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DEMOGRAPHIC FACTORS ASSOCIATED WITH 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 the demographic factors associated with 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 demographics factors causing the increased incidences among the patients.

Unique contribution to theory, practice and policy: 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: *demographic factors, 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 the demographic factors associated with increasing incidences of burns among adult patients admitted in the Kenyatta National Hospital Burns Unit

2.0 LITERATURE REVIEW

2.1 Empirical Review

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 and 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.

Boys have also been associated with an increased risk of burn injury due to their mischievous nature and greater activity levels compared to those of girls (van Niekerk, 2007; Kai-Yang, Zhao- Fan, Luo-Man, Yi-Tao, Tao, Wei, Bing, Jie, Yu and Yu, 2008). However, it has been shown that older girls have a higher risk due to their domestic activities (Van Niekerk, Rode and Laflamme, 2004; Piazza-Waggoner, Dotson, Adams, Joseph, Goldfarb and Slater, 2005). During the winter season it has been reported that there is a higher incidence rate. This is to be expected as families are exposed to the cold weather and attempt to keep warm by lighting fires or using heaters (Van Niekerk, Rode and Laflamme, 2004).

Although scalds are the most common type of pediatric burn, flame burns (such as those caused by house fires) can be most devastating: They cause inhalation injuries which have a higher association with morbidity and mortality (Palmieri et al., 2009). Young children and the elderly are at the highest risk for fatality caused by house fire injury (DiGuiseppi, Edwards, Godward, Roberts, & Wade, 2000; Warda, Tenenbein, & Moffatt, 1999). 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 (Palmieri et al., 2009).

As regards sex distribution, the female preponderance in the age group 20-40 years concurs with other reports from developing countries such as India and Jordan as well as other Egyptian studies and might be explained by the involvement of females in domestic activities and also dowry deaths. 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 (Abu Ragheb, Qaryoute & El-Muhtseb, 2005) . This finding concurs with other reports from different countries. 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 (Duggan & Quine, 2002).

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.

Thermal burns are burns to the skin caused by any external heat source. This may be in the form of a naked flame from an open fireplace or house fire, a scald from steam, hot or molten liquid, or via direct contact with a hot object such as a hot oven rack or hot cooking pan. Other types of burns include radiation burns (from the sun's ultraviolet rays), chemical burns and electrical burns. (Chalise et al., 2008; Lawrence, 2008). Developing countries have a high incidence of burn injuries, creating a formidable public health problem. Moreover, high population density, illiteracy and poverty are the main demographic factors associated with a high risk of burn (Khajuria et al., 2009). Despite major advances in the care of burned patients, infectious complications remain an important cause of morbidity and death. Furthermore, wound invasion still represents a major cause of infection in burn intensive care units (Santucci et al., 2003).

The incidence of burns varies across countries, populations, and time. Studies have focused on burns in elderly people and children, in a war environment, among non-combatant military personnel, in populations with low-socioeconomic status, and among alcohol and substance abusers, who experience burn injuries more frequently (Atiyeh, Costagliola & Hayek, 2009). The severity of a burn depends on the degree of heat, duration of exposure, and thickness of the involved skin (Sen, Greenhalgh & Palmieri, 2010)

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 Gender of Study Participants

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

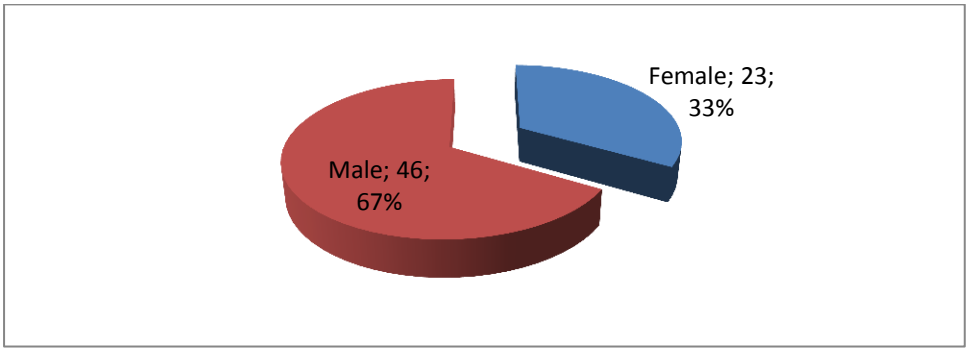

Figure 1: Gender of the Respondents

As illustrated in figure 1, 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.

4.2.2 Age of the Respondents

The study sought to establish the age bracket of the respondents. The findings are presented in Table 2 below.

Table 2: 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 2, 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.

