Post-traumatic Stress Disorder among Medical Personnel after Nepal earthquake, 2015

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ABSTRACT

Background: Health professionals involved in a disaster are not immune to the stressors. However, little attention is given on the psychological consequences among these professionals. This study has explored the frequency of post-traumatic stress disorder (PTSD) among them after the Nepal earthquake 2015.

Methods: A descriptive cross sectional study was carried out amongst the medical professionals at Manmohan Memorial Teaching Hospital, Kathmandu to assess the PTSD among them after the Nepal earthquake 2015. Two months after the post disaster the standard PTSD Checklist for DSM-5 (PCL 5) was administered to medical personnel of a hospital(n=64) along with demographic features, disaster related experience and working hours. PTSD was defined by two ways: 1.using DSM V diagnostic criteria (the presence of at least one intrusion, one avoidance, two negative alterations in cognitions/mood and two alterations in arousal and reactivity symptoms); and 2. a cutoff score of 30.

Results: The overall prevalence of PTSD was 21.9% and 17.1% using cutoff score and diagnostic criteria respectively. Females scored significantly higher than males. No significant difference was observed according to age, marital status, profession, previous disaster experience, tragic events with relatives. Those who were present in the hospital during the initial influx of victims, witnessed patients suffering, worked extra time were at significantly high risk for development of PTSD.

Conclusions: This study suggest that PTSD is highly prevalent among healthcare professionals after disaster management and therefore it highlights the need for targeted interventions to specific staff who respond to large disasters to reduce the psychological burden.

Keywords: Disaster; earthquake; healthcare professional; Nepal; post-traumatic stress disorder.

INTRODUCTION

The April 2015 Nepal earthquake killed more than 9,000 people and injured more than 23,000[1] and consequently all local hospitals were overwhelmed with surge of victims and were challenged in ways they had not previously experienced. The psychological challenges that the medical personnel faced was related to exposure to life-threatening situation, suffering of patients and their families, deaths of victims combined with long hours of work, tragic events with family or friends, compassion fatigue, separation from family, decreased sleep.[2, 3] As a result they are vulnerable to develop post-traumatic stress disorder (PTSD) and become concealed victims of disaster; however special attention is not addressed to recognize and provide support for them. Those with persistent PTSD symptoms often suffer from poor job satisfaction, absenteeism from work and early retirement.[4]

This study aimed to determine the incidence of PTSD amongst healthcare professionals two months after the earthquake using PTSD-DSM-5 criteria.[5]

METHODS

This was a descriptive cross sectional study conducted

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at Manmohan Memorial Teaching Hospital, Kathmandu which actively participated during the disaster. At two months post disaster questionnaire were distributed to the medical/paramedical staff and volunteer students of the institution during a disaster debriefing session as a convenience sample. Written consent was obtained from them and their names were not mentioned in the questionnaire so the confidentiality of the participants was maintained. Incomplete forms were excluded from the study. Ethical clearance was obtained from MMIHS-Institutional Research Centre (IRC)

A questionnaire was designed to assess demographic data of participants, their educational level and job experience, previous disaster experience, exposure to victims, experience with loss of family or friend, separation with family, hours of work and any difficulty functioning at home and work.

The standard PTSD Checklist for DSM-5 (PCL 5), 20-item self-report measure that assesses the DSM-5 symptoms of PTSD was used to screen for PTSD.[5]The PCL-5 include a history of exposure to a traumatic event that meets specific stipulations and symptoms from each of four symptom clusters (B-E): B-intrusion, C- avoidance, D-negative alterations in cognitions and mood, and E-alterations in arousal and reactivity.[6]These symptoms must persist for at least one month before PTSD may be diagnosed. The self-report rating scale is 0-4 for each

symptom, 0-"Not at all,"1-"A little bit,2-" Moderately," 3-"Quite a bit," and 4-"Extremely".[7] The PCL-5 was scored in two ways: A total symptom severity score (rang - 0-80) was obtained by summing the scores for each of the 20 items. In the setting of civilian primary care, Department of Defense screening, or general population samples suggested PCL cut-point is 30-35.[8] As it is advised to consider scores on the low end of the range if the goal is to screen for PTSD to maximize detection of possible cases we set the cut-point of 30 for this study. Secondly a provisional PTSD diagnosis was made by treating each item rated as 2 = "Moderately" or higher as a symptom endorsed, then following the DSM-5 diagnostic rule which requires at least: 1 B item (questions 1-5), 1 C item (questions 6-7), 2 D items (questions 8-14), 2 E items (questions 15-20).

