

Prevalence, Socio-demographic & Quality of Life correlates of Post-Traumatic Stress Disorder among Disaster victims of Uttarakhand

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Background: In view of recent catastrophe in disaster prone Uttarakhand, it's poor preparedness and severe outcome in terms of destruction and loss of human lives & property, a study was designed to look into other 'not too visible' areas loss in terms of Post-Traumatic Stress Disorder (PTSD) and Health related Quality of Life (H-QOL) of the disaster victims and estimate this burden. Hence, the present study was planned to estimate magnitude/prevalence of PTSD and assess Health related QOL with potential relationship between variables of PTSD & Health related QOL among the disaster victims of Sub Himalayan Uttarakhand state of India.

Methods: 2667 disaster victims were sampled by multi stage probability sampling in a cross sectional study with key respondents being 'head of the family', 'next to head of the family', 'any individual directly injured during disaster, aged ≥ 14 years and non-alcoholic'. Study instruments used were WHO endorsed PTSD-S and WHOQOL- BREF tools besides a structured, pre-tested instrument to elicit socio- demographic data.

Results: More than half (51%) of the disaster victims were diagnosed with PTSD. Key socio-demographic and other variables, namely gender, education, occupation, family income, marital status, kind of disaster exposed to, frequency of disaster, type of loss and type of exposure significantly affected development of PTSD. Also, Health related QOL was found to be negatively correlated with PTSD among the disaster victims.

Conclusion: Sensitization and capacity building of both providers & community to proactively take appropriate measures in minimizing/mitigating PTSDs and thereby ensure desired QOL are of paramount importance.

Keywords: Disaster Victims, Post Traumatic Stress Disorder, Quality of Life.

Introduction

Disasters are traumatic events that are experienced by many people and may result in a wide range of mental and physical health consequences. Published literature reports effects that these were quite severe, with a high proportion of study participants exhibiting clinically significant distress or diagnosable disorders, the most frequently reported condition being PTSD, followed by depression, and then other anxiety disorders.^{1,2} The Asia Pacific region experiences sixty percent of world's natural disasters. India on account of its geographical locus standi, climate and geological setting, is the worst affected theatre of disaster in south

east region ;these are increasingly causing more injury, disability, mental illness, disease and death, adding to the health and economic burden of an already impoverished nation.³ In June 2013, a multi-day cloudburst cantered on the North Indian state of Uttarakhand caused devastating floods and landslides in the country's worst natural disaster since the 2004 tsunami.

In view of ample scope for further research in a potentially disaster prone and vulnerable state of Uttarakhand, the recent catastrophic flash flood in the state with unprecedented death and destruction, the present study has been designed to study magnitude of

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Cite this article as: Mahalingam V, Roy D. Prevalence, Socio-demographic & Quality of Life (QOL) correlates of Post-Traumatic Stress Disorder (PTSD) among Disaster victims of Uttarakhand. SRHU Medical Journal 2017;1(1): 26-30

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Manuscript received: 28.08.16; Revision accepted: 12.09.16

Post Traumatic Stress Disorder (PTSD), its socio-demographic correlates and potential association with Health related Quality of Life (HQOL) of Disaster victims.

Material and Methods:

An observational cross-sectional study design was employed in a study setting of the flash flood i.e., affected community of Ukhimath tehsil, Rudra Prayag district of northern Indian state of Uttarakhand. A total of 2822 study subjects were sampled by multi-stage probability sampling. (systematic random sampling with appropriate sampling interval). Considering the 'Head' and 'Next to Head' of all the households (1129) to be 2258 i.e. (02×1129) and assuming 50% of the sampled households i.e.564 households having at least 01 injured person who was > 14 years of age and non-alcoholic, i.e. 564.(564×01) subjects, estimated sample population size was 2822. Fifteen ASHA workers were utilized to collect the data from the study subjects. Although considering the availability and missing data total 2662 study subject's data were analysed for present study. Ethical committee permission was taken from the concerning authority and written informed consent was taken from study subjects before collecting the data.

Study tool:

1. **PTSD Checklist** – Civilian Version (PCL-S) score was used to find the magnitude / prevalence of PTSD among Disaster victims.
2. **WHOQOL- BREF** was used to measure Health related QOL.
3. A structured, pre-tested instrument to elicit socio-behavioural & demographic data.

