

## ORIGINAL ARTICLE

# Pattern of Burn Injury in Children Presented to Dhaka Shishu (Children) Hospital

Muhammad Rashedul Alam<sup>1</sup>, Md. Saif Ullah<sup>2</sup>, Prosanto Kumar Biswas<sup>3</sup>

### Abstract

**Background:** Children are mostly affected in burn injury at our country like other low and middle income countries (LMICs). Approximately 90% of the burns occur in under developed countries, which generally lack the necessary infrastructure to reduce the incidence and severity of burns.

**Objectives:** This study was done to investigate the pattern of burn cases admitted to Dhaka Shishu (Children) Hospital (DSH).

**Methods:** This was a retrospective study conducted over the period of one year from January 2019 to December 2019 at Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh. The data was collected from the patients record section of the hospital. Patients characteristics (e.g. age, sex), causes and severity of injury, outcome, hospital stay and seasonal variation were analyzed in this study.

**Results:** A total of 91 patients were admitted during study period of one year. This study consisted of 53 male patients (58.24%) and 38 female patients (41.76%) with male to female ratio of 1.3:1. The most frequently hospitalized burn patients were in the age group 3-5 years, which accounted for 30.77% of patients. Burns were more common during winter season followed by autumn season, with 43 cases (47.25%) and 18 cases (19.78%) respectively. The highest number of admissions was during the month of December. Scald burn was the most common cause of burn injury in our study which accounted for 83 cases out of 91 cases (91.2%). Flame burn occurred in 3(3.29%) patients. There were 2 cases of electric burn and 2 cases of contact burn during this study period. One patient was with chemical burn. Scald burn was the most common cause of burn injury in this study which accounted for 83 cases out of 91 cases (91.2%). Flame burn occurred in 3(3.29%) patients. There were 2 cases of electric burn and 2 cases of contact burn during this study period. One patient was with chemical burn.

**Conclusion:** The most frequently hospitalized burn patients were in the age group 3-5 years and more common during winter season. Most of the burn occurred in children are scald in our country due to accidental fall of worm liquid. Superficial epidermal and dermal burns are treated conservatively, but deep burns may require surgical treatment.

**Keywords:** Burns in children, scalds in children, seasonal variation of burn.

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1. Assistant Professor, Burn and Reconstructive Unit, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh.
  2. Associate Professor, Burn and Reconstructive Unit, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh.
  3. Registrar (Incharge), Burn and Reconstructive Unit, Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh.

**Correspondence to:** Dr. Muhammad Rashedul Alam, Assistant Professor, Burn and Reconstructive Unit, Bangladesh Institute of Child Health and Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh. Cell: 0171200577, E-mail: dr.mrapiash@gmail.com

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## Introduction

Burn injury is one of the most common injuries around the world. Children are mostly affected in burn injury in our country like other low and middle income countries (LMICs). An estimated 180,000 deaths every year are caused by burns globally in LMICs.<sup>1,2</sup> In the world nearly 90% of burn deaths occur in lower middle or low income countries (LMICs), while only 3% of burn deaths happen in high income countries (HIC).<sup>3</sup> Approximately 90% of burns occur in under developed countries, which generally lack the necessary infrastructure to reduce the incidence and severity of burns.<sup>4</sup> Dhaka Shishu (Children) Hospital (DSH) has a separate 14 bedded burn unit which was started in 1999, is one of the oldest and well-established burn center that serve children. Thus the rationale of this study was to investigate the pattern of burn cases admitted to DSH, to maximize the efficiency of our burn unit to know our defects and to reduce the mortality rates.

## Materials and Methods

This was a retrospective study conducted over a period of one year from January 2019 to December 2019 at Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh. The data was collected from the patients record section of the hospital. Patients characteristics (e.g. age, sex), cause and severity of injury, outcome, hospital stay and seasonal variation

were examined in this study. The research proposal was presented to the hospital ethical committee and was approved. The data were entered in a Microsoft Excel spreadsheet and analyzed.

## Results

A total of 91 patients were admitted in DSH burn unit. The age of burn patients were from neonate to 18 years. Study consisted of 53 male patients (58.24%) and 38 female patients (41.76%) with male to female ratio of 1.3:1. The most frequently hospitalized burn patients were in the age group 3-5 years, which accounted for 30.77% of patients. Only one neonate was found in this study (Table I).

Burns were more common during winter season (December-February) followed by autumn season (September-November), with 43 cases (47.25%) and 18 cases (19.78%) respectively. The highest number of admissions was during the month of December (Table II).

Scald burn are most common cause of burn injury in our study which accounted for 83 cases out of 91 cases (91.2%). Flame burn occurred in 3(3.29%) patients. There are 2 cases of Electric burn and 2 cases of contact burn during this study period. One patient with chemical burn (Table III).

