

Original Research Article

Prevalence and severity of depression among people residing in flood affected areas of Kerala

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Received: 02 January 2019

Revised: 21 January 2019

Accepted: 22 January 2019

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ABSTRACT

Background: The world is witnessing significant change in its climate leading to an increase in natural disasters. Kerala state of India recently witnessed its worst Monsoon rainfall in the century. Floods have significant effects on mental health. Screening of psychological problems is necessary in the background of recent floods in Kerala. So this study was done with the objectives to assess the prevalence of depression in the flood affected people of Kerala and to assess the severity of depression among people residing in flood affected areas of Kerala.

Methods: Cross sectional study was done four weeks after flood. Individuals aged ≥ 15 years residing in flood affected areas were included and people not willing to participate were excluded. Purposive sampling was done and 306 participants were studied. Participants were assessed by interview technique using PHQ9 questionnaire. Data was analysed using SPSS-22. Descriptive statistics like percentage were applied. Inferential statistical tests like chi-square test were applied for association.

Results: Among the participants 48% showed symptoms of depression. 28.10 % were mildly depressed, 12.74% were moderately depressed, 5.56% had moderately severe and 1.63% had severe depression. Maximum prevalence of depression was observed in geriatric age group.

Conclusions: A significant amount of people residing in flood affected areas showed signs and symptoms of depression. An urgent intervention is therefore required to improve mental health status of the flood affected individuals.

Keywords: Depression, Disasters, Floods

INTRODUCTION

The climate of the globe is changing which is leading to an increase in incidence of natural disasters. The number of natural disasters are increasing every year since 1960 and significant amount of damage is caused by the same.¹ The proportion of people living in flood prone river basins and cyclone exposed coastlines has increased significantly in last few years.² India due to its unique geography and climatic conditions is vulnerable to many

natural disasters.³ Disasters like floods can cause widespread devastation. Damage to billions of personal property and public infrastructure can occur in floods along with loss of lives and other health problems.⁴ Floods and cyclones can cause direct and indirect health impacts. Mental health problems like Post-traumatic stress disorder, Anxiety and depression are common among flood affected individuals.⁵

A cross sectional study conducted among residents of a coastal Tamil Nadu district observed that 33.7%

percentage of adult population had depression.⁶ Adjustment disorder and depression (13.5% each) were found to be the most prevalent psychiatric illness in a group of adolescents and children affected directly and indirectly by earthquake and Tsunami in the islands of Andaman and Nicobar, India.⁷ Another study of male population from Kanyakumari district of Indian state of Tamil Nadu, done following the major tsunami disaster of 2004 showed 43% prevalence of clinically significant psychological distress. 31% of participants had very high levels of psychological distress.⁸

A study was conducted among adolescent victims of super-cyclone in Orissa 1 year after the incident and 37.9% were observed to have some psychiatric illness. 17.6% of study participants were diagnosed with depression.⁹ 540 participants were observed in a study conducted in super cyclone affected areas and it was observed that depressive disorders were present in 52.7% disaster victims. The prevalence of depression was significantly more in males (59.3%) compared to females (42.7%). Participants aged 17 years or less had maximum prevalence of depression (61.8%) followed by geriatric people (56.2%).¹⁰

The Indian state of Kerala was badly affected by its worst Monsoon rain in last 100 years. The flash flood claimed 483 lives and many people went missing. 14.50 lakhs people were forced to move to more than 3000 relief camps. A total of 57000 hectares of agriculture crops were destroyed and according to state government an approximate estimate of the loss was more than annual outlay of the state.¹¹

Anticipation of disasters and its mental health problems by countries and individuals is important in the present scenario.¹² This study was conducted to assess the prevalence and severity of depression among people residing in flood affected areas of Kerala state where a long term economic and health impacts are expected.

METHODS

Study design

A cross sectional study was conducted among residents of flood affected areas in Idukki district of Kerala state. The study was done in September 2018, one month after the disaster.

Study conduct and sampling technique

Convenient sampling technique was used for the study and a total of 306 study subjects participated in the study. Medical camps were conducted supported by Catholic Health Association of India and Sister Doctors Forum of India in the flood affected areas of Idukki district and the study was done on willing participants from different parts of the districts attending the medical camps. Residents of the areas, aged above 15 years and

consenting to participate in the study were included and people with pre-existing psychiatric illness were excluded from the study. Institutional Ethical Committee clearance was obtained for the study.

