UNIVERSITY OF NAIROBI

KNOWLEDGE AND BEHAVIOR ON FIRE EMERGENCIES AMONG FIRE VICTIMS AT KENYATTA NATIONAL HOSPITAL

BY

ESTHER O. SALAMBA

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DECLARATION

I hereby certify that this is my original work and has not been presented for a degree in any University or any other award whatsoever.

Name: Esther O. Salamba

Signature _____ Date 4th Dec 2012

CERTIFICATION

This Project has been submitted for examination with my approval as the University Supervisor.

Dr. R.M. Ocharo
Department of Sociology and Social Work

University of Nairobi

Signature _____ Date 5/12/12

DEDICATION

This Project is dedicated to all victims of fire and more particularly the participants in this piece of work, who were admitted at the Kenyatta National Hospital (ward 4D) at the time of this Research. Thank you for your willingness to share your story.

God richly bless you and grant you a long life.

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First and foremost I thank God from whom all Wisdom, Knowledge and Understanding come.

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Last and not least, I truly want to thank my mum for encouraging me to pursue higher Education. Your words of motivation continually rang through my mind as I soldiered through this work.
God bless you and Grant you a long life.

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LIST OF ABBREVIATIONS & ACRONYMS

AP	-	Administration Police
CCN	-	City Council of Nairobi
GSU	-	General Service Unit
KNH	-	Kenyatta National Hospital
SPSS	-	statistical Package for Social Sciences
NFPA	-	National Fire Prevention Act

ABSTRACT

This research was set to study knowledge and behavior on fire emergencies. An assessment of the knowledge fire victims at Kenyatta National Hospital have concerning fire emergencies and how their actions associate with the injuries they sustained.

The study was conducted among victims of fire at Kenyatta National Hospital which is currently the largest referral and teaching hospital in the country, where most emergency cases within the vicinity of Nairobi town are treated. Hence this research found Kenyatta National hospital to be the only possible place where victims of fire could be accessed

The general objective of this research was to study Knowledge and behavior on fire emergencies. In specific the study sought to find out the knowledge fire victims have concerning fire emergencies, what they did during the fire emergencies, and how their actions associate with the injuries they sustained.

Structured interviews were conducted among 77 patients of fire admitted in ward 4D of Kenyatta National Hospital, the fire patients in the Burns Unit of K.N.H were not interviewed as prior promised. Patients in this ward are not in a stable condition and hence not accessible for interviews, once the patients become more stable, they are moved to ward 4D where they continue to recuperate. A set of predetermined questions were used to collect the primary data from the victims of fire. Unstructured observation was also used to observe the injuries the victims got, this research realized that some injuries were in sensitive places which could not be observed and hence observation tool only applied where possible.

The responses to specific questions were summarized, coded and categorized using common themes and phrases relevant to the research questions. The data was then entered into the computer for analysis using Statistical Package for Social Sciences (SPSS).The data has been presented in form of relative frequency distribution tables and Cross-tabulation tables.

In establishing what fire victims do during a fire emergency, data collected revealed that some fire patients lose consciousness and hence don't engage in any action, however those who don't lose consciousness, engage in actions which expose them to multiple injuries, of importance to note however is the fact that, only the pre-dominant actions the fire victims engaged in were noted. In the future therefore, the study would recommend the multiple responses of actions the fire victims engage in to be noted and analyzed accordingly.

The study further established that fire victims don't have knowledge concerning behavior during a fire emergency hence the reason for the wrong actions engaged in during the emergencies.

Hence to imply that the actions fire victims engage in during the fire emergencies directly associate with the injuries they sustain.

Ability to respond to a hazard when it strikes is very important, and after the hazard, how one recovers from it is also very important, through recovery fire victims should be made better than they were so that if the hazard ever strikes again, they deal with it better hence minimizing injuries.

Lack of knowledge on fire emergencies make the fire victims vulnerable, vulnerability precedes a disaster and contributes to its severity, when the vulnerability is overwhelming then responds does not work.

The vulnerability cycle is prone to continue unless fire victims get exposed to knowledge on behavior during fire emergencies.

Hence the study recommends, through societal structures, people should be exposed to knowledge on fire hazards.

The study revealed that single people are more vulnerable to fire hazards and hence recommends an investigation into what happens in recovery for people with no proper social networks.

The findings of this project are to be shared with the respective bodies, which include the University of Nairobi, Department of Sociology, and the Kenyatta National Hospital particularly the Ethical Research Board and more importantly the findings of this research will be distributed and discussed in detail with the participants in the very piece of work.

CHAPTER ONE: INTRODUCTION

1.0 Fire defined:

Fire or **combustion** is a process of burning and not as usually thought an element such as air or water. It's a chemical reaction in which a substance combines with oxygen in the air and the process is accompanied by the emission of heat, light and sound.
(Langdon Thomas, 1972:24)

Fire is a state or process in which a fuel is ignited (set on fire) and gives off light, heat and flame. That is why fire is very useful to people, they can use it for light and warmth. But fire can also be dangerous and even deadly.
(William B. Rice, 2009:6)

Wallace and Webber (2007) define fire as a chemical reaction in which a fuel mixes with oxygen and is heated to a point where flammable vapors are created.

Three elements are essential before a fire can occur and the removal of any one of them will terminate the reaction. These three elements of fire constitute the triangle of fire (Stollard P. et al, 6)

- Fuel or gaseous fuel
- Heat
- Oxygen/air

Fires start when a flammable and/or a combustible material, in combination with a sufficient quantity of an oxidizer such as oxygen gas or another oxygen-rich compound (though non-oxygen oxidizers exist that can replace oxygen), is exposed to a source of heat or ambient temperature above the flashpoint for the fuel/oxidizer mix, and is able to sustain a rate of rapid oxidation that produces a chain reaction.

Fire cannot exist without all of these elements in place and in the right proportions (though as previously stated, another strong oxidizer can replace oxygen). For example, a

flammable liquid will start burning only if the fuel and oxygen are in the right proportions. Some fuel-oxygen mixes may require a catalyst, a substance that is not directly involved in any chemical reaction during combustion, but which enables the reactants to combust more readily.

1.1 Risks in the event of fire

Risk denotes a danger that is likely to be incurred in the event of a fire. Bird (1949) in his work gives five broad classifications of risks namely:

Panic risk: This is the most likely risk to be faced within a building containing crowds of people. Johnson et al names it as the 'physical science' model of human reactions. He asserts that, in extreme situations of potential entrapment, people panic, characterized by the non-social behavior of homogenous crowd of individuals in flight competing for diminishing access to an exit where crushing occurs.

Infirmity risk: Refers to the risk that caters for the aged, bed-ridden, physically or mentally handicapped and very young children. They are usually disadvantaged to reach the escape routes where they exist. He asserts that the most important in matters of escape from fire is time

Sleeping risk: In this case fire may catch an occupant unaware, either because they are a sleep or are in a separate room. This tends to increase the escape time required for warning the occupant and evacuating the building. Darkness also increases the escape time as well as adds to the risk of panic.

Normal Risk: This refers to risk bestowed as a result of a normal rate of fire growth on the able bodied intelligent occupant in relatively small numbers

Acute Industrial Risk: Refers to risks of eminent danger likely to be experienced in factories containing flammable materials and poisons to lead to explosions.
(Bird E.L, 1949:66)

Fire risk remains a fact of life as reflected in the few cited fire scenarios worldwide.

1.2 Fire incidences

Loss of life and property through fires remains a fact of life globally, in the recent past many fire incidences have been reported across the globe. Fema disaster information records that "Each year, more than 4,000 Americans die and more than 25,000 are injured in fires, many of which could be prevented. Direct property loss due to fires is estimated at $8.6 billion annually."

Bird (1949) asserts that in every country in the world uncontrolled fire takes a toll of human life and property. In civilized countries however, the losses are kept from growing to gigantic proportions because communities pay continuous overhead charges for the maintenance of fire fighting services and also impose on building owners-through their architects –the duty of providing structural precautions against fires. Below are a few among the reported major fire incidences that have taken toll of countries across the globe.

Wildfires: Is an uncontrolled fire burning in wild land areas. Common causes include lighting and drought but wildfires may also be started by human negligence or arson. (Chawla P.S, 2008:25)

There are approximately 100,000 wildfires in the US per year, most caused by people rather than nature. (National Geographic 1998) the fires damage or destroy timer, ranch buildings and increasingly, subdivisions of homes built in heavily wooded areas. (Waugh W. L , 2005:81)

In 1994 fourteen, 10 men and four women died fighting a blaze on Storm King Mountain in Colorado, this was declared the worst wildfire disaster in the US because a dozen smokejumpers were killed in Mann Gulch, Montana.

In 1949, the southern Canyon Fire, as it's called, surprised a group of firefighters when a relatively small blaze turned into a windblown inferno overtaking them as they tried to scramble to safety on the rocky mountainside.
(Waugh W.L, 2005:84)

Arson: Arson is the deliberate burning of property, but it's not described as such until a court has found a case proved. The correct expression is a fire of "doubtful" origin whereas a fire whose origin is unknown is said to be of 'unknown origin'.
(Underdown G.W, 1971: 85)

The FBI, ATF, the Orange County Fire Authority and the California Department of Forestry confirmed that the massive Santiago Canyon Fire -- which caused an estimated $10 million in damage, was the work of an arsonist, and a $70,000 reward was offered to find the arsonist.

Structural fires: in every country structural fires takes a toll of human life and property. Examples of such fires in the US are illustrated below:

On 7th Apr 1949 it was reported that an estimate of 80 persons perished in the fire which destroyed St. Anthony's Hospital, all the hospital records were destroyed. Among the dead were 14 newborn babies. Just after midnight the fire was reported to have broken out in the wards, it burned so swiftly it could not be checked. The hospital burst into a mass of flame.

Patients with their legs in bed slings screamed for help until they were burnt to death. A group of old people were trapped in the charity ward on the top floor. Some jumped 50 ft. to death. About 60 of its occupants were saved, some by jumping to mattresses spread on the ground and others by ladders. Eighteen of the inmates were killed leaping from windows of the building, many others were seriously injured.

Despite the efforts of firemen from Effingham and nine other communities the building almost destroyed within an hour of the time the first alarm was given.
(Bird E.L, 1949:3)

Years later, on May 30, 1989 a fire alarm was sounded at the Penn Mutual Insurance Company in Philadelphia, Pennsylvania, smoke was discovered on the ninth floor of a high rise building. The area from where the smoke was emanating was the records room, the blaze was horrendous, with the flames causing the temperatures to rise in the space up to 2000 degrees, such intense heat only helped the flames spread even more rapidly. Paper was literally igniting from the heat through out the rest of the day and into the next day. The fire escalated to a nine alarm condition, with upwards of 450 to 500 firefighters involved.
(Bates R.J, 1992:16)

And among the most recent scenarios was an apartment fire in Seattle, WA as reflected below:

Seattle Apartment Fire, 5 found huddled together, dead in apartment fire:
On 14 June 2010, an apartment building in Seattle, WA caught fire, killing four children and a young woman. The fire which was declared the deadliest in almost four decades was ignited in a living area on the first floor of the two-storey Fremont apartment building at 334 N.W. 41st St., around 10:04 a.m. as reported by the Seattle Post Intelligencer.

The massive fire killed a 22 year old woman; her two nieces and two nephews, it was reported that the Fire officials found them huddled together in the second-floor bathroom of apartment unit. Fire Chief Gregory Dean reported that the fire started on the first floor in the living quarters and it proceeded upstairs to the second floor. At the time of reporting the cause of the fire had however not been established.

(Legal News Reporter: Nicole Howley-Legal news for Washington personal injury lawyers.)

Kenyan scenario:

Fires in Kenya cause many deaths every year, the destruction of many houses and damage to thousands more. Apart from those fires started by faulty equipment, many are the direct results of somebody's carelessness or failure of majority of people to attend to simple rules of safety.

(International Medical Corps and USAID, 2001)

Right at the heart of Nairobi, major fires have taken place as reflected in the cited scenarios, the Nairobi slums in particular have been hit strongly for many years as reflected in the few chosen examples:

Mukuru Kayaba slum was struck by a fire in Feb 2006, which rendered 1565 families homeless, as reported by the Kenya Red Cross Society. Previously within the Kenya's biggest slum, Kibera Laini Saba a fire had broken out on 17 Jan 2006 which burnt down houses and destroyed property worth thousands of shillings.

(Kenya Red Cross Society, 2006:9)

Public and private Premises have not been an exception, on 14th May 2004 fire broke out in City hall burning down the entire third floor while in a another scenario, a fire razed down a shopping mall in Westlands, Nairobi on 20th Apr 2004, destroying property worth 50 million shillings

(Republic Of Kenya, 2004: 25).

Nakummatt Downtown Supermarket (Nairobi-Kenya)

On 28th January 2009 at about 3:00 pm, afire started in Woolworths Building (Holding Nakumatt Downtown Supermarket) along the Kenyatta and Kimathi streets junction, at the heart of Nairobi, It was not immediately established the cause of the fire. But from the eyewitnesses' the lights went out in the building causing a blackout. They flickered on and off again. It was closely followed by a loud explosion from downstairs. A ball of fire

engulfed the whole staircase forcing those in the upper floors to retreat. This was followed by a thick cloud of chocking smoke that engulfed the whole building. Those who managed to escape from the fire claimed that the doors and exists were closed by the supermarket staff in an effort to prevent looting. Meanwhile, as this went on, gas cylinders could be heard exploding from the ground floor of the building.

Half an hour later, in response to a distress call from the buildings tenant, the Nakumatt Holdings Limited, the city council of Nairobi's (CCN) Fire Brigade arrived at the scene. It was not until 4.00 pm, that the fire fighting commenced. The raging inferno lasted 12 hours despite the valiant efforts of police and Military to rescue victims trapped inside the smoke-filled premises.

Out of 48 persons reportedly missing, 28 were confirmed dead. Many bodies were charred and DNA testing only managed to identify a few.
Those who got injuries were admitted to various city hospitals, one of whom succumbed to the injuries.
(Nation and Standard Newspapers dates 29th to 5th February 2009.)

Sachang'wan fire tragedy

On 31 January 2009, more than 91 people were burnt to death after the oil tanker from which they were siphoning off petrol burst into flames near Molo town. Many more sustained life-threatening burns in the explosions near Jolly Farm on Nakuru-Eldoret highway at about 7.30 p.m. Among the dead were children from an orphanage, three GSU officers and women. Another 139 were rushed to hospital with severe burns, including the officers who were guarding the truck.

The tragedy occurred when a mob from Sachang'wan Trading centre, attempted to siphon fuel from a tanker that had veered off the road after the driver lost control. The oil tanker was carrying approximately 10000 litres of fuel at the time of accident. Moments later the tanker exploded in flames-engulfing hundreds of the residents near the accident scene. The fire covered an area of about 60 by 100 square meters. The majorities of the

injured sustained third degree burns of over 5 to 80% of their bodies and were admitted to various hospitals. The tanker explosion came barely four days after the tragedy in Nakumatt Downtown Supermarket.

The scene of the tanker was littered with charred human remains, shoes, containers, burn motorcycles and bicycles. Eye witnesses said that the fire broke out when an angry villager or irate person who was being asked by the Administration Police Officer (AP) to pay first before siphoning the petrol lit a match stick in a bid to light cigarette. Moments after arguing with the AP personnel whom the residents claimed were demanding a fee from those who wished to scoop petrol spilling from the tanker, a loud bang was heard and a huge ball of fire mushrooming around the tanker followed.
(Nation and Standard Newspapers dates 1st to 5th Feb 2009)

1.3 Human responses

Bird (1949) in his classification of risks in the event of fire, says that the panic risk is the most likely to be faced within a building containing crowds of people. However, according to the 'scientific psychological approach' one of the difficulties frequently encountered when discussing human responses during emergencies, is overcoming the widely held believe that "panic" is sufficiently accurate description of what people do during a fire emergency. Panic is assumed to be the automatic response to changes in immediate social or physical environment such as smell of smoke, smoke itself, absence of light, and a cry of an alarm or 'fire', particularly when people are a sleep or in a crowded area of a building.