Statistical analysis included descriptive statistics (mean, S.D., frequency, and percent) of all data. Subgroups were compared using the *t*-test for continuous variables and the chi-square test for categorical variables. A *P* value below 0.05 was considered to be statistically significant.

RESULTS

Out of 85 participants only 72 returned their questionnaire (response rate of 84%). Eight were excluded as the response was incomplete and 64 questionnaires were finally included in the study (Doctors=20, nurses and

Table1. Distribution of PTSD by population variables.

Variables	Difficulty functioning at home		Difficulty functioning at work		PTSD with cutoff-score>30		PTSD- with Diagnostic Criteria[7]	
Age (years)								
≤ 20	9/18(50)		10/18(55.6)		4/18(22.2)		4/18(22.2)	
21-30	21/29(72.4)	*P* =.041	18/29(62.)	*P* =.611	7/29(24.1)	*P* =.875	5/29(17.2)	*P* =.715
≥31	6/17 (35.3)		8/17(47.1)		3/17(17.6)		2/17(11.8)	
Gender								
Female	33/39(84.6)		31/39(79.5)		12/39(30.8)		10/39(25.6)	
Male	3/25(12)	*P* =.000	5/25(20)	*P* =.000	2/25(8)	*P*=.032	1/25(4)	*P* =.025
Marital status								
Single	25/43(58.1)		26/43(60.5)		10/43(23.3)		9/43(20.9)	
Married	11/21(52.4)	*P*=.663	10/21(47.6)	*P*=.331	4/21(19)	*P*=.702	2/21(9.5)	*P*=.256
Profession:								

		P		P		P		P
Doctors	5/20(25)		5/20(25)		3/20(15)		2/20(10)	
Nurses	22/26(84.6)	P=0.000	21/26(80.8)	P=0.001	7/26(26.9)	P=0.624	5/26(19.2)	P=0.57
Students	9/18(50)		10/18(55.6)		4/18(22.2)		4/18(22.2)	
Previous mass casualty exposure								
Yes	22/38(57.9)		20/38(52.6)		10/38(26.3)		7/38(18.4)	
No	14/26(53.8)	P=.748	16/26(61.5)	P=.481	4/26(15.4)	P=.299	4/26(15.4)	P=.752
Present in hospital during initial influx of casualties								
Yes	31/50(62)		34/50(68)		14/50(28)		10/50(20)	
No	5/14(35.7)	P=.08	2/14(14.3)	P=.000	0	P=.025	1/14(7.1)	P=.05
Witnessed victims suffering/dying								
Yes	33/51(64.7)		33/51(64.7)		14/51(27.5)		11/51(21.6)	
No	3/13(23.1)	P=.007	3/13(23.1)	P=.007	0	P=.033	0	P=.06
Tragic events with relatives/close friends								
Yes	14/22(63.6)		14/22(63.6)		5/22(22.7)		3/22(18.6)	
No	22/42(52.4)	P=.389	22/42(52.4)	P=.389	9/42(21.4)	P=.905	8/42(19)	P=.586
Separated from family during the earthquake								
Yes	32/46(69.6)		34/46(73.9)		13/46(28.3)		10/46(21.7)	
No	4/18(22.2)	P=.001	2/18(11.1)	P=.000	1/18(5.6)	P=.048	1/18(5.6)	P=.117
Working hours								
Normal	13/24(54.2)		11/24(45.8)		2/24(8.3)		1/24(4.2)	
Extended	23/40(57.5)	P=.798	25/40(62.5)	P=.193	12/40(30)	P=.042	10/40(25)	P=.032

paramedics=26, volunteer students=18)

