ORIGINAL ARTICLE

The Need for Medical Rehabilitation during Floods: A Cross-Sectional Survey of Physicians from Pakistan Armed Forces

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ABSTRACT:

Objective: To analyze the spectrum of medical issues during floods and to document the needs for medical rehabilitation expertise during floods in Pakistan.

Methodology: A questionnaire based cross sectional survey was designed. Medical officers from Pakistan Army who provided services in the flood affected areas of Pakistan during 2010-14 were selected. Data recorded included the area, time since flood, number and types of patients seen per day, medical issues encountered and trauma cases seen. We also inquired about the need for rehabilitation medicine physicians during floods and if any rehabilitation interventions were needed or offered during rescue operations. Data was analyzed using SPSS version 20.

Results: Forty self-administered questionnaires were distributed among physicians who had recently returned after performing duties in the flood hit areas. The response rate was 70% (28). All the respondents were medical officers from Army Medical Corps. There were 15 males and 13 female respondents with an average of 1 year experience. They had reached the flood affected areas1-4 weeks post-floods and spent an average of 30 days in those areas. Majority of the doctors were in Rahimyar khan and surrounding areas. Average number of patients attended was 147 patients/physician/day. Gastrointestinal diseases, skin infections and conjunctivitis were the commonest issues seen, followed by respiratory illness and minor trauma (bruises and lacerations). Only one case each of head injury and fracture were reported. None of the respondents considered early rehabilitation intervention mandatory in acute flood situation, however, weekly visits of medical, surgical, skin and eye specialist, gynaecologist and psychiatrist were recommended.

Conclusion: Frequent medical consultations in floods involve gastrointestinal disorders, skin diseases, conjunctivitis and respiratory illnesses. General duty doctors trained in common flood related ailments are sufficient. However weekly visits by consultants is recommended. No specialized rehabilitation and other services are required in initial days of floods.

Keywords: Floods, Disaster, Rehabilitation, Survey, Opinion, Need assessment, Pakistan, Relief services

INTRODUCTION:

Floods are common worldwide and constitute 40 percent of all global natural disasters[1], resulting in half of the total deaths due to all natural disasters combined[2,3]. Major floods result in displacement of a large number of people and high death rate. Asia has been the most affected among other continents in terms of morbidity and mortality[4,5]. Pakistan is located in South Asia and frequently affected by major floods, mainly due to the summer weather system. Floods mostly occur from July to September when the rainfall adds water to the melting glaciers in the north. Floods usually affect Sindh and Punjab[6,7]. The 2010 floods were one of the worst flood in the history of Pakistan. It affected 79 districts out of total 124 districts in the country resulting in massive damage to life, property, crops and houses. Approximately 20.2 million people were affected and 2 million houses were damaged or destroyed[7]. National disaster management authority (NDMA), reported 1,985 deaths and an estimated loss of 10 billion US dollars[8,9]. Flash floods are always a surprise but the people living in susceptible areas need to be vigilant[10]. River floods on the other hand are not much of surprise especially for people living downstream. People know well in advance that the flood would be coming so at least human life loss could have been easily prevented if not the property. Here comes the role of the governments to inform and arrange emergency evacuation of the people to safe places so lives can be saved [9,11].

Deaths, injuries and illnesses after the floods are not only related to the flood itself, but also relate to prevailing socioeconomic and health conditions of the people living there. The medical conditions resulting from floods can be classified into immediate, intermediate and long term[12,13]. The immediate consequences are death due to drowning. Other consequences are injuries, skin diseases, conjunctivitis, gastrointestinal and respiratory conditions. The injuries occur due to direct impact as well as during the evacuation and clean up process. The intermediate effects include communicable diseases, infections, and complications of injuries, psychological stress and poor nutrition[14,15]. Long term medical conditions include chronic diseases, malnutrition, mental health and chronic disabilities. Long term effects are more profound on the elderly and the disabled.

