

## Epidemiology of Paediatric burns at Lady Reading Hospital Peshawar

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### Abstract

**Objective:** To find out the epidemiologic characteristics of Paediatric burns.

**Methodology:** This descriptive study was carried out from January 2015 to December 2015 at Plastic surgery and Burn Unit Lady Reading Hospital, Peshawar. Manual and computerized data comprising epidemiological variables of all the patients presenting with acute burns was recorded. Results were analyzed with SPSS 23.

**Results:** During one year study period (Jan 2015-Dec 2015) total burn patients recorded were 7240. Paediatric patients (age 0 to 10 year) were 3947 (54.51%). Male to female ratio was 1.39:1. Minimum age recorded was 0.15 year while maximum age was 10 year (mean: 3.48 and St. Deviation: 2.22). 84.5 % of the patients were below 6 years of age. 38.2% of the burns were recorded in winter season. In most cases, cause of burn was scald (84.7%) followed by flame (10.7%). 2,829 patients (71.7%) patients belonged to district Peshawar while 1,118 (28.3%) were referred from other parts of KPK and Afghanistan. Minimum area burnt was 1% and maximum was 73% (mean: 7.12 and St.deviation: 7.89). In 3,749 cases (95%) accident occurred at home. The most common body area burnt was lower limb (34.4%) followed by upper limb (29.7%). In 25.6% cases more than one body area were involved.

**Conclusion:** Paediatric burns are common and serious health issue. Most of these burns are preventable. While treatment facilities need enhancement, focused should be paid towards prevention of burns. Burn prevention program needs integration in to the syllabus and preventive health care.

**Keywords:** Epidemiology, pattern, burn, thermal injury, paediatric population

### Introduction:

Burn injury is among the top five causes of morbidity and mortality in children.<sup>1</sup> Global incidence of burns requiring medical treatment is about 11 millions with over 300,000 death annually. World highest incidence of pediatric burns have been reported from Pakistan with 1,388 per 100,000 per year.<sup>2</sup> Burn management is not only prolonged and painful but expensive also.<sup>3</sup> As most of the burn afflicted patients are poor and can not afford timely treatment, many end up with disabilities and disfigurements. Resultant cost of treatment for the society is enormous, overburdening the meager health resources. Fortunately, most of the burns are preventable. Developed countries have reduced

the incidence of burns by adopting preventive strategies.<sup>4</sup> A lot has to be done in this regard in developing countries like Pakistan.

Characteristics of burns are largely dependent on sociocultural practices of the society.

An epidemiologic study is a first step to identify the pattern of the disease and population at risk in a particular society. Preventive measures can then be adapted to target the risk factors. Although 60% of the burns victims are children, paediatric burns have remained a neglected subject in Pakistan, hence this study this study was carried out to find the magnitude and characteristics of burn injuries.<sup>5</sup>

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Table 1: Cause of burn.

No	Cause	Number	%age
1	Scald	3342	84.7%
2	Flame	423	10.7%
3	Contact	112	2.8%
4	Electric	33	0.8%
5	Chemical	31	0.8%
6	Steam	6	0.2%
Total		3,947	100%

Table 2: Body area affected by burns.

No	Area of body burnt	Number	%age
1	Head and Neck	202	5.1
2	Upper Limb	1,173	29.7
3	Trunk	207	5.2
4	Lower Limb	1,356	34.4
5	More than one area	1,009	25.6
Total		3,947	100%

