AN INVESTIGATION INTO THE PREPAREDNESS FOR DISASTERS IN SECONDARY SCHOOLS IN RUIRU DIVISION, THIKA DISTRICT, KENYA

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An Investigation into the
October, 2009

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DECLARATION

This thesis is my original work and has not been presented for a degree or any other award in any other University or any institution of higher learning

Signature: ___________________________ Date: 19/10/09

Mururi Susan Wangui

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DEDICATION

This thesis is dedicated to my dear husband, Francis M. Kimondo and all those who persevered, supported and encouraged me to pursue this study to the end.
ACKNOWLEDGEMENTS

No work of this nature can be a product of one person. Surely it has not been a walk over, but due to the encouragement, guidance and contributions given to me by my supervisors: Dr. Afullo Augustine and Prof John H. Ouma to whom I give my deepest and most sincere gratitude for every bit of this research work, not forgetting the support awarded to me by the Chairman of the Department of Public Health Dr Mwanzo, the statistical support from Francis Oguya, the overseeing of the Thesis corrections from Dr. Wilson Otenga, and the respondents who participated in this study willingly. The participation of all of you at whatever level of this work is highly appreciated.

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<td>Community Development Fund</td>
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Disaster is an overwhelming event that involves the destruction including injury and loss of lives and they become common events that pose serious threats to Public health. The objective of the study was to establish preparedness in disaster management in Secondary Schools in Ruiru Division in Thika District, Kenya. The study targeted the students, teaching staff and the supportive staff from Ruiru Division Secondary Schools. The findings of the study were designed to benefit the school administrators, disaster managers, researchers, scholars, policy makers and the funding Agencies with an aim of improving the health and safety of the Secondary School community and those living in the schools environs and spare the already strained economy of this country. To achieve a desired representation from the various Secondary Schools, a stratified simple random sampling technique was employed where a sample size of 120 was realised and participated in the study voluntarily. To assess disaster preparedness in the selected secondary schools, the researcher gathered detailed, descriptive information from the respondents by use of simplified and closed ended questionnaire, in-depth interview and observation check list. The data obtained was entered and analyzed using statistical package for social sciences (SPSS) and confirmed lack of provisions for disaster management in secondary schools. The respondents did not know how to use the first aid kit elements ($\chi^2 = 835.263, p = 0.000, \text{df} = 1$). Lack of knowledge on use of first aid elements was significantly high among the respondents which also reflected lack of skills to manage minor incidences ($\chi^2 = 835.1, P= 0.000, \text{df} = 1$). Lack of knowledge on where to keep the first aid kit was significantly high among the respondents ($\chi^2 = 474.386, P= 0.000, \text{df} = 1$). The respondents confessed the lack of preparedness for disasters in their schools ($\chi^2 = 840.8, \text{P}= 0.0, \text{df} = 2$). The level of knowledge where information was highlighted in the media and the daily nations like the collapse of the building along Ronald Ngala in 2006 street was significantly high among the respondents ($\chi^2 = 0.175, \text{P}= 0.675, \text{df} = 1$). Therefore information education and communication (IEC) played a big role in disaster management because there was a significant relation on (IEC) and knowledge about this particular disaster. The respondent knew the common disasters in Ruiru Division ($\chi^2 = 571.482, \text{P} = 0.000, \text{df} =2$). Analysed data were presented in tables, figures, graphs and statements. There was lack of preparedness in the secondary schools in Ruiru division. The Ministry of Education should adopt a wide range of strategies to mitigate and prepare for disasters in schools by increasing the knowledge and skills of the communities within the secondary schools and their environs. Those in authority should also ensure the necessary tools for disaster management are available and operational at all times.
CHAPTER ONE: INTRODUCTION

1.1: Background

Disasters are an increasing Global health concern with an average of one disaster per week requiring external and international assistance, this emphasises mankind vulnerability to disasters and the necessity for preparedness (Lloyd, 2005). Recent disasters throughout the globe have shed new light on the vulnerability of life on earth.

Whether caused by natural or technical hazards they have become part of our every day experiences sparing no communities in our increasingly interconnected world (UNDRO, 1998). The devastating disasters that afflicted numerous communities in 2004 and 2005 were the killings in Beslan, Russia, The Indian Ocean Tsunami, the earth quake in Pakistan, and the damaging hurricanes along the Gulf coast (Nonny, 2006).

Kenya has experienced simple and complex disasters caused by drought, fires, floods, industrial accidents, the HIV/AIDS, traffic accidents, terrorist attacks, and collapse of building among others. Disasters constitute to real threat in every sphere of human development.

The causes of disasters can be divided into two distinct categories: those due to man made hazards and those due to natural hazards. Natural hazards are principally the result of geophysical interactions between atmosphere, hydrosphere and lithosphere. Any changes in these interactions may lead to changes in the normal frequency and cause disasters of high magnitude.
The types of natural hazards that can cause disasters are earthquakes, floods, drought, landslides, tropical storms and volcanoes among others. Man-made disasters are caused by the actions of human beings either directly or indirectly. These disasters include wildfires, accidental release of oils on land and in the sea, road accidents bomb blast/violence, pollution especially in industrial accidents (Berz, 1991).

Disasters are low-probability events caused by the interaction of social processes and the physical environment. They compete for attention with priorities of daily living (Mutisya, 2004a). The poor are more vulnerable to disasters than the rich because they live in unsafe areas such as flood plains, slopes of steep hillsides and river beds and their daily struggle to survive takes priority over investment in mitigating the impact of potential disaster events (Alcira and Margaret 2002).

One of the serious and growing problems in the secondary school was the increase of disasters. Records showed an increase in the number of fires, rape, collapse of buildings, roof blown off by wind, floods, drought and HIV/AIDS which was declared a national disaster in 1998 by the then President of Kenya.

The secondary school students were not in disaster free environments though certain life styles make some people more vulnerable to disasters than others (Quarantelli, 1992). One family disregarded warnings about where and how they built their home which was destroyed in a disaster because the building collapsed whilst the other took precautionary measures leading to their home withstanding the impact of the disaster (Parker, 1992).
In 1999 natural catastrophes and man-made hazards claimed more than 105,000 lives across the globe and resulted in total loss of US $ 100 billion (Alcira and Margaret, 2002). A disaster in a developed country could cause few deaths and destruction than a disaster of the same magnitude in a developing country simply because of the different life styles of the people in the two different countries.

A good disaster and emergency response is merely an extension of good routine, (Mutisya, 2004). It should go beyond immediate care given to an injured person (Hurt, 1976). Systemic assessment of losses, social and economic impact of disasters and particularly mapping of risks are fundamental in understanding where to take action (Valancy, 2004).

Disaster management is a planned, deliberate, organised, directed and visualised effort to mitigate, prepare for, respond to and recover from a disaster or emergency situation or its effect. Disaster preparedness involves an integrated combination of planning, training personnel qualification, drills, acquisition of equipments and standard certification (WHO, 1999).

Planning is how personnel, equipment, and other resources are used to support incident management and emergency response activities. Plans provide mechanisms and systems for setting priorities, integrating multiple entities and functions, and ensuring that communications and other systems are available and integrated in support of a full spectrum of incident management requirements.
It is important that the personnel participate in realistic exercises including multi-disciplinary, multi-jurisdictional, and multi-sector to improve integration and interoperability and optimise resource utilization during incident operations.

Qualification and certification activities are necessary to identify and publish national-level standards and measurement performance against standards to ensure that incident management and emergency responder personnel are appropriately qualified and officially certified to perform the functions.

Equipment Acquisition and Certification is necessary for emergency responders to perform their work effectively. A critical component of operational preparedness is the acquisition of equipment that will perform to certain standards, including the capability to be interoperable with similar equipment used by other jurisdictions. Reducing disaster is possible not only by modifying the hazard but by reducing the vulnerability (Varley, 1994).

1.2: Problem statement

Disasters cause a lot of damage and they are expensive to manage, they strike quickly without warning. Records have shown an increase in the number of disasters in Kenyan Secondary Schools causing deaths and a lot of suffering (Lumbasio, 2004).

At Bombolulu high school, 26 girls perished in a fire inferno and hundreds of others got maimed. In Nyeri high school 4 prefects died in unexplained fire inferno in 1999, and in Kyanguli high school 68 students perished in a fire inferno leaving hundreds maimed (Lumbasio, 2004).
Students of Gateway High School, (one of the sampled secondary school) salvaged whatever remained of their belongings after a fire gutted down their dormitories, though nobody was injured property worth thousands of shillings were destroyed by fire (Avuyefu, 2007).

