

Analysis of Incidence and Prevalence of Communicable Diseases Associated With Flooding Disaster in Dar es Salaam City

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Abstract: The threat of communicable disease outbreaks is greater during and after a disaster than during other times particularly when large populations have been displaced. The study was to mainly analyzing the occurrence and prevalence of communicable diseases associated with flooding disaster in Dar es Salaam City. It was intended to screen and establish a spectrum of flood proneness for areas exposed to frequent flooding in Dar, Also to review the characteristics and the influencing factors of diseases associated with flooding in the context of environmental and socio-economic conditions prevailing in the case study area as well as to analyse the relationship between the occurrence of the diseases associated with flooding and the presence of their risk factors (causative agent and influencing factors) in the case study area. The different methods were used such as discussions and consultations, key informant interviews, secondary information, mapping and photographs and direct observations. The study found that Kinondoni was the most prone of all three Municipalities because it has 40.6 % of the city total population in which many people live in unplanned settlements which make them vulnerable to flooding disasters while Ilala has only 27.9 % of the total population and Temeke has 31.36%.

Keywords: Flood, communicable diseases, prevalence, incidences, prone.

1. INTRODUCTION

Natural disaster are frequently characterized by the displacement of large numbers of people, with severe disruption of basic infrastructure, resulting in overcrowding, increased exposure to disease vectors, food insecurity, and lack of access to safe water, sanitation, and basic health services. In populations affected by emergencies, the risk of communicable diseases is greatly increased, with particularly high morbidity and mortality from communicable diseases in acute conflict situations. Flood situations are variable and can occur as a result of spring snowmelt, severe thunderstorms, prolonged rains, inadequate drainage or failure of levees and dams. The impact can be local affecting a neighborhood or community, or very large, affecting entire river basins and multiple states. Some develop slowly – allowing time to prepare and evacuate – while others (e.g., flash floods) can develop quickly, even within minutes.

The threat of communicable disease outbreaks *is* greater during and after a disaster than during other times particularly when large populations have been displaced. However, an epidemic or outbreak will only occur if the equilibrium is changed between the population's susceptibility (host or reservoir), the virulence of the infectious agent (bacteria, viruses, parasites, or fungi or their products) and the environment that promotes the exposure are upset. Floodwater is generally contaminated by various pollutants: sewage, human and animal feces, pesticides and insecticides, fertilizers, oil, asbestos, rusting building materials, and so forth. Flood may boost cross contamination between sanitation system and water supply systems. Due to the displacement of large numbers of people, with severe disruption of basic infrastructure, resulting in overcrowding, increased exposure to disease vectors, food insecurity, and lack of access to safe water, sanitation, and basic health services.

The study brought out different information concerning causes, symptoms, prevention and control measures of communicable diseases in flood affected society in Dar es Salaam as well as the whole world. For decision makers and implementers, the study also suggest better and modern ways of identifying causes and symptoms, how those diseases spread easily in flood affected society and also on measures for prevention and control of the problem which includes both incidences and prevalence of communicable diseases in association with flooding disaster in Dar es Salaam. It was able to identify problems, situations, weakness concerned communicable diseases in association with flooding disaster in Dar es Salaam. Also bring out some improvement measures, needs and options for communicable diseases prevention and control in study area.

2. MATERIALS AND METHODS

Data collected through different methods includes discussion and consultation, key informants interview, secondary information, mapping and photographs, direct observation etc. as they are well discussed each below.

A. Key Informants Interview:

Interviews were conducted to individuals from different offices from Ministry of Health and Welfare, City council, Region commissioner office, district doctors from Ilala Municipality, Kinondoni and Temeke Municipality and health officers from all these office, Red Cross officials, TMA Officials etc. Questions were made during the interview, which helps to focus the research in terms of location and as subject of flood and communicable diseases is of concern. All these officials gave their in-depth knowledge and information on communicable diseases associated with flooding in Dar es Salaam and how it affects the city and country as a whole. However the interview helps to get specific data which were needed for the analysis.

B. Secondary Information:

Secondary sources which includes information's collected by other agencies/ offices such as Ilala, Kinondoni and Temeke health departments, Red cross, Region commissioner office, information available on the internet, national disaster profile, newspaper, journals, reports etc which provide background knowledge and help to focus on this study.

C. Direct Observation:

The study mission may observe many things example building damage, how safe water contaminated with waste water due to flood event, affected populations, physical surroundings', poor drainage systems, wetlands areas in the city such as Jangwani, Bonde la mpunga, Kigogo etc. Direct observation was one of the methods used in this study as many others.

D. Photographs and Mappings:

Some photos were taken to show the existing situation as well as how affected people are, also map to show the existing study area, as it was represented in analysis also some drawings/ figures were made as part of the study to present the real situation and variation of the problem in different Municipalities.

E. Discussion and Consultation:

In each offices visited there were deep discussion and consultation were made to professionals of health issues together with flood related issues. Discussions were made more than three times in different days in each office in order to get accurate and valid information on the study. In Prime Minister Office under Disaster management department discussion were made and it was possible to get consultation with DMD director. As for that matter so many were discussed on flood disaster in relation to communicable diseases as the study is of concern. Also discussions were made in regional level, City council, Red Cross, and all three Municipalities to the different officials.

3. RESULTS AND DISCUSSION

Kinondoni Municipality represents big population of Dar es Salaam. Specific diseases have been presented for the period of five years to see the trend and their age link with rainfall trends which cause floods. The Figure 1 shows that in 2009 malaria cases was very high above 20000 compared to other years in Kinondoni Municipality, as time passed by malaria cases decreased for two years respectively 2010 and 2011. In 2012 for first five months malaria was low. From June it started to increase again, while in 2013 there were variations in each month.

