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## Prevalence of post-traumatic stress disorder and depression among flood affected individuals of Kashmir after six months of flood

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### Abstract

In September 2014, the Kashmir region suffered disastrous floods across many of its districts caused by torrential rainfall. Such events can lead to psychological disturbances among the affected persons. The objective of the present study is to assess post-traumatic stress disorder and depression among the affected population after floods in Kashmir. A total of 500 adult individuals irrespective of age and gender were studied. Screening questionnaire for disaster mental health (SQD) was administered for post-traumatic stress disorder and depression. A single adult individual from each family was asked to respond to the questionnaire. All ethical issues were taken into consideration. Data was analyzed using SPSS version 18. It was found that a large number of people are affected from post-traumatic stress disorder and also suffered from severe depression after six months of the flood.

**Keywords:** Flood, Psychological Disturbances, Post-traumatic stress disorder, Depression

### Introduction

Disasters, both natural and man-made, affect millions of people around the world every year. The immediate physical health consequences of disasters have been well described. Increased respiratory, gastrointestinal, and cardiovascular symptoms have also been reported for up to five years after a disaster. Asia, due to its geographical location has a high incidence of disasters and is known to be the most disaster prone area of the world.

Floods are the most common natural disaster in both developed and developing countries, and they are occasionally of devastating impact, as the floods in China in 1959 and Bangladesh in 1974 and the tsunami in Southeast Asia in December 2004 show. There is strong epidemiological evidence that floods cause considerable physical, social and psychological impacts on the afflicted population. Post-traumatic stress disorder was reported in 27% adolescents after a natural disaster. Their impacts on health vary between populations for reasons relating to population vulnerability and type of flood event. Under future climate change, altered patterns of precipitation and sea level rise are expected to increase the frequency and intensity of floods in many regions of the world. It is generally accepted that natural disasters, such as earthquakes, floods, and hurricanes, “take a heavy toll on the mental health of the people involved, most of whom live in developing countries, where [the] capacity to take care of these problems is extremely limited” (p. 43).

Most studies on the effects of flooding on common mental disorders are from high or middle-income countries, including Australia, Poland, the United Kingdom, and the United States, but there is also a study from Bangladesh. Bennet’s analysis of the 1968 Bristol floods found a significant increase (18 percent vs. 6 percent;  $p < 0.01$ ) in the number of new psychiatric symptoms (considered to comprise anxiety, depression, irritability, and sleeplessness) reported by women from flooded compared with non-flooded areas, although there was no significant difference for men. These results broadly agree with the findings for the 1974 Brisbane floods, except that in Brisbane men were also affected. Those between 35 and 75 years of age suffered the greatest impacts.

The degree to which disasters cause mental health problems is still being debated. Some studies show only minimal mental health effects, if any. Most studies, however, show evidence of psychological sequelae after disasters.

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Post-traumatic stress disorder, depression, insomnia, anxiety, and problems such as substance abuse and domestic violence have been reported. There may be greater psychological consequences for women, for younger victims, and for victims of disasters with many casualties. Although temporary symptoms are more common than severe long-term reactions, the psychological sequelae can persist for up to three to five years after a natural disaster. Psychological reactions may result from the stress caused directly by the disaster (e.g., the death or injury of family members or loss of property, financial assets, or employment), as well as from the disruption of the social fabric of community life. Psychological reactions may also result from stress caused by the processes of applying for assistance, obtaining housing, or filing for insurance reimbursement.

There is much that can be done to reduce health and other impacts through public education, emergency service planning, and the implementation of early warning systems. There is also more to understand about the long-term consequences of flooding on health and about the mechanisms by which such consequences can best be prevented or alleviated.

### Methodology

**Objectives:** To assess post-traumatic stress disorder and depression among the affected population after floods in Kashmir.

**Sample:** A total of 500 adult individuals from Srinagar and Anantnag district of Jammu and Kashmir, irrespective of age and gender, were included in the present post event study with the help of purposive sampling method. There were 320 male and 180 female flood victims aged from 15 to above 60 years. Majority was of Muslim population that is 98% and most of them were illiterate and farmers. Screening questionnaire for disaster mental health (SQD) was administered on each single individual from each victim family of the affected areas to examine post-traumatic stress disorder and depression among flood victims after six month of the disaster.

