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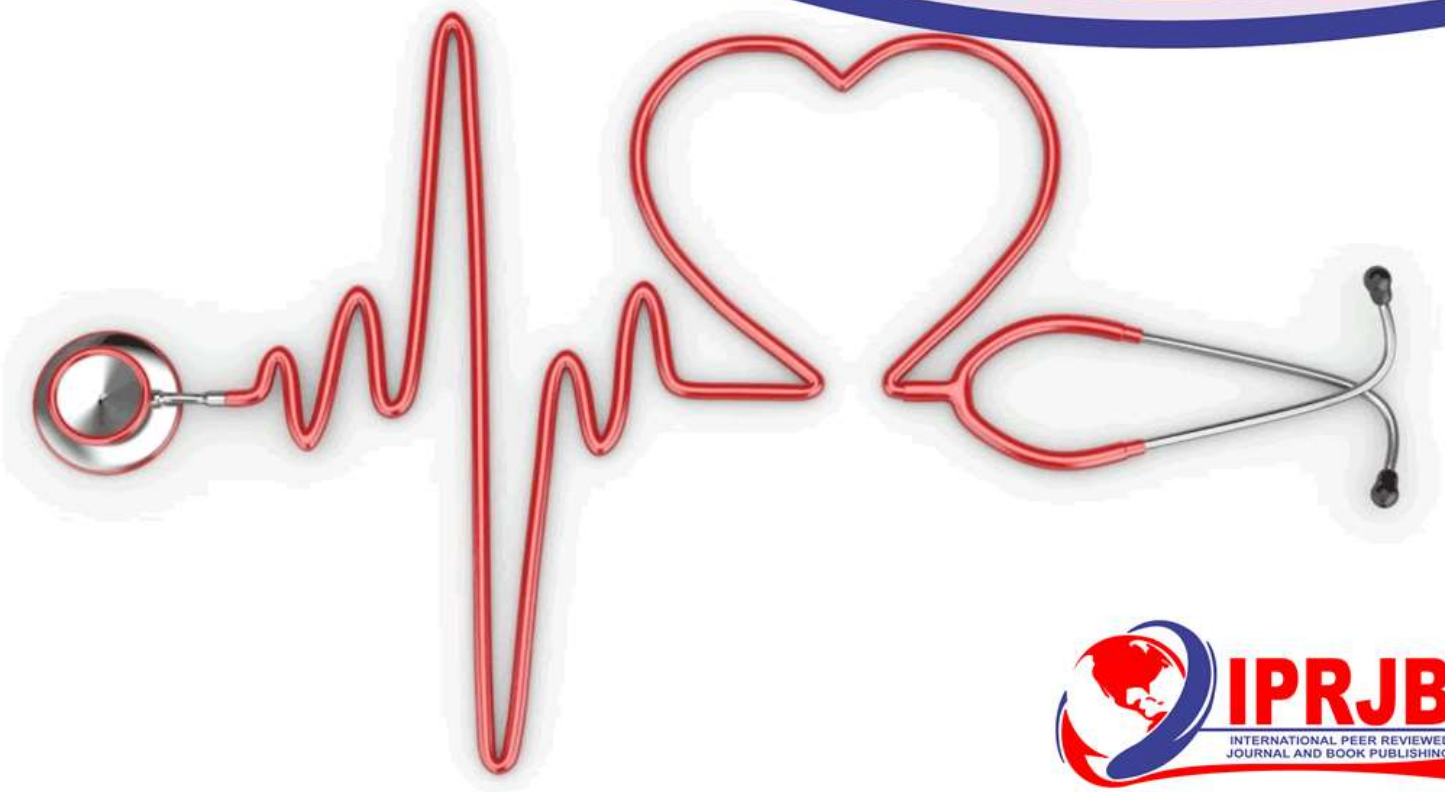
FACTORS ASSOCIATED WITH INCREASING INCIDENCE OF BURNS AMONG ADULT PATIENT ADMITTED IN THE KENYATTA NATIONAL HOSPITAL BURNS UNIT

NELLY CHEROP AMAKOBE



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Factors Associated with Increasing Incidence of Burns among Adult Patients Admitted in the Kenyatta National Hospital Burns Unit

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Abstract

Purpose: The purpose of this study was to establish the factors associated with increasing incidence of burns among adult patients admitted in the Kenyatta National Hospital burns unit.

Materials and methods: The population of this research consisted of all patients in the burns unit at Kenyatta hospital. The study used primary data in particular used questionnaires. The questionnaire consisted of structured closed ended statements. Data was analyzed using Statistical Package for Social Sciences (SPSS) mainly by use of descriptive statistics. Descriptive statistics included mode, mean, median, standard deviation. Data was presented by use of graphs, pie charts and tables.

Results: The study findings indicated that there has been an increase in number of patients with burns which is associated with various factors such as demographics factors, knowledge related factors and social economic factors causing the increased incidences among the patients. Specifically, poverty, overcrowding, having more than 3 children in the house, illegal electricity connection, lack of access roads and solid waste accumulation were identified as significant risk factors associated with injury in general. It can be concluded that demographics factors also led to increased incidences of burns due to low education and occupation hence forcing people to live in challenging areas.

Recommendations: From the study findings the researcher recommend that it's important to educate the citizens in order to make them more aware of the dangers associated with various factors such as illegal electricity connection and lack of access roads. In doing this more cases of fire would be reduced and reduce loss of lives and property in more fire prone areas. The study also recommends that the Government through the Ministry of Public Health and Sanitation should impart knowledge related to the burns especially on how people can take preventive measures and emergency measures against fire outbreak.

Keywords: *burns, demographic factors, social economic factors*

1.0 INTRODUCTION

1.1 Background of the Study

Burn is a type of injury to flesh caused by heat, electricity, chemicals, light, radiation or friction (Saunders, 2007)**.** The extent of the injury depends on the degree of heat and length of time in contact with the heat (Burn injury model, 2009). A burn is an injury that cannot cause disability, if proper treatment is provided on time. On the contrary, if the injury is inadequately treated or not following standard rules and principles, burn injury can seriously threaten the patient's life, and lead to complications such as disabilities that increase burden to family, community and the nation may arise.

Worldwide burn injury is a problem, it causes intense pain and long term morbidity is often a significant problem for burn a survivor that creates suffering for the individual as well as for family and community.

The causes of burn injuries are intense heat or flame, scalds and radiation burns (from the sun's ultraviolet rays), chemical burns and electrical burns. (Chaliseet al., 2008; Lawrence, 2008). Developing countries have a high incidence of burn injuries, creating a formidable public health problem.

The incidence of burns varies across countries, populations, and time the severity of a burn depends on the degree of heat, duration of exposure, and thickness of the involved skin (Sen, Greenhalgh & Palmieri, 2010)

The treatment of burns requires a multidisciplinary approach; it varies depending on the psychological and physiological status of the patient. The main components of treatment are surgical intervention (early excision/skin grafting), volume therapy, the treatment of sepsis and multi-organ failure, nutrition, and rehabilitation (Evers, Bhavsar & Mailander,2010). The quality of nursing is also of great importance for successful outcomes (Osborn, 2003).

