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Full Length Research Paper

Disasters in Kenya: A major public health concern

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A disaster is defined as an event or series of events, which give rise to casualties and/or damage or loss of property, infrastructure, essential services or means of livelihoods on a scale which is beyond the normal capacity of the affected community to cope with unaided. This event or events disrupt the normal patterns of life (or ecosystem) and extraordinary emergency interventions are required to save and preserve human lives and/or the environment. Disasters can either be manmade or natural, and either of slow or rapid onset. The objective of this work was to review disasters that have happened in Kenya in the last twenty five years in respect to their public health impact, community perceptions and preparedness. Results indicate that there is inadequate preparedness and responses despite the repetitive nature of specific disaster episodes. This may be due to economic, social, and cultural barriers prevent effective devolution of mitigating institutional and policy frameworks from central institutions to local communities.

Key words: Disasters, Kenya.

INTRODUCTION

Disasters are worldwide phenomena that range from being highly localized to global in scope. Regardless of their origin and classification, all disasters have a public health importance due to their potential to cause loss of lives and livelihoods. What differs however is the preparedness of the community which determines its ability to cope and prevent loss of lives and livelihoods during the event and immediately after. It is even more important however, that the ability to predict a disaster before it happens allows mechanisms such as evacuations which drastically reduce loss of lives.

It would be expected that a community that has lived through disaster would learn from the experience and thus be better prepared if faced with a similar situation. This theoretical framework however assumes that after the event, the community, would among others, audit the disaster to establish its cause and dynamics; as well as institute mechanisms to either cope or avoid a similar disaster in the future. Central to this preparedness is the community's perception relating to the disaster that may be influenced by its socio-cultural-religio-economic status. This paper reviews disasters in Kenya in the last 25 years with particular emphasis to their public health impact such as loss of lives and injuries as well as loss of property. Post disaster preparedness and factors influencing it will be discussed.

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METHODOLOGY

This study consisted of survey of secondary data concerning disasters in Kenya within the last 25 years in respect to disaster awareness, perception and preparedness of local communities.

RESULTS AND DISCUSSION

Natural disasters

Among the natural disasters that have plagued the country is flooding both as unique "once off" or seasonal events. The *El Nino* brought unusually heavy rainfall in the country causing widespread flooding in 1997 - 1998. Rivers burst their banks causing flooding in homesteads and farmland that resulted in loss of lives and property. Within cities such as Nairobi, poor drainage and town planning further exacerbated the situation with flooding on roads and houses built on lowlands and river catchment areas resulting in destruction of property and road network. It is estimated that El Nino affected 1.5 million Kenyans (Ngecu and Mathu, 1999; UCAR, 2007).

