



# MANAGEMENT OF NON-COMMUNICABLE DISEASES DURING 2018 FLOOD IN KOZHENCHERRY TALUK OF KERALA

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## ABSTRACT

*Kerala is a multi-hazard-prone state. Recently, disaster administration has developed effective strategies for three phases of disaster management: mitigation and preparedness, response, and recovery. Infectious disease management is well addressed in health disaster management. The prevalence of non-communicable diseases (NCDs) is high in Kerala's population, and many receive inadequate treatments during catastrophes, particularly flood times. Displacement during floods causes loss of access to existing medicines or assistive devices and loss of prescription. Disruption of treatment will result in later-stage complications and emergencies. Steps for NCD management policies in each phase of disaster are described in this paper*

## INTRODUCTION

Kerala, the southernmost state of India, has been experiencing devastating climate change over the last few years. The state suffered high rainfall in 2018 and 2021 due to irregular monsoons. According to the Times of India report (2018), one million people were displaced, and more than three thousand camps were operated in the state due to the heavy flood of 2018. Furthermore, most residents lost their shelters and were rescued to camps without having medicines or medical reports. Also, insulin shortages were experienced in camps of Pathanamthitta, one of the most affected districts (Business Standard, 2018). Power supply disruption caused the malfunction of the cold storage system and had a consequence on the insulin therapy for diabetes mellitus

Kerala has a high risk of NCDs. It also had the highest hypertension prevalence rate as per the state-wide prevalence study conducted by the Indian Council of Medical Research (2017). In addition, according to the study, about 27% of men and 19% of women have diabetes, and more than 50% of death rates in 30-60 age groups are accounted to NCDs. But disaster management often focuses on preventing outbreaks of infectious diseases. Hence, during floods and disasters, NCD patients face the risk of complications due to discontinuing medicines.

Controlling of NCD must be incorporated into the health management plans during a disaster because of the significant risk of morbidity and mortality. Those patients face the risk of complications due to discontinuing medicines. Hence, it is essential to include NCD guidelines in disaster management plans.

## LITERATURE REVIEW

Several studies revealed its increased risk during the humanitarian crisis (Pradhan, 2022, Christine et al. (2022). The effectiveness of management depends on the availability of medicines and technologies. But then, emergency care mainly focuses on infectious diseases and injuries in a complex disaster and avoids caring for NCD patients (Slim Slama et.al, 2016).

The study of Parasuraman (2020) included NCD management during a disaster's preparedness and response stage. The study advises following six steps:

1. Prioritising diseases - In Kerala Diabetes, hypertension, cardiovascular disease, stroke, chronic pulmonary obstructive disease, and chronic kidney disease are considered priority NCDs.
2. Estimation of patients and drug stock needed to be made available for one month's requirement
3. Prepare standard protocol for treatment and referral at primary care settings, including shelters.
4. Mapping private and public secondary and tertiary care facilities to treat complications
5. Public engagement and education on the importance of self-identification of known patients,



6. Daily reporting of the number of consultations on the above diseases and drug usage.

Kerala State Emergency Operations Centre published 'Minimum Standards of Relief' in May 2020. It detailed the minimum standards followed in six areas: temporary shelters, food, water, health, sanitation and hygiene, and waste management. They defined it as the "minimum level of services that are essential to ensure the survival and dignity of the people affected by disasters". Consideration of patients with diabetes, cardiac illness, and hypertension in relief camps and priority for timely availability of meals are included. Medical assessment, referral facilities, and regular medicine supply should be maintained.

## PROBLEM STATEMENT

NCD patients suffered health issues during the 2018 flood in Kerala. This study was conducted to evaluate its management in disaster settings through the following objectives.

1. To understand the issues these patients confronted in the relief camp in Kerala
2. To identify the later stage complications they experienced
3. To analyse the efficiency of NCD management plans in relief camps

## METHODOLOGY AND OBSERVATION

### PARTICIPANTS

Twenty participants were interviewed with semi-structured questions. They were the residents of Pathanamthitta district, one of Kerala's most severely flood-impacted districts. They were affected by the 2018 flood and displaced to the relief camp.

### THEMES

Three themes were made after analysing the minimum standard requirement in camp settings provided by the Kerala state disaster management authority (2020) and the NCD management protocol. They are (i) health issues faced by NCD patients in camps, (ii) the impact of flood-like disasters on their later life, and (iii) current NCD management plans in camp settings.

Topics covered in the interview

- Availability of medicine as per the ailments
- Provision for vaccinations of infants
- Availability of insulin and other emergency medicines
- Continuous monitoring of disease outbreaks
- Medical assessments for chronic diseases such as HIV, NCD, tuberculosis
- Facilities for referral services in the case of any worsening health conditions
- Availability of female health volunteers
- Supply of iron and folic acid, provision for TT injection to pregnant ladies
- Regular medicine supply for people with diabetes, hypertension, cardiac illness, bed-ridden, dialysis patients
- Facilities for psychosocial support
- Mobile medical teams
- Providing sanitary napkins, food for pregnant women and infants, nutritional assessment, and assuring the quality of drinking water
- Availability of doctor once a day
- Active surveillance for epidemics, supplements for pregnant women, lactating women, malnourished children, and people living with chronic medical conditions under the guidance of the camp doctor.
- Surveillance of nutritional status and diseases of public health importance such as measles, diarrheal diseases (cholera, dysentery), acute respiratory infections, and diseases of epidemic potential such as hepatitis and meningitis.

