SOCIODEMOGRAPHIC PROFILE AND PATTERN OF BURNS CASES ADMITTED AND AUTOPSIED AT TERTIARY CARE HOSPITAL – "A CROSS-SECTIONAL STUDY."

Submitted by

(REG. NO. BF0122001)

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JAWAHARLAL NEHRU MEDICAL COLLEGE,
KAHER, BELAGAVI, KARNATAKA, INDIA – 590010

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KAHER * BELAGAVI * J.N. MEDICAL COLLEGE

Dr. RAVINDRA S. HONNUNGAR MD

Professor and Head,
Department of Forensic Medicine and
Toxicology
J. N. Medical College,
KAHER, Belagavi,
Karnataka, India - 590010.
Place: Belagavi
Date: 25/03/2025

Dr. Ravindra S. Honnungar
M.B.B.S.,M.D.
Prof & Head
Forensic Medicine Toxicology
J. N. Medical College, Belagavi.

Dr. (Mrs.) N. S. MAHANTASHETTI MD

Principal,
J. N. Medical College,
KAHER, Belagavi,
Karnataka, India - 590010.
Place: Belagavi
Date: 25/03/2025

PRINCIPAL
Jawaharlal Nehru Medical College
BELAGAVI

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Accredited 'A+' Grade by NAAC (3rd Cycle) **Placed in Category 'A' by MoE (GoI)**

Nehru Nagar, Belagavi- 590 010, Karnataka, INDIA

0831 - 2471350 0831 - 2470759 www.jnmc.edu principal@jnmc.edu

Ref No: MDC/PG/ Date: 10-03-2025

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Dr. (Mrs.) N.S. Mahantashetti.
Chairperson-Antiplagiarism Committee &
Principal,
J. N. Medical College, Belagavi.

To,
Reg. No. BF0122001
Postgraduate Student,
2022-23 Batch,
Department of Forensic Medicine
J. N. Medical College, Belagavi.

ETHICAL CLEARANCE CERTIFICATE

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed – to- be- University)
Accredited 'A+' Grade by NAAC in (3rd Cycle) Placed in Category 'A' by MHRD (GoI)
JNMC INSTITUTIONAL ETHICS COMMITTEE
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu
Phone: (+ 91-(0)831 Office : 2472550
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref No.MDC/JNMCIEC/ 164 **Date: 31/03/2023**

To,

Reg. No. BF0122001

PG Student in Forensic Medicine and Toxicology
J. N. Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"SOCIODEMOGRAPHIC PROFILE AND PATTERN OF BURNS CASES ADMITTED AND AUTOPSIED AT TERTIARY CARE HOSPITAL- A CROSS SECTIONAL STUDY",** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

(Dr. Harsha Hegde)
Chairman,
JNMC Institutional Ethics Committee
J.N.Medical College, Belagav

LIST OF ABRREVATIONS

AIIMS	ALL INDIA INSTITUTE OF MEDICAL SCIENCES
BI	BURN INDEX
CO	CARBON MONOXIDE
COHB	CARBOXYHAEMOGLOBIN
FMT	FORENSIC MEDICINE AND TOXICOLOGY
GMC	GOVERNMENT MEDICAL COLLEGE
JNMC	JAWAHARLAL NEHRU MEDICAL COLLEGE
KLE'S	KARNATAKA LINGAYAT EDUCATION SOCIETY
LPG	LIQUID PETROLEUM GAS
NRSMCH	NIL RATAN SARKAR MEDICAL COLLEGE AND HOSPITAL
Q & A	QUESTION AND ANSWER
RIMS	RANCHI INSTITUTE OF MEDICAL SCIENCES
SPSS	STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES
TBSA	TOTAL BODY SURFACE AREA

ABSTRACT

Title:

Sociodemographic Profile and pattern of burns cases admitted and autopsied at Tertiary Care hospital – "A Cross-sectional study."

Introduction:

Burn injuries are massive public health issue in the world, especially in countries where income is low and also access to safety measures and medical resources may be inadequate. In burn cases, Carboxyhaemoglobin levels serve as a crucial marker for carbon monoxide poisoning, where it is a leading contributor to illness and death in fire victims. Histopathological changes in the kidney following burns are primarily influenced by factors such as hypovolemia, sepsis, haemolysis, and myoglobinuria, which contribute to acute kidney injury (AKI). This study seeks to examine the sociodemographic characteristics and pattern of burn cases, which is crucial for designing effective prevention control measures, improving clinical management, optimizing rehabilitation efforts. Additionally, this research investigates the significance of carboxyhaemoglobin levels in guiding treatment. while also investigating histopathological changes in the kidneys of autopsied burn victims. By analysing these alterations, we aim to gain deeper insights into the mechanisms of renal damage associated with burns.

Objectives:

1. To study Sociodemographic Profile and pattern of burns cases admitted and autopsied at Tertiary Care hospital.

2.To study relation between burn injuries and carboxyhaemoglobin levels.

3.To study histopathological changes in kidneys of autopsied cases of burns.

Materials and Methods:

People who fit the eligibility requirements were recruited for the study after receiving institutional ethical approval and written informed consent from participants or their families. They were given an explanation of the study's importance and goal. Data collection included socio-demographic and personal information, along with blood samples for carboxyhaemoglobin level estimation. In cases of burn-related deaths, half of each kidney sent for histopathological examination to document the findings.

Results:

Our study included 120 patients who arrived at the casualty department with burn injuries, the majority of whom were male. Most patients came from rural areas, with a predominance of individuals from the Hindu community. Following the burn incident, significant number of patients preferred to seek treatment directly at our hospital. Burns, electrocution and scalds are major types of thermal burns in our study and particularly second-degree burns, were the most common type of injury observed. The Nearly all of the burn occurrences were Accidental, and most happened in the afternoon and evening. In most cases, <50% of the total body surface area (TBSA) was impacted. A large proportion of patients reached the hospital within the first hour of injury, though only a few had received first aid before arrival. Carboxyhaemoglobin levels were found to be below 20% in most cases. Histopathological examination of autopsied burn cases revealed congestion and tubular necrosis as the predominant renal findings.

Discussion:

This study analysed the sociodemographic profile of burn cases, where incidence of burn is predominant in males with 21–40-year-old age group involved which is similar to most of burn studies. In our study most cases were from rural area with TBSA of burn is less than 40% which is similar to most of the studies. Our study consists most cases were accidental with electrocution cases were commonly seen which is contrast with most of the studies. Most of the burn incidents took place in evening which is similar to other studies. Along with sociodemographic profile the estimation of carboxyhaemoglobin levels and histopathological changes in the kidneys of post-mortem cases also done in our study. The results showed similar findings in most of the studies. This will help in understanding the burden of burn injuries and contribute to improving treatment strategies for burn patients.

Conclusion:

To help reduce burn incidents, it is important to promote safer methods of cooking, such as using LPG or electric stoves instead of open fires. Educating women on fire safety, including the proper handling of kerosene and other flammable substances, can greatly minimize risks. the application of personal protective equipment (PPE), like boots and gloves with insulation, can significantly lower the chances of burns caused by electrical accidents. To further enhance awareness and preparedness, interactive first-aid training sessions will be organized in schools, workplaces, and community centres, empowering people with the knowledge to respond effectively in emergencies.

Keywords: Burns, Scalds, Electrocution, Carboxyhaemoglobin level,
Histopathological Changes

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INTRODUCTION

Injuries continue to be major focus for researchers worldwide, and among them, burn injuries stand out as some of the most severe. They not only cause immense pain and suffering but also come with high risk of complications and a significant impact on survival and recovery.[1]

In India, home to over a billion people, more than a million cases of moderate to severe burns occur each year. Tragically, a life is lost to burn injuries every four minutes, with the most common cause being mishaps in the home. Everyday hazards like gas cylinder explosions, open-fire cooking, dangerous stoves, and even violent crimes put women at greater risk.[2]

Young children and infants are particularly susceptible since they rely on their caretakers for safety and might not be able to recognize unsafe situations. Actually, among youngsters, burns rank as the 5th most frequent cause of non-fatal injuries.

Burn injuries are a significant cause of suffering and loss of life worldwide, affecting not only the individuals who sustain them but also their families. Beyond the physical pain, burns have profound psychological and financial consequences.

However, many of these injuries are preventable, making education and awareness crucial. Understanding the causes, risk factors, and patterns of burn injuries, along with proper management practices, can greatly reduce complications and improve survival rates.

Burn injuries are often caused by flames, gas cylinder or stove explosions, electrical accidents, radiation exposure, hot liquids like boiling water, and chemical spills.

These injuries can affect any part of the body, ranging from the outermost skin layer to deeper tissues, including muscles, internal organs, and even bones.

A burn is an injury that results in tissue destruction and is brought on by the application of heat (either by conduction or radiation) or a chemical substance to the body's internal or exterior surfaces.[3]

Burn injuries and their complications are a significant cause of illness and death worldwide. More than 95% of burn-related deaths occur in low- and middle-income nations, making them a significant public health concern. Burn injuries are one of the top 15 causes of death in India. 70 lakh persons in India alone suffer from burn injuries; of these, 2.4 lakh become crippled and 7 lakhs require hospitalization.[4]

In addition to causing over 71 lakhs injuries, almost 1 crore 80 lakh disability-adjusted life years (DALYs), and over 265,000 deaths globally each year, burns contribute 1% of the world's disease burden.[5]

Globally, burn injuries are a major source of illness and mortality, often resulting from fire-related accidents, explosions, or chemical exposures. Inhaling carbon monoxide (CO), a colourless, odourless, and extremely deadly gas created during incomplete burning of organic materials, is a crucial factor affecting patient outcomes in burns caused by fire. Carboxyhaemoglobin (COHb) levels in the blood are frequently used to measure[6].

Carboxyhaemoglobin reduces the blood's ability to carry oxygen and causes tissue hypoxia when it binds to haemoglobin with an affinity that is two hundred to two hundred fifty times higher than that of oxygen.[7]

Elevated COHb levels can cause symptoms ranging from headache and dizziness to coma and death, depending on the exposure duration and concentration[4].In burn patients, COHb levels serve as a critical biomarker for diagnosing inhalation injury and determining the need for hyperbaric oxygen therapy (HBO)[8].

The relation between the burn severity and COHb levels remains an area of ongoing research. While higher COHb concentrations are generally associated with increased inhalation injury and mortality, factors such as burn surface area, airway involvement, and pre-existing conditions may influence outcomes[9].

Understanding this relationship is essential for improving clinical management, guiding treatment decisions, and predicting patient prognosis.

This study focuses on to explore the association between burn injuries and COHb levels the potential role of COHb as a forensic marker for distinguishing between fatal burns with and without significant inhalation exposure.

A burn injury triggers a complex chain of physiological reactions, rapidly affecting multiple organ systems and leading to widespread disruption in the body.

Severe infections and multiple organ failure are the leading causes of death for burn patients. Those life-threatening complications stem from deep tissue and cellular-level damage, which alters the structure and function of vital organs.

Studying the affected organs through pathological analysis can provide valuable insights into these changes, helping us better understand and manage burn-related complications[10].

Among the affected organs, the kidneys are particularly vulnerable because of the systemic inflammatory response, hypovolemia, and oxidative stress associated with burns. Acute kidney injury (AKI) is frequently observed in burn patients, contributing to increased mortality rates[11,12].

The pathophysiological mechanisms of renal injury in burns include ischemia-reperfusion injury, rhabdomyolysis-induced nephrotoxicity, and sepsis-related damage[13].

Histopathological examination of kidneys in burn-related fatalities provides critical insights into the extent of renal involvement, which can range from tubular necrosis to glomerular alterations and interstitial inflammation[14].

Such findings are crucial for understanding the progression of renal dysfunction and for guiding clinical management strategies.

The study aims to analyse the histopathological changes in the kidneys of autopsied burn cases to elucidate the underlying mechanisms of renal damage and their implications in burn pathology.

OBJECTIVES

PRIMARY OBJECTIVE:

1. To study Sociodemographic Profile and pattern of burns cases admitted and autopsied at Tertiary Care hospital.

SECONDARY OBJECTIVES:

2. To study relation between burn injuries and carboxyhemoglobin levels.

3. To study histopathological changes in kidneys of autopsied cases of burns.

REVIEW OF LITERATURE

Any damage to the skin or underlying tissues brought on by heat, electricity, chemicals, radiation and friction is referred to as a burn. A burn can start to develop at temperatures as low as 44°C if the skin is exposed for 5 to 6 hours. However, at 65°C, a burn can occur in just two seconds. When the temperature exceeds 70°C, the skin can suffer full-thickness destruction almost instantly.

Pathophysiology of burns:

Burn patients will lose fluids as a result of their injuries leading to hypovolemia due to which the patient will fall into shock. Shock inturn will cause an increase in plasma viscosity, which will be followed by microthrombin, ischaemia, and tissue necrosis.

1.Age and Gender Distribution

Research shows that burns are more common among women. particularly in the 15–35 age group, due to domestic fire accidents, kitchen-related burns, and dowry-related violence. In contrast, paediatric and elderly burn cases often result from accidental scalds and negligence.

Kumar M et al conducted A cross-sectional study on burn injury patterns was in 2018 at Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India. The findings revealed a significant gender disparity, with women accounting for 72.3% (n=89) of the cases, while men made up only 27.7% (n=34). The majority of burn victims (62.6%) were between the ages of 21 and 40.[15]

2.Religion

Certain religious customs involve the use of fire, candles, or oil lamps, increasing the risk of accidental burns. Hinduism, for example, incorporates fire in ceremonies such as Diwali, while in Christianity, candle lighting is common in religious observances. Religious dress codes may also contribute to burn injuries. Loose and flammable garments, such as hijabs, saris, or robes, have been reported to increase burn risks, particularly in domestic cooking settings.

This hospital-based cross-sectional study conducted by **Sahu RK et al** over six months, from January 16 to June 15, 2023. Among them were patients who were admitted to AIIMS Bhubaneswar, India's burn unit. According to the study, among the 145 patients, Hindus made up the majority (58.62%), after that Muslims (26.21%; 38 patients) and lastly Tribes (11.03%; 16 patients).[16]

3.Place of burn:

The place of burn injury significantly affects the sociodemographic profile of burn cases. Rural burn victims often include women and children, with open flames as the primary cause. Urban burn victims are more likely to young adults involved in industrial work or electrical work.

Patil SW et al This observational cross-sectional study was conducted at the burn ward of GMC, Latur, over the course of a year, from July 2012 to June 2013. During this time, a total of 302 patients were admitted with burn injuries. Sadly, 137 of them (45.36%) did not survive due to burns of varying severity. According to this survey, rural areas accounted for 63.50% of burn deaths. For men, the percentages from rural and urban areas were 61.11% and 38.89%, respectively. Similarly, 35.64% of females came from cities, while 64.36% of them lived in rural areas.[17]

4. Cause of Burns

Burn injuries occur due to various external sources, the most common causes including:

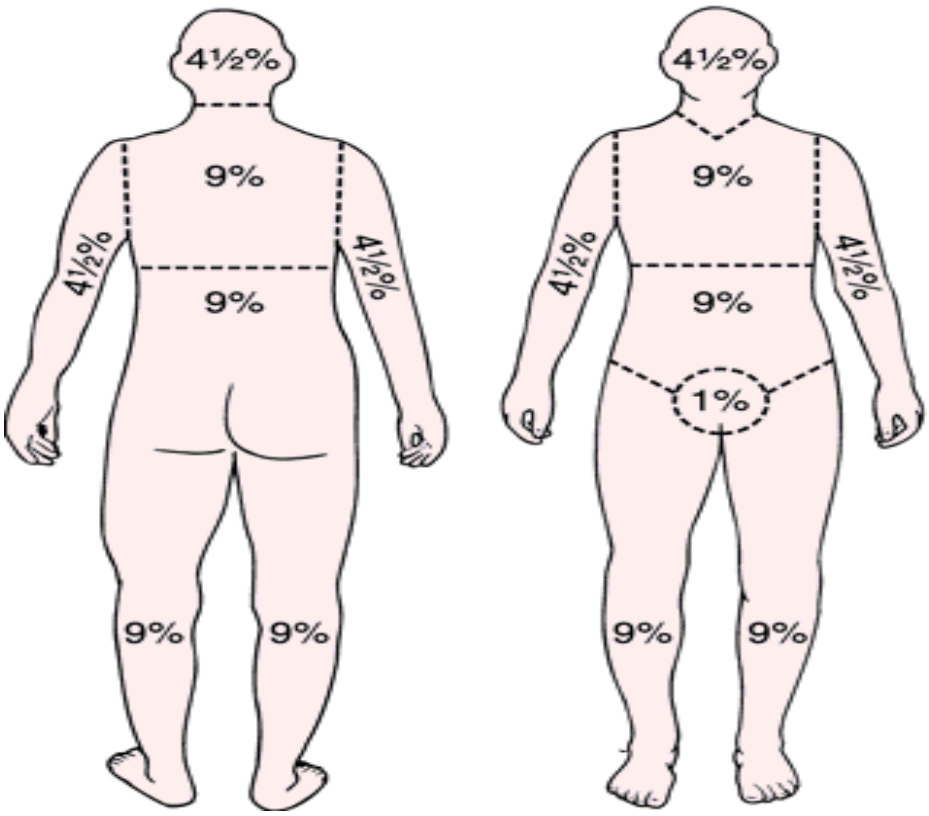
1. Thermal Burns – Resulting from contact with flames, hot liquids (scalds), hot objects.
2. Chemical Burns: These result from coming into contact with acidic or alkaline materials. commonly in industrial or household settings.
3. Electrical Burns – Occurring due to exposure to high-voltage or low-voltage electrical sources.

Verma K. et al. carried out a four-year retrospective study at SMS Medical College in Jaipur between June 2018 and June 2022.The study analysed data from 2,348 cases to examine gender distribution in burn incidents. By reviewing records from this period, researchers aimed to gain insights into trends and patterns in burn injuries.

Study In 2018 and 2019, there were 748 and 661 male cases, respectively, compared to 355 and 345 female cases, indicating the largest gender gaps. Flame burns were the most prevalent type of injury throughout the study period, followed by scald burns. Electrical and chemical/miscellaneous burns were less common in comparison.[18]

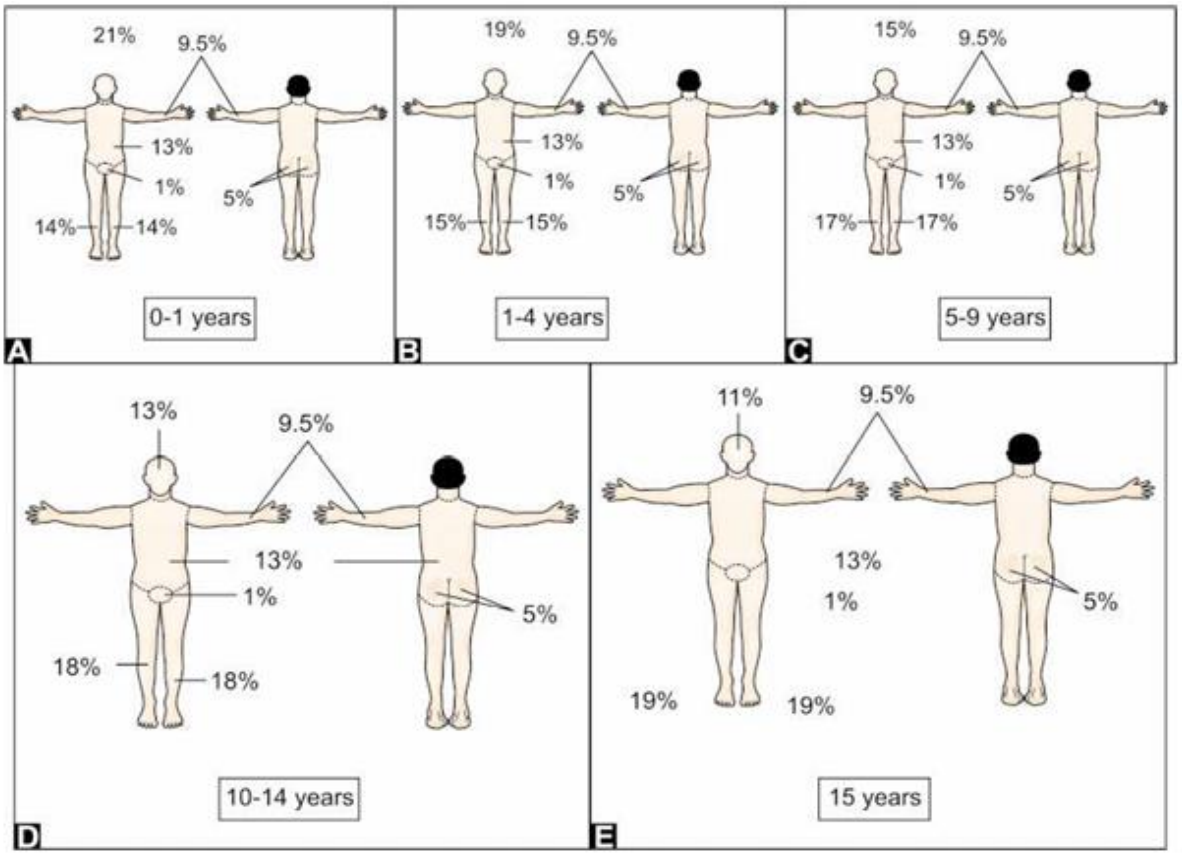
5)Percentage of total burn surface area

The "Wallace rule of nine" (Figure number 1) is typically used to estimate the surface area of the adult body involved.



(Figure number 1)

However, the TBSA for children is calculated using the Lund and Browder chart (Figure number -2).



(Figure number 2)

Out of 1,436 postmortems conducted at the Department of FMT, Assam Medical College, 224 cases involved flame burns as per Debbarma S et al study. These cases were examined between July 1, 2014, and June 30, 2015. The major cases, 98 (43.76%), included burn injuries that affected above 80% of the body's surface area (TBSA). In contrast, only 20 cases (8.93%) had burns affecting less than 40% of the TBSA. Notably, no cases were recorded with burns less than 10% of the TBSA.[19]

6)Time interval between incident and admission

The time interval between sustaining a burn injury and hospital admission plays critical role in determining patient outcomes. Timely admission allows for early resuscitation, infection prevention, and wound management, ultimately reducing morbidity and mortality. Various studies have investigated factors influencing

admission time, including geographical accessibility, burn severity, and pre-hospital care availability.

Chauhan N et al conducted prospective observational analysis on patients with acute thermal burns were admitted to the BICU at Safdarjung Hospital and Vardhaman Mahavir Medical College in New Delhi. The study included patients in June, August, and December of 2011, which corresponded to northern India's summer, monsoon, and winter seasons. This study had 162 patients in total. In the first hour following their injuries, only seven of the 162 patients hospitalized to our burn unit showed up. Most of the admissions (28.4%) happened four to eight hours after the burn. Remarkably, 87% of patients arrived at the hospital dehydrated.[20]

7)Time of occurrence of burns

Research consistently indicates that burn injuries are more frequent during specific times of the day, primarily influenced by daily routines, household activities, and occupational hazards.

Daytime Incidence: Studies show that burns commonly occur between morning and early evening hours, aligning with peak periods of cooking, industrial work, and household activities.

Paediatric Burns: Young children tend to sustain burns during the late morning to early afternoon, coinciding with meal preparation times when they may come into contact with hot liquids or flames.

Dr. Chandra Shekhar Prasad et al Data for the study came from 302 burn patients that had medicolegal autopsies conducted at RIMS, Ranchi, between October 2015 and September 2016.

The majority of burn injuries occurred between 18:01 and 23:59 hours, accounting for 49% of cases. Additionally, 23% of burns took place between 12:01 and 18:00 hours, while 14% of cases were reported in both the 00:00 to 06:00 hours and 06:01 to 12:00 hours timeframes. Furthermore, more than 70% (72%) of burn-related deaths occurred between 12:01 and 23:59 hours, a time when people are usually working on professional projects in industrial settings or doing household chores in the kitchen.[21]

8)Manner of burns

Burn injuries are significant cause of mortality and morbidity worldwide, with causes varying from accidental, suicidal, and homicidal incidents. Understanding the manner of burns is essential for forensic investigations, medical management, and legal proceedings.

