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Research Article

An Epidemiological Study Post Cyclone Fani: An Insight of Our Disaster Risk Reduction and Relief Services

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A B S T R A C T

Introduction: Every year cyclones hit India, impacting the population living along the coastline, the infrastructure, and inland areas within India. Multiple bodies of evidence suggest that cyclonic storms disrupt regular health systems depending on the category of the storm. The cascading risks emerging from such disasters present a more complex risk scenario for sustainable development.

Methodology: A cross-sectional study on 370 cyclone victims from May 23, 2019 to May 27, 2019 using purposive sampling was carried out at 12 medical relief centres. SPSS version 22 was used to analyse the data.

Results: Of the total 370 participants, majority (216, 58.4%) belonged to the age group of 35-64 years, and 200 (54.1%) victims were women. Majority (290, 78.4%) were married and 240 (64.9%) belonged to families with more than four family members.

336 (90.8%) participants reported to the medical camp with disease-related signs and symptoms post-disaster while 34 (9.2%) sought medical services for injuries alone.

266 (71.9%) victims reported receiving early warning signals regarding the storm through media (radio/ TV/ newspapers/ cell phones), while 104 (28.1%) received the information through neighbours and friends.

Conclusion: A social determinant of health approach from a risk reduction perspective needs to be nurtured while providing rescue, relief, and rehabilitation in disaster management operations. This has scope to additionally factor in extreme weather events and public health consequences that will further aggravate in coming years.

Keywords: Disaster Risk Reduction, Public Health, Climate Change, Health Systems, NGO

Introduction

Every year cyclones hit the east and west coasts of India, impacting the population living along the coastline, the infrastructure, and inland areas within India.[1] Among the states in India, Odisha stands most vulnerable to natural disasters and impact of climate change, thereby being affected by cyclones, heat waves, floods, and occasional droughts.[2,3]

Cyclone Fani, originating from a tropical depression that formed on 26th April 2019 west of Sumatra in the Indian Ocean,was the strongest tropical cyclone to strike Odisha since the Odisha Cyclone of 1999.[4,5] Multiple bodies of evidence suggest that cyclonic storms disrupt regular health systems depending on the category of the storm and the cascading risks emerging from such disasters present a more complex risk scenario for sustainable development.

The study was thus conducted to survey the social health parameters, the understanding of cyclonic disasters, and their resilience and relief mechanisms during the disaster relief phase towards Cyclone Fani when the CHD Group team of health providers were extending medical relief support.

Methodology

Study Design and Sample

After obtaining the ethical committee approval, a community-based, cross-sectional study using purposive sampling was carried out at 12 medical relief centres in Odisha covering both urban and rural areas selected by systematic random sampling. Cyclone victimswho turned out at the medical relief camp, and were willing to participate in the study were included. After obtaining their written and informed consent, a total of 370 participants were studied.

Study Period: May 23, 2019 to May 27,2019 during the relief phase mission by the CHD Group, India Country Office.

Study Tools

A pre-designed, pre-tested, pre-validated structured questionnaire was administered to the victims to elicit socio-demographic profile, access to relief and care, and response towards the disaster. SPSS version 22 was used to analyse the data.

Results

As shown in Table 1, of the total 370 participants, majority (216,58.4%) belonged to the age group of 35-64 years, and 200(54.1%) victims were women. Majority (290, 78.4%) were married, and 240 (64.9%) belonged to families with more than four family members.

216 (58.4%) were literate, of which 6(1.6%) were graduates. 174 (47%) participants were unemployed. 178 (48.1%) were labourers, 12 (3.2%) worked as government employees, and 6 (1.6%) were local businessmen. Most (73%) of the participants were from rural areas, while 100 (27%) were from urban areas.