### Tools

**Screening Questionnaire for Disaster Mental Health (SQD):** This interview based questionnaire was developed after earthquake in Japan in 1995 to assess the symptoms of post-traumatic stress disorder and depression according to the DSM IV criteria. It is an easy to administer questionnaire with good screening validity, especially for post-traumatic stress disorder. The questionnaire consists of 12 close-ended questions with "Yes" or "No" options. Nine questions were related to post traumatic stress disorder (SQD-P), six questions for depression (SQD-D) while three questions were common to both SQD-P and SQD-D. The participants who scored between 6 and 9 were categorized as "severely affected", between 4 and 5 as "moderately affected", "and up to 3 as "slightly affected (Little possibility of PTSD)". Likewise, participants who scored between 5 and 6 were categorized as "more likely to be depressed" whereas those who scored between 0 and 4 were "less likely

to be depressed". In addition to SQD, the questionnaire included gender, age, marital status, educational status, mother tongue and income of the study participants.

**Procedure:** It was a post event study in which the data was collected after six months of the deadly flood in Srinagar and Anantnag district of Kashmir valley in 2014 on 500 individuals who were affected by the flood. Single adult individual from each family was asked to fill the Screening questionnaire for disaster management (SQD) in order to measure the level of depression and prevalence of post-traumatic stress disorder among the flood victims. Prior to data collection researcher had to establish a rapport with the subject. The purpose of the research was explained to the subject to develop the subject's keen interest to cooperate the task and after the subject's readiness to support the purpose, they were asked to fill the questionnaire. A translator was also present there to translate the questions into Kashmiri and Urdu language so that the subjects will be able to understand the questions and the task properly. Those who were unwilling or not interested or were not able to understand the objectives or outcomes of the research were not included in the study. After the completion of the questionnaires subjects were thanked and informed that their responses would be kept confidential and should be used for research purpose only. Data was analyzed using SPSS version 18 and Excel 2007 software for frequencies. Cross tabulation for categorical variables with PTSD and depression was done. The level of statistical significance was set as  $p < 0.05$ .

### Result and discussion

There were 500 participants in the study out of which 320 were males and 180 females that is 64% and 36% with age range from 15 to 60 above. Majority of the population was of Muslims (98%) with mother tongue Kashmiri (96%), 86% living in joint families and 20% were earning less than 6000 per month and 26% were earning from 10000-25000 per month. Most of them were farmers (56%) and illiterate (34%). (Table-1)

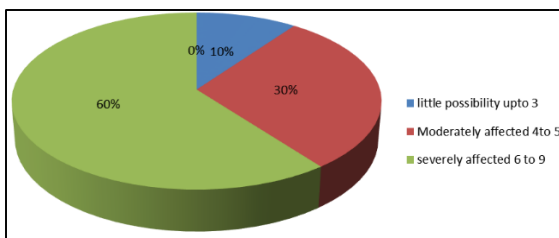
Figure-1 is showing the level of prevalence of post-traumatic stress disorder among flood victims. It can be clearly seen from the given pie chart that 302 (60%) were severely affected from post-traumatic stress disorder. 148 (30%) of the population were moderately affected by post-traumatic stress disorder and remaining 50 (10%) of the flood victims were slightly affected.

Figure-2 is showing the level of depression among flood affected population. 344 victims were more likely to be depressed whereas rests 156 were at lower possibility to be depressed.

In Table-2, the cross tabulation of characteristic variables revealed that there was a significant difference in respect to gender, females were more affected and developed mental disorders in comparison to male population ( $p > 0.001$ ). There was no significant difference found for PTSD and depression with age and marital status. Also people living in joint families were more affected by depression and PTSD ( $p < 0.01$ ).