Dr. N. P. Zanjad et al revealed study of Cases of burn-related deaths brought for medico-legal autopsies to the mortuary of Government Medical College & Hospital, Nanded (India), over a three-year period from July 2002 to June 2005.Regarding the manner of death, the majority were accidental, accounting for 323 cases (70.8%), with 225 (68.8%) occurring in females and 98 (75.9%) in males. Suicidal deaths were observed in 83 cases (18.2%), while homicidal deaths occurred in 50 cases (10.9%). Most individuals who died by suicide, both males and females, were married, whereas all female victims of homicide were married.[22]

9) Days Stay in hospital

The length of hospitalization for burn patients depends on several factors, including the extent of the burns, the proportion of the body surface area (TBSA) that was impacted, any sequelae, any underlying medical issues, and the standard of the treatment received. The length of hospital stay is largely determined by the severity of the burns.

In **Sivamuthu CT et al** study, 10.6 days was the average length of stay in the hospital. The longest hospital stays were seen by patients whose burns covered 30–50% of their total body surface area (TBSA), averaging 21 days. Those with burns affecting less than 30% TBSA had an average stay of 8.5 days, while patients with extensive burns more than 60% TBSA had a shorter average stay of 4.75 days, likely due to severity and associated complications.[23]

10)Direct cases and referred cases

Burn injuries necessitate prompt and specialized medical attention to optimize outcomes. Patients may either be admitted directly to burn centre or referred from other healthcare facilities. The pathway to specialized care—direct admission versus

referral—can significantly influence patient outcomes, including time to treatment, complication rates, and overall prognosis.

A study by **Nathan E. Bodily, MD, et al.** A total of 122 patients were split equally between those who were moved from an outlying institution to a burn centre and those who were admitted straight from the field. The median time from injury to burn centre admission for patients who were admitted directly was one hour., whereas transferred patients had a median time of 8 hours. Direct admissions more likely to involve patients with inhalation injuries compared to referred patients, indicating that more severely injured patients were often identified and transported directly to burn centers.[24]

11)Degree of burns

Burns are classified in 4 degrees:

A) 1st degree burns, also known as superficial burns, affect only epidermis.

B) 2nd degree burns also known as Partial thickness burns, penetrate the dermis in addition to the epidermis.

C) 3rd degree burns devastate the dermis and epidermis completely, frequently extending to the subcutaneous tissue.

D) 4th degree burns extend into muscles, tendons, and bones.

Sheridan et al study revealed that first-degree burns account for about 60% of minor burn cases. Approximately 30% of all burn injuries in hospital admissions, second degree burns. Third-degree burns constitute about 5–10% of severe burn cases.[25]

12)Carboxyhaemoglobin levels

Carbon monoxide (CO) poisoning happens when a person inhales too much of the gas. Since CO is toxic, colourless, odourless, and tasteless, it's nearly impossible to detect without special equipment. Because it doesn't cause irritation, even rescue workers responding to a fire may not realize they're being exposed until it's too late. A blood carbon monoxide concentration will cause symptoms. Severity of the symptoms are depended upon the concentration of carboxyhaemoglobin levels in the blood.

Aleksa Leković et al study includes 53 males (71.6%) and 21 females (28.4%). Thirty-three had COHb less than 30%, while forty-one had COHb more than 30%. COHb levels were significantly correlated negatively with both BI and burns extensivity (TBSA).[26]

13)Histopathological changes in kidney

Burn injuries can lead to significant histopathological changes in the kidneys, impacting patient outcomes.

Congestion: This involves engorgement of renal blood vessels, potentially due to systemic inflammatory responses post-burn.

Acute Tubular Necrosis (ATN): Marked by necrosis of tubular epithelial cells, ATN is a severe manifestation leading to acute kidney injury (AKI).

Interstitial edema: One of the histopathological changes observed in the kidneys post-burn is interstitial edema, distinguished by the buildup of fluid in the renal tubule spaces.

From April 2013 to March 2014, **Alakesh Halder et al.** carried out a retrospective observational study in the FMT Department at NRSMCH in Kolkata. Out of a total of 318 burn injury cases brought for autopsy, a random selection of 100 cases was made for study purposes, including the collection of kidney tissue samples for histopathological examination. Histopathological examination of kidney sections showed that 32 patients had normal histology, whereas 77 cases had congestion, 34 cases had interstitial edema, 29 cases had tubular degeneration, 3 cases had glomerular degeneration, and 20 cases had acute tubular necrosis.[27]

MATERIALS AND METHODOLOGY

Study design

A cross-sectional study was carried out to determine the different sociodemographic factors that contribute to burn injuries, as well as the sociodemographic profile and pattern of burn cases admitted and autopsied at KLE'S Dr. Prabhakar Kore hospital and medical research centre, Belagavi.

Study duration

The current research was carried out from 1st April 2023 to 31st March 2025 to study Sociodemographic Profile and pattern of burns cases admitted and autopsied at KLE'S Dr. Prabhakar Kore hospital and medical research centre, Belagavi.

Ethical clearance

Before the study began, ethical approval from the JNMC institutional ethical committee was acquired.

Study population

Patients with burns who reported to the casualty of KLE's Dr. Prabhakar Kore Hospital and Medical Research Centre in Belagavi made up the study population.

Sample size

Sample size is calculated at 95% confidence interval for 44.7% TBSA with 20% tolerable error in P where P=44.7.[4] q is (100-44.7)

$Z_{1-\alpha/2}$ is with 95% confidence interval with 1.96

$$n=\frac{Z_{1-\alpha/2}^2 \times q}{(P\%)^2 \times P}$$

$$=\frac{1.96\times1.96\times(100-44.7)}{0.2\times0.2\times44.7}$$

$$=118.815$$

$$n=120$$

Inclusion criteria

All Patients with burns injury admitted and autopsied at KLE's Dr. Prabhakar Kore Hospital and Medical Research Centre during study period.

Exclusion criteria

Nil

Procedure

Single examiner conducted the clinical examination of each participant until the require sample size was reached.

Participants who met the eligibility requirements were recruited for the study after receiving institutional ethical approval and obtaining written informed consent from them or their relatives. Data was then gathered from eligible participants.

In the event that the victim's condition was poor, relatives and attendees were interviewed.

They were explained the importance and need for this study.

Data collection included socio-demographic and personal data.

A blood sample was collected for carboxyhaemoglobin level estimation using Hoppe-Seyler test.

Hoppe-Seyler test- A few drops of blood are added to a 10% sodium hydroxide solution. The colour of normal blood turns brownish-green, but if CO is present, it stays pink.

In case of death related to burns, half of each kidney was sent for histopathological examination to note the findings.

Statistical analysis

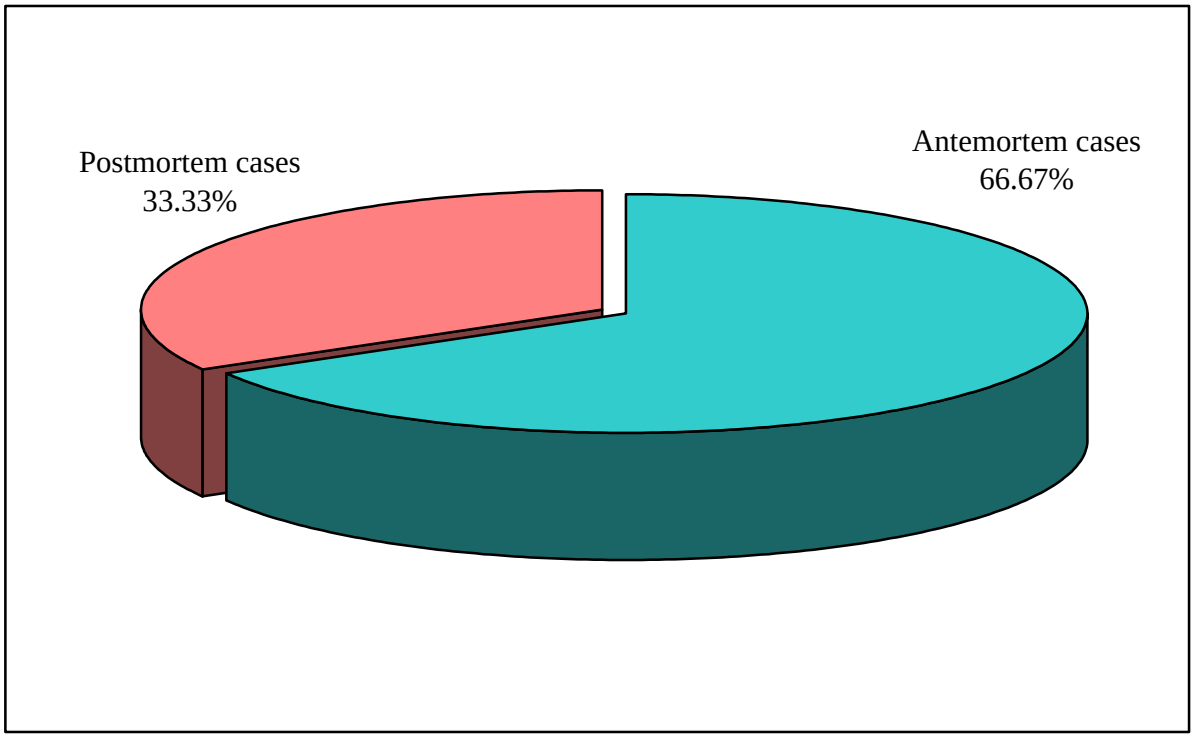
After entering the gathered data into Microsoft Excel program, the input data was exported to SPSS Version 22 for statistical analysis. The mean and standard deviation (SD) for numerical data and a fraction for normal data are the outcomes of the exploratory data analytics, which examined the distribution of values. The chi-square test for categorical variables were used to analyse the pattern of burn injuries.

RESULTS

Table 1: Distribution of Cases based on outcome

Case type	No of patients	% of patients
Antemortem cases	80	66.67
Postmortem cases	40	33.33
Total	120	100.00

Figure 3: Distribution of Cases based on outcome

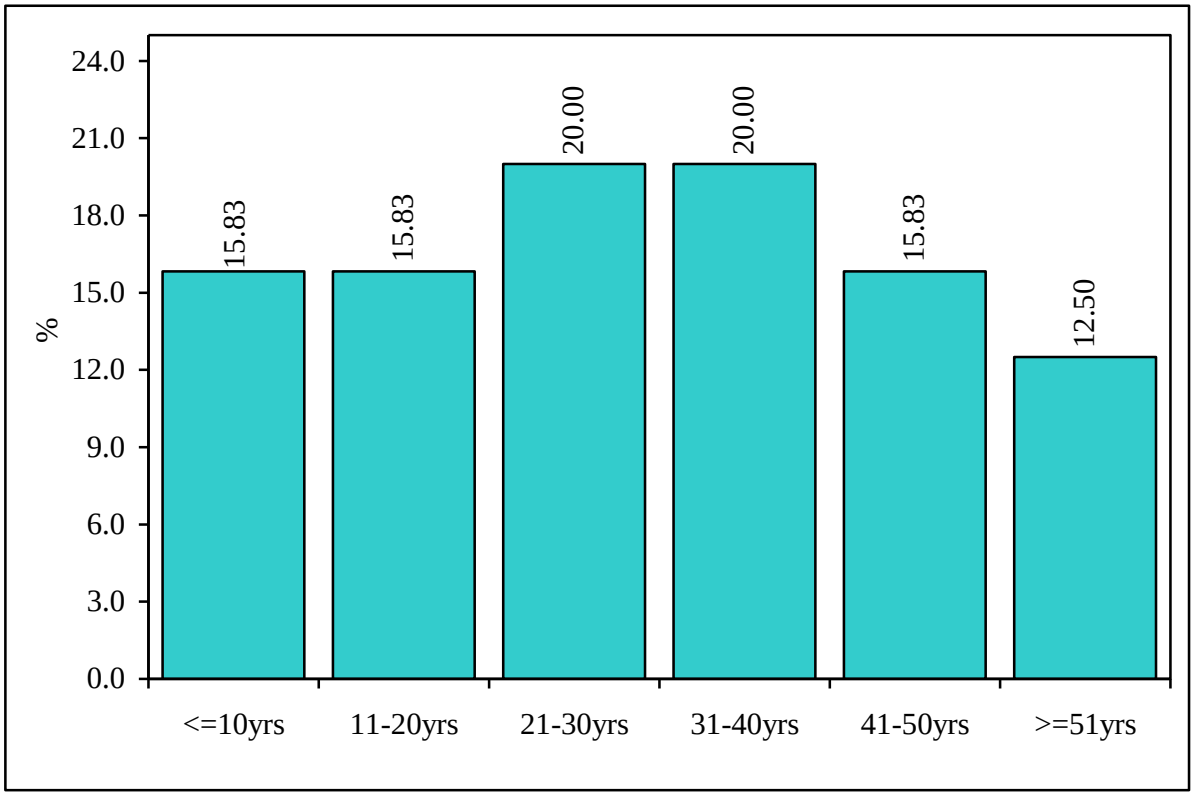


According to the distribution of patients based on case types, it has been categorized into antemortem and postmortem which shows that 80 patients fall into the category of Antemortem case which constitutes 66.67 % of the total cases and 40 cases were postmortem cases making up 33.33 % of the total case.

Table 2: Distribution of Cases based on age

Age groups	No of patients	% of patients
<=10yrs	19	15.83
11-20yrs	19	15.83
21-30yrs	24	20.00
31-40yrs	24	20.00
41-50yrs	19	15.83
>=51yrs	15	12.50
Total	120	100.00

Figure 4: Distribution of Cases based on age

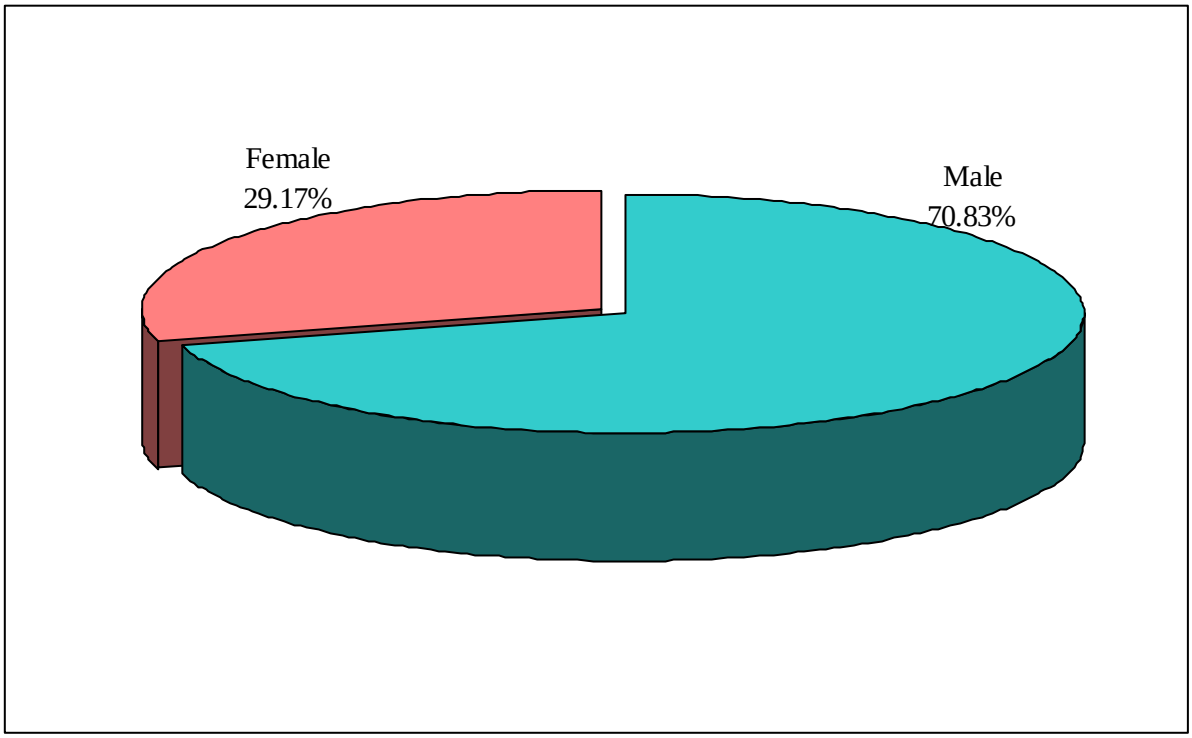


It was found that the age groups of 21–30 (20%) and 31–40 (20%) had the highest number of instances, followed by those under 10 years old, 11–20, and 41–50 years old (15.83%), and those over 50 years old (12.50%).

Table 3: Distribution of Cases based on sex

Gender	No of patients	% of patients
Male	85	70.83
Female	35	29.17
Total	120	100.00

Figure 5: Distribution of Cases based on sex

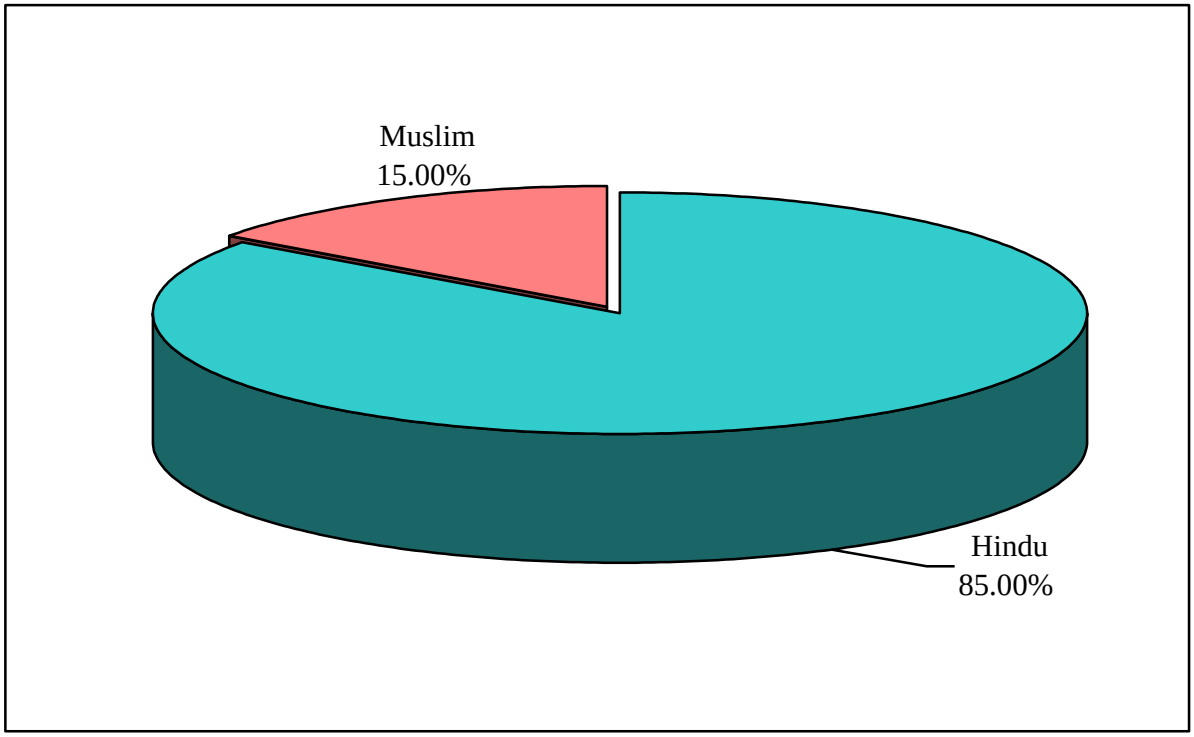


According to gender wise distribution in this study – Male cases (70.83%) were more reported, that were 2.5 times greater than those of female cases (29.17%). This indicates that majority of patients are male.

Table 4: Distribution of Cases based on religion

Religion	No of patients	% of patients
Hindu	102	85.00
Muslim	18	15.00
Total	120	100.00

Figure 6: Distribution of Cases based on religion

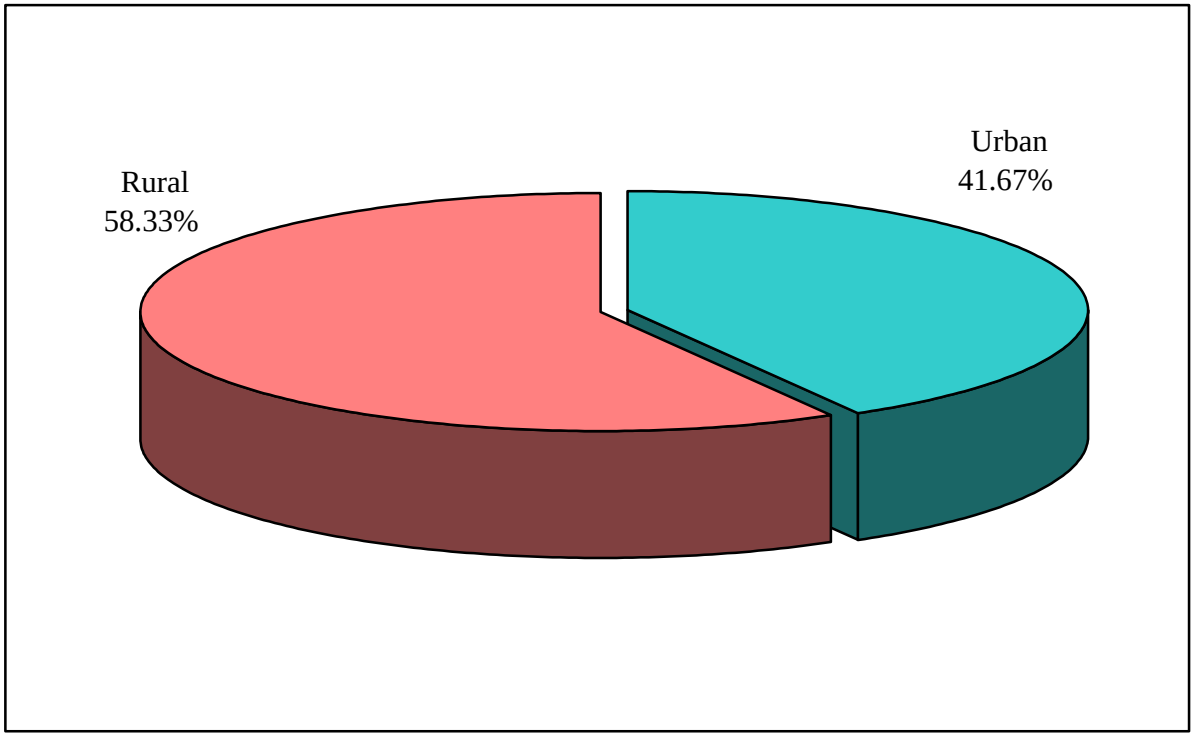


Based on the patients' religious distribution, the majority of the study participants were Hindu, with Muslims coming in second. Out of 120 total cases 102 patients were Hindu which constitutes 85% of the total case and 18 patients were from Muslim religion which constitutes 15% of the total case.

