

MANAGEMENT OF FLOODS MONSOON 2010 AFFECTED POPULATION AT COMBINED MILITARY HOSPITAL, RISALPUR

Muhammad Younas, Sibtain Rafique, Amir Sohail, Danish Almas

Combined Military Hospital, Risalpur

ABSTRACT

Objective: The objective of this study was to evaluate the type of patients and procedures carried out on flood affected population near Risalpur and Nowshera in monsoon 2010.

Study Design: Descriptive study.

Place and Duration of the Study: Medical relief camps established at Government Technical Training College (TTC) near Kabul River Nowshera Kalan, and Federal Government Boys High School (FGS) at Risalpur Garrison and Combined Military Hospital (CMH) Risalpur from 29th July 2010 to 10th October 2010.

Patients and Methods: Management of cases was divided into 2 phases. Phase 1 comprised of initial 6 days at TTC and phase 2 comprised of work at FGS from 7th day onwards till culmination of relief activity. Data was summarized on the basis of total number of patients rescued, sustained injuries, carried out procedures, detained, admitted and referred / transferred cases. Frequencies and percentages were used to describe the data.

Results: Total number of patients managed during this flood relief operation were 8308. During first phase a total of 3863 cases including 969 males, 1419 females and 1495 children were treated at TTC Nowshera, while during second phase a total of 4425 flood affected cases including 1227 males, 1929 females and 1269 children were managed at FGS Risalpur Garrison and CMH Risalpur. During this operation at CMH, 1024 patients were treated as outdoor cases, 74 patients were detained, 51 were admitted, 40 cases were referred while 4 cases were evacuated to DHQ Hospital/ CMH Mardan, 950 laboratory tests and 104 X-Rays/ USG were carried out. Gynecological services were of great importance as 3 caesarian sections, 18 normal vaginal deliveries and 6 dilatations and curettages were performed.

Conclusion: Medical services for disaster management were helpful to flood affected population in need of hour. Prompt medical treatment and early evacuation remains the mainstay. Emergency reproductive health care services should also be incorporated in effective disaster management plans.

Keywords: Disaster, Flood, Relief operation

INTRODUCTION

A disaster is defined as a sudden massive disproportion between hostile elements of any kind and the survival resources that are available to counterbalance these in the shortest period of the time. Disasters put considerable strain on the rescue and medical management system¹. Most commonly occurring natural disasters include earthquakes, floods, windstorms, typhoons, drought, and extremes of temperature and epidemic outbreaks². During past 20 years, natural disasters have claimed more than 3

million lives worldwide. These have affected at least 800 million people and resulted in damage to property exceeding US \$ 50 billion³. Pakistan is vulnerable to a number of natural hazards, of which floods, earthquakes, cyclones, windstorms, avalanches, drought and heat waves are the most significant. Floods, droughts and landslides in Pakistan tend to be frequent, seasonal, and localized. The snow melts at high mountains coinciding with the monsoon season and leads to very large discharges of the Indus River and its tributaries that result in annual floods⁴.

The 2010 Pakistan floods began on 29th July 2010 following heavy monsoon rains in the Khyber Pakhtunkhwa (KPK), Sind, Punjab and Baluchistan regions of Pakistan and affected the Indus river basin. At one point, approximately

Correspondence: Maj Muhammad Younas,
Pathologist, PAF Hospital Sargodha.

Email: younasmuhammad@yahoo.com

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one-fifth of Pakistan's total land area was under water⁵⁻⁷. According to data furnished by Pakistani government the floods directly affected about 20 million people, mostly by destruction of property, livelihood and infrastructure, with a death toll close to 2,000. The number of individuals affected by the flooding exceeds the combined total of individuals affected by the 2004 Indian Ocean tsunami, the 2005 Kashmir earthquake and the 2010 Haiti earthquake^{8,9}. Monsoon rains were forecasted to continue into early August and were described as the worst in this area in the last 80 years¹⁰. The Pakistan Meteorological Department reported that over 200 mm of rain fell over a 24-hour period in a number of places in KPK and Punjab¹¹. Heavy rainfalls of 415 millimeters were recorded at Risalpur during the four day wet spell of July 27 to July 30, 2010. The death toll from Pakistan's worst floods in living memory topped 1000 as outbreaks of waterborne disease emerged and penniless survivors sought refuge from the raging torrents. More than 1000 people were killed due to flash floods in KPK and more than one million people were affected by the flood in 21 out of 25 districts of KPK. The current flood has broken all the previous records of the floods.