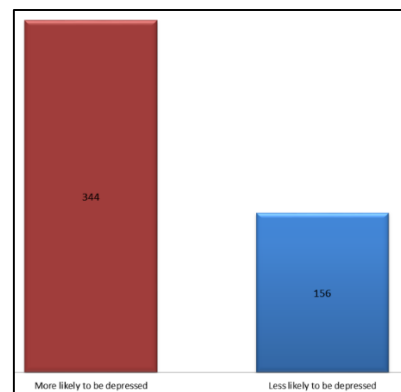
**Table 1:** Showing Demographic details of flood affected individuals

Variables	N=500	%
<b>Sex</b>		
Male	320	64%
Female	180	36%
<b>Age</b>		
15-20	80	16%
21-40	280	56%
41-60	110	22%
Above 60	30	6%
<b>Marital Status</b>		
Single	130	26%
Married	350	70%
Widow	20	4%
<b>Religion</b>		
Muslim	490	98%
Others	10	2%
<b>Education</b>		
Illiterate	170	34%
Primary	50	10%
Middle	80	16%
Secondary	150	30%
Others	50	10%
<b>Occupation</b>		
Farmer	280	56%
Housewife	160	32%
Employed	50	10%
Others	10	2%
<b>Mother tongue</b>		
Kashmiri	480	96%
Others	20	4%
<b>Family system</b>		
Nuclear	70	14%
joint	430	86%
<b>Income (in rupees)</b>		
Less than 6000	100	20%
6001-10000	110	22%
10001-25000	130	26%
25001-50000	110	22%
More than 50000	30	6%
Do not earn	20	4%
<b>Use of addictive substances</b>		
Smoking	250	50%
Tobacco	10	2%
Alcohol	130	26%
No addiction	110	22%



**Fig 1:** Pie chart showing the possibility of prevalence of post-traumatic stress disorder among affected population after six months of flood

little possibility upto 3	50
Moderately affected 4 to 5	148
severely affected 6 to 9	302



**Fig 2:** Graph showing the level of depression among people of Kashmir after six months of flood

**Table 2:** Showing the Cross tabulation of possible PTSD and depression with different variables

Variables(n=500)	PTSD		p value	Depression		p value
	Affected (%)	Unaffected (%)		More likelyn (%)	Less Likelyn (%)	
<b>Sex</b>						
Male	240(50)	30(6)	0.001	250(50)	70(14)	0.00
Female	160(30)	20(4)		94(18.8)	86(17.2)	
<b>Age</b>						
15-20	70(14)	10(2)		50(10 )	30(06 )	NS
21-40	260(52)	20(4)	NS	200(40 )	60(12 )	
41-60	100(20)	10(2)		80( 16)	20(04 )	
Above 60	20(4)	10(2)		10( 02)	20(04 )	
<b>Marital Status</b>						
Single/Widow	130(26)	20(4)	NS	70(14 )	80(16 )	NS
Married	320(64)	30(6)		274(54.8 )	76(15.2 )	
<b>Family Support</b>						
Single	50(10)	20(4)	0.03	40(08 )	30(06 )	0.02
Joint	400(80)	30(6)		404(80.8 )	26( 5.2)	

### Conclusion

To conclude it is safe to say that a higher number of affected people are at greater risk of developing post-traumatic stress disorder following severe depression or are affected from severe post-traumatic stress disorder after six months of the disaster. People who are more likely to be depressed are also much higher as compared to those who were low at depression level. Most of the people were illiterate, farmers and lived in joint families who lost all of their belongings, beloved ones and suffered a lot economically. In the present study though only 6% of the population was over the age of 60 years but most of them suffered from post-traumatic stress disorder.

An Indian study on flood victim survivors reported significantly high scores of post-traumatic stress disorder among the vulnerable group when compared to all age groups. These elderly individuals are more prone to mental health issues as they are also reluctant to seek health services.

An English study reported greater mental health impact among female flood victims. Older age and lower educational status are also known risk factors for disturbed mental health following disasters and same findings were seen in the present study.

This research study has done in order to examine the level of depression and post-traumatic stress disorder among affected population and with a hope that psychological interventions should be kept as a priority and policy makers should plan disaster management in order to tackle with any future calamity.

The limitation of the present study is that assessment of affected population was done after 6 months of the disaster, which generates the possibility of many missed cases of post-traumatic stress disorder which can be diagnosed after one month of the flood.

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