Table 5: Distribution of Cases based on residence

Residence	No of patients	% of patients
Urban	50	41.67
Rural	70	58.33
Total	120	100.00

Figure 7: Distribution of Cases based on residence

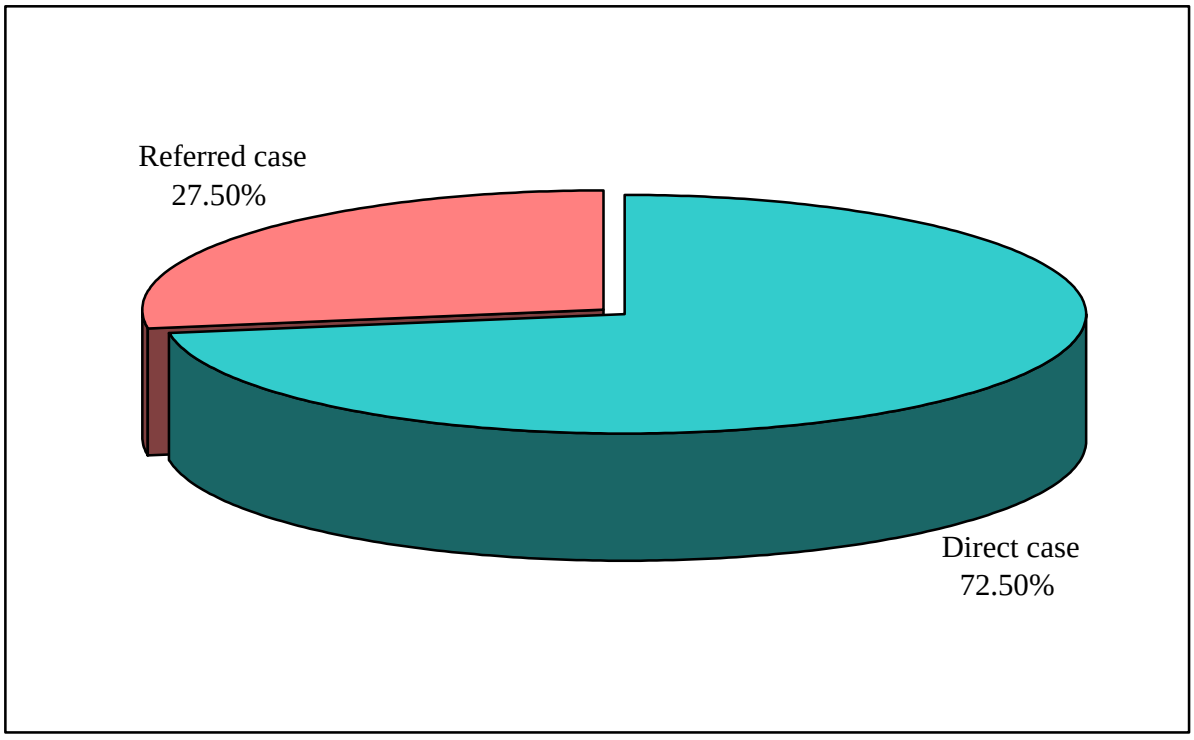


Out of 120 patients,70 patients from rural areas which constitute 58.33 % of the total case followed by 50 patients were from urban areas constituting 41.67 %.

Table 6: Distribution of Cases based on referral

Direct case / Referred case	No of patients	% of patients
Direct case	87	72.50
Referred case	33	27.50
Total	120	100.00

Figure 8: Distribution of Cases based on referral

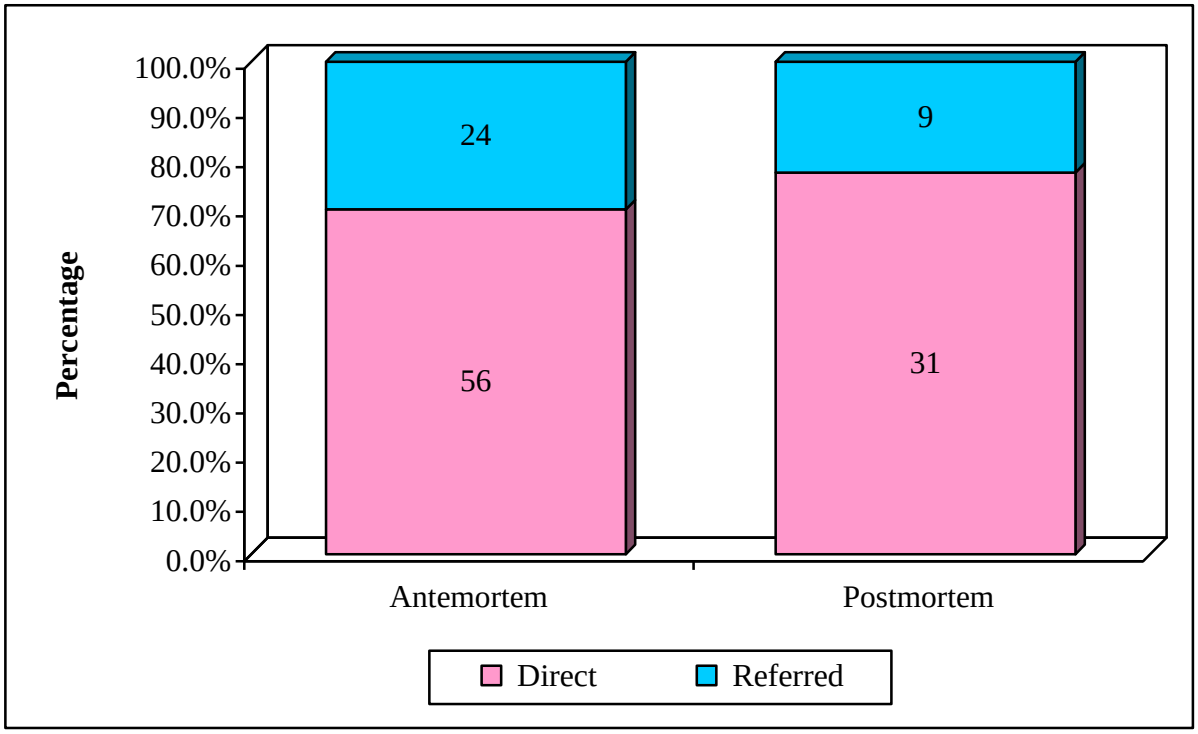


In the study 87 patients (72.50%) came directly to the casualty whereas 33 patients (27.50%) were being referred from other hospitals.

Table 7: Association of cases between referral and their outcome

Direct / Referred	Antemortem	%	Postmortem	%	Total	%
Direct	56	70.00	31	77.50	87	72.50
Referred	24	30.00	9	22.50	33	27.50
Total	80	100.00	40	100.00	120	100.00
Chi-square=0.7524, p=0.3857						

Figure 9: Association of cases between referral and their outcome

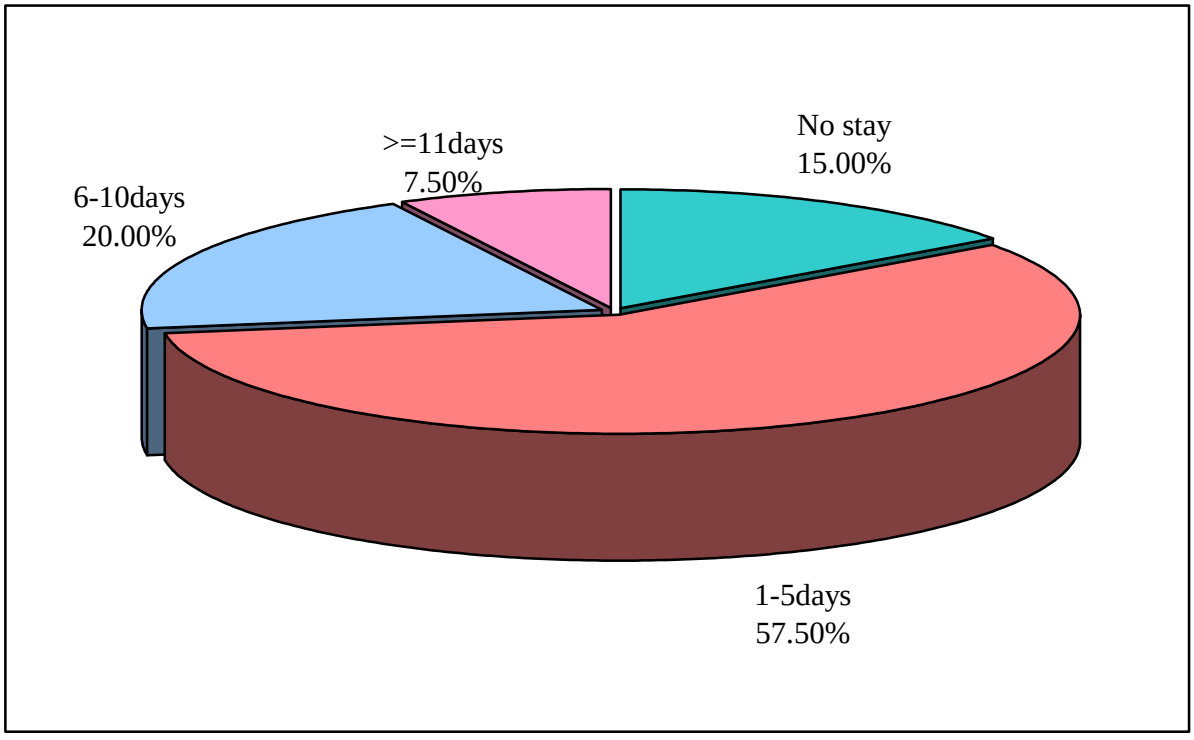


In the study 87 patients came directly to the casualty which constitutes 72.50%, out of which 56 patients were antemortem cases and 31 were postmortem cases. 33 patients (27.50%) were referred from the other hospital, out of which24 were antemortem cases and 9 were postmortem cases.

Table 8: Distribution of Cases based on duration of stay in hospital

Days in hospital	No of patients	% of patients
No stay	18	15.00
1-5days	69	57.50
6-10days	24	20.00
>=11days	9	7.50
Total	120	100.00

Figure 10: Distribution of Cases based on duration of stay in hospital

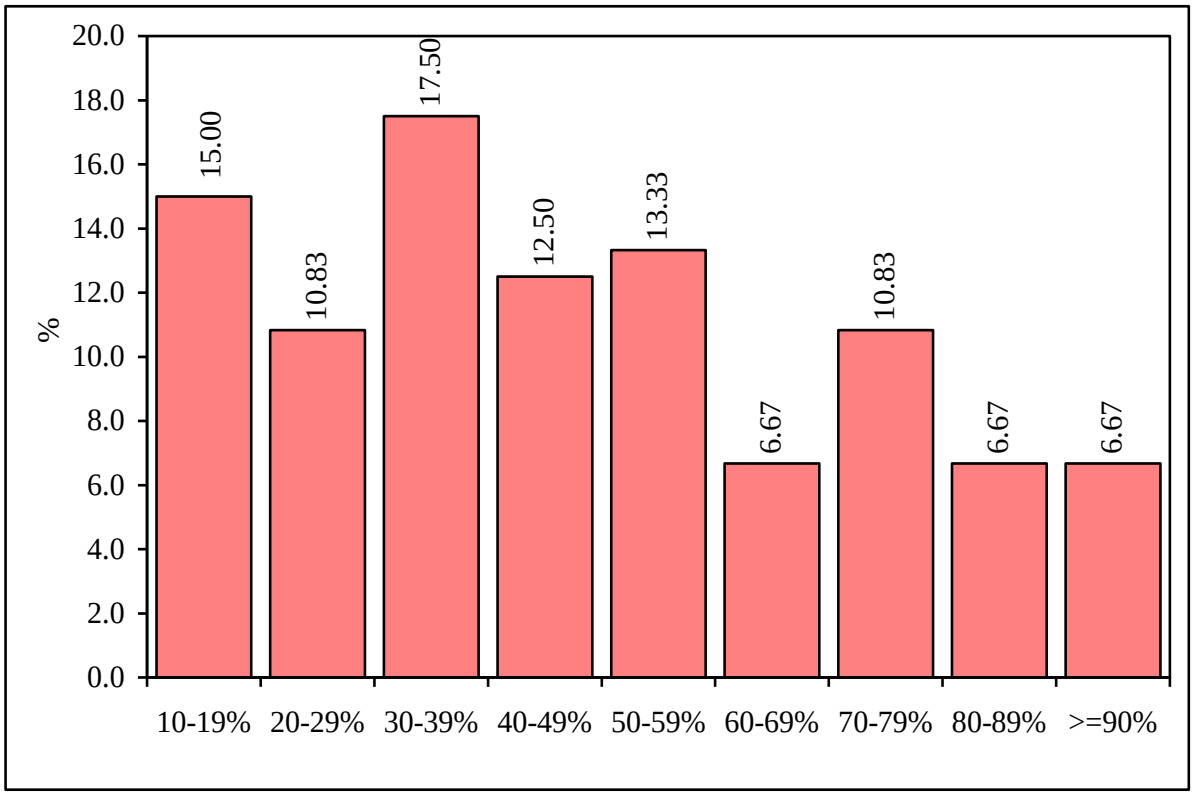


Based on the hospital stay duration, majority of patients ,69 (57.50 %) stayed in the hospital for 1-5 days followed by 24 patients (20%) stayed for a duration of 6-10 days followed by 9 patients (7.50%) had prolonged hospital stays of about 11 or more days.

Table 9: Distribution of Cases based on Percentage of total body surface area involved

% of total body surface area burn	No of patients	% of patients
10-19%	18	15.00
20-29%	13	10.83
30-39%	21	17.50
40-49%	15	12.50
50-59%	16	13.33
60-69%	8	6.67
70-79%	13	10.83
80-89%	8	6.67
>=90	8	6.67
Total	120	100.00

Figure 11: Distribution of Cases based on Percentage of total body surface area involved



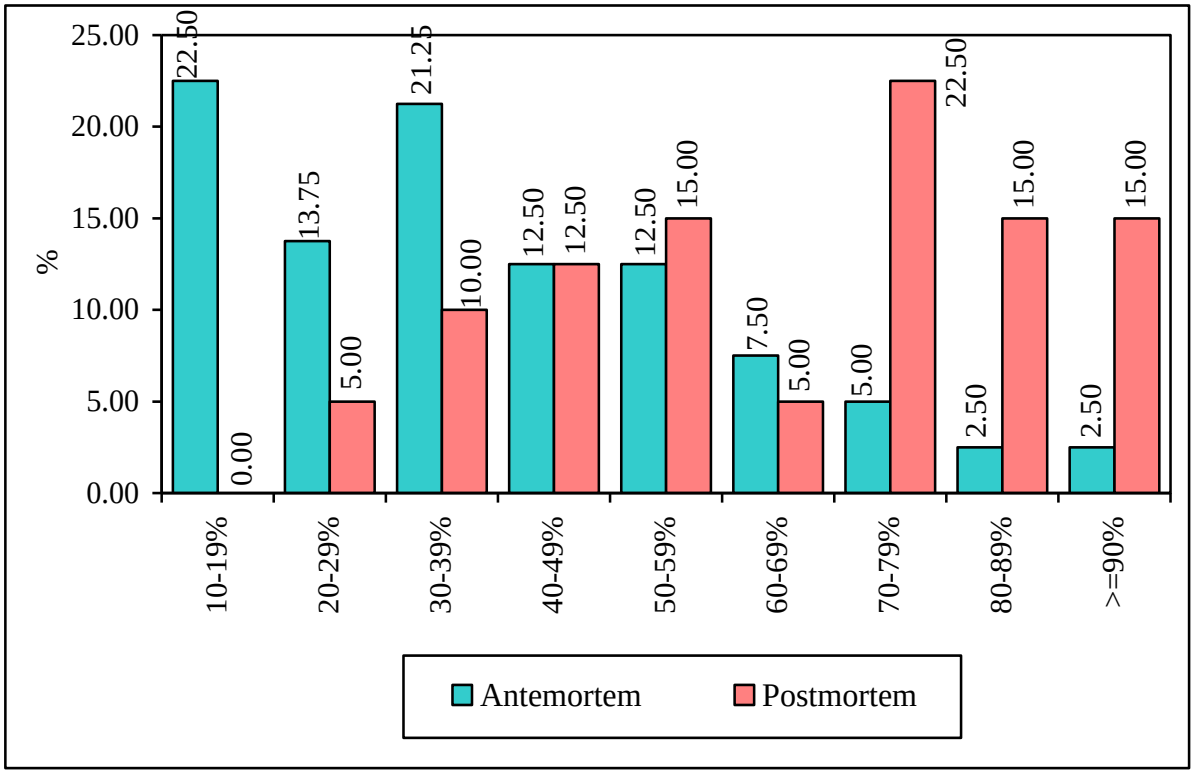
As per the % of total body surface area affected, 21 patients (17.5%) had 30-39% of total surface area burns followed by 18 patients (15%) in the category of 10-19% of total body surface area burns whereas 8 patients (6.67%) fall in the category of more than 90 % of the burns which is less common.

Table 10: Association between Percentage of total body surface area involved with outcome of cases

% of area burn	Antemortem	%	Postmortem	%	Total	%
10-19%	18	22.50	0	0.00	18	15.00
20-29%	11	13.75	2	5.00	13	10.83
30-39%	17	21.25	4	10.00	21	17.50
40-49%	10	12.50	5	12.50	15	12.50
50-59%	10	12.50	6	15.00	16	13.33
60-69%	6	7.50	2	5.00	8	6.67
70-79%	4	5.00	9	22.50	13	10.83
80-89%	2	2.50	6	15.00	8	6.67
>=90	2	2.50	6	15.00	8	6.67
Total	80	100.00	40	100.00	120	100.00
Chi-square=33.7245, p=0.0001*						

***p<0.05**

Figure 12: Association between Percentage of total body surface area involved with outcome of cases



In the study, 30-39 % of the burn surface area is seen in majority over 21 patients constituting 17.50%, out of which 17 cases were antemortem and 4 were postmortem cases followed by 10-19 % of the burn surface area seen in 18 patients where 18 were antemortem cases. Total 37 patients came with more than 60% burn area involved among that 23 cases were expired. So, association between burn area and with cases shows p value <0.05. So, there is significance between TBSA with cases.

Table 11: Association between Percentage of total body surface area involved with duration of stay in hospital

% of area burn	No stay	%	1-5days	%	6-10days	%	>=11days	%	Total
10-19%	4	22.22	14	77.78	0	0.00	0	0.00	18
20-29%	5	38.46	6	46.15	2	15.38	0	0.00	13
30-39%	5	23.81	14	66.67	1	4.76	1	4.76	21
40-49%	0	0.00	12	80.00	3	20.00	0	0.00	15
50-59%	1	6.25	6	37.50	7	43.75	2	12.50	16
60-69%	0	0.00	3	37.50	3	37.50	2	25.00	8
70-79%	1	7.69	5	38.46	3	23.08	4	30.77	13
80-89%	2	25.00	3	37.50	3	37.50	0	0.00	8
>=90	0	0.00	6	75.00	2	25.00	0	0.00	8
Total	18	15.00	69	57.50	24	20.00	9	7.50	120
Chi-square=50.9690, p=0.0010*									

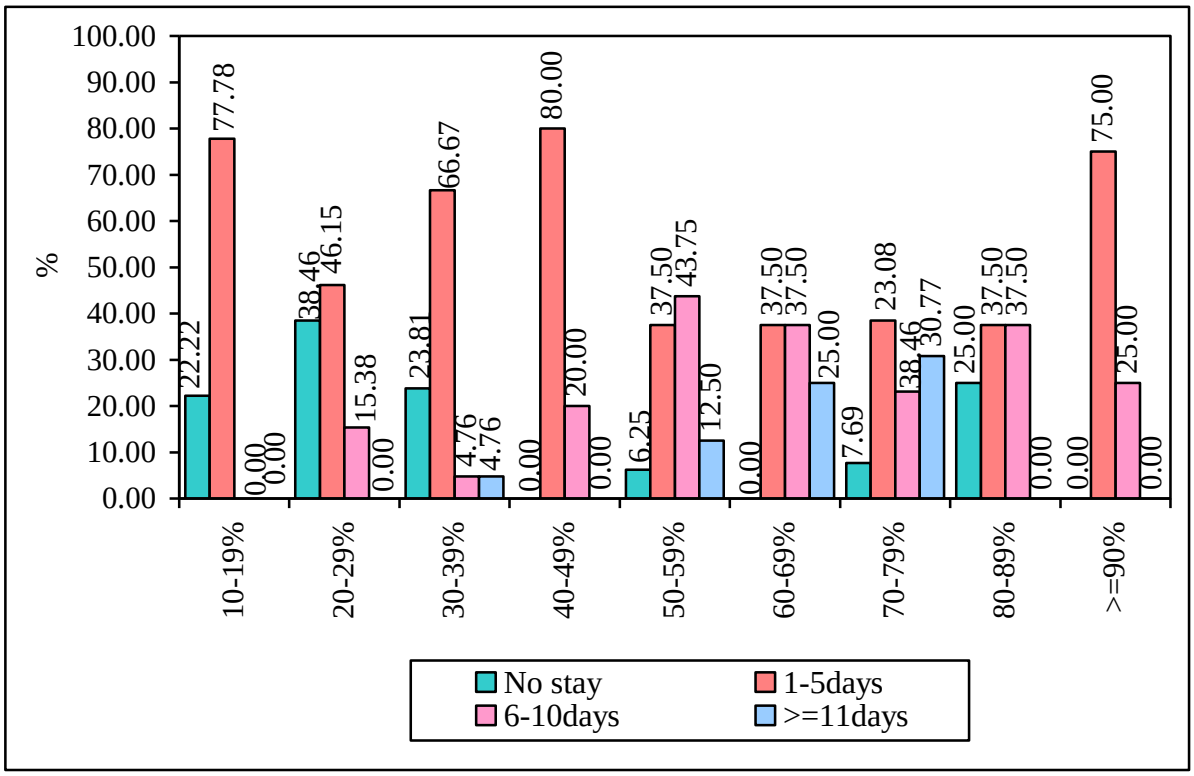
***p<0.05**

Table 12: Correlation between % Of total body surface area burn with duration of stay by Spearman's rank correlation

Variables	Correlation between % Of total body surface area burn with			
	N	Spearman R	t-value	p-value
Duration of stay	120	0.3863	4.5500	0.0001*

*p<0.05

Figure 13: Association between Percentage of total body surface area involved with duration of stay in hospital

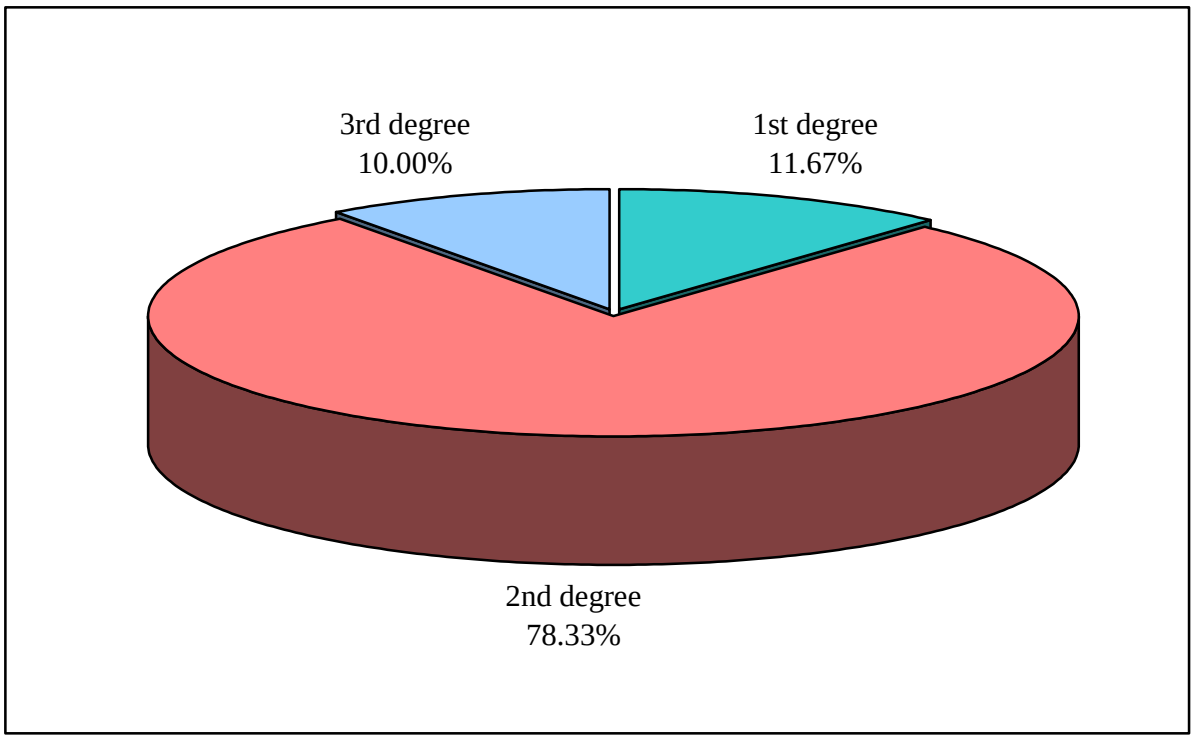


On the basis of duration of stay in hospital total 9 patients were seen to stay in hospital for a period of more than 11 days, out of which 4 patients with 70-79 % of burnt (30.77%). So, Association between % Of total body surface area burns with duration of stay shows p value <0.05. So, there is significance between TBSA with duration of stay.

