

**STUDY OF MORBIDITIES IN A FLOOD RELIEF CAMP: OBSERVATIONS FROM KERALA 2018**V. T. Krishnadas Menon<sup>\*1</sup>, Jenyz M.<sup>2</sup>, Kerline P. J.<sup>3</sup>, Vidhu J.<sup>4</sup> and C. R. Saju<sup>5</sup><sup>1,2</sup>Assistant Professor of Community Medicine.<sup>3</sup>Postgraduate Student.<sup>4</sup>Statistician.<sup>5</sup>Professor and HOD of Community Medicine.**\*Corresponding Author: V. T. Krishnadas Menon**

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**ABSTRACT**

**Background:** During the year 2018, the southernmost state of Kerala in India experienced devastating flooding due to unprecedented rains. Indiscriminate damage to housing, communication and transport networks, and health facilities ensued affecting the lives of thousands of people. **Objective:** To assess the morbidity profile of patients attending the medical camps conducted at Thrissur during the post flood period. **Methodology:** In our study, the investigators with their health team conducted camps in Thrissur one of the worst affected districts during the floods between August 2018. Data were collected regarding age, gender, and presenting health problems. Total number of patients seen in camps was 5. **Results:** It was observed that among people who came to the camp, common health problems were as follows – 21.72% had headache 19.84% had itching on legs with acute gastroenteritis, 17.91% had leg pain and 9.26% had respiratory tract infection with skin problems. **Conclusion:** Due to provision of safe drinking water and epidemic prevention measures, epidemic outbreaks have been averted. However, strengthening of existing health care systems is required to handle the burden of acute gastrointestinal and respiratory infections during disasters such as floods.

**KEYWORDS:** Chennai flood, disaster, health impact.**INTRODUCTION**

Kerala is the southernmost state of India bounded on the west by the Arabian sea in the north and north east by Karnataka to the east and south east by Tamil Nadu and to the south by the Lakshadweep sea. It is spread over 38,863 km and has population of 33,387,677 inhabitants as per 2011 census.<sup>[1]</sup> It is also the first place in India where the South west monsoon lands which is usually on June 1<sup>st</sup>. During the months of July and August the state experienced the most severe floods since the 1924 floods. Following the floods a total of over 3274 relief camps were opened across the state with over 12 lakh people taking shelter in such camps.

Floods are the most common type of disasters globally and have caused 53,000 deaths worldwide in the last decade. The negative impacts of flooding are loss of life and property. Disruption in availability of clean water, transportation, and communication can affect human health.

Although floods cannot be avoided their effects can be minimized. Immediate health impacts of floods are drowning, injuries, hypothermia, and unknown bites. These impacts are aggravated by loss of health workers

and damage to health infrastructure. In the medium term, complications of injuries, infections, psychiatric morbidities, communicable diseases, and starvation result. Long-term health effects of floods are chronic diseases, psychiatric comorbidities, poverty, and malnutrition. Disease outbreaks following floods are more common in areas of inadequate sanitation, overcrowding, and displacement.<sup>[2]</sup>

Diarrheal diseases caused by *Vibrio cholera*, enterotoxigenic *Escherichia coli*, and enteric fever are common. Hepatitis A and E can spread by feco-oral route. Leptospirosis can be transmitted by direct contact with contaminated water. Overcrowding can spread respiratory infections due to displacement. Tetanus is not transmitted person-to-person, but contaminated wounds can cause the illness in areas where vaccination coverage is low. Short-term health effects due to flooding have been studied, but long-term effects are currently not well understood. Mortality rates are observed to increase by up to 50% in the first year of post floods. Floods vary markedly in their character and size and the devastation caused is influenced by the size and vulnerability of the population affected. The effects of floods will be different in high-income countries as compared to low-

income countries.<sup>[3]</sup> The risk factors for epidemics also correspond to the population displaced, and availability of clean water and sanitation.<sup>[4,5]</sup>

In our study, we aimed to assess the morbidity profile of patients attending the medical camps conducted at Thrissur Kerala during the post flood period.