The underlying assumption is that, as a behavioral response, panic is the inevitable, emotional and uncontrollable response to a fire emergency, but there's little evidence to suggest that human behavior is indeed unpredictable or governed by such stimulus – response, or animalistic, rules. Careful analyses of witness's statements following major fire disasters characterize the human response to be largely altruistic (Brian, 1980) and affiliative (Sime, 1983). Panic appears to be an exception to the rule, occurring only

when the occupants perceive their route to escape to be closing rapidly and their time to search for an alternative means of escape to be inadequate.

Wood (1972) carried out the first exploration of behavior in fires, his research based on questionnaire interviews of fire victims. His results illustrate that motivation to evacuate is related to the following variables.

Gender: according to Wood, women are more likely to evacuate immediately than men, who initially tend to fight the fire. This implies that decisions relate to social behavior and gender roles.

Knowledge of an escape route: He asserts that if people are a ware that an escape route exits, they are less likely to leave because they feel less threatened by the fire, thus the motivation to escape is only dominant, when other objectives, such as extinguishing the fire, are perceived as unattainable.

Intensity and spread of smoke: The presence and density of smoke is directly related to the level of perceived threat, so that smoke encourages people to leave. The perceptional relationship cited is believed to outweigh the physiological and spatial disorientation difficulties.

Previous experience of fire: people are less likely to leave if they have experienced a fire previously. It would appear that people who have learnt that they can cope with a fire threat believe they can pursue objective other than evacuation.

Training: The more training an individual has received, the more the person is likely to attempt to control the threat and thus less likely to leave. He further mentions that, the factor of training is important, but it's likely that fire training in occupancies such as hospitals will give individuals a set of organizational responsibilities to which they are responding, independently of the threat.

Direct threat perception: If a fire is judged to be extremely serious then those facing the threat are most likely to leave.

Wood hence concluded that behavior in fires is influenced by social roles and that different group of people displays distinctive patterns of response.
He was however criticized for failing to produce an account of how responses developed with respect to the changing fire conditions.

The Affiliative Model

Sime (1983) using witnesses' statements from victims of the Summerland Leisure Complex fire (Isle of Man, UK., 1973) provided strong evidence of affiliative behavior during fire evacuation. The model summarized the strong tendency exhibited by building occupants to move towards familiar people, such as family and friends and familiar places, such as their usual entrance route. Sime noted that affiliative behavior had other consequences in that, separated individuals responded quickly to cues, whereas intact family groups did not begin to evacuate, until there was a clear sign of the fire threat. He asserts that, a possible explanation may be that the social pressures of conformity operating within a group make the individual reluctant to evacuate, thinking that they may appear foolish should the cues represent a "false" alarm. There may also be a feeling of security gained from being a part of a group.

General Model of Human Behavior in Fires

Canter (1980) conducted open-ended interviews with fire victims which allowed them to follow a response strategy from the point at which an initial alerting cue was perceived, to the time when the sequence of behavior was concluded, by rescue or evacuation. An important theme which emerged from the data was the attempt to 'make sense' of what was actually happening throughout the various stages of the fire, that is, fire victims were engaged in behavior which sort to reduce the prevailing state of uncertainty arising from ambiguous perceptual cues (such as strange noises and unaccustomed behavior of others)

A second major theme has a risen from the work of Canter et all, which has argued that behavior in fire related to a 'role rule' model. This model postulates that people's conduct is guided by a set of expectations they have formed about their purpose in a particular context. The general framework formed by these expectations is known as their role. The activities in which they engage to fulfill their roles are guiding principles or rules. Canter et all. argue that when faced with a fire threat, an individual's behavior continued to be guided by the role-rule influences, which had been operating prior to the emergence of the threat.

Conclusion:

Individuals who find themselves in fire situations react differently, but mostly as (McGraw-Hill, 1992:3) reckon that threatened individuals do help one another to meet the challenge of a major fire. This notion also comes out in the affiliative model where Sime (1983) points out the strong tendency exhibited by occupants of a building to move towards familiar people, such as family and friends and familiar places, like in the case of the cited Seattle apartment fire where the five reported dead were found huddled together in a bathroom. For instance during the Kenyan Nakumatt inferno it was reported that "among the bodies recovered was that of a woman clinging on her dead child"
It may seem that, the individuals tend to seek security and comfort from one another.

Woods variable of Gender in his explorations of behavior in fires catches well the African context. Culturally, in Africa women will tend to rely on the men for help, even in a fire emergency. For instance, during the Nakumatt inferno, an attendant explained that a colleague went missing while helping shoppers out of the burning building. It would appear that his decision to risk his own life while helping others was guided or relates to social behavior and gender roles. This kind of helpless response was also demonstrated by who called her husband and told him that they were burning. (Daddy, we are burning!), the man may have been far but she believed that he would help. Social roles were also demonstrated by the shop attendants who at the threat of fire risked their lives by staying within the premises to perform their duty. They were accused of blocking the way as the occupants tried to escape the fire, a shopper narrated his brush with death,

as he explained that the attendant stopped him as he tried to dash to safety and asked him if he had stolen anything from the store "the shop attendant held me by the shirt and asked me if the reason I was running towards the exit was because I had stolen from the store."
(Nation paper Jan 31 2009: 3)

These kinds of responses live a lot to be questioned particularly in regard to the knowledge the individual's posses concerning behavior during fire emergency.

1.4 Problem statement

Human behavior is of great concern during fire emergencies. Fire victims behave differently during fire emergencies, this rages from screaming, making phone calls to people who could be very far at the time of the emergency and cannot help, crowding in a particular place of the building, and even to some extent, some people even try to help others while they are themselves exposed to the same risk. These and many other kinds of behaviors are demonstrated during fire emergencies. The question then is! What exactly do fire victims do during fire emergency? What knowledge do they have regarding fire emergencies? And could it be possible that the **actions** the individuals engage in associate with the **injuries** they sustain?

Previous mentioned models like Canter (1980) general model of human behavior, looked into human response from the point at which an initial alerting cue was perceived, to the time when the sequence of behavior was concluded. An important theme which emerged from the data was the attempt to 'make sense' of what was actually happening throughout the various stages of the fire, that is, fire victims were engaged in behavior which sort to reduce the prevailing state of uncertainty arising from ambiguous perceptual cues (such as strange noises and unaccustomed behavior of others).

In another study, conducted by Sime (1983), the model summarized the strong tendency exhibited by building occupants to move towards familiar people, such as family and friends and familiar places, such as their usual entrance route. Sime noted that affiliative

behavior had other consequences in that, separated individuals responded quickly to cues, whereas intact family groups did not begin to evacuate, until there was a clear sign of the fire threat.

But still the question remains, what knowledge do fire victims have concerning behavior during a fire emergency? For instance why should they try to make sense of what is happening instead of vacating the premise? Why should they move towards familiar people and places such as their usual entrance route instead of maybe taking the easiest route out? Of what impact are such mentioned responses? How do this kind of responses and behaviors associate with the injuries sustained during fire emergencies?
National Fire Protection Association among many other acts provide standard guidelines in regard to fire operations; for instance, the Factories Act 1961, the offices, shops and Railway Premises Act 1963 and Fire Precautions Act all require that , under certain conditions, adequate means of giving warning in case of fire must be provided.

Underdown (1971) says it's a legal requirement every employee should be familiar with the exit routs from a building and the only satisfactory way to ensure this knowledge is to prepare an evacuation scheme leading to regular evacuation practices of both the primary and secondary ways out of the building (Fire drills). He continues to reckon that in order to maintain high degree of safety from fire it is necessary to take every opportunity of making people fire conscious. He further suggests that, new persons joining a company should be provided with clear instructions of how to behave in case of a fire emergency, more preferably within the first week of employment.

The training should cover the below:
Incase of a fire, Underdown (1971) recommends that one should sound an alarm immediately to enable everyone to get out in safety, after the alarm has been raised and no danger threatens and there is an immediate exit to safety, a small fire may be tackled with the nearest fire extinguisher, **provided** that the operator is between the fire and the exit. This is necessary because if the fire is not promptly extinguished the operator can then escape in safety, Underdown, further warns that, the argument of whether to tackle a

small fire first or raise the alarm, their should be no argument, the alarm must always come first.

In a fire scenario and only one person is present, it's very hazardous for that one person to attempt to fight a fire single handed. Under NO circumstance must a blazing object be moved either with the intention of carrying it out into the open air or throwing it out of a window because one could be seriously injured by the flames being driven back onto them and the fire is spread all along the route. The people should be informed the same rule applies to a fry pan on fire. The evacuation warning must always be treated as an indication of danger; the building must be evacuated immediately, by the nearest route.

In an emergency scenario, no one must run, because it tends to cause confusion and interferes with other people. If anyone trips and falls other people may be brought down, so causing danger and further confusion, leading to panic.

On no account should anyone go in the reverse direction to the general run of traffic, neither may they go to the cloak rooms because by doing so they put themselves in danger and certainly will delay the warden from reaching safety himself. Any sign of smoke is an indication of danger. The last person out of the room should always close the door, any door will tend to check the spread of fire, under no circumstance should a closed door be opened, not even a cupboard door to see whether there is a fire behind it. Otherwise a fire that has only been smoldering could suddenly obtain the air it has been lacking, and burst into flame almost with explosive violence.

From the proceedings of the symposium no 4 held at Watford College of Technology, Watford Herts on ninth and tenth of Apr 1969 it was found out that few people burn to death- majority are overcome first by smoke and hot gases which may leave the immediate fire area at a temperature in the region of 1000c. Although the gases will cool when mixed with the air in the building, they may still retain an intolerable temperature at some considerable distance a way from the fire, but even if cooled to a tolerable degree,

the concentration of carbon monoxide in the atmosphere will cause death within minutes and concentration more than this would be major life hazard in buildings full of smoke. (Movement of smoke on escape routes in buildings, 1969:2)

But the question is! Do people know how to behave in a building that has smoke? For instance within developing countries like Kenya, do most Companies take time to train new employees on behavior during fire emergencies?

Bird (1949) asserts that, occasionally, circumstances call for power of reasoning of which an individual may be incapable. Often a risk is taken deliberately without ill consequences following, the action may further be repeated perhaps more than once, giving a false sense of safety. Until one day the consequences of the action occur. For instance, an un-intelligent man may not realize the risk he runs by smoking while handling petrol, he may on the other hand realize there's a risk, take a chance, and find that no fire has resulted, hence continue to repeat the performance until he is burnt.

From Birds point of view, could it be possible that, for instance an individual who has previously successfully moved a blazing object either with the intention of carrying it out into the open air or throwing it out of a window may continue to repeat this act until one day they are burnt?

Why would one continually take a risk deliberately without considering the ill consequences following, the action?

Hence the questions still linger on, what knowledge do people have concerning behavior during fire emergencies?

What exactly do fire victims do during a fire emergency?
And how do the actions they engaged in associate with the injuries they sustain?

1.5 Key research questions

The study was guided by the following key questions:

1. What knowledge do the fire victims have concerning behavior during fire emergencies?
2. What do fire victims do during fire emergencies?
3. How do the actions they engage in associate with the injuries they sustain?

1.6 Objectives of the study

General Objective:

The general objective of this research is to study knowledge and behavior during fire emergencies.

Specific Objectives:

The specific objectives of this research include:

1. To establish the knowledge that fire victims have concerning behavior during a fire emergency
2. To find out what they did/did not do during the fire emergency
3. To determine how the actions they engaged in associate with the injuries they sustained during the fire emergencies.

1.7 Scope and limitation of the study

This research was conducted at Kenyatta National Hospital, among victims of fire incidences. The research sought to establish the knowledge fire victims have concerning behavior during fire emergencies,

What the fire victims did during the fire emergency and the study further sought to establish how the actions the fire victims engaged in during the emergency associate with the injuries they sustained.

1.8 Justification of the study

Fires happen anywhere, in our homes, at work, and outside. They can also be started in many ways. Fire emergencies are also highly associated with human activities like: cooking, smoking, careless use of fire, appliances like heaters and microwaves. Hence fire emergencies tend to revolve around the people, as such; it's of paramount importance to find out if the people therefore have the relevant knowledge of what to do and what not to do during a fire emergency.

From a disaster management point of view, it follows that, lack of information and knowledge increases once vulnerability during an emergency situation.
Vulnerability refers to the long term factors that affect the people's ability to respond to disaster events like fire or which make them susceptible to calamities.

Lack of appropriate knowledge on behavior during a fire emergency could lead to one engaging in the wrong kind of behavior, for instance: a small fire may be tackled with the nearest fire extinguisher, **provided** that the operator is between the fire and the exit. This is necessary because if the fire is not promptly extinguished the operator can then escape in safety, an individual lacking this kind of knowledge could fight a small fire while positioned away from the exit meaning if the fire gets out of control then the individual could be injured.

It is therefore important to find out the knowledge people have in regard to behavior during fire emergencies. This could be established by looking into what the fire victims did/did not do during the fire emergencies and do the actions engaged in associate with the injuries sustained in any way? And that is exactly what this research is set out to establish.

CHAPTER TWO: LITERATURE REVIEW

2.0 Emergency defined:

The primary purpose of any emergency response is to save lives, to prevent injury and protect property

An emergency is any situation in which the life or well being of a human being/population will be threatened unless an immediate and appropriate action is taken and which demands an extra-ordinary response and exceptional measures.

Emergencies can be classified into two:

- Personal emergencies
- Physical emergencies

Personal emergencies include; Serious assaults, armed offenders, bomb threat, death and serious injury, intruders, medical emergencies, missing child among many others. Whereas Physical emergencies include; fires, flooding, chemical spill, earthquakes, storms, volcanic eruptions and ash falls, power failure.

2.1 Fires

Throughout the centuries, man has tried to harness fire, first as a source of heat and light, then as a component in power and energy. One major triumph was the discovery in 1827 by John Walker (Stockton, England) of Lucifer's'-the friction match (a mixture of potassium chlorate, antimony sulfide and gum) But with increased use of fire came increased danger, with increased facility to produce fire came an increase in miss-use e.g. arson.

(Levinson J and Granot H, 2002: 131)

Fire is therefore no new thing, from the beginning of civilization man has used.fire for cooking, warmth and light, until comparatively recent times the majority of town dwellers have been compelled by economic circumstances to live in flimsy dwellings of timber frames in filled with water, feed or similar combustible materials and they have

been constantly aware of the danger which threatened their home if their precious fire should get out of hand.
(Bird E.L, 1949:23)

Langdon Thomas (1972) asserts that, Fire with the exception of Lighting, is man made and the risk of 'wildfire' is an unavoidable handicap of modern civilization. He continues to reckon that it's a true but unfortunate, cynicism that fires are caused by men, women and children and the higher our standards of living become, the greater appears to be the ever-present risk of an outbreak. This is not difficult to appreciate when one considers the modern materials, often highly flammable, the increase in pre-packed goods and the multiplicity of modern labor-saving devices and machines to smooth the passage of our daily lives, hence as an outbreak fire is greatly associated with people.
(Langdon Thomas, 1972:2)

Mankind posses a subconscious fear of uncontrolled fire which strongly conditions our daily habits, this fear and conditioning have been built up through countless generations of experience, resulting in an inherited behavior and sense of potential danger. In some persons the behavior and sense are weaker than in others. Occasionally, circumstances call for power of reasoning of which an individual may be incapable. Often a risk is taken deliberately without ill consequences following, the action may further be repeated perhaps more than once, giving a false sense of safety. Until one day the consequences of the action occur. For instance, an un-intelligent man may not realize the risk he runs by smoking while handling petrol, he may on the other hand realize there's a risk, take a chance, and find that no fire has resulted, hence continue to repeat the performance until he is burnt.

In fire prevention therefore as in other things, man really learns only by experience, fire experts know only too well the difficulty of making those who have never seen a fire appreciate risk.
(Bird E.L, 1949:51)

Hence, as total elimination of fire hazard in buildings is an unattainable object, mankind takes precautions to reduce the risk to a tolerable minimum and this includes, looking into various causes of fires and the necessary preventive measure, the various classes of fires and their extinction, different types of fire extinguishers and the appropriate extinction media. This research therefore takes a look into all the above mention areas, this chapter will further look into what should be done during a fire emergency and what should not be done during a fire emergency.

