Original Article

Posttraumatic Stress Disorders in Adult Victims of 2006 Flood in Surat, Gujarat

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ABSTRACT

Introduction: Disasters are traumatic events in terms of emotion of psychology that may result in wide range of mental and physical health consequences. Post- traumatic stress disorder (PTSD) is one of the common psychiatric disorders following the disaster.

Aims and Objectives: Aim of the study was to find out the association between the flood and PTSD among victims of Surat flood 2006.

Material and Methods: 40 families from two separate flood affected area of Surat city were interviewed; Area A (first time affected by the flood) and Area B (Had faced the flood previously also). Participants above the age of 16 years or more were interviewed to fill up the Impact of Event Scale – Revised. Scores were calculated for subscales avoidance, intrusion and arousal.

Results: 32 (23.2%) subjects at standard cut off IOES-R score >24, were identified in distress within 1st month of exposure to the flood. Out of 32 affected subjects 28 (47.45%) were from area B in comparison to 4 (5.06%) from the area B. This difference between the two areas was found to be highly significant statistically. Female had higher score of intrusion than males. In follow up visit after 6-month significant decrease in PTSD disorder was observed.

Conclusion: PTSD is prevalent in the community exposed to the flood like natural disaster and is more common in females and mid age victims. PTSD symptoms resolves in most of the victims but previous experiences of the disaster may result in longer duration of the symptoms.

Key words: Post traumatic stress disorder, Disaster, Intrusion, Avoidance, Hyper arousal

INTRODUCTION

Disaster is defined as 'Misfortune, misshape, calamity; any unfortunate event, especially a sudden, serious one. But more ominous disaster encompasses events with enormous and distant repercussions [1]. World health Organization (WHO) defines disaster as, 'A severe disruption, ecological, and psychological, which greatly exceeds the coping capacity of the affected community [2].

Disasters are traumatic events in terms of emotion of psychology that may result in wide range of mental and physical health consequences. Post-traumatic stress disorder is one of the common psychiatric disorders following the disaster [2, 3].

Disaster may come in form of natural disasters like hurricane, flood, earthquake; human disasters like wares, terrorist attack. Fire in a home immediately affects only a person or one family; others like a bomb blast or tornado may affect hundreds of people. Disasters may be relatively short lived, although devastating or as in the case with famine and war may last for years [1].

Surat the biggest city of South Gujarat, faced flood on August 2006. On 7th August 2006, mere 3'rainfall, had filled up the Ukai dam and reached the dangerous level. People residing at the Tapi river bank were affected first. Within few hours 90-95% of the approximately 35-40 lakhs population of Surat was affected by flood. Water started receding on 10thAugust. The flood had incurred loss of many people and animal lives and affected the physical, economical and psychological health of the victims [4, 5].

Post-traumatic stress disorder (PTSD) is common among victims of the flood or any other natural disaster. The person reacts to the experience with fear and helplessness, persistent relives the event and tries to avoid being reminded of it. It is a complex events characterized by intrusive memories about the event, persistent avoidance of stimuli associated with the trauma, and persistent symptoms of increased arousal [6, 7].

IOES- R scale (Impact of Event Scale – Revised) [8-11]:
IOES- R is the instrument designed to assess current subjective distress for any life event. The IOES-R has 22 items. These 22 items self-report inventory results in three subscales regarding cognitive response to the traumatic events (In this case, experience with the flood)

Avoidance: (i.e. emotional numbness and removing it from memory)
Intrusion: (i.e. troubled dreams and reminders brought back feeling about it)
Hyperarousal: (i.e. Trouble concentrating and easily startled)

This study was conducted to find out the prevalence of the Post-traumatic stress disorder among victims of Surat flood 2006. Aim of the study was to find out the association between the flood and post-traumatic stress disorder among victims of Surat flood 2006. To identify the association and effect of the flood the subjects were randomly selected from Area a (first time affected by the flood) and Area B (Had faced the flood previously also).

Objectives: Diagnosis of PTSD among the Group A and Group B. To calculate and comparison of the prevalence of PTSD among group A and group B.

MATERIAL AND METHODS

This study was carried out by department of Psychiatry, Government Medical College and new Civil Hospital, Surat, Gujarat during August 2006 to February 2007 after approval from institute ethical committee.

Victims of the flood 2006 were approached to take part in the investigation about their reaction to the flood. Two flood affected area of Surat city named as A and B was included in the study. Area A was affected by the flood for the first time while area B had faced flood on multiple occasions in the recent past and had been more impacted by the flood of the year 2006. Systemic random sampling of 40 families from each area was done.

Each member of the families above the age of 16 years was interviewed as per semi-structured and protested standard questioners approved by ethical committee. Verbal and written consent was taken from each subject before the interview. Participants were interviewed within the first month of the flood and at sixth month of the flood to assess the short term and long term psychological impact of the flood respectively.

Exclusion Criteria: Uncooperative or Debilitated subjects were not included in the study. Subjects of age 16 years below the 16 years were not included in the study.