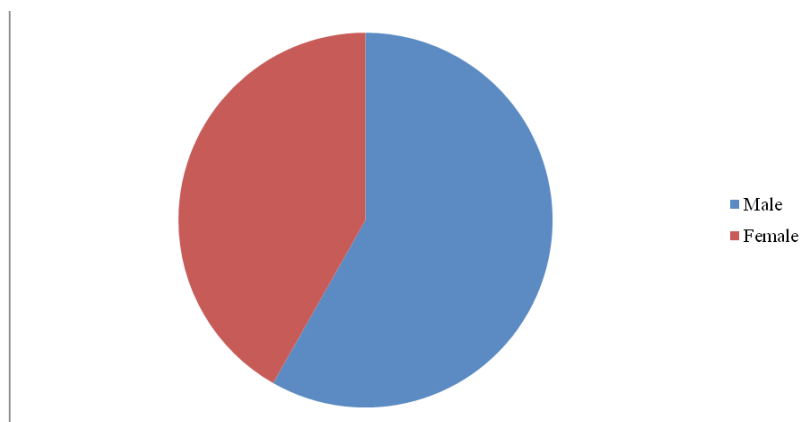


Fig.1: Gender Distribution of Paediatric Burns

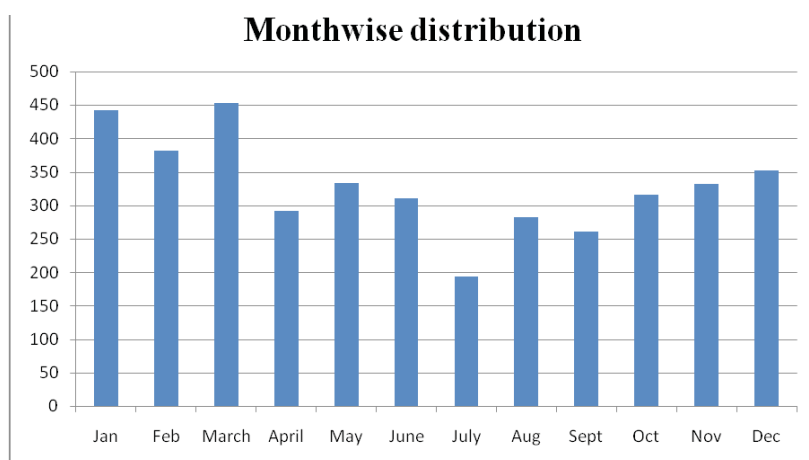


Fig.2: Month wise distribution of burns

## Material and Methods:

This one year (Jan 2015 - Dec 2015) descriptive study was carried out at Plastic Surgery and Burn Unit Lady Reading Hospital, Peshawar. Epidemiologic variables (age, sex, month, percentage, cause and place of burn, body part affected and district of residence) were recorded in specified Performa. Percentage of burn was measured as per Lund and Browder chart. Data analysis was done with the help of SPSS 23.

### Inclusion Criteria:

All patients below 11 years (0-10 years) presenting with acute burns were included in this study.

### Exclusion Criteria:

Chronic burns and burns with chronic burn complications were excluded from the study.

Burns presenting >48 hours since accident and treated elsewhere were also excluded.

## Results:

During one year study period (Jan 2015-Dec 2015) total burn patient recorded were 7,240. Paediatric patients (age 0 to 10 year) fulfilling the study criteria were 3,947 (54.51%).

Male were 2,298 while female were 1,649. Male to female ratio was 1.39:1. Fig. No 1.

Minimum age recorded was 0.15 year while maximum age was 10 year (mean: 3.48 and St. Deviation: 2.22). 84.5 % of the patients were below 6 years of age.

Month wise distribution of the cases is shown in Fig. No: 2.

In most cases, cause of burn was scald followed by flame burns. Table No: 1

2,829 patients (71.7%) patients belonged to Peshawar while 1,118 (28.3%) were referred from other parts of KPK and Afghanistan.

Regarding extent of the burns, 96% of the patients had burns below 25% of the total body surface area. Minimum area burnt was 1% and maximum was 73% (mean:7.12 and St.deviation:

7.89). In 3,749 cases (95%) accidents occurred at home. The most common body area burnt was lower limb (34.4%) followed by upper limb (29.7%). In 25.6% cases more than one body areas were involved. Detail of areas affected in Table No. 2.

While contact and electric burns affected upper limbs most commonly (53.57% and 36.36% respectively) the flame and scald burns mainly affected the lower limbs (20.33% and 36.44% respectively).

#### Discussion:

Burn injuries are a major health problem in South East Asia with annual burden of 243/100,000.<sup>1</sup> Paediatric burns are major health hazard but preventable in most cases. Epidemiologic studies help to identify the risk factors and appropriate preventive measures can be adopted accordingly. Unfortunately, research work on pediatric burn is almost nonexistent in Pakistan. This study has highlighted several important points.