1.2 Research Problem

Burn injuries among adults have become a major problem in Kenya today leading to, prolonged hospital stay, disfigurement, disability and increased mortality rates. In the 2011-2012 the number of adult patients admitted in KNH with burn injuries is three times more than the past years.

Most of the adult burns are caused by flames 66% (including petrol, kerosene, gas, candles and falling into fire), 21% caused by scalds, 10% by electricity and 10% by chemicals.

The bed capacity in the burns unit and the burns ward is no longer able to cater for the increased number of admissions in the hospital. To an extent whereby during such crisis the emergency wards are used to admit some of the cases.

Patients are at risk of many complications which include- infections, decrease tissue perfusion, acute renal failure, contracture and death (Pham, Cancio & Gibran, 2008).

Therefore, the major objective of this study is to address the factors associated with the increasing incidences of burns among adult patients admitted in Kenyatta National Hospital Burns Unit**.** Burn injuries are common in Kenya yet evidence shows that prevention strategies can work; therefore

there is an urgent need to address factors associated with increased incidence of burns among adults admitted at KNH Burns unit.

1.3 Research Objectives

1.3.1 Broad Objective

The general objective of the study is to establish the factors associated with increasing incidence of burns among adult patients admitted in the Kenyatta National Hospital burns unit

1.3.2 Specific Objectives

i. To establish the demographic factors associated with increasing incidences of burns among adult patients admitted in the Kenyatta National Hospital Burns Unit
ii. To establish influence of lack of awareness on the increasing incidences of burns among adult patients admitted in the Kenyatta National Hospital Burns Unit
iii. To establish the influence of social economic factors on the increasing incidences of burns among adult patients admitted in the Kenyatta National Hospital Burns Unit.

2.0 LITERATURE REVIEW

2.1 Empirical Literature Review

Burn injury is an acute surgical problem which needs optimal management. Burn patients are at risk of many complications if immediate optimal nursing care is not provided, (Pham, Cancio & Gibran, 2008). Burns in pediatrics' differ from those in adults in multiple aspects; the extent and depth of the burn injury are often more severe; the pediatrics' body proportions differ, from that of adult resulting in greater evaporative water and heat loss, and fluid requirements are therefore generally greater. Pediatrics' have a relatively thinner dermis, so for any given thermal insult the infant will sustain a deeper burn than the adult (Lowell, Quinlan, Gottlieb,2008).The pattern of burn injuries has been reported to vary from one community to another and is influenced by age, sex, economic status and local customs, social and environmental circumstances (Al-Shehri, 2008).

Optimal management of burn injuries is important because they are commonly painful and can result in disfiguring, disabling scarring, and amputation of affected parts or death in severe cases. The management of pediatric burns and their sequelae remains demanding and extremely costly even in well-equipped, modern burn units of advanced societies (Atiyeh, Costagliola, Hayek, 2009). However, in most developing countries, late presentation to health facilities, lack of well equipped burn centers and trained medical personnel for treatment and rehabilitation of burn injury patients, non existing early excision and skin grafting contributes significantly to increasing morbidity and mortality (Dongo, Irekpita, Oseghali, Ogbebor, Iyamu,et al, 2007). The outcome of burn injuries is greatly influenced by the quality of care that patients receive, patient nutritional needs, resources available and skills of health care providers (Burn injury model, 2009). Burn

injuries can results into many complications such as infections, electrolyte imbalance, respiratory distress, shock and multiple organ dysfunction syndrome. Infection is the leading cause of mortality and morbidity in the critical care patient.

2.1.1 Demographic Factors

Burns occur most frequently in children aged one to five years old. Young adults and children under the age of five years have the highest risk of death from burn injury (Morrow, 1996). Hot liquid burns (hot water, tea and oil) are the most common and regularly occur in the home. Flame injury normally results in a larger body surface area being burnt (Leong, 1995). In South Africa burns from fire, paraffin stove explosion and torched homes are common with the increasing urban informal settlement (Lakhoo, 1995). Toddlers and infants have been associated with increased number of burns due to their curiosity of the environment and an increased yet still evolving and unstable ability to explore their environment (Van Niekerk, Rode & Laflamme, 2004).

Haik, Liran, Tessone, Givon, Orenstein and Peleg (2007) conducted a study on Burns in Israel: demographic, etiologic and clinical trends, 1997-2003. The purpose of the study was to identify risk factors for burn injuries and provide a starting point for the establishment of an effective prevention plan. The authors analyzed the demographic, etiologic and clinical data of 5000 burn patients admitted to the five major hospitals with burn units in Israel during a 7 year period (1997-2003). Data were obtained from the records of the Israeli National Trauma Registry. The differences between various groups were evaluated using the chi-square test. Male gender was twice as frequent as female gender in burn patients (68.0% vs. 31.9%), and non-Jewish ethnicity was more common when considering their proportion in the total population (62.3% vs. 36.8%). Second and third-degree burns with body surface areas less than 10% constituted the largest group (around 50%). The largest age group was 0-1 years, constituting 22.2% of the cases. Inhalation injury was uncommon (1.9%). The most common etiologies were hot liquids (45.8%) and open fire (27.5%). Children less than 10 years old were burnt mainly by hot liquids while the main cause of burns for adults > 20 years old was an open flame. The majority of burns occurred at home (58%); around 15% were work related. The mean duration of hospitalization was 13.7 days (SD 17.7); 15.5% were in an intensive care unit with a mean duration of 12.1 days (SD 17.1). Surgical procedures became more common during the period of the study (from 13.4% in 1998 to 26.59% in 2002, average 19.8%). The mortality rate was 4.4%. They found a strong correlation between burn degree and total body surface area and mortality (0.25% mortality for 2nd to 3rd-degree burns with less than 10% TBSA, 5.4% for 2nd to 3rd-degree burns with 20-39% TBSA, and 96.6% for burns > 90% TBSA). The worst prognosis was for those over the age of 70 (mortality rate 35.3%) and the best prognosis was for the 0-1 year group (survival rate 99.6%). The groups at highest risk were children 0-1 years old, males and non-Jews (the incidence rate among non-Jews was 1.5 times higher than their share in the general population). Those with the highest mortality rate were victims of burns > 90% TBSA and patients older than 70. Most burns occurred at home.

2.1.2 Lack of Awareness

In a rural area of South Africa, the average interval from the time of burn to arrival in the hospital was estimated to be 42 hours (www.who.int). This results in delay of treatment for the burn wounds, possibly increases the risk of secondary complications and may have a negative effect on prognosis. No literature was found on epidemiology of burn injury in rural areas in South Africa,

however in a study carried out in China, children from the rural areas accounted 1.6 to 12.94 times more than hospitalizations from the urban areas. Reasons for this include there are more people living in the countryside in China as well as urban families comply with the one-child policy and so they are more likely to be more cautious (Kai-Yang, 2008).