Table 13: Distribution of Cases based on degree of burns

Degree of burn	No of patients	% of patients
1st degree	14	11.67
2nd degree	94	78.33
3rd degree	12	10.00
Total	120	100.00

Figure 14: Distribution of Cases based on degree of burns



Based on the degree of burns out of 120 patients 94 patients had 2nd degree burns which constitutes 78.33 % followed by 14 patients having 1st degree burns constituting 11.67%. The 3rd degree burns were seen in 12 patients only constituting 10 %.

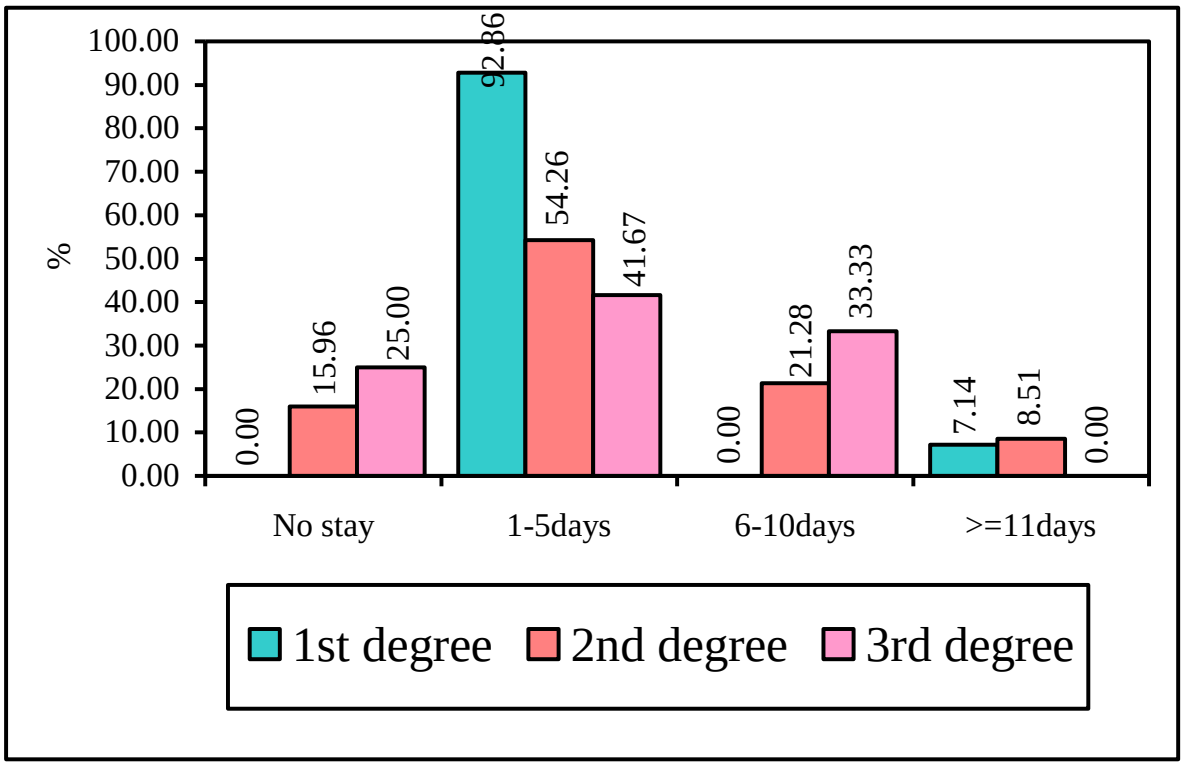
Table 14: Association between Degree of burns with duration of stay in hospital

Degree of burn	No stay	%	1-5days	%	6-10days	%	>=11days	%	Total
1st degree	0	0.00	13	92.86	0	0.00	1	7.14	14
2nd degree	15	15.96	51	54.26	20	21.28	8	8.51	94
3rd degree	3	25.00	5	41.67	4	33.33	0	0.00	12
Total	18	15.00	69	57.50	24	20.00	9	7.50	120
Chi-square=11.6702, p=0.0697									

Table 15: Correlation between Degree of burn with duration of stay by Spearman's rank correlation

Variables	Correlation between % Of total body surface area burn with			
	N	Spearman R	t-value	p-value
Degree of burn	120	0.0048	0.0516	0.9589

Figure 15: Association between Degree of burns with duration of stay in hospital

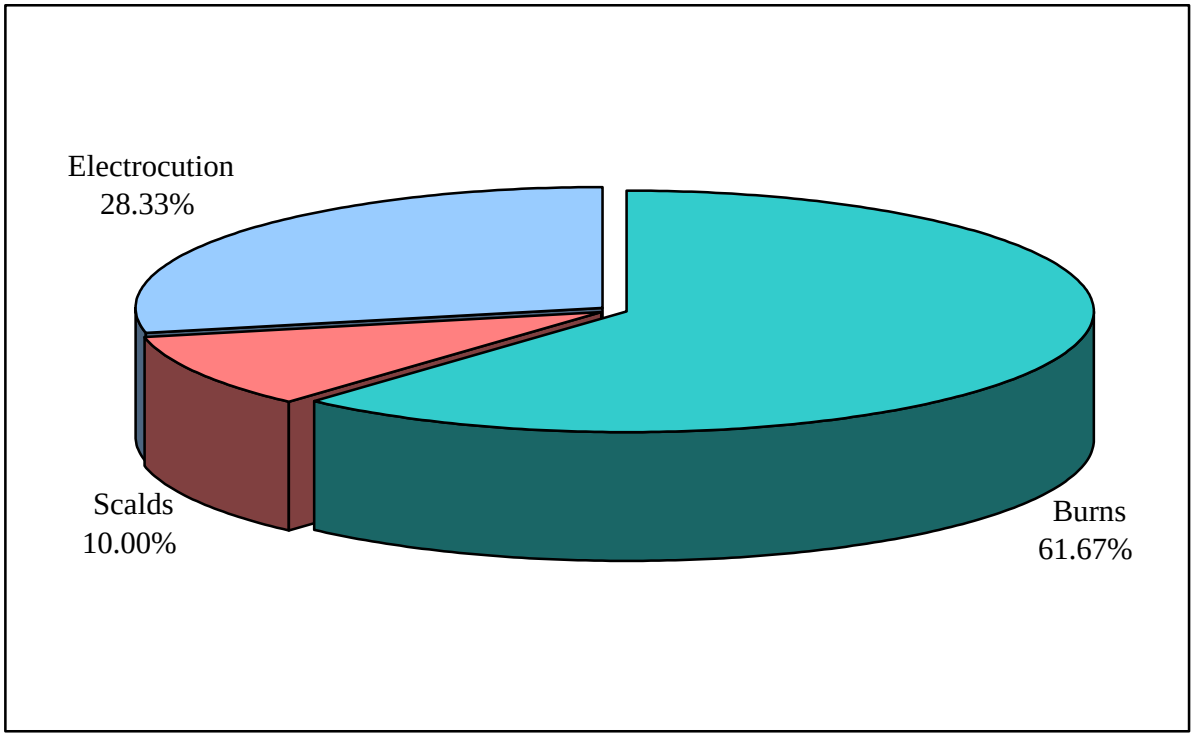


9 patients were seen to have prolonged stay for a period of more than 11 days out of which 8 patients were of 2nd degree burns followed by 1 patient with 1st degree burn. Most of the cases with second degree burns had a duration of stay between 1-5 days.

Table 16: Distribution of Cases based on type of thermal injury

Type of thermal injury	No of patients	% of patients
Burns	74	61.67
Scalds	12	10.00
Electrocution	34	28.33
Total	120	100.00

Figure 16: Distribution of Cases based on type of thermal injury

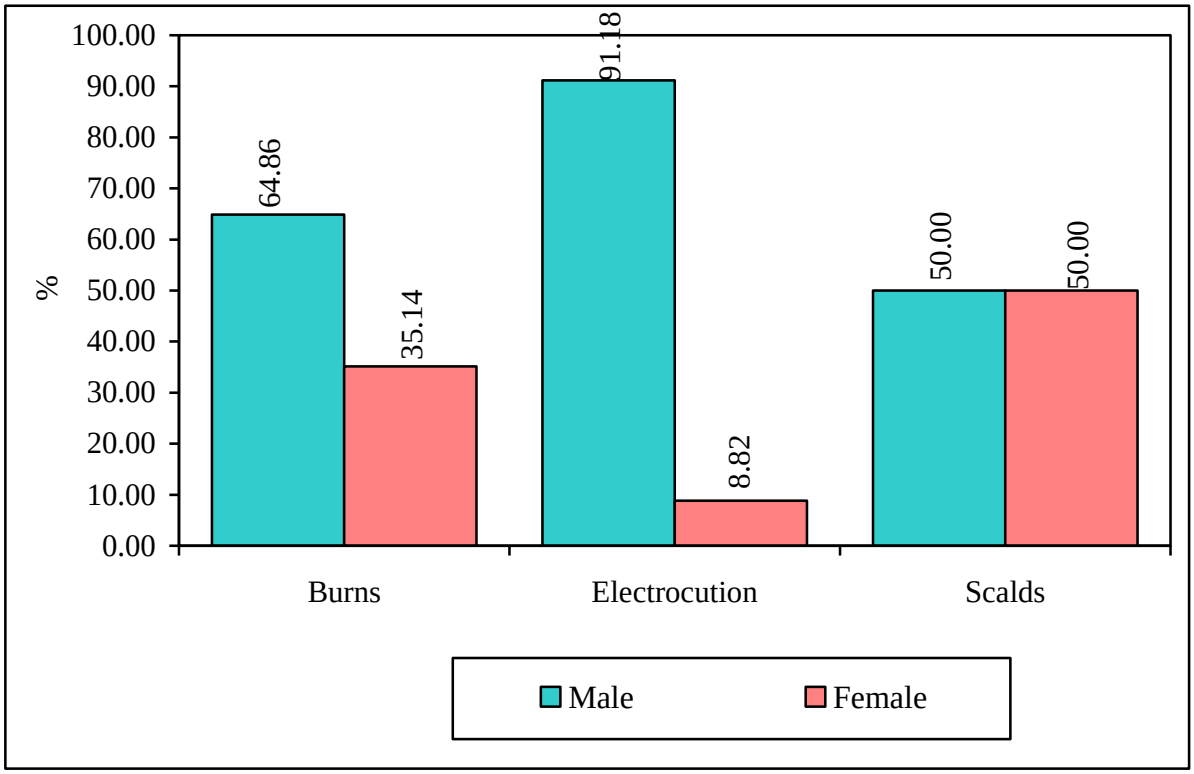


Out of 120 patients 74 patients were diagnosed with thermal burns which constitutes 61.67% followed by 34 electrocuted patients (28.33%) followed by 12 scald injuries patients which constitutes 28.33 %.

Table 17: Association between Type of thermal injuries with sex distribution

Type of thermal injury	Male	%	Female	%	Total	%
Burns	48	64.86	26	35.14	74	61.67
Electrocution	31	91.18	3	8.82	34	28.33
Scalds	6	50.00	6	50.00	12	10.00
Total	85	70.83	35	29.17	120	100.00
***p<0.05**		**Chi-square=10.9678, p=0.0269***				

Figure 17: Association between Type of thermal injuries with sex distribution

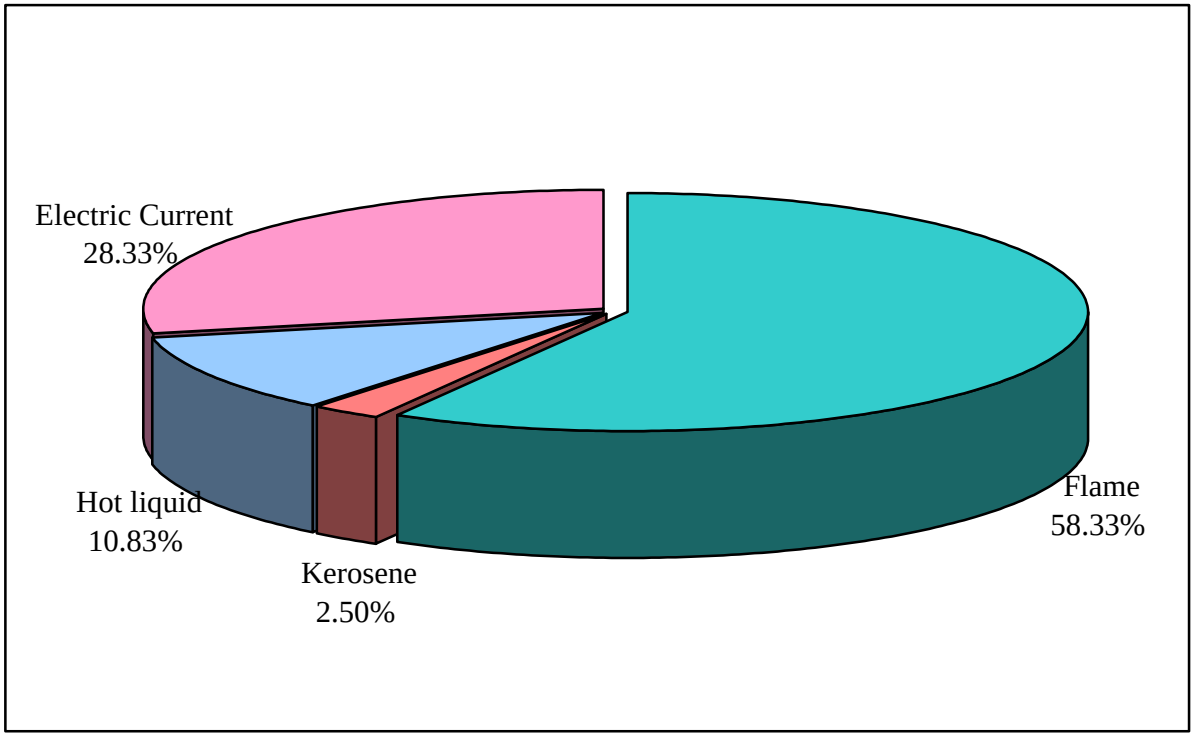


Out of 120 patients,74 patients (61.67%) were due to burns out of which 48 were males constituting 64.86% followed by 26 females (35.14%).34 patients (28.33%) were due to electrocution out of which 31 (91.18%) patients were male and 3 patients (8.82%) were females.12 patients (10%) were due to scalds where 6 ere male and 6 were females constituting of 50% each. So, Association between % Of total body surface area burns with duration of stay shows p value <0.05. So, there is significance between Type of thermal injuries with sex distribution.

Table 18: Distribution of Cases based on agent causing burns

Agent Causing Thermal Injury	No of patients	% of patients
Flame	70	58.33
Kerosene	3	2.50
Hot liquid	13	10.83
Electric Current	34	28.33
Total	120	100.00

Figure 18: Distribution of Cases based on agent causing burns

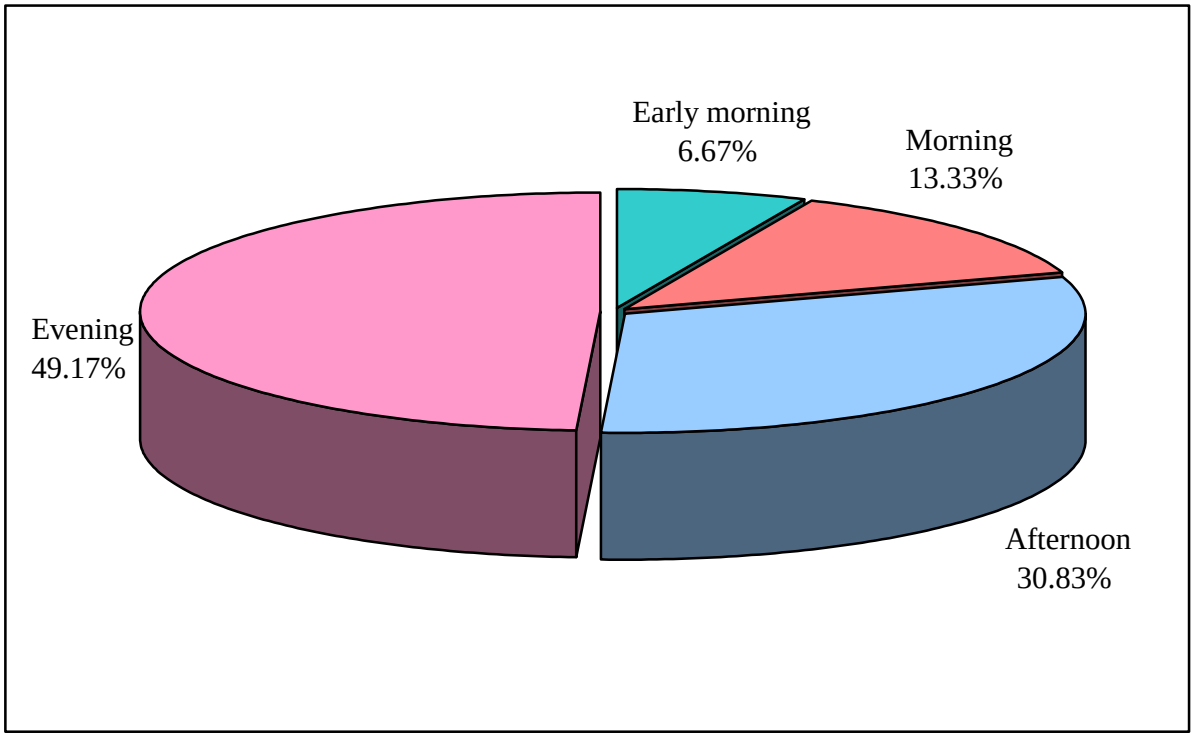


In the study majority of patients i.e., 70 patients (58.33%) were due to flame followed by 34 (28.33%) patients were because of electric current followed by 13 (10.83%) patients due to hot liquid. Only 3 patients were due to Kerosene which constitutes 2.50 %.

Table 19: Distribution of Cases based on time of occurrence of injury

Time of occurrence of injury	No of patients	% of patients
Early morning	8	6.67
Morning	16	13.33
Afternoon	37	30.83
Evening	59	49.17
Total	120	100.00

Figure 19: Distribution of Cases based on time of occurrence of injury

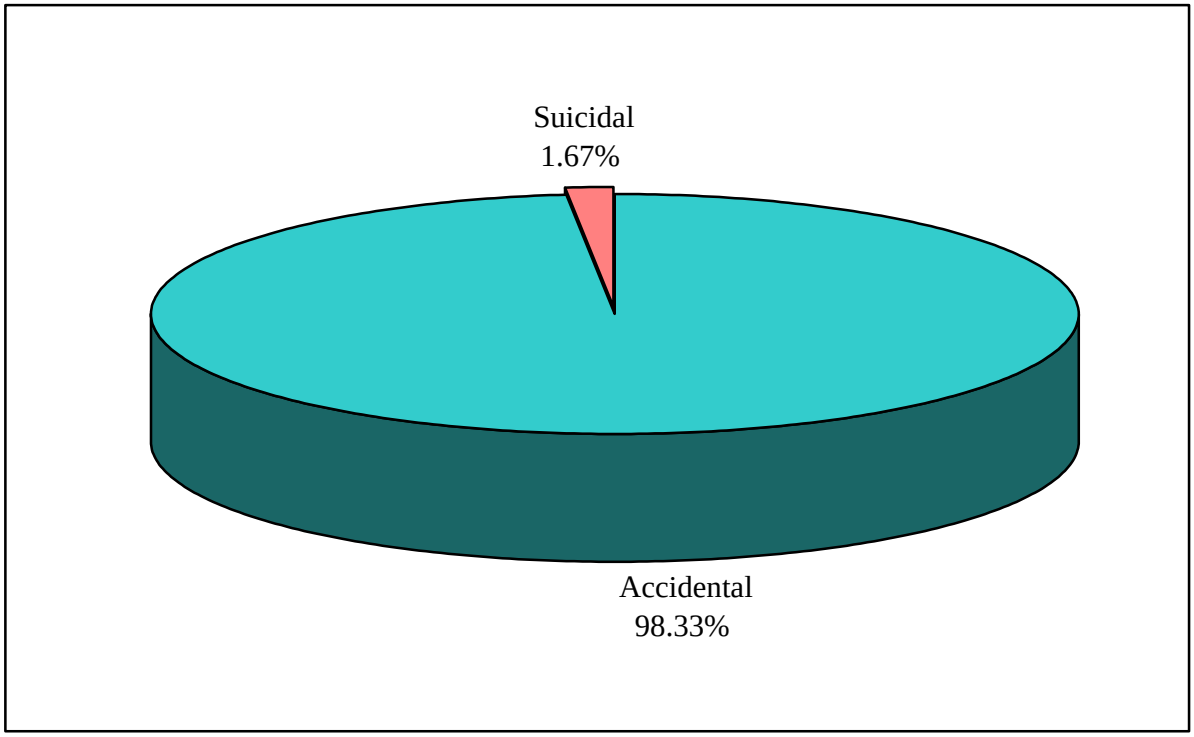


59 patients were injured in the evening time which constitutes 49.17% followed by 37 (30.83%) patients during the afternoon followed by 16 (13.33%) patients in the morning followed by 8 (6.67%) patients in the early morning.

Table 20: Distribution of Cases based on manner of burns

Manner of burns	No of patients	% of patients
Accidental	118	98.33
Suicidal	2	1.67
Total	120	100.00

Figure 20: Distribution of Cases based on manner of burns

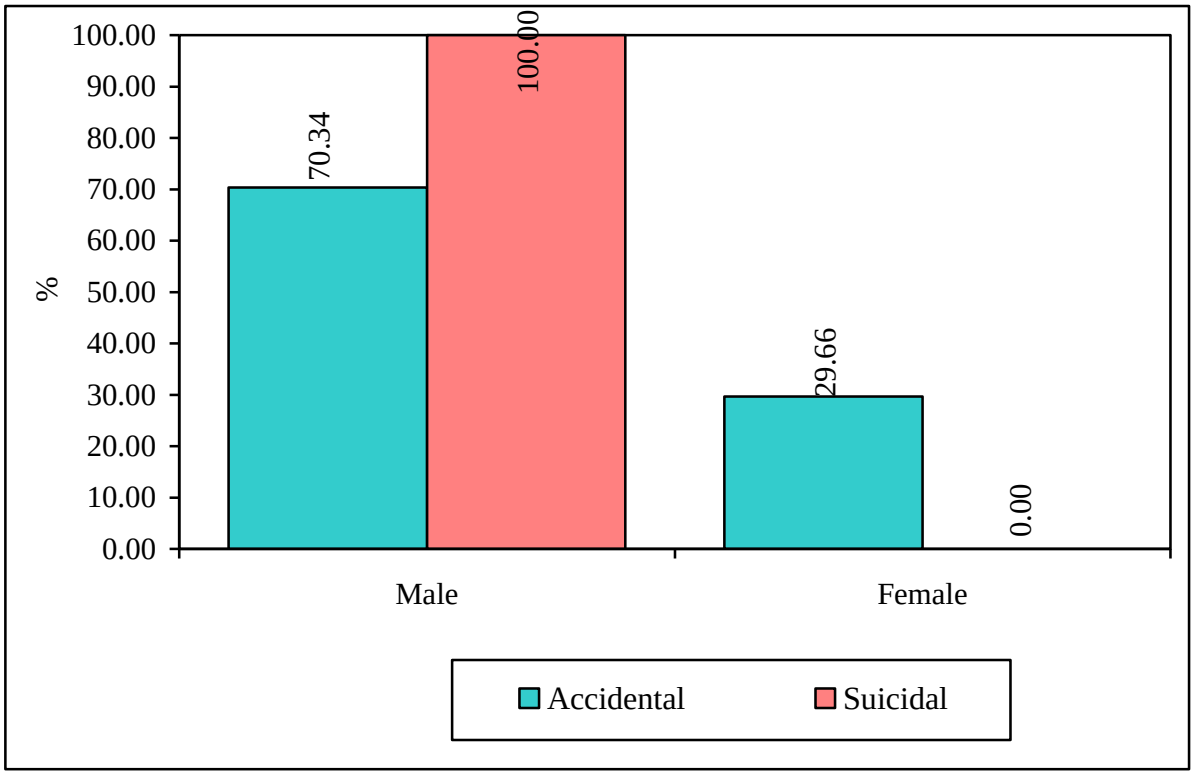


Out of 120 patients, 118 cases were accidental in nature which constitutes 98.33%. Only 2 (1.67%) cases were suicidal in nature.

