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Fire Disaster Risk Plans on Preparedness: A Case Study of Informal Settlements in Nairobi County.

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ABSTRACT

Disaster preparedness is one of the phases within the disaster management cycle which covers implementation or operation, early warning systems and capacity building so that the population can react appropriately when an early warning is issued. Disasters have inflicted a heavy cost on human, material and physical resources. A comprehensive review of the literature has revealed that the development of disaster management strategies, such as preparedness, must be undertaken before the event strikes. The specific objective was to evaluate fire disaster risk plans for preparedness in Nairobi County. The research employed a descriptive research design to carry out the study in order to establish the relationships between the variables of interest. Exploratory and Evaluative research designs were used. Both quantitative and qualitative research designs were used to conduct the research. Households were sampled purposively such that only those from the informal settlement were interviewed and the research involved face to face interviews with 110 households by the use of questionnaires. Findings revealed that most respondents (89.6%) indicated that fire disaster risk plan for preparedness and awareness campaigns were important. Most respondents agreed with awareness initiatives both at household and institutional level except for allowing children to play near fire and lighting of cigarettes in fuel flammable areas. Fire escape plans were the most adopted fire awareness initiative as a fire disaster risk reduction measure.

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1.0 Introduction

Developing countries, such as Kenya, have often failed to implement fire disaster management strategies such as preparedness in informal settlements. Political neglect, social marginalization and limited access to resources compel helpless people to live and work in hazard-prone areas. Drawing on cases from the developing world, scholars such as O'Keefe, Westgate & Wisner (1976), Hewitt (1983) and Wisner, Blaikie, Cannon & Davis (2004) argue that people's behaviour in the face of natural hazards is constrained by social, economic and political forces rather than individual risk perception. Government is accountable to citizens for quality service delivery such as housing provision.

Government accountability to all citizens translates to improving the lives of the poor and the vulnerable. County governments require the assistance of structures involving all fire disaster practitioners and specialists dedicated to monitoring and improving disaster preparedness. Disaster risk is part of everyday life.

Awareness of risk is therefore a necessary condition to engage in disaster risk reduction. Increased public awareness about hazards is a vital element in any comprehensive strategy for disaster risk reduction. Public awareness campaigns can be conducted in schools, through the media and official, public, professional and commercial channels (UNISDR, 2004).

According to Radford (1999), 'Professional newsmen love disaster-it is their business-but don't rely on them to be very different from the rest of the community. The

independent commercial media survives and thrives by reflecting the community it serves. If a community is complacent, then there is a fair chance that its journalists too will take the placid line.... If people don't die in thousands, it is not a disaster, and therefore not news. The preparedness message gets only a limited airing.' This is a serious mistake since news people have no choice. They must report on any disaster that has just happened irrespective of the casualties involved (Radford, 1999).

The UN Human Settlements Programme (UN-Habitat) indicated that 60 percent of Nairobi's population lives on 5 percent of the land (UN Habitat, 2007). The city's overcrowded slums and informal settlements, constructed from cheap materials like corrugated iron and connected to hazardous electricity lines, make them particularly vulnerable to fire. Access roads are few, making passage difficult for fire trucks.

There have been a number of fire-related incidences in Kenya, particularly common in Nairobi's slums but these urban disasters receive a "baffling" lack of response from aid agencies, indicating major gaps in fire crisis preparedness as reported by the UN Office for the Coordination of Humanitarian Affairs (UNOCHA, 2011). For instance, on 4th of December, 2014, five people were killed in a fire incident in Kibera slums, Nairobi. Three others were in critical condition at the Kenyatta National Hospital after the tragedy and more than 100 houses burnt. On the night of 16th October 2014, a huge fire broke out in Gikomba market and destroyed

property worth millions of shillings (Daily Nation, 2014). On the morning of Wednesday August 7, 2013 the country again woke up to some rude shock of a fire gutting down the International Arrival Terminal at Jomo Kenyatta International Airport (Daily Nation, 2013).

Evaluating a project has two main purposes, namely to use resulting feedback to enhance future projects and to create a framework for answerability for implementing organizations (Twigg & Benson, 2007). It is with this focus in mind that the public awareness campaign in the Nairobi area will be evaluated.