2.2 Classes of fire and their extinction

There are four main classes of fire; the classification is based on the precept of the fuel involved. These can be briefly highlighted as:

Class 'A': refers to fires involving ordinary combustible materials like, woods, papers and some plastic. According to Professor G. I Finch, F.R.S these are referred to as **Tinder**. Water solution extinguishers, are normally considered the most effective and these forms the most common fires in building structures especially in residential areas.
Wallace and Webber (2007) assert that class 'A' fires can be prevented through good housekeeping practices such as keeping all areas free of trash and the proper disposal of greasy rags.

Class 'B': this involves flammable liquids, gases and heavy lubricants for which blanketing is the most suitable method of extinguishment. (William J. J, 1958)
Wallace and Webber (2007) write that these class of fire can be prevented by never refueling a running or hot engine, storing flammables away from spark-producing sources and by always handling flammables liquids in well-ventilated areas.

Class 'C': these are fires that are ignited by electricity, such as may be caused by an overload wall outlet. Sometimes, the electricity is still present when you move in on the fire.
This kind of fires can be prevented by inspecting for worn or frayed electrical wires and promptly replacing them. Keep electrical motors clean and monitor them for overheating.

Always have a wire guard over hot utility lights to prevent accidental contact with combustibles.
(Wallace M. and Webber L, 2007:281)

Class 'D': this on the other hand involves combustible metals or metallic alloy elements with combustible metal components. Fires involving electrical components or equipment represent a special risk outside the usual scope of provision in buildings (Peter Burbbery. 1997:350)
Wallace and Webber (2007) assert that these fires are very difficult to extinguish and must be suppressed by use of a special fire fighting agent.

2.3 Fire extinguishers:
Fire extinguishers can be used to contain small fires. They lack the capacity to attack large fires. The content of the fire extinguisher determines the type of fire for which it's best suited and each extinguisher has a distinctive color that identify the class of fire for which its suited.
The types of fire extinguishers include:

Class A extinguisher use water to cool the material below its ignition temperature. This deprives the fire of its fuel; this kind of extinguisher **should never** be used on electrical fire! Electricity from the source that started the fire may still be active and travel up the stream of water and injure the extinguishers operator. The extinguishers are usually red in color and should be used on class 'A' fires only

Class B extinguishers use foam, carbon dioxide, or a dry chemical to smother grease flammable liquid fires. This deprives the fire of its oxygen. The extinguishers are usually black in color and should be used on class 'B' and 'C' fires

Class C extinguishers use carbon dioxide, dry chemical, or halon to smother the fire whereas

Class D extinguishers use a dry powder specifically for metal fires. In most cases, the powder dissipates the heat form the burning material thus cooling it below its combustion level.

An **ABC**-rated extinguisher is a multipurpose dry chemical powder extinguisher that is good for class A, B or C fires. However, the extinguishing agent may leave a residue that is mildly corrosive and potentially damaging to electronic equipment. The extinguishers are usually blue in color and can be used on all classes for fires.
(Wallace M. and Webber L, 2007:281)

2.4 Classification of combustible materials:

Combustible materials have been classified by Professor G.I Finch, F.R.S as tinder, kindling and Bulk fuel.

Tinder: refers to the materials ignitable by the domestic match and which will thereafter continue to burn on their own e.g. textiles, cardboard, paper, celluloid (volatile combustible liquids like petrol, and easily melting fats can also be classified as tinder). Class 'A' fires are usually regarded as tinder.

Bulk fuel: this includes the heavier constructional tinder like joints, floorboards, rafter, compressed or baled books such as bales of textiles and paper including books.

Kindling: includes materials which ignite and burn if associated with sufficient tinder, but in which a match will not produce a continuing fire e.g. thin match boarding and plywood. Bird (1949) asserts that all buildings which contain tinder and kindling are inherently fire hazardous.

2.5 Fire extinction media

Fires are mainly extinguished by removing combustible materials, cooling, excluding oxygen or inhibiting the process of combustion. Fire extinguishers mainly act as cooling or excluding oxygen. Some of the principle media used to extinguish fires in buildings includes:

Water: water is cheap, readily available and very effective as a cooling agent. It's particularly appropriate to class 'A' fires. If however, oil is present, use of water may spread the fire rapidly, this is militated by providing it in spray form. Water can also be used against some types of class 'B' fires.

Foam: this consists of water with a foaming agent. They act by excluding oxygen. Different foaming agents can produce different densities of foam and different chemical properties.

Gaseous media: this includes halogens, nitrogen and carbon dioxide. These gases are stored at high pressure usually in liquid form. On discharge, they vaporize and will extinguish fire when they reach an appropriate concentration. All these media are clean and non-conductive, they do not damage materials or equipment hence, can safely be used on electrical equipment. They are of advantage because of their ability to fill enclosed spaces which other media might not be able to penetrate.

Dry powder: this is usually powdered bicarbonate of soda, but other chemicals are used for particular application and they are available for all classes of fire. Most powders are non-toxic and cannot affect visibility

(Peter Burberry, 1997:351)

N/B

The class or nature of fire will usually determine the kind of extinction media to be used.

2.6 Causes of fires and preventive measures:

Bird (1949) in his study reckons that sometimes it's hard to establish the cause of a fire, sometimes the fire destroys most of the evidence and in other scenarios the careless man does not like to admit his carelessness, the criminal on the other hand will not reveal his crime, and many other fire scenarios the witnesses are rarely present at the moment of outbreak. The below are however recorded to be the main causes of fires:

Electrical installations and apparatus: According to Underdown (1971) the risk of an outbreak of fire due to insulations and connected appliances can be caused by:

- Over current
- Short circuit
- Earth leakage faults

These can however be prevented by the installation of fuses and circuit breakers, he adds.

In 1943, the first nation-wide statistical system of fire reporting, under the control of staticians was set up in Great Britain. It was designed jointly by the Fire Service Department of the Home Office and the Fire Research Division of the Ministry of the Home Security. The statistics revealed that Electrical apparatus was responsible for 14 percent of the total fires reported. Fire caused by apparatus – cookers, kettles and irons- amounted to three-fifths of them. It was noted that practically all such fires are cased by carelessness, distraction of attention or a similar human failing.

Defects of installation on the other hand accounted for two-fifth of all electricity-caused fires. However it was noted that this mostly the affair of the architect, builder or maintenance engineer; though all-too-prevalent practices of householders using a fuse of too high rating and installing amateur wiring should no be overlooked.
(Bird E.L, 1949:57)

Prevention of such fires includes: testing the electrical installation, which should be done under the supervision of a properly qualified electrical engineer, any electrical installation should be completely tested before being taken over by the company, after which a

complete test should again be carried out within five years, testing should take place every two years until the installation is twenty years old.
(Underdown G.W, 1971:66)

Still in regard to electrical installation and apparatus FEMA offers below preventive measures:
First, have the electrical wiring in your residence checked by an electrician, all extensions cords should be inspected for frayed or exposed wires or loose plugs. Make sure outlets have cover plates and no exposed wiring, also make sure wiring does not run under rugs, over nails, or across high-traffic areas. Still important is to ensure that you do not overload extension cords or outlets. If you need to plug in two or three appliances, get a UL-approved unit with built-in circuit breakers to prevent sparks and short circuits.
Make sure insulation does not touch bare electrical wiring.

More generally is to install multipurpose A-B-C-type fire extinguishers within residence and all occupants taught how to use them. Consider installing an automatic fire sprinkler system in your residence. Ask your local fire department to inspect your residence for fire safety and prevention.

Naked flames and sparks: This constitutes the greatest cause of domestic fires and includes smoking and smoker materials. Underdown (1971) asserts that prohibition of smoking, unless it can be absolutely enforced, is not sufficient. Even in mines containing explosive gases and in which the danger of naked flames is well known to miners, men have still been known to smoke. Prevention therefore entirely rests on the education of the people to the dangers of smoking and the simple measures of prevention that should be taken
(Underdown G.W, 1971:76)

From the previously mentioned first nation-wide statistical system of fire reporting, the habit of smoking originated 10 percent of the whole. It was further reported that some are certainly caused in dwellings by smoking in bed; the smoker is often half a sleep in

surroundings consisting entirely of tinder. Others are caused by ignorant or reckless workmen in industrial premises and warehouses.

In one plant that was inspected by a federal inspector housekeeping conditions were unusually good. The building and its surroundings were immaculate, and for this reason the inspector who had previous experiences in similar instances, was interested in finding that smoking was strictly prohibited throughout the plant and the lunches were to be eaten only in lunchrooms provided at sections of the building removed from the portions devoted to manufacturing. When the inspector examined the fire hose newly installed in a smoke-proof stair tower, the management was startled to find that upon upending the nozzles of the fire hose more that a peck of cigarette butts was shaken out. Bites of food-sandwiches, fruits etc. obviously employees "sneaking a smoke" in the stair tower had no place to dispose of incriminating evidence.
(Bird E.L, 1949:57)

From the proceedings of the symposium no 4 held at Watford College of Technology, Watford Herts on ninth and tenth of Apr 1969 it was found out that few people burn to death- majority are overcome first by smoke and hot gases which may leave the immediate fire area at a temperature in the region of 1000c exit the building. Hence FEMA reckons that properly working smoke alarms decrease your chances of dying in a fire by half and the following should be done:

Place smoke alarms on every level of your residence. Place them outside bedrooms on the ceiling or high on the wall (4 to 12 inches from ceiling), at the top of open stairways, or at the bottom of enclosed stairs and near (but not in) the kitchen. Test and clean smoke alarms once a month and replace batteries at least once a year. Replace smoke alarms once every 10 years.

Matches and Smoking greatly contribute to naked flames and sparks as illustrated previously, hence FEMA further recommends that

Matches and lighters should be kept up high, away from children, and, if possible, in a locked cabinet and more responsibly, **never** smoke in bed or when drowsy or medicated. Smokers should be provided with deep, sturdy ashtrays. Douse cigarette and cigar butts with water before disposal

Spontaneous ignition: this refers to ignition by chemical reaction. Undergown (1971) says that three conditions are required for a chemical reaction to take place.

- Sufficient heat to commence or ignite combustion
- Conditions under which any heat produced cannot be dispersed more quickly than it's being produced.
- Materials that are subject to spontaneous ignition

Flammable Liquids: Grimaldi and Simonds (2001) note that fires in flammable liquids like industrial solvents, alcohol or petroleum products are best prevented form occurring by controlling the accumulation of flammable vapor from these materials. Some flammable liquids will give off flammable vapor only after being heated. They add that, flammable liquids become fire hazards when their vapors reach flammable or explosive concentrations in air. Some flammable liquids, gaso line for instance are hazardous at normal temperatures. Materials like Stoddard Solvent, kerosene or fuel oil will not liberate flammable vapor until they are heated to temperatures above the normal air temperature, usually above 100f.

Underdown (1971) asserts that good housekeeping used in connection with fire precautions means the removal of all inflammable materials or maintaining it under safe conditions.

Still as a preventive measure FEMA recommends that never use gasoline, benzine, naptha, or similar flammable liquids indoors. Store flammable liquids in approved containers in well-ventilated storage areas, and never smoke near flammable liquids.

Discard all rags or materials that have been soaked in flammable liquids after you have used them. Safely discard them outdoors in a metal container.

Insulate chimneys and place spark arresters on top. The chimney should be at least three feet higher than the roof. Remove branches hanging above and around the chimney

Portable lamps: These are a frequent source of trouble, the common causes being as follows:

- Lead wires damaged
- Lamp taken into an atmosphere where there is an explosive dust, gas or vapor
- Lamp placed on flammable material (even with a guard)
- Lamp used in a damp or wet situation(this may also cause a risk of shock)
- Bulb loose in socket and causing arcing
- Bulb easily broken.

Prevention of fires resulting from portable lamps include: installing voltage reducing transformers and earth leakage circuit breakers. In addition, all wandering leads and portable lamps and tools should be kept in a locked store under the control of a store keeper and only issued by him against the requisition signed by a responsible person.
(Underdown G.W, 1971:62)

Cooking apparatus: cooking apparatus, both domestic and industrial, provides a large number of outbreaks. The majority of these fires are caused by fat and oils boiling over or "spitting" because of water contamination. Asbestos blankets or some of the new non-combustible materials should be provided in all kitchens, people should be carefully instructed that if a pan or saucepan of fat catches fire, on no account may they pick it up, attempt to remove it or pour water on it. The first thing to do is to turn off the heat and then the best thing is to cover the pan with a saucepan lid or if that is not available cover it with a damp cloth. If the contents of an oven become overheated and ignite, turn off the heat; keep the oven door shut until a shovel or a scoop full of dry sand or earth, asbestos powder fire extinguisher can be discharged into the oven.
When opening the oven door for this purpose, do not face the oven or stand over it but crouch behind the door, using the door as a shield.
(Underdown G.W, 1971:62)

Non- accidental causes of fire:

The term "non-accidental" causes have been coined to cover a number of causes of outbreaks of fire which are either malicious, deliberate or of such gross carelessness as to equally culpable.

Oliver and Witson, (1968} asserts that under the term "non-accidental fires" can be listed such items which could be described as willful neglect, which infers neglect to maintain fire precautions deliberately so that if fire does occur it will be serious.

Non- accidental fires include:

Children playing with matches: matches as a form of ignition provide many non-accidental fires, and in the hands of children and young persons they are a positive menace. The only safeguard is to keep unaccompanied children under careful observation or, if they have no right to be on the premises, they should be promptly removed. Good security therefore is the only answer to this trouble.

(Underdown G.W, 1971:85)

Bonfires and rubbish fires: this fires technically said to be "burning under control" do from time to time get out of control. The site of rubbish fires should be carefully selected at least 60 ft (say 20m) away from doors or windows that might be open.

Rubbish fires, incinerators and bonfires should never be left unattended and, if not completely burnt out and cold at the end of the day, they should be doused with buckets of water while the ashes are being turned over.

Paraffin should never be thrown on to a fire to revive it, and petrol will almost always flash back to the container with serious results, probably burning the operator. If it is necessary to assist a fire burn or to revive a dying fire, a piece of rag soaked in paraffin will be more successful and much safer.

(Underdown G.W, 1971:85)

Arson: This also constitutes "non-accidental" fires, it entails deliberate burning of property, but it is not described as such until a court has found a case proved.

Johnson and Stollard (1994) in their studies asserts that Arson can be classified into two broad categories according to one insurance company. The first covers deliberate fire raising from gratification , revenge or racist or political ends and the arsonist in this case may be worried a bout concealment of the crime. The second case can be described as Fraudulent Arson, where the arsonist is hiding a loss, attempting to claim insurance benefit by making the fire ignition look accidental or trying to conceal a crime.
(Stollard Paul and Johnson Lawrence, 1994:37)

2.7 What to do/not do during a fire Emergency

Upon discovery of fire or suspected fire, Underdown (1971) says that the important point is to sound the alarm immediately to enable everyone to get out in safety.
If there is any doubt whether it's a fire or not, there must be no delay in trying to find out. He warns that there should be no investigation for this purpose, but the alarm must be sounded immediately.
The evacuation warning must always be treated as an indication of danger; the building must be evacuated immediately, by the nearest route Stay out once you are safely out. Do not reenter.

Small fires: frequently there are arguments as to whether a small fire should be tacked first or the alarm raised first; Underdown says that there should be no argument. The alarm must come first because there can be no definition of what constitute a small fire or the conditions under which it may occur. US Fire Administration recommends that a fire extinguisher can be used to put out small fires, adds that water can be used if the fire is not electrical. Further warns that Do Not try to put out fire that you can't control.

Underdown, affirms that, a small fire may be tackled with the nearest fire extinguisher, provided that the operator is between the fire and the exit. This is necessary because if the fire is not promptly extinguished the operator can then escape in safety , he further asserts

that, in a fire scenario and only one person is present, it's very hazardous for that one person to attempt to fight a fire single handed.

Big fires: the US Fire Administration advises that, if there's a fire that is too big to put out, leave the building immediately. You might not have much time before the fire spreads, so don't even stop to call for help, once you're outside and safe then you can seek help like calling the brigade. Incase of a building with many people like an office, Underdown (1971) reckons that, no one must run, because it tends to cause confusion and interferes with other people. If anyone trips and falls other people may be brought down, so causing danger and further confusion, leading to panic.