Table 21: Association between Manner of burns with sex distribution

Manner of burns	Male	%	Female	%	Total	%
Accidental	83	70.34	35	29.66	118	98.33
Suicidal	2	100.00	0	0.00	2	1.67
Total	85	70.83	35	29.17	120	100.00

Figure 21: Association between Manner of burns with sex distribution

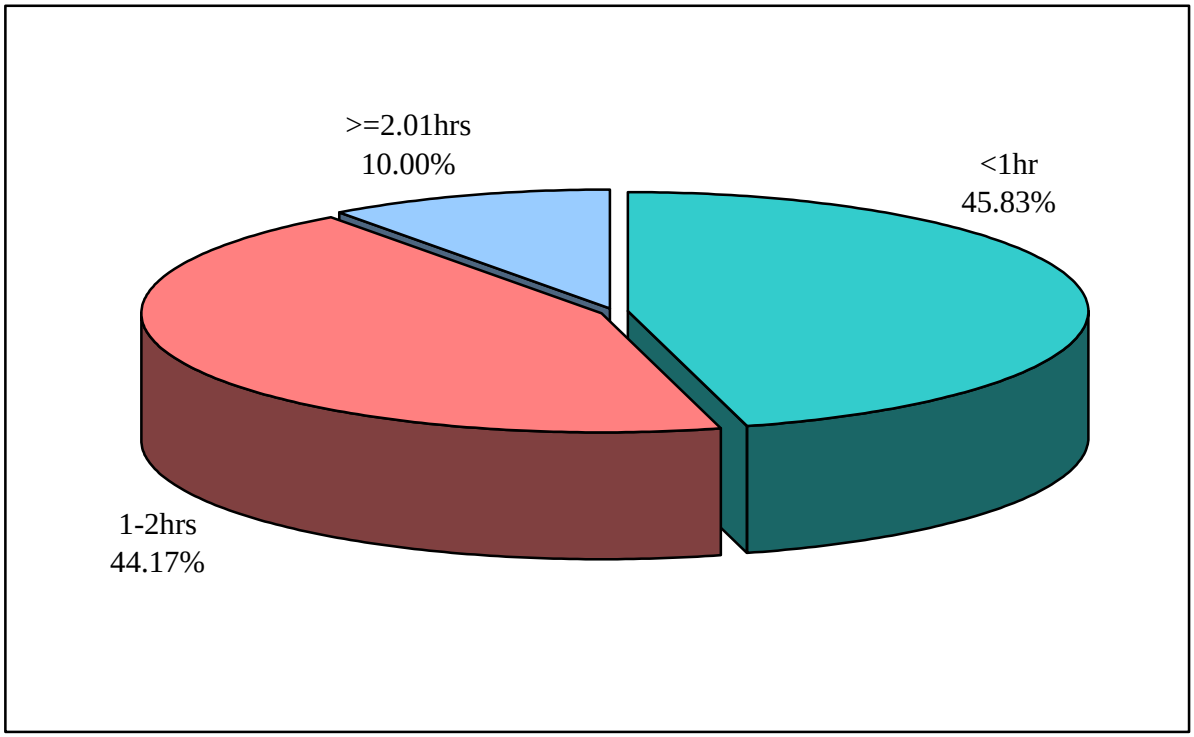


Out of 120 patients 118 patients accidental in nature which constitutes 98.33% out of which 83(70.34%) were males and 35(29.66%) were females. Only 2 (1.67%) patients were suicidal in nature out of which 2 were males.

Table 22: Distribution of Cases based on time interval between sustaining injury and admission

Time interval between burn and admission (in hrs)	No of patients	% of patients
<1hr	55	45.83
1-2hrs	53	44.17
>=2.01hrs	12	10.00
Total	120	100.00

Figure 22: Distribution of Cases based on time interval between sustaining injury and admission

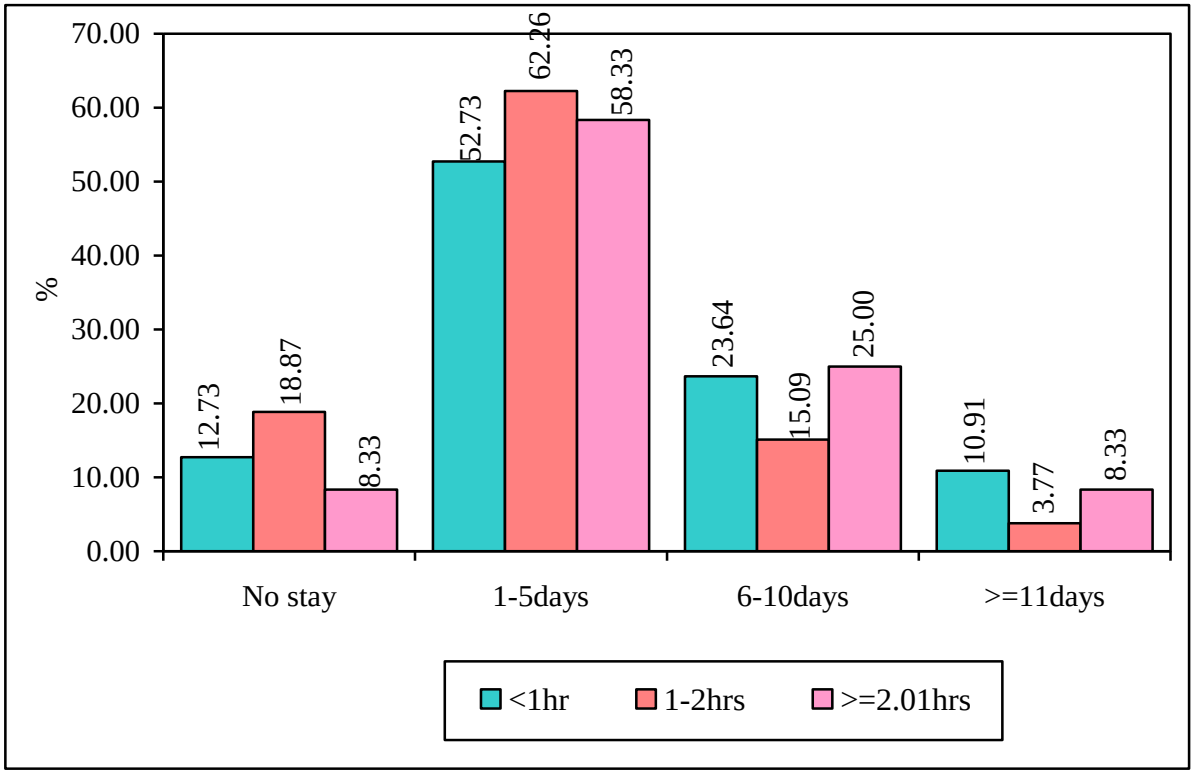


On the basis of time interval between burn and the admission wise distribution,55 patients were in the time interval of less than 1 hour constituting 45.83 % followed by 53 patients (44.17%) in the time interval of 1 -2 hours followed by 12 patients (10%) in the time interval of more than or equal to 2 hours.

Table 23: Association between Time interval between sustaining injury and admission with duration of stay in hospital

Time interval between burn and admission	No stay	%	1-5 days	%	6-10 days	%	>=11 days	%	Total
<1hr	7	12.73	29	52.73	13	23.64	6	10.91	55
1-2hrs	10	18.87	33	62.26	8	15.09	2	3.77	53
>=2.01hrs	1	8.33	7	58.33	3	25.00	1	8.33	12
Total	18	15.00	69	57.50	24	20.00	9	7.50	120
Chi-square=4.4982, p=0.6095									

Figure 23: Association between Time interval between sustaining injury and admission with duration of stay in hospital

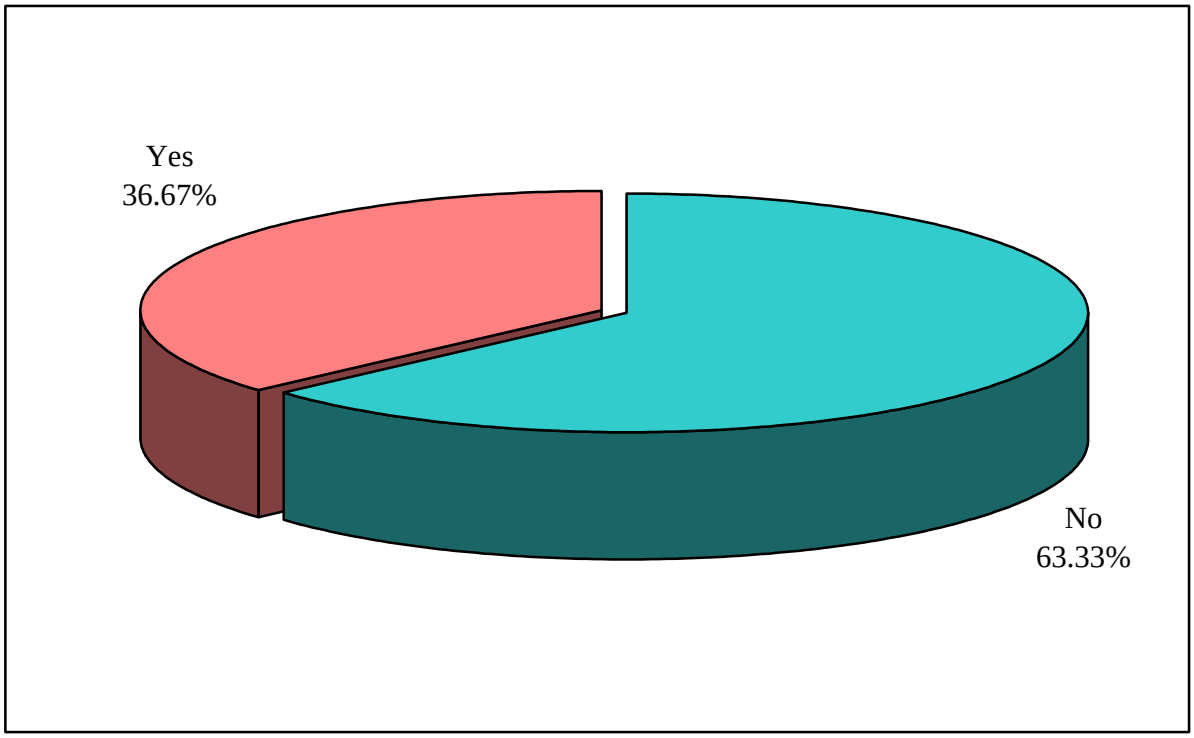


Out of 120 patients 79 patients were came to hospital within 2 hours of incident stayed in hospital for less than 5 days.

Table 24: Distribution of Cases based on first aid received after incident

First aid received after incident	No of patients	% of patients
No	76	63.33
Yes	44	36.67
Total	120	100.00

Figure 24: Distribution of Cases based on first aid received after incident

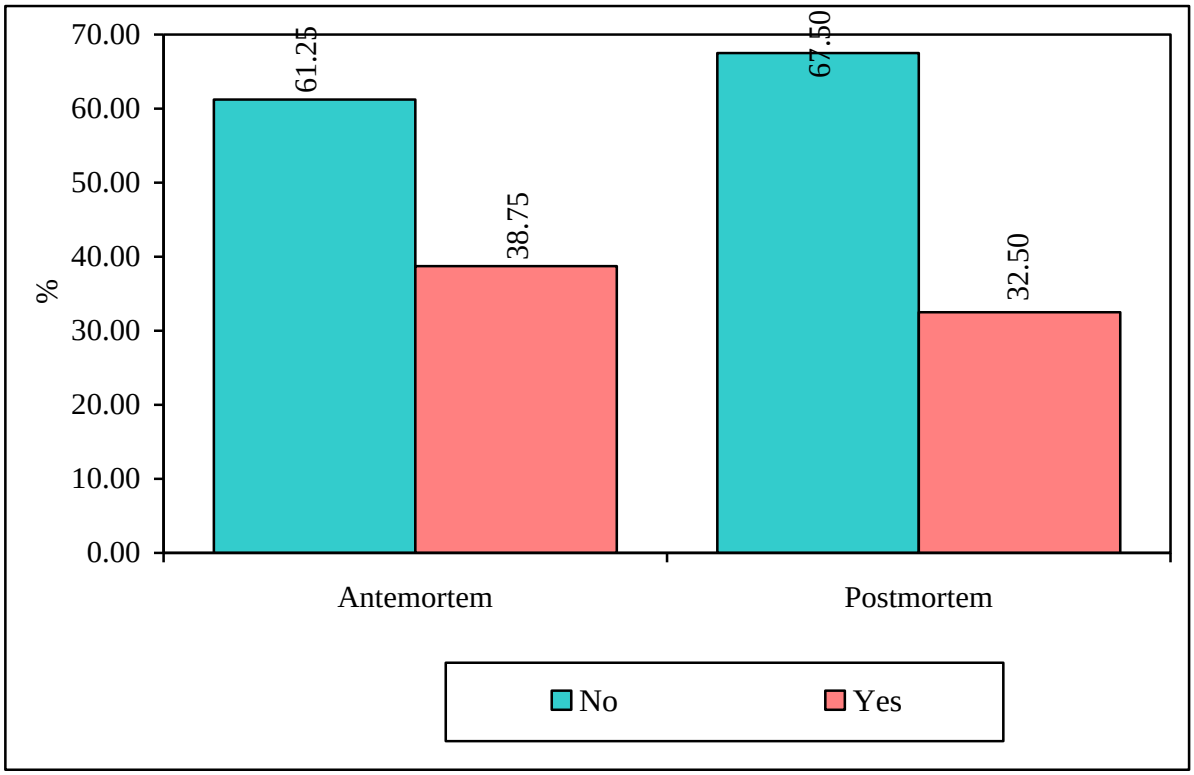


Out of 120 patients 44 patients had received the first aid constituting of 36.67% and 76 patients (63.333%) did not receive the first aid after the incident.

Table 25: Association between First aid received after incident with outcome of cases

First aid received after incident	Antemortem	%	Postmortem	%	Total	%
No	49	61.25	27	67.50	76	63.33
Yes	31	38.75	13	32.50	44	36.67
Total	80	100.00	40	100.00	120	100.00
Chi-square=0.4486, p=0.5030						

Figure 25: Association between First aid received after incident with outcome of cases

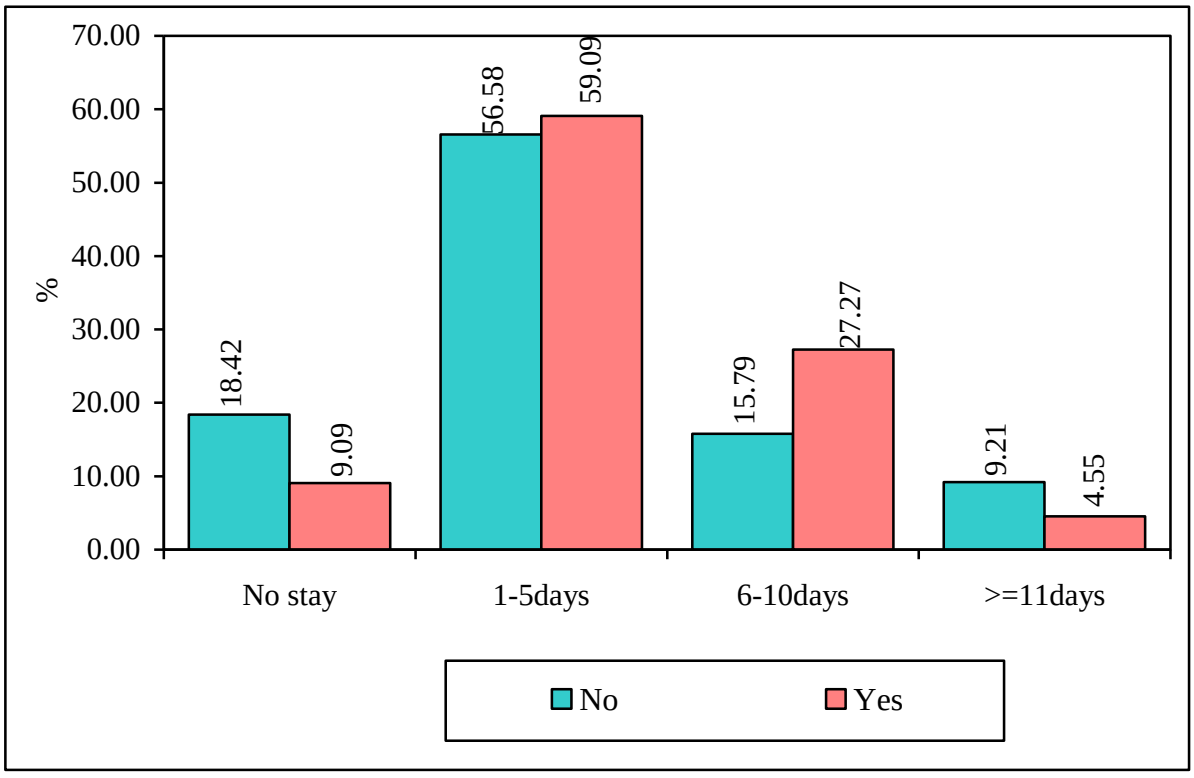


Out of 120 patients 44 patients had received the first aid constituting of 36.67% out of which 31 were antemortem cases and 13 were postmortem cases and 76 patients (63.333%) did not receive the first aid after the incident out of which 49 were antemortem cases and 27 were postmortem cases.

Table 26: Association between First aid received after incident with duration of stay in hospital

First aid received after incident	No stay	%	1-5 days	%	6-10 days	%	>=11 days	%	Total
No	14	18.42	43	56.58	12	15.79	7	9.21	76
Yes	4	9.09	26	59.09	12	27.27	2	4.55	44
Total	18	15.00	69	57.50	24	20.00	9	7.50	120
Chi-square=5.9241, p=0.1154									

Figure 26: Association between First aid received after incident with duration of stay in hospital

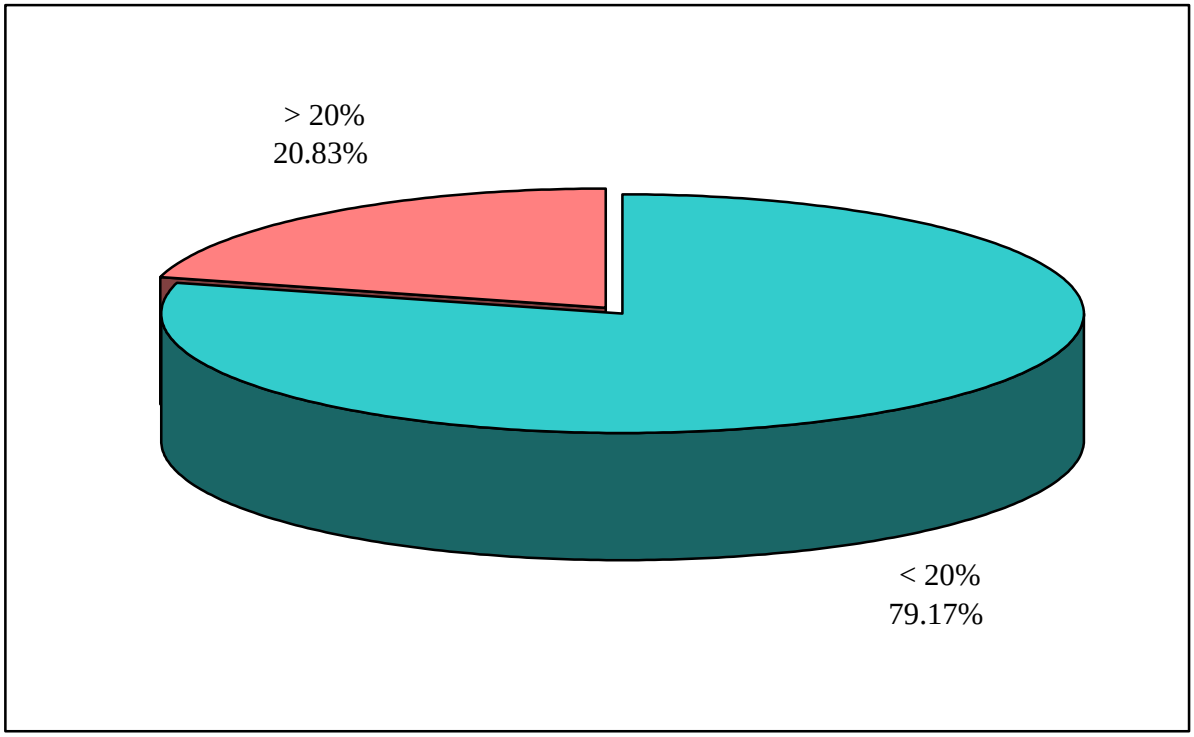


7 patients are had hospital stay is more than 11 days who didn't received first aid after incident. Only 2 patients are had hospital stay is more than 11 days who received first aid after incident.

Table 27: Distribution of Cases based on carboxyhemoglobin level

Carboxyhemoglobin level	No of patients	% of patients
< 20%	95	79.17
> 20%	25	20.83
Total	120	100.00

Figure 27: Distribution of Cases based on carboxyhemoglobin level



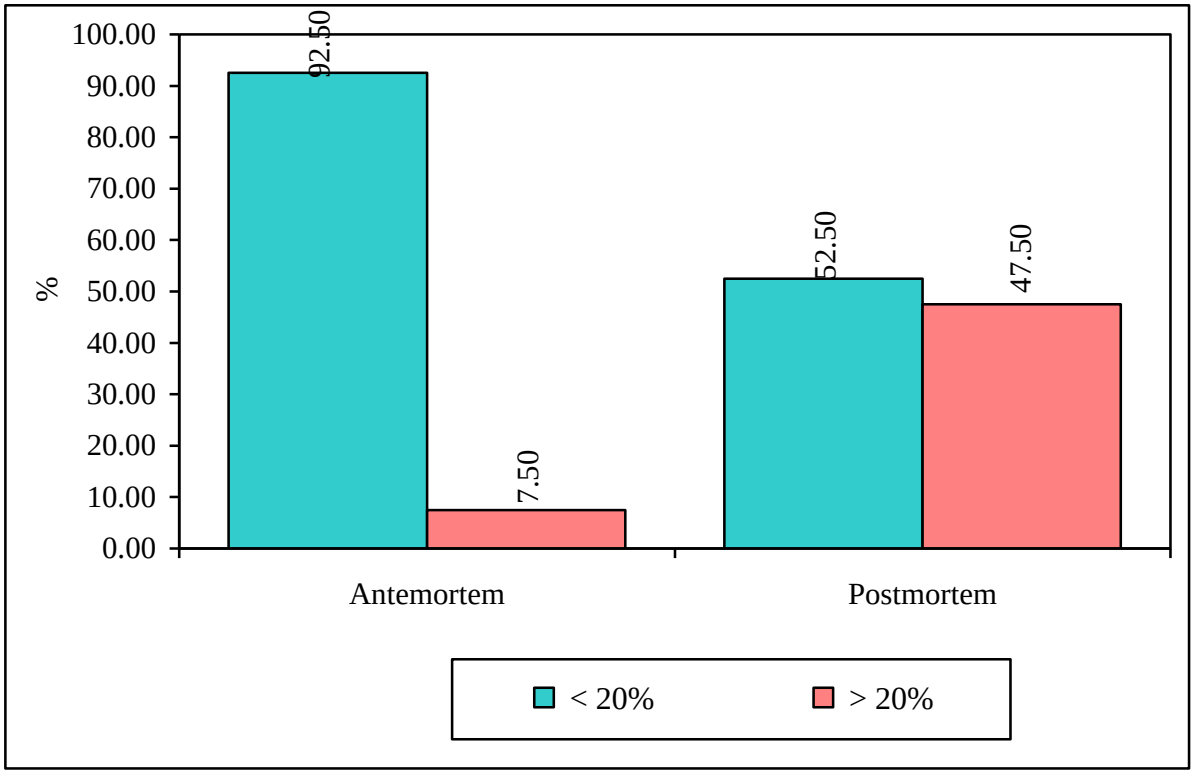
On the basis of carboxyhemoglobin level 95 patients (79.17%) have the level of less than 20 %. 25 patients (20.83%) have the level of more than 20 %.

