

Paediatric Scald Burns: A Study on Causes, Trends, and Prevention in Tamil Nadu

Dr. Burra Viswa Chaitanya¹, Dr. P. Nellaiappar², Dr. K. Panchapakesan³

¹MBBS, MS (MCh), Department of Burns, Plastic and Reconstructive Surgery, Government Kilpauk Medical College, Chennai
Corresponding Author Email: [drviswa89\[at\]gmail.com](mailto:drviswa89[at]gmail.com)

²MBBS, MS, MCh, FRCS (Hons), Professor and Head, Department of Burns, Plastic and Reconstructive Surgery, Government Kilpauk Medical College, Chennai

³MBBS, MS, MCh, Assistant Professor, Department of Burns, Plastic and Reconstructive Surgery, Government Kilpauk Medical College, Chennai

Abstract: Burns and burn - related injuries remain one of the most prevalent forms of trauma in children. Paediatric burns are particularly common in developing countries, with their incidence being significantly higher in low - and middle - income populations compared to high - income groups. Scald injuries consistently make up most paediatric burn cases, typically accounting for about two - thirds of all burn - related injuries. This dominance of scald burns has naturally led to increased attention on prevention, first aid education, and wound management. The objective of this study was to present recent, prospective epidemiological data on paediatric burns, with a particular focus on common causes like scald injuries, and to propose preventive strategies. This was a prospective, single - centre study involving all paediatric burn cases presenting to the casualty and outpatient departments at a regional burns centre, Government Kilpauk Medical College, Chennai.

Keywords: Epidemiology of burns, Paediatrics, Scald

1. Introduction

Scald injuries are the leading cause of burns in children (1, 2). This predominant type of burn injury in young children has led to a strong emphasis on prevention, first aid education, and proper wound care (3). Several risk factors are associated with paediatric burns, including low socioeconomic status, poor living conditions, illiteracy, overcrowding, and cooking at floor level using kerosene stoves or open fires. Shockingly, outdated and ineffective first aid practices, such as applying ink, cow dung, hen's blood, turmeric, honey, and other traditional remedies, continue to be used. Delays in seeking medical treatment due to a lack of education, limited access to transportation, and insufficient financial resources are still common. Multiple factors influence the severity and pattern of burns in children, such as the child's age and ethnicity, the type of heat source (like irons, chemicals, or hot liquids), the injury mechanism (such as pulling down or spilling), and the environment where the injury happens (home or school, time of day, and the level of social deprivation) (4, 5).

Epidemiological data on paediatric burns is essential for knowing effective prevention strategies, ultimately reducing the incidence of such injuries and improving healthcare outcomes.

2. Methodology

The study included patients up to 14 years of age who were admitted to the Department of Burns & Plastic Surgery at Government Kilpauk Medical College, Chennai, between October 2023 and October 2024. It included cases from outpatient, inpatient, and emergency departments. Each patient was initially assessed following the Primary and Secondary Survey Protocol, followed by a thorough

evaluation of the burn area, with the percentage of burns calculated using Lund & Browder's Chart.

This study involved both empirical and prospective assessments, gathering data on admission, injury circumstances, and clinical evaluations for all patients. The resident doctors who admitted the patients conducted interviews to collect the necessary information. Data was retrieved from clinical notes within 24 hours, with confirmation from the attending doctor when needed. Depending on the patient's age and condition, either the patient or their attendant provided the responses to the questions. The collected data was analysed using the IBM SPSS 20.0 software (Statistical Package for the Social Sciences). Descriptive statistics, including frequency, percentage, mean, standard deviation, graphs, and cross - tabulation, were used to present the study findings.

3. Results

A total of 120 cases were observed during the study period. The majority of patients were in the age group of 8 - 14 years, while the fewest were under the age of one. Most of the children in the study were female. The cause of the burn is crucial, as it provides insight into the depth of the injury. In our study, the leading cause of burns was scalding from spilled hot milk, followed by burns from hot water. During the initial assessment of burn injuries, it is essential to evaluate the affected body surface area and the location of the injury. The majority of children had burns covering 6 - 10% of their total body surface area (TBSA), and the upper and lower limbs were the most commonly affected areas. 30% of the patients received cold water as first aid. For the rest, either no first aid was administered or inappropriate remedies like creams, ice, ink, potato, Ratan Jot (alkane), and toothpaste were used. There is a clear need to improve public knowledge

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on proper first aid measures. The duration of hospital stays directly impacts treatment costs, placing a significant financial burden on the families of the patients. The average hospital stay was 8.5 days. More dressings result in higher treatment costs and increased pain and discomfort for the children. Most of the patients came from nuclear families of low to middle socioeconomic status. This could be attributed to the fact that smaller families may struggle to provide adequate supervision, putting children at greater risk of burn injuries. The majority of burns (75%) occurred indoors, likely

due to children spending most of their time inside, especially younger ones. Research has shown that burns occurring indoors are often in the kitchen or bathroom. Additionally, households using the floor for cooking experienced a higher percentage of injuries. Such findings are common in rural areas of India but are also found in urban settings, highlighting the elevated risk of burn injuries among lower socioeconomic groups.