On no account should anyone go in the reverse direction to the general run of traffic, neither may they go to the cloak rooms because by doing do they may put themselves in danger and certainly will delay the warden from reaching safety himself.

Smoke: any sign of smoke is an indication of danger, Underdown, says there must be no delay in trying to find out, there must be no investigation, sound the alarm and vacate the building immediately, during the Kenyan, Nakumatt Inferno, it was reported that, a shop attendant noticed smoke coming from the generator, and went to check just when it exploded.

The US Fire Administration advices that if there is smoke in your house, stay low to the ground as you're leaving. Smoke is very dangerous to breathe and difficult to see through. Since smoke naturally rises, you should crawl on your hands and knees out From the proceedings of the symposium no 4 held at Watford College of Technology, Watford Herts on ninth and tenth of Apr 1969 it was found out that few people burn to death- majority are overcome first by smoke and hot gases which may leave the immediate fire area at a temperature in the region of 1000c exit the building.

Closely related to smoke are **closed doors**: Underdown asserts that the last person out of the room should always close the door, any door will tend to check the spread of fire, under no circumstance should a closed door be opened, not even a cupboard door to see

whether there is a fire behind it. Otherwise a fire that has only been smoldering could suddenly obtain the air it has been lacking, and burst into flame almost with explosive violence.

Still in regard to closed doors FEMA asserts that first check closed doors for heat before you open them. If you are escaping through a closed door, use the back of your hand to feel the top of the door, the doorknob, and the crack between the door and door frame before you open it. Never use the palm of your hand or fingers to test for heat - burning those areas could impair your ability to escape a fire (i.e., ladder

Incase of a hot door, FEMA recommends that do not open. Escape through a window. If you cannot escape, hang a white or light-colored sheet outside the window, alerting fire fighters to your presence. If the doors is cool, open slowly and ensure fire and/or smoke is not blocking your escape route, if your escape route is blocked, shut the door immediately and use an alternate escape route, such as a window. If clear, leave immediately through the door and close it behind you. Be prepared to crawl. Smoke and heat rise. The air is clearer and cooler near the floor.

Blazing objects, Underdown warns that under NO circumstance must a blazing object be moved either with the intention of carrying it out into the open air or throwing it out of a window because one could be seriously injured by the flames being driven back on to them and the fire is spread all along the route, same rule applies to a fry pan on fire.
If your clothes catch fire, do NOT run. This could make the fire spread more quickly. Instead, stop, drop, and roll! In other words, stop, drop to the ground, cover your face with your hands, and roll back and forth until the fire is put out.

In practicability, what people do or don't do during a fire emergency is what this research is set to find out but meanwhile will look into the various theories whose application may provide a framework for addressing human behavior during fire emergency.

2.8 Theoretical framework:

A theory is asset of interrelated concepts, definitions or propositions that present a systematic view of phenomenon by specifying relations among variables in order to explain or predict the outcome of the phenomenon.

(Kerlinger, 1964:11)

Abraham (1992) defines a theory as a way of making sense of a disturbing situation so as to bring a bout favorable change.

2.9 Disaster Crunch Model:

The term disaster may be defined in general as the occurrence of a sudden or major misfortune which disrupts the basic fabric or normal functioning of the society or community.

(Fritz, 1961: 14)

Disaster is also defined as an event, series or a process which give rise to casualties and/or damage, or loss of property, infrastructure, essential services and means of livelihood on a scale which is beyond the normal capacity of the affected community to cope un-aided.

(Westgate, 2006: 6)

Disaster is further defined as an event that carries extensive destruction, death or injury and that produces widespread community disruption and individual trauma

(Gartsough and Myers, 1987:48)

Disasters are classified as either man-made or Natural, its however argued that Natural disasters have elements of human involvement, its argued that natural phenomenon which is a physical event does not affect human beings, however when the Natural phenomenon happens in a densely populated area then it becomes a hazardous event, when the hazardous event affect a large no of people e.g. property damage then it's a natural disaster.

In an area where there's no human interest Natural phenomenon does not constitute hazards or disaster, humans cant control Natural phenomenon **but** can ensure Natural events are not converted into disasters by their own actions e.g. desertification(it's a human induced natural hazard). The argument therefore is that if human actions can cause or aggravate the effects of natural phenomenon, then they can also eliminate or reduce them.

Davis and Wall (1992) in their disaster Crunch Model, asserts that a disaster only happens when a hazard like fire impacts on a vulnerable society, a natural phenomena by itself is not a disaster. The argument here is that trigger evens are always blamed when there is a disaster, yet the underlying cause is the unsafe conditions which make people vulnerable.

Vulnerability refers to the long term factors which affect the people's ability to respond to events or which make them susceptible to calamities.
For instance lack of information among other factors creases vulnerability, and as the model states, when vulnerability meets a hazard then a disaster like loss of life and property strikes.

The model continues to verify that, vulnerability however is not in isolation, they in turn are caused by dynamic pressures like lack of education and training, lack of ethical standards in public life and population expansion among others. The dynamic pressures are also not in isolation, the model continues to clarify that there are also other underlying causes to unsafe conditions that people find themselves in, like fundamental ideologies on which the society is built which among many include social and economic systems.

Hence, to minimize the destructive consequences of such hazards, serious measures are necessary to address the underlying causes that promote vulnerability. Fire on its own does not constitute a disaster but may only precede a disaster due to lack or capacity to address the unsafe conditions created by dynamic pressures in the sociology like lack of information of what to do during a fire emergency.

2.10 Chaos Theory:

The dictionary definition of chaos is turmoil, turbulence, primordial abyss and un-desired randomness. Chaos also refers to the question of whether or not it's possible to make good long-term predictions a bout how a system will act. A chaotic system can actually develop in a way that appears very smooth and ordered.
(Mendelson and Blumenthal, 1985)

According to Bomer (1988) chaos is the irregular, uncertain discontinuous aspect of change within the confines of a patterned whole i.e. there are those events we cannot predict in an organizational life and even in our desire to create order and control, the situation and events always step a head of us. He further maintain that, as a qualitative study, chaos theory investigates a system by asking the general characters of its term behavior, rather than seeking to arrive at numerical predictions about its exact future state. I.e. disaster and emergency situations epitomize the unpredictability or the non-linearity of human evens. Many events in organizational life can be predicted but not disasters.

Chaotic behavior appears extremely disorderly and a symbol or orderliness does not exist. Chaos theory explains movement from order to disorder. It was what organized systems degenerate to if they do. Chaos is therefore the synonym of entropy. Chaos theory is relevant to the study of emergencies since the

When a fire breaks within a building, say an office, business place or even a house, it is normally business as usual, everything get disrupted and what was previously called an organized system, degenerate. For instance, since the Nakumatt inferno took place, the supermarket that was always filled with people has never been able to function till date. More particularly during afire emergency, people will not walk out of the building normally as they should, during the Nakumatt fire, some people jumped out through the roof, and in the case of St. Anthony's Hospital fire, About 60 of its occupants were saved, some by jumping to mattresses spread on the ground and others by ladders. Eighteen of the inmates were killed leaping from windows of the building, many others were

seriously injured. According to this theory therefore, orderliness does not exist, especially during an emergency.

2.11 Conclusion:

The above theories hence provide a framework for addressing human behavior during fire emergency, but the questions still linger on, do the people have the knowledge and information about behavior during a fire emergency? What do fire victims do during a fire emergency? And how do the actions fire victims engage in associate with the injuries sustained?

And that is what this research is set to find out.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Research Design

A research design guides researchers in collecting, analyzing and interpreting observed facts.

This was a descriptive study; a descriptive study is a fact-finding investigation which aims at providing adequate interpretation of a phenomenon or phenomena. This study on the general looked into knowledge and behavior during fire emergency and in specific the study looked into the knowledge fire victims have regarding behavior during fire emergencies, what fire victims do during the fire emergency and further the study established how the actions engaged in during fire emergencies associate with the injuries sustained.

3.1Techniques of data collection

For each research method, there are techniques used to collect the data, and each technique has a related tool used to pick data.

This is normally determined by the nature of the research, besides factors like time, accessibility and cost limitations which also determine the choice of methods used.

Structured Interview and observation techniques were used to collect data from the patients of fire.

3.2 Tools of data collection:

This study mainly used structured interviews and structured observation to collect data from the victims of fire admitted at the Kenyatta National Hospital

Structured interviews:

A set of predetermined questions were used to collect the primary data from the victims of fire. The action component in particular was measured by asking respondents questions about their past behaviors during fire emergencies and future behavior towards the same. The future aspect was paramount in measuring the level of knowledge and information the respondents had a bout behavior during fire emergencies.

This research realized that, the respondents may not be in a fire situation again, hence hypothetical situations were specified and respondents asked questions about how they would act in those situations, this enabled the research to establish the level of knowledge the respondents had in regard to behavior during fire emergency.

Depth of knowledge was measured with an index of the number of statements about the same situation; the same question was paraphrased to determine whether the answer remained the same.

The **behavioral** aspect on the other hand was captured by asking the respondents what they did or did not do during the fire emergency; where the respondents were at the time of the emergency and the timing of their response.

Unstructured observation

The injuries the fire victims sustained during the emergencies were observed, this research realized that some injuries were in sensitive places which could not be observed and hence observation tool only applied where possible.

3.3 Unit of analysis and observation

According to Baker (1994:102) a unit of analysis refers to the social entities whose characteristics are the focus of the study. As such, units of analysis can be individuals, social roles, behaviors and actions among others.

The study focused on victims of fire emergencies admitted at Kenyatta National Hospital in ward 4D, victims both male and female aged 18 years and above were interviewed. The study sort to establish the knowledge fire victims have in regard to behavior during fire emergency. The study further sort to establish which actions the victims engaged in during the emergencies and how their actions associates with the injuries sustained.

3.4 Sources of data

Primary data:

Primary data refers to the first information that the study seeks to obtain from the respondents. This was a descriptive research aimed at collecting data about knowledge and behavior during fire emergencies, and the respondents of this study were fire victims admitted at the Kenyatta National hospital in ward 4D, as such the study mainly relied on primary data collected from the fire victims.

3.5 Sampling Design

Purposive method of Non-Probability Sampling was employed. In purposive sampling the researcher chooses the sample based on who they think would be appropriate for the study. The study sort to establish the knowledge fire victims have concerning behavior during a fire emergency, which actions they engaged in during the emergency and how the actions associate with injuries sustained. Hence only people who had been vulnerable to fire emergencies were considered appropriate for the study.

Kenyatta National Hospital is currently the largest referral and teaching hospital in the country, where all emergency cases within the vicinity of Nairobi town are rushed, this research hence found Kenyatta hospital to be the only possible place where potential respondents to this study could be accessed. Over a period of one year, structured interviews were periodically conducted among 77 different patients of fire admitted in ward 4D of Kenyatta National Hospital. Each patient was interviewed only once.

The fire patients in the Burns Unit of K.N.H were not interviewed as prior promised. Patients in this ward are not in a stable condition and hence not accessible for interviews, once the patients become more stable, they are moved toward 4D where they continue to recuperate, all fire victims admitted in Ward 4D at the time of research were interviewed.

A set of predetermined questions were used to collect the primary data from the patients of fire. Unstructured observation was also used to observe the injuries the victims sustained, this research realized that some injuries were in sensitive places which could not be observed and hence observation tool only applied where possible.

3.6 Data analysis

The responses to specific questions were summarized, coded and categorized using common themes and phrases relevant to the research questions. The data was then entered into the computer for analysis using Statistical Package for Social Sciences (SPSS). The data has been presented in frequency tables and Cross-tabulations tables.

3.7 Site Description

Kenyatta National Hospital is situated in Nairobi; off Mbangathi road, it is the oldest hospital in Kenya. Founded in 1901 with a bed capacity of 40 as the Native Civil hospital, it was renamed the King George VI in 1952. It was further renamed Kenyatta National Hospital after Jomo Kenyatta following independence from the British in 1963. It is currently the largest referral and teaching hospital in the country. The hospital covers an area of 45.7 hectares and within the KNH complex are College of Health Sciences (University of Nairobi); the Kenya Medical Training College; Kenya Medical Research Institute and National Laboratory Service (Ministry of Health).

KNH has 50 wards, 22out-patient clinics, 24 theatres (16 specialized) and Accident & Emergency Department. Out of the total bed capacity of 1800, 209 beds are for the Private Wing. There is a Doctors Plaza consisting of 60 suites for various consultant specialties. The hospital offers a wide range of diagnostic services such as Laboratories, Radiology/Imaging and Endoscopy among other specialized services. Sometime, the average bed occupancy rate goes to 300%. In addition, at any given day the Hospital hosts in its wards between 2500 and 3000 patients. On average the Hospital caters for over 80,000 in-patients and over 500,000 out-patients annually.

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

4.0 Introduction

This Chapter presents the findings of the study; the findings are further discussed in light of the study objectives.

The data was collected with the objective of looking into knowledge and behavior on fire emergencies among fire victims at Kenyatta National hospital.
In specific the study sought to establish the knowledge fire victims have concerning behavior during a fire emergency, further the study sought to find out what fire victims do during fire emergencies and lastly to determine how the actions fire victims engage in associate with the injuries they sustain.

4.1 Overview of Kenyatta National Hospital

Kenyatta National Hospital is currently the largest referral and teaching hospital in the country, where most emergency cases within the vicinity of Nairobi town are treated. Hence this research found Kenyatta National hospital to be the only possible place where victims of fire could be accessed.

As earlier mentioned in the Site Description, K.N.H has 50 wards among which ward 4D is specifically for fire Patients, besides Ward 4D, there is a Burns Unit where patients with the highest degree of burns are admitted, patients in this Unit are not in a stable condition and hence were not part of this research work. On becoming more stable, patients admitted in the Burns Units are transferred to Ward 4D where they continue with treatment and Observation. Within Ward 4D there are several rooms where the patients are admitted, there are rooms for female, males and also Children. Over the time of Periodic Interviews, all patients present and willing in Ward 4D were interviewed, except children and patients below the age of 18 years.

4.2 Demographic data:

Fire emergencies remain a harsh reality within the society; people's lives and property continue to be threatened unless an immediate and appropriate action is taken. Both governmental and non governmental organizations have been active in offering relieve and rehabilitation to the victims of fire, but the organizations are challenged to be more proactive than just reactive.

This study observed people who were victims of fire, meaning therefore they were already vulnerable to the hazard. Vulnerability refers to the long term factors that affect people's ability to respond to disasters or factors which make them susceptible to the calamity. Vulnerability precedes and contributes to the severity of a disaster like fire; if the level of vulnerability is overwhelming then response does not work.

In addition to the response, recovery from the disaster is also of great concern, while restoring normalism; the hazard victims should be made better than they were so that if the disaster strikes again, they are able to deal with it in a better way.

Of factors that influence disaster response and recovery include, age, social support, education and gender. The researcher hence sought to gather demographic data of the respondents and the findings are as tabled below:

Table1: Demographic data of respondents:

		Frequency	Percentage (%)
Gender	Male	46	59.7
	Female	31	40.3
	Total	77	100
Marital Status	Married	37	48.1
	Single	39	50.6
	Separated	1	1.3
	Total	77	100
EDUCATION	Primary	45	58.4
	Secondary	30	39.0
	Post-Secondary	2	2.6
	Total	77	100
AGE	18-24	31	40.3
	25-29	20	26.6
	30-34	10	13.0
	35-39	7	9.1
	40-44	3	3.9
	45-49	2	2.6
	50-Above	4	5.2
	Total	77	100

4.2.1 Gender:

Out of 77 respondents, 59.9 percent were male while 40.3 percent were female; this confirms the argument by scholars that more men are more likely to burn during a fire emergency than women.

Wood (1971) argues that in a fire emergency, women are more likely to evacuate immediately than men, who initially tend to fight the fire, this implies that decisions relate to social behavior and gender roles.