Pakistan armed forces have played a leading and relentless role in management of casualties and rescue activities all over the country and this region¹². Army Medical Corps has played a frontline role in management of flood casualties as previously done in 2005 Kashmir earthquake¹³. Potential role of military specific response to natural disasters has also been stressed as in Peru 2007 earthquake¹⁴. The objective of this study was to evaluate the type of patients, their management and procedures carried out on patients affected by floods 2010.

PATIENTS AND METHODS

This descriptive study was based on the management of flood casualties at the medical relief camps established at Government Technical

Training College (TTC) near Kabul River, Nowshera Kalan, medical relief camps at Federal Government Boys High School (FGS) at Risalpur Garrison and Medical Reception Centre (MRC) of Combined Military Hospital (CMH) Risalpur from 29 July 2010 till calling off this operation on 10 October 2010.

Management of cases was divided into 2 phases. Phase 1 comprised of initial 6 days work at TTC and phase 2 comprised of work at FGS from 7th day onwards to end of relief activity.

The first team worked at Kabul river rescue point where all the casualties were initially received by medical officer (MO) and after first aid they were sent to Government TT College Nowshera Kalan medical camp and later to MRC of the CMH.

Triage was done at the rescue point and the patients were prioritized into immediate, urgent and definitive groups. Initial assessment was done following the advance trauma life support (ATLS) protocols¹⁵. Inclusion criteria for the purpose of this were all patients who needed medical consultation / management. Great emphasis was laid on proper paper work for each patient. Patients were received and examined by MO and they were managed depending upon their clinical condition like admission, detention, referral, evacuation or consultation.

Data was summarized on the basis of total number of patients, injuries, procedures, detained, admitted and referred/ transferred cases. Data was entered into a computer, and print outs generated. These were used for identification and analyses, as well as being made available to the higher headquarters. Statistical analysis of data was done by using statistical program for social sciences version 11.0. Frequencies and percentages were used to describe the data.

RESULTS

Total number of patients managed during cases including 1227 males, 1929 females and

Table-1: State of patients treated at CMH Risalpur (29th Jul 2010 to 10th Oct 2010).

S.no	Detail	Male	Female	Children	Total
1.	Outdoor	321	405	298	1024
2.	Indoor				
	a. Detentions	25	31	18	74
	b. Admissions	9	37	5	51
	c. Referral	16	12	12	40
	d. Evacuation	2	2	-	4
	e. Deliveries	-	18	-	18
	f. Caesarian section	-	3	-	3
	g. Dilatations and curettage	-	6	-	6
	h. Medical and surgical	9	10	5	24
	j. Lab tests	218	561	171	950
	k. X-Rays/ Ultrasonography	40	42	22	104
3.	Brought in dead	4	-	-	4
Total		644	1127	531	2302

Table-2: State of patients treated at free medical camps.

Place	Duration	Male	Female	Children	Total
TTC Nowshera	29-7-10 to 3-8-10	969	1419	1495	3863
FGS Risalpur cantt	3-8-10 to 9-9-10	583	802	738	2123
Total		1552	2221	2233	6006
Grand total		2196	3348	2764	8308

