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**THE INFLUENCE OF LACK OF AWARENESS ON THE
INCREASING INCIDENCES OF BURNS AMONG ADULT
PATIENTS ADMITTED IN THE KENYATTA NATIONAL
HOSPITAL BURNS UNIT**

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Abstract

Purpose: The purpose of the study was to establish influence of lack of awareness on the increasing incidences of burns among adult patients admitted in the Kenyatta National Hospital Burns Unit.

Methodology: 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 knowledge related factors causing the increased incidences among the patients.

Unique contribution to theory, practice and policy: From the study findings the researcher. 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: *lack of awareness, incidences of burns, adult patients, Kenyatta National Hospital Burns Unit*

1.0 INTRODUCTION

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). Burns are global Public Health problems, accounting for an estimated 195,000 deaths annually. World Health organization (WHO) estimated that 43000 people die of burns in Africa every year with a rate of 6.1 per 100,000.

Burn injuries are common in Kenya and are a leading cause of morbidity and mortality rates, including prolonged hospitalization, disfigurement and disability, often with resulting stigma and rejection. Such injuries impose substantial medical, social, economic and social burden on society and victims of families. Patients often develop numerous surgical procedures over a long period of hospitalization and some require readmission for reconstructive surgery.

Kenyatta National Hospital (KNH) in Nairobi 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 is currently the largest referral and teaching hospital in the country.

KNH has turned 112 years and it had its Centenary Celebration in 2001. The Hospital was built to fulfill the role of being a National Referral and Teaching Hospital, as well as to provide medical research environment.

KNH is the only hospital in Kenya that has a Burns unit that caters for patients with burn injuries from all over the country. The burns unit is well equipped and the nurses provide health care services in collaboration with the plastic surgeons, psychologists, physiotherapists, occupational therapists and nutritionists. All patients with severe burns from other hospitals in the country are referred to KNH for proper treatment. It admits both adults and children in the same unit; the unit has a bed capacity for 21 patients. The patients are admitted in the Burns unit in their acute phase, they are managed until when they are stable to be transferred to another ward (ward 4D) which has a large bed capacity of 100 patients to continue with management.

1.2 Problem Statement

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 Objective

To establish influence of lack of awareness on the increasing incidences of burns among adult patients admitted in the Kenyatta National Hospital Burns Unit

2.0 LITERATURE REVIEW

2.1 Empirical Review

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 et al, 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 et al (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 Alaghebandan (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.

Domestic injuries do not account for all burn-related injuries within the United States. Burn injuries account for 5 percent to 10 percent of combat casualties (White & Renz, 2008) and are not included within the domestic reports of burn unit admissions. Burn-related casualties are linked to a variety of mechanisms, including explosions related to incendiary devices and secondary fires that ignite clothing and surrounding materials following the primary explosion (White & Renz, 2008). Despite active efforts to ensure optimal protection against flame for the combatant, the face and hands continue to be those areas least protected resulting in significant burns to these areas (White & Renz, 2008).

Marsh, Sheikh, Khalil, Kamil, Jaffer-uz-Zaman, Qureshi, Siraj, Luby and Effendi (1996) carried out a study on Epidemiology of adults hospitalized with burns in Karachi, Pakistan. Burns are a leading cause of adult death in Karachi slums, therefore we reviewed 1 year's logged experience (November 1992 to October 1993) at Karachi's two adult burn units for patient age, sex, burn severity and outcome. Also 47 inpatients were interviewed regarding their circumstances of injury. We grouped these using Haddon's Matrix. The log identified 832 patients. Females (57 per cent) outnumbered males and were younger on average (25.1 vs 27.6 years, $P = 0.002$). Females had more severe burns than males (57 per cent vs 50 per cent total body surface area (TBSA) burn, $P = 0.002$). At the unit with outcome data ($n = 556$), the case fatality was 56 per cent. The estimated adult mortality due to burns in Karachi was 10.2/100 000, 6.8/100 000 and 14.1/100 000 for men and women, respectively. Burns of interviewed patients were most often associated with flames (33/47), but stove bursts caused the most severe injury (52 per cent TBSA). These patients were predominantly young uneducated female houseworkers, clothed in loose attire who were injured during daylight at home around a floor-level stove, unaware of fire safety, and who received no first aid. It was concluded that the high burn severity and case fatality rates demand: (1) preventive measures, such as kitchen sand buckets, safer stove design and placement and education on fire safety and first aid, and (2) risk factor analysis to refine interventions.

