The various patterns of burn injuries in South Punjab, Pakistan.

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ABSTRACT:

Objective: To document the pattern of Burn injuries at South Punjab.

Methodology: From June 1, 2023, to December 31, 2023, a cross-sectional study was carried out at Department of Plastic Surgery & Burn Unit; Sheikh Zayed Medical College and Hospital, Rahim Yar Khan's Department of Plastic Surgery & Burn Unit. The cases included in this study were those who presented to the aforementioned institution with burns of any severity requiring medical attention, regardless of their age or gender. Burn injury patterns were observed.

Results: Fifty burn cases were included in this investigation. The subjects mean ages were 17.77±6.13 years and their mean percentage of burns was 31.11±8.17 years. There were 31 (62%) males and 42 (84%) burns were accidental in origin. In 35 (70%) of the cases, thermal burns were the most common form, followed by electric burns in 11 (22%), and chemical burns in 4 (8%). Females were more likely to sustain thermal injuries, whereas all chemical burns occurred in males (p=0.04).

Conclusion: Thermal burns are the most prevalent type, occurring in 70% of cases, while chemical burns are notably more frequent among the male.

Key words; Wounds and Injuries, Burns, Burns Chemical, Burns Electric, Burns Inhalation

Introduction:

Injuries from burns are a frequent source of substantial morbidity and mortality, making them a critical public health challenge. They not only raise healthcare costs but also lead to harmful effects on health in both the short and long term, particularly in underdeveloped nations where safety measures are often inadequate.1,2 Burns are a serious health issue in Pakistan and other underdeveloped nations. Overall mortality associated with burn injuries in Pakistan are 6 per 100 thousand cases and again are more common in the remote areas as compared to the major cities. The mortality is higher is advanced age groups and is seen in as high as the double of the overall incidence especially after the age of 50 years.3-5

The deficiency of a central registry system in Pakistan has created a considerable gap in data related to various areas of the country, particularly regarding the severity, nature, and outcomes of burns. Recent advancements in practices have, however, led to a emergence of substantial data, which has significantly contributed to the understanding of epidemiology and the identification of various contributing factors. This knowledge can facilitate targeted actions aimed at decreasing the incidence of burns. The predominant types of burns include thermal, electrical, and chemical, with other uncommon types also being acknowledged. The majority of incidents reported are either accidental or suicidal in nature.5-6

Management remains steadfast in its goal-oriented approach. Treatment modalities encompass adequate hydration, infection control, a variety of ointments and creams, and surgical corrections, each following specific guidelines and presenting unique benefits and risks.7,8 The region of South Punjab, including Rahim Yar Khan, faces resource limitations and has insufficient initial data on burn injury patterns. This study was initiated to better understand the characteristics and trends of burn injuries, facilitating the development of preventive measures and management strategies.

Objective:

To document the pattern of Burn injuries at South Punjab.

Methodology:

This cross-sectional study was carried out from June 1, 2023, to December 31, 2023 at Department of Plastic Surgery, Sheikh Zayed Hospital Rahim Yar Khan. Approval from IRB sought vide letter no. 840/plastic surgery/SZH/RYK 2023. This study included cases selected through consecutive convenience sampling, regardless of age or gender, who presented to the aforementioned institution with varying degrees of burn severity requiring medical care. Excluded from this study were individuals with burns sustained over a month prior and those with mental health issues where the nature of the injury was ambiguous. The patterns of burn injuries were documented and analysed.

Statistical analysis:

SPSS 21 was used to analyze the data. For nominal data, frequency and percentages were computed, and for numerical data, mean and standard deviation. Data analysis was done using the chi square test, and a post-stratification p value of 0.05 or less was considered significant.

Results:

During period of study, 50 burn patients presented with age ranges from 5-55 years with a mean of 17.77 ±6.13 years. Male (n=31, 62%) outnumbered by female (n=19, 38%).

