

Section

General Surgery

Original

Article

## Assessment of Burn Cases Visited in Hospital for Surgical Treatment

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### ABSTRACT

**Background:** Burns can be very destructive, and severely endanger the health and lives of humans. It maybe causes disability and even psychological trauma in individuals. Hence; the present study was undertaken for assessing burn cases visited in hospital for surgical treatment.

**Methods:** A total of 269 burn patients were enrolled in the present study. Complete demographic profile and clinical details of all the patients was obtained. All the patients were segregated into various socio-economic classes on the basis of Kuppuswamy's socioeconomic status scale. Swabs were taken from the burn areas and were inoculated into culture media for assessing the growing microorganisms. All the results were recorded in Microsoft excel sheet.

**Results:** Mean hospital stay was found to be 39.6 days. Conservative treatment without surgical intervention was done in 187 patients while surgical treatment was done in 82 patients. Most common microorganism growing in the burn areas were *Pseudomonas aeruginosa*, *Staphylococcus epidermidis*, *Methicillin-sensitive staphylococcus aureus*, *Methicillin-resistant staphylococcus aureus*, *Enterococcus sp.* and *Escherichia coli*.

**Conclusions:** Burn patients should be initially conservatively managed by adequate resuscitation, early wound debridement and closure.

**Keywords:** Burn, Surgery.

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### INTRODUCTION

Acute thermal injuries requiring medical treatment affect nearly half a million Americans each year, with approximately 40,000 hospitalizations and 3,400 deaths annually. The survival rate for admitted burn patients has improved consistently over the past four decades and is currently a favourable 97% for patients admitted to burn centers.<sup>1-3</sup> Burns can be very destructive, and severely endanger the health and lives of humans. It maybe causes disability and even psychological trauma in individuals. Numerous options exist for dressings. The selection of an appropriate dressing depends on several factors, including depth of burn, condition of the wound bed, wound location, desired moisture

retention and drainage, required frequency of dressing changes, and cost. While many factors must be considered in dressing selection, the goals in selecting the most appropriate dressing should include providing protection from contamination (bacterial or otherwise) and from physical damage, allowing gas exchange and moisture retention, and providing comfort to enhance functional recovery.<sup>4,5</sup> The management of burn patients is with a multidisciplinary team that consists of a surgeon, intensivist, burn specialist, dietitian, physical therapist, nurses, wound care specialists,

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pulmonologist and plastic surgeon. Burn patients are best looked after a burn team in a specialized center.<sup>6</sup> Hence; the present study was undertaken for assessing burn cases visited in hospital for surgical treatment.

### METHODS

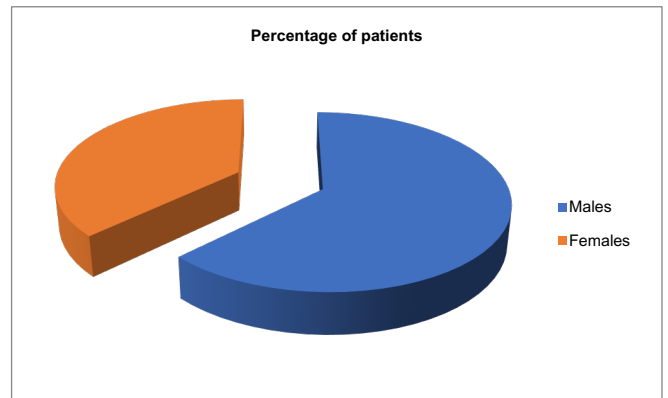
The present study was conducted in the Department of General Surgery, Government Medical College, Bharatpur, Rajasthan (India) with the aim of assessing burn cases visited in hospital for surgical treatment. Ethical approval was obtained from the institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. A total of 269 burn patients were enrolled in the present study. Complete demographic profile and clinical details of all the patients was obtained. Exclusion criteria the present study included:

- Hypertensive patients,
- Diabetic patients,
- Patients with presence of any other acute infection

