

A Study of Psychiatric Morbidity in Survivors of Tsunami Disaster in South India

Dr Nikhil U.G¹, Dr Jithu V.P²

Assistant professor¹, Associate professor²

Department of Psychiatry, Government Medical College, Kozhikode, Kerala, India

Corresponding author: dr jithu v.p

Abstract: aims 1. To compare the psychiatric morbidity between groups having different levels of exposure to trauma and differ in the extent of loss suffered following the disaster 2. To identify the socio demographic variables associated with psychiatric morbidity 3. To assess the relation between severity of exposure and psychiatric morbidity

Methods: we did a retrospective cohort study which compares the psychiatric morbidity between two groups of tsunami survivors with different levels of severity of exposure and loss.

Results: 18 persons in group i (36%) had an axis -I psychiatric diagnosis compared to 4 persons in the other group (8%). Among the subjects in group -i who received a psychiatric diagnosis 39% had ptsd, 28% had major depression, 16.5% had anxiety disorder and 16.5% had alcohol related disorders. 77% of those with ptsd were females. Among the subjects in group -ii who received a psychiatric diagnosis one (25%) had depression, two persons had alcohol related disorders(50%) and one subject had delusional disorder(25%).increasing age, female sex, preexisting physical and mental illness and exposure to trauma had a positive correlation conclusions: the high rate of psychiatric disorders found in these survivors of tsunami in this study indicates the need for judicious provision of mental health services for disaster survivors. This suggests that to reduce negative health impacts of the disaster adequate psychosocial support is needed for those who survived the tragedy.

Key words: Tsunami, post traumatic stress disorder,

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I. Introduction

Disasters are traumatic events that affect whole communities of individuals and cause widespread destruction and distress, unlike traumatic events that happen at the level of the individual¹. Disasters are experienced as a psychological disruption, a physical threat or a massive psychological stress, and mental health professionals are often called upon to assist during acute crisis as it was recognized that the most important physicians to head the recovery efforts were psychiatrists, not emergency trained trauma surgeons or internists². Disasters deserve special attention and are distinguished by their magnitude and their seeming capacity to traumatize great many individuals at once. Moreover by definition they overwhelm the social and political fabric of communities, a disruption that can be expected to significantly exacerbate and color individuals suffering in response to the trauma. Finally disasters are the most public of traumas and thus offer unique opportunities to study human response to tragedy on any level.

A considerable number of psychiatric surveys have been conducted subsequent to earthquakes, hurricanes, volcanoes and various manmade disasters and documented a range of psychiatric symptoms and disorders associated with these events. It is estimated that the disasters are associated with a 17% increase in the best mean estimate prevalence of psychopathology in comparison to pre disaster or control group rated³. There are major identifiable psychiatric disorders that are amenable to preventive measures and treatment which include – acute stress disorder, post traumatic stress disorder, other anxiety disorders, major depression, psychosis and substance use disorders.

Various risk factors that was found in previous studies to influence who is most likely to experience serious and lasting psychological distress are individual level severity of exposure, age ,sex, socioeconomic status, pre disaster functioning and personality factors^{4,5}

II. Materials and methods

Setting

The study was conducted in Alappad panchayath in Kollam district, Kerala, India which was one of the coastal areas of India worst affected by tsunami. On 26th December 2004 at about 12 noon, a tsunami tidal wave struck many villages in kollam district and caused widespread damage and destruction leading to loss of life and property. Alappad had to bear the brunt as proper warning system to predict its occurrence was not present at that time. It is a stretch of land lying wedged between the arabian sea and backwaters. Its total area is 7.38 sq.km with a total population of 24,914 and a density of 3332/sq.km. Majority of the population in this area are engaged in fishing as a means of livelihood

A total of 143 people died and more than 1000 people were injured. Immediately after the disaster around 40,000 people were evacuated to the various relief camps. 14,000 people had to remain in the relief camps for one month because they lost their properties and livelihood and their houses were damaged. Houses of 2500 families were completely damaged and they couldn't return to their houses. Out of this around 1200 families were staying in temporary shelters constructed by government at various places.