Children are highly susceptible to injury due to curiosity and the drive to experiment and discover. However, their drive is not matched by the capacity to understand and respond to danger (Manciaux & Romer, 1991). Therefore, regular supervision is necessary and this can be a challenge in poor families. Many young children are left to be cared for by older siblings when their parents have other responsibilities.

Slums have grown as a seemingly inevitable part of modern urban life. Low-income people find the cheap accommodation helpful in their need to keep housekeeping costs low enough to afford. To do this, they tolerate much less than ideal conditions, no doubt hoping to improve and move to a better place. If the cheap accommodation is also well placed for employment, the better. Where they are not well placed for work or where formal work is not available or not sought, slum housing often plays host to a lively community of home-based enterprises of all sorts, providing the services and employment opportunities unfulfilled by planned cities. This however creates and increases vulnerability to fires (McEntire, 2005; MacGregor *et al.*, 2005).

Morrissey and Taylor (2006) 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.

In many slums, especially in poor countries, many people live in narrow alleys that do not allow vehicles like ambulances and fire trucks to pass. The lack of services such as routine garbage collection allows rubbish to accumulate in huge quantities. Lack of infrastructure is caused by the informal nature of settlement and lack of planning for the poor by government officials (Osorio and Hurych, 2004). Slums are generally home to the poorest and most marginalized urban populations. The combination of poverty, marginality, overcrowding and limited, if any, service provision, exposes residents to a range of ongoing hazards; particularly informal dwelling fires, and creates a risk environment in which the effects of even minor incidents can be devastating for the affected households (Robyn, 2009).

3.0 RESEARCH METHODOLOGY

This study adopted a descriptive design. This descriptive research design was preferred because the study needed to establish the demographic factors associated with increasing incidence of burns among adult patients admitted in the Kenyatta national hospital burns unit. The study targeted 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 study used simple random sampling in selecting the respondents for the study. In this study primary data was collected using a structured questionnaire, since it is easier to administer, analyze and economical in terms of time and money. The researcher used a questionnaire as a data collection tool. The questionnaire comprised of both open and closed ended questions. After data was collected, it was prepared in readiness for analysis by editing, handling blank responses, categorizing and keying into Statistical Package for Social Sciences (SPSS) computer software for analysis. SPSS was used to produce frequencies, descriptive and inferential statistics which helped to derive conclusions and generalizations regarding the population.

4.0 RESULTS AND DISCUSSIONS

4.1 Response Rate

A total of 69 responses/Questionnaires were received out of a possible 108 Questionnaires from the respondents. This was a response rate of 63.8%. According to Mugenda and Mugenda (2003), a response rate of 50% or more is adequate. Babbie (2004) also asserted that return rates of 50% are acceptable to analyze and publish, 60% is good and 70% is very good.

Table 1: Response Rate

Response	Total	Percent
Returned	69	63.8%
Unreturned	39	36.2%
Total	108	100%

4.2 Descriptive Statistics

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 2 below.

Table 2: Risk Factors

Risk factors	No		Yes	
	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 1.

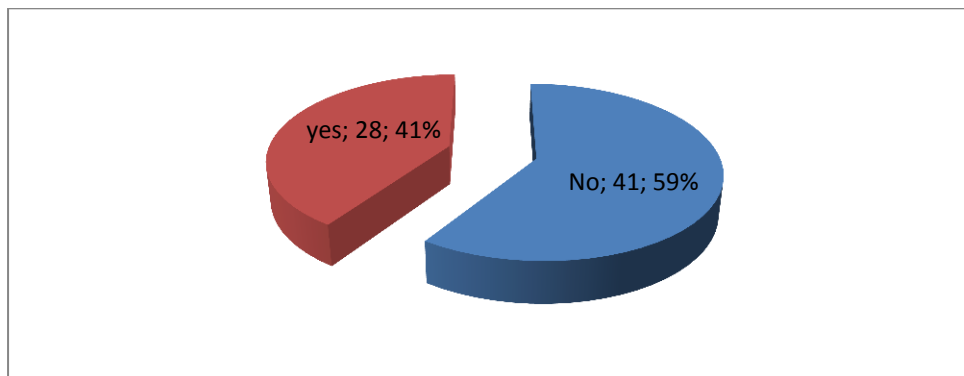


Figure 1: Access to Municipal Council

As revealed in figure 1, 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 emergency measures that they can put in place to stop a fire. The findings are presented in figure 2.

