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Anxiety, Depression and Post-Traumatic Stress Disorder after Earthquake

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ABSTRACT

Background: Prevalence of anxiety, depression and post traumatic stress disorder is high after earthquake. The aim of the study is to study the prevalence and comorbidity of commonly occurring psychological symptoms in people exposed to Nepal mega earthquake in 2015 after a year of the event.

Methods: A community based, cross sectional, descriptive study was carried out in Bhumlichaur area of Gorkha district, Nepal after around 14 months of the first major earthquake. We used self-reporting questionnaire 20, Post-traumatic stress disorder 8 and hospital anxiety and depression scale to screen for presence of symptoms of anxiety and depression or post-traumatic stress disorder in this population. The risk of having these disorders according to different socio-demographic variable was assessed by calculating odds ratio. All calculations were done using predictive and analytical software (PASW) version 16.0.

Results: A total of 198 participants were included in the final data analysis. The mean age of study participants was 35.13 years (SD=18.04). Borderline anxiety symptoms were found in 104 (52.5%) while significant anxiety symptoms were found in 40 (20%) of respondents. Borderline depressive symptoms were seen in 40 (20%) while significant depressive symptoms were seen in 16 (8%) of subjects. Around 27% (n= 53) of respondents were classified as having post-traumatic stress disorder.

Conclusions: The prevalence of anxiety and depressive symptoms and post-traumatic stress disorder seems to be high even after one year in people exposed to earthquake.

Keywords: Anxiety; depression; disaster; post-traumatic stress disorder.

INTRODUCTION

A major earthquake of magnitude 7.8M_w hit Nepal on 25 April 2015. It killed 8669 people and injured16,808 people. Hundreds of thousands of people were made homeless as 288,793 buildings were damaged and 254,114 buildings were partially damaged. It was followed by 459 aftershocks of ≥4 magnitude until 28th May 2016.[1] Such disasters may increase psychological morbidity by more than 17%.[2] Some studies have suggested that the major post disaster psychiatric presentation is a conglomeration of post-traumatic stress disorder (PTSD), depression and anxiety symptoms.[3] Such psychiatric symptoms may even last for years or even decades.[4] Some studies suggest that psychological symptoms may be more prolonged in adoloscents.[5]

Two previous studies from Nepal have assessed psychiatric comorbidity in earthquake victims with contradictory findings. A study conducted in three earthquake affected districts Kathmandu, Gorkha and Sindhupalchowk found high levels of depression, anxiety but low levels of PTSD.[6] Another study has reported prevalence of 27.1% of PTSD in adoloscents.[7]

We carried out this study to find out the prevalence and comorbidity of the most frequently seen psychological symptoms i.e. PTSD, depression and anxiety in people exposed to this mega earthquake after a year of exposure.

METHODS

A community based, cross sectional, descriptive study was carried out in Bhumlichaur area of Gorkha district,

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Nepal. Data was collected from 22nd - 24thjune 2016 i.e. nearly about 14 months after the disaster after obtaining ethical clearance from institutional review committee of Manipal teaching hospital, Pokhara, Nepal. Data was collected after getting informed consent from the participants by second and third authors. A predesigned proforma was used to collect information regarding relevant sociodemographic details. Other tools used for data collection were:SRQ20, PTSD8 and HADS.

The Self Reporting Questionnaire (SRQ) is a scale designed to screen for psychiatric disturbances. It contains 20 items which question the respondent about symptoms likely to be present in neurotic disorders. Each question is scored either 0 (for absence of symptoms in last one month) or 1 (for presence of symptoms in last one month). The maximum score is 20. Its psychometric properties have been demonstrated to be good.[8]A cutoff of ≥7 was chosen to indicate "caseness" in current study.

PTSD8 is a brief screening inventory which can be used to screen for PTSD. It contains eight items. Each item is rated on a four point likert scale; 1= "not at all", 2= "rarely", 3= "sometimes", 4= "often". These items are divided into three symptom clusters with question 1-4 being intrusion items, questions 5 and 6 being avoidance items and questions 7 and 8 being hypervigilance item. The criterion for a symptom cluster is met if any of the items in that cluster is scored ≥ 3. To meet the diagnostic criteria for PTSD criteria for all three symptom clusters have to be met along with following criteria: The event has to involve actual or threatened death, serious injury, or a threat to the physical integrity of self or other and the experience of intense fear, helplessness or horror. The symptoms have to be present for at least one month after the trauma and cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. The psychometric properties of this scale have been demonstrated to be adequate.[9]

Hospital anxiety and depression scale (HADS) is a short screening instrument to screen for depression and anxiety which has been used extensively in community surveys. It consists of 14 items. Half of these items form depression subscale while the other half forms anxiety subscale. Each of these items is rated on a four point Likert scale ranging from 0 to 3. A summed score of 0-7 is considered normal, 8-10 is considered borderline and ≥ 11 signifies caseness. Recently HADS has been translated in Nepalese language. Its psychometric properties have been demonstrated to be acceptable.[10]In this study we used the Nepalese version of HADS.