Table 1.Demographic Distribution of Study Participants

Gender	n (%)
Male	170 (45.9)
Female	200 (54.1)
Age group (years)	
18-34	92 (24.8)
35-64	216 (58.4)
> 65	62 (16.8)
Marital status	
Married	290 (78.4)
Unmarried	80 (21.6)
Family size (No. of members)	
> 4	240 (64.9)
4	17 (4.5)
3	42 (11.4)
< 3	16 (4.3)
Literacy	
Illiterate	154 (41.6)
Literate	216 (58.4)
Graduate	6 (1.6)
Occupational status	
Unemployed	174 (47)
Labourers	178 (48.1)
Government workers	12 (3.2)
Local businessmen	6 (1.6)
Place of residence	
Rural	270 (73)
Urban	100 (27)

336 (90.8%) participants reported to the medical camp withdisease-related signs and symptoms post-disaster while 34 (9.2%) sought medical services for injuries alone.

266 (71.9%) victims reported receiving early warning signals regarding the storm through media (radio/ TV/ newspapers/ cell phones), while 104 (28.1%) received the information through neighbours and friends. 342 (92.4%) knew about the dangers and the measures to be taken for self-protection during a cyclone, while 28 (7.6%) had incomplete or no knowledge. 270 (72.9%) correctly knew about the food hygiene, water quality, and waste disposal

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measures post-disaster, while 100 (27%) were unaware of the same (Figure 1).

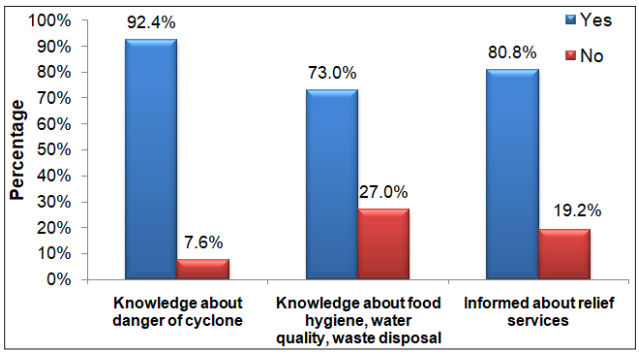

Figure 1.Assessment of Participants' Knowledge

When asked about the participants' knowledge of the relief services, 299 (80.8%) were prior informed about the relief services. 71 (19.2%) reported receiving no information about the same.Only 20 (5.4%) victims received relief support within 12-24 hours post-cyclone, 278 (75.1%) received support within 48 hours to a week, and 72 (19.5%) received it after 2 weeks (Figure 2).

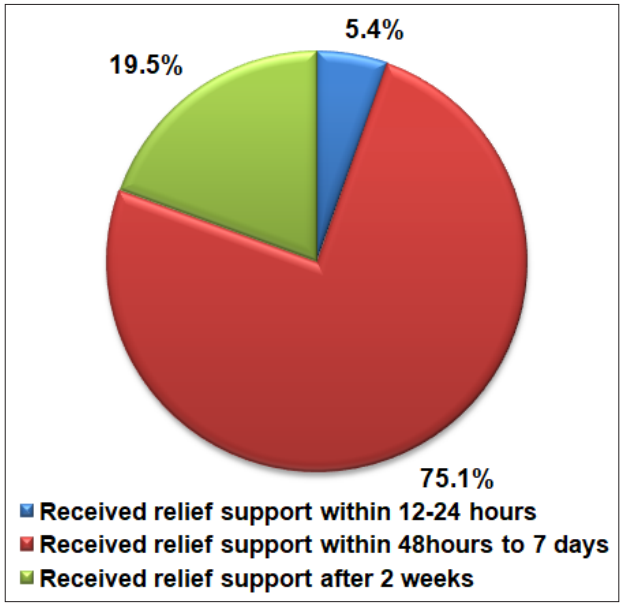

Figure 2.Delivery of Relief Services

The relief services to 302 (81.6%) participants were provided at their homes, while 68 (18.4%) victims received the services at other places. Out of 68 victims who received services elsewhere, 49 (72.1%) had to travel less than a kilometre to procure the relief material, while 19 (27.9%) had to travel more than one kilometre to receive the same.

All the victims received regular food services during the preceding weeks (last 20 days) since the cyclone made landfall. While 304 (82.2%) received water services, 185 (50%) received shelter, 22 (5.9%) received other essential services like infant food, sanitary napkins, and soaps. 71.4% sought healthcare or food or clothing or educational material on safety measures as family needs, while 28.6% wanted government compensation only. A vast majority (98.4%) received services through government agencies and NGOs, while only 1.6% received services from religious and political outfits.