4.2.3 Level of Education

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

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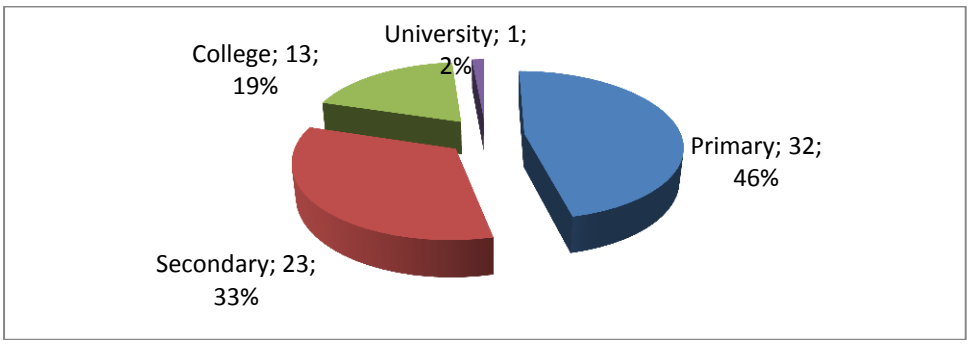

Figure 2: Level of Education

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.

4.2.4 Occupation

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

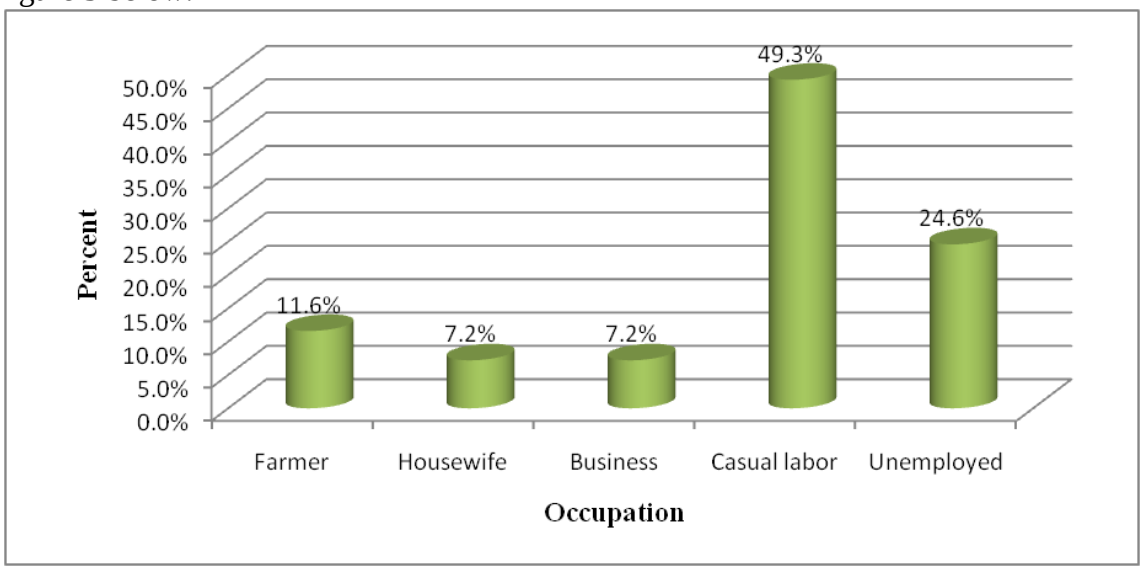

Figure 3: Occupation

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.

4.2.5 Marital Status

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

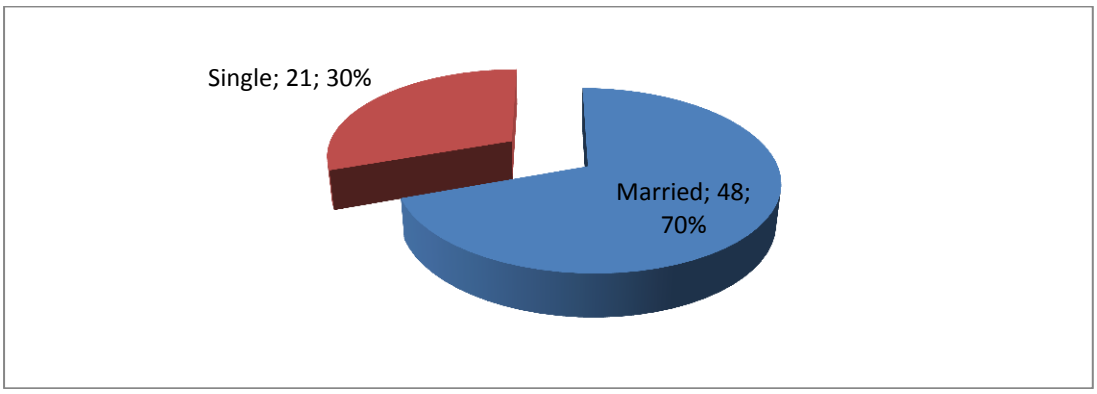

Figure 4: Marital Status of Study Participants

As illustrated in figure 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.

4.3 Inferential Statistics

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 is 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 3: 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)

5.0 DISCUSSION CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

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.

5.2 Conclusions

There has been an increase in number of patients with burns which is associated with various demographics factors causing the increased incidences among the patients. The study concluded that demographics factors leads 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 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.

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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