

# PATTERN OF BURNS AT LADY READING HOSPITAL, PESHAWAR

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## ABSTRACT

**Objective:** To describe the pattern of burn in Plastic Surgery and Burn Unit Lady Reading Hospital.

**Methodology:** This one year (January 2009 to December 2009) descriptive study was carried out at Plastic surgery and Burn Unit Lady Reading Hospital, Peshawar. Manual and computerized data comprising epidemiological variables of all the patients presenting with acute burn was recorded. Results were analyzed with SPSS 15.

**Results:** During one year study period, 758 patients were included. Male to female ratio was 1.5: 1. Mean age was 13.59 years (Std. deviation 14.162). Median age was 7 years. Mean Total Body Surface Area (TBSA) burn was 14.53 %. Home was the site of accident in most cases (88.1 %). There was no statistical significance in gender and percentage of burn area (*p* value: 0.363). Scald and flame burn were the cause of burn in 91.2 % of the cases. 519 (68.5%) of the patients were from Peshawar district. Majority of burn victims (59.2%) were below 10 year of age.

**Conclusion:** Majority of burn accidents occur at home and are preventable. Scald injury is the most common cause of burn resulting in two third of the total burns. Majority of the patients are children.

**Key Words:** Epidemiology, burn, thermal injury.

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## INTRODUCTION

Thermal injuries are the major health hazard resulting in about 10 % of all the surgical admissions<sup>1</sup>. WHO has reported world highest incidence of burns from Pakistan amounting to 1388/100000 annually as compared to global incidence of 110/100000 per annum<sup>2</sup>. Burn management is not only prolonged and painful due to multiple procedures but also costly. Consequently, victims of burn often end up with physical, psychological and economic stigmata<sup>3</sup>.

Since most burn injuries are accidental, the best way to reduce the incidence of burns is prevention by health education and attempts to minimize the risk factors<sup>4</sup>. Prevention is much more rewarding than management and requires

identification of the epidemiological characteristics of the injury in a given population.

The etiological factors of thermal injuries vary considerably among different communities. A careful search for these factors in every community is needed to plan and apply a comprehensive prevention program<sup>5</sup>.

Despite very high incidence of burns in our region, little research has been done on this subject. This study was carried out to find the pattern of burn injuries in our region.

## METHODOLOGY

This one year (January 2009 – December 2009) study was carried out at Plastic Surgery and Burn unit Lady Reading Hospital, Peshawar. It was a descriptive study. Eight epidemiologic variables were recorded in the specified Performa as well as in computer data. These variables included age, sex, month, percentage of body area burn, area of the body involved, district, cause of burn and place at which burn accident occurred. To simplify the data entry, the areas of body were coded as 1- head and neck, 2-upper limb, 3-trunk, 4- lower limbs and 5 – more then one area involved. Percentage of body area burn was calculated according to Lund and Browder Chart. Data analysis was carried out with the help of SPSS 15.

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Chi Square test was used as test of significance.

All the patients with acute burns presenting to this unit during one year study periods were included in this study. Patients presenting with chronic burn complications like contractures, hypertrophic scars, keloids and Marjolin ulcers were excluded from the study.

**RESULTS**

A total of 758 patients were included in this study. Male patients were 461 (60.8 %) while female patients were 297 (39.2 %). Male to female ratio was 1.5:1. Mean age was 13.59 years while median age was 7 years (Std. Deviation 14.162). Patients below 10 years were 59.2 % (449). In this group 61% of the patients were male and 39 % were female ratio was 1.56:1. Of total 758 patients 309 patients (40.76% ) were above the age of 10 years, male to female ratio was 1.53:1. 81.5% of the male and 98.3 % of the female got burn at home. Patients from district Peshawar were 519 patients (68.5%) while rests were from other parts of Khyber Pakhtunkhwa and Afghanistan. Scald was the most common cause of burn involving

65.4 % (496) patients. In children below 10 years of age scald was the cause in 79.06 % (355/449). Other causes of burn are shown in Table 1.

While scald and flame were the commonest cause in both male and female, all types of burn were more common in males except steam burns where the frequency was equal (Table 2).

In 359 patients (47.4 %) more than one body part was involved. Burn involvement of different body parts is shown in Table 3.

Highest incidence of burn was noted in the month of June with a total of 102 patients (13.5 %). Table 4 depicts month wise distribution of burn patients.

Mean percentage of TBSA burn was 14.53 while median was 12 ± 10.623. Minimum TBSA burn was 1 % and maximum was 74 %. There was no significant statistical difference in the percentage of burn with gender difference (p value: 0.363). Mean percentage of burn area in male was 14.58 % and in female 14.44%.