The overall prevalence of PTSD amongst all healthcare personnel was 21.9% (n=14/64) and 17.1% (n=11/64) using cutoff score and diagnostic criteria respectively. Accounting all severity of symptoms (including 1="a little bit") the prevalence increased to 60.9% (n=39/64). The mean PTSD score was 19 SD ±13.3. Females scored significantly higher than males i.e 23.11 ±13 versus 12±9.5 (p=.002). Doctors scored less than paramedical staff and students 15±11.7, 21±13.1 and 20.56.5±14.7 respectively, but this was not statistically significant. More than half (56.3%) of the participants reported difficulty functioning at home and work. All participants (n=14) who met diagnostic criteria of PTSD were having difficulty functioning at work (p=.000) and 78.6% (n=11) were having difficulty at home (p=0.057). Table 1 summarizes the relation between different demographic factors, disaster related experience and the prevalence

of PTSD using both methods.

DISCUSSION

One out of five (21.9%) healthcare workers met the PTSD criteria, ranging from 15% for doctors to 26.9% for paramedical staff. This result reflects that healthcare workers undergo highly stressful scenario during the disaster by the overwhelming numbers of victims and are extremely vulnerable for development of mental disorder like PTSD. Furthermore 59% (n=38) reported that they were having difficulty functioning at home and/or work; amongst them female gender, nurses were significantly at risk. All of those who fulfilled the diagnostic criteria for PTSD were having difficulty functioning at work which is worrying. Despite of these overwhelming distresses, healthcare personnel are expected to have endurance, be able to cope with it and are expected not to react emotionally.

The prevalence of PTSD among medical workers in previous studies was reported from 6.6% after Japan earthquake 2011,[9] 14.1% after World trade center

disaster 2001,[10] to 24.2%after Tsunami 2004.[11] This discrepancy in post-disaster PTSD rates in different studies done previously may be due to methodological variation, nature and magnitude of the disaster, the time elapsed between the disaster occurrence and data collection, the different criteria used for screening. Our prevalence is higher than some previous studies.[9,10] Unlike many other natural disasters, earthquakes come without warning with widespread and ongoing impact. Moreover there were ongoing aftershocks when the data was collected resulting in continued stress among the participants which might have impact on the high level of symptoms.

Our finding sub analysis of the result showed that gender (women) as an risk factor for PSTD which is consistent with other evidence.[12] However in some studies this was not the case[9,11,13] perhaps because their sample had a relatively small number of women

Prevalence of PTSD was more in younger age however statistically it was not significant, so age is not a dependent factor for developing PTSD in our study. Fullerton in his study suggested that younger age was a significant risk factor for development of PTSD.[13] There was no significant difference in the rate of PTSD according to marital status in our study which is consistent with previous study.[14] Those who were single were more likely to develop PTSD in other studies.[12,13]

The role of previous experience with disasters in development of PTSD is important for the healthcare workers repeatedly exposed to disaster. Those who had previous mass casualty exposure had higher incidence of PTSD (n= 10 vs. 4) but the number was not statistically significant. Fullerton in their study indicated that exposed disaster workers with previous disaster experience are 6.77 times more likely to develop PTSD.[13] In contrast Perrin from their study suggested that prior training or experience may protect against the psychological distress associated with disaster work.[10] Whether previous disaster experience sensitizes or protects against future risk is a debatable issue.

More nurses and students were having symptoms of PTSD; however the number was not statistically significant as in previous study.[11] The prevalence of PTSD increased significantly with extended duration of working hours. Longer duration of time worked, lack of rest was related to higher prevalence of PTSD in previous studies.[9,10] Those who were present in the hospital during the initial influx of the victims, witnessed death or suffering scored significantly more than their counterparts. Fullerton in his study concluded that exposed disaster workers

are at increased risk of PTSD.[13] A study demonstrated the association between duration of time worked and current probable PTSD was strongest for those who started earlier.[10]

There are several limitations to this study. First, the sample size is small and the study was cross-sectional not prospective. Second, data are based on self-report measures and psychiatric diagnostic interview was not conducted to confirm the results of the self-administered questionnaires, as the result the prevalence of PTSD could have been overestimated. Although it was notified that the results would remain confidential, it is nevertheless possible that some participants may not have answered honestly because of the stigma attached to poor mental health. Third, pre-disaster baseline risk factors, such as prior psychiatric problems, personal stressors and alcohol consumption which are known to affect the mental health of affected people after a disaster was not obtained. Fourth, direct assessment of the degree of previous training experience and preparedness for disaster, participation in mental health interventions was not done, thus, whether such factors might have been responsible for the differences in mental health conditions among the different occupations was unknown.