TTC: Technical training college, FGS: Federal government school

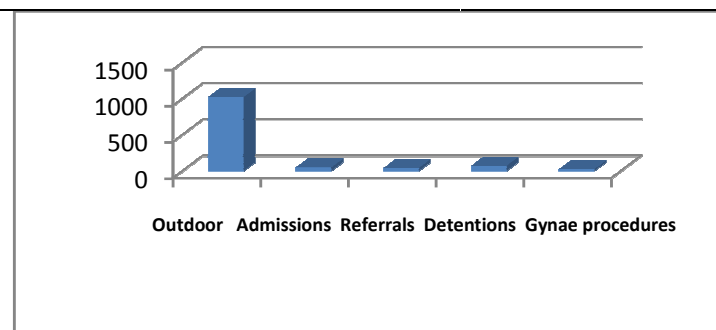


Figure-1: Patients treated at CMH Risalpur during flood 2010 (n=1193)

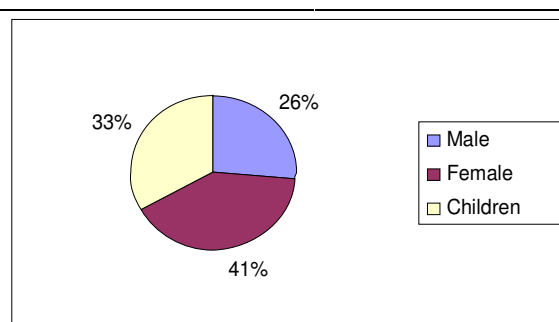


Figure-2: Patients treated by army medical services during the flood of 2010 (n=8308).

this flood relief operation by Army medical services was 8308 which lasted from 29th July 2010 to 10th October 2010. During first phase, a total of 3863 (47% of total) cases including 969 males, 1419 females and 1495 children were treated at TTC Nowshera, while during second phase a total of 4425 (53% of total) flood affected

1269 children were managed at FGS Risalpur Garrison and CMH Risalpur cumulatively as shown in tables.

Maximum patients received in a single day were 1681 (20% of total), including 415 males, 623 females and 643 children on 31st July 2010. At CMH Risalpur, during this operation 1024

patients (86%) were treated as outdoor, 74 patients (6%) were detained, 51 (4%) were admitted in CMH, 40 (4%) cases referred to DHQ Hospital/CMH Mardan after initial management, 4 cases were evacuated to DHQ Hospital / CMH Mardan after necessary 1st aid, 950 laboratory tests were carried out, and 102 X-Rays/ 2 ultrasounds were performed (Figure-1). Patients were mostly suffering from acute gastroenteritis (AGE), upper respiratory tract infections (URTI) and acute conjunctivitis (AC). Gynecological services were of great importance as 3 caesarian sections, 18 parturitions/ normal vaginal deliveries (NVD) and 6 dilatations and curettage (D and C) were performed in these circumstances. Inj Rhogam (anti D) was administered to 2 patients.

Four dead bodies were brought to CMH Risalpur (1 on 29th July and 3 on 1st August 2010) and kept in mortuary till their identification and then handed over to relatives, 1 body could not be identified as no relatives were traceable. As there was electricity failure at that time for almost 72 hours, so dead bodies were preserved with help of ice.

DISCUSSION

In mass casualty situations, demands always exceed the capacity of resources in terms of personnel and facilities. In the last few years, there has been an increased incidence of natural calamities and civil disasters; the spectrum of possible catastrophes has also increased dramatically as a result of an increasing technologically sophisticated society¹⁶. The emphasis of medical management shifts from individualized treatment to standardized therapy for disaster victims with the aim of providing maximum benefit to a maximum number of salvageable patients. A successful medical response to disasters, dictates formulation, dissemination and periodic updating of a contingency plan to facilitate the triage and treatment of victims¹⁷. Triage however remains the mainstay of treatment¹⁸. Prompt medical

treatment and early evacuation must be emphasized¹⁹.