Minimal studies have been done in the Kenyan context on the area of fire disaster risk plan. Irrespective of the many death cases reported in the Kenyan slums and other areas due to fire related incidences, the public still remain reluctant to change their actions and behaviors. This therefore calls for renewed efforts in matters related to Public Awareness Campaigns to the members of the public in response to fire disasters. In return, it will impart knowledge to the residents on the importance of fire preventive measures and how to avoid actions that can endanger their lives. Because of the continuous trend in fire outbreaks and the negative outcomes in Nairobi area, safety awareness issues appear to be a bigger challenge to the population. Hence the study aimed at answering the question; what is the effect of fire disaster risk plans on preparedness in informal settlements in Nairobi County?

1.1 Statement of Problem

Fire as a disaster has been affecting both the urban and rural dwellers causing serious loss of lives and damage to properties worth millions of shillings. Nairobi is one of the areas adversely affected by the fire disasters.

Internationally, there have been serious concerns for the continuing human sufferings and disruptions of development caused by natural disasters, fire included. In 1989, the General Assembly of United Nations declared 1990-2000 an International Decade for Natural Disaster Reduction with a view to restricting loss of lives and property through concerted and collective efforts (UN, 1989).

Because of the continuous trend in fire outbreaks and the negative outcomes in Nairobi area, safety awareness issues appear to be a bigger challenge to the population.

1.3 Research objective

The general objective of this study was to evaluate the role of public awareness campaigns and fire disaster risk reduction plans in Kenya and specifically in the informal settlements in Nairobi County.

Specific objective is:

To determine the effects of fire disaster risk plans on preparedness in informal settlements in Nairobi.

1.4 Research question

In order to achieve the purpose of the research, the following guiding question was adopted. What are the effects of fire disaster risk preparedness plans on preparedness for fire in the informal settlements in Nairobi County?

1.5 Significance

The findings and recommendations of this study will be envisaged to give policy makers in the County of Nairobi, City dwellers and the entire planning departments of other county governments the information useful in making and redefining fire safety and awareness issues.

2.0 Literature Review

2.1 Global approach to disaster management

Disaster management strategies are traced back to antiquity when early hieroglyphics depict cavemen trying to deal with disasters. The Holy Bible speaks of the many disasters that hindered civilisations. Haddow and Bullock (2006:1) mention the account of Moses parting the Red Sea which can be interpreted as the first attempt at flood control. Genesis 6 verse 14 (Zodhiates, Baker and Kemp, 1996: 10) speaks about Noah and the Ark, when he built an ark from cypress wood, coated it with pitch inside and out, as a mitigation strategy for the forthcoming predicted floodwaters. Moreover, the holy Bible speaks of many disasters that hindered civilizations.

Early disaster management strategies include inter alia, the promulgation of the United State of America (USA) Congressional Act of 1803 which was passed to provide financial assistance to a New Hampshire town that had been devastated by fires (Haddow et al., 2006:2). Another notable example is that of the cold war era where the nuclear war was seen as a potential disaster threat. Disaster preparedness attempt to forecast extreme events, attempt to mitigate the impact of disasters, respond to disasters and cope with consequences of disasters. Strategies for disaster preparedness include awareness of event that is most likely to happen at a particular time and at a specific geographical location, risk and vulnerability assessment, response mechanisms, coordination, information management, and the implementation of early-warning systems International Federation of Red Cross and Red Crescent Societies (IFRC), 2000:34).

International agreements, such as the International Decade for Natural Disaster Reduction 1990-1999 (IDNDR), Yokohama Strategy (1994), International Strategy for Disaster Reduction (ISDR), Hygo Framework for Action (2005-2015), and Disaster Reduction and Recovery Programme (DRRP), emphasise the importance of disaster preparedness. The United Nations (UN) promotes preparedness, prevention and mitigation activities through its regular development projects. The UN is encouraging the building of early warning systems and conducting monitoring and forecasting routines which are working to increase local capacity to adequately boost local and regional preparedness (Haddow et al., 2006:222).

