International Journal of Community Medicine and Public Health
Vaithiyalingam S et al. Int J Community Med Public Health. 2019 Nov;6(11):4940-4943
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20195084

Original Research Article

Morbidity pattern of Kerala flood victims of 2018 in the post flood recovery phase

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Received: 13 September 2019
Accepted: 10 October 2019

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ABSTRACT

Background: In the year 2018, Kerala experienced natural disastrous due to heavy rainfall and floods due to breakdown of dams. More than five lakhs people were affected and disruption in transportation, communication and damaged health care facilities. Objective of this study was to access the morbidity pattern of flood victims in the post flood recovery phase.
Methods: The study was carried out by the investigators along with medical team conducted free camps in seven different locations in the districts of Wayand and Kozhikode in the month of October 2018. Data were obtained in the format designed by the National Centers for Disease Control and Prevention, India.
Results: A total of 3123 patients were attended the flood relief camp. The most of the camp people were come up with complaints of myalgia 24.8%, acute respiratory infections 14.6%, skin infections 8.3% and 7.7% had fever.
Conclusions: To create awareness to the community about the natural disaster and appropriate action to prevent it through information, education and communication by regular period of intervals. And to provide basic amendments to improve the health care infra structure.

Keywords: Catastrophic, Kerala post flood, Morbidity

INTRODUCTION

India's southern state of Kerala was suffering its worst monsoon floods from June to August 2018. It was one of the most catastrophic floods that Kerala has witnessed in nearly a century, 5.4 million people were affected and around ten lakhs people left their home and displaced, and more than 400 fatalities recorded during its peak.[1,2]

Government organizations and numerous non-governmental organizations had established over 3,500 aid camps in the impacted regions, while NDRF (National Disaster Relief Force) rescue workers traveled to submerged villages in helicopters and boats to evacuate people in danger. Weeks of heavy rainfall led dams to open their floodgates, leading to landslides, particularly in vulnerable areas such as Wayanad, Kozhikode, Malappuram, and Alappuzha.

Over the past decade floods have recorded nearly 53,000 casualties globally, and it is one of the most frequent natural disaster. Following floods, victims experience damage that is not limited to the loss of their property and changes in their daily routine, but that also has to deal with disruptions in transportation, health care, communication, and food and water necessities.[3]

Short term health risks in post-flood victims include water and vector-borne infections due to displacement of population, contamination of drinking water facilities, increased breeding of various infectious vectors, etc. Drowning, injuries, unidentified bites, hypothermia in children marooned in certain waterlogged areas and acute respiratory tract infections are also common risks contracted in the aftermath of floods. Long term health hazards include disability, mental health disorders like depression and various other psychosocial stressors.[4]

One of the grave outbreaks that spread in Kerala in the aftermath period was Leptospirosis, a zoonotic bacterial disease caused by Leptospira interrogans.[5,6] Transmission occurs through contact of the skin and mucous membranes with water, damp soil or mud contaminated with rodent urine. The occurrence of flooding after heavy rainfall facilitates the spread of the organism due to the proliferation of rodents, which shed large amounts of leptospirosis in their urine. It is likely that the environmental changes increased the vector (rodent) population, which facilitated transmission.[7]

The unprecedented amount of patients they received, overwhelmed the health care facilities in the impacted areas. Because of the absence of infrastructures such as highways and bridges, both the government and private health industries were affected and could not satisfy the requirements of the individuals at the time of need. There was also a shortage of drugs for the treatment of various diseases and a challenge to restart them, especially for elderly patients with chronic medical illness like diabetes and hypertension. Assessing the health ramifications of floods in these areas and gathering information on morbidity pattern among the victims in the post flood period obtained from the flood relief medical camps helps to formulate a disaster management plan for better preparedness.

The purpose of this research is to assess the morbidity pattern among victims in the post flood period performed in the medical camps in the districts of Wayand and Kozhikode, Kerala.

METHODS

The flood relief medical camps were conducted in seven different locations in the districts of Wayand and Kozhikode. The camps in Wayanad were held in towns Mananthavady, Bavali (Tribal population) and Panamaram. The camps in Kozhikode were held in Kanadical, Feroke, Pavalicheerp, and Pantheerpaom. Which incidentally where one of the worst affected regions. The camps were held from 11th to 18th October, 2018.

Demographic data including age, sex and the type of morbidity which was diagnosed clinically were obtained from the patients. Relevant information was collected in the format designed by the National Centers for Disease Control and Prevention, India. Among the several camps organized, one was held in Bavali, a tribal area in Wayanad in close collaboration with the Indian Red cross society and Kerala State AIDS Society (KSACS). The objective was to screen victims for any illness contracted from floods as well as to perform screening tests for high-risk patients suspected of having TB and HIV (using Rapid test kit). At the end of each day all the data from the medical team were collected, compiled and entered in MS Excel sheet version 2013.

RESULTS

Health impact of Kerala during flooded 2018.

Table 1: Gender and age - wise distribution of health problems.

Age group	0-5		6-18		19-59		>60		Total (%)
Disease	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	
Myalgia	-	-	5	4	159	344	107	156	775
Fever	3	9	35	35	34	66	22	37	241
ARI	21	36	43	48	78	139	57	37	459
Skin infections	1	5	34	25	43	101	24	29	262
Conjunctivitis	-	-	2	2	5	16	1	7	33
AGE	5	-	-	-	15	11	9	6	46
Others	17	13	45	38	307	454	216	217	1,307
Total	**47**	**63**	**164**	**152**	**641**	**1,131**	**436**	**489**	**3123**

A total of 3123 patients attended the flood relief camp. Among them, 1288 were male, and 1835 were female. There was a total of 110 children belonging to the under-five age group. Acute respiratory tract infection (ARI) was diagnosed in 57 of them. Of the total patients, 775 had Myalgia, 241 endorsed fever (Table 1).