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Body surface area (BSA) affected was estimated using Lund and Browder chart at the time of admission and ranged from 10-60% with mean BSA of 31.11% ±8.17. Most of the patients presented within 1 hour of the incidence, however maximum time between incidence and admission was 16 hours with a mean lapse time of 7.91 hours. Most frequent pattern of burn injury was thermal (n=35, 70%) followed by electric (n-11, 22%) and chemical in 4 (8%) cases as shown in graph 1. Stratification by nature of injury, gender and age showed that females are more likely to sustain thermal injuries, whereas all chemical burns occurred in males (p=0.04). However, there was no statistically significant difference with respect to the nature of injury and age of the patient (p= 0.31, and 0.22 respectively) as shown in table no 1.

Graph No 1: Pattern of Burn Injuries

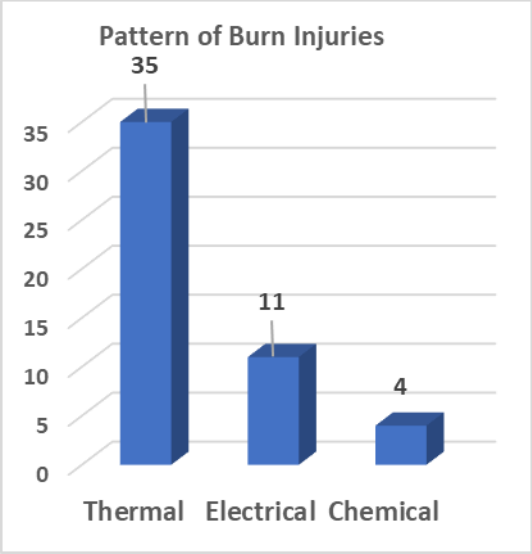

Table No 1: Stratification of pattern of Burn injury with respect to gender, age and nature of injury.

Variables		Thermal	Electrical	Chemical	p-value
Gender	Male	17	7	4	0.04
	Female	18	4	0	
Age	Up to 20	22	5	1	0.31
	>20	13	6	3	
Nature	Accidental	19	8	1	0.22
	Suicidal	16	3	3	

Discussion:

Burn injuries can be effectively treated if addressed promptly, with management strategies aimed at reducing the risk of complications. In this context, it is crucial to gather local data on the specific burden of the disease, the types of burns, and antibiograms that indicate the prevalent causative organisms and their susceptibility patterns. Such information is vital for determining the necessity of burn centres in a given area, as well as for implementing first aid measures tailored to the frequency of reported cases involving thermal, electrical, or chemical burns.9,10 In this study, thermal burns were the most common type, accounting for 35 out of 50 cases (70%), followed by electrical burns in 11 cases (22%) and chemical burns in 4 cases (8%). These findings align with existing literature. A study by Siddique E et al. reported an overall incidence of burns in Pakistan at 147 cases per 100,000 population, which has doubled since the previous study conducted in 2010-11, indicating a significant increase in recent years.11,12 Other research has similarly identified thermal injuries as the most prevalent, particularly in rural and peripheral regions, where they are observed in more than two-thirds of cases. Furthermore, it was noted that poorer outcomes were associated with cases located far from specialized burn facilities and among rural residents.12,13. During period of current study, 62% male and 38% of the females present with burn injury. When stratification done, we found thermal injury more prevalent among female as compared to chemical injury which was exclusively found among female with a statistically significant difference with p=0.04.

Research conducted by Othman et al.14 and Kumar et al.15 revealed that thermal injuries are the most prevalent, with males generally facing a greater risk of sustaining burn injuries. This increased risk can be attributed to their higher likelihood of exposure in occupational settings, particularly concerning electrical and chemical burns. In the current study, outcomes were not evaluated; however, data from Pakistan indicates significant variability in results, with mortality rates ranging from 14% to 41% across different regions, regardless of burn severity.16-18

Conclusion:

Thermal burns are the most prevalent type, occurring in 70% of cases, while chemical burns are notably more frequent among the male.

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