Data collection

After obtaining informed consent, basic demographic details like age, gender, sex, address were recorded and PHQ9 questionnaire was administered by interview technique.^{13,14} Psychiatry reference was given by the observer if the depression was provisionally diagnosed and interventions by psychiatrists were provided free of cost if diagnosed with depression. However no interventions were taken as part of the study.

Data analysis

The Socio-demographic details and PHQ9 score was entered to excel spreadsheet and analysis was done using licensed SPSS version 22 (licensed to JSSAHER). Demographic details and prevalence were calculated using percentages and represented by appropriate diagrams. Categorical data were analyzed using chi square test.

RESULTS

Among the 306 individuals participated in the study, 135 (44.1%) were males and 171 (55.9%) were females. The mean age of the participants was 53.879 years with standard deviation 17.1076. Among the participants 52% had minimal or no depression and 48 % showed signs and symptoms of depression. 28.1% of participants showed mild depression and 12.7% had moderate depression. While 5.6% people showed moderately severe depression, only 1.6% of the 306 participants were diagnosed with severe depression by PHQ9 scale (Figure 1).

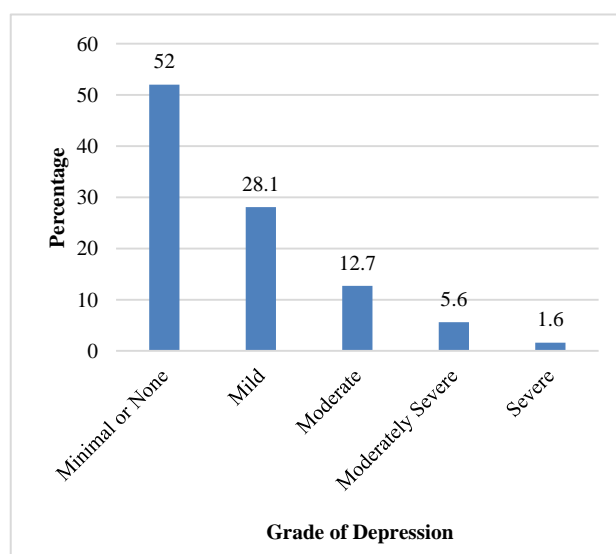
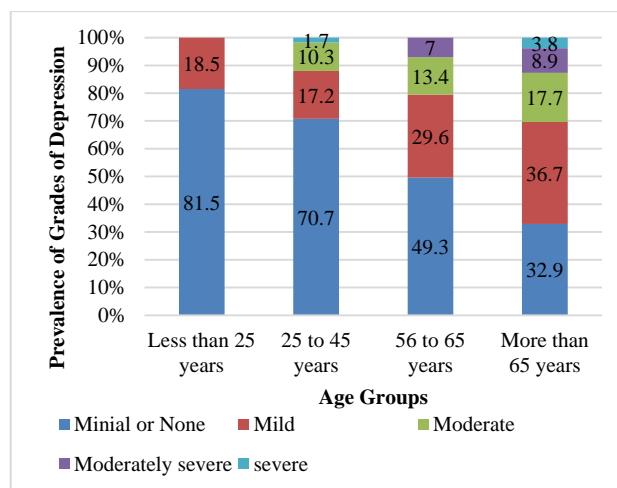


Figure 1: Severity of depression in study population.

Table 1: Prevalence of depression in age and gender categories.

Variables	Categories	Depression present	Depression absent
Gender	Male	57 (42.2)	78 (57.8)
	Female	90 (52.6)	81 (47.4)
Pearson chi square- 3.275; df 1; p=0.70			
Age (years)	<25	5 (18.5)	22 (81.5)
	25-45	17 (29.3)	41 (70.7)
	46-65	72 (50.7)	70 (49.3)
	>65	53 (67.1)	26 (32.9)
Pearson chi square test: 29.465; df 3; p<0.001			