Additionally, 262 patients had some skin infection (they were predominantly fungal infection, and some of the children had scabies; most of the patients acquired the skin infection after the floods). About 33 patients developed conjunctivitis associated with fever, and 46 patients were diagnosed with acute gastroenteritis.

A total of 1,307 patients came with miscellaneous health problems such as cardiovascular disease, alcoholic liver disease, kidney transplanted patient, breast cancer, prostatitis, etc. Roughly 60% of the people were suffering from non- communicable diseases like diabetes & hypertension. An estimated 33% of females presented with reproductive tract infections such as pelvic inflammatory disease, candidial vaginitis, etc. Lastly, there was one case of filariasis reported as well.

DISCUSSION

The findings of this study conclude that most patients who attended belonged to the age group of 19-59 years (independent age group) working age group, of which most of them were females. None of the patients who attended the camp had any life-threatening symptoms requiring imminent hospital admission. Some of the patient in the camp had already been diagnosed with Leptospirosis and was initiated on Benzathine pencillinin their nearby district hospital. Most patients endorsed myalgia and generalized weakness.

According to the official report from the Kerala Directorate of Health Services (DHS), a total of 1,395 leptospirosis cases were reported among which 70 deaths were confirmed from June to September 2018. In August 2018 there were 246 leptospirosis cases reported among which 14 cases were confirmed, during September 2018 the highest numbers of 854 leptospiosis cases were reported and 41 deaths were recorded.[8]

The Directorate of Health Services in Kerala delivered an action plan for the prevention and control of communicable diseases and informed the public regarding the symptoms and appropriate treatment of such diseases with the help of volunteers.

The common ailments reported in this study were ARI, fever, skin infections, myalgia, etc. A similar pattern of illness was prevalent in the Chennai floods in 2015.[9] The post flood period not only posed numerous health risks but disrupted the normal social livelihood of the victims. Most of the individuals who resided in relief camps had to return to their homes which was wrecked with heaps of muddy dirt, reeked with sewage waste. Common household appliances from utensils, refrigerators to furniture such as beds, cupboards and trunks were all damaged beyond repair due to the stagnant water. Numerous animal livestock like cattle, goats and pets like dogs were also battered by the floods no less than human life. The floods impacted people from every socioeconomic status, sparing no one. Most patients in this study not only needed medical attention for their acute and chronic diseases but also needed psychological support to help them cope with rehabilitation and recovery from distress, trauma, and insecurity from loss of home, livelihood, assets, possessions, and most importantly death of close friends and relatives.

CONCLUSION

Kerala has been notorious for its heavy monsoon but due to multifactorial reasons, the unprecedented heavy rainfalls from June to August, 2018 led to the overflow of most of the dams placing the entire state virtually at red alert. The deluge led to displacement of scores of populations from their normal livelihood, fatalities from drowning and landslides in low lying areas, damages to infrastructure like roads and bridges from being submerged, communication breakdown causing havoc among victims. From a healthcare perspective, numerous health hazards and risks posed fear of epidemics from water and vector borne infections from the polluted water.

It is imperative that government invest in more resources to further empower health care facilities especially in the unforeseen event of a natural disaster. Formulating a workforce comprising various individuals from the entire spectrum of healthcare providers in acting quickly in the form of a rapid response team would be highly beneficial. Training volunteers in the field to identify symptoms of potential outbreaks of various water borne infections like leptospirosis, cholera, dengue, malaria etc. and initiating prophylactic medicines like doxycycline can significantly improve survival as well as reduce morbidity and mortality among the victims.

Educating the public community via information, education and communication (IEC) on the do's and don'ts during natural disasters would help prevent panic and promote sound health.

Increasing the availability of medicines especially for non-communicable diseases especially in a state like Kerala with increased prevalence of cardiovascular disease like hypertension and diabetes can help reinitiate them quickly and efficiently in those who have lost all their medications.

Also, paramount importance should be given in tackling mental health issues such as depression, post-traumatic stress disorder (PTSD), distress, insecurities etc. This can be accomplished by screening and enquiring about these issues specifically and encouraging them to be brave to talk about these concerns. Taking stringent measures in the affected group by instituting support groups, repeated follow ups and pharmacotherapy are other alternatives.

Maternal and child health needs should be addressed by ensuring their safety from life threatening environments. The floods in 2018 witnessed heroic measures employed by the Indian navy by airlifting pregnant women and children to safer locations. A dedicated team should be set up to meet the requirements of this sector of the society in close collaboration with various rescue operators and rapid response teams.

ACKNOWLEDGEMENTS

We would like to thank Malayala Manorama (NGO) for organizing more than 100 free medical camps backed with essential drugs and health kits. And we acknowledge Dr. Gopala Krishan for his immense support in this work.

Funding: This study was supported by Malayala Manorama (NGO)
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Vaithiyalingam S, Mohan R, Joseph AA, Jacobe MG, Purty AJ. Morbidity pattern of Kerala flood victims of 2018 in the post flood recovery phase. Int J Community Med Public Health 2019;6:4940-3.