Within the African context and more particularly in Kenya, women will tend to rely on the men for help, even in a fire emergency. For instance, during the Nakumatt inferno one shop attendant explained that his male colleague, went missing while helping shoppers out of the burning building. It would appear that his decision to risk his own life while helping others was guided or relates to social behavior and gender roles.

4.2.2 Marital Status:

Out of 77 respondents interviewed 50.6 percent indicated single, 48.1 percent were married while 1.3 percent were separated, none of the respondents indicated to be widowed or divorced. Hence to indicate that single people burn more during a fire emergency as compared to the married people.

Of factors that influence disaster recovery is the social support from the family, without such kind of support one does not recover fully from the disaster and hence when it strikes again, one remains vulnerable. Then the question arising from the above data would be, what kind of support do the single people receive during hazards?

4.2.3 Education:

Out of 77 respondents interviewed 58.4 percent indicated primary school education as their highest level of education, 39.0 percent indicated Sec school, as their highest level of education, while 2.6 percent indicated Post Secondary Education as their highest level of education. None of the respondents indicated that they had no education or University level as their highest level of education.

From the data collected, all the respondents had some sort of education, with the majority indicating primary school as the highest level of education. Though having been to school, the study revealed that respondents did not have knowledge concerning behaviour during a fire emergency. This then leaves the t impression that the education system does not expose people to knowledge on hazards like fires, hence the people remain vulnerable to such hazards.

4.2.4 Age:

Out of 77 respondents interviewed, 40.2 percent indicated that they belonged to the age gap of 18-24 years, 25.9 percent indicated 25-29 as their age gap, 12.9 percent indicated 30-34 as their age range, 9.1 percent indicated 35-39 yrs of age range, 3.9 percent indicated the age gap of 40-44yrs, and 2.6 percent indicated the age range of 45-49yrs, while 5.2 percent indicated that they were above 50yrs.

In his classification of risk during a fire emergency, Bird (1949) mentions the Infirmity risk which refers to the risk that caters for the aged, be-ridden, physically or mentally handicapped and very young children. However, the study established that (40.3%) of fire victims are of the age range of 18-24 years. Hence to imply it's not only children, the elderly and sick people who are vulnerable during the emergency.

The question then would be, do the systems we have expose people to knowledge on hazards?

4.3 What fire victims do during the fire emergency:

To achieve the above objective, the researcher sought to find out what the respondents did during the fire emergency. Pre-determined questions were asked, in regard to where the respondents were at the time of the emergency, what caused the fire, the actions they engaged in and what prompted the kind of response. The kind of help received was taken note of and the kind of injuries the patients sustained was also noted as discussed below.

4.3.1 Place of emergency:

Fire emergencies happen everywhere, in our homes, at work and even outside. Fire hazards present themselves differently in different places. Fires can also be started in many ways, but in most scenarios fires happen in residential places and the cause of the fire is mostly associated with human activities like cooking, smoking, careless use of fire and appliances like microwaves and heaters.

Langdon Thomas (1972) asserts that fire with the exception of Lighting, is man made. He continue to reckon that fires are caused by men, women and children and the more our standards of living become, the greater appears to be the ever-present risk of an outbreak. Hence the researcher sought to determine where most fire emergencies take place, the respondents were asked to indicate where they were at the time of the emergency and the responses as indicated in the table 2 below:

Table 2: Place of Emergency:

Place of Emergency	Frequency	Percentage (%)
House	51	66.2
Work place	13	16.9
Road	9	11.7
Social Place	4	5.2
Total	77	100

Out of the 77 respondents interviewed, 66.2 percent of the respondents indicated that they were in the house at the time of the emergency. 16.9 percent were at the workplace, 11.7 percent were walking on the road while 5. 2 percent were caught up while in the social places as indicated in the table above. The data hence revealed that most fire emergencies happen within the residential places.

Fires on their own don't constitute a disaster but when a fire meet vulnerability then a disaster occurs, how vulnerable the people using the fire within the home are? is the question of concern.

4.3.2 Cause of fire

There are four main classes of fire; the classification is based on the precept of the fuel involved. The classes include:

Class 'A' which involved ordinary combustibles materials like wood, papers and some plastic according to Professor G. I Finch, water solution extinguishers are usually considered the most effective in putting off such fires.

Class' B' fires involve flammable liquids, gases and heavy lubricants for which blanketing if the most suitable method of extinguishment (William J.J, 1958)

Class 'C' fires are ignited by electricity, the extinguishers use Carbon dioxide or dry chemical to smother the fire.

Class 'D' fires on other hand involve combustible metals or metallic alloy elements with combustible metal components. Fires involving electrical components or equipment represent a special risk outside the usual scope of provision in buildings.
(Peter Burbbery. 1997:350)

Wallace and Webber (2007) assert that these fires are very difficult to extinguish and must be suppressed by use of a special fire fighting agent

The researcher hence sought to establish what caused the fire during the emergency in order to be able to determine if proper course of action was taken in ensuring safety.

Table 3: Cause of fire

Cause of fire	Frequency	Percentage (%)
Stove	11	14.3
Electricity	11	14.3
Gas explosion	3	3.9
Petrol explosion	12	15.6
Jiko	11	14.3
Unknown causes	7	9.1
Three stone fire	6	7.8
Other	12	15.6
Kerosene	4	5.2
Total	77	100

When asked what caused the fire, 14.3 percent indicated stove explosion (class 'B' fire) another 14.3 percent indicated electricity (class 'D' fire), 3.9 percent indicated gas explosion, 15.6 percent indicated petrol explosion (class 'B' fire), 14.3percent of the respondents indicated a" jiko" as the cause of the fire (class 'A' fire), 9.1 percent of the respondents did not know what cause the fire that burnt them, 7.8 percent of the respondents Indicated three stone fire(class 'A' fire) as the cause of the emergency, 5.2 percent indicated kerosene lamb(class' B' fire) as the cause of the fire while 15.6 percent of the respondents indicated other causes that were not listed on the questionnaire(Acid, hot oil, candle, paper)

Hence leading cause of fire as represented in the figures above is petrol explosion, closely followed by stove, 'jiko' fire and electricity. Of interest to the researcher is where the people who got injured with petrol fire were, considering as reflected in table 2 above, majority (66.2%) of the respondents indicated to have been in the house were at the time of the emergency. Hence the cross tabulation table below:

Table 4: Across-tabulation of cause of fire and place of emergency

Cross tabulation of cause of fire and place of emergency						
		Place of emergency				Totals and percentages
		House	Workplace	Road	Social Places	
Cause of fire	Stove	10	1	0	0	11(14.3%)
	Electricity	5	3	3	0	11(14.3%)
	Gas explosion	2	1	0	0	3(3.9%)
	Petrol explosion	7	3	2	0	12(15.6%)
	'Jiko'	9	2	0	0	1114.3%)
	Unknown cause	6	0	1	0	7(9.1%)
	Three stone fire	6	0	0	0	6(7.8%)
	Other	2	3	3	4	12(15.6%)
	Kerosene lamp	4	0	0	0	4(5.2%)
Total		51(66.2%)	13(16.9%)	9(11.7%)	4(5.2%)	77(100%)

From table 4 above, of the patients who indicated to have been in the house at the time of the emergency, the leading cause of fire was stove, closely followed by those who indicated 'jiko' as the source of the fire which burnt them.

However, majority of those who burnt with petrol were still in the house at the time of the emergency as opposed to the most held believe, that petrol fire victims are burnt while trying to siphon the petrol. Still notable from the cross tabulations is most of the respondents who indicated other causes of fire like acid were burnt while at the social places.

Hence the leading cause of fire within the residential place was stove fire. As discussed earlier stove fire is a class 'B' fire of which blanketing is the most suitable method of extinguishment, use of water will make such a fire spread further.

Stove fires within the home are inevitable; one could accidentally hit a burning stove leading to an explosion, if however the fire is extinguished in the right way, then injuries during the emergency can be minimized. The study hence went on to determine which actions the fire victims engaged in while ensuring safety during the fire emergency.

4.3.3 Actions engaged in to ensure safety

When faced with emergency, victims of fire display different kind of behaviors, ranging from screaming, running, remove clothes, pouring water and even fighting the fire.

As mentioned earlier, fire emergencies are inevitable, but if one engages n the correct steps while ensuring safety, then injuries during the emergency can be minimized. The researcher hence sought to find out what the respondents did in ensuring safety at the time of the emergency and the responses are tabled below:

Table 5: Actions engaged in:

Actions	Frequency	Percentage (%)
Running	13	16.9
Removing clothes	21	27.3
Screaming	11	14.3
Pouring water on myself	1	1.3
Putting off the fire	6	7.8
Went unconscious	23	29.9
Other	2	2.6
Total	77	100

When asked what they did during the time of emergency, the highest percentage of 29.9 percent indicated to have gone unconscious hence did not engage in any kind of action, except for the help they received. Those who did not loose their consciousness engaged in various actions as reflected in the table above.

Out the 77 respondents, 27.38 percent indicated to have removed their clothes, 16.9 percent ran followed by 11.3 percent who indicated to have been screaming. 7.8 percent fought the fire, a small percentage of 1.3 percent poured water on themselves, while 2.6 percent of the respondents indicated kind of actions that were not listed on the questionnaire(jumping out through the window)
Hence with an exception of those who lost consciousness, the respondents engaged in actions which exposed them to injuries. For instance, the highest percentage (27.38%) of the respondents indicated to have removed their clothes.

Underdown (1971) recommends that, if your clothes catch fire, do NOT run or attempt to remove the clothes. Instead, Stop, Drop and Roll, in other words, stop, drop to the ground, cover your face with your hands and roll back and forth until the fire is put out. Out of the 77 respondents interviewed, 16.9 percent of the respondents indicated to have ran in ensuring safety, Underdown, reckons that in a fire emergency, no one should run, he asserts that running causes confusion and if anyone trips and falls other people may be brought down, so causing danger and further confusion.

Other actions indicated as represented above, are putting off the fire, screaming and pouring water on one self, action which got them injured during the emergency. Of extra keep interest to the researcher, is what caused the fire for the victims who indicated to have gone unconscious at the time of the emergency, hence the cross-tabulation below:

Table 6: A cross-tabulation of Cause of fire and Actions engaged in

Cause of fire * Actions engaged in Cross tabulation									
		Actions engaged in							Total
		Running	Removing clothes	Screaming	Pouring water on myself	Putting off the fire	Went unconscious	Other	
Cause of fire	Stove	2	5	1	0	2	1	0	11(14.3%)
	Electricity	0	2	3	0	0	6	0	11(14.3%)
	Gas explosion	1	0	1	0	0	1	0	3(3.9%)
	Petrol explosion	5	4	2	0	0	0	1	12(15.6%)
	Jiko	0	2	1	1	0	7	0	11(14.3%)
	Unknown Cause	3	1	1	0	0	2	0	7(9.1%)
	Three stone fire	0	1	0	0	0	5	0	6(7.8%)
	Other	2	5	2	0	2	0	1	12(15.6%)
	Kerosene lamp	0	1	0	0	2	1	0	4(5.2%)
Total		13(16.9%)	21(27.3%)	11(14.3%)	1(1.3%)	6(7.8%)	23(29.9%)	2(2.6%)	77(100%)

Of the total respondents interviewed, most indicated to have gone unconscious hence did not engage in any kind of action, from the cross-tabulation above, the leading cause of fire for those who went unconscious was 'jiko', closely followed by electricity and three-stone fire.

On the other hand, the leading cause of fire on the general as reflected in the cross-tabulation above was petrol, of interest being the fact that none of the petrol fire victims indicated to have gone unconscious, hence to mean they engaged in other actions.

4.3.4 Why fire victims act the way they do during an emergency:

According to the 'scientific psychological approach' one of the difficulties frequently encountered when discussing human responses during emergencies, is overcoming the widely held believe that 'panic' if sufficiently accurate description of what people do during a fire emergency.

Panic is assumed to be the automatic response to changes in immediate social or physical environment.

Careful analysis of witness's statements following major fire disasters, characterize the human response to be largely altruistic (Brian, 1980) and affiliative (Sime, 1983). Panic appears to be exception to the rule, occurring only when the occupants perceive their route to escape to be closing rapidly and their time to search for an alternative means of escape to be inadequate. This researcher hence sought to establish what guided the victims actions displayed in table 4 above and the responses were as below:

Table 7: Why the kind of response?

Why the kind of response	Frequency	Percentage (%)
Instinctive reaction	39	50.6
Panic	13	16.9
No response	23	29.9%
Copied others	1	1.3%
Guided by past experience	1	1.3%
Total	77	100.0%

When asked what guided their behavior, majority (50.6%) indicated that their behavior which ranged from screaming, removing clothes and running among other actions was entirely instinctive reactions. Of the 77 respondents interviewed (29.9%) indicated no

response because they went unconscious at the time of the emergency, 16.9 percent behaved the way they did due to panic while 1.3 percent copied what they saw other people do and another 1.3 percent was guided by past experience.

Only 16.9 percent of respondents who indicated that they panicked hence the kind of behavior, 1.3 percent were guided by past experience and another 1.3 percent just copied what others were doing. One respondents indicated to have been guided by a past experience, according to Wood (1972) people who have learnt that they can cope with a fire threat believe they can pursue objective other than evacuate. Hence the data reveals that most fire victims are entirely guided by instinctive reactions and not panic as widely believed. The research further seeks to establish how each action in particular was guided hence the cross-tabulation below:

Table 8: A cross-tabulations of actions engaged in and why the kind of response:

Cross-tabulation of actions engaged in and why the kind of response							
		Why response					
		Instinct	Panic	No response	Copied others	Guided by past experience	Total (%)
Actions	Running	10	2	0	1	0	13(16.9%)
	Removing clothes	18	3	0	0	0	21(27.3%)
	Screaming	4	7	0	0	0	11(14.3%)
	Poured water on myself	1	0	0	0	0	1(1.3%)
	Putting off the fire	4	1	0	0	1	6(7.8%)
	Went unconscious	0	0	23	0	0	23(29.9%)
	Other	2	0	0	0	0	2(2.6%)
Total		39(50.6%)	13(16.9%)	23(29.9%)	1(1.3%)	1(1.3%)	77(100%)

Drawn from the table above, majority (76.9%) the fire victims who indicated to have run during the time of the emergency were entirely guided by instinctive reactions.
Majority (66.6%) of those who fought the fire indicated also to have been guided by instinctive reactions.

Majority (85.7%) of the fire victims, who indicated to have removed their clothes during the emergency, indicated that their behavior was entirely guided by instinctive reactions. One patient, who poured water on themselves, indicated that his action was guided by instinctive reaction. However, majority of (63.6%) the fire victims who indicated the screamed during the emergency mentioned that their behavior was due to panic. As indicated previous though, majority of the victims indicated that their behaviors was entirely guided by instinctive reaction to the situation.

4.3.5 Help fire victims receive

Injuries within a fire emergency are minimized if one receives the right kind of help. Different type of fires involves different types of fuels as explained in section 4.3.2 above, and the type of fuel involved determines how the fire should be put off. Hence to mean if a fire is extinguished fast using the right type of extinguisher, loss could be minimized. Further more if a person on fire receives the right kind of help, injuries could also be minimized. The researcher hence sought to find out what kind of help fire victims received at the time of the emergency and the responses were as tabled below:

Table 9: Help received

	Frequency	Percent (%)
Poured on water	27	35.1
Covered with a blanket	10	13.0
Helped to remove clothes	5	6.5
Other	22	28.6
No help	13	16.9
Total	77	100.0

When asked which kind of help was received, as reflected in table 7 above, Patients indicated having received different kinds of help from people who were around at the time of the emergency, 35.1 percent indicated that they were poured on water by those who were around,13.0 percent of the respondents indicated to have been covered with a blanket, 6.5 percent of the fire patients indicated that they were helped remove clothes, and 28.6 percent indicated other kind of help that was not listed on the questionnaire while 16.9 percent indicated to have received no help.

Hence if fire victims received the right kind of help, then the injuries could be minimized as opposed to getting the wrong help as reflected in the table below:

The highest percentage (35.1%) of the respondents hence indicated to have been poured on water during the fire emergency. Water is a fire extinction media, its cheap, readily available and very effective as a cooling agent. If however, oil is present, use of water spreads the fire rapidly.