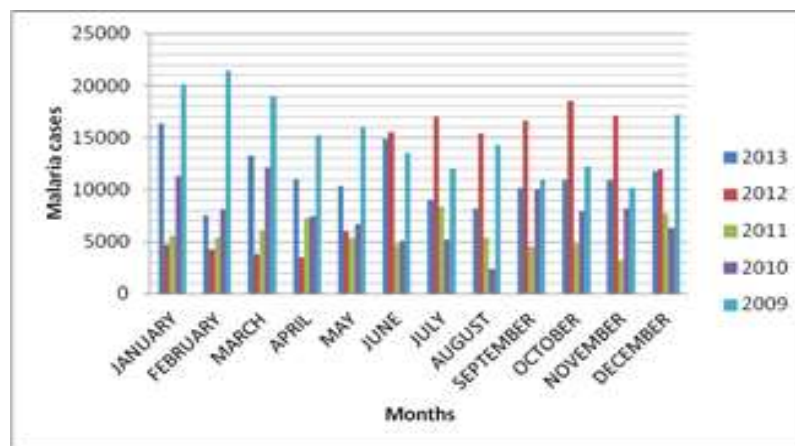


Fig. 1 Malaria status for Five years trend in Kinondoni Municipality

There is a clear link between rainfall, floods and communicable diseases. Heavy rainfall results to overflow of drainage system thus causing floods. The City has poor drainage systems, large population living in prone areas, poor sewerage system (storm water) all together make the city vulnerable to flood hazards, causing pollution of the safe water which leads to eruption of diseases particularly diarrhea and cholera. The City's drainage systems are frequently overwhelmed during heavy rains resulting in mass displacement of the city residents, particularly those residing around the Msimbazi River basin.

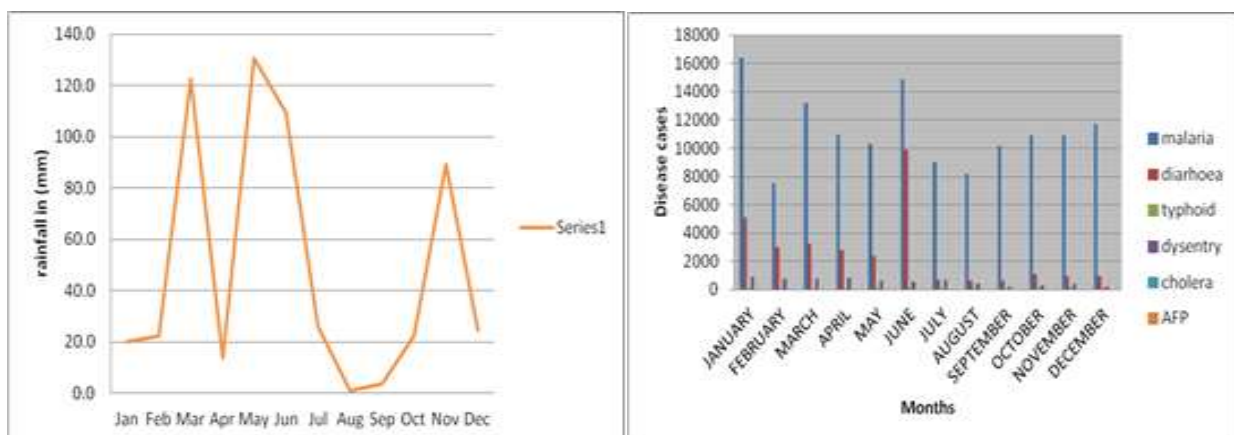


Fig. 2 Represents monthly average actual Rainfall and Fig. 3 shows Health status of Kinondoni Municipality in 2013 respectively

These figures 2 and 3 show how the increase of rainfall above its normal range (threshold) results in floods in May, June and July, affecting health status in the same months in which the direct communicable disease was diarrhoea

During the field work it was revealed that in all three Municipalities there were major communicable diseases associated with floods. It is vital to know and to understand well about the causative agents together with their influencing factors which include changes in human behavior, disrupted environmental control, change of habitat, poor sanitation, population displacement, water pollution etc

4. CONCLUSIONS

In this study it was revealed that in all three Municipalities there were major diseases associated with flooding disasters. It is vital to know and understand well about the causative agents and their influencing factors which among others include; changes in human behavior, disrupted environmental control, change of habitat, poor sanitation, population displacement, contaminated water etc.

Findings from this study revealed that floods have been potentially associated with communicable diseases in Dar es Salaam. Both rainfall data and health data from the three Municipalities support the fact that floods influence the spread of communicable diseases as shown in chapter four during analysis.

There is a clear link between rainfall, floods and communicable diseases. Rainfall when increases beyond the normal range (threshold) results in overflow of drainage system thus causing floods. As Dar es Salaam is concerned, poor drainage system, large population living in prone areas, poor sewerage system (storm water) all together makes the city vulnerable to flood hazards in which once it rains large part of the city becomes flooded.

Flood water affects water supply system by polluting the safe water hence causing eruption of diseases especially diarrhea. Most cases which have been observed during data analysis show that water-borne diseases especially diarrhea, dysentery, cholera and malaria tend to increase during and soon after heavy rainfall. In this scenario it proves that floods have a very big influence in spreading most communicable diseases which affect mostly flood affected population.

In all levels from ministry, regional, city, Municipality up to ward level data collection is poorly conducted as well as stored, most of health data have been poorly collected and also stored in hard copies by which it is very easier to be lost and destroyed.

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