2.1 Disaster preparedness within the context of disaster management

According to Col (2007:115), preparedness is the state of readiness to respond to an emergency based on planning, training, and exercise. The concept of disaster preparedness encompasses measures aimed at enhancing life safety when a disaster occurs, such as protective actions during an earthquake, hazardous materials' spill, or a terrorist attack. It also includes actions designed to enhance the ability to undertake emergency actions to protect property and contain disaster damage and disruption, as well as the ability to engage in post-disaster restoration and early recovery activities (Tierney & Sutton, 2006:3). With regard to management response, the Manitoba Health Department (2002:29) mentions the following two aspects of preparedness: emergency response plan which deals with meeting the special demands created by an impact on the community; and business continuity planning to ensure services are maintained when the organization is negatively affected by disasters, even if the effects are limited to internal disruptions.

Emergency response planning deals with how the municipality will help its clients cope with the extraordinary demands that a disaster creates. In contrast, business continuity planning deals with how the municipality copes with the impact of the disaster with its own systems and resources (Manitoba Health Department, 2002:30).

3.0 Research Methodology

This study employed a descriptive research design. Descriptive research design is designed to provide further insight into the research problem by describing the variables of interest. A descriptive study is concerned with determining the frequency with which something occurs or the relationship between variables (Bryman and Bell, 2003). Descriptive studies usually involve large samples and in this case, the researcher picked a sample population for the study. Evaluative and exploratory research designs were also used. Evaluative design used exploratory, descriptive and experimental studies to analyze issues such as program accountability, performance, improvements and challenges. It determined whether or not a program was effective in achieving its stated goals and what changes are required to improve the program's effectiveness, for instance fire disaster risk plans in Nairobi County.

According to Mugenda and Mugenda (2003), target population is the population whereby the researcher intends to generalize the study results. The target population was 10,635 (Government of Kenya, 2009), out of which a sample size representative of the study population was surveyed using the following simplified formula by Coe (Coe, 1996).

$$n = 16 P (1-P)$$

C2

Where, n = sample size

P = (0.95) or the probability of obtaining a household who has heard about fire outbreak incidences.

C = 2 (0.15) or the width of confidence interval.

This study employed Purposeful Random Sampling to arrive at a sample size from the target population. It is a process of identifying a population of interest and developing a systematic way of selecting cases that is not based on advanced knowledge of how the outcomes would appear. Therefore, it increases the credibility of the sample population. The method that the researcher used for gathering information is through issuing questionnaires. The questionnaire was used as data collection instruments because they were very economical in terms of time and cost as compared to other methods. Similarly, it was easier to collect and analyze the data collected using these questionnaires. The questionnaires included both structured and unstructured questions. Questions which are structured were used so as to save time, money and facilitate in data analysis. The unstructured questions were used so as to encourage the respondent to give information without feeling held back.

The study gathered quantitative data by use of self-administered questionnaire through drop and pick later method where the researcher delivered the questionnaires in person at the respondents' places of work. However, where it proved impossible for respondents to answer the questionnaire immediately, the respondents were left to fill the questionnaires and then the research picked them up on a later date. Data collected was carefully summarized, analyzed and processed. Quantitative data collected was analyzed using descriptive analysis technique involving means, percentages and standard deviations and the inferential statistics. Statistical

Package for Social Sciences was used for analyzing quantitative data. These data was presented using graphs, tables, and pie charts where necessary.

4.0 Results and Discussion

4.1 Evaluation of fire disaster risk plan for preparedness

An evaluation of fire disaster risk plan for preparedness was also done and the findings were as stated below.

From figure below, most respondents (89.6%) agreed that preparedness and awareness campaigns were important firefighting initiatives, 4.3% were undecided while 6.1% disagreed. The findings above indicated that evaluating the fire disaster risk plan for preparedness is an essential part in preparing for fire risk or any other risks.

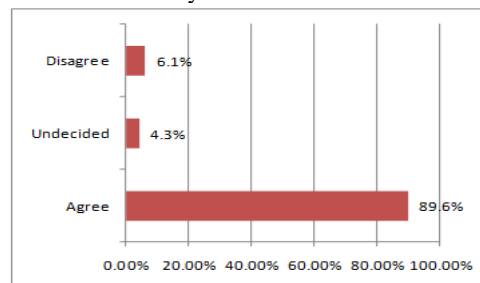


Figure 1. Preparedness and awareness campaigns are important firefighting initiatives.