Table 28: Association between Carboxyhemoglobin level with outcome of cases

Carboxyhemoglobin level	Antemortem	%	Postmortem	%	Total	%
< 20%	74	92.50	21	52.50	95	79.17
> 20%	6	7.50	19	47.50	25	20.83
Total	80	100.00	40	100.00	120	100.00
Chi-square=25.8695, p=0.0001*						

***p<0.05**

Figure 28: Association between Carboxyhemoglobin level with outcome of cases

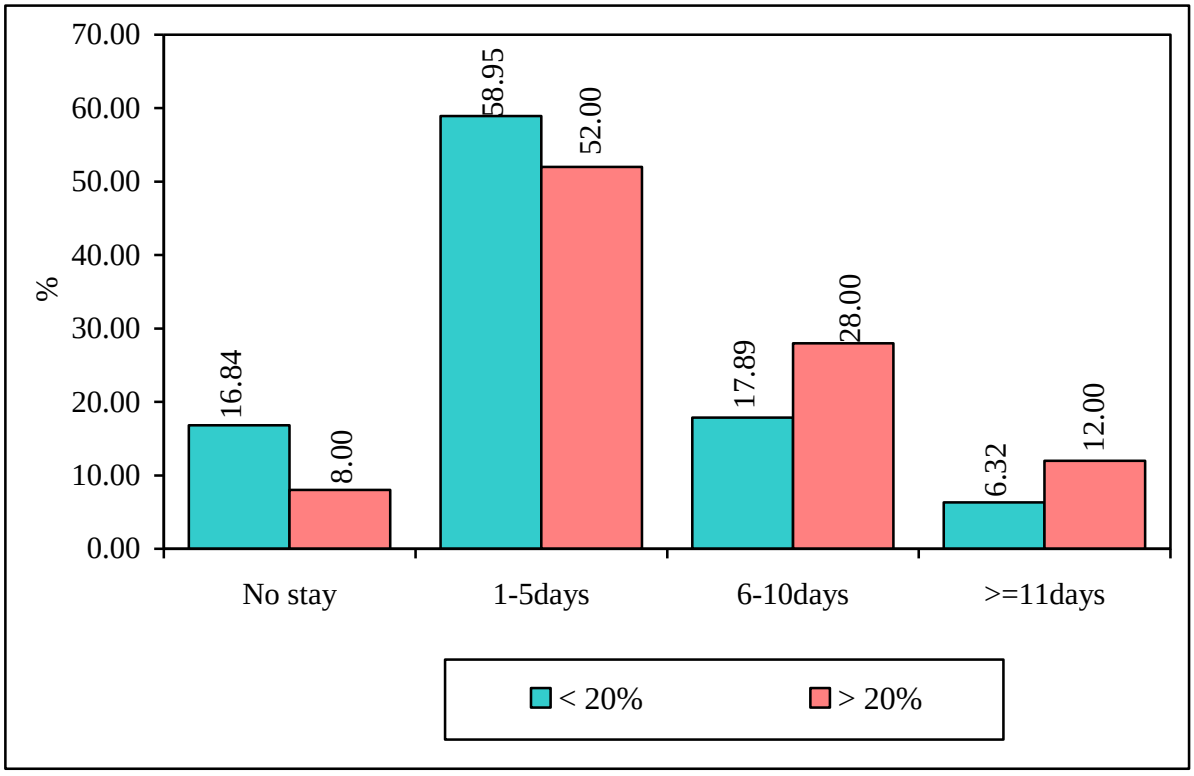


Out of which 74 were antemortem cases and 21 were postmortem cases. 25 patients (20.83%) have the level of more than 20 % out of which 6 were antemortem cases and 19 were postmortem cases. So, association between carboxyhemoglobin levels with Cases shows p value is <0.05. It shows there is significance between TBSA with cases.

Table 29: Association between Carboxyhemoglobin level and admission with duration of stay in hospital

Carboxy-haemoglobin level	No stay	%	1-5 days	%	6-10 days	%	>=11 days	%	Total
< 20%	16	16.84	56	58.95	17	17.89	6	6.32	95
> 20%	2	8.00	13	52.00	7	28.00	3	12.00	25
Total	18	15.00	69	57.50	24	20.00	9	7.50	120
Chi-square=3.0609, p=0.3823									

Figure 29: Association between Carboxyhemoglobin level and admission with duration of stay in hospital



6 patients with less than 20% 0f carboxyhemoglobin level were admitted in hospital for a duration of more than 11 days followed by 3 patients with less than 20% carboxyhemoglobin level.

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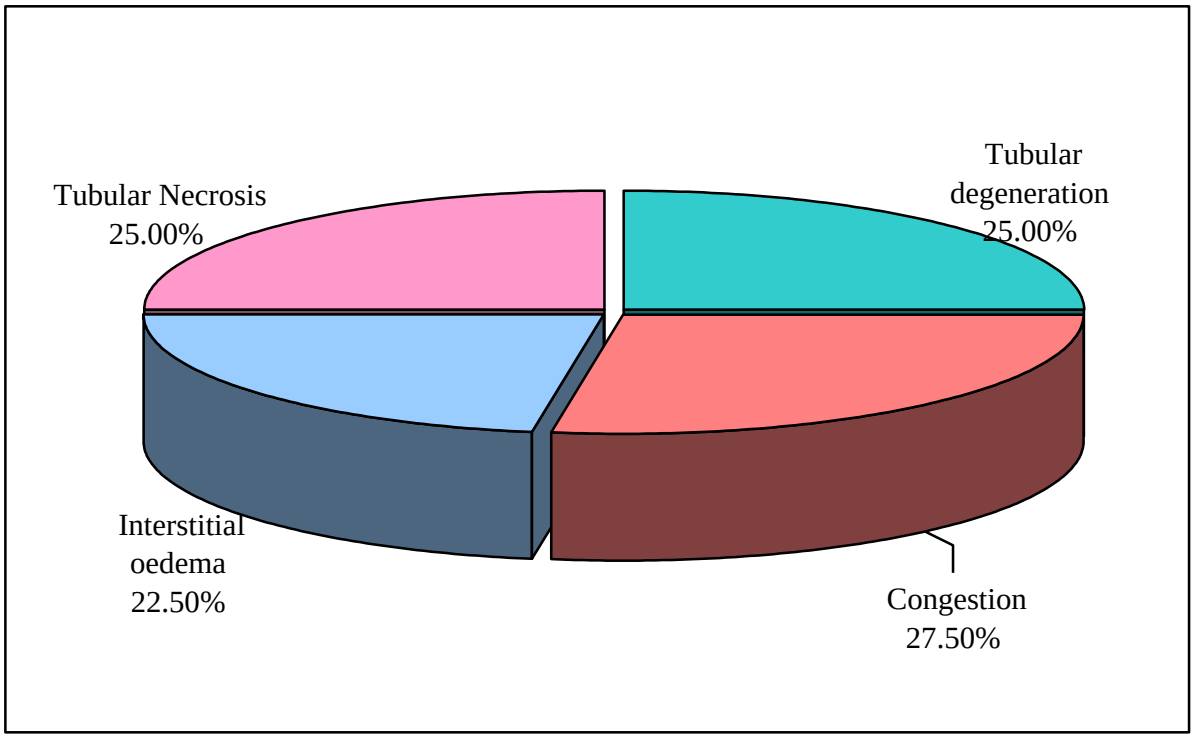
Table 30: Distribution of Cases based on histopathological report of kidneys in autopsied cases

Histopathological report	No of patients	% of patients
Tubular degeneration	10	8.33
Congestion	11	9.17
Interstitial oedema	9	7.50
Tubular Necrosis	10	8.33
Total	40	33.33

Figure 30: Distribution of Cases based on histopathological report of kidneys in autopsied cases

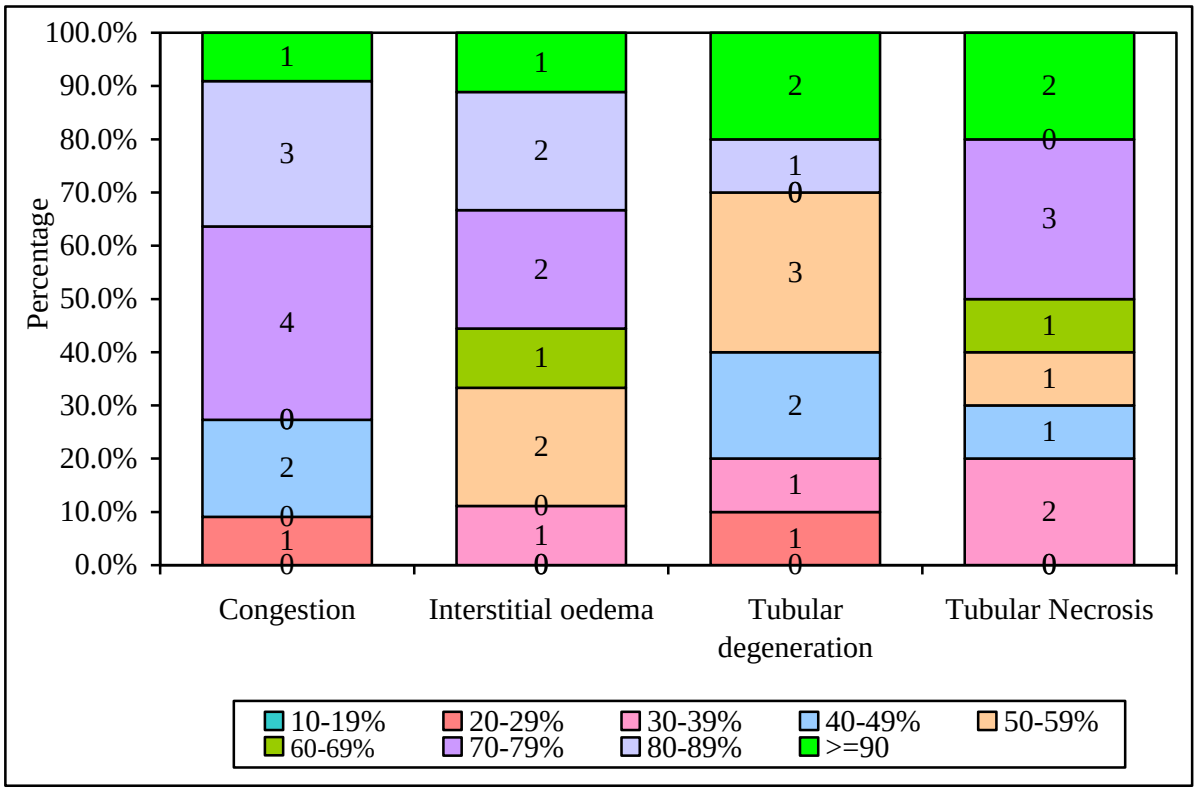


On the basis of histopathological report findings of kidneys in autopsied cases ,11 patients (9.17%) were due to congestion, 10 patients (8.33%) were due to Tubular degeneration, 10 patients (8.33%) were due to Tubular necrosis and 9 patients (7.50%) were due to interstitial oedema.

Table 31: Association of Percentage of total body surface area involved with Histopathological report in postmortem cases

% Of area burn	Congestion	Interstitial oedema	Tubular degeneration	Tubular Necrosis
10-19%	0	0	0	0
20-29%	1	0	1	0
30-39%	0	1	1	2
40-49%	2	0	2	1
50-59%	0	2	3	1
60-69%	0	1	0	1
70-79%	4	2	0	3
80-89%	3	2	1	0
>=90	1	1	2	2
Total	11	9	10	10

Figure 31: Association of Percentage of total body surface area involved with Histopathological report in postmortem cases



Twenty-one of the forty postmortem cases had burn surface area greater than 70%. These 21 patients had more histopathological alterations.

DISCUSSION

Millions of people worldwide sustain burn injuries every year. These injuries can lead to both immediate and long-term complications, including death. Burn injuries are severe traumas that result in permanent damage, contractures, tissue loss, disfiguring scars, and psychosocial issues for patients. They necessitate extended rehabilitation and multiple surgeries to address both psychological and physical effects. Moreover, treating burn patients imposes significant economic burdens due to need for specialized intensive care settings and skilled healthcare staff.[28]

Our burn centre is located in the Belgaum region, which is the most densely populated and industrialized geographical region of Karnataka state. In addition to being a reference centre for the region, it accepts patients from all over Karnataka. However, there is no published epidemiological research on this centre in last 15 years. In our opinion, our data roughly reflect the aetiology of the region and country related to burn injuries.

Our investigation indicated that the prevalence of burn injuries was rather high in the 21–40-year-old age group. Similar to our study, the most often impacted age group was 16–40 years old, according to Sachin Patil et al.[17] While the age range that was frequent in Osman Essen et al.'s study conducted in Turkey was 0–10 years old.[28]

Approximately 36% patients were under the age of 18 in our study and the lowest rate obtained from the 61–70 age groups which was similar with most of the studies. According to Goswami P et al mean age group of burns patient found to be 29.6% which was in accordance to our study.[29]

People in the 20–40 age range are most frequently impacted, mainly because they actively participate in both indoor and outdoor labour. Since they don't usually work in kitchens or industries, children under the age of ten and senior people over 60 are less likely to sustain thermal burns.[20]

Incidence of burn in our study is predominant in males with 70.83% than females with 29.17% which was in contrast to most of the studies where female predominance is seen. The frequency of burns in females was found to be high throughout the study

conducted by Chauhan N et al. Women made up 73.72% of the burn victims, while men made up only 26.28%. 38.89% of men and 69.31% of women are in the 16–30 age range.[20] In contrast to our analysis, Khaja Azizuddin Junaidi et al.'s study showed a female prevalence with 90.2% of instances compared to a male preponderance of 9.8%.[30] The author Bhardwaj SD et al listed a number of factors, such as early marriages, marital disputes, early responsibilities assumed by women to assist mothers in the kitchen, and a lack of awareness regarding safety. Sarees and salwar kameez, which are traditional garments in Indian culture, are also frequently the source of unintentional burns from poor cooking. The majority of Indian research also discovered that young people in the reproductive age range had a significant prevalence of burns.[31]

The significant number of patients who reported thermal injury from electrocution while working in industries was the primary cause of the male preponderance in our study. Females mainly shown thermal injuries due to burns and flames. Same results were seen in studies done by Soltan et al[32] as well as Piccoli NS et al[33] where male predominance was more due to outdoor work.

According to our research, there is a relatively high rate of burn injuries among Hindus (85%). After that incident of burn injuries in Muslims (15%) is high. Gupta A.K. et al conducted study where their results are corresponds to our results. Out of 852 patients 834(98%) were Hindus and 16 (2%) were Muslims.[34] Sahu RK et al also showing similar results where Muslims made up 26.21% of the population, while Hindus made up 58.62%.[16] Reason for this may be Hindus present more burn injuries from firecracker accidents during Diwali, oil lamp mishaps, or kitchen fires. Women wearing sarees or dupattas may have a higher risk. Muslim patients may have burns from kitchen fires, kerosene stove explosions, or accidental fires due to loose clothing like hijabs, abayas may catch fire.

In our present study, 58.33% burn cases from rural areas while 41.67% from urban areas. According to Patil SW et al, in their study they found out that, maximum burn deaths were from rural area.[17] The percentage of burn deaths in rural areas was significantly higher (63.50%) than in urban areas (36.50%). Similar findings were also obtained by studies conducted in India by Lal et al.[35] (71.84%), Gupta R et al.[36] (84.6%), Bhagora R V et al.[37] (60%) and Harish D et al.[38] (66%).

In all these studies burns cases were more from rural areas. The reasons may include the fact that most people still cook with kerosene stoves and chulhas, as well as the widespread use of makeshift chimneys in rural India, among a few other factors.

In our study 72.50% cases were directly referred to our institute while 27.50% cases were referred by other doctors and hospitals from surrounding localities. Areta Kowal-Vern et al shows similar results that Most of the patients (73%) came to the hospital themselves, 23% were transferred from other hospitals[39]. Reason could be awareness among the patients regarding Tertiary hospitals that have specialized burn units with experienced multidisciplinary teams, including burn surgeons, intensivists, plastic surgeons, and rehabilitation specialists and they are equipped with ICU beds, ventilators.

In dividing patients according to total body surface area involved in our study highest no. of cases (43.33%) were seen with < 40% of TBSA involved. Dr. Chandra Shekhar Prasad et al study shows highest no. of cases (56%) were seen with < 40% of total body surface area involved which is similar to our study[21]. Krishnamurthy VR et al also show same result as our study. (49.2%) cases involved < 40% of total body surface area.[4] Jain M et al, was 45.33%[40], and in Egypt, Hemeda et al, reported mean TBSA 32±5.7%[41] similar to our study. Least no. of cases (13.34%) seen in > 80% of total body surface area involved. Debbarma S et al shows (43.73%) Burn injuries > 80% of TBSA comprises the highest victims in the study.[19] Other studies like Memchoubi et al (73.84%)[42], Karaddi S et al (38.39%)[43] also shows more no. of burn cases with >80% of TBSA involved. These all studies are totally contrasting to our study.

The manner for burns in our study is mainly accidental with 98.33% and very minimal patients have suicidal manner (1.67%). Verma PK et al[18] was found that the majority of deaths (64.00%) were accidental, with suicidal thoughts coming in second (34.00%). The findings of the present study align with those of According to Chaudhary BL et al., suicidal cases made up 17.39% of cases, whereas accidental burns accounted for 72.94%.[44] Similarly, Buchade D et al. observed that accidental burns were most prevalent, occurring in (62.02%) cases, followed by suicidal burns in (26.16%) cases[45]. While Junaidi KA study shows that 78.4% cases were suicidal followed by 21,6% cases were accidental which is contrast to our study[30].

The majority of instances were burns, including scald, electric, and chemical/miscellaneous burns, highlighting the necessity of focused preventative measures for these particular categories. In our study, burns accounted for the majority of cases (61.67%). In line with our findings, Golshan et al. carried out a comprehensive investigation on the epidemiology of accidental burns in South Asia and discovered that burns were the most prevalent kind of thermal injury.[46]

In our study Agent causing injury in these groups was most commonly flames (58.33%) followed by electric current (28.33%) followed by hot liquid (10.83%). Zanjad NP study shows Flame burns comprised of 92.3% of the cases, followed by electric current (5.3%) and hot liquid (2.4%) which is similar to our study[22]. Ahuja RB et al also resembles with our findings where Flame accounted for 82.15%[47]. Factors such as an unprotected fire source, cooking at floor level, and loose-fitting synthetic clothing were the primary causes of accidental flame burns. In contrast, Parks et al. found the highest number of incidents using heated liquid.[48]

Our study shows highest no. of cases presented with 2nd degree of burns (78.33) followed by 1st degree of burns (11.67%) and lastly 3rd degree of burns (10%). Karaddi S et al shows Highest number of cases i.e., 60.61% 2nd degree of burns, which is followed by 1st degree of burns i.e., 29.51% and lastly 9.88% cases showed 3rd degree of burns[43]. Gorea et al. made similar observations, reporting that 2nd degree burns accounted for 36.17%, followed by 1st degree of burns at 35.17% and 3rd degree of burns at 28.65%[49].

Most of the patients reported hospital during evening showing that maximum burn injuries took place during evening (49.17%) followed by afternoon (30.83%). Dr. Chandra Shekhar Prasad et al shows injuries due to burn most prevalent between 18:01 and 23:59 hours, accounting for nearly half of the cases (49%). Additionally, 23% of cases occurred between 12:01 and 18:00 hours resembling our study[21]. Ambade V N et al also shows similar results with our study[50]. Zopate PR et al shows that the majority of burn injuries typically happened while working in the kitchen or during cooking that is evening followed by afternoon[51]. The reason for that is this is a period when individuals are typically busy in household activities in kitchen or in factories.

Out of 120 patients, 55 patients reported within an hour of injury, 53 reported within 1-2 hours after injury and only 12 patients reported after 2 hours of injury. Chauhan N et al shows Out of 162 patients, just 7 showed up to hospital within an hour of the burn. The greatest proportion of patients showed up to hospital two hours following the accident, which is in contrast to the findings of our study.[20] The early reporting of patients to the hospital in present study due to the well-equipped tertiary care hospital in the Belagavi region. As a result, many patients prefer seeking medical attention as soon as possible.

Out of 120 patients in our study, only 36.67% of them received first aid immediately after injury. Subramanian A et al found that the majority of victims, 59 (50.8%), applied ointment as some kind of first aid step. in 21 cases (18.1%) and pouring running water in 20 cases (17.2%)[52]. A study by Sonavane et al found that for burn first aid, most participants used egg white, castor oil, or chopped potatoes (57.1%).[53] Similarly, Lal P et al. found that 73.7% of cases involved the use of only home treatments.[54]. All these studies are contrast with our study. Reason being that most of cases in our study are from rural areas so there was lack of awareness regarding first aid treatment and also Unavailability of basic first aid materials such as clean water, burn ointments, or sterile dressings.

Blood carboxyhaemoglobin levels were detected in our study to find severity of burn injury. Our study shows out of 120 patients (79.17%) shows less than 20% carboxyhaemoglobin in their blood. M.M. Afify et al checked Blood carboxyhaemoglobin (COHb) levels in 70 cases out of these 59 cases shows less than 20% carboxyhaemoglobin in their blood which is resembles our study[55]. I. Gerling et al shows out of 115 cases only 3 cases show less than 20% carboxyhaemoglobin levels in their blood[56] which is not resembles to our study.

Out of 120 cases in our study 40 cases were postmortem cases. Histopathological changes in kidney shows Congestion in 11 cases (9.17%) followed by Tubular Necrosis and Tubular degeneration in 10 cases respectively (8.33%). Mangare VK et al shows out of 80 cases Congestion was most with 24 cases congestion in (66.25%), and (63.75%) had tubular necrosis, resembling our study[57]. The results of our study showed some variation compared to Halder A et al.[27] (tubular degeneration with acute

tubular necrosis) and Bhetariya BV et al.[58] (tubular necrosis in 81.25% of cases) were found in 29% and 20% of cases, respectively.

In our study significant proportion of cases (72.5%) were direct admissions, while only (27.5%) were referred. Although direct admissions have a higher number of antemortem cases, they also account for **77.5%** of postmortem cases. This could be due to critical patients being brought directly to the hospital.

Our study found that 37 patients arrived at our hospital with more than 60% Total Body Surface Area (TBSA) involvement, of which 23 patients (62.16%) succumbed to their injuries. Goswami, et al shows similar results where overall mortality of patients with above 60% TBSA burns was 91.8%.[29] Dr. Chandra Shekhar Prasad et al. reported that over 70% of burn-related deaths occurred in cases where > 70% of total body surface area was affected showing similar observations to our study[21]. The results contradicted the study of Usama B et al., which found that 116 postmortem patients (28.8%) had burns that covered 26% to 50% of their body surface area.[59]

Patients with <50% TBSA burns mostly stayed for less than 5 days (89.55%), with only 7 cases out of 67 cases (10.44%) staying beyond 5 days. 50-89% burns Patients had a wider spread, with 53.33% staying more than 6 days suggesting prolonged care. This showing a direct link between extensive burns and longer hospital stays. Patients presented with ≥ 90% TBSA burns had 75% staying 1-5 days and only 25% staying 6-10 days, with no cases surviving beyond 11 days. This suggests that most of these patients succumbed early due to the severity of their injuries. Sivamuthu TC et al shows contrast results to our study patients with <50% of TBSA of burns stays in hospital more than Fourteen days on average and patients with >50 % TBSA of burns stays in hospital less than 5 days on average[5].