Ndiritu, Ngumi and Nyaim (2006) conducted a study on Burns: the epidemiological pattern, risk and safety awareness at Kenyatta National Hospital, Nairobi. The authors asserted that many burns are preventable but there is no published local prospective data on the epidemiological pattern of burns that would form the basis of care and formulation of burn prevention strategies. The study adopted a cross-sectional study and focused on a sample size of one hundred and nine consecutive burn patients admitted at Kenyatta National Hospital. The study findings indicated that the mean age was 14.4 years (median 7.0, range 0.2-66 years). Mean total body surface area burned (TBSA) was 22.3% (median 13.0, range 1-95%). Children under five years were 48.6% with more scalds compared to adults. Open flames burns, involvement of accelerants and assault were prominent among adults. Education level above primary school was associated with higher risk awareness compared with primary level education or below. The study concluded that the pattern of burns noted resembles other reported series but the role of accelerants and assault appears enhanced in this study. Public education campaigns aimed at burns reduction could be tailored to the educational level of target population.

Kai-Yang (2008), comments that the majority of burn injuries occur indoors (1.62 to 17 times the rate of injuries that occur outdoors) and that this is likely due to younger children living and playing mainly indoors. Other studies, particularly those reported by Forjuoh, Guyer and Smith (1995), Fernandez-Morales, Galvez- Alcaraz, Fernandez-Crehuet-Navajas, Gomez-Grazia and Salinas-Martinez (1997), and Panjeshahin, Lari, Talei, Shamsnia and Alaghehbandan (2001) have showed that indoor burns occurred mainly in the kitchen and bathroom. Van Niekerk, Seedat, Menckel & Laflamme (2007) comment how caregiver's testimonies emphasize the involvement of necessary communal tasks, including chores, child care, unexpected events, crises and work and this may decrease the caregiver's ability to supervise and protect the child in hazardous home environments.

2.1.3 Social Economic Factors

Some evidence has linked a number of familial factors to burn injuries amongst children. It has been documented globally that poor socio-economic circumstances increase the risk of paediatric burn injuries (Cubbins, LeClere & Smith, 2000; Van Niekerk, Reimers and Laflamme, 2006; Forjouh, 2006; Edelman, 2007; van Niekerk, 2007; Peck et al, 2008). The World Health Organisation (WHO) states that over 90% of fatal fire-related burns occur in low and middle-income countries. Over 98% of deaths from fire and burns occur in developing nations, which are least able to provide the resources for care or the community support for rehabilitation (Peck et al, 2008).

Ombati, Ndaguatha and Wanjeri (2013) did a study on the risk factors for kerosene stove explosion burns seen at Kenyatta National Hospital in Kenya. The study was a prospective longitudinal descriptive study carried out at the Kenyatta National Hospital. Forty-eight patients who met the inclusion criteria were recruited into the study over a period of 6 months from November 2010 to April 2011 and the data was collected using a structured questionnaire. The analysis, using SPSS version 17.0 was done by associating occurrence of injury to: age, sex, socioeconomic status and

level of education of patient. Results indicated that the mean age of patients who sustained kerosene stove explosion burns was 23.6 years (SD ± 11.7) with the commonest age group being 20-39 years. More females were affected than males by a ratio of 7:3 and ninety two percent of those who sustained these burns were either from poor or lower middle socio-economic class. Stove explosions occurred mainly during cooking and when kerosene refill was being done. Most of the patients (63%) reported having bought kerosene from fuel vendors and almost all explosions were caused by the wick type of stove (98%). The study concluded that young females from poor socioeconomic background were found to be at a higher risk for kerosene stove explosion burns. The wick stove is a common cause of burns especially when users unwittingly refill it with kerosene when already lit resulting in an explosion. Prevention can be done through evidence based public health education targeting the groups at risk and enactment of relevant laws.

3.0 RESEARCH METHODOLOGY

This study adopted a descriptive design. The study targets a population of all adult patients with burns admitted at Kenyatta National Hospital. Kenyatta national hospital admits around 150 adults per month hence the target population was 150 patients.
A sample size of 108 respondents was determined by the fisher et al, (2003) formula for small population. The researcher used a questionnaire as a data collection tool. The questionnaire comprised of both open and closed ended questions.

4.0 RESULTS

4.1 Descriptive for Respondents

4.1.1 Gender of Study Participants

The study sought to establish the gender of the respondents. The findings are presented in figure 1 below

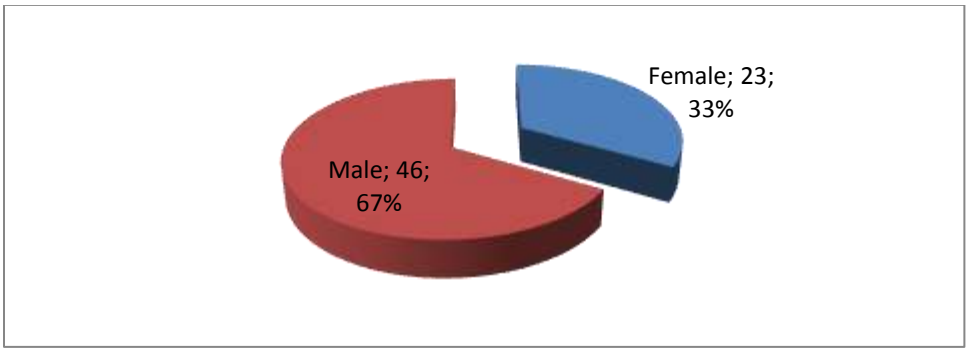

Figure 1: Gender of the Respondents

As illustrated in figure1, the findings revealed that 67% (n=46) of the respondents indicated that they were male while 33% (n=23) of the respondents indicated that they were female. From the content analysis, the respondents indicated that they were from Eastleigh, Kiambu, kangemi,

majengo, mukuru kwa reuben, Kibera, and Dandora. The findings imply that most of the patients were from slums where there were prone to illegal connections of electricity.

4.1.2 Age of the Respondents

The study sought to establish the age bracket of the respondents. The findings are presented in Table 1 below.

Table 1: Age of the Respondents

Age Bracket	Frequency	Percent
18 to 25 years	42	60.9
26 to 35 years	21	30.4
36 - 45 years	6	8.7
Total	69	100

As illustrated in table 1, the findings revealed that 60.9% (n=42)of the respondents were aged between 18 to 25 years, 30.4%(n=21) indicated between 26 to 35 years of age and 8.7% (n=6)indicated they were aged between 36 to 45 years.

4.1.3 Level of Education

The study sought to establish the level of education of the respondents. The findings are presented in figure 2 below.