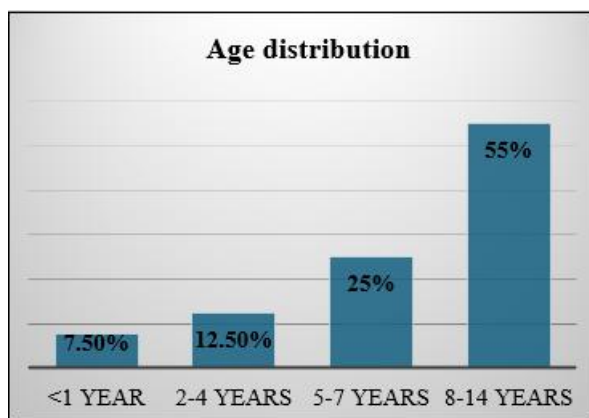


Figure 1: Age distribution of patients

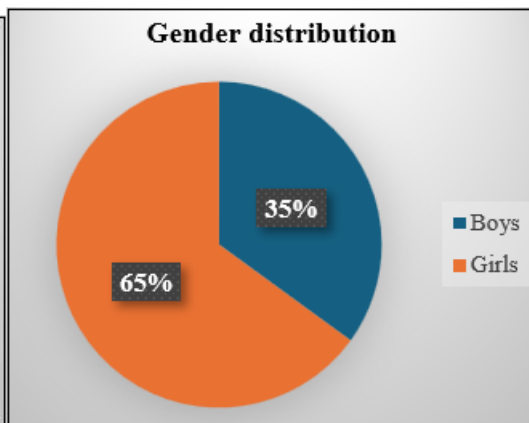


Figure 2: Gender distribution

Table 1: Various findings seen in patients (n=120)

Total Body Surface Area	Percentage of patients injured
0 - 5%	37%
6 - 10%	48%
11 - 20%	15%
Area of body involved	
Head & Neck	4%
Trunk, abdomen	8%
Upper limbs	69%
Lower limbs	16%
Genitalia	12%
Combined	
Aetiology	
Flame	20%
Electricity	15%
Hot liquids/Foods	54%
Others	11%
Place of burn	
Indoor	68%
Outdoor	32%

4. Discussion

Children aged 1 to 5 years represent the most vulnerable group when it comes to paediatric burns and should be the primary focus of prevention efforts. Common accident - prone areas, such as the kitchen, bathroom, and living room, require the implementation of appropriate safety measures. Factors influencing the extent of burns, such as the patient's age, type of burn, injury mechanism, presence of inhalation injury, gender, and the timing of admission, were identified as key determinants of total body surface area (TBSA) involvement. Globally, the standard recommendation for first aid is to apply cool running water for 20 minutes, and cooling blankets are also suggested, although their availability and cost can be limiting factors. It is important to avoid hypothermia, particularly in young children. Our study revealed a

significant lack of societal awareness regarding proper first aid for burns.

Young children, particularly those playing on the floor, are at risk of reaching out to cooking items in the kitchen, leading to burn injuries. This is often the result of parents working and a lack of alternative caregiving, such as the absence of grandparents or other family members, leading to children being cared for by maids, which can result in increased accidents. Children may also pull - down hot kitchen utensils or accidentally fall into containers, remaining trapped until someone rescues them (6, 7). Our findings indicate that burn prevention programs should primarily target indoor injuries, as this is where most burns occurred in this age group.

This research underscores the community's limited understanding of first aid, as reflected in the responses given by burn patients. It is critical to implement policies that educate parents and guardians to prevent burn injuries in children. Promoting proper childcare practices is essential. Our study highlights several risk factors contributing to paediatric burns in our environment, which can help inform the development of effective burn prevention programs. Additionally, we stress the importance of teaching and supervising older children to reduce the current high incidence of burns in this group. Improved communication between children and parents is necessary to address psychological issues early on, with parents being more supportive and open to understanding their children's concerns.

This study highlights the limited awareness regarding environmental hazards, as evidenced by the inadequate first aid responses of burn patients. Efforts to prevent burn - related injuries in children must focus on educating parents and guardians and emphasizing the importance of proper child supervision. This review identified complex risk factors

associated with paediatric burns in our context, providing a framework for designing effective prevention programs and strategies within the country.

5. Limitations

A significant limitation of this study was the potential inability to accurately measure the incidence and risk factors for paediatric burns, as it was conducted in a referral hospital setting. Data on outcomes such as morbidity and mortality were not included, as the study primarily focused on the epidemiology of paediatric burns. Further research incorporating these aspects will be valuable for a more comprehensive understanding and to inform prevention efforts.

6. Conclusion

Paediatric burns, particularly scald injuries, remain a significant issue in developing countries, with most cases occurring indoors. The study highlights the urgent need for preventive measures, including educating parents and caregivers about proper first aid and ensuring better child supervision. While this hospital - based study provides valuable insights into burn epidemiology, broader community - based research is needed to develop more comprehensive prevention strategies.

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