(Peter Burberry, 1997:351)

This kind of help exposed the fire victims to more injuries during the emergency hence the research sort to establish how the help the fire victims received associated with the injuries sustained and the results are tabled in the below cross-tabulation table

Table 10: Across-tabulation of help received and injuries sustained

Help received * Injuries sustained Cross tabulation

		Injuries sustained							
		Burnt Face/Head/Neck	Burnt hands	Legs/Thighs	Chest	Stomach	Multiple injuries	Other parts	Total
Help	Poured on water	5	2	1	1	0	19	0	28(36.4%)
	Covered with a blanket	4	0	2	1	0	3	0	10(13.0%)
	Covered with' 'aduve'	0	0	0	0	0	1	0	1(1.3%)
	Helped to remove clothes	1	1	1	0	0	2	0	5(6.5%)
	Other	5	5	4	0	0	7	0	21(27.3%)
	No help	0	2	3	0	1	5	1	12(15.6%)
Total		15(19.5%)	10(13.0%)	11(14.3%)	2(2.6%)	1(1.3%)	37(48.1%)	1(1.3%)	77(100%)

Hence from the cross-tabulation table above, of the fire patients who indicated to have been poured on water during the time of the emergency, keeping in mind majority of the fire victims were in the house with the highest cause of fire being stove explosion of which blanketing is the most appropriate way of extinguishment.

Majority (67.85) sustained multiple injuries. Hence to mean that was not the right kind of help. Of those who indicated to have been poured with a blanket, only 30 percent sustained multiple injuries. Hence to imply when fire victims receive the right kind of help then injuries during the emergency are minimized.

4.3.6 Injuries fire victims sustain from fire emergencies

Lack of appropriate knowledge about behavior during a fire emergency could lead to one engaging in the wrong kind of behavior leading to injuries. The researcher sought to find out the kind of injuries the fire victims sustained form the fire emergencies and more particularly the research sought to establish how the actions the victims engaged in during the emergency associate with the injuries sustained.

Table 11: Injuries sustained from the emergency

Injuries	Frequency	Percentage (%)
Burnt face/Head/Neck	15	19.5
Burnt hands	10	13.0
Legs/thighs	11	14.3
Chest	2	2.6
Stomach	1	1.3
Multiple injuries	37	48.1
Other parts	1	1.3
Total	77	100

Unstructured observation was used to observe the injuries the respondents sustained. Some injuries were in sensitive places which could not be observed, most of the wounds were dressed and hence this tool only applied where possible. The fire victims were asked which injuries they sustained; 19.5 percent had burns around the face, head and neck. 13.0 percent burnt their hands, 14.3 percent burnt legs and thighs, 2.6 percent of the respondents got burnt at the chest, 1.3 indicated their stomach got burnt and a majority of 48.1 percent had multiple injuries while 1.3 percent got burnt in other parts which were not listed.

Hence the data above reveals that the highest percentage (48.1%) of the respondents sustained multiple injuries. This to be discussed in detail in objective three which seeks to establish how the actions the victims engaged in associate with the injuries they sustained. Still in regard to injuries sustained, of keen interest to the researcher is how the cause of the fire associates with the injuries sustained, hence the cross-tabulation below:

Table 12: Across-tabulation of cause of fire and injuries sustained

Cause of fire and Injuries sustained cross-tabulation									
		Injuries							
		Burnt Face/Head/ Neck	Burnt hands	Legs/t highs	*Chest*	*Stomach*	Multiple Injuries	Other parts	Total
Fire Cause	stove	3	0	0	1	0	7	0	11(14.3%)
	Electricity	4	3	1	0	0	3	0	11(14.3)
	Gas Explosion	1	0	0	0	0	2	0	3(3.9%)
	Petrol Explosion	1	0	0	0	0	11	0	12(15.6%)
	Jiko	0	3	6	1	0	1	0	11(14.3)
	Unknown Causes	1	1	0	0	0	5	0	7(9.1%)
	Three stone fire	3	1	0	0	0	2	0	6(7.8%)
	Other	1	2	3	0	1	4	1	12(15.6%)
	Kerosene	1	0	1	0	0	2	0	4(5.2%)
Total		15(19.5%)	10(13.0%)	11(14.3%)	2(2.6%)	1(1.3%)	37(48.1%)	1(1.3%)	77(100%)

From the cross-tabulation above, the leading cause of fire was petrol at (15.6%), closely followed by stove, electricity and jiko fires. While looking through injuries sustained, close to majority (48.1%) of the respondents indicated to have sustained multiple injuries during the fire emergency. Looking through the patients who sustained multiple injuries,

the highest number indicated petrol as the cause of the fire which burnt them, closely followed by stove fire.

Back to table 6, where the cause of fire is cross-tabulated with actions the victims engaged in, the data revealed that of the patients who burnt from petrol fire, none of them indicated to have gone unconscious at the time of the emergency. Hence to imply all petrol fire victims engaged in other actions which exposed them to multiple injuries.
Still reflected in table 6, except for the patients who lost consciousness, the other fire victims engaged in other actions which exposed them to multiple injuries, leading of the actions the victims engaged in was removing clothes.

The leading cause of fire for those who indicated to have removed their clothes was stove, closely followed by petrol. From the number of those who indicated to have run during the emergency, the leading cause of fire was petrol, good to note still, when requested to indicate where they were at the time of the emergency, majority (66.2) indicated to have been in the house with the leading cause of fire being stove fires, closely followed by 'jiko' and petrol.

4.3.7 Conclusion

Hence in looking through what fire victims do during a fire emergency, the findings of the study reveal that most of the fire victim's loose consciousness and hence don't engage in any kind of action except for the help they receive. However, the fire victims who don't loose consciousness engage in activities which range from screaming, removing clothes, running, fighting the fire and even jumping out through the window, actions which leave them with multiple injuries during the emergency.

4.4 The knowledge fire victims have in regard to behavior during fire emergencies.

The second objective of this study was to establish the knowledge fire victims have concerning behavior during a fire emergency. Lack of information and knowledge concerning behavior during a fire emergency, makes one more vulnerable to the fire

hazard. Vulnerability here refers to the long term factors which make which affect people's ability to respond to events or which make them susceptible to calamity.

Davis and Wall (1992) in their disaster Crunch Model, asserts that a disaster only happens when a hazard like fire impacts on a vulnerable society, a natural phenomena by itself is not a disaster. The argument here is that trigger evens are always blamed when there is a disaster, yet the underlying cause is the unsafe conditions which make people vulnerable. Hence to imply, vulnerability is progressive, starts with underlying factors like ignorance, population shifts and settlement patterns (overcrowding in an area), lack of choice, corruption and bureaucracy among many other factors.

Therefore, lack of appropriate knowledge on behavior during a fire emergency makes one more susceptible to the calamity. The research hence sought to establish the knowledge fire victims have concerning behavior during fire emergency, This research realized that, the respondents may not be in a fire situation again, hence hypothetical situations were specified and respondents asked questions about how they would act in those situations, this enabled the research to establish the level of knowledge the respondents had in regard to behavior during fire emergency.

Depth of knowledge was measured with an index of the number of statements about the same situation; the same question was paraphrased to determine whether the answer remained the same.

4.4.1 Major Cause of residential fires

Davis and Wall (1992) in their disaster Crunch model asserts that dynamic pressures within a society like lack for training and education which make fire vulnerable to calamity does not stand in isolation, the model clarifies that there are other underlying causes to unsafe conditions that people find themselves in, like fundamentals and ideologies on which the society is built on. In regard to fire emergencies, the ideologies upon which a society stands form the perspective upon which disasters like fire emergencies are looked at. The researcher hence sought to establish what the respondents

believed to be the major cause residential fires and the responses are represented in the table below:

Table 13: Major causes of fire emergency

	Frequency	Percentage (%)
Carelessness	25	32.5
Negligence	29	37.7
Ignorance	11	14.3
Drunkenness	2	2.6
Illegal power connections	1	1.3
Other	5	6.5
Accidents	4	5.2
Total	77	100.0

When asked what they believed was the major cause of residential fires, 32.5 percent indicated Carelessness, 37.7 percent indicated Negligence, 14.3 percent indicated Ignorance, 2.6 percent indicated drunkenness, 1.3 percent believed it was illegal power connections, 5.2 percent indicated that fire incidents are just accidents and no one should be blamed for it, while 6.5 percent indicated other causes (the devil, accident)

Hence to imply that fire victims believe that the number one factors which contributes to fire emergencies is negligence and carelessness. This implies knowing what needs to be done and choosing not to do it may be because one is in a hurry or due to other reasons. Below is the confession of one of the respondents who got burnt by a stove fire.

' I rushed home over lunch time to warm food for my children, while putting on the stove, I noticed one "tambi" was missing but since I was in a hurry I just ignored, I put the food on the stove and as I walked out of the kitchen, I was hit by a ball of fire'

Bird, (1949) asserts that, often a risk is taken deliberately without ill consequences following; the action may be repeated perhaps more than once, giving a false sense of safety. Until one day the consequences of the action occur. For instance, an-intelligent man may not realize the risk he runs by smoking while handling petrol, he may on the other hand realize there is a risk, take chance, and find that no fire has resulted, hence continue to repeat the performance until he is burnt.

Of the 77 respondents interviewed, only 14.3 percent believed that the number one cause of fire emergencies was ignorance. Interesting were other believes that emerged which the respondents blamed for fire emergencies, 6.5 percent of the respondents indicated other causes not listed among which was the devil.

'No one should be blamed for a fire emergency, that's the work of the devil'

4.4.2 Stove Explosion

Stove fire is a class 'B' type of fire, this type of fires involves flammable liquids, gases and heavy lubricants for which blanketing is the most suitable method of extinguishment. (William J. J, 1958)

Water is cheap, readily available and very effective as a cooling agent. It's particularly appropriate to class' A' fires. If however, oil is present, use of water may spread the fire rapidly. Class B fires are very common within residential places and in most cases the

cause of the fire is associated with human activities like cooking. A hypothetical situation was formed and the respondent asked how they would put off a stove fire if they hit a burning stove leading to an explosion.

Table 14: Stove explosion 1

	Frequency	Percentage (%)
Pour water	28	36.4
Carry the stove out	8	10.4
Cover with a blanket	40	51.9
Other	1	1.3
Total	77	100.0

Out of 77 respondents interviewed, 51.9 percent indicated that they would cover it with a blanket, 36.4 percent indicated that they would pour water, 10.4 percent indicated that they would carry the stove out while 1.3 percent indicated other steps they would take that were not listed on the questionnaire (pour sand). Hence, when asked for the first time as reflected above, majority (59.9%) of the respondents knew the right steps to follow in ensuring safety in case of a stove explosion.

Of the 77 respondents, 36.4 percent of the respondents indicated that they would pour water on the stove, which is a wrong step. Though water is a fire extinction media, cheap, readily available and very effective as a cooling agent, when oil is present, use of water spreads the fire rapidly.
(Peter Burberry, 1997:351)

Hence use of water on a stove fire could result in a bigger explosion. Still out of the 77 respondents, 10.4 Percent of indicated that they would carry the stove out.

In regard to blazing objects, Underdown (1971) warns that under **NO** circumstance must a blazing object be moved either with the intention of carrying it out into the open air or throwing it out of a window because one could be seriously injured by the flames being driven back on to them and the fire is spread all along the route.

1.3 percent of the respondents indicated other causes that were not listed on the questionnaire (put the fire using sand).

4.4.3 Stove Explosion 2

In determining the depth of knowledge in regard to stove fires, the question was paraphrased and the respondents asked what they would do if while refuelling a burning stove it exploded leading to a fire?

The responses were as in the table below:

Table 15: Stove explosion 2

	Frequency	Percentage (%)
cover with a" duve"	2	2.6%
pour water	28	36.4%
Carry the stove out	10	13.0%
cover with a blanket	37	48.1%
Total	77	100%

When asked what they would do if a burning stove exploded while being re-fuelled, the highest percentage (48.1%) of the respondents indicated correctly that they would cover the stove with a blanket. Of the 77 respondents interviewed, 36.4 percent indicated that they would pour water on it, 13.0 percent indicated that they would carry the stove out, while amazingly 2.6 percent of the respondents indicated that they would cover it with a"duve" when asked for the first time as reflected in table 10, majority (59.9%) of the respondents knew the right steps to follow in ensuring safety in case of a stove explosion.

When the question was paraphrased, still close to the majority (48.1%) indicated the correct steps that they would cover the stove with a blanket.

Hence, confirming that fire victims have correct knowledge on how to deal with class B fires and more particularly stove fires. On the contrary, of the 51 respondents who indicated to have been in the house at the time of the emergency, majority were bunt by stove fires. This then would confirm the believe held by majority (37.7%) of the respondents that main factor of contributes to fire emergency is Negligence, closely followed by (32.5%) who believe it has something to with careless.

4.4.4 Fire within a building

In regard to fires within buildings, US Fire Administration, asserts that one may not have before the fire spreads, so don't even stop to call for help, once you are safely outside, you can seek help like the calling the brigade. The National Fire Prevention Act has stipulated the below steps to be followed during a fire emergency.

NFPA, (1986) Fire Protection Handbook 16th edition

i) Do not panic
ii) Raise alarm. Shout Fire
iii) Attach Fire using available appliances
iv) Leave the doors and Windows open for the smoke to go out
v) Evacuate the building using staircase and don't return to the building unless authorized to do so
vi) Once you are out safely, call the Fire brigade. Dial 999
vii) Report to the Assembly point for roll call.

The researcher hence sought to establish the knowledge people have in regard to safety during fire emergency within buildings, the respondents were asked to select a pool of sequence of actions appropriate to be followed in afire emergency within a building.
The responses were as reflected below:

Table 16: Fire within a building

	Frequency	Percentage (%)
A	24	31.2
B	32	41.6
C	21	27.3
Total	77	100.0

Out of the 77 respondent's interviewed, 41.6 percent indicated 'B' as the most ideal sequence of actions to be taken. This implied that:

i) Do not Panic
ii) Raise Alarm. Shout Fire
iii) Call Fire brigade. Dial 999
iv) Attack Fire using available appliances
v) Close doors and windows behind you
vi) Evacuate the building using staircase and don't return to the building unless authorized to do so
vii) Report to the Assembly point for roll call

While 31.2 percent of the respondents indicated 'A' as the most I deal sequence of actions to be taken which implied that:

i) Do not panic
ii) To find out the cause of the fire
iii) If it's a small fire attack it using available appliances, if its unmanageable, call the fire brigade, Dial 999
iv) Close the doors and windows behind you
v) Use the lift to leave the building faster
vi) Raise the alarm to alert the rest
vii) Report to the Assembly point for roll call

Only 27.3 percent indicated 'C' which was the correct sequence of actions to be taken in case of a fire emergency as per NFPA, (1986) Fire Protection Handbook 16th edition. The responses above indicated that fire victims don't have knowledge in regard to safety measures during a fire emergency within a building.

4.4.5 Fire within a smoking building

Underdown (1971) asserts that any sign of smoke is an indicator of danger and just like fire, there must be no delay in trying to find out, there must be no investigation, sound the alarm and vacate the building immediately. During the Kenyan, Nakumatt Inferno, it was reported that, a shop attendant noticed smoke from the generator, and went to check just when it exploded. Smoke within a building is assign of fire and the building occupants should follow the same steps as outlined in NFPA, (1986) Fire Protection Handbook 16th edition. Hence in determining the depth of knowledge in regard to fire within a building, the respondents were still asked to indicate the most appropriate steps to be followed in case of smoke within building they are in and the responses were as represented in the table below:

Table 17: Fire within a smoking building

	Frequency	Percentage (%)
A	5	6.5
B	49	63.6
C	23	29.9
Total	77	100

Out of the 77 respondents interviewed, 63.6 percent indicated option 'B' which implied:

i) Do not panic

ii) Find out the cause of the fire

iii) If it's a small fire attack it using available appliances, if its unmanageable, call the fire brigade, Dial 999

iv) Close the doors and windows behind you

v) Use the lift to leave the building faster

vi) Raise the alarm to alert the rest

vii) Report to the Assembly point for roll call

While 6.5 percent indicated they would follow the steps outlined in option 'A' which implied that:

i) Do not panic

ii) Raise Alarm. Shout Fire

iii) Call Fire brigade. Dial 999

iv) Attack Fire using available appliances

v) Close doors and windows behind you

vi) Evacuate the building using staircase and don't return to the building unless authorized to do so

vii) Report to the Assembly point for roll call

When asked for the first time to indicate the correct pool of sequence of actions to be taken incase of a fire within a building they are in, of the 77 respondents interviewed, Only 27.3 percent indicated the correct sequence of actions as per NFPA, (1986) Fire Protection Handbook 16th edition. Still questioned in regard to smoke which is still a sign of fire within a building, of the 77 respondents interviewed, only 29.9 percent indicated the correct of actions as per NFPA, (1986) Fire Protection Handbook 16th edition.