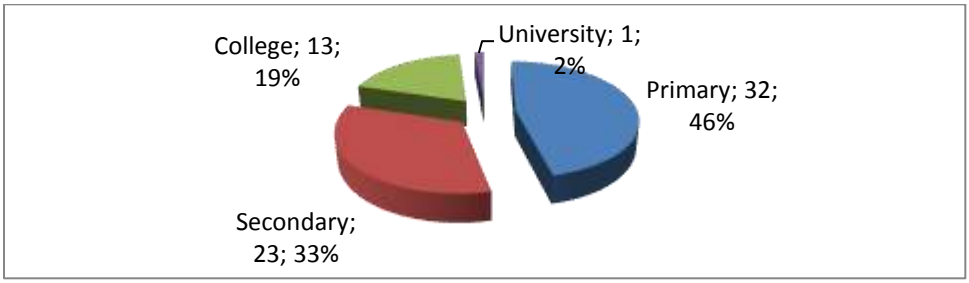

Figure 2: Level of Education

As illustrated in figure.2, the findings revealed that 46% (n=32) of the respondents indicated that they only possessed primary school education. However, 33% (n=23) of the respondents indicated that they held secondary school education while 19% (n=13) indicated that they possessed tertiary education and finally 2% (n=1) of the respondents indicated that they are university graduates.

4.1.4 Occupation

The study sought to establish the occupation of the respondents. The findings are presented in figure 3 below.

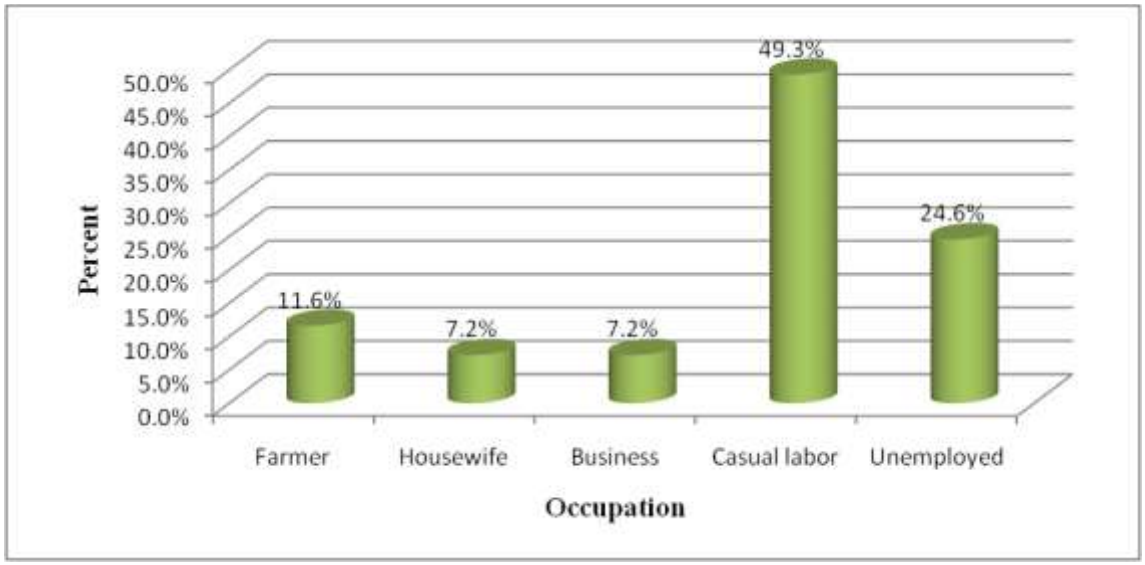

Figure 3: Occupation

Figure 3 indicates that 49.3% (n=34) of the respondents were casual labourers, 24.6% (n=17) were unemployed and 11.6% (n=8) indicated they were farmers. In addition 7.2% (n=5) of the respondents indicated they were house wives and another 7.2% (n=5) indicated they were in business.

4.1.5 Marital Status

The study sought to establish the marital status of the respondents. The findings are presented in figure 4 below.

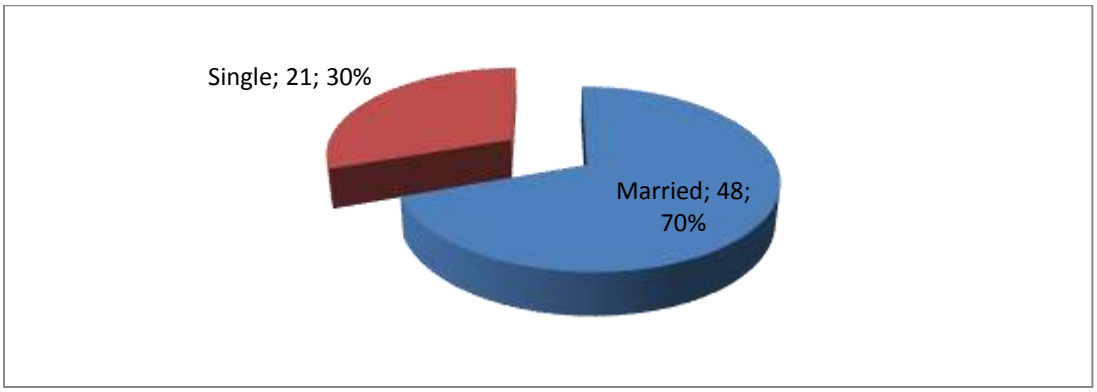

Figure4: Marital Status of Study Participants

As illustrated in figure 4.4, the findings revealed that 70% (n=48) of the respondents indicated that they were married while 30% (n=21) of the respondents indicated that they were single.

4.2 Knowledge Related Factors

4.2.1 Risk Exposure Factors

The study sought to find out whether the respondents were aware of factors that increase exposure and vulnerability to fire risk. The findings are presented in table 5 below.

Table 2: Risk Factors

	No		Yes	
Risk factors	**Frequency**	**Percent**	**Frequency**	**Percent**
Poverty	18	26.1%	51	73.9%
House Congestion	22	31.9%	47	68.1%
High Population	19	27.5%	50	72.5%
Illegal Electricity Connection	16	23.2%	53	76.8%
Lack of Roads	23	33.3%	46	66.7%
Solid Waste Accumulation	34	49.3%	35	50.7%

As illustrated in table 2, the study findings revealed that 73.9% (n=51) of the respondents indicated poverty as a risk factor, while 68.1% (n=47) indicated house congestion, and 72.5% (n=50) indicated high population as risk factors for causing fire. In addition, 76.8% (n=53) of the respondents indicated illegal electricity connection as risk cause of fire, 66.7% (n=46) indicated lack of roads and 50.7% (n=35) indicated solid waste accumulation as a risk factor that causes fire.

The respondents were asked to indicate what were the most causes of fire. Content analysis revealed that most causes of fire were alcoholism, marital fights, gas explosions, electricity faults, hot oil, water, stove explosions, illegal electricity connections, electrical shocks and bombs explosions. The respondents were also asked to indicate the most prone people to be affected by the fire accidents. From content analysis results, the most affected are children and in rare cases both adults and children.

Table 3: Causes of Fire

Risk factors	**No**	**Yes**
Gas Explosions	40%	60%
Electrical faults	35%	65%
Stove explosions	21%	79%
Illegal Electricity Connection	28%	72%
Hot oil	30%	70%
Hot water	23%	77%

4.2.2 Access to Municipal Council

The study sought to find out in case of a fire disaster, whether the respondents were able to access the municipal council in time for them to be able to send the fire extinguishers. The findings are presented in figure 5.