A disaster event in a Kenyan Secondary School would affect quite a population and destroy the infrastructures like classrooms, roads, dormitories, sewer systems, lighting systems, water systems etc. The destruction might be so severe that recovery may take time or it may become inevitable depending on the economic powers of the managers and the associates of such a school. The school would also get stigmatised.

Mtongwe ferry capsized in 1994 and killed 270 people and caused oils to spill along the country’s coastal line. American embassy was bombed in 1998 and caused death of 247 and 5,600 people got injured. Floods displaced families in Budalangi Division, in Busia District in Western Kenya, after river Nzoia burst its banks (Wanjala, 2001).

The El -Nino of 1998 affected many parts of the country causing damage worth millions of shillings, displaced 60,000 families, destroyed crops, livestock, infrastructure, the environment was not spared and the economic losses recorded that time took time to heal (Stanley, 2002). Along Ronald Ngala Street in Nairobi, 14 people died and 77 got injured when a four storey building collapsed during construction.
In Marsabit 14 people including 6 members of parliament perished and 3 got injured in Harbin Yunshuji Y-12 military aircraft which crashed in Marsabit (Siringi et al., 2006).

1.3: Justification
A host of records in the problem statement has shown an increase in the number of disasters in Kenyan Secondary Schools in the recent past, the commonest being fire which has caused a lot of deaths and destruction of infrastructures like the classrooms, dormitories, office blocks and water sewage systems among many others.

Disasters have a very negative effect in any country and they interfere with the economy of the affected countries where resources must be diverted to meet the sudden demand raised by the disaster effect, they cause trauma, loss of life, loss of work and study hours, and property damage, raises court cases and affects the reputation of the affected organizations (WHO, 1999).

Children are the nation’s most valuable assets; this fact places a tremendous responsibility upon us all to provide safety to the children (Florio et al., 1999). No school is immune to disasters; therefore it is important that each school establishes administrative procedures for handling emergencies (Minnesota health council, 1964).

Effective preparedness for disasters is of paramount importance if reduction of the suffering and deaths of the student’s, teachers and the supportive staff among others is to be achieved and tragedies will not be catching us flat footed in future (Kabaria, 2009). The reason for carrying out the study in Ruiru division was based on the fact that there is no part of the world that is immune to disasters and the researcher found a
highly populated area where residents' safety was of paramount importance and it was for those reasons that the research was designed.

1.4: Research Questions

a) What were the common disasters in the secondary schools in Ruiru Division?

b) What training records on disaster management were available in Ruiru Secondary Schools?

c) What health and safety equipment do these schools have and are they operational?

d) What was the level of knowledge on disaster management among the community in Ruiru secondary schools?

e) What was the level of skills on disaster management among the community in Ruiru secondary schools?

1.5: Null hypothesis

$H_0$: There is no adequate preparedness for disaster management in Ruiru Division Secondary Schools.

1.6: General Objective

To investigate disaster preparedness in Ruiru Division secondary schools in Thika District, Kenya.

1.6.1: Specific Objectives

1. To investigate the common disasters in secondary schools in Ruiru Division.

2. To establish lessons taught on disaster management to secondary school community in Ruiru Division.
3. To establish the availability of facilities to counteract disasters in Ruiru Division secondary schools.

4. To determine the level of knowledge of the Ruiru Division secondary school community disaster management.

5. To determine the level of skills Ruiru Secondary Schools community had on disaster management.

1.7: Significance of the study

The findings of this study will provide valuable information to the Government of Kenya and other interested groups to come up with disaster management preparedness policies and strategies. This will improve livelihood of the students and the staff and spare the already strained economy of Kenya.

The study will be an eye opener in understanding the hazards, risks and the vulnerability to the students, staff and the country at large including policy makers. The findings are expected to reveal the gaps the students have in disaster management by assessing their knowledge and skills. This study will enable the researcher to recommend interventions like training programs in disaster management in Ruiru Secondary Schools and regular risks assessments by qualified people.

The knowledge and skills the communities would gain from the training would be useful to them and the communities where they stay and where they will ever stay or work. The risk assessments will help by making it possible to identify the risk early enough and mitigation and measures put in place to reduce the chances of disaster occurring and if they occur reduce their impact. This can be a successful story which
can be replicated in other schools, other areas within the country and even worldwide.

1.8: Limitation of the study

There was little documented information on disasters that have taken place in Kenya. As a result, this study was done with information from few books, periodicals like the newspapers, journals and also from the web sites. There was ignorance among the secondary school community on the importance of the study because the school curriculum was too tight to allow free time and this fact contributed to challenges organising for a focus group discussion (FGD).

1.9: Assumption of the study

1. There were some disaster issues in secondary schools which went unattended to due to lack of knowledge and skills.

2. There were policies on disaster management in secondary schools but they had not been implemented.

3. There were some disaster management equipments within the schools but the communities did not know how to use them.
1.10: Operational definition of terms

**Disaster**: This is an overwhelming event that involves the destruction including injury or loss of life, and the destruction exceeds the ability of the affected society to cope using only its available resources.

**Disaster management**: These are measures taken to reduce the likelihood of damage that will occur related to a hazard(s) and to minimize the damage once an event is occurring or has occurred and to direct recovery from the damage; the body of policy and administrative decisions and operational activities that pertain to the various stages of a disaster at all levels.

**Disaster response**: These are measures taken immediately during and following a disaster incident directed towards saving of life, protecting property, and preventing further damage.

**Mitigation**: These are the efforts designed to prevent or lessen the impact of disasters.

**Preparedness**: These are measures taken in preparation for a disaster.

**Rehabilitation**: Actions taken in short, medium and long term to improve health status of victims or damaged structure.

**Re-constructions**: This is building of new structures or the renovating the damaged ones.

**Risk**: Hazard x vulnerability
CHAPTER TWO: LITERATURE REVIEW

2.1: Introduction

World Health Organisation (1999) defined a disaster as any phenomenon that had the potential to cause disruption or damage to people and their environment such a disaster can either be natural or man-made.

This chapter will capture what has been done by other people in reference to disasters from the global level all the way down Ruiru Division Secondary Schools. The researcher will look at disaster situations globally, nationally provincial level, district level and at the divisional level. Literature was reviewed on the causes of disasters, effects of disasters, approaches to disaster management and the challenges of disaster management.

2.2 Global situation about disasters

In 1999, natural catastrophes and man-made hazards claimed more than 105,000 lives across the globe and resulted in total loss of US $ 100 billion (Alcira and Margaret 2002). A disaster in a developed country can cause few deaths and destruction than a disaster of the same magnitude in a developing country simply because of the different economic levels and life styles of the people in the two different countries.

A good disaster and emergency response is merely an extension of good routine. Systemic assessment of losses, social and economic impact of disasters and particularly mapping of risks are fundamental in understanding where and when to take action (Valancy, 2004).
Disaster management is a planned, deliberate, organised, directed and visualized effort to mitigate, prepare for, respond to and recover from a disaster or emergency situation or its effect, while disaster preparedness involves an integrated combination of planning, training personnel qualification, drills, acquisition of equipments and standard certification (WHO, 1999).

Planning is how personnel, equipment, and other resources are used to support incident management and emergency response activities. Plans provide mechanisms and systems for setting priorities, integrating multiple entities and functions, and ensuring that communications and other systems are available and integrated in support of a full spectrum of incident management requirements (Amadi, 2005).

Training is the standard courses on multi-agency incident command and management, organizational structure, and operational procedures; discipline-specific and agency-specific incident management courses; and courses on the integration and use of supporting technologies. It is important that personnel participate in realistic exercises including multi-disciplinary, multi-jurisdictional, and multi-sector to improve integration and inter-operability and optimize resource utilization during incident operations (Modena, 1991).

Qualification and certification activities are necessary to identify and publish national-level standards and measure performance against standards to ensure that incident management and emergency response personnel are appropriately qualified and officially certified to perform the functions (Edward, 2005).
Equipment Acquisition and Certification is necessary for emergency responders to perform their work effectively. A critical component of operational preparedness is the acquisition of equipment that will perform to certain standards, including the capability to be interoperable with similar equipment used by other jurisdictions. Reducing disaster is possible not only by modifying the hazard but by reducing the vulnerability (Varley, 1994).