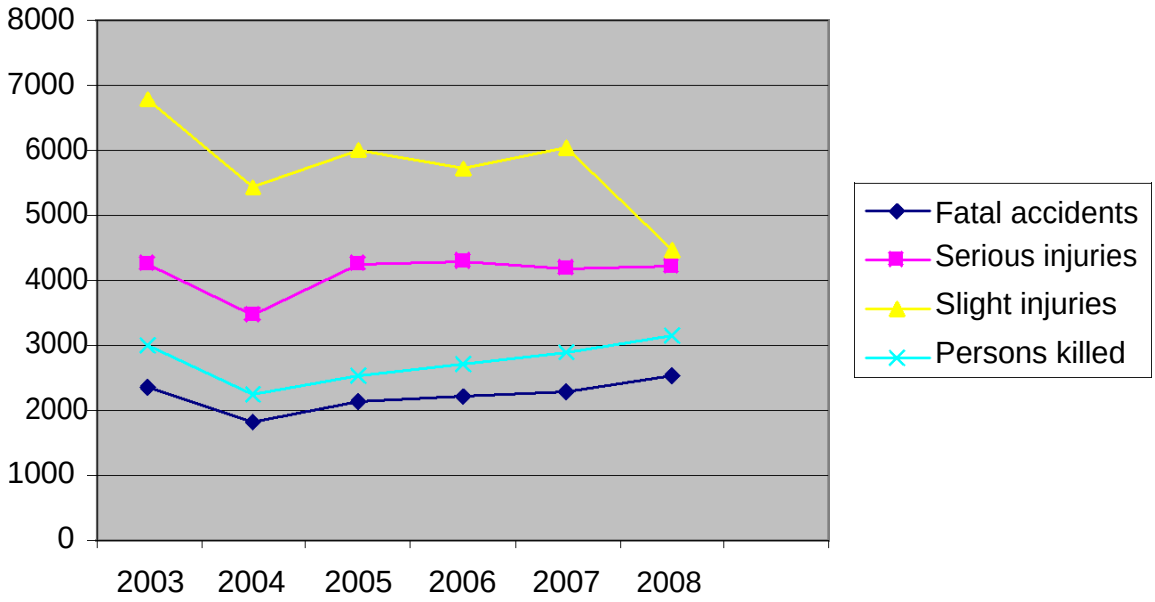

Figure 1. Road traffic accident statistics on Kenyan roads 2003 - 2008 (Commissioner of Police, 2010).

There however are certain geographic areas in Kenya that experience seasonal flooding. An example is Budalang'i where rivers Nzoia and Yala destroy dykes resulting in flooding leading to loss of lives and livelihood almost yearly (IRIN, 2007). It is thus predictable that this event will happen during rainy seasons and yet preparedness that would prevent loss is apparently lacking. Could this be a shortcoming in the physical planning of the river or socio-cultural values of the people that would resist resettlement from the flood prone areas which is their ancestral homes?

Failure to have the expected amount of rainfall has led to several droughts in Kenya during the last 25 years mainly 1975, 1977, 1978, 1984, 1992, 1997, 2005 and lately 2008; 2009. These droughts have been countrywide although some areas such as the arid and semi-arid areas have been more severely affected than others. These periods of reduced rainfall have been followed by widespread famine due to crop failure and loss of livestock and evidently loss of lives. The severity of these disasters have gradually increased ranging from estimates of 20,000 in 1977; 10 million in 2009 to affected and in need of relief (OCHA, 2010). There appears to be a predictable pattern of between 5 - 7 years which would allow preparedness such as water harvesting and adequate strategic grain reserves. Are these pre emptive mechanisms lacking due to poor planning or lack of prioritization of the needed resources? Land slides have also been among the natural disasters experienced in particular areas of the country such as Meru, Murang'a, Nyeri and Nandi where in 2002 and 2004, some people died and over 2000 were affected (OCHA, 2008). These are areas with topography with sharp gradients where heavy rains initiate slides. Although, classified as natural, these disasters may have a human element whereby destruction of soil cover by intensive agricultural activities may exacerbate the natural predisposition. Being recurrent disasters, could it be that socio-cultural factors prevent translocation of the residents to other areas or is it a case of poor planning?

Man-made disasters

In the last 25 years man-made disasters in Kenya have been more severe than natural ones as evidenced by the heavy loss of lives and property affecting people's livelihoods. Road traffic accidents top the list as evidenced by statistics that show the number of people killed on Kenyans roads has been generally on the rise (Odero 1995). These statistics neither take into account the number maimed with accompanying loss of productive years nor the loss of property in terms of vehicles and infrastructure destroyed. Preparedness of the relevant government authorities can certainly prevent many accidents related to motoring on the roads. This is evidenced by the sharp decrease of accidents from 133378 in 2003 to 10717 in 2004 (Commissioner of Police, 2010). Within the same period, there was a decrease in the number of fatal accidents, injuries and people killed as shown in Figure 1. This decrease correlates to appointment of a new Minister of Transport who enforced already existing laws particularly in the public transport sector pertaining to speed limits, safety belts as well as prevention of overcrowding. This clearly indicates that certain disasters may be due to a

Table 1. A summary of the major fires disasters in Kenya.

Venue	Year	Cause	Losses	Casualties
Lamu	1982,1990	unknown	Loss of property	No record
Free market Nairobi	2001	unknown	Millions worth of merchandise	none
City Hall Nairobi	2004	Suspected arson	Property worth Ksh 70 M	none
Bombolulu girls school	1998	Suspected arson	School property destroyed	25
Kyanguli Boys school	2001	Suspected arson	School property destroyed	68
Sachangwan	2009	Petrol tanker		150
Nakumatt supermarket, Nairobi		unknown	Merchandise of unknown value	14

governance issue where there is inability or unwillingness to enforce existing laws. Train accidents have also been a source of public health concern in Kenya in the last 25 years. Accidents in 1976, 1992, 1996 and 2000 caused the deaths of over 100 people and more than 500 injured. The rail network in Kenya primarily consists of railway lines from the eastern coast town of Mombasa to the west of the country and onward to Uganda. These lines are over 100 years old with little modification and modernization to match the current rail technology (Standard, 2009b). Recently, the rail system in Kenya is operating under a concession and it is hoped that this will bring the much needed technology required for preparedness necessary to prevent more rail disasters.