The current flood has broken all the previous records of the floods. The worst flooding was in 1929 before 2010 in which the water flow was 150000 cusecs while the current floods with water flow at 275000 cusecs have broke the previous records²⁰. Since 1935 the region where Pakistan is located has repeatedly experienced various natural disasters of which earthquakes and floods have been more dreadful. This has resulted in loss of life of thousands of people and affecting millions²¹. In 2005, large areas of Pakistan were battered by rain and flooding. The worst affected areas were KPK, Northern Areas and Baluchistan. In KPK more than 80000 houses were destroyed and over 108000 were damaged. A number of dams collapsed due to excessive flooding, causing severe destruction of corps and livestock²².

During this flood operation, there was no electricity for initial 3 days which caused extreme difficulties. Similarly infrastructure was damaged and communication means were hampered. After initial 3 days when electricity recovered and Civil government medical services/ Non Government Organizations started joining the relief work, patient's management started improving.

Total number of patients treated in this flood relief operation was 8308 from 29th July 2010 to 10th October 2010 which is quite high. Maximum patients received in a single day were 1681 including 415 males, 623 females and 643 children on 31st July 2010.

At CMH during this operation bulk of the patients 1024 (86%) were treated as outdoor, 74 patients (6%) were detained, 51 (4%) were given indoor treatment at CMH, (4%) 40 cases referred to DHQ Hospital/ CMH Mardan after initial management/ 4 cases evacuated to DHQ Hospital/CMH Mardan after necessary first aid (including 2 cases of snake bite, 1 case of fracture neck of femur and 1 case of road traffic accident). Vaccination with TAB/ TT was done to 229

individuals at FGS camp for typhoid fever and tetanus. CMH Risalpur is a 100 bedded hospital but due to heavy rains, building of hospital collapsed which resulted in loss of 28 beds, and available beds reduced to 72, so some patients were transferred/ evacuated to other hospitals.

At laboratory 950 tests (mostly blood complete picture, liver function tests, screening for hepatitis B and C and X- matches) were carried out, and 102 X-rays/ 2 ultrasounds were performed. These diagnostic services were very helpful in management of cases. Patients were mostly suffering from AGE, URTI and AC.

Gynaecological and obstetrics services were of great importance as 3 caesarian sections, 18 parturition/ NVDs and 6 D and C were performed under such emergent circumstances. Injection Rhogam was also administered to 2 patients. It is highlighted here that emergency reproductive health care services should be given due consideration in effective disaster management plans as this aspect is generally not catered for by health care providers. The management of patients during this relief activity was coordinated in an integrated way as recommended by Nadeem A et al²³.

Four dead bodies were brought to CMH Risalpur (1st on 29th July and 3rd on 1st August 2010) and kept in mortuary till their identification and then handed over to relatives, 1 body could not be identified as no relatives were traceable. Since there was electricity failure and disturbed infrastructure for almost 72 hours so dead bodies were preserved with help of ice. Almost all patients who had acute gastro enteritis, had intravenous infusions running. There were neither any complications of the procedure nor there were any deaths among affected population at this CMH which is in contrast to other studies about disaster management².

Management was done by hospital indigenous resources including doctors, paramedical staff, medicines, ambulances and diagnostic services. Although majority of patients did not comprise of diseases of serious nature but

still most of the patients required intravenous fluids, pain killers and dressings which played an extremely important role for restoration of the affected population. This shows that in disaster management, role of prompt medical services becomes life saving and it decreases mortality and morbidity³.

A very important point to be highlighted is that as hospital was prepared for disaster management/ mass casualty handling, so we did not meet any confusional status and management was done in an effective and organized way, this proves that hospitals should remain prepared for disaster management/ mass casualty handling. This is in accordance with a study which has concluded that, the remedial measures to mitigate grief of the disaster may be made as part of the curriculum at varying levels of education from primary schooling to higher learning¹.

CONCLUSION

Medical services for disaster management were helpful to flood affected population in need of hour. Prompt medical treatment and early evacuation remains the mainstay. Emergency reproductive health care services should also be incorporated in effective disaster management plans.