The indirect impact of the floods include damage to the infrastructure including health, water and shelter and acute and long term food shortage[7]. Traditionally medical

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Received: 19-08-2017
Revised: 18-09-2017
Accepted: 30-09-2017

response to flood includes medical teams of doctors and paramedic staff trained in handling the basic flood related ailments and trauma management. In the recent years, there has been an increased emphasis on providing early multi-disciplinary rehabilitation services to victims of natural disasters like earthquakes and tsunamis[16]. The need for specialized health services including rehabilitation in the early and late phase of floods has not been researched.

The objective of this study was to analyze the spectrum of medical issues during floods and to document perspectives of the service providers for the need for medical rehabilitation expertise during floods

METHODOLOGY:

A questionnaire based study was planned. Permission of ethical review committee was obtained. Forty questionnaires were sent to the doctors who had provided services in the flood hit areas from 2010-2014. Respondents were sampled by convenience. Response rate was 70%. One form was rejected on technical grounds. The questionnaire was pilot tested. The questionnaire had three parts. First part was the demographic data including name, age, gender, work experience and area of flood visited. Second part included arrival day at flood hit area, number of days spent, number of patients seen per day and the type of ailments and injuries seen. Last part was a series of open ended questions on the requirement of specialist doctors including rehabilitation medicine physicians after the floods and suggestions for improvement in medical response to floods. SPSS version 20 was used for data analysis. Frequencies as percentages were calculated for descriptive statistics, and mean and range were calculated for numeric data.

RESULTS:

Out of 28 respondents, 15 were males and 13 were females. The mean age of respondents was 24 years. All of the respondents were general duty medical officers. Forty percent arrived at the flood hit area within one week, while the remaining within 30 days. Each individual spent an average of 34 days in the flood hit area. Average patients seen per day were 147. Majority of the doctors were in Rahimyar khan and surrounding areas; other areas included Muzaffargarh, Rojhan, Dera Ghazi khan, Sukkur, Shikarpur, Nowshehra and Charsadda. Gastrointestinal illnesses were the most common, followed by skin diseases and conjunctivitis (Table-1). Only seven cases of trauma were seen, five minor cases including three with lacerations and two with sprain and strain. Two patients had head injury and two had fracture of the long bone.

Table-1: Frequency of diseases in flood affected areas

DISEASE	FREQUENCY	PERCENT%
GASTROINTESTINAL	10	35.7%
SKIN	8	28.56%
CONJUCTIVITIS	6	21.4%
RESPIRATORY	3	10.7%
OTHER DISEASES	1	3.6%

Majority (24) of the doctors considered a general duty medical officer sufficient to handle flood related ailments but 50% of the respondents recommended weekly/fortnightly visits by medical specialists, surgeons, paediatricians, and skin specialists. None of the respondents considered that early rehabilitation intervention is needed in floods.The major suggestions given by the doctors to improve services included planned deployment, improving and mobilizing existing medical setups, human resource justification, training of paramedic staff and medical officers, coordination between government and non-governmental organizations (NGOs), psychological stress management, hygiene and immediate rescue operations.

DISCUSSION:

Flood not only leads to mortality and morbidity but also causes significant damage to property, livestock and infrastructure. The area affected in 2010 Pakistan flood was equal to the size of England[8,17]. In the present study, majority of respondents were from Armed forces and were recent graduates performing house job duties when deputed for flood relief activities. They spent on an average 35 days in flood hit areas from Nowshehra in the north till Muzaffargarh, Rahimyarkhan, Rajanpur, Rojhan, Shikarpur and Sukkur in the south. The average number of patients attended by each doctor was 147 which revealed the need for medical care after floods. Most of the common medical conditions seen by the

doctors included gastrointestinal illnesses like diarrhoea and vomiting and dehydration, followed by skin diseases and conjunctivitis. Other health problems included respiratory conditions and musculoskeletal conditions. These findings were similar to World health organization (WHO) report on 2010 floods that,"Between August and September 2010, 6.2 million consultations for gastroenteritis, respiratory infections, malaria and dermatological conditions were reported to WHO from 50 out of 64 affected districts"[18]. That is a huge number to be catered for and indicates the priorities of health teams in flood affected area to focus on hygiene, clean drinking water and food, and readiness to treat such cases on a massive scale[19]. The risk for water borne and vector borne diseases remain high and must be kept in mind especially malaria, dengue, measles and cholera. According to WHO majority of the reported cases of polio from Pakistan in 2010 were from the flood affected regions[20].

