and 144 (48.65%) were unmarried. Majority of the respondent 170 (57.43%) were from lower middle socio-economic status) had monthly family income of taka 11000-25000 (Lower socio-economic status), 87 (29.4%), 28 (9.5%) had monthly family income up to 10000 taka, and 26000 -50000 (Upper middle socio-economic status) taka while lowest no of the respondent 11 (3.71%) had monthly family income 51000-100000 (Upper socio-economic status) taka(Table 1). Age, sex, habitat and occupation are associated to events of PTSD among the respondents(Table 2).Most of the events231 (78%) happened due to road traffic accidents, while 56 (19%) at working place, 6 (2%) at home working and 3 (1%) by explosion through bombs/firearms.Among the respondents diagnosed with PTSD, 10 (50%) had only digits amputated, while 41 (68.33%) had upper limb amputated, 155 (77.11%) lower limb, and 15 (100%) had both/multiple limbs amputated. The difference was statistically significant ($P<0.05$)(Table 3).

Table 2. Association of prevalence of PTSD with age, sex, living and occupation

Variables	Distribution of PTSD		Chi-square (χ2)	P value
	Yes	No		
Age group				
7-19	40	10	13.7916	0.007991
20-29	106	22		
31-49	32	20		
50-59	30	18		
60 and above	13	5		
Sex				
Male	148	65	10.7683	0.001033
Female	73	10		
Habitant				
Rural	155	17	55.5071	0.00001
Sub-urban	20	26		
Urban	46	32		
Occupation				
Unemployed	11	0	52.769	0.00001
Student	40	10		
Housewife	40	6		
Transport Driver andHelper	17	20		
Day Labourer	45	6		
Industrial Worker	46	5		
Business	16	18		
Civil Service	6	10		

Table 3. Association between PTSD and part of limb loss

Amputation	Distribution of PTSD		Chi-square (χ2)	P value
	Yes	No		
Digit	10	10	13.43	0.003793
Upper limb	41	19		
Lower limb	155	46		
Both limbs	15	0		

Discussion

In the present study, the mean age of the respondents was 32.013±5.35 years; 72% of the respondents were male and 28% female. In a study done by Dar et al.[13]in Kashmir region of India, there was a higher rate of morbidity in females than in males following trauma (45.87% vs. 40.68% respectively). In another study done by Mansoor et al.[14], males out-numbered females by approximately 4:1 ratio (79% vs. 21%). Higher prevalence of PTSD in females was also reported in the study done by Bryant & Harvey[15]. Male predominance could be derived from the reason that ours is a patriarchal type of society, where men are the bread earners of the family and the women usually prefer to stay at home. Another reason could be that men report for rehabilitation and also seek help for their psychological problems more readily than women.

In the present study, the young age group suffered most trauma and subsequent morbidities. Dar et al.[13] reported that maximum number of cases with trauma and subsequent morbidities belonged to 20-40 years age group (P <0.001). Mansoor et al.[14]reported that majority (45%) of the amputees were males in the age group of 15-30 years, followedby 30% in the age group of 31-45 years and 25% in the age group of 46-60 years. Similar evidence was produced by the study done by Pooja & Sangeeta.[16] The amputees in that report were at young age. This may be due to the fact that most amputations were due to trauma, which occurred more frequently in younger people who led more active lives. However, victim suffering from PTSD at a young age may not benefit from powerful confronting strategies and need more times to be able to develop effective coping strategies and implement them.[17]

We Observedthat majority (81%) of the cases were from rural areas with low literacy rates. Similar results were found in the study done by Mansoor et al.[14] Most likely explanation for this observation is that the majority (74.9%) of the population in the sub-continent region are from rural background and the literacy rate is low that of urban areas.

Limitations of the study

Although optimum care had been tried by the researcher in every step of this study, still some limitations exist.The study population was not taken from the population of all the amputated cases of the community, rather the sample was representative of only those amputated cases who got admitted in in-patient unit of specialized hospitals. No follow up of amputated respondent was possible as because they came from different areas of the country. There were no similar studies conducted before in the country, making our task arduous in finding out relevant information. Our study period was short and sample size was small, due to the budget constraint.