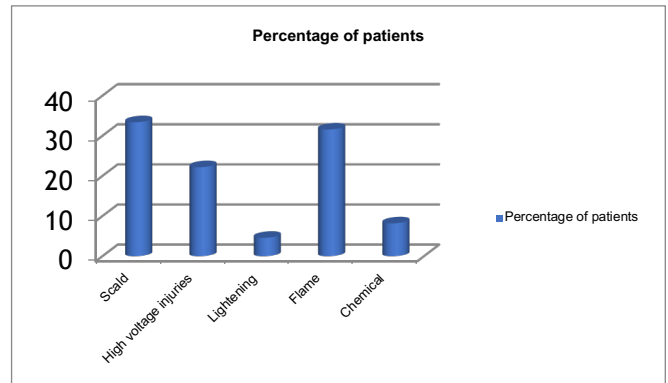
All the patients were segregated into various socio-economic classes on the basis of Kuppuswamy's socioeconomic status scale.<sup>6</sup> Swabs were taken from the burn areas and were inoculated into culture media for assessing the growing microorganisms. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

### RESULTS

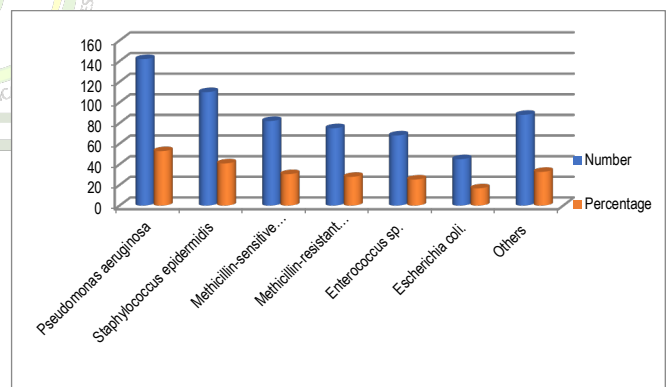
In the present study, majority of the patients belonged to the age group of less than 25 years as shown in Table 1. 62.82 percent of the patients in the present study were males while the remaining 37.18 percent were females. Scald and flame burns were the most common etiologic factors for Burn in the present study. Majority of the patients in the present study belonged to lower class. 89 patients had TBSA involved by burn in between 20 to 40 percent. In the present study, mean hospital stay was found to be 39.6 days. Conservative treatment without surgical intervention was done in 187 patients while surgical treatment was done in 82 patients. Most common microorganism growing in the burn areas were Pseudomonas aeruginosa, Staphylococcus epidermidis, Methicillin-sensitive staphylococcus aureus, Methicillin-resistant staphylococcus aureus, Enterococcus sp. and Escherichia coli.



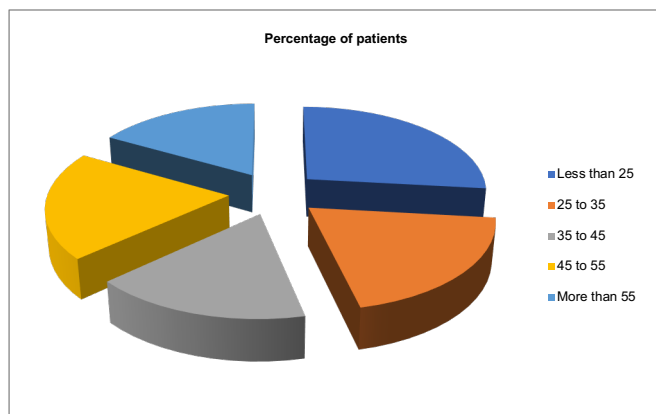
Graph 2: Gender-wise distribution of burn patients



Graph 3: Etiologic profile



Graph 4: Growing microorganism in the burn injury



Graph 1: Age-wise distribution of burn patients

Table 1: Socio-economic status and TBSA involved

Variable	Number	
Socio-economic status	Lower	99
	Middle	95
	Upper	75
TBSA involved	Less than 20 percent	53
	20 to 40 percent	89
	40 to 60 percent	85
	More than 60 percent	42