**Table I**  
*Distribution of age and sex*

Age	Male	%	Female	%	Total	%
Neonate	1	1.1	0	0	1	1.10
1-12month	5	5.49	4	4.4	9	9.89
1-3 years	9	9.89	8	8.79	17	18.68
3-5 years	15	16.48	13	14.29	28	30.77
5-10 years	14	15.39	8	8.79	22	24.18
>10years	9	9.89	5	5.49	14	15.38
Total	53	58.24	38	41.76	91	100

**Table II**  
*Seasonal variation of burn injury*

Season	Month	Number	Percentage
Summer	June-August	5	5.50
Autumn	September-November	18	19.78
Winter	December-February	43	47.25
Spring	March-May	25	27.47

**Table III**  
*Causes of burn injury*

Type of burn	Male	Female	Number (%)	Average TBSA (%)
Scald	50	33	83 (91.21)	11.4 (10-35%)
Flame	1	2	3 (3.29)	7.1 (5-15%)
Contact	1	1	2 (2.20)	3.3 (4-7%)
Electric	1	1	2 (2.20)	1.7 (1-3.5%)
Chemical	0	1	1 (1.10)	3.2 (3.2%)

**Table IV**  
*Management and outcome of burn patient*

Management and outcome	Number	Percent
Management	Conservative	89
	Surgical	2
Outcome	Improved	88
	Died	3
Hospital stay Mean (Range)	Scald (n=83) 9(5-13) days, Flame (n=3) 5(4-9) days, Contact (n=2) 4 (3-5) days, Electrical (n=2) 4(3-5) days, Chemical (n=1) 7(7) days	

In our study the percentage of total burn surface area (% TBSA) ranged from 1% to 35%. Most of them were superficial 84(92.3%) burn and were treated conservatively. Two patients needed surgical treatment due to deep burn. Hospital stay ranged from 4 days to 32 days. The mean hospital stay for scald injury (83 patient) was 9 days, flame burn (3 patients) 5 days, contact burn (2 patients) 4 days, electric burn (2 patients) 4 days and chemical burn (1 patient) 7 days. Among 91 patients admitted in one year 3 patients (3.3%) expired. One patient had 25% of TBSA burn injury aged 4 years 7 months, one patient with 17% of TBSA burn with renal failure aged 9 months, one patient with 15% of TBSA burn with pneumonia and sepsis aged 3years 3 months (Table IV).

### Discussion

Burn injury occur over the year but in our study, winter was the most common season for burns which is in agreement with the other studies.<sup>5-7</sup> Some studies reported that summer and spring were the most common season for burn injury.<sup>8</sup> From the findings of our study, a higher incidence of burn patients were found with the low socio-economic condition. In this study, majority of the patients were male, but female were also not rare. Burn injuries

represent a major cause of morbidity and mortality throughout the world and its occurrence is not specific to any age group.<sup>3</sup> It was also observed that amongst the paediatric age group, scalds clearly dominate whilst flame burns dominate within the working age group. Similar finding was also reported by the systematic review regarding burns in Nepal and Cosovo.<sup>9</sup> Most of the burn and scald in children in our country is due to accidental fall of hot water, hot milk, hot curry, hot dal, hot water for bathing. Flame burn also occurs but the number is less. Some study shows that flame burn is more in number but is not similar to our study.<sup>10</sup> Analysis of age groups of burn patients show that children are mostly affected by burns which is about 53%. While the age group 0-5 is the most common (41.8%). Data also show that the highest incidence of burns was in the first decade of life (48.4%).<sup>10</sup>

Superficial epidermal and dermal burns are treated conservatively, but deep burns (full thickness) require surgical treatment. The largest number of patients with burns in our clinic were treated conservatively (76.3%), as in South Korea, 80.6%.<sup>11</sup> Although patients with deep burns (third grade) were present in 31% of cases, only 19.3% of our patients were treated surgically.

Burns are preventable public health problem. We believe most of the burn injuries in Bangladesh are caused due to illiteracy, ignorance and lack of effective policy from the government. Medical personnel and government should focus more on prevention program rather than treating the burn patients, identifying the most vulnerable group. Government and health institution should educate people especially in the rural area about burn prevention. We believe the prevention program would be highly beneficial if it can be included in the primary school text book. High-income countries have made a considerable progress in lowering the burn incident, through a combination of educating people and installation of safety measures.

### Conclusion

The most frequently hospitalized burn patients were in age group 3-5 years and more common during winter season. Most of the cases of burn found in children are scald in our country due to accidental fall of hot liquid. Superficial epidermal and dermal burns are treated conservatively, but deep burns may require surgical treatment.

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