2.2: Disaster situation in Kenya

In Kenya Arid and Semi-Arid land, droughts caused death of about seventy percent (70%) live stock in 1992/93. In 1999/2000, there was a severe drought in Kenya that affected 4.4 million people, massive livestock deaths and power rationing which lead to massive loss of livelihood support where many people were shown the door in the name of retrenchment.

Properties worth millions of Kenya Shillings including coffee, tea plantations and domestic animals have been destroyed by land slides. Losses caused by landslides also have a negative impact on infrastructure such as power transmission, water supplies and irrigation facilities.

A drought is a recurrent phenomenon that affects large areas and many people suffered in the process. The effect of the 1991/92 drought in the arid district led to livestock loses of many animals and a high rate of children, elderly and the hard caped died of malnutrition.

The worst drought emergency in recent years (1999/2000) affected the central, eastern rift valley, coast and north eastern province with 4.4 million people requiring food
assistance, the drought also caused massive livestock deaths and power rationing which led to massive loss of livelihood support.

Mtongwe ferry capsized in 1994 killing 270 people and caused oils spills along the country’s coastal line. American embassy was bombed in 1998 causing death of 247 and injury of 5,600 people. Floods displaced families in Budalangi Division, in Busia District in Western Kenya, after river Nzoia burst its banks.

The displaced families were evacuated to higher grounds for safety where they lived in fear and were threatened with starvation and possible outbreak of waterborne diseases like cholera, dysentery typhoid (Wanjala, 2001). At Bombolulu high school, 26 girls perished in a fire inferno and hundreds of others were maimed and disfigured. In Nyeri high school, 4 prefects died in unexplained fire inferno in 1999.

In Kyanguli high school, 68 students perished in a fire inferno leaving hundreds maimed (Lumbasio, 2004). Cases of fires in schools have become a common item in the news. To date those involved exhibit post traumatic stress disorders in addition to physical disability (Mutunga, 2004a).

Disasters strike quickly without warning. Along Ronald Ngala Street, in the heart of Nairobi, 14 people died and 77 got injured when four storey building collapsed during construction (Smooth, 2006). In Marsabit, 14 people including 6 members of parliament perished and 3 got injured in Harbin Yunshuji Y-12 military aircraft which crashed in Marsabit (Siringi et al. 2006).
2.3: disaster situation in Ruiru Division Secondary Schools

Students of Gateway High School salvaged whatever remained of their belongings after a fire gutted down their dormitories. Though nobody was injured property worth thousands of shillings were destroyed by fire (Ojow, 2007). Students were sent home after their dormitories were destroyed by fire at Gateway Secondary School (Avuyefu, 2007). This was one of the sampled secondary schools in the study area during the study period.

2.4: Causes of disasters

Disasters are caused by hazards / or hazardous materials which are potentially dangerous events or circumstances falling into either natural or technological categories. Natural hazards are caused by natural events that pose threats to human lives, property and other assets that a given society values.

Technological (man made) hazards are from tools, machines, substances developed and used by man in the course of living, especially when developed to destroy man or human values. Though floods or earthquakes are natural processes, the disasters associated with them are not natural (Varley, 1994).

There has to be a human inadequacy management and un-professional behaviour for a disaster to occur (Barry, 2003). Those involved in disaster work and the disaster victims believe their suffering is not simply an act of God (Wijkman and Timberlake, 1994).

For a hazard to cause a disaster there has to be vulnerable people. In the developing countries, people crowd onto marginal land, in flood plains and on the slopes of
menacing volcanoes. They denude the hills, making mudslides more likely. Their flimsy houses, which have no basements or good foundations, and are infrequently maintained, make the people more vulnerable to disasters.

These people lack technology to track coming storms, communication systems to send alarms, resources to stage large scale evacuation and proper medical services to take care of the injured. Sachagwan survivors of the tanker explosion blamed poverty and unemployment for the high number of casualties saying the area had experienced poor harvest and the youth were idling around for lack of something to do and whenever they saw an opportunity they gladly jumped at it even when they don’t now what to do with the product or its value (Cheploen, 2009).

Disaster occurrences were closely linked to vulnerability and poverty as the researcher reviewed the literature and learnt that people scrambled for spit oil to earn an extra shilling (Cheboi, 2009). Disaster management therefore calls for strong linkages with the poverty alleviation programs.

2.5: Socio-economic effects of disasters

Disasters can erode economy due to un-expected therapy requirements. In developing countries, the high cost of disaster relief operations can drain the already strained economy and disrupt development initiatives. Poverty is the single most important factor characterizing the sectors of the population which are most vulnerable to disasters.
The economic status of the individual or family in many ways determine where and under what material conditions they live in as well as their capacity to reduce their vulnerability to potentially calamitous or disastrous situations (Lavell, 1991).

The low social economic status was one of the most intractable barriers to the mitigation of disasters. These include the enforced marginalization of people on to less productive land, or the need for those who earn low wages, have few resources, or are discriminated against to live in particular places where hazards strike more harshly.

The move may have been to make the land useful for commercial agriculture or ranching and the losers were made more vulnerable to drought and other hazards. Those disposed of land or other income opportunities live in extremely flood prone areas, in substantial housing located on unstable slopes, and in buildings which landlords and Governments fail to reinforce against earthquakes.

When disasters take place, it is the recipient country that has to bear the overwhelming burden of the cost of any catastrophe and provide most of the resources in manpower to alleviate its effects (Knowles, 1997). Kenyatta National Hospital which is the biggest referral hospital in east and central Africa filled up to full capacity after the victims of Molo tanker tragedy were moved there (Rwenji, et al., 2009).

Funds were diverted to manage disaster and the Aid was directed to the affected community. This jeopardises long-term development goals (Alcira and Margaret,
Disasters impede progress towards social and economic growth as they wipe out investment made and divert resources. Poverty plays a big role in keeping people vulnerable to disasters because the poor live in unsafe areas and their daily struggle to survive takes priority over investment in mitigating the impacts of potential disasters (Mutunga, 2004b).

2.6: Approaches in disaster management

There is no country that is completely immune to disaster; therefore adequate procedures to deal with disasters are of importance in every country. A continuous preparedness to provide quick and effective relief and preventive measures is necessary when disaster strikes (Knowles, 1977).

A disaster management policy should be established and maintained at an efficient, effective and coordinated manner. The national policy on disaster management documented seven years ago, which proposed establishment of a disaster management fund, should have been put in place then (Lussiane, 2009). Legal compliance to specific safety codes is important.

Man-made hazards can be controlled by recognising the hazards and taking preventive actions (Emerald, G. 2005). A good disaster and emergency response is merely an extension of good routine (Mutisya, 2004). It should go beyond immediate care given to an injured person (Hurt, 1976).

Use of Psychiatrists has been described as an epidemiological approach in understanding and treating the effect of mass casualty due to their management skills.
Many people should be trained in disaster management so that a participatory approach can be applied when a disaster strikes (Kariuki, 2004). Hospitals can be overwhelmed with management of disaster victims’ so proper management of hospital resources and staffs are important (Dara, et al., 2006). Qualification and certification activities are necessary to identify and publish national level standards and measure performance against standards to ensure that incident management and emergency responder personnel are appropriately qualified and officially certified to perform the functions.

There is no school that is free from disasters. Thus, it is important that each school establishes administrative procedures for handling emergencies. To prevent and manage disasters in schools, people from the department of health and safety survey and from National Environment Management authority should ensure risk assessment, review of school policies, injury tracking and creation of school based emergency plan are in place and there should be disaster management drills (Minnesota Health Council, 1964).

2.7: The challenges of implementing disaster management

Disasters can be seen as rare events, but they bring about large changes in the development process. The annual world disaster reduction campaign is an interactive movement where social pressure to change people’s perceptions towards reducing risks and vulnerabilities is put in place (Salvano, 2004).

A national policy on disaster management drafted seven years ago, which would have provided timely warning on disasters has been gathering dust since 2002 and the
cabinet had rejected it twice (Lusianne, 2009). A disaster event creates a supply-and-demand model for aid measures undertaken by public officials and Agencies where the affected population generates demand at certain times and over particular periods for given kinds of goods and services (Geipel, 1982). A disaster causing a great number of injured persons or acute patient’s produces a variety of different problems, which requires a First Aid stations at the damage area in the case of mass accidents (Hersche and Menker, 1997).

