

# Epidemiology of Burns at SMS Hospital Jaipur: Over a Period of Three Years (2016-2019)

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**Abstract:** *Introduction:* A Burn is defined as an insult to body's tissues resulting from heat, chemical, electricity, sunlight or radiation. Scald burns occurring due to hot liquids, steam and gases form the most common mode of burns. Besides saving lives, the ultimate goal in burn management is early and complete healing of wounds leading to good cosmetic and functional results. *Material and Methods:* This is a retrospective study done at Dept Of Burns & Plastic Surgery SMS Medical College and Hospital, Jaipur, Rajasthan over a period of three years (April 2016- April 2019). A total of 5116 (Five thousand one hundred sixteen) burn patients were admitted to the department which included all forms of burn injury. *Result:* Out of 5116 burn patients, one thousand two hundred and sixty four (1264) patients suffered by Electrical burns (24.69%), 3471 suffered by flame burns (67.85%) and remain-ing 381 suffered by scald burns (7.46%). Three thousand nine hundred and thirteen patients were of the age group 11-40 years (76.5%). Of 5116, 3304 were males (64.6%), 1812 were females (35.4%) of all burn admissions. *Conclusion:* Our study concludes that the most common mode of burn injury is flame and electrical burn. With this study we want to send the message to public that prevention is better than cure in burn injuries.

**Keywords:** Epidemiology of burns, flame burn, electrical burn

## 1. Introduction

A burn injury is defined as insult to body's tissues from heat, electricity, chemicals, sunlight or radiation. The most common of them is scald burns occurring due to hot liquids, steam and gases. Burn can be classified in to four types as follows, First degree burn-involve only the epidermis, Second degree burn-involve the epidermis and upper part of dermis, third degree burn-involve the epidermis, entire dermis and may or may not involve subcutaneous tissue, Fourth degree burn- involve the deeper structure like bones, muscle and tendons. Burns can cause pain, swelling, blistering, redness, charring, scarring and in extensive cases shock and even death. Infection can occur as a result of damage to protective barrier of skin. Treatment mainly depends on the three main factors namely cause of burn, its extent (i.e. percentage of burns) and its depth. Patients with extensive deep burns frequently die and those with lesser injuries, physical recovery is gradual and painful with development of burn sequelae. Our aim in burn patients management is proper healing of the wound at earliest, so that patient achieves good cosmetic and functional result and resume his/her duties.

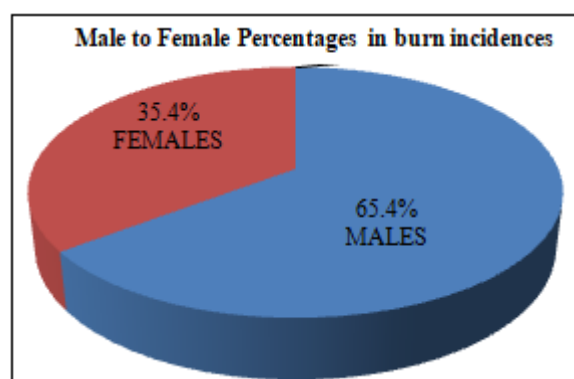
### Social characteristics

The age of the burn patients ranged from 0 (Zero) to greater than 60 years. Most of the patients (76.5%) were between 10 and 40 years of age. Males predominated, with an incidence of 64.6% (3304), compared to female incidence of 35.4% (1812) cases of total 5116. The reason for this might be due to the larger male population in our study and greater exposure to professional hazards. (Figs. 2, 3), [Table: 1].