The results in the figure above is supported by UNISDR (2002) which advocates for a shift from the traditional response-based thinking to a pro-active risk reduction mindset that has highlighted risk education, training and public awareness as essential elements in the overall integrated approach towards Disaster Risk Management. Also that Public awareness campaigns if conducted appropriately remains among the important tools for achieving disaster risk reduction through increased hazard knowledge, risk perception, preparedness and the fostering of risk avoidance behavior (OECD, 2007).

The findings as demonstrated by figure below revealed that most respondents (58.5%) rated the importance of preparedness in the improvement of response time to fire, 27.5% indicated moderate while 14.0% indicated low. The findings are supported by Krischenbaum (2002) and Petal (2004) that the identification of natural hazard risks, human vulnerability and capacity mapping are assessments that can lead to risk reduction planning and improvement of response time, such as land use planning, early warning, business continuity or household preparedness planning. Setbacks, buffer zones, property management and building placement have all been used as strategies for reducing exposure to natural hazards.

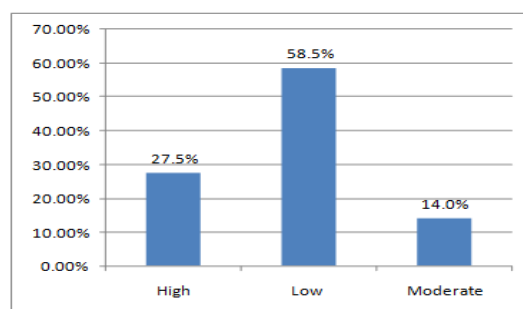


Figure 2. Rating the importance of preparedness in improvement of response time to fire.

The findings from the study as indicated in the figure below, shows that most respondents (46.2%) indicated that

preparedness and awareness campaigns would to a great extent improve efficiency in fire response, 42.7% held the view that this would contribute to a moderate extent while 11.0% indicated to a low extent. Through internal and community service initiatives, companies have also encouraged risk reduction and preparedness in their communities and funded civic sector risk awareness programmes. Through innovation and technology development, they have supplied communities with the tools to carry out effective risk reduction (OECD, 2005).

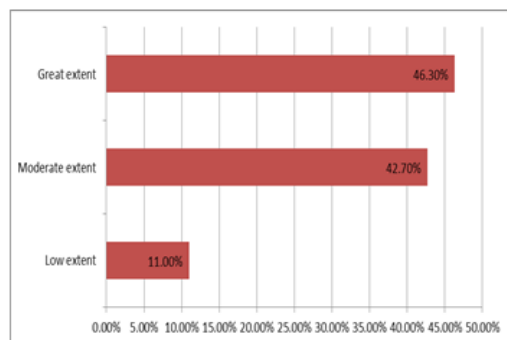


Figure 3. Perception on extent to which preparedness and awareness campaigns improves efficiency in fire response.

Most respondents were males (60.2%), had tertiary level education (43.1%), had stayed in the city for 4 years (64.8%) and did not have professional firefighting skills (72.3%).

Most respondents (89.6%) indicated preparedness and awareness campaigns were important. While for 58.4% rated high on the importance of preparedness in the improvement of response. On the other hand, 46.2% indicated that preparedness and awareness campaigns to a great extent would improve efficiency in fire disaster response. Majority of the respondents at 89.0% indicated the implementation of better preparedness would reduce fire risks. Similarly 83.3% indicated that firefighting plans that adopted preparedness and preventive initiatives were effective. Most respondents rated installation of smoke detectors high. It was also observed that 53.1% of the respondents had never come across any fire public awareness campaign. At the same time 68.8% of the respondents indicated that public awareness campaigns had targeted the population at large. Moreover 40.2% indicated that the role of the media and fire department in educating the public about fire disaster risk was highly relevant while 62.7% indicated that lack of awareness lead to increased fire related death cases in the country.