There are also disasters of serious public health importance in the water systems in Kenya. Incidents of drowning in Kenyan lakes particularly Lake Victoria are routinely reported in the media. In addition to drowning, incidences of crocodile and hippo attacks have also been recorded in the rivers. In terms of transport, the Mtongwe channel ferry accident in 1994 where 270 died is probably the most severe in terms of loss of lives (Nation, 2009). Ferries that provide transport to and from Mombasa Island are old and often stall. The fact that the Ministry of Transport is reported to have secured resources for new and more reliable ferries suggests that preventive measures are initiated to reduce disasters in this sub-sector. In addition, there have been air traffic accidents. In 1974, an air accident at the Airport in Nairobi resulted in 60 deaths. More recently, are the 2003 crash in Busia whereby three people died and 10 injured, the 2006 Marsabit crash where 14 people perished and three were injured and the 2008 accident in Narok were all four people on the plane were killed. Other than the 1974 one, the other accidents involved light fixed wing aircraft and the travels involved politicians. The causes of these accidents are unclear but it may suggest human error particularly during poor weather as the situation in the last two accidents (Ministry of Transport, 2009). Other man-made disasters that have been experienced in Kenya are bomb blasts. To date, the terrorist attach at the American Embassy in Nairobi in 1998 that claimed 214 lives and 5,600 injuries and untold psychological trauma is the worst in the countries history (Ndetei et al., 2005). More than 20 years earlier in 1975, a bomb blast occurred at the OTC bus terminus in Nairobi where 27 people died and many more injured. Later in 1981, a suspected terrorist attack at the Norfolk Hotel in Nairobi resulted in five deaths and 75 injuries. In 2002, another attack at the Paradise Hotel in Mombasa caused 15 deaths. It is interesting to note that other than the 1975 bomb blast, the other attacks were apparently not directly to Kenyans *per se* but foreign interests in Kenya (Office of the President, 2004).

Fires have also contributed to the toll of man made disasters in Kenya with varying loss of property and lives (DREF, 2009). As shown in Table 1, early examples are fires in Lamu in 1982 and 1990 causing massive losses of lives and property. Later, in 2001, a fire at the Free Market at Uhuru Park in Nairobi razed down the entire market with merchandise worth millions of shillings destroyed. Later, in 2004, another fire at the City hall in Nairobi destroyed the entire third floor of the building where valuable documents and property estimated to be worth KSh 70 million were destroyed. These two disasters were similar in that there were no casualties for the fires at night. Unlike these two, fires at Bombolulu girls' secondary school in Mombasa (1998) and Kyanguli boys' secondary school in Machakos (2001) caused deaths of 25 and 68 students, loss of school property and accompanying psychological impact in the educational sector. Lately in 2009, a petroleum tanker fire at Sanchagwan just west of Nakuru was by far the most severe for it is estimated to have claimed 150 lives and many more injuries. Later in the year, fire at the Nakumatt Supermarket in downtown Nairobi resulted in 14 deaths and 40 injuries. Investigations suggest suspected arson in most of these fires such as in the schools, as well as the Nairobi city hall and the Market. The tanker fire however was unique for the majority of those who died were at the scene to loot fuel from the accident tanker without due regard dangers related to highly combustive petroleum. Interestingly, looters at another accident scene shortly after this tragic one blamed poverty to the risk they were taking in siphoning fuel from another tanker.

Human error may also be responsible for loss of lives in collapsed building particularly those under construction

such as the 2006 site in Nairobi where 16 people died and over 200 were injured. In these cases, poor workmanship and regulatory mechanisms were implicated in these disasters (Standard, 2009a). Epidemics of communicable and non-communicable diseases have also contributed to loss of lives and property in the last 25 years. Food poisoning due to aflatoxin has been reported severally in Makueni, Machakos and Kitui in Eastern Kenya due to consumption of contaminated grain particularly during periods of food shortages as was found in 2004 where 123 people died and 333 were affected. Another non-communicable medical disaster has been industrial alcohol poisoning reported in some parts of Kenya, the most severe one reported in Machakos in 2005 where 53 people died (Sharif, 2005). These disasters have been related to poor post harvest practices and storage of grain and poverty, respectively, in marginal areas of Kenya.