Data were analyzed using predictive and analytical software (PASW) version 16.0. Continuous data are presented as mean and standard deviation; categorical data are presented as frequency and percentages. Odds ratio (OR) with their 95% confidence interval (CI) were calculated to assess the risk of being classified as having PTSD, depression or anxiety according to different categories of relevant sociodemographic variables.

RESULTS

Data was collected from 206 participants but data from eight participants were incomplete so their data was not included in the final data analysis. Hence a total of 198 participants were included in the final data analysis. The mean age of study participants was 35.13 years (SD=18.04) with youngest participant being 18 years of age and the eldest participant being 88 years of age. Most of the participants were illiterate with the modal number of education obtained being zero years. (Table 1)

Table 1. Shows baseline characteristics of study participants.

Variables		N (%)
Age groups (years)	18-30	101 (51%)
	31-50	61 (30.8%)
	51-65	23 (11.6%)
	>65	13 (6.6%)
Sex	female	124 (62.6%)
	male	74 (37.4%)
Marital status	unmarried	56(29.3%)
	married	140 (70.7%)
Occupation	housewife	28 (14.1%)
	farmer	96 (48.5%)
	student	50 (25.3%)
	Business	1 (0.5%)
	others	23 (11.6%)

Among the study participants 17 (8.6%) had past history of receiving treatment for psychiatric disorder. Five (2.5%) of patients had experienced another traumatic experience in the last 3 years. Around 41% of the participants of the current study fulfilled the criteria for psychiatric "caseness" as indicated by a score of ≥7 in SRQ 20.

The distribution of patients classified into different categories by the scales used in this study is shown in table 2.

Table 2. Shows distribution of patients in different diagnostic categories.

Scale	Categories	N (%)
SRQ 20	Negative	117 (59.1%)
	positive	81 (40.9%)
PTSD 8	No PTSD	145 (73.2%)
	PTSD	53 (26.8%)
HADS A subscale	No anxiety	94 (47.5%)
	Borderline anxiety	64 (32.3%)
	Anxiety	40 (20.2%)
HADS D subscale	No depression	142 (71.7%)
	Borderline depression	40 (20.2%)
	Depression	16 (8.1%)

Among the study participants 29/198 (14.6%) of patients had more than one diagnoses. The commonest pattern of comorbidity was presence of both PTSD and anxiety in the same patient. This pattern was observed in 7.6% of the patients. Presence of all three diagnoses in the same patient was seen in 1.5% of the patients.(Table 3)

Table 3. Shows pattern of comorbid diagnosis.

Comorbid diagnoses	N (%)
PTSD + probable depression	5 (2.5%)
PTSD + probable anxiety	15 (7.6%)
Probable Anxiety + probable depression	6 (3%)
PTSD + probable Anxiety + depression	3 (1.5%)

The relationship of different sociodemographic variables with the risk of being classified as having PTSD, depression or anxiety was assessed by calculating OR with 95% CI. Statistically significant increase in risk of having PTSD was seen in people <30 years ofage and unmarried people. Whereas the risk of anxiety and depression was statistically significantly more in females compared to males.(Table 4)

Table 4. Showing relationship of different sociodemographic variables with PTSD, anxiety and depression.

Sociodemographic variables		PTSD 8		OR (95% CI)	HADS A		OR (95% CI)	HADS D		OR (95% CI)
		negative	positive		negative	positive		negative	positive	
Age (years)	< 30	36	65	2.606 (1.342; 5.058)	17	84	0.651 (0.323;1.311)	8	93	0.975 (0.344; 2.659)
	≥30	17	80		23	74		8	89	
Sex	Female	38	86	1.738 (0.877; 3.442)	33	91	3.471 (1.447; 8.322)	15	109	10.045 (1.298; 77.713)
	Male	15	59		7	67		1	73	
Marital status	Unmarried	23	35	2.409 (1.241; 4.676)	11	47	0.895 (0.413; 1.941)	1	57	0.1462 (0.018; 1.133)
	married	30	110		29	111		15	125	
Past history	Yes	5	12	1.154 (0.386; 3.448)	1	16	0.228 (0.293; 1.769)	1	16	0.692 (0.086; 5.582)
	No	48	133		39	142		15	166	