**Table 2: Treatment variable**

Variable	Number
Mean hospital stay (days)	39.6
Treatment	
Conservative treatment without surgical intervention	187
Surgical treatment	82

## DISCUSSION

Thermal burns from dry sources (fire or flame) and wet sources (scalds) account for approximately 80 % of all reported burns and can be classified based on the depth of burn. In addition to local injury at the site of burn, severe thermal injury over a large area of the skin, roughly 20 % total body surface area (TBSA) or greater, results in acute systemic responses collectively known as burn shock. Burn shock is characterized by increased capillary permeability, increased hydrostatic pressure across the microvasculature, protein and fluid movement from the intravascular space into the interstitial space, increased systemic vascular resistance, reduced cardiac output, and hypovolemia requiring fluid resuscitation.<sup>8</sup>

A variety of factors guides the evaluation and management of burns. First is the type of burn such as thermal, chemical, electrical or radiation. Second is the extent of the burn usually expressed as the percentage of total body surface area (%TBSA) involved. Next is the depth of the burn described as superficial (first degree), partial (second degree) or full thickness (third degree). Finally, other factors include specific patient characteristics like the age of the patient (< 10 or > 50 years old); other medical or health problems; if there are specialized locations of the burn (face, eyes, ears, nose, hands, feet and perineum); and if there are any associated injuries, particularly smoke inhalation and other traumatic injuries.<sup>9,10</sup> Early excision and grafting has been the standard of care for decades. Most studies have shown that excision within 24 to 48 h after injury is associated with decreased blood loss, infection, length of hospital stay and mortality, and increased graft take, although mortality reductions may only occur in patients without inhalation injury.<sup>10</sup>

In the present study, majority of the patients belonged to the age group of less than 25 years as shown in Table 1. 62.82 percent of the patients in the present study were males while the remaining 37.18 percent were females. Scald and flame burns were the most common etiologic factors for Burn in the present study. Majority of the patients in the present study belonged to lower class. 89 patients had TBSA involved by burn in between 20 to 40 percent. In the present study, mean hospital stay was found to be 39.6 days. Conservative treatment without surgical intervention was done in 187 patients while surgical treatment was done in 82 patients. Most common microorganism growing in the burn areas were *Pseudomonas aeruginosa*, *Staphylococcus epidermidis*, Methicillin-sensitive *Staphylococcus aureus*, Methicillin-resistant *Staphylococcus aureus*, *Enterococcus* sp. and *Escherichia coli*.

Albayrak Y et al presented epidemiological and demographic characteristics of patients treated over an 8-year period at a reference burn treatment centre located in the northeast of Turkey and serving a population of approximately four million people. Each patient's medical record was reviewed, and demographic features, source of burns, place of residence, total body surface area (TBSA), surgical treatment, duration of hospital stay, and mortality rates were analysed. Removal of tandirs and replacement with high ovens, restriction of cheese and butter production under primitive circumstances, encouraging cheese and butter production via dairy farm systems, and raising people's awareness through training programs could greatly reduce the number of the burn accidents occurring in this region.<sup>11</sup> Tekin R et al evaluated the epidemiological, etiological features and outcomes of burns. A total of 3010 burn patients were reviewed. Age, gender, demographic characteristics, length of hospital stay of patients, etiology and degree of burns, cause of nosocomial infections, the total body surface area (TBSA) percentage and outcomes were analysed. Of 3010 patients, 1602 (53.2%) cases were female and 1408 (46.8%) were male. The mean of length of hospitalization was 13.25 ±10.77 days. The most frequent isolated microorganisms were *Pseudomonas aeruginosa* (55%, 553), *Acinetobacter* spp. (13%, 128), and *Escherichia coli* (8%, 78). The epidemiology of burns may vary according to lifestyles, age, living conditions and socio-economic status among different regions and hospitals.<sup>12</sup>

## CONCLUSION

From the above results, it can be concluded that burn patients should be initially conservatively managed by adequate resuscitation, early wound debridement and closure.

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