Communicable and infectious diseases that can be classified as disasters in the last 25 years with unusually high mortalities and morbidities are among others, malaria, tuberculosis and cholera in various parts of the country. The most important epidemic however has been HIV first diagnosed in 1984 and declared a national disaster in 1999. The actual impact of this epidemic is not known but latest figures from the Kenya AIDS Indictor survey of 2005 estimated that there were 1.5 million Kenyans are infected with approximately 150,000 deaths annually (KAIS. 2007). Initially, HIV control was by increased awareness and knowledge aimed at preventing new infections through the ABC (abstain, be faithful, condom use) programs. However, with the advent of anti retroviral therapy additional programs are now in place to reduce morbidity and mortality of those who are already infected. The fact that the effect of HIV is multisectoral; effective prevention and control of HIV programs are multidisciplinary using multipronged approach by the public, private and civil society co-ordinated from the office of the President. Although, resources spent on HIV prevention and control are more than those spent on any other epidemic, their effectiveness and impact is however not clearly evaluated. The KAIS however estimated that only about 13% of Kenyans know their status – a measure commonly used to indicate success of HIV intervention programs.

Civil unrest at times referred to as ethnic or tribal clashes have been of public health importance in Kenya. All these unrests have been related to political events either related to pre or post election periods in 1992, 1997 and lately in 2007. These have mostly been in the Rift Valley province as well as sporadic events in the Coast, Nyanza and Nairobi. The exert numbers of deaths and people affected is however not known. In the last and worst of these events in 2007 however, it is estimated that over 1000 people died and over 300,000 affected particularly by displacement (OHCHR, 2008). In addition, general insecurity from muggings, robbery, carjacking and kidnapping which at times results to loss of lives and injuries that are experienced throughout the country, also increases during these periods of civic unrest. It is evident that there is certainly a relationship between civic unrest and disasters, emphasizing the correlation between governance, political events and public health.

Preparedness

After having experienced these disasters, are Kenyans better able to predict, prevent, control or mitigate these events? The National Disaster and Management Agency in the Office of the President is mandated to co-ordinate a multi-agency approach by all stakeholders in both the public, private and civil society sectors. The strategy for this is in The National Disaster Management Policy of 2004. The legal framework for this policy is available in the various legislative acts such as: The Explosives Act (Cap 115); Petroleum Act (Cap 116);The Water Act (Cap 372);The Police Act (Cap 84); The Public Health Act (Cap 242); The Pharmacy and Poisons Act (Cap 244); The Malaria Act (Cap 246);The Medical Practitioners and Dentists Board (Cap 253); The Food, Drugs and Chemical Substances Act (Cap 254); The National Cereals and Produce Board Act (Cap 388) and The Preservation of Public Security Act (Cap 57). In addition, there are policy guidelines to prepare, prevent and mitigate disasters such as strategic stockpiles of food, health and essential supplies with early warning systems and vulnerability analysis. What is even more important however, is the participation of local communities in places where these disasters happen. In this regard, public education and awareness is necessary in order for members of local communities to collect and document information of disasters that they have encountered and lessons learnt as prerequisites of preparedness for future disasters. Of outmost importance, is to incorporate homegrown coping mechanisms for each community. These activities are supposed to be devolved to the local authorities and provincial administration units in every community.

The repetitive nature of both the natural and man-made disasters in the 25 years suggests that despite the legal, institutional and policy framework, local communities are not adequately prepared for disaster prevention, control and mitigation. It is likely that these programs have not been devolved and adequately implemented at community levels. This was observed by Maingi (2009) in both rural and urban; formal and informal settlements. Economic, social and cultural barriers may however interfere with community attitudes, thereby reducing their perception and preparedness of disasters. These may be the circumstances surrounding disasters such as seasonal flooding, tanker disasters as well as aflatoxin and alcohol poisoning. However, for the majority of the

rest, such as traffic accidents, civil unrest and famine, there seems to be a lack of political and governance goodwill impeding implementation of existing laws and policies. Thus, to benefit from a 25 year disaster experience and prepare for future disasters, Kenya needs political and governance reforms that will result in bridging the disconnection between legislation and policy in the central government and knowledge, attitude and practice at community levels. Until these issues are adequately addressed, it is likely that disasters will continue to be the major factors compromising the public health situation of Kenya.

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