Preparedness for disaster in these kinds of institutions is of paramount importance if there is to be any achievement in reduction of losses of lives distraction of property and economic disruption; Therefore every body in the field of education should have a positive and undeniable responsibility for providing instructions in safe practices and safe environment for the millions of children and staff in the schools (Marland, et al., 1973).
CHAPTER THREE: MATERIALS AND METHODS

3.1: Introduction.

This chapter informs the leaders about the issues to be considered in this section of the study. It will clearly state the study area, study population, study design, variables, sampling procedure, sample size determination, data collection procedures, data analysis, and ethical considerations.

3.2: Study area.

The study was carried out in Ruiru Division of Thika District, in Central Province, Kenya (appendix i). The other Divisions of Thika District are, Thika municipality, Kakusi, Gatundu north, Gatundu south and Gatanga. Administratively the Ruiru Division is divided into two locations namely Ruiru and Juja.

The division has eight Secondary Schools. One of the schools is for boys; two for girls and five are mixed, that is for boys and girls. Four of these Secondary Schools are privately managed and the other four are Government managed (Muthoni, 2006). Ruiru division has many industries and most of the industrial workers are from within this division, which is in the outskirts of Nairobi with most of its residents working in the city.

3.3: Study design.

The research design used in this study was descriptive in nature where the researcher took the variables the way they exist without any manipulations (Johann, 1998). This design was considered appropriate because it enabled the researcher to collect a
considerable amount of information from the sampled teachers, support staff and the students within a short time by use of a detailed close-ended questionnaire.

An observation checklist was used to check what was on the ground and the usefulness of the available resources. An in-depth interview was done on Secondary Schools administrators from the ministry of education, district education office and division office where in-depth information on disaster preparedness on the community was sought within the secondary schools and their environs.

3.4: Variables

These are measurable characteristics that assume different values among the subjects (Mugenda and Mugenda 1999).

3.4.1: Dependent variable

Dependent variable indicates the total influence arising from the effect of the independent variables, which in this study were knowledge, skills, and change of attitude on disaster management with specific reference to disaster preparedness.

3.4.2: Independent variables

An independent variable is that which the researcher can manipulate to determine its effect on the dependent variable and in this study they were training, drills/simulations and the Socio-demographic factors, a positive improvement on the independent variable could improve the dependent variables which in this study were knowledge and skills of the study population and their social demographic factors.
3.5: The target population

The target population refers to the total number of the subjects or the total environment of interest where in this study are the communities in Ruiru Division.

3.6: The study population

The study population is the experimentally accessible population (Mugenda and Mugenda, 1999). The study population comprised of the teachers students support staff of Secondary Schools and community representatives from the secondary schools environs in Ruiru Division.

3.6: Inclusion criteria

a) Teachers, support staff and the students of registered secondary schools in Ruiru
b) Respondents who were willing to participate in the study.

3.7: Exclusion criteria

a) All the students, teaching staff and support staff teaching outside Ruiru Division
b) Respondents who were not willing to participate in the study.

3.8: Sample size determination

A sample is part of the target population that has been procedurally selected to present that particular population (Oso and Onen, 2005). To obtain a representative sample, the method recommended by Mugenda and Mugenda (1999) for social sciences, Fisher et al. (1998) standard formula was used:

\[ N = \frac{Z^2 \cdot Pq}{d^2} \]

Where, \( N = \) sample size
\[ Z = \text{standard normal deviate (1.96) which corresponds to the 95\% confidence interval.} \]

\[ p = 0.1 \text{ proportion of respondents with the desired characteristics} \]

\[ q = 0.9 \]

\[ d = \text{degree of accuracy set at 0.05} \]

\[ N = \frac{1.96^2 \times 0.01 \times 0.09}{0.05^2} = 138 \]

3.9: Sampling technique

Sampling technique is a strategy used by the researcher to select representative respondents from the target population for this study (Oso and One, 2005). A stratified random sampling was employed to identify the various Secondary School communities in Ruiru Division which are managed either by private administrators or by the Government officers.

This sampling procedure was used which made the existing sub-groups in Ruiru Secondary Schools population reproduced in the sample (Mugenda and Mugenda, 1999). This method made the researcher get the right proportions from each Secondary School community. The eight Secondary Schools were also exposed to site assessment and spot check using an observation checklist (O. C. L) where the availability of disaster management equipment and their serviceability was assessed.

For proportional distribution from the eight (8) Secondary Schools, 138 participants were divided among the 8 giving sixteen participants for each school which was then
divided by 3 giving five for each sub group. A simple random sampling was used to get the equal number of teachers, students and support staff from each secondary school by having five (5) folded papers with yes and the rest with no, depending on the number of teachers, students and the support staff in each Secondary School. A sample size of one hundred and twenty (120) was realised (appendix 7.2).

More information was gathered from six (6) secondary schools managers and sixteen (16) community representatives who were selected as key informants for an in-depth interview. Snowball sampling was applied to get the secondary school administrators while two (2) community representatives were also selected from each Secondary School environs through snowball sampling to participate in this study.
Figure: 3.1: Students sampled from Kahawa secondary school

The five standing students were the ones sampled from Kahawa secondary schools one of the mixed secondary schools which was privately managed.
3.10: Research instruments.

The tools used to elicit relevant information from the participants were, a pre-tested structured questionnaire which was divided into five (5) sections namely: common disasters, lessons on disaster management taught, available facilities to counteract disasters, level of knowledge and skills among the communities in secondary schools in Ruiru Division.

The instruments also helped to gather information by use of an observational checklist consisting of fire fighting equipments, inspection records of the equipments, first aid kit and a record of the team that operated them, danger points warning signs,
emergency exits, assembly points, discipline records, training records on emergencies and disaster management among others.

To observe what was on the ground for disaster management was used to compliment the questionnaire and an in-depth interview which was carried out on key informants guided by secondary school health and safety guidelines helped the researcher to gather relevant information which gave direction on lack of preparedness for disasters in secondary schools.

3.10.1: Pre-testing.

Pre-testing of the questionnaire was done in two secondary schools where the questionnaire was administered to five students for validity and reliability. Validity is concerned with the extent to which a technique measures what it is intended to measure (Borg and Gall, 1989) and reliability is a measure of the degree to which a research instrument yields consistent results after repeated trials (Gitonga, 1999).

The observation check list was also tested in the two secondary schools. These two secondary schools were excluded from the study. Omissions and corrections from the pre-testing exercise were incorporated in the final questionnaires and the observation check list for improvement.

3.11: Data collection methods

To assess disaster preparedness in the secondary schools, the researcher gathered detailed information about disaster management from the hundred and twenty respondents (120). Methods used were administration of detailed questionnaire which had questions based on the specific objectives.
An in-depth interview was done under the guidelines in appendix 6, on the key informants who included the District education officer (D. EO), Provincial Education Officer (P E O), National Disaster Coordinators, Ministry of Education officials, Occupational Health and Safety officers, the National Environmental Management Authority (N E M A) official and the community representatives.

An observation check list was used to check what was on the ground to deal with disasters and their efficiency. The researcher had a list of what to be observed as indicated in the appendix 5. The information gathered captured disaster management in the secondary schools and the community around the schools in Ruiru Division.

3.12: Ethical considerations

A research permit was obtained through Kenyatta University, from the Ministry of Education, Science and Technology. Informed Consent from the Division administrators, the head teachers were sought before the study commenced and the respondents were requested to participate in the study. Privacy of the information obtained from the respondents was safeguarded throughout the study period.

3.13: Data analysis

Data was inspected and edited in relation to the questionnaire to ascertain accuracy, completeness and uniformity and for quality. Data was coded and assigned labels, before analysis was done. For validity and reliability pre-testing of data collecting tools was done. Data was analyzed using statistical package for social sciences and the analyzed data was presented in bar graph, pie charts, tables, percentages, frequencies and statements. Descriptive statistics was used to summarize the data.
This included frequency distribution tables which were used to give a record of the
times a response occurred, mean, range, percentages. Inferential statistics particularly
chi-square was used to establish relationship between variables such as availability of
guidelines, level of training, availability of supplies and equipments. This helped the
researcher to draw conclusions and make recommendations on the study.
CHAPTER FOUR: RESULTS

4.1: Introduction

The purpose of this study was to establish the preparedness for disaster management in secondary schools in Ruiru division, Thika district. This study contained an analysis of the study findings. The study involved students, teaching staff and the non teaching staff of Ruiru secondary schools in Ruiru division, Thika district. Also included in the study as key informants, were the secondary school managers and some community members from the secondary schools environs.