In this study pediatric burns (age 0-10 years) were 54.51% of the total burns patients. The incidence of pediatric burn in Peshawar has remained almost the same (59%) during last six years, despite almost ten times increase in total number of patients.<sup>5</sup> In another study from Peshawar, the incidence of pediatric burn for same age was reported 31.6%.<sup>6</sup> The reason for this lower trend might be the study setup, which was an adult surgical ward. Moreover, the study was carried out on the admitted patients only. On the contrary, our study dealt all age groups and included both admitted and non admitted patients, thus omitting both bias.

While mean age in our study was 3.48 years (Std. deviation: 2.22), 90% of the patient were below six years of age. Other studies from India and China have reported a somewhat lower trend (82% and 72% respectively).<sup>7,8</sup> Most accidents happening at tender age of below six years in our study, speak volumes in lapses regarding child supervision.

Male to female ratio in our study was 1.39:1. This male preponderance in our study is consistent with other local and foreign studies.<sup>9-12</sup> The phenomenon of predominantly boys affliction has been explained due to their mischievous nature, hyperactivity and over all greater numbers.<sup>13</sup> While most studies on pediatric burns report male predominance, the trend is reversed in many adult burn studies. Increased female burns ratio has been reported due to high kitchen related accidents, dowry and other social issues.<sup>14</sup>

Mean Total Body Surface Area (TBSA) burn in our study was 7.12 %. This is in agreement to other burn center of Pakistan.<sup>9</sup> Eighty one per cent of our patients had burns less than 10% of TBSA. Similar trend has been reported from china (71.4%),<sup>15</sup> USA (63.5%)<sup>16</sup> and Saudi Arabia (82.4%).<sup>17</sup> Majority of our patients presented with minor burns. This reflects awareness on the part of parents to seek medical treatment even for minor burns. This concern of caretakers need to be extended to preventive measures. Studies covering the admitted burn patients only, report higher TBSA of more than 20%.<sup>18</sup>

We noticed higher incidence of burns (38.2%) during winter season. Similar findings have been reported by others.<sup>7</sup> Poor housing, Use of hot water for bath and washing, substandard gas heaters, use of candles and lantern during power load shedding may contribute to this higher incidence. Different cultural practices may affect the seasonal variation of burn incidence.<sup>5,18</sup>

Most common cause of burn in this study was scald (84.67%) followed by flame (10.71%). While flame burn has been more commonly reported cause in admitted patients, community based studies and studies covering the pediatric population only, report scald injury to be the most common cause.<sup>2,18,19</sup> Our finding is totally in agreement with other epidemiologic studies in this regard.

Although scald injury is the most common cause of pediatric burns, the mechanism may vary among societies, depending on sociocultural practices.<sup>4,17,18</sup> Most common patterns in

our study were falling of child in to hot water pan meant for washing cloth, falling into hot food utensil and spillage of hot food. In all these scenarios, the common factor was an unsupervised child left with hot liquid. These accidents reflect the lapses in child supervision and need behavioral changes on the part of caregivers.

As most of these burn accidents are preventable, a comprehensive burn prevention program is the only effective mean to deal with this major health issue. In many countries, burn prevention programs have been successfully implemented with significant decrease in burn incidents.<sup>4,20</sup> Formulation and implementation of a national burn prevention strategy is urgently needed involving parents, teachers, media, civil society and health care providers.

Strength of our study is that it was a prospective study and all data was entered by single person (author No 2) thus reduced the bias. Limitation of this study is that such study should have been a community based while this one is a facility based.

#### **Conclusion:**

Pediatric burns is a major health issue with significant morbidity and mortality. Most burns are preventable . A comprehensive prevention program can help to decrease the incidence of these devastating accidents. Burn prevention program may be integrated in to education syllabus and preventive health care.

**Conflict of interest:** None

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#### **Role and contribution of Authors:**

Dr Muhammad Aslam, FCPS (Surg), FCPS (Plastic Surgery), Associate Professor and HOD, Plastic Surgery and Burn Unit, Lady Reading Hospital Peshawar, conception of the Idea, literature review, data collection and analysis

Dr Muhammad Zarar Niazi, FCPS (Plastic Surg), Assistant Professor and Incharge Plastic

Surgery Unit Mardan Medical Complex, Mardan, did data collection, data entry and analysis

Dr Irfanullah Khan, FCPS (Plastic Surgery), Assistant Professor Plastic Surgery and Burn Unit, Lady Reading Hospital Peshawar, did data collection and analysis

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