Discussion

Among the participants who turned up for seeking door-step relief through the services provided by the CHD Group, middle-aged population i.e. 35-64 years, comprised the majority (58.4%). It is possible that the younger working age group remained at home due to early warning signals or were moved to temporary human settlements during the storm as many of them were evacuated.[6]As much as the agrarian populace lost their crops, others could possibly have faced infrastructural loss due to which work environments would also be jeopardised.

The fact that the elderly population (>64 years) (n=62) did not turn out in large numbers suggests the need for a more aggressive approach to home-based health care not withstanding the endemic determinants of health approach. CHD Group's last mile penetration focused on rural regions, from which 73% of the beneficiary patients came. This action is in line with the district administration where professional medical assistance in rural areas stands neglected.[7]

About 54% of the total beneficiaries who sought medical assistance were women showcasing higher vulnerability of women post disasters. 91% of the total beneficiaries reported to the camp either with infectious diseases or exacerbation of previously existing comorbidities like hypertension, diabetes mellitus, and asthma. Only 9% reported with injuries alone. Similar findings were revealed by Howard et al. wherein injuries were more common in the week of the disaster whereas infections or exacerbations of existing illnesses were more common in the weeks that followed.[8-10] Thus, effective preventive measures converging on infectious diseases and prior health education on the same needs to be followed in disaster preparedness. Despite disaster-related stress negatively affecting chronic co-morbid conditions, participants lacked awareness of carrying their medication for chronic diseases at the time of evacuation, leading to acute exacerbation of the already existing co-morbid conditions. In our study, nearly 72% of the victims received warnings through mass media, while the remaining received the same through neighbours and friends. Although all the participants were prior informed regarding the disaster, 1/3rd still received the information through non-reliable sources, where the complete and correct information regarding relief and rescue was missing.

Although 81% knew about the relief services that would

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be extended, others were either unaware or had partial information about the same. Thus, warnings from authentic sources and information dissemination on complete relief services regarding the location of distribution of relief services and materials to be provided, call for strengthening.

Only 82% were provided relief services at convenient places like their homes/ shelters. Of all those who were provided relief services elsewhere, nearly 28% had to travel more than a kilometreto receive the aid. Thus, in order to ensure effective disaster mitigation services, relief distribution channels need meticulous planning. In disaster-prone areas, communities need to be well aware of the earmarked relief service distribution location to avoid inconvenience during procurement.

Only 5% of the victims received relief services within 12-24 hours, while 75% received the same within 48 hours to one week, and 20% received the support after two weeks. This gap in providing immediate and timely supply needs to be addressed.

Although all the victims received regular food services during the preceding weeks since the cyclone, many did not receive essential services including water. Nearly half of the victims were not provided shelter and only 1% of those needing first-aid could receive the aid. 99% did not receive clothes and blankets, and very few (3%) received other essential services like infant food, sanitary napkins, and soaps. Increasing coverage by providing essential services other than food is of paramount importance. On the qualitative assessment of participants, 71% demanded healthcare, daily wear, educational material, and toiletries as family needs.From warning alerts to relief, 98% of the participants received it through Government agencies and NGOs. Very few cyclone affected victims received services from religious and political outfits.The involvement of local religious and political bodies (like Puri Jagannath Dham etc.) needs to be improved as faith-based coalitions can help build resilient communities. In conclusion, a risk-informed planning approach through cross-sectoral convergence will remain necessary to mitigate future risks and also build community resilience.

Conclusion

Cyclone Fani left behind significant damage to the areas that got impacted. Relief work provided reasonable respite to populations that were stranded due to damaged electricity, loss of supply chain in healthcare, food, and other needs and also presented scope for more effective and efficient risk-informed planning which the state disaster management authorities could adapt and learn from. Future risk mitigation plans can surely build upon community-based models of public health resilience where families remain at the very heart of planning withthe intent to leave no one behind.

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