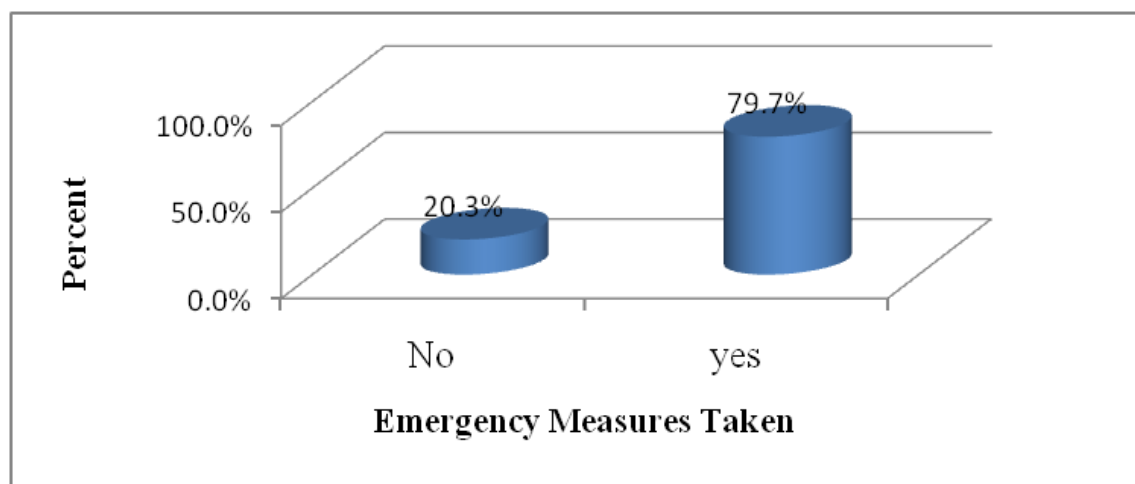


Figure 2: Emergencies Measures

As illustrated in figure 2, 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

The study sought to find out whether the respondents were aware of any preventive measures that can be put in place to reduce the occurrences' of burns. The findings are presented in figure 2 below.

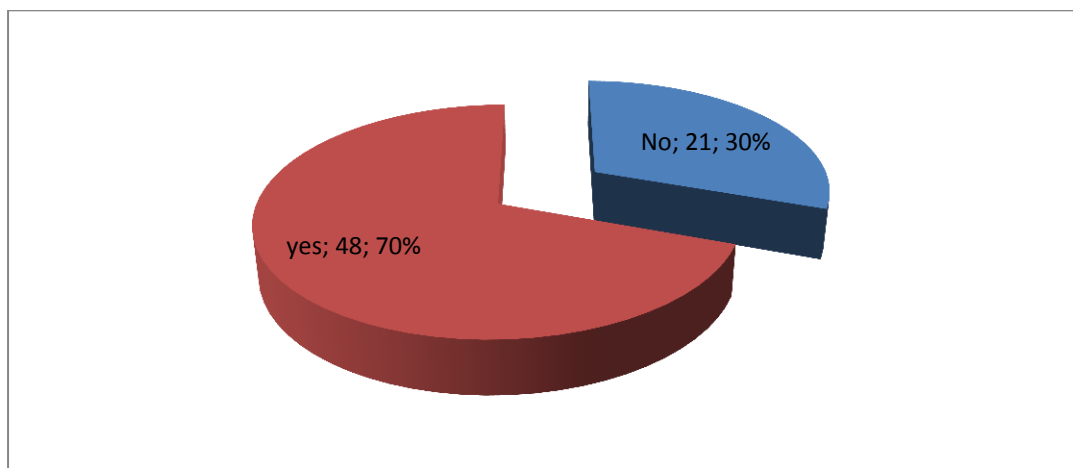


Figure 3: Preventive Measures

As illustrated in figure 3, 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 Inferential Statistics

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 4: Relationship between knowledge related factors and incidences of burns

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

5.0 DISCUSSION CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

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 et al. (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.

5.2 Conclusions

There has been an increase in number of patients with burns which is associated with various knowledge related 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.

5.3 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.

5.4 Areas for Further Studies

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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