## METHODOLOGY

### Study area

This study was conducted in medical camps were conducted in three revenue blocks in Thrissur districts, namely, Kunnamakulam, Chavakkaand Mala. Data was collected from 5 camps in Thrissur. Data were obtained on the age, sex, and presenting complaints from the camp

attendees. Data were entered in Epi info and analyzed in SPSS version 17.0. Duration.

The camps were organized during the period from August 17, 2018, to August 24<sup>th</sup> 2018.

## RESULTS

This study was done in 5 different camps IN Thrissur district Kerala. A total of 2610 persons were there in these camps. Of these 1100 were male and 1510 were female There were 530 children below the age of 18 yrs of which 280 were male and 250 female There were 220 children below age of 5 of which there were 112 were male and 108 were female. A total 584 persons had morbidities that were attended to in the camps.

| Morbidities     | Frequency | Percentage |
|-----------------|-----------|------------|
| Headache        | 305       | 21.72      |
| Fever           | 100       | 7.12       |
| Leg pain        | 250       | 17.81      |
| Itching in legs | 280       | 19.94      |
| Hypertension    | 110       | 7.83       |
| Diabetes        | 124       | 8.83       |
| RTI             | 130       | 9.26       |
| Diarrhea        | 60        | 4.27       |
| Nausea vomiting | 45        | 3.21       |
| Total           | 1404      | 100.00     |

| Gender  | Frequency | Percentage |
|---------|-----------|------------|
| Males   | 1100      | 42.31      |
| Females | 1500      | 57.69      |
| Total   | 2600      | 100.00     |

### Children 0- 12

| Gender  | Frequency | Percentage |
|---------|-----------|------------|
| Males   | 280       | 52.83      |
| Females | 250       | 47.17      |
| Total   | 530       | 100.00     |

### Under 5 Children

| Gender  | Frequency | Percentage |
|---------|-----------|------------|
| Males   | 112       | 50.91      |
| Females | 108       | 49.09      |
| Total   | 220       | 100.00     |

| Morbidities     | 0-5 |    | 5-18 |    | 18-59 |    | ≥60 |    |
|-----------------|-----|----|------|----|-------|----|-----|----|
|                 | M   | F  | M    | F  | M     | F  | M   | F  |
| Nausea          | 5   | 8  | 10   | 12 | 3     | 2  | 2   | 3  |
| RTI             | 10  | 12 | 11   | 8  | 24    | 20 | 25  | 20 |
| Diabetes        | -   | -  | -    | -  | 12    | 8  | 54  | 50 |
| Hypertension    | -   | -  | -    | -  | 15    | 10 | 48  | 37 |
| itching in legs | 15  | 10 | 15   | 10 | 65    | 60 | 55  | 50 |
| leg pain        | 7   | 8  | 10   | 10 | 55    | 50 | 60  | 50 |
| Headache        | 5   | 2  | 10   | 8  | 70    | 60 | 75  | 75 |

## DISCUSSION

In our study it has been found that the commonest morbidity was headache followed by itching in legs and leg pain. in a similar study in Chennai after floods was

acute respiratory infections followed by gastroenteritis.<sup>[6]</sup> Respiratory tract infections were also the main cause of morbidities in another in another study done in Pakistan.<sup>[7]</sup> A study done in taiwan showed higher

incidence of vaccine preventable diseases in those in relief camps. our study however did not have a similar finding.<sup>[8]</sup> A high prevalence of infectious diseases was also found in another study done in Nepal.<sup>[9]</sup>

### CONCLUSION

This study was done as part of medical camps for those in the relief camps. While there were a few cases of fever and diarrhoea there was no need for hospitalization for any of these persons. There was also no clear epidemic of leptospirosis or cholera or other waterborne diarrhoeal diseases though there were a few cases of fever. However it would appear that the lesser incidence of infectious disease in this study was due to the overall better health status of the community in Kerala.

It is important to have regular health check ups in relief camps and also have safe provision of drinking water and proper medicines. it is also important to send the camp residents home as early as possible.

### Limitations

This study was done in only a few camps in one district of Kerala. Also it was done immediately after the flood. No follow up well camps were held in the same area after the relief camps were closed down. Also no psychiatric no psychological or psychiatric assessment was done.

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