

Medical Relief Camps in Flood Disaster-affected Area: Experience in Jammu and Kashmir

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Abstract

Introduction: In September 2014, Jammu and Kashmir region of India was hit by flood disaster. Medical relief camps were set up by the army in the affected area. This study characterizes the epidemiology and clinical data of patients seen in two such camps along with challenges faced in running the camps.

Aim/Purpose: (1) To identify medical needs of the flood-affected population and (2) to identify challenges faced in running a medical relief camp in flood disaster-affected area.

Methods: Medical records were created for all registered patients seen at the two camps which were later analyzed. Interview of the medical staff was taken at the end of each camp to identify the difficulty faced by them in running these camps.

Result and Discussion: In a period of 12 camp days, total 3511 patients registered in the two camps mainly comprising of children, adolescents, and geriatric population. Trauma-related injuries (972), acute respiratory tract infection (1152), and chronic medical illness (590) were mostly seen. Trauma-related injuries decreased and communicable diseases increased with time. Total 632 patients presented with somatic complaints only. 40 medical emergencies were also handled in these camps. Inadequate staff, lack of medicines, lack of triage, and inadequate training in disaster management were the major challenges.

Conclusion: Running a medical relief camp after a flood disaster requires a high level of expertise and resources. National or state level disaster medical assistance teams are required for handling future such camps. Public health education programs can be linked with these camps.

Key words: Disaster, Flood, Relief camps

INTRODUCTION

Disaster has both acute and chronic effects on the physical and mental health of the affected population. In the aftermath of disaster injuries, spread of communicable diseases and worsening of non-communicable diseases is reported in several studies.¹⁻⁴ In the disaster-affected area, medical camps are run by Government, Army, and NGOs to provide medical relief to the affected population, but there is a lack of publications in India on the functioning of these camps. Through this work, we attempt to give

an insight on the types of medical illness seen, services provided and challenges faced in functioning of these camps in India after a flood disaster.

In September 2014, the Jammu and Kashmir region was hit by heavy floods caused by torrential rainfall; nearly 284 people died due to floods. According to the Home Ministry of India, several thousand villages across the state were hit, and 350 villages were submerged. More than 2,00,000 people were rescued, including 87,000 from Srinagar city.⁵⁻⁷

Medical camps to provide medical relief were set up by the army in the flood-affected area. This study analyses the data collected from two such camps. First camp (FC) was situated at airport adjacent to the helicopter landing area, started on 10th September and was meant mainly to attend to medical needs of people rescued through air sorties; this camp continued for 5 days. The camp consisted of a tent

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with the arrangement of 4 beds for emergency inpatient care. The staff at this camp consisted of one MBBS doctor and two nursing personnel.

The second camp (SC) was started on 12th September. It was situated just adjacent to flood-hit area Rajbagh in Srinagar and provided medical services to the flood-affected population in this area; the camp ran for 7 days. Camp was created using tent adjacent to busy road, and there was no arrangement for inpatient admission. The staff at this camp consisted of two MBBS doctors and 1 pharmacist.

The authors as a part of disaster relief team from the National Institute of Mental Health and Neurosciences got to work and observe proceedings at both these camps and along with medical care were able to assess the psychosocial needs of patients presenting there and provided psychological first aid.

AIMS AND OBJECTIVES

1. To identify medical needs of the flood-affected population.
2. To identify problems faced in running a medical relief camp in flood disaster-affected area.

Participants and Data

Medical records were created and kept for all patients seen at the two camps. Patients who presented to camps were registered with personal information regarding name, age, and sex. A note of presenting complaints, provisional diagnosis as well as medicine prescribed and intervention done was made. Total 907 patients presented at the FC and 2604 at SC. These medical records were reviewed later for data extraction. Furthermore, interview of the medical personnel was taken at the end of each camp to identify the difficulty faced by them in running these camps.

All patients who were requiring tertiary setup care were given emergency treatment, and then, they were sent to higher centers in Jammu, Chandigarh, and Delhi through air with the help of Indian Air Force (IAF).

Apart from the registered patients, there were many people coming to camp for getting knowledge regarding how to prevent outbreak of infectious disease, vaccination to prevent epidemic outbreak and how to purify drinking water. Free drugs, Bottled water, Chlorine tablets, and masks were also distributed at these camps.