The data was collected two years after the disaster and is being analyzed now. Presently we are doing a study which compares the psychiatric morbidity between the two groups of survivors with different levels of severity of exposure and loss.

Severely affected group -1 (n=50) was selected based on the following criteria

1.death of a relative (family member living in the household) 2.destruction of house causing displacement from home/destruction of means of livelihood 3.witnessing the event.

Those satisfying all the three criteria were included in the severely affected group. For selecting this group systematic random sampling was done from the list of people who lost a relative. Those above 18 years of age and satisfying the other two criteria were included. The other group with equal number of people individually matched with respect to age(+2) and sex , and not satisfying any of the above mentioned criteria were recruited from a different ward(ward 9 and 10) in the same Panchayath in the coastal belt. This area though vulnerable to tsunami was not directly exposed to the waves and did not suffer any loss of life or property. But they were indirectly affected in terms of loss of livelihood, disruption of transportation facilities, electricity and water supply and also faced evacuation following tsunami. They were also exposed to same amount of scare and uncertainties regarding the recurrence of tsunami. Most of the families in this region had undergone emergency evacuation following tsunami warning. Those who were less than 18 years of age or having moderate to severe mental retardation were excluded from the study

Instruments

Information related to socio demographic characteristics, history of mental illness, physical illness, duration of stay in the place, extent of loss were entered in the proforma.28 item general health questionnaire(GHQ) (Goldberg & hillier, 1979) was administered to assess the psychiatric morbidity. Trauma screening questionnaire- TSQ (Cris r. Brewin) which is a specific screening tool for post traumatic stress disorder was given. TSQ is a 10 item instrument evaluating DSM iv criteria b (re-experiencing) and d (arousal) that is based on the PDS (post traumatic diagnostic scale). Items are rated on yes/no format as to their occurrence in the last one week. Positive endorsement of at least six items has a positive likelihood ratio(plr=sensitivity/1-specificity) of 12.3 for PTSD. A score of 3 is considered moderately positive and that of 10 is strongly positive. Both GHQ and TSQ were translated to Malayalam. Exposure scale based on DSM- iv a-1 and a-2 criteria for PTSD was administered to assess the severity of exposure. The instrument includes eight items evaluating objective and four items evaluating subjective features of exposure. Losses suffered were also quantified with a five item questionnaire. Clinical interview was done and cases were diagnosed based on ICD -10(clinical descriptions and diagnostic guidelines) criteria.

Statistical method – data was analyzed using SPSS ii. Frequency, mean and percentage were used to compare the descriptive data. Carl pearson's correlation was used to study the relation between different variables. Students t test was used for comparing the mean scores of GHQ and TSQ between the groups. Chi-square test was used to assess the significance in the difference in proportion of diagnosis in the two groups.

III. Results

Characteristics of the study sample

		group i		group ii	
		Frequency	%	Frequency	%
Age	18-30	14	28	14	28
	31-40	10	20	10	20
	41-50	12	24	12	24
	>50	14	28	14	28
Gender	Male	21	42	21	42

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	Female	29	58	29	58
Marital status	Single	8	16	5	10
	Married	36	72	41	82
	Separated/divorced	2	4	1	2
	Spouse died in disaster	4	8	3	6
Education	Illiterate	1	2	0	0
	Primary	8	16	11	22
	Matriculate	30	60	29	58
	Graduate and above	11	22	10	20
Occupation	Unemployed	21	42	21	42
	Fishing	19	38	18	36
	Govt. Employee	0	0	5	10
	Others	10	20	6	12
H/o mental illness	Positive	3	6	5	10
	Negative	47	94	45	90
H/o physical illness	Positive	10	20	6	12
	Negative	40	50	44	88

Comparison between the two groups

Group	Variables	Mean	Std deviation
I	Age	40.02	12.91
	Extent of loss	2.30	0.61
	Ghq score	10.76	7.22
	Tsq score	5.10	2.43
	Degree of exposure	4.88	1.36
	ii	Age	42.34
Extent of loss		0	0
Ghq score		4.20	3.40
Tsq score		2.02	1.49
Degree of exposure		0.02	0.14

The groups differ in the degree of exposure and degree of loss. Subjects in group ii had not witnessed the event. Few had indirect exposure as they took part in the immediate relief activities.