To achieve the purpose of the study the following specific objectives were formulated and used to guide the study:

1. To establish the common disasters in Ruiru Secondary Schools.
2. To find out if there were lessons on disaster management taught to Secondary School community in Ruiru Division.
3. To establish if there were facilities to counteract disasters if they occurred in Ruiru Division Secondary Schools.
4. To determine the level of knowledge the Ruiru Division secondary school community had on disaster management.
5. To determine the level of skills the Ruiru Division secondary school community had on disaster management.
6. To assess the feelings of Ruiru Division secondary school communities on disaster management.
4.2: Demographic characteristics

The demographic characteristic of the respondents included: level of education profession, age and sex and marital status.

4.2.1: Education level

The level of knowledge was looked at, with the hope to establish whether people of higher education had more knowledge on disaster management. The study had 29 (24.17%) graduates, 24 (20%) diploma holders and 20 (16.67%) certificate holders. The rest 40 (33.3%) were form two students (fig 4.1).

Table 4.1: Composition of the Secondary School community respondents showing their education levels:

<table>
<thead>
<tr>
<th></th>
<th>Educational level</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary students</td>
<td>certificate</td>
</tr>
<tr>
<td>student</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>teacher</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>support staff</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Total (n)</td>
<td>7</td>
<td>40</td>
</tr>
<tr>
<td>Total (%)</td>
<td>5.8</td>
<td>33.33</td>
</tr>
</tbody>
</table>
4.2.3: Sex, marital status and age of the respondents

Gender age and marital status were looked at to establish whether there was any category that would have been more knowledgeable in disaster management. It came out clearly that majority (Eighty eight (73.3%) of the respondents were female while thirty two (26.7%) of the respondents were male.

Forty four (36.7%) respondents were single while seventy six (63.3%) were married. It was also observed that forty (33.3%) of the respondents were teenagers while eighty (66.7%) were adults (table 4.2 and fig 4.2).
Table 4.2: Sex, marital status and age of the respondents:

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>88</td>
<td>73.3</td>
</tr>
<tr>
<td>male</td>
<td>32</td>
<td>26.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>single</td>
<td>44</td>
<td>36.7</td>
</tr>
<tr>
<td>married</td>
<td>76</td>
<td>63.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>teenager</td>
<td>40</td>
<td>33.3</td>
</tr>
<tr>
<td>adult</td>
<td>80</td>
<td>66.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure 4.2: Graphic presentation of the characteristics of sex, marital status and age.
4.3: Common disasters in Ruiru Division

Objective one was investigating the common disasters in Ruiru division secondary schools with an aim of recommending strategic plan for disasters in secondary schools. Out of the 120 respondents, more than half 63 (53%) could not name any of the disasters that had occurred in Ruiru Division within the last five years. whereas 35(29%) could name at least 3 and 22 (18%) named less than 3 (table 4.3).

Table 4.3: Common disasters in Ruiru Division:

<table>
<thead>
<tr>
<th>Common disasters</th>
<th>Observed N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>named fire, R.T.A, rape</td>
<td>35</td>
<td>29.2</td>
</tr>
<tr>
<td>named fire, R.T.A</td>
<td>22</td>
<td>18.3</td>
</tr>
<tr>
<td>named none</td>
<td>63</td>
<td>52.5</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>

4.4: Lessons Taught on Disaster Management to Secondary School Community in Ruiru Division.

Objective two was examining lessons taught to secondary schools community in Ruiru Division on disaster management with an aim of recommending training programs on first aid services as a short term plan and disaster management as a long term plan.

4.4.1: Respondents trained in First Aid

There were no lessons taught on disaster management to Secondary School community in Ruiru Division. The researcher looked at first aid training which was
expected and almost all the respondent 102 (85%) were not trained in first aid and 18 (15%) have had the training with no refresher courses. Of the 18 (15%) who were trained 8 (44%) were supportive staff 6 (33%) teachers and 4 (22%) students. Elements in the first aid kit were known by 45 (37.5%) whereas 75 (62.5%) did not know them (table 4.4 and fig. 4.3)

Table 4.4: Respondents trained in first aid:

<table>
<thead>
<tr>
<th>Profession</th>
<th>trained in first aid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>teacher</td>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>student</td>
<td>4</td>
<td>36</td>
</tr>
<tr>
<td>support staff</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>Total (n)</td>
<td>18</td>
<td>102</td>
</tr>
<tr>
<td>Total (%)</td>
<td>15</td>
<td>85</td>
</tr>
</tbody>
</table>
4.4.2: Use of First Aid Kit elements

First aid kits and their elements are important in institutions like secondary schools where a big number of people live and knowledge on their proper use is of paramount importance. It was shown that 75 (62.5%) of the respondents had never used a First Aid kit while 45 (37.5%) of the respondents had used a First Aid kit (table 4.5). There was a statistically significant relationship between ever using a First Aid kit and knowledge of disaster preparedness ($\chi^2 = 835.263$, df=1, p=0.0001).

Table 4.5: Use of First Aid Kit elements frequency:

<table>
<thead>
<tr>
<th>Use of a First Aid Kit</th>
<th>Observed N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>45</td>
<td>37.5</td>
</tr>
<tr>
<td>no</td>
<td>75</td>
<td>62.5</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>
4.4.3: Location of First Aid kit

A first Aid Kit should be kept in the open where it can be used in case of an emergency. Fifty two (48%) of the respondents indicated that the First Aid kit should be stored in a locked cabinet while sixty two (52.0%) indicated that the First Aid kit should be stored in the open (table 4.6). There was a statically significant relationship between the location of a First Aid kit and the knowledge of disaster preparedness which includes knowledge of the ideal place for a first aid kit. Respondents who cited location of a First Aid kit in a closed cabinet were less likely to be knowledgeable about disaster preparedness ($\chi^2 = 474.386$, df =1, $p = 0.0001$).

Table 4.6: Location of first aid kit frequency:

<table>
<thead>
<tr>
<th>Location of kit</th>
<th>Observed N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>locked cabinet</td>
<td>62</td>
<td>52.0</td>
</tr>
<tr>
<td>in the open</td>
<td>58</td>
<td>48.0</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.4.3.1: Location of a First Aid kit against the different categories of respondents

Among the teachers 19 (15.8%) thought that the kit should be located in the open while 12 (17.5%) felt that it should be located in a locked cabinet. Nineteen (15.8%) of the students felt that the kit should be located in the open while 21 (17.5%) thought that it should be locked in a cabinet. Among the support staff, 20 (16.7%) thought that the kit should be located in the open while 20 (16.7%) felt that the kit should be located in a locked cabinet (table 4.7).
Table 4.7: Location of a First Aid kit against the different categories of respondents:

<table>
<thead>
<tr>
<th></th>
<th>where should the first aid kit kept</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in the open</td>
<td>locked cabinet</td>
</tr>
<tr>
<td>teacher</td>
<td>19 (15.8%)</td>
<td>21 (17.5%)</td>
</tr>
<tr>
<td>student</td>
<td>19 (15.8%)</td>
<td>21 (17.5%)</td>
</tr>
<tr>
<td>support staff</td>
<td>20 (16.7%)</td>
<td>20 (16.7%)</td>
</tr>
<tr>
<td>Total N (%)</td>
<td>58 (48.3)</td>
<td>62 (51.7)</td>
</tr>
</tbody>
</table>

4.5: Facilities to counteract disasters if they occurred in Ruiru Division Secondary Schools

Objective three was to establish the availability of facilities to counteract disasters in Ruiru division Secondary Schools which were to be known by the respondents. The aim here was to see what was in place and their efficiency to have bases for recommending additional replacement or even rehabilitation. Through observation check list most of the schools did not have the facilities to counteract disasters if the occurred and where the first aid kits were present the respondents were informed on their uses.

4.5.1: School disaster preparedness

Seventy five (62.5%) of the respondents rated their school disaster preparedness as poor, 37 (30.8%) rated their school disaster preparedness as good while 8 (6.7%) rated the preparedness as excellent (table 4.8). There was a statistically significant relationship between rating the schools’ disaster preparedness as poor and the knowledge on disaster preparedness (χ² = 840.843, df=2, p = 0.0001).
Table 4.8: School disaster preparedness:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Observed N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>poor</td>
<td>75</td>
<td>62.5</td>
</tr>
<tr>
<td>good</td>
<td>37</td>
<td>30.8</td>
</tr>
<tr>
<td>excellent</td>
<td>8</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.6: Level of Knowledge the Ruiru Division Secondary School Community had on Disaster Management.