Age Group	Total Patients	Male	Female
<10 yrs	358	210	148
10-40yrs	3913	2555	1358
41-60yrs	537	350	187
>60yrs	308	159	149



Figure 1: Hot Water burn in a 3 year child



### Aetiology of the burns

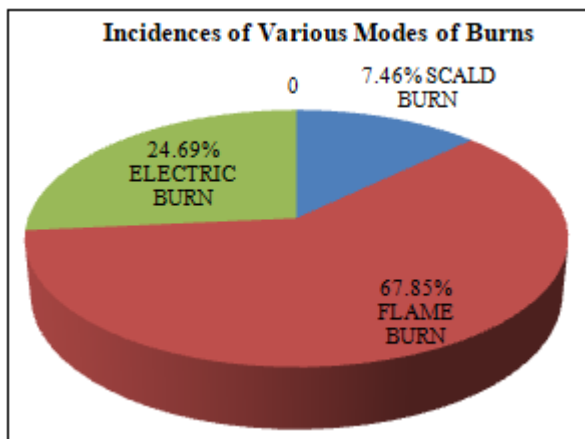
History elicited from the patients revealed that the majority of flame and scald injuries occurred at home and electric burns occurred at workplace. In more than three fourth (3837 of 5116) of the cases, domestic cooking, stove, choolah etc were responsible for the flame and scald burns. Flame was the commonest of burn injuries (3471 of 5116

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which comes out to be 67.85 %). In scalds the commonest causative agent was boiling water, followed by cooking oil and milk.



### Clinical assessment

Most cases admitted were second-degree superficial or deep burns, using the rule of nine, of 10-40% of the total body surface area. The burn agent was significantly associated with the degree, depth, and severity of the burn wound. Flame burns usually caused mixed second- and third degree, deep, and severe burns. The sites most commonly affected were the face, upper extremity and upper trunk followed by the lower extremity.

## 2. Discussion

Epidemiological studies have played an important role in burn prevention, and its knowledge helps in appropriate selection of target groups for preventive action. The common reasons listed are lack of education, overcrowding and an unsafe cooking habits. Southeast Asia accounts for roughly sixty percent of fatal burn cases around the world with a rate of 11.6 per 1lac. The external sources causing burns are classified into: thermal (heat related), chemical, electrical and radiation. In the developed world the common cause of burn are flame (44%), scalds (33%), hot objects (9%), electricity (4%), and chemicals (3%). Majority of burn injuries occur at home (69%) or work (9%), mostly accidental in nature and occasionally homicidal (2%) or suicidal (1-2%). The lower socio-economic strata are more commonly affected by burn injuries. In India, incidence of burn injury per year is approx 7,00,000 to 8,00,000 with highest incidence in women of age group 16-35 year of age. The high incidence in women of 16-35 years of age group is related to unsafe kitchens and loose fitting clothing typical of India. Age and sex are important epidemiological determinants for injuries, including burns. The present study revealed that nearly three of four of the patients were aged 10-40 years, while those at age > 60 years represented 2% of the cases. The high incidence among young adults can be due to the fact that they are generally active and exposed to hazardous situations both at home and at work. Male population proved to be at greater risk of sustaining burn injuries. Flame burns (no. 4872/67%) were the commonest agent, followed by electric (no. 1631/22%) and scald burns (no. 685/9%). Kerosene and petrol were found to be commonest flammable liquids.

In the present study, a significant association was found between age and the burn injury agent. Most scald burns occurred in the age group less than 10 years and were due to boiling water. The incidence of electric burn was around 22 % which were mainly caused by ignorance, non-compliance with rules and regulations, and the lack of safe work practices.

Prevention programs and measures play a major role in significant reduction of rates of serious burns. A variety of preventive measures which can be undertaken include limiting water temperature, smoke alarms, sprinklers, improved construction of building and fire resistant clothings. Scald burns can be prevented by using thermometer to measure both water temperature and splash guards on stoves. Firework injuries can be prevented by strict adherence to government rules regarding its manufacture and sale.

## 3. Conclusion

Burns in most of the cases can be prevented. Public awareness is the mainstay method to achieve this. This can be done by proper advertisement and involvement of electronic and print media to make people aware of it. The government should take decisions regarding educating public and to provide medications at subsidized rates for the patients so that they can be treated without cost factor coming in between. The plan of free drug and food supply for the patients has been implemented in our state and patients are extremely benefitted. Hence every state govt should try to educate people to prevent themselves from this unfortunate injury and adequate treatment should be available in such cases.

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