18 persons in group i (36%) had an axis -1 psychiatric diagnosis compared to 4 persons in the other group (8%). Among the subjects in group -i who received a psychiatric diagnosis 39% had PTSD, 28% had major depression, 16.5% had anxiety disorder and 16.5% had alcohol related disorders. 77% of those with PTSD were females. Among the subjects in group -ii who received a psychiatric diagnosis one (25%) had depression, two persons had alcohol related disorders(50%) and one subject had delusional disorder(25%).

Group	Diagnosis based on scid-1 cv	Frequency
I	Alcohol dependence syndrome	2
	Alcohol abuse	1
	Anxiety disorder nos	1
	Mdd	1
	Mood disorder nos	1
	Ptsd	7
	Ptsd & depression	3
	Adjustment disorder with mixed anxiety and depression	2
	Total	18
	ii	Alcohol dependence syndrome major depressive disorder, single episode
Alcohol abuse		1
Total		1
Total		4

When icd -10 clinical diagnosis was used, 21 persons in group I received psychiatric diagnosis (46%). Among the cases ptsd was the most common 48%. Depression (28%) and alcohol use disorder (14%) were the other diagnosis in the group. In group ii 4 cases (8%) received a psychiatric diagnosis.

Diagnosis based on icd -10

Group -i	
Alcohol dependence syndrome	2
Harmful use of alcohol	1
Ptsd	10
Adjustment disorder with mixed anxiety and depression	2
Ptsd & depression	4
Depressive episode	2

Total	21
Group ii	
Alcohol dependence syndrome	1
Delusional disorder	1
Depressive episode	1
Harmful use of alcohol	1
Total	4

Analysis of symptoms of presentation showed that most frequent symptoms were excessive preoccupation with the dead and with the property losses(50%), generalized aches and pains (29%)sadsness (25%), anxiety (30%)autonomic symptoms (21%), diminished appetite (15%), avoidance of sight and of feelings(25%), intrusive imagery(22%), sleep disturbance(15%), startled reaction(18%), and reduced involvement in external world(10%).

The severely affected group had 4.5 times psychiatric morbidity than the less severely affected group.

Pearson chi square test showed a significant difference between percentages of diagnosis among groups at 1% level of significance. The findings in the study showed that there were significant difference between people with different characteristics:

Age- high GHQ scores and high incidence of psychiatric diagnosis showed a positive correlation with increasing age, but the TSQ scores did not increase significantly with age. This trend is not seen in the second group where the TSQ values were found to be decreasing significantly as age increases.

Sex- in group i female sex had a significant correlation with TSQ scores which predict PTSD at 1% level of significance.($p=0.008$). In group ii also there was a positive correlation at 5% level of significance($p=0.024$).female sex also had a positive correlation with psychiatric diagnosis at 5 % level of significance($p=0.05$)in group i. This relation is not found in group ii.

Education status- subject with lower education status in group i scored high on GHQ ($p=0.19$) which is a measure of psychological distress but did not show any positive correlation with the psychiatric diagnosis or tsq scores. In group ii educational status did not show any correlation with GHQ, TSQ scores or psychiatric diagnosis.

Marital status- it does not have any significant correlation on GHQ, TSQ scores and psychiatric diagnosis in both groups

Occupation – it does not have any significant correlation on GHQ, TSQ scores and psychiatric diagnosis in both groups.

Preexisting physical illness-those who had preexisting physical illness showed higher GHQ scores ($p=0.01$ in group i which is not seen in group ii. History of physical illness has a positive correlation with psychiatric diagnosis in group ii at 1% level of significance ($p=.000$) and at 5% level of significance in group i ($p=0.012$).but this correlation was not seen in with TSQ scores in both groups

History of psychiatric illness –subjects with past history of psychiatric illness reported more psychological distress GHQ in group i ($p=0.088$).it had positive correlation with the psychiatric diagnosis in both groups. In group i 75% of those who had past history of mental illness had psychiatric morbidity at the time of assessment in group ii, only two out of five persons with previous history of mental illness (20%) had psychiatric morbidity.