Hence the respondents did not demonstrate proper knowledge in regard to fire within buildings, just as previously revealed in section 4.4.2 where the respondents demonstrated incorrect knowledge concerning safety within a building one that is on fire.

4.4.6 Smoke blocking escape path within a building

Still in regard to smoke, the US Fire Administration advice that if smoke is blocking your escape route, stay low to the ground as you're leaving. Smoke is very dangerous to breathe and difficult to see through. Since smoke naturally rises, you should crawl on your hands and knees out.

From the proceedings of the symposium no 4 held at Watford College of Technology, Watford Herts on ninth and tenth of Apr 1969 it was found out that few people burn to death- majority are overcome first by smoke and hot gases which may leave the immediate fire area at a temperature in the region of 1000c exit the building. The respondents were hence requested to indicate the most appropriate pool of sequence of actions to be taken in a fire emergency and smoke is blocking escape route.

The responses are as tabled below:

Table 18: Smoke blocking escape route

	Frequency	Percentage (%)
A	13	16.9
B	59	76.6
C	5	6.5
Total	77	100.0

Out of the 77 respondents interviewed, 16.9 percent indicated the correct steps which were outlined in option 'A' which implied

i) Stay low to the ground,
ii) Crawl on their knees to the nearest exit
iii) Once safely out call the fire brigade.

Majority (76.6%) indicated option' B' which implied that

i) Call the fire brigade
ii) Cover your nose with apiece of cloth to avoid inhaling in the smoke
iii) Crawl on your knees to the nearest exit.

The remaining 6.5 percent, implied that

i) Call the fire Brigade
ii) Stay low to the ground
iii) Crawl on your knees to the nearest exit.

Hence drawn from the data, majority (76.6%) of the respondents don't have knowledge in regard to smoke blocking escape route.

4.4 7: Blazing Objects

In regard to blazing objects, Underdown (1971) warns that under NO circumstance must a blazing object be moved either with the intention of carrying it out into the open air or throwing it out of a window because one could be seriously injured by the flames driven back onto them and the fire is spread all along the route, this rule applies to a sauce pan on fire

He asserts that people should be carefully instructed if a pan or saucepan catches fire, on no account may they pick it up, attempt to remove it or pour water on it.

The first thing to do is turn off the heat; and then the best thing is to cover the pan with a sauce lid or if that's not available cover it with a damp cloth.

The researcher hence sorts to establish if fire victims have knowledge concerning blazing object, the respondents were asked to indicate the correct steps to be followed while ensuring safety if while frying eggs, the saucepan caught fire and the responses were as tabled below:

Table 19: Blazing object 1

Sauce pan of fire	Frequency	Percentage (%)
A	40	51.9
B	4	5.2
C	33	42.9
Total	77	100

Out of the 77 respondents interviewed, 51.9 percent indicated option 'A' which implied that they would remove the saucepan from fire and pour water on it to put off the fire. Closely following this group was 42.9 percent who indicated option 'C' which outlined the correct steps to be taken, turn off the heat and cover the pan with a lid or damp cloth.

While 5.2 percent of the respondents indicated option' B' which implied that they would turn off the heat, hold the pan with a damp cloth and throw it out.

The data a above revealed that people don't have the proper knowledge in regard to blazing objects.

4.4.8 Blazing Objects 2

Whether a frying pan, a sauce pan or a stove on fire, as mentioned in the section above, under NO circumstance must a blazing object be moved either with the intention of carrying it out into the open air or throwing it out of a window because one could be seriously injured by the flames driven back onto them and the fire is spread all along the route.

When questioned the first time as reflected above, majority (51.9%) indicated the correct steps in ensuring safety in regard to blazing objects.

The researcher hence sought to establish the depth of knowledge and the respondents were still asked what steps they would follow in ensuring safety if while deep frying chicken the frying caught fire?

The responses were as tabled below:

Table 20: Blazing 2

Frying pan of fire	Frequency	Percentage (%)
A	30	39.0
B	35	45.5
C	12	15.6
Total	77	100

Out of 77 respondents interviewed 45.5 percent indicated option 'B' which implied that they would remove the pan from fire and put off the fire by pouring water. Closely followed by 39.0 percent of the respondents who indicated the correct steps in option 'A'

which implied that they would turn off the heat and cover the pan with a saucepan lid or a damp clothe

While 15.6 percent indicated option 'C' which implied that they would move the pan to an open place and cover it with a damp cloth to put off the fire.
The responses in section 4.4.7 and 4.4.8 indicate that the fire victims don't have correct knowledge in regard to dealing with blazing objects.

When asked what they would do when a sauce pan catches fire, in section 4.4.7 , majority (51.9%)of the respondents indicated option 'A' which implied that they would remove the pan from fire and put off the fire by pouring water. Still when the question was paraphrased, close to majority of the respondents (45.5%) indicated option 'B' which implies that they would remove the pan fire and put off the fire by pouring water.

One fire victims who sustained multiple injuries while he trying to move a blazing object made the below confession:

> 'The fire on the pan was getting out of control, then I remembered there was a water tank outside the kitchen, I decided to throw the pan in the water to put off the fire before the whole kitchen burns, this lead to a big explosion'

Water is cheap, readily available and very effective as a cooling agent. It's particularly appropriate for class 'A' fires. If however, oil is present, use of water spreads the water rapidly.
(Peter Burberry, 1997:351)

Hence to imply the fire victims remain vulnerable in regard to blazing objects like sauce pans and frying pans.

4.4.9 Burning clothes

In regard to burning clothes, Underdown (1971) asserts that, do **NOT** run. This could make the fire spread more quickly. Instead, stop, drop, and roll! In other words, stop, drop to the ground, cover your face with your hands, and roll back and forth until the fire is put out.

The researcher hence sought to establish what knowledge fire victims have concerning burning clothes , the respondents were asked to indicate which steps were most appropriate to be taken if clothes were on fire and the responses were as tabled below:

Table 21: Burning clothes

	Frequency	Percentage (%)
A	27	35.1
B	49	63.6
C	1	1.3
Total	77	100

Out of the 77 respondents interviewed, 63.6 percent indicated that option 'B' which implied hat they would remove the clothes and run a way, followed by 35.1 percent of the respondents who indicated option 'A' which implied the correct steps, stop, drop and roll. While 1.3 percent indicated the last option which implied that they would shout help while trying to put the fire using their hands. Hence the data above reveals that majority of the respondents (63.6%) did not posses knowledge concerning safety in regard to burning clothes.

4.4.10 Conclusion:

Hence from the findings of the above objective, the victims of fire except for knowledge on how to deal with stove fires don't have knowledge on behaviour during a fire emergency. Contrary to the fact that the fire victims displayed knowledge of how to deal with a stove fire, the leading cause of fires within the house was still stove. Hence further confirming negligence and carelessness of which the fire victims believe to be the number one contributing factor to fire emergencies.

4.5 How the actions fire victims engage in during a fire emergency associate with the injuries sustained:

The third Objective of this study was to establish how the actions the fire victims engaged in during the fire emergency associate with the injuries they sustained. In Section B of the questionnaire, respondents were asked to indicate the injuries they sustained during the emergency, observation tool was also used to observe the injuries that were sustained, and this research realized that some injuries were in sensitive places which could not be observed, hence the observation tool only applied where possible.

Still in section B of the questionnaire, the respondents were also asked to indicate the actions they engaged in while ensuring safety during the fire emergency. In the cross-tabulation table below, the researcher sought to establish how the actions the fire victims engaged in associate with the injuries they sustained.

Table 22: Across-Tabulation of the actions engaged in and injuries sustained

Actions engaged in * Injuries sustained									
		Injuries sustained							Total
		Burnt face/head/neck	Burnt hands	Legs/thighs	Chest	Stomach	Multiple injuries	Other parts	
Actions	Running	2	0	0	1	0	10	0	13(16.9%)
	Removing clothes	4	2	3	0	1	11	0	21 (27.3%)
	Screaming	4	1	0	1	0	4	1	11 (14.3%)
	Pouring water	0	0	0	0	0	1	0	1 (1.3%)
	Putting off the fire	0	0	2	0	0	4	0	6 (7.8%)
	Went unconscious	5	6	6	0	0	6	0	23 (29.9%)
	Other	0	1	0	0	0	1	0	2 (2.6%)
Total		15 (19.5%)	10(13.0%)	11(14.3%)	2(2.6%)	1(1.3%)	37(48.1%)	1 (1.3%)	77 (100%)

4.5.1 Injuries

From the cross-tabulation table above, the data reveals that 48.1 percent of the total respondents interviewed sustained multiple injuries during the fire emergency, followed by 19.5 percent who indicated to have suffered injuries on the face, head and the neck., 14.3 percent of the respondents sustained injuries on the legs.

Still 13.0 percents of the respondents had sustained injuries only on the ands, 2.6 percent of the respondents got burnt on the chest while 1.3 percent sustained injures on the stomach and another 1.3 percent indicated to have sustained injuries in other parts not listed. Injuries during a fire emergency cannot be fully avoided, but if one engages in the correct actions then the injuries could be minimized.

4.5.2 Actions

In regard to actions engaged in during the fire emergency, of keen interest is the fact that the highest percentage of (29.87%) of the total respondents interviewed went unconscious and hence did not engage in any kind of actions except for the help they received. One more patient, who went unconscious, indicated gas fire while another one indicated stove fire.

Of keen interest is the fact that, though majority (29.87%) of the fire victims interviewed indicated to have gone unconscious hence not engaging in any action, only (26.1%) of those who went unconscious sustained multiple injuries. The fire victims who did not loose their consciousness engaged in actions which raged from removing clothes, running, screaming, fighting the fire and even pouring water on themselves.

Removing clothes:

Out of the 77 respondents interviewed, (27.3%) indicated to have removed their clothes in ensuring safety. Of the fire victims who indicated to have removed their clothes, (52.38%) sustained multiple injuries, (19.0%) burnt their face, head and neck while trying to remove their clothes, (9.52%) burnt their hands while trying to remove the clothes while (14.28%) also sustained injuries on the legs while trying to remove their clothes. Only (4.76%) indicated to have sustained injuries on the stomach. Hence from the data

representation above, patients who indicated to have removed their clothes during the fire emergency, majority (52.38%) sustained multiple injuries.

When asked to indicate what guided their behaviour, (85.7%) indicated that their behaviour was entirely guided by instinctive reactions as reflected in table 7. In regard to burning clothe, Underdown (1971) recommends that, do NOT run or attempt to remove the clothes. Instead, Stop, Drop and Roll, in other words, stop, drop to the ground, cover your face with your hands and roll back and forth until the fire is put out.

While testing the level of knowledge among the victims of fire, a hypothetical situation was created and respondents asked what they would do if their clothes caught fire during a fire emergency, majority (63.6%) of the respondents indicated that they would remove the clothes and run.

As previous mentioned, hazards present themselves differently in different places, removing clothes as revealed from the data collected, for sure leaves one with multiple injuries during a fire emergency, but again one would argue, how would you possibly stop, drop and roll in a fast spreading petrol fire?

Running:

Of the 77 respondents interviewed, (19.9%) indicated to have run during the time of the emergency. Of the fire victims who indicated to have run (76.9%) sustained multiple injuries during the fire emergency. Still of those who ran (15.38%) sustained injuries in face, head and neck during the emergency while (7.6%) sustained injuries on the chest.

Running during a fire emergency as reflected above leaves a victim with multiple injuries. In regard to running during a fire emergency, Underdown (1971) reckons that in a fire emergency, no one should run, he asserts that running causes confusion and if anyone trips and falls other people may be brought down, so causing danger and further confusion, running also funs the fire more.

Drawn from table 7, majority (76.9%) of the fire victims who indicated to have run during the emergency indicated that their behavior was entirely guided by instinctive reactions.

Screaming:

Of the 77 respondents interviewed, (14.3%) indicated that they were screaming during the emergency, (36.3%) of those who indicated screaming sustained multiple injuries. Still another (36.3%) sustained injuries on the face, head and neck. One patient sustained on the hands while yet another one sustained chest injuries. When asked what guided their behaviour, majority (63.6%) of the fire victims who screamed during the fire emergency indicated that their behaviour was entirely guided by panic as reflected in table 7.

Bird (1949) asserts that panic appears to be an exception to the rule, occurring only when the occupants perceive their route to escape to be closing rapidly and their time to search for an alternative means of escape to be inadequate.

Fighting the fire:

Out of the 77 respondents interviewed, 7.8 percent indicated to have fought the fire in ensuring their safety. Majority (66.6%) of those who indicated to have fought the fire had multiple injuries.

Concerning fighting a fire, the US Fire Administration warns that DO Not try to put out a fire that you cant control, they further advise that if there is too big a fire to put out, leave the building immediately, one might not even have time to leave before the fire spreads, so don't even stop to call for help, once you are outside and safe then you can seek help like calling the brigade.

Pouring water on one self:

Of the respondents interviewed, only 1.3 percent indicated to have poured water on themselves in ensuring safety. The respondent sustained multiple injuries. Water is cheap, readily available and very effective as a cooling agent. It's particularly appropriate for class 'A' fires. If however, oil is present, use of water spreads the fire rapidly.
(Peter Burberry, 1997:351)

Of a keen interest is that, though only one respondent indicated to have poured water on himself in ensuring safety, checking through the help the respondents received, the data reveals that the highest percentage (36.4%) are poured on water by those who come to help. From the help received and injuries sustained tabulation, of the respondents who indicated to have been poured on water, (67.8%) sustained multiple injuries as reflected in table 9.

Of the 13.0 percent who indicated to have been covered with a blanket at the time of the emergency, only 30 percent sustained multiple injuries.

Other actions:

Of the 77 respondents interviewed, 2.6 percent indicated to have engaged in other actions there were not listed on the questionnaire (jumping through a window,) of these two, (50%) sustained multiple injuries while the other (50%) sustained injuries on the hands.

4.5.3 Conclusion:

Hence the above data reveals that the respondents, who sustained multiple injuries except for those who went unconscious, engaged in the wrong kind of actions which they deemed logical and most reasonable.

Of keen interest in regard to actions engaged in and injuries sustained, is the fact that, though the highest percentage (29.87%) of the fire victims interviewed indicated to have gone unconscious hence not engaging in any action, only (26.1%) of those who went unconscious sustained multiple injuries. Hence implying that, the actions fire victims engage in during the fire emergency, directly associate with the injuries they sustain from

the emergency. Notable however from the data collected, the cause of fire for patients who engage in other actions is mostly petrol and stove, none of the patients who suffered from petrol fire indicated to have gone unconscious and only one patient who suffered from stove fire went unconscious.

In addition, when asked to indicate where they were at the time of the emergency, majority (66.2%) indicated to have been in the house with the leading cause of fire being stove, followed by' jiko' and petrol. Of the 'jiko' fire patients, majority(63.6%) went unconscious hence did not engage in any action, but the patients who then mostly engaged in other actions which exposed them to multiple injuries mostly suffered from stove and petrol fires while in the house.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter summarizes the main findings of the study, including the main conclusions and recommendations derived from the findings of the study.

5.1 Summary of Findings

The main objective of this research was to study knowledge and behaviour on fire emergencies among fire victims at Kenyatta National Hospital.

In specific the research sought to establish what the fire victims do during the fire emergencies, the knowledge fire victims have concerning behaviour during fire emergency and the study further sought to establish how the actions fire victims engage in during the emergency associate with the injuries they sustain.

i) In regard to what fire victims do during fire emergencies, the study revealed that majority of the fire victims go unconscious and hence do not engage in any action except for the help they receive.