REFERENCES

1. Mijeeb SA, Jaffery SH. Emergency blood transfusion services after the 2005 earthquake in Pakistan. *Emerg Med J* 2007;24:22-4.
2. Malik SA, Hussain Q, Malik SA, Noor SJ. Earthquake 2005: Experience with mass casualties at military hospital Rawalpindi. *Pak Armed forces Med J* 2009; 59: 117-22.
3. Schultz CH, Koenig KL, Noji EK. A medical disaster response to reduce immediate mortality after an earthquake. *N Engl J Med* 1996; 334: 438-44.
4. Hameed W, Hussain M, Butt IF, Aslam M. Medical education and training for disaster management: an urgent need. *Pak Armed forces Med J* 2006; 56: 425-32.
5. "Millions of Pakistan children at risk of flood diseases." BBC news online. 16 August 2010. <http://www.bbc.co.uk/news/world-south-asia-10984477>.
6. Goodwin, Liz. "One-fifth of Pakistan under water as flooding disaster continues." *News.Yahoo.Com*.
7. Updated at 7:20 am on 22 August 2010. "The International Monetary Fund says the floods which have devastated Pakistan will present a massive economic and political challenge to its government and people". *Radionz.co.nz*.
8. "Floods in Pakistan worse than tsunami, Haiti". *Gulfnews*. <http://gulfnews.com/news/world/pakistan/floods-in-pakistan-worse-than-tsunami-Haiti>. Retrieved 2010-08-12.
9. Wahlstorm M. Overview of tsunami disaster. *Prehospital Disaster Med* 2005; 20:480-2.

10. "Flooding kills hundreds in Pakistan and Afghanistan".BBC. 30 July 2010. <http://www.bbc.co.uk/news/world-south-asia-10815265>
 11. "WunderBlog:WeatherUnderground".Wunderground.com.<http://www.wunderground.com/blog/JeffMasters/comment.html?entrynum>.
 12. Yamin T. Disaster management revisited. Halal 2010; 10:23-24.
 13. Editorial committee, PAFMJ. Editorial. Pak Armed forces Med J 2006; 56: 325-6.
 14. Oliver-De MR, Rush RM, Sigmon MJ, Burkle FM. Potential role of military specific response to natural disasters. Medical Corps International Forum 2009; 4:28-33.
 15. The American College of Surgeons. Advanced Trauma Life Support manual; 1997.
 16. Aldis W, Rockenschaub G, Gorkhowich Y, Doocy S, Lumbiganon P, Grunwald F. Assessing impact and needs. Prehospital Disaster Med 2005; 20: 396-8.
 17. Kapila M, McGarry N, Emerson E, Fink S, Doran R, Rejto K. Health aspects of the Tsunami disaster in Asia. Prehospital Disaster Med 2005; 20: 368-77.
 18. Sabir S. Triage in modern battlefield. Pak Armed forces Med J 1993; 43: 52-9.
 19. Safdar SA. War casualties: recent trends in evacuation, triage and the golden hour. Pak Armed forces Med J 2010; 60: 129-34. <http://blogs.aljazeera.net/asia/2010/09/01/pakistan-drowns-its-leaders-fight>.
 20. GSA Supplemental Data Item 2013073, precipitation data, flood inundation chronology, river discharge, and digital elevation model, online at www.geosociety.org/pubs/ft2013.htm. USA; gsatoday@geosociety.org.
 21. Khan MA. Report of the Flood Inquiry Commission, appointed by the Supreme Court of Pakistan: Supreme Court of Pakistan, 2011; 84 p., <http://www.pakissan.com/english/watercrisis/flood/report.of.flood.inquiry.commission.shtml> (last accessed 24 Oct. 2012).
 22. Khan B, Muhammad JI, Khan MA. Flood risk assessment of River Indus of Pakistan: Arab Journal of Geosciences, 2011; 4: 115-22. doi: 10.1007/s12517-009-0110-9.
 23. Nadeem A, Khan AK, Ahmad T, Sheikh IA. Tremor, tragedy and human triumphs - CMH Rawalpindi. Pak Armed forces Med J 2006; 56: 450-9.
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