Participants were interviewed to fill up the IOES- R scale (Impact of Event Scale – Revised) [8-11]
Respondents were asked to rate each item in the IOES-R on a scale of 0 (not at all), 1 (a little bit), 2 (moderately), 3 (quite a bit) and 4 (extremely) for the past 7 days.

The scoring system of IES-R [8-11]:
Avoidance Subscale = mean of items 5, 7, 8, 11, 12, 13, 17 and 22
Intrusion Subscale = mean of items 1, 2, 3, 6, 9, 16 and 20
Hyperarousal Subscale = mean of items 4, 10, 14, 15, 18, 19 and 21
Mean IES-R score = sum of the above three scales
Scores were calculated for subscales avoidance, intrusion and arousal. The scores of participants from area A and area B were compared and analyzed by standard statistical formulas.

RESULTS

138 participants of >16 years were interviewed in first visit; participants were classified according to age and sex wise.

32 (23.2%) subjects at standard cut off IOES-R score >24, were identified in distress within 1st month of exposure to the flood. 106 (76.8%) subjects did not show any significant level of distress.

Table 1: Age wise distribution of IOES-R score for Adults during first visit (n=138)

Age groups (in years)	IOES-R Score	
	≤ 24	>24
	N (%)	N (%)
16-30	55 (51.9%)	13 (40.6%)
31-45	26 (24.5%)	5 (15.6%)
46-60	20 (18.9%)	11 (34.4%)
> 60	5 (4.7%)	3 (9.4%)
Total	106 (76.8%)	32 (23.2%)

Highest frequency of affected participants was from the age group of 16-30 years (Table 1).

Out of 32 affected subjects 28 (47.45%) were from area B in comparison to 4 (5.06%) from the area B. This difference between the two areas was found to be highly significant statistically at 99.99 confidence interval. (Yates corrected X2 value = 31.74, degree of freedom =1, p value = 0.0001)

There was no statistically significant difference in the score of avoidance, intrusion and Hyperarousal at the confidence interval of 99.95% and p value < 0.05. (Table 2)

Table 2: Adherence to hand hygiene practices among different health personnel

IOES-R Scale	Sex	Avoidance Subscale Mean (SD)	Intrusion Subscale Mean (SD)	Hyperarousal Subscale Mean (SD)
>24	Male	1.51 (0.51)	1.61 (0.63)	1.38 (0.45)
	Female	1.36 (0.58)	2.05 (0.44)	1.57 (0.51)
	Total	1.41 (0.55)	1.92 (0.53)	1.52 (0.49)
≤ 24	Male	0.37 (0.48)	0.46 (0.47)	0.56 (0.40)
	Female	0.46 (0.40)	0.46 (0.37)	0.53 (0.40)
	Total	0.41 (0.45)	0.46 (0.42)	0.55 (0.44)

In case of intrusion difference between male and female was statistically significant at 99.95 % confidence interval (p= 0.02); female had higher score of intrusion than that of the males. Avoidance and Hyperarousal did not show any significant difference between male and females.

Follow up of the families was carried out after the six months of the first visit. During this period one family from the area A consisting of two adults migrated and could not be included in the follow up. None of the subjects from area A who had significant psychological distress during first visit had psychological distress during follow up. Out of initial 28 subjects from area B who had significant psychological distress only 4 continued to have psychological distress during follow up (Table 3).

Table 3: Sex wise distribution of significant IOES-R score during follow up visit (n=136)

Sex	IOES-R Score (>24)		
	Area A	Area B	Total
Male	0	1	1
Female	0	3	3
Total	0	4	4

Difference in the IOES-R scale of the participants between the first and follow up visit was statistically significant (Wilcoxon matched paired test, Two tailed, p<0.001).

DISCUSSION

More frequency and ore score of intrusion was observed among females during first and follow up visit in comparison the males. In this study we found female gender and 16-30 years as risk factors of psychological impact of the flood. Norris F (2005) [12] reported in his study female gender, age in 40-60 years after disaster as risk factors for PTSD. As per American Psychiatric Association guideline being female and perception of an external locus of control (natural causes) rather than an internal one (human causes) are the two important predisposing factors in the development of PTSD [13]. Delisi L et al. (2003) also reported significantly more symptoms in females than males in all intrusions, avoidance and arousal [14].

In this study during follow up after six months of the flood the prevalence of the PTSD decreased significantly. That shows that psychological distress in victims of disaster decreases as time passes by. Foa EB. et al (2006) and Joshua M et al. (2002) found that risk factors for PTSD resolved in most of the cases as time passed [15,16].

In this study psychological symptoms were persisted for longer duration in area which had repeated exposure to flood in the past. That was also supported by the results of previous studies [13-16]

CONCLUSION

This study concludes posttraumatic stress disorders are prevalent in the community exposed to the flood like natural disaster and is more common in females and mid age victims. Although, PTSD symptoms resolves in most of the victims but previous experiences of the disaster may result in longer duration of the symptoms.

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