Results:

It was found that a total of 1372 (51%) of the sampled population was afflicted with PTSD with PCL-S SCORE< 50. Observation on potential socio-demographic correlates (Table 1) showed that proportionately more females (27%) suffered from PTSD than males (24.5%); the difference however was not statistically significant implying no association of development of PTSD with Gender of the victims. Formally educated disaster victims (39.8%) afflicted with PTSD outnumbered the victims with PTSD who had non-formal education (12%); Educational status of the victims was found to be strongly associated with development of PTSD. The disaster victims who were employed (32.7%), married (46%) and had monthly family income between Rupees 5000-20000 (41.1%)

Table: 1 Socio-demographic & associated correlates of PTSD disaster victims (n=2667)

S. No	Variables		Frequency and Percentage(%)		Sig
			PTSD<50	PTSD>50	
1.	Gender	Male	667(25%)	654(24.5%)	.006
		Female	628(23.5%)	718(27%)	
2.	Educational Status	No Formal	209(7.5%)	315(12%)	.0001
		Primary	515(19%)	536(20%)	
		Secondary	446(17%)	420(16%)	
		Tertiary	125(4.7%)	101(3.8%)	
3.	Occupation	Skilled	231(8.7%)	176(6.6%)	.0001
		Non- Skill	728(27.4%)	704(26.1%)	
		No Occupation	336(13.2%)	492(18%)	
4.	Family Monthly Income	<5000	30(1.1%)	146(5.5%)	.0001
		5001-10000	584(22.2%)	490(18.1%)	
		10001-20000	561(21%)	612(23%)	
		>20000	120(4.5%)	124(4.6%)	
5.	Marital Status	Single	42(1.4%)	141(5.2%)	.0001
		Married	1247(47%)	1225(46%)	
		Separated	6(.2%)	6(.2%)	
6.	Kind of Disaster Exposed	Water	613(23%)	689(26%)	.0001
		Land	329(12%)	443(17%)	
		Road	353(13%)	240(9%)	
7.	Frequency of Exposure	1	523(20%)	518(19%)	.001
		2	399(15%)	362(14%)	
		3	373(14%)	492(18%)	
8.	Duration of Exposure	1week	568(21%)	553(21%)	.215
		2week	96(3.6%)	117(4.4%)	
		3week	60(2.2%)	58(2.2%)	
		4week	571(21.4%)	644(24.2%)	
9.	Type of Exposure	Life threatening	60(2%)	903(34%)	.0001
		Non Life threatening	1235(46%)	469(18%)	
10.	Type of Loss	Impairment	12(.4%)	356(13.2%)	.0001
		Loss of Property	53(2.2%)	754(28.2%)	
		None	1230(46%)	262(10%)	

suffered PTSD more than those unemployed, unmarried and having family income <Rs 5000/ per month respectively. All three variables of occupation, marital status & family income showed highly significant association with development of PTSD. Further, victims exposed to disasters involving water (26%), exposed more than once to a disaster (32%) and also the ones reporting up to 3 weeks' continuous exposure to disaster (27.6%) developed PTSD more than those exposed to disasters either on land or road (26%), those exposed only once to a disaster (19%) and the ones reporting up to 4 weeks' continuous exposure to a disaster (24.2%) respectively; differences in proportion of subjects in terms of 'kind of disaster exposed to' and 'frequency of exposure to a disaster' were significant. Those victims who experienced 'life

threatening' situations (34%), suffered impairment and orlost property (41.4%) during disaster were found to have PTSD more than those having suffered 'non-life threatening' conditions(18%) and incurring 'no loss of property'(10%). Both 'type of exposure' and 'type of loss' proved to be strongly associated with development of PTSD in victims.

Scores measuring Post Traumatic Stress Disorder (PTSD) and Quality of life (QOL) of disaster victims were found negatively correlated i.e. -0.91 at the level of $p < 0.05$ (Table 2). The beta score (-1.259) in correlation indicates that a rise of a single unit of PTSD score results in a fall of QOL score by 1.259 units among the disaster victims. Scores for different domains of QOL i.e. Physical, Psychological, Social and environmental also correlated negatively with PTSD score at the level of $p < 0.05$.