Loss of family member- those who had lost an earning member in the family reported higher GHQ scores level of significance ($p=0.073$) but it was not associated with TSQ and psychiatric diagnosis.

Relationship to the deceased- those who had lost children and first degree relatives had higher scores on depression in GHQ but showed no statistically significant correlation with the psychiatric diagnosis.

Extent of loss-it was found that extent of loss experienced increases the psychiatric morbidity at a significant level ($p<0.01$). But it did not show any significant correlation with TSQ scores.

Exposure to the trauma- those who had higher degree of exposure to the trauma reported more psychological distress as evident by higher GHQ scores ($p=0.009$). They had maximum psychiatric morbidity also. They received more psychiatric diagnosis especially PTSD. Degree of exposure had a positive correlation with tsq scores ($p=0.01$) in group i at 1% level of significance. Group ii also showed a positive correlation ($p=0.03$) though at 5% level of significance.

Treatment- 34% of the subjects had received pharmacological treatment for mental health problems in group i but only 12% had at least one further follow up or were compliant with the medications for two weeks.

IV. Discussion

This was a population based study comparing psychological distress among survivors of tsunami in which the psychiatric morbidity among the severely affected was compared with those who were not directly exposed to the event but residing in the same area. The subjects in the study shared similar socio cultural and

demographic characteristics being from the same area. They differed in the severity of exposure to the disaster and the extent of loss. So the difference in the psychiatric morbidity between the groups can be meaningfully attributed to the effect of disaster, though post disaster events might have contributed to it.

There was a significant difference (4.5 times) in the psychiatric morbidity in the two groups. The presence of psychiatric morbidity of this magnitude even two years after exposure to the disaster is an important matter that has to be addressed. Trauma related psychological distress was higher among female respondents in the severely affected groups (higher TSQ scores & psychiatric diagnosis. The study showed female sex as a predictor of occurrence of post disaster morbidity especially post traumatic stress disorder. This is consistent with some of the existing studies.^{4,6} some researchers have differed from this view⁷

Educational status was also found to be a protective factor for post disaster psychological distress in general but not against PTSD. This may be due to better coping skills and better access to relief information as mentioned in other studies⁸.

This study also showed that age is another important factor which influences post disaster psychological distress though this is not seen with PTSD. And many studies consider aged as a vulnerable group in the post disaster period.⁹

Preexisting mental and physical illness were also found to be risk factors for post disaster psychiatric morbidity. 75% of those who had past history of mental illness developed post disaster psychiatric morbidity in severely affected group¹⁰. Patients with preexisting physical illness had significantly higher GHQ scores in the severely affected group¹⁰. it has a positive correlation with psychiatric diagnosis.

This study analyzed the extent of loss separately from the dose of exposure and it found a statistically significant correlation between the severity of exposure and psychiatric morbidity in particular the occurrence of post traumatic stress disorder^{11,12}

This study has shown that PTSD and depression are distinct issues and loss only relates to psychological distress in general whereas PTSD is linked to factors relating to exposure to threat.¹³

Various shortcomings of this study

1.this study did not measure the extent of psycho social interventions and rehabilitation aid received by the affected population during the two years following the disaster. These are the other major factors found to be associated with post disaster psychiatric morbidity.2.role of other negative life events after tsunami.3.incidence of substance use disorders are probably under reported

V. Conclusion

Psychological distress among tsunami survivors along with experience of other problems could be considered a serious issue for peoples' health status living in such difficult conditions. Evidence suggests that severe disaster can cause long standing morbidity. The study subjects in the study seemed to represent the population of tsunami victims in terms of severity of exposure and destruction. The high rate of psychiatric disorders found in these survivors of tsunami in this study indicates the need for judicious provision of mental health services for disaster survivors. This suggests that to reduce negative health impacts of the disaster adequate psychosocial support is needed for those who survived the tragedy. None of the rehabilitation services extended to the disaster survivors will be complete if adequate psychosocial support is not provided to them.

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