However, the fire victims who did not loose their consciousness engage in actions which raged from removing clothes, running, screaming, fighting the fire and even pouring water on themselves, actions which expose the patients to multiple injuries. Good to note however, is the fact that the leading cause of fire for the patients who engage in the other actions which expose them to multiple injuries is stove and petrol, more importantly is the fact that, this fires take place within the home.

The study however notes that, only pre-dominant actions the fire victims engaged in were noted and analyzed, the study realizes that a fire victim could engage in more actions at the same time and hence recommends in the future multiple responses to the actions the fire victims engage in to be noted and analysed.

The study further established that, the actions of the fire victims are entirely guided by instinctive reactions.

ii) The study further established that fire victims don't have knowledge concerning behavior during fire emergency.

The research realized that the respondents may not be in a fire situation again, hence hypothetical situations were specified and respondents asked questions about how they would act in those situations, this enabled the research to establish the level of knowledge the respondents had in regard to behavior during fire emergency.

Depth of knowledge was measured with an index of the number of statements about the same situation; the same question was paraphrased to determine whether the answer remained the same. Hence from the findings of the above objective, the victims of fire except for knowledge on how to deal with stove fires don't have knowledge on behaviour during a fire emergency. Contrary to the fact that the fire victims displayed knowledge of how to deal with a stove fire, the leading cause of fires within the house was still stove. Hence further confirming negligence and carelessness of which the fire victims believe to be the number one contributing factor to fire emergencies.

iii) The study further established that the actions fire victims engage in during the fire emergency, expose them to multiple injuries.

Majority of fire victims loose consciousness during the emergency, hence don't engage in any action except for the help they receive.

However, the fire victims who don't loose consciousness engage in various actions which range from running, removing clothes, screaming, fighting the fire, pouring water on themselves and even jumping out through the windows.

This kind of actions exposes them to multiple injuries as indicated below:

i) Of those who ran 76.9 percent sustained multiple injuries
ii) Of those who removed their clothes, 85.7 percent sustained multiple injuries

iii) Of those who were screaming 63.6 percent sustained multiple injuries
iv) Of those who fought the fire 66.7 percent sustained multiple injuries
v) The fire victim who poured water on himself sustained multiple injuries
vi) The fire victims who indicated to have jumped out through a window all sustained multiple injuries.

The study established that the patients who indicated to have gone unconscious at the time of the emergency, only (26.1%) sustained multiple injuries, hence confirming that it's the actions fire victims engage in that make them more susceptible to the fire calamity. The study observed that apart from their own actions, fire victims also receive help from those who are around at the time of the emergency, and data collected revealed that most fire victims are poured on water by those who come to help.

Water is a fire extinction media, its cheap, readily available and very effective as a cooling agent. If however, oil is present, use of water spreads the fire rapidly.
(Peter Burberry, 1997:351)

Of the fire victims who indicated to have been poured on water at the time of the emergency, (67.85%) sustained multiple injuries.

5.2 Conclusion

Fire emergencies remain a harsh reality within the society particularly within the residential areas as revealed from the data collected, when asked where they were during the emergency, majority 51(66.2%) of the 77 respondents interviewed indicated to have been in the house, with the leading cause of the fire being stove explosions. Except for those who loose consciousness, fire victims engage in actions which make them more susceptible to the fire hazard.

Though the fire victims believe negligence and carelessness are the leading factors contributing to fire emergencies, the study revealed that victims are ignorant in regard to behavior during fire emergencies. Hence lack of knowledge and information concerning

behavior during fire emergency, makes the fire victims more susceptible to the fire hazard when it so strikes.

Vulnerability precedes disasters and contributes to its severity.
Hence response to fire emergencies is entirely dependant on the level of vulnerability among the victims of fire. If the level of vulnerability is overwhelming as reflected in the data collected then response may not work.

5.3 Recommendations

As prior mentioned, fire emergencies may not possibly be fully eradicated, but measures can be put in place to minimize its destructive consequences like loss of life, property and injuries sustained during the emergencies.

Ability to respond to a hazard when it strikes is very important, and when it occurs how one recovers from it is also important because through recovery people should be made better so that in case the same hazard strikes again, they should deal with it in abetter way hence minimizing injuries.

I) Though having been vulnerable in the past, fire victims remain vulnerable to fire hazards due to lack of knowledge in regard to behaviour during fire emergencies, this study hence recommends, through the societal structures, people should be exposed to knowledge on fire hazards.

2) The study established that, single people are more vulnerable to fire hazards; hence the study recommends an investigation into what happens in recovery for people with no proper social networks?

3) The study revealed most fire emergencies happen within the home, with the leading cause of fire being stove explosions, closely followed by petrol related fires.

Good to note is the fact that, of the patients who went unconscious only one suffered from a stove fire, whereas none of the patients who suffered from petrol fires went unconscious, hence to imply most of the patients who engaged in other actions which exposed them to multiple injuries suffered from stove and petrol fires.

The study however notes that, only the pre-dominant actions the fire victims engaged in were noted and analyzed, the study realizes that a fire victim could engage in more actions at the same time and hence recommends in the future multiple responses to the actions the fire victims engage in to be noted and analysed.

4) The study further recommends awareness campaigns to be conducted in regard to use of stoves within the vulnerable community.

5) The study established that, most fire victims who suffer from petrol fires are usually in the house and not siphoning the petrol as is normally assumed. Hence recommends through the respective bodies, mitigative measures against petrol explosions to be put in place.

5.4 Suggested areas for further study

The study recommends further research to be conducted on the below topics:

i) Causes of residential fires
ii) What happens in recovery for victims with no proper social network
iii) Behaviour during fire emergency, using multiple responses.
iv) An investigation into the copying mechanism of fire victims after the emergencies.

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RESEARCHERS STATEMENT

I hereby declare that I have explained clearly to the participants (respondents) all that pertains to this exercise e.g. the purpose of the study, why they are potential respondents and the general benefits of participation.

The participants are aware that it is a voluntary exercise and that they are at liberty to opt out at any given stage if they so choose to.

NAME.....

SIGN..... **DATE**.....

RESEARCH PARTICIPANT STATEMENT

I hereby declare that I fully understand all that pertains to this research, e.g. the purpose of the study, why I am a potential respondent and the benefits of the study.

Hence voluntarily offer to participate in the study.

Name.....

Sign..... Date.....

Contacts.....

INFORMED CONSENT FORM

Dear Respondent,

M y Names are Esther Ochingwa Salamba; I am a student at the University of Nairobi currently undertaking a Masters Degree in Sociology (Disaster Management).

It's a requirement that all students conduct a project in partial fulfillment of the requirements of Masters of Arts Degree in Sociology, the reason to why I am conducting this research.

The responses provided in this research are hence for the purpose of this study and not for any other purpose.

The objective of this research is to study knowledge and behavior on fire emergencies among fire victims at Kenyatta National Hospital.
Kenyatta National Hospital is currently the largest referral and teaching hospital in the country, where all emergency cases within the vicinity of Nairobi town are rushed, this research hence found Kenyatta hospital to be the only possible place where potential respondents to this study could be accessed.

As a benefit, at the end of this project I will share with you (respondent) the findings of this research. It will be my delight to personally meet with you and to discuss in detail the findings of this exercise, and in future if you will have any questions concerning fire emergencies or if you will need information concerning the same, my lines will remain open and will also be willing to meet with you and discuss in length as need be.

Kindly sign against your name below to show your willingness to participate in this exercise

Please understand that this is a voluntary exercise and you can opt out of the exercise at any given stage if you so wish.

Participant's name.....

Sign..... Tel: .....

APPENDICES

APPENDIX A: QUESTIONNAIRE FOR RESPONDENTS

Dear Respondent,

This questionnaire is designed to assess human behavior during fire situations.

It is meant to assist in collecting relevant data concerning this research.

You are kindly requested to participate in this study by answering this questionnaire. The responses provided are for the purpose of this study and not for any other purpose.

All your responses will therefore be treated with highest confidentiality.

Section A: Demographic Data

1. What is your gender?

   Male ( ) female ( )

2. What is your marital status?

   Married ( ) Single ( ) Divorced ( ) Separated ( ) Widowed ( )

   Other.....

3. What is your highest education level?

None ( ) Primary ( ) Secondary ( ) Post Secondary training/college ( )

University ( )

4. How old are you? Please tick the appropriate category.

18-24( ) 25-29( ) 30-34( ) 35-39( ) 40-44( )

45-49( ) 50-Above ( )

SECTION B: What did you do/did not do during the fire emergency?

1. Where were you when the fire broke out?

House ( ) Office/work place ( ) Road ( ) Social places ( )

2. What caused the fire?

Stove explosion ( ) Electrocution ( ) Gas explosion ( ) Petrol explosion ( )

'Jiko' ( ) unknown ( ) three stone fire ( ) other ( )..... kerosene lamb ( )

3. Which actions did you engage in to ensure your safety?

Running ( ) Removing clothes ( ) Screaming ( ) poured water on myself ( )

Fighting the fire ( ) Called for help ( ) unconscious ( ) other ( )

4. Why did you respond the way you did?

Instinct ( ) Panic ( ) No response ( ) Copied others ( )

Guided by past experience ( ) other ( ) .....

5. Which help did you receive?

Poured water on me ( ) covered me with a blanket ( )

Helped me to remove clothes ( ) other ( )..... no help ( )

6. Which injuries did you sustain?

Burnt face ( ) Burnt Neck ( ) Chest ( ) Stomach ( ) hands ( )

Legs ( ) Multiple injuries ( ) other parts ( )....

SECTION C: Knowledge about behavior during fire emergency

1. What do you consider to be the major cause of residential fires?

Carelessness ( ) Negligence ( ) Ignorance ( ) Drunkenness ( )

Illegal connections of power ( ) other ( )

2. You hit a burning stove leading to an explosion, how would you put off such fire?

Pour water ( ) carry the stove out ( ) cover with a blanket ( ) other ---------

3. Suppose a fire breaks within a building you are in, which of the pool of sequence of actions to be taken is the most appropriate?

a)

i) Do not Panic
ii) Raise Alarm. Shout Fire
iii) Call Fire brigade. Dial 999
iv) Attack Fire using available appliances
v) Close doors and windows behind you
vi) Evacuate the building using staircase and don't return to the building unless authorized to do so
vii) Report to the Assembly point for roll call

b)

i) Do not panic
ii) To find out the cause of the fire
iii) If it's a small fire attack it using available appliances, if its unmanageable, call the fire brigade, Dial 999
iv) Close the doors and windows behind you
v) Use the lift to leave the building faster
vi) Raise the alarm to alert the rest
vii) Report to the Assembly point for roll call

c)

i) Not to panic
ii) Raise Alarm. Shout Fire
iii) Attack Fire using available appliances
iv) Leave the doors and windows open for the smoke to get out
v) Evacuate the building using staircase and don't return to the building unless authorized to do so
vi) Once you are safely out, call the Fire brigade. Dial 999
vii) Report to the Assembly point for roll call

4. While refueling a burning stove, it explodes and causes a fire, how would you put off such a fire?

Cover with a 'Duve' ( ) Pour water ( ) carry out the stove ( )
Run to call for help ( ) Cover her with a blanket ( ) other ( )……

5. In case of a fire emergency and smoke is blocking your escape route, which of the pool of sequence of actions to be taken is the most appropriate?

a)

i) Stay low to the ground
ii) Crawl on your knees to the nearest exit
iii) Once you are safely out, call the Fire Brigade

b)

Call the Fire Brigade

i) Cover your nose with a peace of cloth to avoid inhaling in the smoke
ii) Run out of the building using the nearest exit.
iii)

c)

i) Call the Fire Brigade
ii) Stay low to the ground
iii) Crawl on your knees to the nearest exit

6. If you see or smell smoke within a building that you are in, which steps would you follow to ensure your safety?

a)

i) Not to panic
ii) Raise Alarm. Shout Fire
iii) Call Fire brigade. Dial 999
iv) Attack Fire using available appliances
v) Close doors and windows behind you
vi) Evacuate the building using staircase and don't return to the building unless authorized to do so
vii) Report to the Assembly point for roll call

b)

i) Not to panic
ii) Find out the cause of the fire
iii) If it's a small fire attack it using available appliances, if its unmanageable, call the fire brigade, Dial 999
iv) Close the doors and windows behind you
v) Use the lift to leave the building faster
vi) Raise the alarm to alert the rest
vii) Report to the Assembly point for roll call

c)

i) Not to panic
ii) Raise Alarm. Shout Fire
iii) Attack Fire using available appliances
iv) Leave the doors and windows open for the smoke to get out
v) Evacuate the building using staircase and don't return to the building unless authorized to do so
vi) Once you are safely out, call the Fire brigade. Dial 999
vii) Report to the Assembly point for roll call

7. While your mum is frying eggs the sauce pan catches fire, which of the below steps are most appropriate in putting off the fire?

a)

i) Remove the sauce pan from the fire
ii) Then pour water on the sauce pan to put off the fire

b)

i) Turn off the heat
ii) Hold the pan with damp cloth and throw it out

c)

i) Turn off the heat
ii) Cover the pan with a saucepan lid or a damp cloth

8. If your clothes caught fire, which of the below steps would you follow to ensure your safety?

a)

i) Stop

ii) Drop

iii) Roll

b)

i) Shout for help

ii) Remove the clothes

iii) Run away

c)

i) Stop

ii) Shout for help

iii) Try put out the fire with your hands as you wait for help

8. While deep frying chicken, your frying pan catches fire, which of the below steps would you follow to ensure your safety?

a)

i) Turn off the heat

ii) Cover the pan with a saucepan lid or a damp cloth

b)

i) Remove the pan from the fire

ii) Put off the fire by pouring water on the pan

c)

i) Move the pan to an open place

ii) Cover with ad damp cloth

THANK YOU

APPENDIX B: AUTHORIZATION LETTER

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
(254-020) 2726300 Ext 44355
Ref: KNH-ERC/A/305

KNH/UON-ERC
Email: uonkah_erc@uonbi.ac.ke
Website: www.uonbi.ac.ke
Link:www.uonbi.ac.ke/activities/KNHUoN

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi
7th December 2011

Esther O. Salamba
Dept.of Sociology
University of Nairobi

Dear Esther

RESEARCH PROPOSAL: "KNOWLEDGE AND BEHAVIOR ON FIRE EMERGENCIES AMONG FIRE VICTIMS AT KENYATTA NATIONAL HOSPITAL." (P336/08/2011)

This is to inform you that the KNH/UON-Ethics & Research Committee has reviewed and approved your above revised research proposal . The approval periods are 7th December 2011 6th December 2012.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given. Clearance for export of biological specimens must also be obtained from KNH/UON-Ethics & Research Committee for each batch.

On behalf of the Committee, I wish you a fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of the data base that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely

PROF A N GUANTAI
SECRETARY, KNH/UON-ERC

c.c. The Deputy Director CS, KNH
The Principal, College of Health Science, UON
The HOD, Medical Records, KNH
Supervisors: Robinson Ocharo, Dept.of Sociology, UON
Dr. Stanley Kahinga, Dept.of Surgery, UON

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NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/RRI/12/1/SS011/952**

Date: **5th September, 2011**

Esther Ochungwa Salamba
University of Nairobi
P.O Box 30198
Nairobi

Dear Madam,

RE:RESEARCH AUTHORIZATION

Following your application for authority to carry out research on; ***"Knowledge and behaviour on fire emergencies: An assessment of the knowledge of fire victims in Kenyatta National Hospital have concerning fire emergencies and how their behaviours/actions associate with the injuries they got,"*** I am pleased to inform you that you have been authorized to undertake research in **Kenyatta National Hospital, Nairobi** Kenya for a period ending **30th August 2012**

You are advised to report to **The Director, Kenyatta National Hospital** before embarking on the research project.

On completion of your research project you are advised to submit **one hard** copies and **one soft** copy of your thesis/ project to this office.

P.N NYAKUNDI
FOR: SECRETARY/CEO

Copy to:

The Director,
Kenyatta National Hospital