Table: 2 Correlation and Regression of PTSD & QOL (n=2667)

S. No	Variables	R value	Beta score	sig
1.	TOTAL QOL&PTSD	-.91**	-1.259	.0001
2.	Physical QOL&PTSD	-.87**	-.334	.0001
3.	Psychological QOL & PTSD	-.85**	-.310	.0001
4.	Social QOL & PTSD	-.82**	-2.213	.0001
5.	Environmental QOL & PTSD	-.87**	-.372	.0001

** $P < 0.05$ consider as statistically significantly

Discussion

More than half of the of the disaster victims were diagnosed Post Traumatic Stress Disorder (PTSD) morbidity suggested by PCL-S. This estimated prevalence is considerably less than the reported rates from comparable study settings where 70.9% of the tsunami victims had a diagnosis of PTSD.⁴ This finding is also consistent with 'Ventotene street disaster' study findings that PTSD was the most prevalent disorder after trauma. However, the subjects who had not seen dead or injured people were more likely to receive no psychiatric diagnosis.⁵ In a study by Nilmadhab kareet al⁴, Post-disaster psychiatric presentation in adolescents was a conglomeration of PTSD, depression and anxiety symptoms. The prevalence's of PTSD, major depressive disorder and generalised anxiety disorder were 26.9%, 17.6% and 12.0% respectively.⁶ After the tornado in Eastern North Carolina, 59% victims met the criteria for acute PTSD,

19% of whom had a severe form.⁷ Elderly and younger adult disaster exposed victims in cities closer to the higher exposure had significantly higher index PTSD scores than elderly and adult victims in more distant locations.⁸ After exposure to severe trauma, either an earthquake or violence, adults are at high risk of developing severe or chronic post-traumatic stress reactions that are associated with chronic anxiety and depressive reactions.⁹

It is evident from a study by Goenjian AK et al that females are more likely than males to report symptoms of post-traumatic stress disorder.¹⁰ This finding is corroborated by the present study; also, there is a statistically significant association of gender with development of PTSD. The results of the current study showed difference in vulnerability to PTSD between those who had no formal education and ones formally educated. Analogous studies report contradictory findings on this vulnerability with PTSD prevalence being inversely proportional to level of education.^{11,12} Such contradiction can be explained by population specific demographic attributes, socio-cultural dynamics, study setting etc.

Comparable studies done at similar study settings endorse the study finding that developing PTSD following disasters significantly associated with severity of exposure to the disaster and life events, stressors after disaster (e.g. loss of house, furniture, appliances, vehicles, property) including experiencing financial loss (e.g. lost job, fall in household income).^{13,14} In the present study the physical injury caused by earthquake and deaths of family members were found as risk factors of PTSD. Study done by Moreau C, Zisook Sin Iran after Bam earthquake also reports higher incidence and symptoms of PTSD in those who lost a near dear one.¹⁵

The results of the study indicate that PTSD among the victims of disaster has an inversely variable relation with QOL; that,with increasing PTSD score, magnitude of quality of life decreases and vice versa. Many studies have documented the complicated relationship between Post Traumatic Stress Disaster and Quality of Life of disaster victims. In a study by Jin Wen et al the rates of physical diseases and symptoms of PTSD were relatively high, and QOL poor among victims in the had-hit areas 3 years after the earthquake.¹⁶

In other comparable studies, 'good' QOL and PTSD symptoms were negatively related; 'perceived QOL was closely related to psychological factors and negative characteristics such as stress, anxiety and depression were found to affect the QOL of disaster victims.^{17,18} In another study, depression affected QOL

of the tsunami victims and self-rating anxiety score directly correlated with QOL ($r: 0.08, p < 0.05$).⁴

There are several limitations in the study that need to be acknowledged. First, there was no data on pre-disaster protective or vulnerability factors such as prior psychological adjustment, family history of psychopathology, and/or psychosocial support they received after the flood etc. and thus potentially limiting the generalizability of the results. Second, the investigator relied solely on self-reports of survivors, which were often subject to recall biases. Third, subjects who were less than 14 years old were excluded from the study for several presumed reasons. Fourth, since this study was cross-sectional it is not possible to draw conclusions regarding causal association involving risk factors and outcome.