**Table 1: Cause of burn**

Cause of Burn	Frequency	Percent
Scald	496	65.4
Flame	195	25.7
Electrical	35	4.6
Contact	4	.5
Chemical	13	1.7
Steam	12	1.6
friction burn	3	0.4
Total	758	100.0

**Table 2: Gender and Cause of burn - Cross Tabulation**

		Cause of burn							Total
		scald	flame	electric	contact	chemical	steam	friction	
Sex	male	279 (56.2%)	130 (66.6%)	27 (77.1%)	3 (75%)	13 (100%)	6 (50%)	3 (100%)	461
	female	217 (43.7%)	65 (33.3%)	8 (22.9%)	1 (25%)	0	6 (50%)	0	297
Total		496 (100%)	195 (100%)	35 (100%)	4 (100%)	13 (100%)	12 (100%)	3 (100%)	758 (100%)

**Table 3: Area of body burn**

Area of body burn	Frequency	Percent
Head and Neck	39	5.1
Upper limb	180	23.7
Trunk	59	7.8
Lower Limb	121	16.0
More than one area	359	47.4
Total	758	100.0

**Table 4: Month wise distribution of the burn patients**

Month	Frequency	Percent
January	50	6.6
February	63	8.3
March	76	10.0
April	42	5.5
May	48	6.3
June	102	13.5
July	54	7.1
August	42	5.5
September	62	8.2
October	84	11.1
November	65	8.6
December	70	9.2
Total	758	100.0

## DISCUSSION

Burn injury is the second most common cause of injury and the most common cause of home accidents<sup>6,7</sup>.

Demography and pattern of burn accidents is peculiar to each community according to sociocultural practices. Many distinct epidemiologic features were revealed in this study.

We recorded peak burn incidence during the month of June. This was contrary to other studies from Islamabad<sup>8</sup>, Iran<sup>7</sup>, India<sup>9</sup>, Egypt<sup>10</sup> and Taiwan<sup>11</sup> where higher incidence was reported during winter season. In depth exploration revealed two reasons for this higher incidence. First, there were many high magnitude bomb blasts during this period resulting in many burn victims. Second, there were repeated fire accidents due to fall of burning candle/ kerosene lamp in refugee/ internally displaced people camps during long

spells of power load shedding.

Mean age of burn victims in our study was 13.59 years which was comparable to another local study from Wah Cantt<sup>12</sup> (18.96 years) but quite lesser from other foreign studies from Iran<sup>7</sup> (21.8 years), India<sup>13</sup> (31.58 years), Nepal<sup>14</sup> (31.8 years) and Singapore<sup>15</sup> (32.5 years). One common reason given by all these authors in their studies for higher mean age was affliction of more adult females to non accidental burns.

We attribute our lesser mean age to higher number of paediatric burn accidents in our study. 59.2% of our patients were children below 10 years of age. Other local studies from Peshawar<sup>1</sup> and Wah Cantt<sup>12</sup> report lesser incidence of pediatric burns, 31.66 % and 37.8% respectively. Possible reason for this difference may be that both these studies we conducted in General Surgical Units, while many of the pediatric burns are treated in

pediatric surgical units. During one year study period, our unit was the only Burn center in the province of Khyber Pakhtunkhwa, catering the burn patients of all age groups. Therefore this data is more representative of the true burn incidence.

In pediatric burns, we noticed male predominance with 61%. Similar trends have been reported by others<sup>7,10,13</sup>. Possible explanation for more afflictions of boys is, their hyperactive nature, curiosity and inability to perceive the risk.

Overall higher incidence of male burns in our study was in agreement to others<sup>7, 12, 14</sup>, while from India<sup>5</sup>, higher female incidence has been reported. Social issues like dowry, has been attributed to higher incidence of female burns in India.

Most common cause of burn in our study was Scald 65.4%. It was in contradiction to other local studies from Peshawar<sup>1</sup>, Wah Cantt<sup>12</sup> and Pindi<sup>16</sup> where the flame burn was more commonly reported. Again, the reason being, higher incidence of pediatric burn in our study, in which predominant (79.06 %) cause is scald. Most commonly repeated mechanism of injury in pediatric burn was, fall of children on the hot water/food utensil, during ground level cooking. This identifies a high risk factor and invites special attention in any preventive strategy.

Overall, 91% of our patients got burns at home. While the same pattern has been reported by others<sup>6,7</sup> also, it is unfortunate that the most secure place like home becomes a dangerous one, especially for children.

Creation of public awareness through health education should be primary focus to prevent this devastating accident.

Strength of our study is that it was a prospective study and all the data was collected and analyzed by single person (first author).

## CONCLUSION

Burn injury is a common devastating accident occurring mostly at home. Hazardous cooking practices like ground level cooking are the main cause of pediatric burn which constitutes almost 2/3 of the total burns. Overall, male were more commonly afflicted than female with male to female ratio being 1.5:1. All causes of burn were more common in males except scald. As most of the burns were preventable, parental public health education is urgently needed through print and electronic media. A comprehensive preventive program can be added to school syllabus. Burn prevention program should be integrated with preventive health care.

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None Declared

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#### **CONTRIBUTORS**

MA conceived the idea, planned the study, did data collection and analyzed the data. MZN and GM helped in the data collection. All the authors contributed significantly to the research.