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Factors Associated with Mortality and Morbidity in Paediatric Burn Patients in a Tertiary Care Hospital in Bangladesh: A One-Year Prospective Study

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KEYWORDS:

Paediatric Burns, Mortality, Morbidity, Risk Factors, Bangladesh.

ABSTRACT:

Background: Burn injuries remain a leading cause of childhood morbidity and mortality worldwide, with the majority of deaths occurring in low- and middle-income countries and significant disparities in outcomes persisting. The present study was undertaken to determine the factors associated with mortality and morbidity among paediatric burn patients admitted to a tertiary care hospital in Bangladesh over a one-year period.

Methods: This prospective observational study was conducted at the Department of Burn and Plastic Surgery, 100-Bed Burn Unit of Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh, from January to December 2024. A total of 200 paediatric patients (≤12 years) with acute thermal burns were enrolled by consecutive sampling after informed consent with predefined exclusions. Data on demographic, injury, clinical, and outcome variables were collected using a standardized form and analyzed using SPSS version 25.0 with multivariable logistic regression ($p < 0.05$).

Results: Among 200 pediatric burn cases, scalds (68.5%) predominated. TBSA was 20–40% in 43.5% and >40% in 15.5%. Significant factors: inhalation injury (13.5%), delayed presentation (34.0%), rural residence (67.0%), and low income (57.0%). Major morbidities: skin grafting (47.1%) and infection (43.7%). Mortality linked to flame burns (26.5%), TBSA >40% (15.5%), and delay (34.0%). TBSA, injury type, and maternal education (48.0%) predicted morbidity.

Conclusion: Paediatric burn patients showed significant mortality and morbidity, mainly associated with burn severity, flame injury, delayed presentation, inhalation injury, and maternal education, underscoring the need for better prevention and early care.

Introduction

Burn injuries represent one of the most severe forms of childhood trauma and remain a leading cause of unintentional injury-related morbidity and mortality among children worldwide [1]. According to the World Health Organization, burns account for approximately 180,000 deaths annually, with more than 95% of these deaths occurring in low- and middle-income countries (LMICs) [2]. The burden is particularly concentrated in the South-East Asian region, where age-standardized burn mortality rates are estimated to be nearly 11 times higher than in high-income countries [3]. Despite advances in burn care in high-income settings, global disparities persist, largely driven by inequities in

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prevention, early management, and access to specialized care.

Beyond mortality, paediatric burn injuries are associated with significant long-term physical, psychological, and social consequences. Survivors often suffer from hypertrophic scarring, contractures, chronic pain, functional disability, and disfigurement, which may persist into adulthood and severely impact quality of life [4]. In addition, psychological sequelae such as post-traumatic stress disorder, anxiety, and social withdrawal are common, particularly in younger children. The economic burden is also substantial, as prolonged hospitalization and rehabilitation costs frequently impose catastrophic financial strain on families, often exacerbating existing poverty and social vulnerability [5].

In Bangladesh, a lower-middle-income country with a population exceeding 170 million, paediatric burns constitute a major public health concern. The Bangladesh Health and Injury Survey (BHIS) 2016 estimated that over 200,000 children sustain burn injuries annually, making burns one of the leading causes of injury-related mortality among children aged 1–17 years [6]. The burden is particularly high in children under five years of age, who account for nearly 60% of all paediatric burn admissions [7]. This disproportionate vulnerability reflects both developmental factors and environmental exposure in early childhood.

The epidemiology of paediatric burns in Bangladesh is strongly influenced by household environment, cultural practices, and socioeconomic conditions. In many households, cooking is performed using traditional earthen stoves (chula) placed at floor level, with boiling water, milk, and food preparations such as khichuri occurring in open and accessible spaces [8]. Young children frequently play within or near these cooking areas due to limited space separation. In rural settings, the use of open-flame lighting sources such as kerosene lamps further increases the risk of flame-related injuries. Combined with overcrowded living conditions, inadequate supervision, and lack of physical barriers within homes, these factors create a high-risk environment for accidental burns [9].

The healthcare system in Bangladesh faces considerable challenges in the timely and effective management of paediatric burn injuries. Dhaka Medical College Hospital (DMCH), established in 1946, is one of the oldest and largest public tertiary care hospitals in the country and serves as a major referral centre for burn patients nationwide. Its 100 Bed Burn Unit manages a large volume of critically ill paediatric patients; however, resource limitations, high patient load, and infrastructural constraints continue to affect care delivery [10]. Despite being a key referral centre, delays in referral and variability in pre-hospital care often result in patients arriving in advanced stages of injury.

Pre-hospital management remains largely unregulated, with many families initially seeking care from traditional healers (kabiraj or ojha). Harmful topical applications such as mud, ash, egg yolk, or herbal mixtures are frequently used on burn wounds, which may increase the risk of infection, delay wound healing, and complicate subsequent surgical management [11]. These practices, combined with transportation difficulties—particularly for rural populations—often result in significant delays in reaching specialized burn care facilities [12].