**Figure 2: Grades of depression in age groups.****Table 2: Severity of depression in age and gender categories.**

Variables	Categories	Severity of depression				
		Minimal/none	Mild	Moderate	Moderately severe	Severe
Gender	Male	78 (57.8)	39 (28.9)	8 (5.9)	8 (5.9)	2 (1.5)
	Female	81 (47.4)	47 (27.5)	31 (18.1)	9 (5.3)	3 (1.8)
Fisher's exact test 11.055, df 4, p<0.032						
Age (years)	<25	22 (81.5)	5 (18.5)	0 (0.0)	0 (0.0)	0 (0.0)
	25 to 45	41 (70.7)	10 (17.2)	6 (10.3)	0 (0.0)	1 (1.7)
	46 to 65	70 (49.3)	42 (29.6)	19 (13.4)	10 (7.0)	1 (0.7)
	>65	26 (32.9)	29 (36.7)	14 (17.7)	7 (8.9)	3 (3.8)
Fisher's exact test: 34.823, df 12, p<0.001						

The prevalence of depression among male participants was 42.2% while 52.6% of female participants had depression (Table 1). However no statistically significant association between presence of depression and gender was proved in our study. (Pearson chi square value: 3.275, $p>0.05$). The participants were divided into 4 age group categories (<25 years, 26-45 years, 45-65 years and >65 years) and prevalence of depression was estimated. Maximum prevalence of depression was found in participants in geriatric age group (>65 years) followed by 46 to 65 years age group (67.1% and 50.7% respectively) (Table 1) (Figure 2). The above observation is significant with Pearson chi square value 29.465, degree of freedom 3 and $p<0.05$. The severity of depression showed a uniform pattern in all age groups. Mild, moderate and severe depression was more prevalent in geriatric age group than all other age groups. (Fisher's exact test: 34.823, $p<0.01$) (Table 2).

DISCUSSION

The rain havocs, flood and landslides occurred in Kerala in August 2018 is expected to have a long term impact on social, economic and health sectors. Loss of family members, properties, income sources etc. can lead to

various mental health impacts. The mental health aspects of disaster victims are ignored many times. So this study was aimed at measuring the prevalence of depression among flood victims one month after the disaster. Demographic profiles were recorded and PHQ9 scale was used to assess presence and severity of depression among victims.

A considerable proportion (48%) of residents of flood affected areas were diagnosed with depression. Among diagnosed, most of the people had mild depression followed by moderate, moderately severe and severe depression. The prevalence of depression was more in females (52.6%) than males (42.2%). However no statistically significant association was found between gender and depression in our study. The prevalence of depression was maximum in geriatric population (67.1%) which was significantly higher than general population.

The results of the study is comparable with a study conducted in Orissa after the super cyclone in 1999 by Kar et al where the prevalence of depression was estimated to be 52.7%, one year after the disaster.¹⁰ A study conducted among males residing in Kanyakumari district of Tamil Nadu which was affected by the 2004 Tsunami showed a prevalence of 43% depression. This is

comparable to our study where we observed a similar prevalence of 42.2% depression among males.⁸ Another study aimed at detecting long term mental health effects of 2004 tsunami detected 33.7% prevalence of depression in coastal Tamil Nadu.⁶ Results of our study coincides with observations from many similar studies conducted among flood victims in India.

Limitations

The demographic and socio economic profile of participants, which can influence the outcome is not taken into account in our study. More detailed evaluation of the same would have provided a more comprehensive result. Among mental health problems only depression is evaluated in the study. Other psychiatric disorders like Post traumatic stress disorder, Anxiety disorder etc. which is also common among disaster affected individuals according to previous studies is not evaluated in this study.¹⁵

CONCLUSION

A significant amount of people residing in flood affected areas of Kerala have depression. The maximum prevalence of depression is observed in geriatric population. Vast majority of flood victims diagnosed with depression have only mild depression. So screening for the psychiatric morbidities and early intervention by the psychiatrists and psychologists is required to be done to the affected victims.

ACKNOWLEDGEMENTS

We acknowledge the study participants, Kottayam Social Service Society, Green Valley Development Society, Catholic Health Association of India, Sister Doctors Forum of India and the department of Community Medicine, JSS Medical College, Mysuru.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Thomas JJ, Prakash B, Kulkarni P, Murthy MRN. Prevalence and severity of depression among people residing in flood affected areas of Kerala. Int J Community Med Public Health 2019;6:1143-6.