Objective four was to determine the level of knowledge the communities in Ruiru Secondary Schools had on disaster management to a level of differentiating a disaster from an incident.

4.6.1: Whether collapse of the building is a disaster

One hundred and thirteen (94.2%) of the respondents thought collapse of a building is a disaster while seven (5.8%) of the respondents thought that it was not a disaster (table 4.9). There was no statistically significant relationship between knowledge about disasters and the information education and communication about the building the collapsed along Ronald Ngala whether it was a disaster or not ($\chi^2=0.175$, df =1, p=0.675).

However, different opinions were presented with regard to understanding whether disasters are caused or they just happen where more than half 90 (75%) of the respondents agreed to the affirmative whereas 30 (25%) disagreed.
Table 4.9: Whether collapse of the building was a disaster:

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was a disaster</td>
<td>113</td>
<td>94.2</td>
</tr>
<tr>
<td>not a disaster</td>
<td>7</td>
<td>5.8</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.6.2: Results of Secondary School vulnerability to disasters

One hundred (83.3%) of the respondents cited mixed schools to be vulnerable while twenty (16.7%) of respondents thought that single gender schools were more vulnerable (table 4.10). The findings indicated that there was a significant relationship between the type of secondary school and vulnerability to disasters ($\chi^2 = 4.44$, df = 1, $p=0.035$).

Table 4.10: Results of Secondary School vulnerability to disasters:

<table>
<thead>
<tr>
<th>Type of school</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed secondary schools</td>
<td>100</td>
<td>83.3</td>
</tr>
<tr>
<td>Single gender secondary schools</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.6.3: Fire fighting equipments:

Out of the 120 respondents, only 9 (7.5%) were able to identify two of (sand, blankets, carbon dioxide) as fire fighting materials while 61 (50.8%) named only one of fire fighting materials and 50 (41.7%) could not name any (table 4.11). Observation findings reviewed lack Fire fighting equipments in majority 6 (75%) of the schools.
Table 4.11: Fire fighting equipments:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>named sand and blankets</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>named blankets</td>
<td>61</td>
<td>50.8</td>
</tr>
<tr>
<td>named none</td>
<td>50</td>
<td>41.7</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.7: Level of skills the Ruiru Division Secondary School community had on disaster victims.

Objective five was to determine the level of skills Ruiru Secondary School community had on disaster management.

4.7.1: Arrest Bleeding

Of the 120 respondent only 26 (21.7%) had the idea of arresting the bleeding while 104 (78.3%) had no idea of arresting bleeding (fig 4.4).

4.7.2: Management of an Unconscious Patient

Of the 120 respondent only 52 (43.3%) had the idea of managing an Unconscious Patient while 68 (56.7%) had no idea of managing an Unconscious Patient (fig 4.4).
4.7.3: Management of a Victim with a Broken Bone

Of the 120 respondent only 30 (25%) had the idea of managing a victim with a broken bone while 90 (75%) had no idea of managing a victim with a broken bone unconscious patient (fig 4.4).

4.7.4: Management of Victim who was caught up in a Building that was on Fire

Of the 120 respondent only 12 (10%) had the idea of managing a victim who was caught up in a building that was on fire while 108 (90%) had no idea of managing a victim who was caught up in a building that was on fire (fig 4.4).

Figure 4.4: Management of disaster victims
4.7.5: Would use a Bulldozer to manage any disaster

Asked if the respondents would use a bulldozer to manage any disaster, 45 (37.5%) indicated they would not whereas 75 (62.5%) responded to the affirmative (table 4.12).

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>75</td>
<td>62.5</td>
</tr>
<tr>
<td>no</td>
<td>45</td>
<td>37.5</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.12: would use a bulldozer to manage any disaster:

4.8: Keeping off the crowd

Almost all the respondents 101 (84.2%) articulated that they would use barriers (tape/rope) to keep off the crowd from a disaster site whereas 13 (10.8%) indicated that they would use a bus to ferry the onlookers. Only 6 (5%) would use a bulldozer to keep off the crowd (table 4.13).

<table>
<thead>
<tr>
<th>Method</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>use a bulldozer</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>use a bus</td>
<td>13</td>
<td>10.8</td>
</tr>
<tr>
<td>use barriers like tape or rope</td>
<td>101</td>
<td>84.2</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.13: Keeping off the crowd:
4.9: Attitude of Ruiru Division Secondary School community on disaster management

The importance of disaster management among the secondary school community was sought with the findings as indicated figure 4.5.

4.9.1: First Aid Kit

It was indicated that 94 (62%) of the respondents thought that it was very important to have first aid kit in the schools, 40 (33%) felt it was important to have first aid kit in schools and only 6 (5%) felt it was not important (fig 4.5).
4.9.2: Trained First Aid Personnel

It was indicated that 90 (75%) of the respondents thought that it was very important to have trained first aid personnel in the schools, 30 (25%) felt it was important to have trained first aid personnel in schools and none felt it was not important (fig 4.5).


It was indicated that 62 (52%) of the respondents thought that it was very important to include disaster management in secondary schools curriculum, 48 (40%) felt it was important to include disaster management in secondary schools curriculum and 10 (8%) felt it was not important (fig 4.5).

Three in every four 90 (75%) indicated that curriculum workload contributes to stress which sometimes lead to unwarranted actions that lead disasters in secondary schools whereas 30 (25%) disagreed with the same. Three in every five 72 (60%) could identify at least three great challenges that could hinder them in managing a disaster situation, whereas 18 (15%) named two and 30 (25%) indicated none. All the respondents indicated that kiosks and bars should be nowhere near the schools in bid to fight drug abuse, which contribute to strikes that leads to disasters in schools.

4.9.4: Install fire fighting equipments in Schools.

It was indicated by 80 (67%) of the respondents who indicated that it was very important to include disaster management in secondary schools curriculum, 30 (25%) felt it was important to include disaster management in secondary schools curriculum and 10 (8%) felt it was not important (fig 4.5).
CHAPTER FIVE: DISCUSSION

5.1: Common disasters in Ruiru Division

Sixty three which was (53%) of the respondents could not name any of the disasters that had occurred in Ruiru Division within the last five years, thirty five which was (29%) could name at least 3 while twenty two which was (18%) named less than 3. This finding indicated that the level of knowledge regarding disasters was low. This observation was supported by the finding that the respondents who were knowledgeable about the common disasters were likely to be prepared against disasters ($\chi^2 = 571.482, df = 2, p = 0.0001$).

Disasters have been occurring in this division but due to lack of knowledge, the respondents could not remember them. This observation revealed that the respondents were vulnerable to future disasters. This calls for rapid measures to educate the Ruiru Secondary School community on disaster management.

An in-depth interview of a senior quality assurance and standards officer brought to light that, though there were measures to be undertaken to ensure health and safety in education institutions as per legal notice number 56 of 13th March 2001 (Kosgey, 2001).

The Minister of Education administrators recommended all doors to open outward in all dormitories, windows to have grills, laboratories and kitchen to have fire fighting equipments, story buildings to have staircase as an escape routes, all food handlers to have varied medical certificates among others.
Negligence by the administration to implement the safety measures, lack of qualified personnel to carry out standard assessment of the schools and the lack of resources to implement the measures were cited as the major challenges for implementing health and safety programs in schools (Maluki, 2007).

5.2: Lessons Taught on Disaster Management to Secondary School Community in Ruiru Division.

There were no lessons taught on disaster management to Secondary School community in Ruiru Division. However despite first aid training being a basic component in disaster management and preparedness, 85% of the respondents was not trained.

This finding indicated the need to offer basic disaster management training in schools as a measure of creating awareness (Achoka and Maiyo 2008). They emphasised on disaster reduction initiatives to be rooted in schools and communities. However, an in-depth interview of secondary schools managers revealed that including disaster management in secondary schools would increase the work load to the students and the teaching staff who are already over whelmed by the examinable subjects.

Curriculum workload contributed to stress which sometimes lead to unwarranted riots that lead to disasters in secondary schools. It was also clear that there were intensions to train disaster managers for schools but training dates are not yet known (Maluki, 2007). It was also clear from the findings that, 62.5% of the respondents had not used a First Aid kit which indicated a high level of knowledge deficiency in the area of disaster preparedness.
This observation was supported by the finding that the respondents who had never used a first aid kit were less likely to have knowledge about disaster preparedness ($\chi^2 = 835.263$, df = 1, p = 0.0001).