Majority (92.86%) of patients with 1st-degree burns had a hospital stay of 1-5 days. Only 7.1% required hospitalization for ≥11 days, possibly due to complications. No patients were hospitalized for 6-10 days, suggesting burns typically require only short-term care. 54.26% of cases stayed for 1-5 days, while 21.28% required 6-10 days of hospitalization.8.51% of cases needed more than 11 days, indicating that deeper second-degree burns may require prolonged care. Interestingly, 15.96% of patients with second-degree burns had no hospital stay, possibly due to outpatient

treatment or less severe cases.25% of third-degree burn cases had no hospital stay, which could indicate a high fatality rate before hospitalization.

Burns account for the highest proportion of cases (74 out of 120, 61.67%). Males (64.86%) more frequently affected than females (35.14%). Stuart P. Pegg et al[60] shows similar results as our study includes 73.7% were males and 26.3% were females presented with burns. Zopate et al[51] and Patil SW et al[17] shows female predominance in burn cases which is contrasting with our study. Electrocution accounts for 28.33% of total cases (34 out of 120). A striking 91.18% of electrocution cases involved males, while only 8.82% involved females. Zopate et al[51] and Zanjad NP et al[22] shows male predominance in electric burn cases which shows resemblance with our study. This may be attributed to occupational hazards, as men are more likely to work in electrical and construction-related fields.

The majority of burns (98.33%) were accidental. Males accounted for 83 cases (70.34%), while females accounted for 35 cases (29.66%). Only 2 cases (1.67%) were categorized as suicidal. Both cases involved males (100%), while no females were recorded under suicidal burns. Mostafa M. Afify et al shows similar results in accidental burns cases only where male involves more in number while for suicidal burn cases it shows contrasting with our study where females are more in numbers[55].

The proportion of patients with no stay was highest in the 1-2 hours group (18.87%), followed by <1 hour (12.73%), and least in >=2.01 hours (8.33%). This is likely because most patients were initially treated at another hospital, where they received first aid before being transferred.1-5 days stay is Most common in the 1-2 hours group (62.26%), followed by >=2.01 hours (58.33%) and <1 hour (52.73%). Suggesting that some of these burns may have been less severe or manageable within a few days. 6-10 days stay is common in the >=2.01 hours group had the highest proportion which might indicate delayed care leading to complications. ≥11 days hospital stays is highest in the <1 hour admission group (10.91%), followed by >=2.01 hours (8.33%), and lowest in the 1-2 hours group (3.77%) Early admission seems to correlate with a greater proportion of long hospital stays, possibly due to more severe burns and also depends on age.

Our study shows 9.21% of cases who have not received first aid required ≥11 days hospital stay, compared to those who received first aid (4.55%). It is possibly because prompt treatment minimized complications. More patients who did not receive first aid (75%) did require less than 5 days hospital admission as compared to those who received first aid (68.18%) Reason may be less involvement of TBSA.

Our study found that out of 120 patients, 76 did not receive first aid. Among them, 27 patients (35.52%) sadly succumbed to various complications. In contrast, 44 patients did receive first aid, and 13 of them (29.54%) did not survive. The higher number of postmortem cases among those who didn't receive first aid suggests that delays in the medical intervention may have led to complications, potentially reducing their chances of survival.

In our study of 120 patients, 95 had carboxyhaemoglobin levels below 20%, while 25 had levels above 20%. Among those with lower levels, 22.1% unfortunately succumbed to complications. However, in patients with higher carboxyhaemoglobin levels, the mortality rate was significantly higher at 76%. These finding highlights that as carboxyhaemoglobin levels increase, risk of complications and fatal outcomes also rises.

Patients with higher COHb levels had longer hospital stays. The proportion of patients staying 6-10 days (28%) and ≥11 days (12%) was higher in the COHb > 20% group. Hospital stays (1-5 days) more common among those with COHb < 20%, suggesting milder cases. Prolonged hospital stays (≥11 days) were twice as common in those with COHb > 20%, indicating more severe cases and potential complications. Prompt oxygen therapy and hyperbaric oxygen treatment could potentially reduce the duration of hospital stays for patients with high COHb levels.

In our study Higher burn percentages (>70%) are strongly associated with severe renal changes, especially tubular necrosis, which suggests burn shock, dehydration, and possible acute kidney injury (AKI). Mangare VK et al study shows similar results to our study states that Patients with burn surface area greater than 85% were most likely to experience acute tubular necrosis of the proximal tubules.[57]

CONCLUSION

The majority of burn casualties are male, with most cases resulting from electric current exposure. The risk of electric current burns can be considerably decreased by wearing personal protection equipment (PPE), such as insulated gloves and boots, when working with electrical systems.

Women are predominantly affected by burns from flames, with most cases occurring in rural areas. To reduce these incidents, promote safer cooking methods regarding LPG or electric stoves instead of open fires. Education should be given to the women on fire safety, including the proper handling of kerosene and other flammable substances. Additionally, they should be encouraged to use fire-resistant clothing while cooking to minimize the risk of burns.

Most burn patients do not receive first aid immediately after the injury, which can worsen their condition. To change this, interactive first-aid training sessions should be organized in schools, workplaces, and community centres. These sessions should include hands-on demonstrations using role-play and mannequins to teach proper burn care. Health camps and public events to feature burn awareness booths with live Q&A sessions to educate people on how to respond effectively. Additionally, social media platforms like Facebook and Instagram should be used to spread awareness and share essential first-aid tips for burns.

Spreading awareness regarding the importance of getting medical help quickly after a burn can make a huge difference in recovery. Delays in treatment can lead to infections, deeper tissue damage, and longer healing times. To prevent this, educational campaigns should focus on helping people recognize when a burn needs emergency care—especially deep burns, large burns, or those on the face, hands, or joints. People should be encouraged to seek medical attention as soon as possible to improve outcomes and reduce complications.

The severity of burns should be estimated using a bedside test (Hoppe-Seyler test) to measure carboxyhaemoglobin levels. Therefore, it will be simple for the doctor to administer the required appropriate medicine for that patient based on the levels of carboxyhaemoglobin and prevent the lengthy duration of stay or death.

Kidneys are more prone for damage in burn cases. So early treatment like fluid replacement, electrolyte replacement should be done to prevent kidney damage and further complications.

SUMMARY

- The age group of 21 to 30 years old had the most burn cases.
- Males were more predominantly involved in this study.
- Nearly 80 cases were classified as antemortem.
- The majority of patients belonged to the Hindu religion.
- The majority of patients were from rural regions.
- A large number of patients arrived directly at the emergency department, while others were referred; 44 patients had received first aid before reaching the hospital.
- In terms of hospital stay, most patients were hospitalized for 1-5 days.
- Accidental burns were the most common, with 21 patients sustaining burns covering 30-39% of their total body surface area.
- Among the 120 patients - 94 had second-degree burns, 74 were diagnosed with thermal burns.
- The evening hours saw the most cases reported.
- Based on the time interval between the burn injury and hospital admission, 55 patients were admitted within the first hour.
- Carboxyhemoglobin levels were below 20% in 95 (79%) patients.
- Histopathological examination of the kidneys in autopsied cases showed that 11 patients (9.17%) had congestion.

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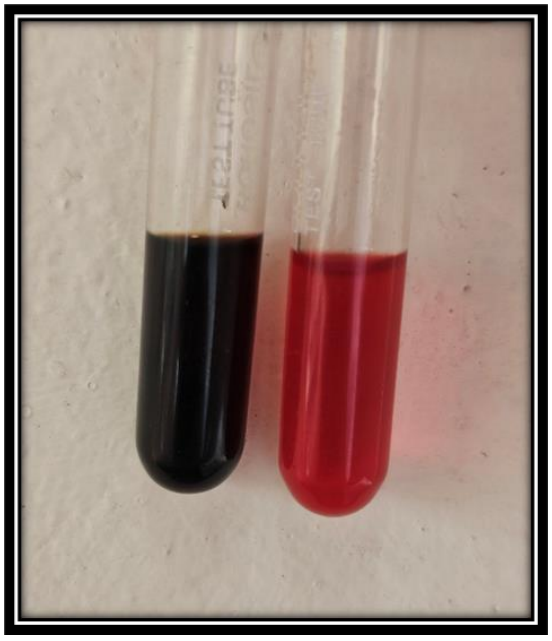
ANNEXURE-I - PHOTOGRAPHS

COLLECTING INFORMATION FROM CASES REPORTING TO CASUALTY

PERFORMING HOPPE-SEYLER TEST IN POISON DETECTION CENTRE

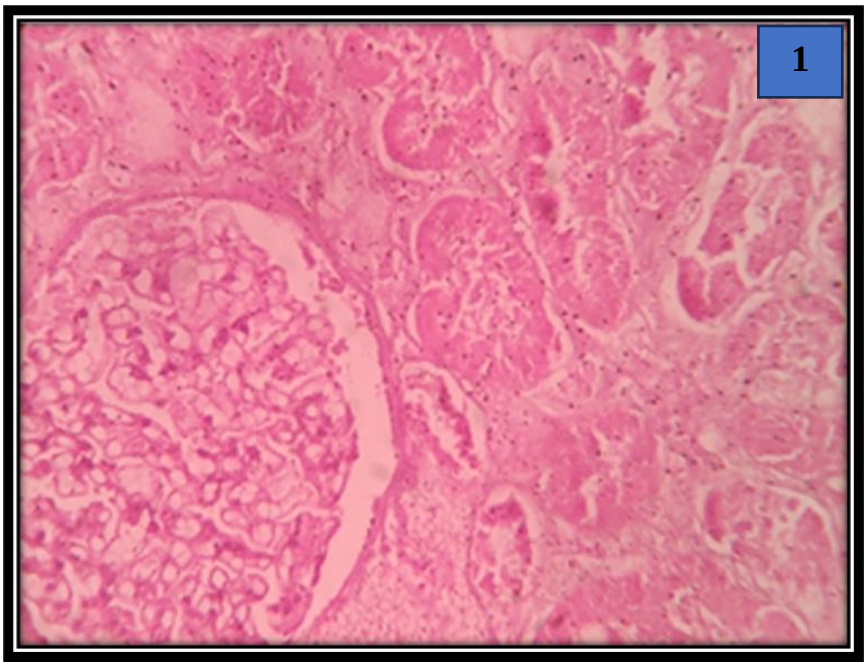


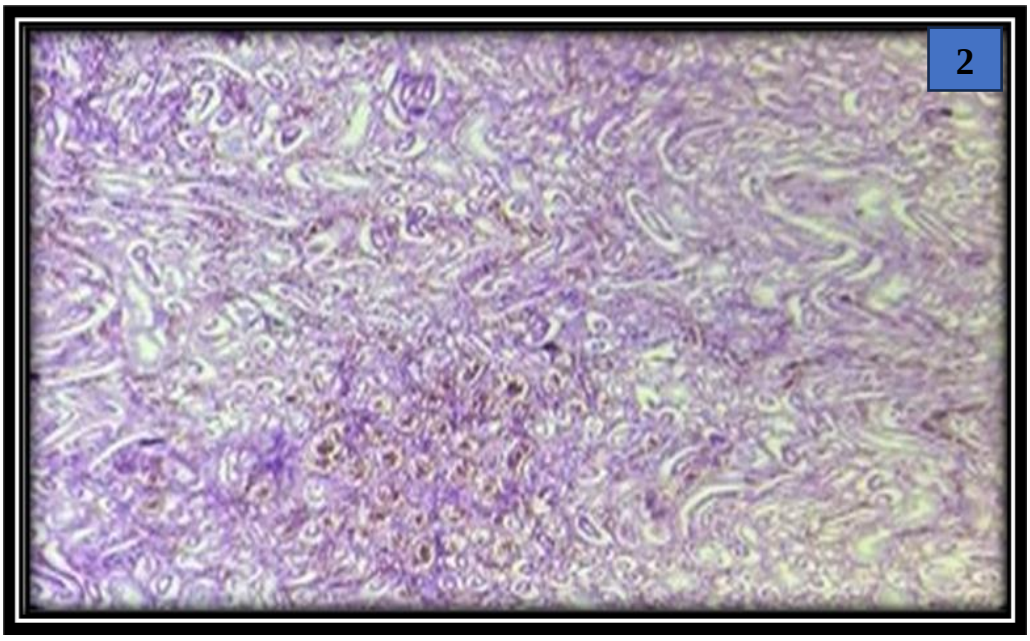
PRESERVING KIDNEYS IN POSTMORTEM CASES

HISTOPATHOLOGICAL CHANGES IN KIDNEY

1. ACUTE TUBULAR NECROSIS

2. CONGESTION





ANNEXURE-II
INFORMED CONSENT FORM

Sociodemographic Profile and pattern of burns cases admitted and autopsied at Tertiary Care hospital – "A Cross-sectional study."

Primary investigator:
REG No-BF0122001, Post graduate student, Department of Forensic Medicine and Toxicology, J. N. Medical college, KAHER, Belagavi-590010

Introduction:

You are being invited to participate in this study to find out **Sociodemographic Profile and pattern of burns cases admitted and autopsied at Tertiary Care hospital – "A Cross-sectional study."**

Burn is defined as an injury which is caused by application of heat (by conduction or radiation) or chemical substance to the external or internal surfaces of body, which causes destruction of tissues. Burn injuries and their sequelae are major causes of morbidity and mortality worldwide. Burns constitute a major public health problem globally, especially in low and middle-income countries where over 95% of all burn deaths occur. Burn deaths are classified among the 15-leading cause of deaths in India.

In India alone 7 million people suffer from burn injury, out of which, 7 lakhs need hospital admission and 2.4 lakh become disabled. Burns account for 1% of the global burden of diseases and cause more than 7.1million injuries, a loss of almost 18million disability-adjusted life years (DALYs), and more than 265,000 deaths worldwide annually.

Thus, this study will be conducted to know the socio-demographic profile and pattern of injury of burn victims and carboxyhaemoglobin levels in burn patients at our

institution so that magnitude of the problem in our society is known, and proper preventive strategies are planned.

Explanation of procedure:

In this study, you will have to answer a few prepared questions about socio-demographic details. Blood sample will be collected for estimation of carboxyhemoglobin levels. Only if you agree to participate, you will enroll in the study.

Withdrawal from participation in the study: Participation in this study in voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. This will not hamper your relation with treating doctor or hospital. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: You will not get any benefits by participating in this study. The society at large will be benefited from this study.

Possible risks from participating in the study: There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person to identify you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication and presentation.

Financial incentives: You will not receive any payment for participating in this study.

Cost of investigations done during the course of study will be paid by the **principal investigator**

Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purpose and or presented to scientific groups. However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact:

REG No-BF0122001, post graduate student, Department of Forensic Medicine and Toxicology, J.N. Medical College, KAHER, Belagavi, Karnataka-590010

Associate Professor, Department of Forensic Medicine and Toxicology, J.N. Medical College, KAHER, Belagavi, Karnataka-590010

If you have any question with regard to your right as study participant you may contact

Dr Harsha Hegde, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waving any of your legal rights.

CONSENT STATEMENT

I am making a voluntary decision to participate in the study **Sociodemographic Profile and pattern of burns cases admitted and autopsied at Tertiary Care hospital – "A Cross-sectional study."** My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

WRITTEN ASSENT STATEMENT

I **(Parent/Guardian)** making a voluntary decision to participate in the study **Sociodemographic Profile and pattern of burns cases admitted and autopsied at Tertiary Care hospital – "A Cross-sectional study."** My signature below indicates that I **(Parent/Guardian)** have decided to participate and I **(Parent/Guardian)** have read the information provided above or the information provided above has been read to me in the language that I **(Parent/Guardian)** understand best. I **(Parent/Guardian)** was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the (Parent/Guardian):

Signature or left thumb impression of the (Parent/Guardian):

Name of the investigator:

Signature of the investigator:

ANNEXURE-III

DATA COLLECTION PROFORMA

OP/IP no.-

DOA-

DOD/EXP-

- **Socio-demographic data-** 1. Age

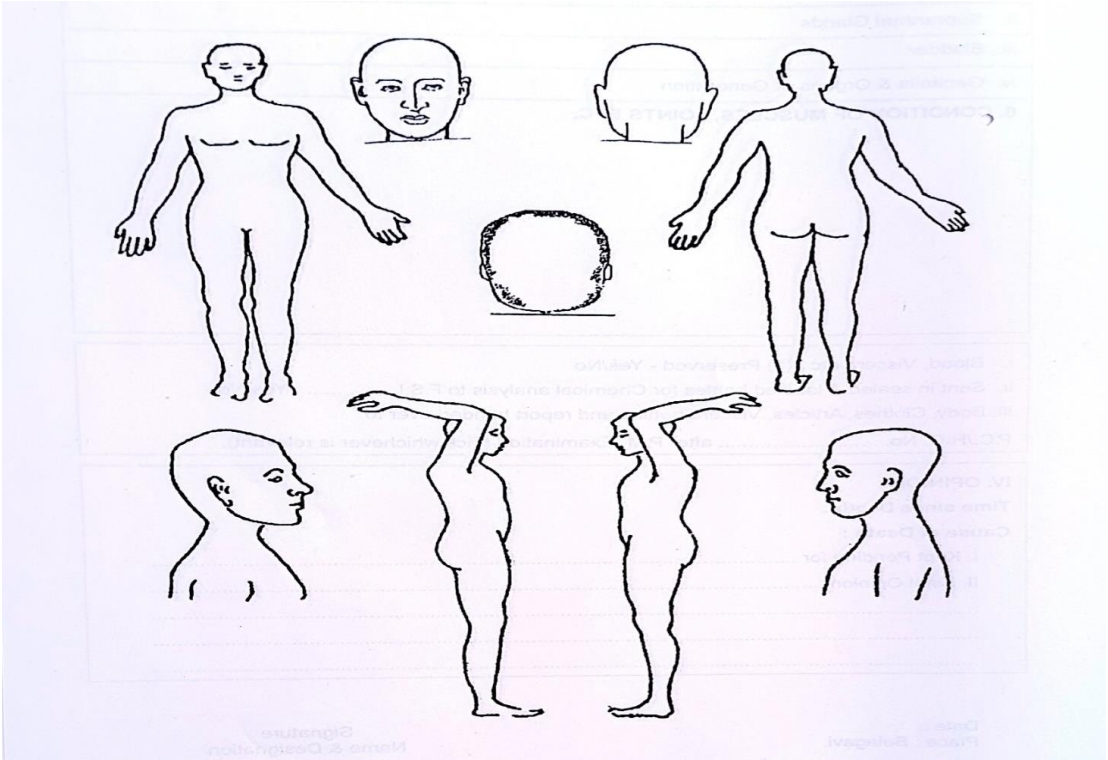
  2. Sex

  3. Religion

  4. Residence (Rural/Urban)

  5. Direct case / Referred case

- **Data related to burn** 1. % Of total body surface area burn -



2. Degree of burn –

3. Type of thermal injury

4. Agent causing thermal injury (flame, kerosine, petrol, Hot liquid, Electric current)

5. Time of occurrence of injury

6. Manner of burns (Suicidal/accidental/homicidal)

7. Time interval between burn and admission

8. First aid received after incident

9. Carboxyhemoglobin level

10. Histopathological report of Kidneys in autopsied cases

ANNEXURE-IV

KEY TO MASTER CHART

DOA- Date of Admission

DOD/EXP- Date of Admission/Expiry

SIH- Stay in hospital

Sex- **M**- Male **F**- Female

Rel.- Religion **H-**Hindu **Mu-**Muslim

D/R- Direct/Referred

% TBSA burn- Percentage of total body surface area burns

DOB- Degree of burns

TOTI- Type of thermal injury

ACI- Agent causing injury

TOI- Time of incident

MOB- Manner of burns

TBBAA- Time between burns and admission

FARAI- First aid received after incident

COHBL- Carboxyhemoglobin levels

HPR- Histopathological Report

ANNEXURE-V- MASTER CHART

Postmortem Cases																		
S.No	OP / IP No.	DOA	DOD/EXP	SIH	Age	Sex	Rel.	Residence	D/R	% TBSA burn	DOB	TOTI	ACI	TOI	MOB	TBBAA	FARAI	COHB	HPR
1	10029139	23-12-2023	30-12-2023	7 Days	66 Years	F	H	Urban	Direct	40-45%	2nd Degree	Burns	Flame	5.30 PM	A	30 Minutes	Yes	< 20%	Tubular degeneration
2	10027571	17-12-2023	22-12-2023	5 Days	40 Years	M	H	Rural	Referred	90-95%	3rd Degree	Burns	Flame	8.30 PM	A	2 Hours	Yes	> 20%	Congestion
3	10029182	17-12-2023	25-12-2023	8 Days	42 Years	M	H	Rural	Direct	85-90%	2nd Degree	Burns	Flame	1.00 PM	A	1.30 Hours	No	> 20%	Interstitial oedema
4	10027569	17-12-2023	22-12-2023	5 Days	35 Years	F	H	Rural	Direct	90-95%	3rd Degree	Burns	Flame	7.30 PM	A	2Hours	No	> 20%	Tubular degeneration
5	10023708	29-11-2023	29-11-2023	0 Day	30 Years	M	H	Rural	Referred	80-85%	2nd Degree	Burns	Petrol	2.00 PM	S	1.30Hours	Yes	> 20%	Congestion
6	10020066	13-11-2023	18-11-2023	5 Days	58 Years	F	H	Urban	Direct	45-50%	2nd Degree	Burns	Flame	10.00 AM	A	45 Minutes	Yes	< 20%	Tubular degeneration
7	7254948	17-11-2023	17-11-2023	0 Days	31 Years	M	Mu	Urban	Direct	55-60%	2nd Degree	Burns	Flame	12.40 PM	A	30 Minutes	No	< 20%	Tubular degeneration
8	10019072	07-11-2023	08-11-2023	1 Days	8 Months	M	H	Rural	Referred	50-55%	1st Degree	Scalds	Hot liquid	3.00 PM	A	2Hours	Yes	< 20%	Interstitial oedema
9	10013076	10-10-2023	24-10-2023	14 Days	27 Years	F	H	Rural	Direct	50-60%	2nd Degree	Burns	Flame	6.30 PM	A	2.30 Hours	No	< 20%	Tubular Necrosis
10	10014308	16-10-2023	24-10-2023	8 Days	45 Years	M	Mu	Urban	Direct	70-75%	2nd Degree	Burns	Flame	5.50 PM	A	45 Minutes	No	< 20%	Congestion
11	10014322	16-10-2023	22-10-2023	6 Days	36 Years	M	Mu	Urban	Direct	70-75%	2nd Degree	Burns	Flame	6.00 PM	A	45 Minutes	Yes	> 20%	Congestion
12	10003890	03-08-2023	23-08-2023	20 Days	55 Years	M	H	Rural	Direct	70-75%	2nd Degree	Burns	Flame	2.00 PM	A	50 Minutes	No	> 20%	Tubular Necrosis
13	10002264	23-08-2023	30-08-2023	7 Days	55 Years	M	H	Urban	Referred	55-60%	2nd Degree	Burns	Flame	3.30 PM	A	2.30 Hours	Yes	< 20%	Tubular degeneration
14	1199574	01-07-2023	21-08-2023	51 Days	10 Years	M	H	Rural	Direct	65-70%	2nd Degree	Burns	Flame	4.00 PM	A	45 Minutes	Yes	< 20%	Tubular Necrosis
15	1205188	25-07-2023	27-07-2023	2 Days	30 Years	M	Mu	Rural	Direct	75-80%	2nd Degree	Burns	Flame	7.30 PM	A	1 Hour	No	> 20%	Interstitial oedema
16	1199571	01-07-2023	07-07-2023	6 Days	34 Years	F	H	Rural	Direct	90-95%	3rd Degree	Burns	Flame	4.45 PM	A	45 Minutes	No	> 20%	Tubular degeneration
17	7109870	03-07-2023	03-07-2023	0 Day	16 Years	M	H	Rural	Direct	80-85%	2nd Degree	Electrocution	Electric Current	5.00 PM	A	1 Hour	No	< 20%	Interstitial oedema
18	1199572	01-07-2023	01-07-2023	0 Day	39 Years	M	H	Rural	Referred	75-85%	2nd Degree	Burns	Kerosene	6.45 PM	A	1.30 Hour	Yes	> 20%	Congestion
19	1174117	01-03-2023	12-03-2023	11 Days	24 Years	F	H	Rural	Direct	75-80%	2nd Degree	Burns	Flame	2.40 PM	A	2 Hour	No	> 20%	Tubular Necrosis