### *What are the health issues faced by NCD patients in camps?*

Among the participants, ten were diagnosed with NCDs like diabetes mellitus and hypertension early. The diabetic patient, insulin-dependent for the past ten years, forgot to bring insulin to the camp. He was following a diabetic diet plan and but it got interrupted. The hypertensive patient had medicines with him but could not maintain a diet. He monitored his blood pressure with the help of medical staff available in camps. He worried about the conditions of his house and livelihood.

...the 2018 floods were an unexpected one. Adequate warnings were not given by them [authorities]. We were displaced very quickly. We didn't take any dresses, medicines or necessary items. When we reached there [camp], someone came and asked about the details such as name, address, medicines taken, diseases, symptoms of rat fever, etc..... I informed them that I had forgotten to bring my insulin. They told me that tablets would provide by them. But I didn't get those [tablets]. (P1, participant)



.... I took tablets for diabetes during the flood. I bought and stored those (tablets) just before the flood. So, I continued it. I felt disappointed as I had to take food like bread which would raise my blood sugar. (P13, participant)

#### ***What was the blood sugar and blood pressure level after leaving the camp?***

Both NCD patients got minor complications in the later stage. The diabetic patient was advised to increase his insulin intake. The hypertensive patient had a variation in blood pressure in his first check-up within two days after leaving the camp.

..... I took insulin after three days. On the way back home, my right big toe got injured as the road was full of mud and remains of the washed-off road. I consulted a doctor and took TT. I had to go four kilometres from my hometown as the hospital near my home was thoroughly damaged by floods. The wound did not heal even after taking antibiotics. The doctor advised me to check my blood sugar level, which was slightly raised. He prescribed me to increase to four units of insulin. It took about four months to heal my wound. (P5, participant)

.... I did not feel any distress while on camp. After three days I reached my home. It was full of mud, and I lost many of my documents and utensils. After two days, I went for my monthly check-up in the hospital. At that, I found a slight increase in my blood pressure level. It had remained at the same level for two to three months. I continued my medicines with a slight increase in dose as per the consultant's advice. Later it came down to my previous level. (P8, participant)

#### ***Were all the current health management plans on disaster response observed in the camps?***

In the camp, there was a shortage of insulin and emergency medicines. There were medical assessments for chronic disease, but due to the unavailability of essential medicines, many NCD patients experienced sudden discontinuation of medications. Camp authorities continuously monitored the outbreaks of infectious diseases such as Leptospirosis and diarrheal diseases. The camp maintained an adequate number of female health volunteers. Facilities for psychosocial support were not available. There was no provision for nutritional assessment and dietic food for NCD patients.

... In our camp, we had some health facilities, and ASHA workers enquired daily regarding illness and rat fever. I got ointment for the wound in my feet. (P18, participant)

..... ASHA worker enquired about our health status. Otherwise, we did not get any services from doctors. She (the ASHA worker) gave us medicines for rat fever. (P17, participant)

## **RECOMMENDATIONS AND CONCLUSIONS**

The following recommendations are formulated after referring to the public health guidelines to flood events, the Sendai Framework, the Operational framework of climate resilience, Integration of NCD care in emergency response and preparedness. It is recommended to National and State Disaster Management Authority.

### **EMERGENCY PHASE**

#### **1. Integrating NCDs in Initial Rapid Assessment**

NCD services should be included in the health state of state emergency management plan. Rapid assessment procedures can be used to determine the exact needs and state of health of NCD patients. Consider local risks and vulnerable groups among them. Compare their necessities with available resources and make them public. Continuity of medication should be ensured to avoid worsening the disease condition. Relief camps should be equipped with the facilities to address minor medical emergencies or give essential life support before referring to higher health care.

#### **2. Map NCD service provision**

The district-wise mapping will help to monitor and evaluate the NCD services and connect them with deserved. The location and available facilities of health centres are plotted and matched with the location of NCD patients. It also helps in identifying potential overlaps and gaps in service provision.

#### **3. Organize NCD services delivery with a focus on integrating into primary health care**

Evidence-based and cost-effective NCD protocols should be implemented in primary health care. It should be equipped with essential medicines and technologies, a trained health workforce, resources for health information, and appropriate referral systems. Identify the sub-group of NCD based on severity and treatment required. It will avoid interruptions of treatment for the patients on controlled medications. Minor symptoms of advanced NCD could be managed by providing basic care at the primary health care level. People should be informed about the availability of subsidized NCD medicines and affordable health care.

### **POST EMERGENCY PHASE OR DURING SLOW-ONSET EMERGENCIES**

#### **1. Debrief on lessons learned from the crises.**

The post-disaster needs assessment learns about the success and deficiencies of response.



## 2. Strengthen health system response

Establish state pharmacy protocols for the cold storage and transportation of medicines, vaccines, and medical equipment during disasters. Stakeholder mechanisms for provisions of rapid information exchange, appropriate treatment, and risk reduction strategies. Enhancement of professional and technical capacities of the health workforce in NCD management. Early identification of risks, avoiding exposure to hazards, and awareness of prompt interventions to save lives in extreme weather conditions. National and state health budget plans include resources to increase resilience to climate change. Projects and programs regarding health system resilience could be submitted to and granted by the international climate change funds.

## 3. Strengthen public health response to NCDs

The national public health system should coordinate programs to deal with NCDs in disaster periods. The risk could be reduced by conducting health promotions.

## 4. Monitoring and evaluation of Emergency response to NCD

Knowledge gained through these will help to improve contingency planning. Development of NCD relevant indicators of all three phases based on the above

Appropriate and well-defined strategies will manage NCDs in emergency conditions. These are recommended for disaster management of Kerala's health sector to avoid emergencies and complications of NCD in a disaster setting.

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