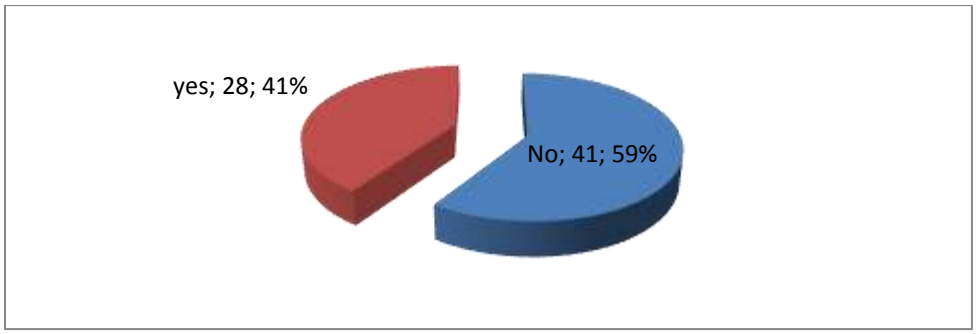

Figure 5: Access to Municipal Council

As revealed in figure 5, the study findings showed that 59% (n=41) of the respondents indicated that the municipal council was not accessible during a fire disaster and 41% (n=28) indicated that the municipal council was accessible in time during a fire disaster to send fire extinguishers.

4.2.3 Emergency Measures

The study sought to find out whether the respondents were aware of any emergencies measures that they can put in place to stop a fire. The findings are presented in figure 6.

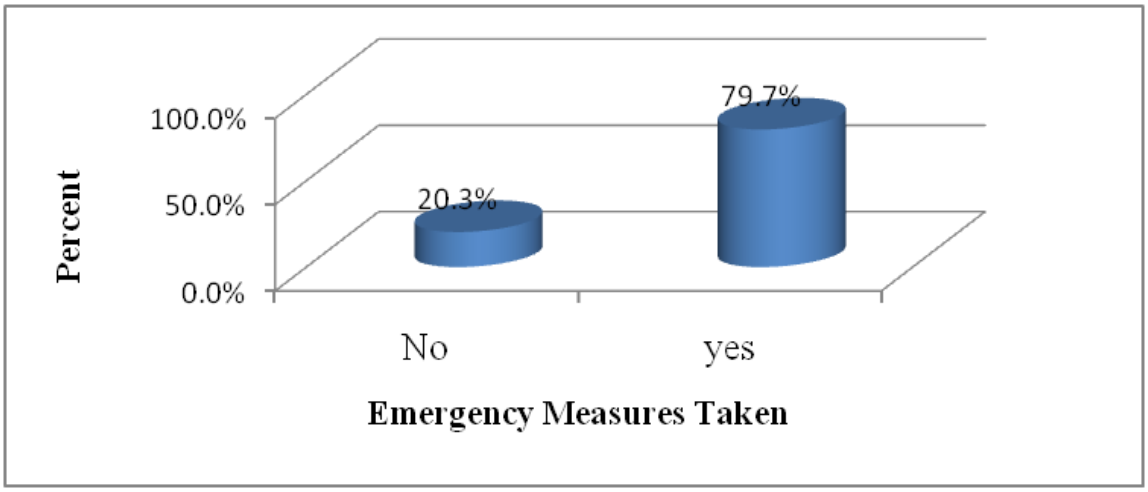

Figure 6: Emergencies Measures

As illustrated in figure 6, the study findings indicated that 79.7% (n=55) of the respondents indicated they were aware of emergency measures to put in place to stop a fire while 20.3% (n=14) were not aware of any emergency measures.

4.2.4 Preventive Measures

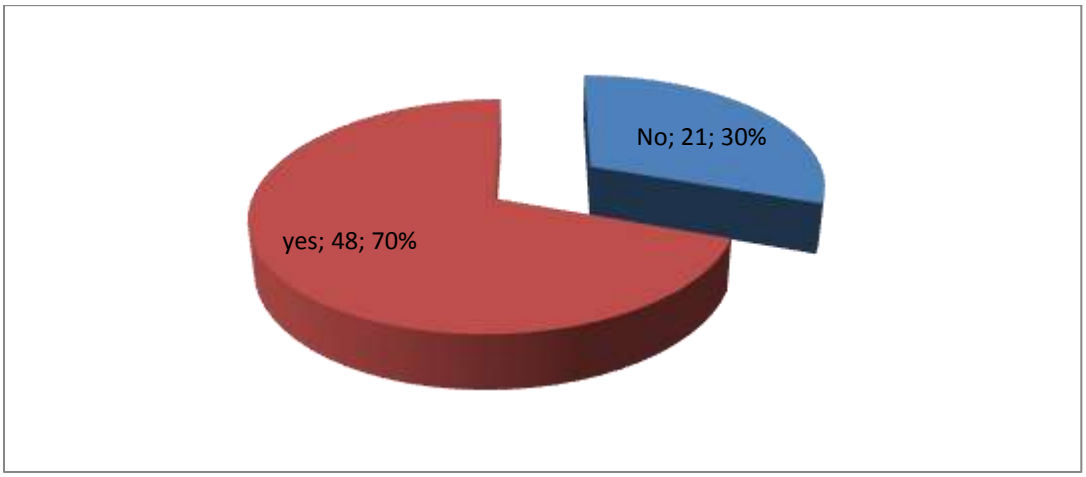

Figure 7: Preventive Measures

As illustrated in figure 7, results indicated that 70% (n=48) of the respondents were aware of preventive measures to use in order to stop occurrences of burns and 30% (n=21) were not aware of the preventive measures. The respondents indicated that the preventive measures that they have put in place are taking caution when using gas and stove, education, taking good care of children, stop taking alcohol, stop marital fights, ensure fire extinguishers next to the people, improve road network, KPLC to improve on electric connection, through educating to create awareness and keeping away the match box from children

Content analysis results indicated that most of the respondents sustained their injuries from electrical shock, bad accident, hot water, kerosene, hot oil at work, sulphuric acid burns, clothes caught fire and children lighting the house when playing.

4.3 Social Economic Factors

4.3.1 Type of House

Table 4: Type of House

Type of House	Frequency	Percent
Permanent building	7	10.1
Semi-permanent	34	49.3
Temporary	28	40.6
Total	69	100

As illustrated in table 4, the study findings revealed that 49.3% (n=34) of the respondents indicated that they lived in semi permanent houses, while 40.6% (n=28) of the respondents indicated that they lived in temporary and 10.1% (n=7) indicated that they lived in permanent houses.