CONCLUSIONS

This study revealed that all healthcare professionals are at risk of developing PTSD, therefore there is a need to better understand risk and mitigating factors for PTSD in this high-risk occupational group. The need for efficient screening of PTSD in disaster-exposed high risk groups (female, those involved during the initial influx of victims, witnessed suffering of patients, worked extra hours) needs to be emphasized and further larger surveys in other centers needs to be executed. Targeted preventative psychological and supportive interventions in the workplaces should be initiated early and continued over time to lessen the development of PTSD and other psychiatric sequel. Exhaustion of the medical workers is a concern and measures should be implemented to improve working conditions for medical staff during disaster (e.g importance of staff rotation to prevent burn out, developing educational programs to staff to inform the symptoms and stress management techniques). The healthcare managers should develop supporting policies, program in order to assists those involved in disasters to manage the effects of those stressors, and to actively work to rebuild and strengthen both professional and personal communities.

ACKNOWLEDGEMENTS

REFERENCES

1. April 2015 Nepal earthquake. (2015, July 21). In *Wikipedia, The Free Encyclopedia*. Retrieved May 10, 2015, available from https://en.wikipedia.org/w/index.php?title=April_2015_Nepal_earthquake&oldid=672411503

2. Schiraldi GR.The Post-Traumatic Stress Disorder Sourcebook. Second ed. USA: McGraw Hill; 2009.

3. Huggard P. Caring for the Carers: the emotional effects of disasters onhealth care professionals. Australasian Journal of Disaster and Trauma Studies. 2011;2:60-2.

4. Hall R, Gardner ER, Perl M, Stickney SK, Pfefferbaum B. The professional burnout syndrome. Psychiatric ipinion. 1979;16:12-7.

5. American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-5. Fifth ed. United States, Washington, D.C. : American Psychiatric Association; c2013.

6. Friedman MJ. Finalizing PTSD in DSM-5: Getting here from there and where to go next. Journal of Traumatic Stress. 2013;26:548-56.

7. Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., & Schnurr, P.P. (2013). *The PTSD Checklist for DSM-5 (PCL-5)*. [cited on May 2015). Scale available from the National Center for PTSD at www.ptsd.va.gov.

8. National center for PTSD. Using the PTSD Checklist for DSM-IV (PCL). January 2014; [Citd on May 2015]. Available from: http://www.ptsd.va.gov/professional/pages/assessments/assessment-pdf/PCL-handout.pdf.

9. Sakuma A, Takahashi Y,Ueda I,Sato H,Katsura M,Abe M et al. Post-traumatic stress disorder and depression prevalence and associated risk factors among local disaster relief and reconstruction workers fourteen months after the Great East Japan Earthquake: a cross-sectional study. BMC Psychiatry. 2015;15(58):1-13.

10. Perrin M, DiGrande L, Katherine W, Lorna T, Mark F, Robert B. Differences in PTSD Prevalence and Associated Risk Factors Among World Trade Center Disaster Rescue and Recovery Workers. Am J Psychiatry. 2007;164:1385–94.

11. Armagan E, Engindeniz Z,Devay AO,Erdur B,Ozcakir A. Frequency of post-traumatic stress disorder among relief force workers after the tsunami in Asia: do rescuers become victims? Prehospital and Disaster Medicine. 2006;21(3):168-72.

12. Iranmanesh S, Tirgari B,Bardsiri HS. Post-traumatic stress disorder among paramedic and hospital emergency personnel in south-east Iran. World J Emerg Med. 2013;4(1):26-31.

13. Fullerton C, Ursano RJ,Wang L. Acute Stress Disorder, Posttraumatic Stress Disorder,and Depression in Disaster or Rescue Workers. Am J Psychiatry. 2004;161(8):1370-6.

14. Guo YJ, Chen CH, Lu ML, Tan HK, Lee HW, Wang TN. Posttraumatic stress disorder among professional and non-professional rescuers involved in an earthquake in Taiwan. Psychiatry research. 2004;127:35-41.