It was also revealed that respondents who cited location of a First Aid kit being in a closed cabinet were less likely to be knowledgeable about disaster preparedness ($\chi^2 = 474.386$, df = 1, p = 0.0001). Although the first aid kit should be kept in the open where it can be accessible when needed, these respondents seemed not to be aware about this. They had fear that it would be vandalised by the students and some staff.

This indicated that education regarding disaster management was a necessity. An in-depth interview of a secondary school manager positioned as a district officer one in the provincial administration and internal security revealed that there were organisations which could respond to disasters one of them being Thika Municipality which was ranked the best compared to the police force during a hospital disaster mock in 2007. Gatundu town caught fire in 2007 and Thika Municipal staff responded within 30 minutes (Shizue, 2005).

Challenges in the Municipals office were lack of enough trained personnel, lack of resources to maintain the available machinery, lack of awareness by the public to pass the information using police or the council’s hotlines and lack of knowledge to use the available resources and not to cause problems of overcrowding in a disaster site where they would cause blockages (Mwenda, 2007).
5.3: Facilities to counteract disasters if they occurred in Ruiru Division secondary

Majority of the respondents (62.5%) rated their schools' disaster preparedness as poor. The finding showed that the respondents who rated the state of disaster preparedness in their schools as poor were less likely to be knowledgeable on disaster preparedness ($\chi^2 = 840.843$, df = 2, p = 0.0001). This finding indicated that majority of the Ruiru Division Secondary Schools community were highly vulnerable to future disasters due to lack of the basic facilities to counteract disasters.

The country lacked policies to address the increasing incidences and emergencies which resulted into serious human distress and suffering, destruction of property and infrastructure, disruption of environment and overall welfare of the society (Cheruiyot, 2002).

5.4: Level of Knowledge the Ruiru Division Secondary School Community had on Disaster Management

Majority of the respondents (94.2%) knew collapse of a building along Ronald Ngala Street was a disaster. This observation was supported by the finding that the relationship between knowledge about disaster preparedness and the knowledge of whether collapse of that building was a disaster was not statistically significant ($\chi^2 = 0.175$, df = 1, p = 0.675).

However, different opinions were presented with regard to understanding whether disasters were a major problem. (75%) indicated that disasters are made to happen, they don’t just happen. It was noted that all support staff found no benefit of disaster
management program in schools to reduce disasters and disaster effect. This observation indicated that the support staff should also be a primary target in disaster management, training programs. Knowledge is a precious national resource that can facilitate the process of disaster prevention, preparedness and response in cost effective participatory and sustainable ways (Durgadas, 2008).

5.5: Level of skills the Ruiru Division secondary school community had on disaster victims

The findings indicated lack of basic skills in managing the disaster victims. Majority of the respondents (78.3%) had no idea of arresting bleeding, 56% had no idea of managing an unconscious patient, 75% had no idea of managing a victim with a broken bone, 90% had no idea of managing a victim who was caught up in a building that was on fire while 62.5% of the respondents indicated that a bulldozer could be used to manage any disaster.

This was a clear indication that the skills of the respondents were far below any desired standard. Education and awareness seemed to be a necessity in order to reduce the vulnerability of the society to future disasters (Josefani, 2008).
CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1: Introduction

This study aimed at investigating disaster preparedness in Secondary Schools in Ruiru Division of Thika district Kenya. This chapter explores the summary, conclusions, recommendations and suggestion for further studies as indicated here below.

6.2: Summary

Disasters have been occurring in Ruiru Division but due to lack of knowledge, the respondents could not recall the common disasters. This was caused by lack of training on disaster management to Secondary School community in Ruiru Division. Majority of the Ruiru Division Secondary Schools community were highly vulnerable to future disasters due to lack of the basic facilities to counteract them.

The country lacked policies to address the increasing incidences and emergencies which resulted into serious human distress and suffering, destruction of property and infrastructure, disruption of environment and overall welfare of the society. A national policy on disaster management drafted seven years ago, which would have provided timely warning on disasters has been gathering dust since 2002 and the cabinet has rejected it twice (Lusianne, 2009). These observations revealed the vulnerability of people not only of Ruiru community to future disasters.

Majority of the respondents knew collapse of a building along Ronald Ngala Street was a disaster due to the fact that it was highlighted in the media. This is an indication
that Knowledge is a precious national resource that can facilitate the process of disaster prevention, preparedness and response in a cost effective and sustainable ways. The findings also indicated lack of basic skills in managing the disaster victims as indicate in figure 4.4.

6.3: Conclusions

According to the study findings, 53% of the respondents could not name any of the common disasters like fire, and road traffic accidents which had occurred in Ruiru Division within the last five years, 29% could name at least 3 while 18% named more than 3. This observation was supported by the finding that the respondents who were knowledgeable about the common disasters were likely to be prepared against disasters ($\chi^2 = 571.482, \text{df} = 2, \text{p}=0.0001$).

There were no lessons taught on disaster management to Secondary School community in Ruiru Division. Despite first aid training being a basic component in disaster management and preparedness, 85% of the respondents did not have this basic training. Respondents who had never used a first aid kit were less likely to have knowledge about disaster preparedness ($\chi^2 = 835.263, \text{df} =1, \text{p}=0.0001$). The study also revealed a number of respondents who cited location of a First Aid kit to be in a closed cabinet ($\chi^2=474.386, \text{df}=1, \text{p}=0.0001$). These were less likely to be knowledgeable about disaster preparedness and the schools lacked facilities to counteract disasters if they occurred.

More than half of the respondents (62.5%) rated their Secondary schools' disaster preparedness as poor. These respondents were less likely to be knowledgeable on
disaster preparedness ($\chi^2=840.843$, df=2, p=0.0001). Majority 94.2% of the respondents (94.2%) knew the collapse of the building along Ronald Ngala Street was a disaster. This showed a positive relationship between knowledge about disaster and highlighting about disasters through proper information education and communication. This was supported statically by a chi result ($\chi^2 = 0.175$, df =1, p=0.675).

The findings also indicated lack of basic skills in managing the disaster victims. According to the study findings, the researcher rejected the null hypothesis and concluded that the respondents were less knowledgeable about disaster preparedness in Ruiru Division.

6.4: Recommendations

The Ministry of Education should introduce disaster management training in secondary schools curriculum in order to enhance knowledge and skills to the community who lives there and produce future disaster managers. The national policy on disaster management documented seven years ago should not be in the cold this long and it should not have been rejected twice by the Government (Lussiane, 2009). The non-governmental organizations like the Kenya Red Cross should introduce first aid courses into schools targeting students, teaching staff and support staff.

The Ministry of Education and non-governmental organizations should create awareness regarding disaster management to the schools, communities, hospitals and the Kenya police. Before any school is built, an environmental impact assessment (E.I.A) should be done by a recognized body which should give an authority for the
school to be put up or not. This should be followed by regular environmental audit (E.A.). These are preventive strategies for health problems (Wokabi, 2007). Since prevention is better than cure the researcher recommends that the involved parties come up with strategies for disaster management in secondary schools and everybody else to be sensitised on disaster management.

The researcher also recommended that disaster management be included in the other institutions of higher learning. The communities should be taught disaster management using community development fund (CDF). Every one should have the necessary knowledge and skills to be able to participate in disasters management which can occur at any time in any place.