4.3.2 Number of Rooms

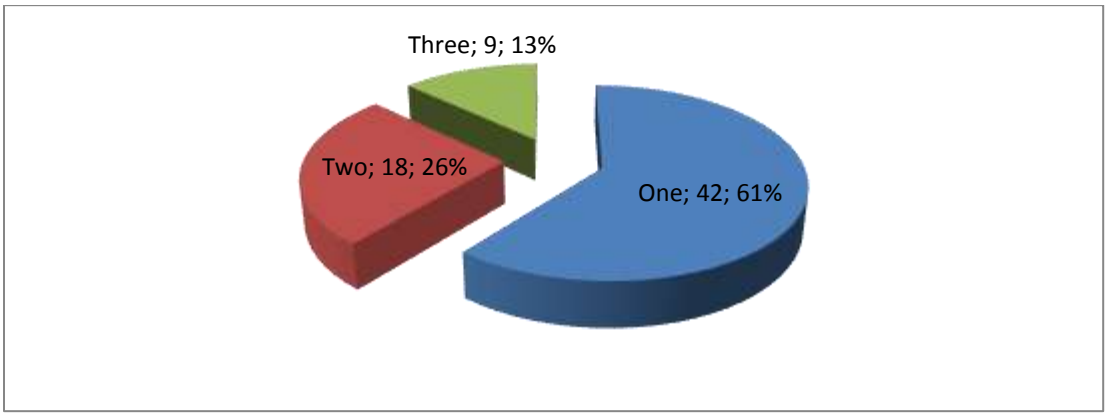

Figure 8: Number of Rooms

As illustrated in figure 8, results revealed that 61% (n=42) of the respondents lived in single rooms, while 26% (n=18) indicated their houses had two rooms and 13% (n=9) indicated their main house had three rooms.

4.3.3 Number of People

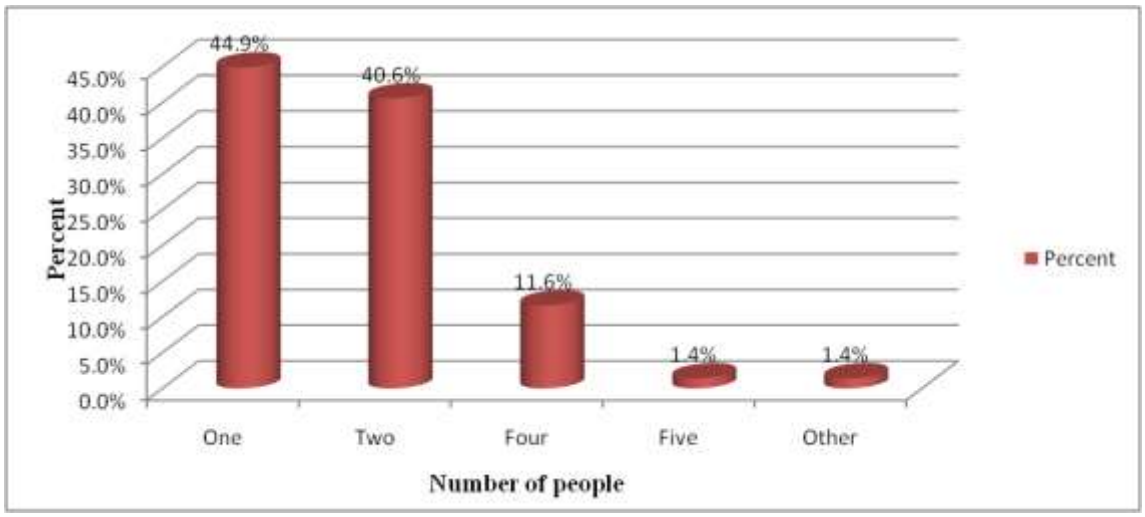

Figure 9: Number of People

As illustrated in figure 9, results revealed that 44.9% (n=31) of the respondents were staying alone in their houses, while 40.6% (n=28) indicated two people lived in the house and 11.6% (n=8) indicated four people lived in the house. One point four percent of the respondents indicated the house they lived in had five people in it and another 1.4% (1) indicated others which mean that the house hosted more than five people and to be precise seven.

4.3.4 Type of Fuel

The study sought to find out the type of fuel the respondents used mainly for cooking in their homes. Results are presented in figure 10 below.

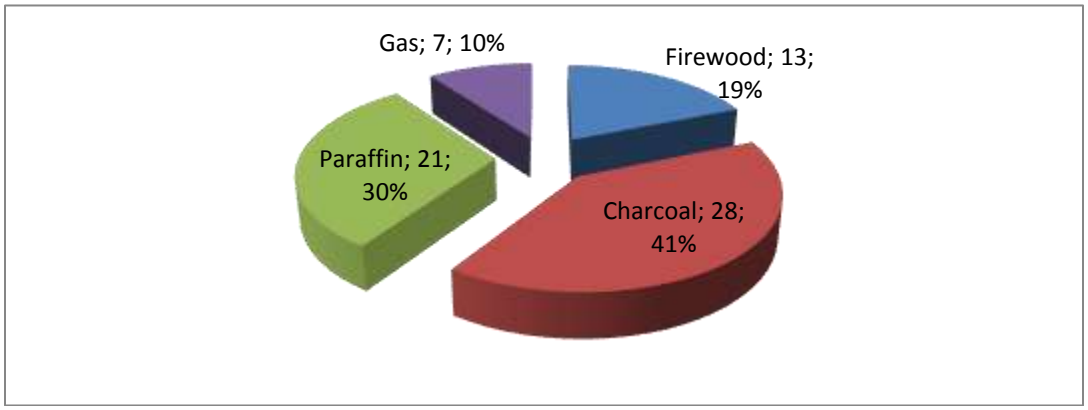

Figure 10: Type of Fuel

Figure 10 reveals that 41% (n=28) of the respondents indicated that they used charcoal, while 30% (n=21) they used paraffin and 19% (n=13) they used firewood. However, only 10% (n=7) of the respondents used gas.

4.3.5 Place of Cooking

The respondents are asked to indicate the place where they cooked their meals from. The study findings are presented in table 5 below.

Table 5: Place of Cooking

Place of Cooking	Frequency	Percent
Inside the house	69	100

As illustrated in table 5, all the respondents indicated that they cooked their food inside the house.

4.3.6 Type of Lighting

The respondents were asked to indicate the type of lighting they use in their houses. Results are presented in figure 11 below

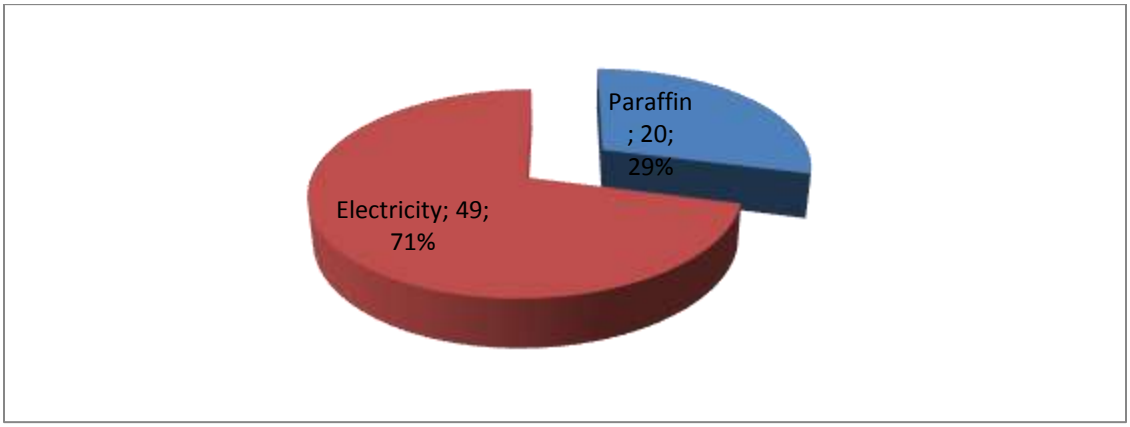

Figure 11: Type of Lighting

As illustrated in figure 11, the study findings indicated that 71% (n=49) of the respondents used electricity and 29% (n=20) indicated they were using paraffin for lighting.