Medical complaints were classified as:

- a. Trauma: Include laceration, abrasion, infected wound, contusion, hematoma, sprain, pain, and other effects of injury were classified as trauma.
- b. Skin-related problems: Infected skin lesions, rashes with itching were categorized under skin-related problems.
- c. Acute respiratory infections and their symptoms and signs were regarded as an acute respiratory problem.
- d. GIT-related complaints: Comprising mainly of diarrhea and abdominal cramps.
- e. Chronic non-communicable disease: Patients who had chronic conditions such as diabetes, hypertension, hypothyroidism, and asthma were classified as chronic non-communicable disease.
- f. Psychiatric illness: Patient with known psychiatric illness before onset of flood.
- g. Somatic complaints: Complaints of generalized body ache and headache without any above complaints.
- h. Others: Rest which cannot be classified in any above categories comprising mainly of patients that came for a health checkup, especially blood pressure measurement without any history or current problem.

Similar classification was used in tsunami disaster medical relief camp by Korean team in Srilanka.⁵

Inclusion Criteria

1. Only patients who were registered and who had complaints or wanted a checkup in the camp were taken for study. People who came for getting information or for bottled water, chlorine tablets, and masks were not included in study data (Tables 1-4).

RESULTS AND DISCUSSION

FC was functional for 5 days, whereas SC for 7 days comprising of 12 camp days. A total of 3511 patients were registered in the two camps, and all were included in this study. The number of daily patients ranged from 137 to 591, and the average was 293. The male to female ratio was 1.52:1 (Male: 2123 and Females: 1388).

- Major representation of patients was from age group 0-20 years (24.49%) and >50 years (32%). The number of patients gradually decreased with passing days at the FC probably because of a decrease in a number of air sorties with time while the number of patients increased substantially in SC with passing days probably due to the spread of infectious diseases and publicity through word of mouth.
- Total of 972 (27.68%) patients presented with trauma which was mainly caused by cuts in lower limbs because of walking in flood water. Others were due to falls, lifting heavy loads, and falling of houses. Some of the trauma-related patients also comprised significant head injuries needing immediate tertiary care referral, fractures, and infected open wounds.

Table 1: Attendance of patients at the two camps

| Days | FC | SC |
|------|-----|-----|
| 1 | 204 | 150 |
| 2 | 216 | 206 |
| 3 | 181 | 287 |
| 4 | 167 | 387 |
| 5 | 137 | 418 |
| 6 | - | 565 |
| 7 | - | 591 |

FC: First camp, SC: Second camp

Table 2: Age group

| Age group | Total (%) |
|-----------|-------------|
| <10 | 288 (8.2) |
| 10-20 | 572 (16.29) |
| 20-30 | 512 (14.58) |
| 30-40 | 365 (10.39) |
| 40-50 | 680 (19.36) |
| 50-60 | 688 (19.59) |
| >60 | 406 (11.56) |

Table 3: Medical complaints

| Type | Total (%) |
|-----------------------------------|--------------|
| Trauma | 972 (27.68) |
| Skin-related problems | 156 (4.3) |
| Acute respiratory tract infection | 1152 (32.11) |
| GIT-related problems | 87 (2.47) |
| Chronic non-communicable diseases | 590 (16.80) |
| Psychiatric illness | 21 (0.59) |
| Somatic complaints | 632 (18.00) |
| Others | 246 (7.00) |

Table 4: Medical emergencies seen in camps

| Name of condition | Number of patients |
|--|--------------------|
| High blood pressure (>180 mm Hg systolic or >110 mm Hg diastolic) | 18 |
| Patients with significant head injury associated either with vomiting or unconsciousness | 13 |
| Sudden onset paralysis with altered consciousness suggestive of stroke | 4 |
| Acute severe left sided chest pain suggestive of cardiac ischemic events | 2 |
| Infected open wound with high-grade fever | 2 |
| High-grade fever (>102°F) and altered consciousness | 1 |

Severity of trauma-related injuries was more in the FC as compared to SC. Number of trauma cases was more in the initial days and declined thereafter.²

- Total 1152 (32.11%) of patients presented with acute respiratory tract problems in form of cough, cold, throat pain with or without fever. The percentage was high in children and young adults. Number of cases increased gradually as the camps proceeded.⁸
- A major proportion 590 (16.80%) presented with chronic problems such as diabetes, hypertension,

hypothyroidism, and asthma. Unfortunately, none of the camps had medicines for these disorders otherwise patient turnout could have been even greater. The patient presented with complaints that their medication is washed out in floods, and they are off drug since a week or two. Many of them had raised blood pressure with headache, raised blood sugar level could be determined only in few because of limited resources. About 10% of chronic problems consisted of thyroid-related abnormalities and about 2% of asthma. Study done by Chan and Sondorp has pointed out that chronic medical needs seem to be insufficiently addressed in disaster relief interventions.⁹