DISCUSSION

The major finding of this study is the high prevalence of psychiatric disorders in people exposed to severe trauma after one year of exposure. In this study "caseness" was observed in 81/198 (41%) of respondents using SRQ20 at a cut off of ≥7. Similar rate of caseness has been previously reported.[3]

Current study found borderline anxiety symptoms in 104/198 (52.5%) of respondents while probable anxiety disorder was found in 40/198 (20%) of respondents. Elevated estimates of anxiety disorder in people exposed to major disaster have been reported previously.[3] Current study has also found presence of borderline anxiety symptoms in a high number of disaster exposed population. It is currently not known how the presence of subsyndromal anxiety symptoms affects the functional outcome, quality of life and overall prognosis of people exposed to major disaster as the existing literature in this area is scarce. Further studies in this area are warranted.

Around 27% (n= 53/198) of respondents in the current study were classified as having PTSD by PTSD 8. There is a wide variation in reported prevalence of PTSD following

exposure to major disaster. Rates as low as 2.5% and higher than 90% have been reported previously.[11,12]This may be because of the multifactorial nature of the etiology of PTSD with age, gender, education, marital status, extent of exposure, past history of mental illness, individuals' resilience and available social support all being the mediating factor in occurrence of PTSD as well as methodological differences in the studies being conducted. Most studies have reported prevalence of PTSD to be in the lower half this range.[13,14]

Some long-term studies of prevalence of PTSD in disaster exposed victims indicate that the prevalence of PTSD decreases with time.[15] However some studies show that there might in fact be a rise in prevalence of PTSD in a few years following exposure to disaster.[16,17] This may be because of emergence of late onset PTSD. It is therefore important to provide appropriate support to victims of major disaster in the long term.

Current study has found a relatively low prevalence of probable depression i.e. 8% (16/198), though borderline depressive symptoms were present in 20% (40/198) patients. This prevalence falls in the range (5.8%- 54%) reported by a previous meta-analysis.[18] One previous study has reported spontaneous resolution of depressive symptoms in some patients exposed to trauma with time. The improvement of depressive symptoms was in part ascribed to subsidence of grief and rising of hope for social and economic recovery.[19] Similar mechanism may explain this relatively low prevalence of significant depressive symptoms after a year of event.

In the overall sample 29/198 (14.6%) of patients had more than one diagnosis with 3/198 (1.5%) having three diagnoses and 26/198 (13%) having any two diagnoses. Previous studies also have reported very similar findings on comorbidity.[3] A meta-analysis published in 2013 has estimated the rate of PTSD- major depressive disorder comorbidity to be around 50% (95% CI= 48- 56%).[20] In our study however only 15% (8/53) of patients had comorbid probable depression and PTSD. This lower rate of comorbidity could be due to finding of relatively lower prevalence of depression in our study sample. It is important to note however that co-occurring depression and PTSD is associated with greater degree of distress, impairment and health care utilization.[21] The rates of comorbidity between probable anxiety disorder and PTSD was higher in our sample 18/53 (33.9%).

The odds of having probable anxiety (OR= 3.471 95%CI = 1.447; 8.322) and probable depression (OR= 10.045 95%CI= 1.298; 77.713) were more in females compared to males. The risk of having PTSD was statistically significantly more in people < 30 years of age compared to older people (OR= 2.606 95%CI= 1.342;5.058) and in unmarried people (OR= 2.409 95% CI= 1.241;44.676) compared to married people. Higher prevalence of PTSD in younger people and unmarried or previously married people had been previously reported.[22]

The finding of current study needs to be interpreted in the background of its limitations. The first limitation is its relatively small size. Another important limitation of the study is that the tool used to assess PTSD i.e, PTSD 8 generates DSM IV diagnosis while the criteria have slightly been changed in DSM V. Some scales e.g, PTSD checklist for DSM V (PCL 5) which generate DSM V criteria are available but they have not been as well validated as the older ones and only preliminary reports of psychometric properties are available.[23] Further, more studies suggest that changes in diagnostic criteria have made minimal impact on prevalence of PTSD with DSM V prevalence being only slightly lower (typically around 1%) than DSM IV prevalence.[24] Finally, another important limitation to be considered is the use of HADS to assess presence of anxiety and depression. Since HADS is a screening tool, it can only indicate probable presence of anxiety and depression and definite diagnosis of either disorder cannot be made using this tool. Further studies in this area may obviate this shortcoming by performing face to face interview with patients or by using diagnostic tools.

CONCLUSIONS

The prevalence of anxiety, depression and post traumatic stress disorder are increased even after one year of earthquake in affected district of Gorkha.

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