4.3.7 Members Take Alcohol

Table 6: Members Take Alcohol

Member take Alcohol	Frequency	Percent
No	28	40.6
yes	41	59.4
Total	69	100

Table 6 shows that 59.4% (n=41) of the respondents indicated that they had members who took alcohol and 40.6% (n=28) indicated that none of their house hold members took alcohol.

4.3.8 Access Roads

The respondents were asked to indicate whether they are access roads in their area where a fire engine can pass. Results are presented in figure 12 below

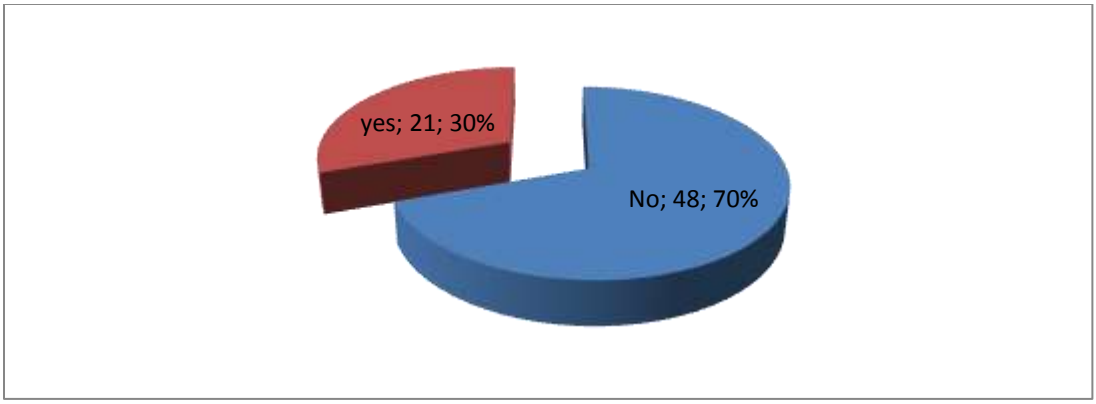

Figure 12: Access Roads

As illustrated in figure 12, results revealed that 70% (n=48) indicated that there were no access roads for fire engines to pass and 30% (n=21) indicated that there were accessible roads where the fire engines could pass.

4.4 Relationship between various factors and incidences of burns

4.4.1 Relationship between Demographics factors and incidences of burns

Relationship between age and incidences of burns was statistically significant (P=0.002). Gender was a significant factor to incidences of burns (P=0.001). Chi square results of marital status and education level towards incidences of burns indicates that there no significant relationship between marital status, education level and incidences of burns. This is supported by an f statistic 1.275 (p=0.291) and 1.959 (p=0.581). This further implies that intervention measures to reduce incidences of burns should not target specific respondents as all respondents (whether married or single and educated or not) have low awareness about fire incidences.

Table 7: Relationship between Demographics factors and incidences of burns

		Incidences of burns		
		Yes	No	Chi-square
Marital Status	Single	20	1	
	Married	41	7	1.375(p=0.241)
Education Level	Primary	30	2	
	Secondary	19	4	
	College	11	2	
	University	1	0	1.959(p=0.581)
Age	18 to 25 years	41	1	
	26 to 35 years	20	1	
	36 - 45 years	0	6	50.185(p=0.000)
Gender	Male	45	1	
	Female	16	7	11.948(p=0.001)

4.4.2 Relationship between Knowledge related factors and incidences of burns

Pearson's chi- square p values was used to show if there is any associations between knowledge related factors and incidences of burns.

A cross tabulation of access to municipal council and incidences of burns indicates that there is no significant relationship between access to municipal council and incidences of burns. This is supported by a chi square statistic of 2.959(p=0.085).

A cross tabulation of emergency measures and incidences of burns indicates that there is no significant relationship between emergency measures and incidences of burns. This is supported by a chi square statistic of 0.340(p=0. 560).

A cross tabulation of preventive measures and incidences of burns indicates that there is no significant relationship between emergency measures and incidences of burns. This is supported by a chi square statistic of 0.126(p=0. 722).

Table 8: Relationship between knowledge related factors and incidences of burns

		Incidences of burns		
		Yes	No	Chi-square
Access to municipal council	No	34	7	
	Yes	27	1	2.959(p=0.085)
Emergency measures	No	13	1	
	Yes	48	7	0.340(p=0.560)
Preventive Measures	No	19	2	
	Yes	42	6	0.126(p=0.722)

4.5.3 Relationship between Socio- economic factors and incidences of burns

Assessment of socio- economic factors on incidences of burns indicated that number of rooms, number of people, type of fuel and type of lighting were among the most significant factors related with incidences of burns. This was supported by (($\chi 2$ (1) = 30.750, P<0.000) (($\chi 2$ (1) = 17.066, P<0.002) (($\chi 2$ (1) = 28.072, P<0.000) (($\chi 2$ (1) = 15.052, P<0.000) respectively. Type of house was not a significant factor in incidences of burns (($\chi 2$ (1) = 5.360, P=0.069).

Table 9: Relationship between socio-economic factors and incidences of burns

		Incidences of burns		
		Yes	No	Chi-square
Type of house	Permanent building	7	0	
	Semi-permanent	27	7	
	Temporary	27	1	5.360(p=0.069)
No. of Rooms	One	41	1	
	Two	17	1	
	Three	3	6	30.750(p=0.000)
Number of people	One	27	4	
	Two	27	1	
	Four	7	1	
	Five	0	1	
	Other	0	1	17.066(p=0.002)
Type of fuel	Firewood	6	7	
	Charcoal	27	1	
	Paraffin	21	0	
	Gas	7	0	28.072(p=0.000)
Type of Lighting	Paraffin	13	7	
	Electricity	48	1	15.052(p=0.000)
Member take alcohol	No	27	1	
	Yes	34	7	2.959(p=0.085)
Access roads	No	41	7	
	Yes	20	1	1.375(p=0.241)