- A substantial number of patients 632 (18.00%) presented with somatic complaints of body ache and headache with onset after floods. This population mainly represents mental stress manifesting as bodily complaints and the need for psychosocial support for these patients.^{10,11} Only those patients who did not have any prior such complaints and who were not having either trauma, skin lesions, acute respiratory infections, any chronic problem, or fever were kept in this group although such complaints in rest of the patients could also have been aggravated due to stress. Total 21 (59%) patients seen were having psychiatric illness before onset of flood mostly depression (11) and schizophrenia (7). 15 of them were off drug since the onset of the flood.
- Diarrhea was not found to be as prevalent as other Indian studies.^{12,13} It may be attributed to the climatic condition in Jammu and Kashmir which are cooler than rest of India.¹⁴
- Total of 246 (7%) patients were kept in others category and consisted of all other complaints that cannot be kept in above categories. This group mostly consisted of people without any complaints who came just for check up to ensure they are healthy. This type of illness anxiety behavior was more prevalent in the older aged population.
- People evacuated from flood-affected hospitals were also brought to these camps and consisted of some unstable patients with known diagnosis who were still under treatment with diagnosis of acute pancreatitis (1), recently delivered females with cesarean section (2), puerperal sepsis (1), fracture of femur (1), renal failure (1), spinal injury (1), and 1 patient diagnosed as having left-sided malignant stroke of middle cerebral artery.

Difficulties Faced

1. There was no supply of antihypertensives, antidiabetic, thyroid- and asthma-related drugs though 561 (16.80%) patients reported with these complaints.
2. There was shortage of supply of tetanus toxoid; many

patients reported with cuts and bruises while walking in flood water and they themselves demanded tetanus toxoid injections.

3. Supply of emergency medicines was inadequate. The supply of masks and chlorine tablets was also not adequate as per the population needs.
4. As mentioned above, there were patients who came just for checkup without any complaints. Furthermore, there were many patients who only had non-significant complaints related to acute respiratory infection and small cuts and bruises. These patients consumed valuable consultation time that could have been used for seriously ill patients. All this indicated need of staff for triage. Importance of triage in disaster situation has been highlighted in a number of studies.¹⁵
5. There was a need of dedicated team for health awareness to educate patient visiting camp as well as in nearby areas with topics such as personal hygiene after floods, reentering flood home, cleanup of flood water, minimum standards for water safety, security, sanitation, and shelter. This could have prevented the spread of infectious disease and eventually could have decreased the daily increase in case load especially at SC.¹⁶
6. In some patients, there was a need of experienced translator to understand their problems better but translation was mostly done by other patients only.
7. No experts were available only MBBS doctors were running the camp.
8. Because of lack of training in disaster management, there were following wrong practices and wrong messages that were being conveyed to public through health workers like:
 - a. Patients and relatives presenting to camps were advised that animal carcasses need to be disposed at the earliest to avoid epidemic outbreak while WHO guidelines state that dead bodies do not cause epidemics in the aftermath of disasters.^{16,17}
 - b. Belief that mass immunization is necessary to prevent epidemic outbreak. Topical antibiotics were frequently prescribed, and washing wounds with antibiotic solutions were recommended.¹⁶⁻¹⁹
9. Finally, there was a lack of manpower to run the camp, especially at SC there were only 2 doctors and 1 pharmacist to attend to more than 500 patients per day. Many patients did not register because of the excessive crowd.

CONCLUSION

Running a medical relief camp after a flood disaster requires a high level of expertise and resources. Mostly, trauma-related injuries, acute respiratory tract infections,

and chronic medical illnesses are seen though any medical/surgical condition or emergencies can present at these camps. Dedicated staff for triage is necessary to avoid waste of resources. Efforts should be made to educate the patient and local public regarding prevention of infectious disease spread, safe drinking water, and sanitation practices apart from treatment. It is advisable that staff should go through the National Policy for Disaster Management and WHO guidelines before starting such camps.^{16,17,19}

Future Directions

- As India is constantly facing disasters and MBBS doctors are mostly deployed in such camps, there is a need for training in disaster management for doctors as a part of MBBS curriculum. If possible, it will be more useful to post specialist doctors in disaster area for better management of the patient. Alternatively, telemedicine can be used to provide specialist support in disaster-affected area.^{20,21}
- It is also highly recommendable to have a national or state level disaster medical assistance team comprising of trained health professionals consisting of specialist doctors, emergency physicians, nursing personnel, and pharmacists with the required infrastructure to set up an emergency medical relief camp in the disaster hit area.²²⁻²⁴ This type of team can be mobilized soon after disaster and can be very effective in providing high-level quality medical care in the disaster-affected area.

Limitations of the Study

Due to an emergency situation and lack of diagnostic investigations facility medical complaints were not coded as per ICD or any other such guidelines.

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