Most respondents (89.5%) agreed with safe keeping of combustibles as an awareness initiative, 86.3% agreed with safe cooking tips, for 66.6% disagreed with allowing children to play near fire, while 69.3% of the respondents disagreed with lighting cigarettes in fuel flammable areas on the other hand 70.3% agreed with teaching children on how to cook safely as an awareness initiative, and 54.0% of the respondents agreed with poverty, illiteracy and poor planning as the cause of fire outbreaks. Similarly 83.6% agreed with the use of Televisions, newspapers and radio in educating the public on fire awareness, as for 55.2% of the respondents agreed with participation in fuel explosion siphoning as an awareness initiative. Majority of respondents at 87.3% agreed with proper use of electricity as an initiative of reducing fire disaster risk. At the same time 80.4% of the respondents agreed that keeping fuel away from heat sources as an awareness initiative. While 44.9% of the respondents agreed with excuses for not owning smoke detectors. It was noted that

91.5% agreed with safe keeping of combustibles, at the same time 91.9% agreed with exit route identification. Majority of the respondents at 85.1% agreed with participation in public awareness campaigns, on the same breath 84.5% agreed with well labeled smoking zones, though a new idea to the respondents 69.9% agreed with testing of smoke detectors, more than half of the respondents at 54.8% agreed with poor planning as the cause of fire outbreaks, for 73.3% responded perceived that fire safety measures should be addressed continuously. At the same time 77.5% agreed with [proper use of electricity/any other form of fuel. And to cap it up 80.4% agreed with inspection of firefighting equipment.

Fire escape plans scored high (28.4%) as an awareness measure in adopting fire reduction measures. Similarly, 61.2% of the respondents had ever left lit candle fire unattended in a room of the house, while 66.7% used kerosene, diesel fuel or gasoline to start fire, and 76.4% always kept cooking areas clear of any combustibles. For 49.5% of the respondents indicated they did not keep obstructions out of the exit doors in their residence or office. Meanwhile 61.4% had never participated in any fire drill exercise. Half of the respondents at, 51.6% were not aware on what to do in cases of fire emergencies. At the same time, 58.4% had no knowledge of telephone numbers to call in cases of emergencies. However, 53.0% rated public awareness campaigns as a relevant tool to fire disaster risk reduction as highly relevant. And finally, 77.2% of respondents agreed that increased public awareness campaigns about fire disaster can reduce its effects.

4.2 Conclusion

This study showed that there was low response on emergency numbers to call, what to do in cases of fire outbreaks and knowledge of the fire assembly point, clearly showing that the level of preparedness is still below expectation and hence it is imperative that the concerned authorities take necessary measures that will aim at increasing the level of preparedness.

Cognizant of the problem, the findings of the study revealed that public awareness campaigns, risk reduction plans and fire disaster risk reduction are important in Nairobi County. Fire escape plans were the most adopted fire awareness initiative as a fire disaster risk reduction measure. The awareness campaigns are important in improving effectiveness in response to fire disasters. The media and the fire department have an important role in educating the public about fire disaster risk. In awareness campaigns, policy makers and other interested groups on the other hand should aim at behavioral changes based on new social norms and attitudes.

4.3 Recommendations

In order to improve public awareness campaigns, risk reduction plans and fire disaster risk reduction in Nairobi County, Kenya, this study presents the following recommendations; There is need to scale up public awareness campaigns to reach more people by diversifying the approaches including targeting specific groups depending on their vulnerability and exposure to fire hazards.

This study recommends that the level of preparedness is still below expectation and hence it is imperative that the concerned authorities take necessary measures that will aim at increasing the level of preparedness.

Cognizant of the problem, the study recommends that public awareness campaigns, risk reduction plans and fire disaster risk reduction are important in Nairobi County. Fire escape

plans were the most adopted fire awareness initiative as a fire disaster risk reduction measure.

Lastly the study recommends that media and the fire department have an important role in educating the public about fire disaster risk. In awareness campaigns, policy makers and other interested groups on the other hand should aim at behavioral changes based on new social norms and attitudes.

The researcher suggests that the role of the media and the fire department in public awareness campaigns and fire disaster risk reduction is significant in fire response planning. As a public awareness and fire disaster risk reduction initiative, the intervening role of the nature of fire hazards on public awareness campaigns and fire disaster risk reduction should also be considered.

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