Conclusion

The findings of the study highlight continuing need for identification and intervention for PTSD among disaster victims in developing countries. The scope of the study may be scaled up to include a larger sample and coverage; also, the initiative holds potential to be replicated at socio-epidemiologically similar perspective. PTSD may persist several years after a disaster that may result in significant personal distress and functional impairment. An early treatment program should be organized for those with significant post-disaster stress. In time, assessment, diagnosis and interventions for survivors should be a primary goal in a program of public health. Both community & provider capacity for disaster preparedness and mitigation should be built.

Reference

- Norris FH, Friedman MJ, Watson PJ, Byrne CM, Diaz E, Kaniasty K. 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. *Psychiatry*. 2002 Fall;65(3):207-39.
- "India raises flood death toll to 5,700 as all missing persons now presumed dead"(cited online news) CBS News.com, 16th July 2013.
- Menon VC, Kara S. Infochanges Disasters, Infochange India News and Features development news on Disaster in India (serial online) 2006 (cited 2006 nov10) (1-8). Available from: <http://infochangeindia.org/Disastersip.jsp>
- Nilamadhab K, Rameshraj K, Kavitha R. Long term mental health outcomes following the 2004 Asian tsunami disaster, *Disaster Health*, 2014; 2(1): 35-45.
- Raja M, Onofri A, Azzoni A, Borzellino B, Melchiorre N. Post-traumatic stress disorder among people exposed to the Ventotene street disaster in Rome. *Clinical Practice and Epidemiology in Mental Health: CP & EMH*. 2008; 4:5.
- Kar N, Bastia BK. Post-traumatic stress disorder, depression and generalised anxiety disorder in adolescents after a natural disaster: a study of comorbidity. *Clinical Practice and Epidemiology in Mental Health: CP & EMH*. 2006; 2:17.
- Madakasira S, Brien KF. Acute posttraumatic stress disorder in victims of a natural disaster. *Journal Nerve Mental Disorder*. 1987; 175(5):286-90.
- Goenjian AK, Najarian LM, Pynoos RS, Steinberg AM, Manoukian G, Tavosian A, Fairbanks LA. Posttraumatic stress disorder in elderly and younger adults after the 1988 earthquake in Armenia. *Am J Psychiatry*. 1994 Jun;151(6):895-901.
- Goenjian AK, Steinberg AM, Najarian LM, Fairbanks LA, Tashjian M, Pynoos RS. Prospective study of posttraumatic stress, anxiety, and depressive reactions after earthquake and political violence. *Am J Psychiatry*. 2000 Jun;157(6):911-6.
- Goenjian AK, Pynoos RS, Steinberg AM, Najarian LM, Asarnow JR, Karayan I, Ghurabi M, Fairbanks LA. Psychiatric comorbidity in children after the 1988 earthquake in Armenia. *J Am Acad Child Adolesc Psychiatry*. 1995 Sep;34(9):1174-84.
- Ruqayya S, Shakil URKP. Posttraumatic stress disorder six months after an earthquake: findings from a community sample in a rural region in Italy. *Society Psychiatry Psychiatric Epidemiology*. 2013; 28(1):393-7.
- Niaz U. The concept of post-traumatic stress disorder today. *Pakistan Journal Medical Science*. 2006; 22(4).
- Orlee U. Risk factors for long term psychological effects of a disaster experienced in adolescence: Predictors of post-traumatic stress disorder. *Journal of Child Psychology and Psychiatry*. 2000; 8:969-979.
- Cerda M. The course of posttraumatic stress symptoms and functional impairment following a disaster: what is the lasting influence of acute versus ongoing traumatic events and stressors? *Soc Psychiatry. Psychiatric Epidemiology*. 2013; 48:385-395.

15. Moreau C, Zisook S. Rationale for a posttraumatic stress spectrum disorder. *Psychiatric Clinical North America*. 2002; 25: 775-90.
16. Jin W, Ying-kang S, You-ping L, Ping Y, Fang W. Quality of Life, Physical Diseases, and Psychological Impairment among Survivors 3 Years after Wenchuan Earthquake, *Plos One*. 2012; 7(8): 1-7.
17. Egil N, Trond H. World assumptions, posttraumatic stress and quality of life after a natural disaster: A longitudinal study. *Health and Quality of Life Outcomes*. 2012 10:76.
18. Johana J, Najib AM. Relating Stress, Anxiety and Depression Flood Victims' Quality of Life in Malaysia. *International Journal of Social Science and Humanity*. 2013; 3(6): 543-547.