Socioeconomic constraints further exacerbate these challenges. A substantial proportion of the population in Bangladesh lives near or below the poverty line, and out-of-pocket healthcare expenditure remains high relative to household income [13]. For many families, the cost of transportation, hospitalization, and long-term care presents a significant financial barrier, leading to delayed presentation or incomplete treatment. These interconnected social, economic, and healthcare system factors collectively contribute to worse clinical outcomes in paediatric burn patients in Bangladesh [14]. In this context, the present study was undertaken to identify factors associated with mortality and morbidity among paediatric burn patients in a tertiary care hospital in Bangladesh over one year.

Objective

- To identify factors associated with mortality and morbidity among paediatric burn patients in a tertiary care hospital in Bangladesh over one year.

Methodology & Materials

This prospective observational study was conducted at the Department of Burn and Plastic Surgery, 100-Bed

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Burn Unit of Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh, between January 1 and December 31, 2024. A total of 200 paediatric patients were enrolled through consecutive sampling based on predefined inclusion and exclusion criteria to evaluate factors associated with mortality and morbidity among hospitalized burn patients. DMCH is a public tertiary care hospital and a major referral centre serving Dhaka city and surrounding districts. The burn unit comprises 100 beds, including 10 intensive care unit beds, and is supported by a multidisciplinary team of plastic surgeons, anaesthesiologists, burn nurses, physiotherapists, and nutritionists.

Inclusion criteria:

- Age ≤12 years at the time of admission
- Acute thermal burn injury requiring hospitalization
- Admission during the study period
- Informed consent provided by a parent or legal guardian

Exclusion criteria:

- Electrical or chemical burns (due to differing pathophysiology)
- Pre-existing chronic conditions affecting wound healing (e.g., diabetes mellitus, immunodeficiency, chronic renal disease)
- Death within 24 hours of admission (to avoid confounding from early resuscitation failure)
- Suspected non-accidental burns (child abuse)
- Incomplete medical records

Data collection procedures

Data were collected by three trained research assistants (postgraduate trainees in plastic surgery) using a standardized, pre-tested data collection form. Data were collected at three time points: within 24 hours of admission (baseline), weekly during hospitalization, and at discharge. The following data domains were recorded:

Demographic and socioeconomic variables: Age (years, categorized as ≤5 and 6–12), sex, maternal education (any formal schooling vs. none), paternal education, monthly family income (Bangladeshi Taka, categorized as <15,000 and ≥15,000 [approximately <150 USD vs. ≥150 USD]), place of residence (urban vs. rural), distance from residence to hospital (<50 km vs. ≥50 km), household size (≤5 vs. >5 members), and primary caregiver.

Injury characteristics: Mechanism of burn (scald, flame, contact), TBSA burned (percentage estimated using the Lund and Browder chart by the attending burn surgeon), burn depth (superficial partial-thickness, deep partial-thickness, full-thickness), anatomical sites involved (head and neck, upper limb, trunk, lower limb, perineum), inhalation injury (presence diagnosed clinically by facial burns, singed nasal hairs, carbonaceous sputum, stridor, or hoarseness, or confirmed by bronchoscopy when available), place of injury (home vs. other location), and presence of supervision at the time of injury.

Clinical course: Time from injury to hospital admission (categorized as <24 hours vs. ≥24 hours), need for mechanical ventilation, development of sepsis, requirement for blood transfusion, number of surgical procedures, and in-hospital complications.

Outcome measures:

- **Mortality:** Death during the index hospitalization, with cause documented.
- **Morbidity:** Three distinct outcomes assessed among survivors:
  - Prolonged hospital stay: Length of hospitalization exceeding 28 days.
  - Need for skin grafting: Any autografting procedure performed during admission.
  - Wound infection: Clinical signs of infection with positive microbiological culture from burn wound swab.

Statistical analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), and categorical variables were presented as frequencies and percentages. Bivariate analysis was performed using the chi-square test or Fisher's exact test, as appropriate. Variables with $p < 0.2$ in bivariate analysis were entered into a stepwise forward multivariable logistic regression model to identify independent predictors of mortality and morbidity outcomes. Adjusted odds ratios (AOR) with 95% confidence intervals (CI) were calculated, and a

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two-tailed p-value < 0.05 was considered statistically significant.