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

5.1.1 Demographics

The findings revealed that 70% (n=48) of the respondents were married while 30% (n=21) were not. 46% (n=32) of the respondents possessed primary school education, 33% (n=23) held secondary school education. Further 49.3% (n=34) were casual labourers, 24.6% (n=17) unemployed and 11.6% (n=8) were farmers. In addition 67% (n=46) were male while 33% (n=23) were female and 60.9% (n=42) were aged between 18 to 25 years, 30.4 %(n=21) were aged between 26 to 35 years and 8.7% (n=6) indicated they were aged between 36 to 45 years. The findings imply that majority of respondents attending Kenyatta National Hospital were married, lowly educated, lived in semi permanent house structures, and were housewives. This implied that marital status, low level of education and traditional houses influenced the causes of burns. Age and gender of the respondents influenced incidences of burns. T-Test results indicate that the difference was significant (p value of 0.000 and 0.001). Parental education level, occupation and marital status as well have been associated with injury. However, these studies have not been consistent and most of them were done in developed countries (Blakely, Atkinson, Kiro, Blaiklock, & D'Souza, 2003; potter, Speechley, Koval, Gutmanis, Campbell & Manuel, 2005). Hong et al., (2005) reported low parental education and occupation as significant risk factors for injury. In Ghana, maternal education was found to be protective against likelihood of a child sustaining injury. On the other hand, Hong Wang conducted a case control study in China and found that parental factors such as education and occupation did not have any influence on injury.

4.1.2 Knowledge Related Factors

About 73.9% (n=51) of the respondents indicated poverty as a risk factor, while 68.1% (n=47) indicated house congestion, and 72.5% (n=50) indicated high population as risk factors for causing fire. In addition, 76.8% (n=53) of the respondents indicated illegal electricity connection as risk cause of fire, 66.7% (n=46) indicated lack of roads and 50.7% (n=35) indicated solid waste accumulation as a risk factor that causes fire. In addition, 59% (n=41) of the respondents indicated that the municipal council was not accessible during a fire disaster and 41% (n=28) indicated that the municipal council was accessible in time during a fire disaster to send fire extinguishers. Furthermore, 79.7% (n=55) of the respondents were aware of emergency measures to put in place to stop a fire while 20.3% (n=14) were not aware of any emergency measures, and 70% (n=48) of the respondents were aware of preventive measures to use in order to stop occurrences of burns and 30% (n=21) were not aware of the preventive measures.

The findings agree with those in Morrissey and Taylor (2006) who pointed out that massive fires are a frequent occurrence in many slum and squatter settlements because of lack of publicly provided fire-fighting systems, extreme proximity and high density of shelters, narrow alleys impeding access by fire fighters, poorly wired electrical systems or use of kerosene stoves and lamps, lack of water sources to douse the flames, and combustibility of construction materials. The absence of municipal development controls to ensure acceptable levels of fire safety further amplifies fire risk. Many slums have experienced such disasters or continue to face serious risks in this regard. Descriptions of recent fire disasters in slums and squatter settlements make it clear

that arson may be used as a weapon, either by public or private interests to remove these communities in preparation for commercial development.

Results from content analysis showed that most affected with burns are children this could be due to young one playing indoors and thus fall on to the causes of burns eg hot water, stoves. The results also indicated that adults were also vulnerable to burns due to ignorance, alcoholism and domestic violence while others is due to bad accidents. The findings agree with those in Palmieri (2009) who asserted that due to their inability or unwillingness to leave a burning room, children are more frequently affected by inhalation injury; outcome for a child with inhalation injury is influenced by the TBSA and thickness of the burn; children typically spend one day in the hospital per percent of TBSA.

5.1.3 Social economic factors

About 49.3% (n=34) of the respondents indicated that they lived in semi permanent houses, while 40.6% (n=28) of the respondents indicated that they lived in temporary and 10.1% (n=7) indicated that they lived in permanent houses. 61% (n=42) of the respondents lived in single rooms, while 26% (n=18) indicated their houses had two rooms and 13% (n=9) indicated their main house had three rooms. In addition, 44.9% (n=31) of the respondents were staying alone in their houses, while 40.6% (n=28) indicated two people lived in the house and 11.6% (n=8) indicated four people lived in the house. One point four percent of the respondents indicated the house they lived in had five people in it and another 1.4% (1) indicated others which mean that the house hosted more than five people and to be precise seven. About 41% (n=28) of the respondents indicated that they used charcoal, while 30% (n=21) they used paraffin and 19% (n=13) they used firewood. However, only 10% (n=7) of the respondents used gas. All the respondents indicated that they cooked their food inside the house while 71% (n=49) of the respondents used electricity and 29% (n=20) indicated they were using paraffin for lighting and 59.4% (n=41) of the respondents indicated that they had members who took alcohol and 40.6% (n=28) indicated that none of their house hold members took alcohol. Finally, 70% (n=48) indicated that there were no access roads for fire engines to pass and 30% (n=21) indicated that there were accessible roads where the fire engines could pass.

Assessment of socio- economic factors on incidences of burns indicated that number of rooms, number of people, type of fuel and type of lighting were among the most significant factors related with incidences of burns. This was supported by (($\chi 2$ (1) = 30.750, P<0.000) (($\chi 2$ (1) = 17.066, P<0.002) (($\chi 2$ (1) = 28.072, P<0.000) (($\chi 2$ (1) = 15.052, P<0.000) respectively. This implies that number of rooms, number of people, type of fuel and type of lighting influenced incidence of burns among the respondents.

The findings concur with those in Abu Ragheb, Qaryoute and El-Muhtseb (2005) who argued that socio-cultural factors are among the major causes of different sex predisposition of burn injury in developing countries like India compared to other developed nations. On the other hand, the male predominance in the younger age group (5-10 years) might be explained by the inquisitive and exploring nature of boys of this age. This finding also concurs with other reports from different countries such as Duggan and Quine (2002) who retaliates that with respect to the place where the burn injury occurred, the majority of burns (91.4%) occurred in the home. This figure is comparable to other reports from developing countries. However, figures from industrialized

countries are clearly lower than those reported from developing countries. This may be due to the relatively higher percentage of occupational and recreational burns or due to better home safety with safer cooking and heating devices in industrialized countries.

5.2 Conclusions

There has been an increase in number of patients with burns which is associated with various factors such as demographics factors, knowledge related factors and social economic factors causing the increased incidences among the patients. Specifically, poverty, overcrowding, having more than 3 children in the house, illegal electricity connection, lack of access roads and solid waste accumulation were identified as significant risk factors associated with injury in general. It can also be concluded that demographics factors also led to increased incidences of burns due to low education and occupation hence forcing people to live in challenging areas.

5.3 Recommendations

From the study findings the researcher recommends that it's important to educate the citizens in order to make them more aware of the dangers associated with various factors such as illegal electricity connection and lack of access roads. In doing this more cases of fire would be reduced and reduce loss of lives and property in more fire prone areas.

The study also recommends that the Government through the Ministry of Public Health and Sanitation should impart knowledge related to the burns especially on how people can take preventive measures and emergency measures against fire outbreak.

5.4 Areas for further Research

A study looking at demographics and socio-economics of the population being affected by burn injuries in rural settings and comparing this data to urban settings.

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