Another concern in flood related issues is trauma. In the initial phase it can be due to direct impact and falls. There can be penetrating and puncture trauma due to glass and other sharp pointing debris in the mud. Falls due to slipping is another cause for injury. Affected population at times has to travel many miles on foot without any rest with their precious belongings and old age family members and people crammed in tight spaces for hours during evacuation. This can lead to body aches and pains, backaches, leg/foot pains and swellings. In the later stage when people return to their homes for cleanup and repair, all the factors mentioned above can contribute to injury; in addition falling debris from damaged homes and electrocution can be contributory factors[13,21]. Fortunately there were very few major trauma cases in our study that included fractures and head injury but no spinal cord injuries. Minor trauma like sprains, strains and lacerations were also very few. There were only two cases of fracture and head injury. The common trauma cases in floods reported in international literature include, fracture, head injury and spinal cord injury; falls, road traffic accidents, contusions, bruises, sprains, strains, swollen legs and feet, lacerations, cuts, electrical injuries, burns, puncture wounds and others[22]. The reason can be exclusion in data form regarding body aches, back and neck pains etc. These findings were similar to a study from Vietnam where there were only 15 cases of injuries from rural areas and 12 cases from urban areas of Hanoi[23]. In 1993 Golaz et al reported 246 cases of trauma in Missouri floods that included 35% sprains and strains, 24.4 % lacerations, 11% abrasions and other injuries each, 8.5 % puncture wounds and six cases of animal bites, 4 cases of burns and 3 cases of electrocution injuries[24].

Rehabilitation physicians specialized in impairments and disability management and dealing with musculoskeletal issues and rehabilitation of the major trauma can be of great help to the affected population. In our study majority of the respondents (94%) did not see any role of rehabilitation physicians in the acute flood situations and considered a trained general duty medical officer sufficient to handle the situation. Bloodworth et al[25] in their study on Physical medicine and rehabilitation(PMR) conditions in Astrodome clinic after Hurricane Katrina that led to secondary flooding, found 289 different PMR conditions in 239 patients. The commonest included swollen feet and legs, leg pain and cramps, headache, neck and back pain. The possible reasons for the difference from our study can be that they had different aims and objectives than our study. They aimed at documenting the different PMR conditions in Hurricane Katrina. Our aim was to determine from the experience of physicians if, Rehabilitation Medicine is required in the initial phase of floods or not. Their study was conducted by expert Rehabilitation physicians who could easily determine these different conditions in the patients they checked. None of the respondents in our study was a trained Rehabilitation physician and might have missed these conditions. All patients in their study were concentrated at one place in the Super Dome. While the patients attended by our respondents were spread over a large area and might not have even reported these musculoskeletal issues.

In addition, identification and evacuation of already disabled population from the flood hit area should be a priority and concern as they are more prone to trauma, complications and morbidity. In the post flood rehabilitation phase, there can be a need for assistive devices for disabled population who have lost it to floods and it could be a great service. Provision of wheel chairs, canes, crutches, walkers and other assistive devices for activities of daily living should be catered for in flood hit areas[13].

Regarding requirement of other consultants, respondents were of the opinion that no other specialized consultants were required full time in managing flood related conditions but they recommended weekly visit by consultants like medical specialist, surgeon, and other specialists providing consultation to the patients in their respective area. Majority of the respondents mentioned the role of psychiatrist and psychologist in the flood hit areas as they reported a large number of patients having anxiety and post-traumatic stress disorders and sleep disturbances and required counselling, reassurance and treatment in certain cases[24]. This highlights the importance of psychological assistance in the post flood scenario which is usually ignored

CONCLUSION:

Gastrointestinal and skin diseases, conjunctivitis and respiratory illnesses are most frequent in floods. No

specialized rehabilitation and other services are required in initial days after floods. General duty doctors trained in common flood related ailments are sufficient, however weekly visits by consultants is recommended. Psychological stress and post-traumatic stress disorder need to be addressed among patients.

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