6.5: Recommendations for further research

There is need for studies to be conducted aimed at identifying the causes of the common disasters, in secondary schools, reasons why the communities were not prepared for disasters and the ways and means of increasing their knowledge and skills for managing disasters. Studies should also be conducted to establish measures which can be put in place for reducing disaster risks in secondary schools and equip the health personnel with disaster management skills.
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Appendix 7.1: The Study Area

7.1: Map of Ruiru Division (inset Map of Kenya) (Abdi 2006)
Appendix 7.2: Sample size by gender and career

<table>
<thead>
<tr>
<th>Name of the secondary schools</th>
<th>Number of students by gender</th>
<th>Number of staff by career</th>
<th>Sample size by gender</th>
<th>Sample size by career and gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls</td>
<td>Boys</td>
<td>Teachers</td>
<td>Support staff</td>
</tr>
<tr>
<td>Ruiru boys</td>
<td>0</td>
<td>86</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>Githunguri</td>
<td>22</td>
<td>32</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Ruiru girls</td>
<td>71</td>
<td>0</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Kitamaiyu</td>
<td>10</td>
<td>18</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>St. Lucy kiriri</td>
<td>46</td>
<td>0</td>
<td>24</td>
<td>14</td>
</tr>
<tr>
<td>Kahawa</td>
<td>23</td>
<td>46</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Gateway</td>
<td>10</td>
<td>68</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Blessed hands sec.</td>
<td>42</td>
<td>67</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>317</td>
<td>124</td>
<td>75</td>
</tr>
</tbody>
</table>

Table 3.1 shows the names of the Secondary Schools in Ruiru Division and the study population and the sample sizes of five respondents from each school.
MINISTRY OF SCIENCE & TECHNOLOGY

Telegrams: SCIENCE TEC", Nairobi

Fax No. Telephone: 318581
When replying please quote

MOST 13/001/37C 191/2 20th April 2007

Susan W. Mururi
Kenyatta University
P.O. Box 43844
NAIROBI

Dear Madam

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on, 'An Investigation into the Preparedness for Disasters in Secondary Schools in Ruiru Division Thika District Kenya'

I am pleased to inform you that you have been authorized to carry out research in Thika District for a period ending 30th October 2007.

You are advised to report to the District Commissioner and District Education Officer Thika District before embarking on your research project.

On completion of your research, you are expected to submit two copies of your research report to this office.

Yours faithfully

B. O. ADEWA
FOR: PERMANENT SECRETARY

Copy to:

The District Commissioner
Thika District

The District Education Officer
Thika District
Appendix 7.4: Consent Note

7.3.1: Letter to the respondent

Kenyatta University
Department of public health
P.O Box 43844
Nairobi
KENYA

Date 22/6/07

Dear Respondent,

I am a post graduate student at the department of public health in the school of health sciences in Kenyatta University. I am currently working on a research proposal to determine disaster preparedness in secondary schools in Ruiru division.

Your input through responding to all the items in the questionnaire will be valuable in carrying out this study. This will improve your livelihood and the livelihood of the future students. The questionnaire is designed for this research purpose only.

Please answer the questions as honestly as possible. All the information will be treated with strict confidentiality.

Thank you in advance.

Yours sincerely,
Mururi Susan W.
Post graduate student
Appendix 7.5: Questionnaire

Instructions
Tick, underline or complete where appropriate

SECTION A: Demographic Information

1. Underline the name of your school.
   Ruiru Boys Secondary School
   Githunguri high School
   Ruiru Girls Secondary School
   Kitamaiyu Secondary School
   St lucy kiriri Secondary School
   Kahawa Secondary School
   Gateway Secondary School
   Blessed hands Secondary School.

2. Are you a male or a female?
   Male □ Female □

3. Marital status
   Married □ single □

4. Indicate your age yrs ____________

5. Your school is in which location
   Ruiru
   Juja

6. Are you a student, teacher or support staff? ____________

7. What is your highest qualification?
   Certificate Degree
   student Diploma
SECTION B: Disaster Occurrences in Ruiru Division

1. Name five disasters that you have ever heard of in Ruiru division and state their causes and the places where they took place.

<table>
<thead>
<tr>
<th>Disasters</th>
<th>Causes</th>
<th>place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>2.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>3.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>5.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>3.</td>
</tr>
</tbody>
</table>

SECTION C: Level of Knowledge the Respondent Had On Disaster Management

1. Have you been trained in disaster management?

Yes □ No □

2. Do you have a First Aid Kit?

Yes □ No □
3. Which of the following events would you term a disaster?
   a. Drought which occurred in early 2006.
   b. Plane crash which occurred in Marsabit in April 2006.
   c. A road traffic accident where one passenger died and two got injured.

4. Name disasters that you know that happened in Kenya within the last five years
   a ____________________________, b ____________________________
   c ____________________________, d ____________________________

5. Name any four disasters that has occurred in secondary schools in Kenya
   a _______________ b _______________ c _______________

6. Would you term the collapse of the building which took place in Nairobi along “Ronald Ngala Street”, in January 2006 a disaster?
   Yes □ No □

7. Disasters are caused, they don’t just don’t happen
   true □ false □

8. The first Aid Kit be kept in
   a) locked cabinet
   b) the open

9. Underline all the fire fighting materials mentioned below if any
a) Sand, b) blankets, c) oxygen, d) carbon dioxide

10. Of the people mentioned below underline the person who would make the disaster activities be done in a harmonious manner?

a) a doctor  
b) a disaster coordinator  
c) a business man  
d) an accountant.

11. From the list below underline the personnel needed in a disaster site to attend to the injured.

a) A teacher  
b) a farmer  
c) a nurse  
d) a counsellor  
e) a watchman  
f) a cook  
g) a doctor,  
h) a police man  
i) a land load
12. A disaster event disrupts:
   a) education,
   b) the natural setting of the sun,
   c) transportations,
   d) Farming activities.

13. How far is the nearest health facility from this school?
   a) Less than 1 kilometre
   b) About 2-4 kilometres

14. Disasters have a positive/ negative effect to the country’s economy.
   True □ false □

15. When a disaster event takes place the affected people can use their local resources to get every thing back to normal
   True □ false □

16. Underline important equipment in disaster management
   a) an ambulance,
   b) fire fighting vehicle,
   c) tent,
   d) axe,
   e) mallet,
   f) first aid kit

17. Which school is more vulnerable to disasters?
    Mixed secondary school,
    Single gender secondary school,
SECTION D: Level of Skills the Respondent Had On Disaster Management

1. Underline the methods you would use to arrest bleeding
   a) bandaging
   b) pouring soil into the bleeding area
   c) applying cow dug on the bleeding site
   d) applying direct or indirect pressure with clean fingers on the bleeding site

2. State how you can manage a nose bleeding patient
   a) keep wiping off the blood
   b) Pinch the nose and bend the head forward.

3. If you suspect a patient has a broken bone you would
   a) Bandage with a stiff material
   b) Bandage with a soft material

4. In a building that has caught fire would you treat the injured in one of the rooms
   Yes ☐  No ☐

5. Somebody in clothing which has caught fire, you would do first?
   a. remove the clothing,
   b. tie with a blanket,
   c. take him/her to hospital
   d. none of the above

6. Do you know how to use all the elements in a First Aid Kit?
   Yes ☐  No ☐
7. After a collapse of a building which sequence below would you follow
   a) Search and rescue, take the injured to hospital, take the dead to the morgues reconstruct the building.
   b) Take the injured to hospital, Search and rescue, reconstruct the building; take the dead to the morgues.
   c) Take the dead to the morgues, Search and rescue, reconstruct the building, take the injured to hospital.

8. Would you use a bulldozer in managing any disaster site?
   Yes ☐   No ☐

9. In a disaster site how would you keep of the crowd?
   By use of:
      a) a bulldozer
      b) a bus
      c) barriers like tape, rope

10. When a disaster has taken place, donors should give
    a) All the materials they can be able to release from their country.
    b) The materials required for disaster management.
Section E: The Feelings of the Respondents about Disaster Management

1. Should disaster management be taught in secondary schools?
   Yes □  No □

2. Should students be allowed to use drugs of abuse for example alcohol?
   Yes □  No □

3. In reference to drug abuse do you think kiosks and bars should be next schools?
   Yes □  No □

4. Do you think accessible first kit is necessary in secondary schools?
   Yes □  No □

5. Whom would you blame for the disasters which has happened in secondary
   a) prefects
   b) school administrators
   c) students
   d) none of the above

6. Which of the following schools is more likely to have disasters?
   a) Single gender secondary schools
   b) Mixed secondary schools.

7. Do you think our country Kenya should have a disaster management team on Pay every month?
   Yes □  No □
Appendix 7.6: Observation Check List

1. Accessible first aid kit.
2. Availability of the first aid team.
3. Adherence to the existing laws.
4. Availability of first Aid elements.
5. Training records on emergencies and disaster managements.
6. Records of recent drills/simulation
7. Records of the recent disasters
8. Location of the first Aid Kits.
Appendix 7.7: In-Depth Interview Guidelines

1. Safety measures in the secondary schools.

2. Policies on health and safety in secondary schools.

3. Facilities for disaster management in secondary schools and their serviceability.

4. In-charge teams for disaster management in secondary schools.

5. Mock drills.

6. Trainings on disaster management.

7. Nearness of the health facilities to the secondary schools and their usefulness.