Conclusion

Our data suggest that PTSD is very common in amputated patients in our country and symptom severity has significant association with sex, age, socio-economic status as well as part of limb loss and time passed after amputation. Multidisciplinary team of health professionals should emphasize on the need of amputees, both physically and psychologically and provide an effective rehabilitation plan**.**

Conflict of interest: None declared.

Ethical approval issue: Ethical clearance was taken from the Institutional Ethical Committee of National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh.

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References:

1. Monson CM, Resick PA, Rizvi SL. Posttraumatic stress disorder. In: Barlow DH. ed. Clinical handbook of psychological disorders. New York: Guilford Press; 2014: p.80-113.
2. Mckechnie PS, John A. Anxiety and depression following traumatic limb amputation: a systematic review. Injury. 2014;45(12):1859-66.
3. Clasper J, Ramasamy A. Traumatic amputations. Br J Pain. 2013;7(2):67-73.
4. Cavanagh SR, Shin LM, Karamouz N, Rauch SL. Psychiatric and emotional sequelae of surgical amputation. Psychosomatics. 2006;47(6):459-64.
5. Giummarra MJ, Fitzgibbon BM, Tsao JW, Gibson SJ, Rich AN, Georgiou-Karistianis N, et al. Symptoms of PTSD associated with painful and nonpainful vicarious reactivity following amputation. J Trauma Stress. 2015;28(4):330-8.
6. Abeyasinghe NL, de Zoysa P, Bandara KM, Bartholameuz NA, Bandara JM. The prevalence of symptoms of Post-Traumatic Stress Disorder among soldiers with amputation of a limb or spinal injury: a report from a rehabilitation centre in Sri Lanka. Psychol Health Med. 2012;17(3):376-81.
7. Copuroglu C, Ozcan M, Yilmaz B, Gorgulu Y, Abay E, Yalniz E. Acute stress disorder and post-traumatic stress disorder following traumatic amputation. Acta Orthop Belg. 2010;76(1):90-3.
8. Margoob MA, Sheikh AA. Community prevalence of adult PTSD in South Asia-experience from Kashmir. JKPractitioner. 2006;13:S18-25.
9. Radhakrishnan M, Masand P. Prevalence of PTSD following surgical amputation. Curr Psychiatry Rep. 2007;9(3):215-6.
10. American Psychiatric Association(APA). Diagnostic and Statistical Manual of Mental Disorders (DSM–5). 2013.
11. Gray MJ, Litz BT, Hsu JL, Lombardo TW. Psychometric properties of the Life Events Checklist. Assessment. 2004;11(4):330-41.
12. Bovin MJ, Marx BP, Weathers FW, Gallagher MW, Rodriguez P, Schnurr PP, et al. Psychometric properties of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (PCL-5) in veterans. Psychol Assess. 2016;28(11):1379-91.
13. Dar MA, Wani RA, Margoob MA, Haq I, Hussain A, Chandel RK, et al. The association between adult mental health problems and childhood trauma: A retrospective community based study from Kashmir. Int J Emerg Mental Health Hum Resilience. 2015;17(2):447-52.
14. Mansoor I, Margoob MA, Masoodi N, Mushtaq H, Younis T, Hussain A, et al. Prevalence of psychiatric comorbidities in traumatic amputees – Across sectional study from Kashmir (Indian Part). Br J Med Pract. 2010;3(4):a347.
15. Bryant RA, Harvey AG. Gender differences in the relationship between acute stress disorder and posttraumatic stress disorder following motor vehicle accidents. Aust NZ J Psychiatry. 2003;37(2):226-9.
16. Pooja GD, Sangeeta L. Prevalence and aetiology of amputation in Kolkata, India: A retrospective analysis. Hong Kong Physiother J. 2013;31(1):36-40.
17. Barmparas G, Inaba K, Teixeira PG, Dubose JJ, Criscuoli M, Talving P, et al. Epidemiology of post-traumatic limb amputation: a National Trauma Databank analysis. Am Surg. 2010;76(11):1214-22.