S.No	OP / IP No.	DOA	DOD/EXP	SIH	Age	Sex	Rel.	Residence	D/R	% TBSA burn	DOB	TOTI	ACI	TOI	MOB	TBBAA	FARAI	COHB	HPR
20	10114609	19-12-2024	27-12-2024	8 Days	77 Years	F	H	Urban	Direct	55-65%	2nd Degree	Burns	Flame	8.05 PM	A	2.30 Hour	No	< 20%	Interstitial oedema
21	10113446	15-12-2024	17-12-2024	2 Days	38 Years	F	H	Rural	Direct	90-95%	3rd Degree	Burns	Hot liquid	6.30 PM	A	25 Minutes	No	> 20%	Tubular Necrosis
22	10111296	06-12-2024	09-12-2024	3 Days	60 Years	M	Mu	Urban	Direct	60-65%	2nd Degree	Burns	Flame	10.30 AM	A	35 Minutes	No	< 20%	Interstitial oedema
23	10093470	22-09-2024	28-09-2024	6 Days	60 Years	F	H	Urban	Direct	55-60%	2nd Degree	Burns	Flame	8.00 AM	A	40 Minutes	No	< 20%	Tubular degeneration
24	10092957	22-09-2024	25-09-2023	3 Days	14 Years	M	H	Urban	Referred	80-85%	2nd Degree	Burns	Flame	11.30 PM	A	3 Hours	Yes	> 20%	Tubular degeneration
25	10090911	13-09-2024	14-09-2024	1 Day	20 Years	M	H	Rural	Direct	45-50%	2nd Degree	Electrocution	Electric Current	5.00 PM	A	45 Minutes	No	< 20%	Congestion
26	7566439	18-08-2024	18-08-2024	0 Day	39 Years	M	H	Rural	Direct	30-35%	3rd Degree	Electrocution	Electric Current	7.15 PM	A	50 Minutes	No	< 20%	Interstitial oedema
27	10082561	09-08-2024	13-08-2024	4 Days	29 Years	M	H	Rural	Direct	90-95%	2nd Degree	Burns	Flame	2.15 PM	A	1 Hour	No	> 20%	Tubular Necrosis
28	10076734	16-07-2024	18-07-2024	2 Days	27 Years	M	Mu	Rural	Direct	75-80%	2nd Degree	Burns	Flame	1.15 PM	A	1.30 Hour	No	> 20%	Congestion
29	10072829	01-07-2024	14-07-2024	13 Days	75 Years	F	H	Rural	Direct	35-40%	2nd Degree	Burns	Flame	12.00 PM	A	45 Minutes	Yes	< 20%	Tubular Necrosis
30	7525977	13-07-2024	13-07-2024	0 Day	28 Years	M	H	Urban	Direct	30-35%	2nd Degree	Electrocution	Electric Current	5.45 PM	A	25 Minutes	No	< 20%	Tubular Necrosis
31	10082561	09-08-2024	13-08-2024	4 Days	29 Years	M	H	Rural	Direct	90-95%	3rd Degree	Burns	Flame	2.15 PM	A	1.20 Hour	No	> 20%	Interstitial oedema
32	10068578	13-06-2024	15-06-2024	2 Days	32 Years	M	H	Urban	Referred	35-40%	2nd Degree	Burns	Kerosene	7.20 PM	S	30 Minutes	Yes	< 20%	Tubular degeneration
33	10063748	25-05-2024	30-05-2024	5 Days	58 Years	M	H	Urban	Direct	75-80%	2nd Degree	Burns	Flame	2.00 PM	A	35 Minutes	No	> 20%	Tubular Necrosis
34	10045353	06-03-2024	08-03-2024	2 Days	94 Years	M	H	Rural	Referred	75-80%	2nd Degree	Burns	Flame	4.00 PM	A	2 Hours	No	> 20%	Interstitial oedema
35	10036641	28-01-2024	31-01-2024	3 Days	83 Years	M	H	Urban	Direct	45-55%	2nd Degree	Burns	Flame	4.45 PM	A	40 Minutes	No	< 20%	Congestion
36	7327245	29-01-2024	29-01-2024	0 Day	54 Years	M	H	Rural	Direct	20-25%	2nd Degree	Electrocution	Electric Current	11.00 AM	A	1.40 Hour	No	< 20%	Congestion
37	10036640	28-01-2024	29-01-2024	1 Day	76 Years	F	H	Urban	Direct	80-90%	2nd Degree	Burns	Flame	7.15 PM	A	25 Minutes	No	> 20%	Congestion
38	10036638	28-01-2024	29-01-2024	1 Day	27 Years	M	H	Urban	Direct	80-90%	2nd Degree	Burns	Flame	7.20 PM	A	30 Minutes	No	> 20%	Congestion
39	7318549	19-01-2024	19-01-2024	0 Days	17 Years	M	Mu	Direct	Direct	20-25%	2nd Degree	Electrocution	Electric Current	9.55 AM	A	1 Hour	No	< 20%	Tubular degeneration
40	7326022	28-01-2024	03-02-2024	6 Days	76 Years	F	H	Referred	Referred	45-50%	2nd Degree	Burns	Flame	4.35 PM	A	30 Minutes	Yes	< 20%	Tubular Necrosis

Antemortem Cases

S.No	OP / IP No.	DOA	DOD/EXP	SIH	Age	Sex	Rel.	Residence	D/R	% TBSA burn	DOB	TOTI	ACI	TOI	MOB	TBBAA	FARAI	COHB
41	7318549	19-01-2024	19-01-2024	0 Days	17 Years	M	Mu	Rural	Direct	20-25%	2nd Degree	Electrocution	Electric Current	9.55 AM	A	1 Hour	No	< 20%
42	7326022	28-01-2024	03-02-2024	6 Days	76 Years	F	H	Urban	Referred	45-50%	2nd Degree	Burns	Flame	4.35 PM	A	30 Minutes	Yes	< 20%
43	7326020	28-01-2024	03-02-2024	6 Days	76 Years	M	H	Urban	Referred	25-30%	2nd Degree	Burns	Flame	4.35 PM	A	30 Minutes	Yes	< 20%
44	6429723	23-02-2024	24-02-2024	1 Day	3 Years	M	H	Urban	Direct	15-20%	1st Degree	Scalds	Hot liquid	6.00 PM	A	2 hours	Yes	< 20%
45	7460519	18-05-2024	22-05-2024	4 Days	66 Years	M	H	Urban	Referred	55-60%	2nd Degree	Burns	Flame	4.30 AM	A	30 Minutes	Yes	< 20%
46	7460520	18-05-2024	25-05-2024	7 Days	61 Years	F	H	Urban	Referred	55-60%	2nd Degree	Burns	Flame	4.30 AM	A	30 Minutes	Yes	< 20%
47	7467315	15-05-2024	18-05-2024	3 Days	23 Years	M	Mu	Rural	Referred	20-25%	2nd Degree	Electrocution	Electric Current	10.30 AM	A	30 Minutes	Yes	< 20%
48	7501280	22-06-2024	29-06-2024	7 Days	75 Years	F	H	Rural	Referred	55-60%	2nd Degree	Burns	Flame	10.00 PM	A	1.30 hour	Yes	< 20%
49	7544968	29-07-2024	01-08-2024	4 Days	18 Years	M	Mu	Rural	Referred	40-45%	2nd Degree	Burns	Flame	4.00 PM	A	1.30 hour	Yes	< 20%
50	7535523	20-07-2024	25-07-2024	5 Days	5 Years	F	H	Urban	Direct	10-15%	1st Degree	Scalds	Hot liquid	7.30 PM	A	1 hour	Yes	< 20%
51	7447994	07-05-2024	12-05-2024	5 Days	8 Months	M	H	Urban	Direct	10-20%	1st Degree	Scalds	Hot liquid	3.00 PM	A	45Minutes	No	< 20%
52	7449476	09-05-2024	12-05-2024	3 Days	2 Years	M	H	Rural	Direct	30-35%	1st Degree	Scalds	Hot liquid	7.00 AM	A	2 Hours	No	< 20%
53	7453042	12-05-2024	14-05-2024	2 Days	2 Years	F	H	Urban	Referred	40-45%	1st Degree	Scalds	Hot liquid	12.30 AM	A	1 Hour	Yes	< 20%
54	7457315	15-05-2024	15-05-2024	0 Day	23 Years	M	Mu	Rural	Direct	25-30%	2nd Degree	Electrocution	Electric Current	3.00 PM	A	2 Hours	No	< 20%
55	7460519	18-05-2024	29-05-2024	11 Days	66 Years	F	H	Rural	Direct	50-60%	2nd Degree	Burns	Flame	5.30 AM	A	1.5 Hour	No	< 20%
56	7460520	18-05-2024	25-05-2024	7 Days	61 Years	F	H	Rural	Direct	60-65%	2nd Degree	Burns	Flame	5.30AM	A	1.5 Hour	No	< 20%
57	10063362	24-05-2024	24-05-2024	0 Day	35 Years	M	H	Rural	Direct	25-30%	3rd Degree	Electrocution	Electric Current	11.20PM	A	45 Minutes	No	< 20%
58	7470373	25-05-2024	30-05-2024	5 Days	60 Years	M	H	Rural	Direct	70-75%	2nd Degree	Burns	Flame	9.00 PM	A	45 Minutes	No	> 20%
59	7476409	30-05-2024	03-06-2024	4 Days	14 Years	F	H	Urban	Direct	50-55%	2nd Degree	Electrocution	Electric Current	6.00 PM	A	35 Minutes	No	< 20%

S No.	OP / IP No.	DOA	DOD/EXP	SIH	Age	Sex	Rel.	Residence	D/R	% TBSA burn	DOB	TOTI	ACI	TOI	MOB	TBBAA	FARAI	COHB
60	7481980	04-06-2024	14-06-2024	10 Days	70 Years	F	H	Urban	Direct	65-70%	2nd Degree	Burns	Flame	8.15 PM	A	40 Minutes	Yes	< 20%
61	10065451	05-06-2024	07-06-2024	2 Days	3 Years	M	H	Rural	Direct	30-35%	2nd Degree	Electrocution	Electric Current	11.40 AM	A	1.30 Hour	No	< 20%
62	7492891	13-06-2024	17-06-2024	4 Days	6 Years	F	Mu	Rural	Referred	40-45%	1st Degree	Scalds	Hot liquid	12.00 PM	A	2 Hours	Yes	< 20%
63	7493191	13-06-2024	22-06-2024	9 Days	35 Years	M	H	Urban	Referred	50-55%	2nd Degree	Burns	Flame	2.30 PM	A	1 Hour	Yes	< 20%
64	7495924	16-06-2024	19-06-2024	3 Days	34 Years	M	H	Rural	Direct	30-35%	2nd Degree	Electrocution	Electric Current	6.10 AM	A	1.30 Hour	No	< 20%
65	7501280	22-06-2024	24-06-2024	2 Days	75 Years	M	H	Urban	Referred	60-65%	2nd Degree	Burns	Flame	7.45 PM	A	2 Hours	Yes	< 20%
66	7502695	23-06-2024	23-06-2024	0 Day	23 Years	M	H	Rural	Direct	35-40%	2nd Degree	Electrocution	Electric Current	6.45 PM	A	2 Hours	No	< 20%
67	7510587	30-06-2024	30-06-2024	0 Day	19 Years	M	Mu	Rural	Referred	30-35%	2nd Degree	Electrocution	Electric Current	11.45 AM	A	2.30 Hours	Yes	< 20%
68	7516040	04-07-2024	06-07-2024	2 Days	27 Years	F	H	Rural	Direct	45-55%	2nd Degree	Burns	Flame	11.40 PM	A	3 Hours	Yes	< 20%
69	7518675	06-07-2024	16-07-2024	10 Days	45 Years	M	H	Urban	Referred	80-85%	2nd Degree	Burns	Flame	5.00 PM	A	1.30 Hour	No	> 20%
70	7522732	10-07-2024	10-07-2024	1 Day	24 Years	M	H	Rural	Direct	10-15%	2nd Degree	Electrocution	Electric Current	9.30 PM	A	1.45 Hour	No	< 20%
71	7525972	13-07-2024	22-07-2024	9 Days	36 Years	M	H	Urban	Direct	35-40%	2nd Degree	Electrocution	Electric Current	11.00 AM	A	1 Hour	No	< 20%
72	7530042	16-07-2024	24-07-2024	8 Days	27 Years	M	H	Rural	Direct	90-95%	3rd Degree	Burns	Flame	8.00 PM	A	45 Minutes	No	> 20%
73	7534324	20-07-2024	20-07-2024	0 Day	38 Years	M	H	Urban	Referred	30-35%	2nd Degree	Electrocution	Electric Current	12.30 AM	A	1.20 Hour	Yes	< 20%
74	7535523	20-07-2024	24-07-2024	4 Days	8 Years	F	H	Urban	Direct	30-35%	1st Degree	Scalds	Hot liquid	7.45 AM	A	45 Minutes	Yes	< 20%
75	7535600	21-07-2024	31-07-2024	10 Days	23 Years	M	Mu	Rural	Direct	70-75%	2nd Degree	Burns	Flame	1.10 PM	A	1 Hour	No	> 20%
76	7537089	22-07-2024	26-07-2024	4 Days	55 Years	M	H	Rural	Direct	35-40%	2nd Degree	Burns	Flame	7.15 PM	A	2 Hours	No	< 20%
77	7538479	23-07-2024	23-07-2024	0 Day	17 Years	M	Mu	Rural	Direct	15-20%	2nd Degree	Electrocution	Electric Current	10.20 PM	A	50 Minutes	No	< 20%
78	7547968	29-07-2024	09-08-2024	12 Days	18 Years	M	Mu	Rural	Direct	70-75%	2nd Degree	Burns	Flame	8.20 PM	A	40 Minutes	No	> 20%

S No.	OP / IP No.	DOA	DOD/EXP	SIH	Age	Sex	Rel.	Residence	D/R	% TBSA burn	DOB	TOTI	ACI	TOI	MOB	TBBAA	FARAI	COHB
79	7551590	04-08-2024	04-08-2024	0 Day	30 Years	F	H	Rural	Direct	15-20%	2nd Degree	Electrocution	Electric Current	2.00 PM	A	1.30 Hour	No	< 20%
80	7552946	05-08-2024	08-08-2024	3 Days	47 Years	M	H	Urban	Direct	10-15%	2nd Degree	Electrocution	Electric Current	10.40 PM	A	35 Minutes	No	< 20%
81	7554275	06-08-2024	08-08-2024	2 Days	32 Years	M	H	Rural	Direct	50-55%	2nd Degree	Burns	Flame	10.15 AM	A	40 Minutes	No	< 20%
82	7554274	06-08-2024	10-08-2024	4 Days	39 Years	M	H	Rural	Direct	45-50%	2nd Degree	Burns	Flame	10.15 AM	A	45 Minutes	No	< 20%
83	7554276	06-08-2024	10-08-2024	4 Days	35 Years	M	H	Rural	Direct	65-70%	2nd Degree	Burns	Flame	10.15 AM	A	40 Minutes	No	< 20%
84	10081878	07-08-2024	20-08-2024	13 Days	34 Years	M	H	Urban	Direct	70-75%	2nd Degree	Burns	Flame	8.00 PM	A	25 Minutes	No	< 20%
85	7557890	09-08-2024	12-08-2024	3 Days	23 Years	M	H	Rural	Referred	45-50%	2nd Degree	Burns	Flame	5.00 PM	A	3 Hours	Yes	< 20%
86	7557882	09-08-2024	19-08-2024	10 Days	29 Years	M	H	Rural	Referred	80-85%	3rd Degree	Burns	Flame	5.00 PM	A	3 Hours	No	> 20%
87	7557878	09-08-2024	10-08-2024	1 Day	32 Years	M	H	Rural	Direct	35-40%	2nd Degree	Electrocution	Electric Current	6.00 PM	A	2 Hours	No	< 20%
88	7567319	19-08-2024	21-08-2024	2 Days	46 Years	F	H	Rural	Direct	35-40%	2nd Degree	Burns	Flame	11.00 PM	A	1 Hour	Yes	< 20%
89	7567317	19-08-2024	22-08-2024	3 Days	45 Years	F	H	Rural	Direct	50-55%	2nd Degree	Burns	Flame	11.00 PM	A	1.15 Hours	Yes	< 20%
90	7570321	22-08-2024	24-08-2024	2 Days	16 Years	M	H	Urban	Referred	35-40%	2nd Degree	Electrocution	Electric Current	4.00 AM	A	2.30 Hours	Yes	< 20%
91	7574241	25-08-2024	31-08-2024	6 Days	6 Years	F	Mu	Urban	Direct	60-65%	2nd Degree	Burns	Flame	9.45 PM	A	45 Minutes	Yes	< 20%
92	7575449	26-08-2024	15-09-2024	20 Days	11 Months	F	H	Urban	Direct	60-65%	1st Degree	Scalds	Hot liquid	3.30 PM	A	50 Minutes	No	< 20%
93	10087775	31-08-2024	02-09-2024	3 Days	3 Years	M	H	Rural	Direct	35-45%	2nd Degree	Burns	Flame	10.40 PM	A	1.30 Hour	No	< 20%
94	7582174	02-09-2024	03-09-2024	1 Day	18 Years	M	H	Urban	Direct	20-25%	2nd Degree	Burns	Flame	12.30 PM	A	25 Minutes	No	< 20%
95	7582113	02-09-2024	04-09-2024	2 Days	20 Years	M	H	Urban	Direct	35-40%	2nd Degree	Burns	Flame	12.35 PM	A	30 Minutes	No	< 20%
96	7585205	04-09-2024	05-09-2024	1 Day	37 Years	M	H	Urban	Direct	15-20%	3rd Degree	Electrocution	Electric Current	1.05 PM	A	45 Minutes	No	< 20%

S No.	OP / IP No.	DOA	DOD/EXP	SIH	Age	Sex	Rel.	Residence	D/R	% TBSA burn	DOB	TOTI	ACI	TOI	MOB	TBBAA	FARAI	COHB
97	7587896	08-09-2024	10-09-2024	2 Days	40 Years	M	H	Urban	Direct	40-45%	2nd Degree	Burns	Flame	1.00 AM	A	30 Minutes	No	< 20%
98	7594827	13-09-2024	13-09-2024	0 Day	20 Years	M	H	Rural	Referred	10-15%	2nd Degree	Electrocution	Electric Current	5.40 PM	A	45 Minutes	No	< 20%
99	7596350	15-09-2024	16-09-2024	1 Day	37 Years	M	H	Rural	Direct	15-20%	2nd Degree	Electrocution	Electric Current	7.00 PM	A	1.5 Hours	No	< 20%
100	7599599	18-09-2024	24-09-2024	6 Days	44 Years	M	H	Rural	Direct	55-60%	2nd Degree	Burns	Flame	11.00 AM	A	50 Minutes	No	< 20%
101	7534162	20-09-2024	23-09-2024	3 Day	54 Years	M	H	Urban	Referred	35-40%	1st Degree	Scalds	Hot liquid	3.15 PM	A	2 Hours	Yes	< 20%
102	7604543	22-09-2024	22-09-2024	0 Day	14 Years	M	H	Rural	Direct	25-30%	2nd Degree	Burns	Flame	5.30 PM	A	1Hour	No	< 20%
103	7604561	22.09.2024	24-09-2024	2 Days	60 Years	F	H	Rural	Direct	30-35%	2nd Degree	Burns	Flame	12.30 PM	A	1 Hour	No	< 20%
104	7613016	28-09-2024	30-09-2024	2 Days	25 Years	M	H	Rural	Direct	10-15%	2nd Degree	Electrocution	Electric Current	9.00 AM	A	1 Hour	No	< 20%
105	7615913	02-10-2024	04-10-2024	2 Days	48 Years	M	H	Urban	Direct	15-20%	1st Degree	Burns	Flame	11.00 PM	A	30 Minutes	No	< 20%
106	10095439	03-10-2024	06-10-2024	3 Days	5 Years	M	H	Rural	Direct	10-15%	1st Degree	Scalds	Hot liquid	8.00 AM	A	1 Hours	No	< 20%
107	7625790	10-10-2024	12-10-2024	2 Days	17 Years	M	H	Urban	Direct	10-15%	1st Degree	Electrocution	Electric Current	6.30 PM	A	30 Minutes	No	< 20%
108	7626246	10-10-2024	10-10-2024	0 Day	14 Years	M	H	Urban	Direct	15-20%	3rd Degree	Electrocution	Electric Current	11.35 PM	A	30 Minutes	No	< 20%
109	7637484	21-10-2024	25-10-2024	4 Days	2 Years	F	H	Rural	Referred	10-15%	2nd Degree	Scalds	Hot liquid	4.10 PM	A	2 Hours	Yes	< 20%
110	7638812	22-10-2024	23-10-2024	1 Day	22 Years	M	H	Urban	Referred	10-15%	1st Degree	Electrocution	Electric Current	4.50 PM	A	3 Hours	Yes	< 20%
111	7643012	26-10-2024	28-10-2024	2 Days	7 Years	M	Mu	Rural	Referred	25-30%	2nd Degree	Electrocution	Electric Current	4.50 AM	A	4 Hours	Yes	< 20%
112	7644353	27-10-2024	30-10-2024	3 Days	14 Years	M	Mu	Urban	Direct	20-25%	2nd Degree	Burns	Flame	11.20 AM	A	2 Hours	Yes	< 20%
113	7646001	28-10-2024	30-10-2024	2 Days	24 Years	M	H	Rural	Direct	20-25%	2nd Degree	Electrocution	Electric Current	7.10 PM	A	1 Hour	No	< 20%
114	7646000	28-10-2024	30-10-2024	2 Days	19 Years	M	H	Rural	Direct	20-25%	2nd Degree	Electrocution	Electric Current	7.10 PM	A	1 Hour	No	< 20%
115	7649529	03-11-2024	12-11-2024	9 Days	7 months	F	H	Rural	Referred	10-15%	3rd Degree	Electrocution	Electric Current	2.00 PM	A	2 Hours	Yes	< 20%

S No.	OP / IP No.	DOA	DOD/EXP	SIH	Age	Sex	Rel.	Residence	D/R	% TBSA burn	DOB	TOTI	ACI	TOI	MOB	TBBAA	FARAI	COHB
116	7657853	11-11-2024	13-11-2024	2 Days	24 Years	M	H	Rural	Direct	20-25%	2nd Degree	Electrocution	Electric Current	2.05 PM	A	30 Minutes	No	< 20%
117	7649553	03-11-2024	06-11-2024	3 Days	1 Year	M	H	Rural	Referred	50-60%	2nd Degree	Burns	Flame	8.25 PM	A	2 Hours	Yes	< 20%
118	7650700	04-11-2024	08-11-2024	4 Days	12 Years	F	H	Rural	Referred	40-50%	2nd Degree	Burns	Flame	10.00 AM	A	4 Hours	Yes	< 20%
119	7650863	04-11-2024	11-11-2024	7 Days	2 Years	M	H	Rural	Direct	30-40%	2nd Degree	Burns	Flame	5.30 PM	A	45 Minutes	Yes	< 20%
120	10111200	05-12-2024	07-12-2024	2 Day	27 Years	F	H	Urban	Direct	40-50%	2nd Degree	Burns	Flame	7.20 PM	A	10 Minutes	No	< 20%