Ethical considerations

Ethical approval was obtained from the Institutional Review Board of Dhaka Medical College. Written informed consent was obtained from parents or legal guardians after a detailed explanation of the study procedures in Bengali. Participants were assured of confidentiality, and all data were anonymized using unique identification numbers. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Results

Table 1: Baseline Demographic and Clinical Characteristics of the Study Participants (n = 200)

Characteristic	Category	n (%)
Age	≤5 years	111 (55.5)
	6–12 years	89 (44.5)
Sex	Male	118 (59.0)
	Female	82 (41.0)
Mechanism of Burn	Scald	137 (68.5)
	Flame	53 (26.5)
	Contact	10 (5.0)
TBSA Burned	<20%	82 (41.0)
	20–40%	87 (43.5)
	>40%	31 (15.5)
Burn Depth	Superficial partial-thickness	91 (45.5)
	Deep partial-thickness	71 (35.5)
	Full-thickness	38 (19.0)
Inhalation Injury	Present	27 (13.5)
	Absent	173 (86.5)
Time to Admission	<24 hours	132 (66.0)
	≥24 hours	68 (34.0)
Maternal Education	No formal education	96 (48.0)
	Formal education	104 (52.0)
Family Income (Monthly)	<15,000 BDT	114 (57.0)
	≥15,000 BDT	86 (43.0)
Place of Residence	Urban	66 (33.0)
	Rural	134 (67.0)
Distance to Hospital	<50 km	78 (39.0)
	≥50 km	122 (61.0)
Household Size	≤5 members	96 (48.0)
	>5 members	104 (52.0)

The majority of children were aged ≤5 years (111 patients, 55.5%), with a mean age of 5.8 ± 3.2 years, and males predominated (118 patients, 59.0%). Scald burns were the most common mechanism (137 patients, 68.5%), followed by flame (26.5%) and contact burns (5.0%). Most patients had 20–40% TBSA involvement (87 patients, 43.5%), while 15.5% had TBSA >40%; superficial partial-thickness burns were most frequent (45.5%), followed by deep partial-thickness (35.5%) and full-thickness burns (19.0%), and inhalation injury was present in 13.5%. Most patients presented within 24 hours (66.0%), although 34.0% had delayed presentation. Socioeconomically, 48.0% of mothers had

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no formal education, 57.0% of families had monthly income <15,000 BDT, 67.0% resided in rural areas, 61.0% lived ≥50 km from the hospital, and 52.0% had household sizes >5 members.

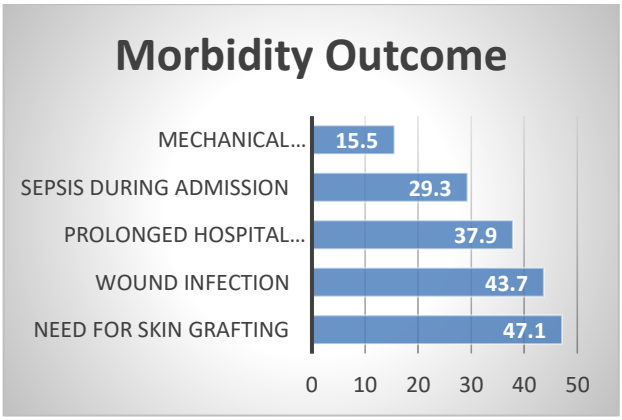

Figure 1: Morbidity Outcomes Among Survivors (n = 174)

Among survivors, the most common morbidity was the need for skin grafting (82 patients, 47.1%), followed by wound infection (76 patients, 43.7%), prolonged hospital stay >28 days (66 patients, 37.9%), and sepsis during admission (51 patients, 29.3%), while mechanical ventilation was required in 27 patients (15.5%).

Table 2: Multivariable Logistic Regression Analysis of Factors Associated with Mortality

Factor	Adjusted Odds Ratio (AOR)	95% CI	p-value
Flame Burns (vs. Scald)	4.52	1.71 – 11.95	0.002
TBSA >40% (vs. ≤40%)	9.38	3.08 – 28.56	<0.001
Delayed Presentation >24 h	3.28	1.22 – 8.82	0.018
Inhalation Injury	2.12	0.81 – 5.55	0.124
Full-thickness Burns	2.05	0.78 – 5.38	0.146

Multivariable analysis demonstrated that flame burns were significantly associated with increased odds of mortality (AOR 4.52; 95% CI: 1.71–11.95; p=0.002), patients with TBSA >40% had markedly higher odds of death (AOR 9.38; 95% CI: 3.08–28.56; p<0.001), and delayed presentation beyond 24 hours was also an independent predictor (AOR 3.28; 95% CI: 1.22–8.82; p=0.018), whereas inhalation injury (AOR 2.12; p=0.124) and full-thickness burns (AOR 2.05; p=0.146) showed increased odds but were not statistically significant.

Table 3: Multivariable Analysis of Factors Associated with Morbidity Outcomes Among Survivors (n = 174)

Outcome	Factor	Adjusted Odds Ratio (AOR)	95 % CI	p-value
Need for Skin Grafting	TBSA >20%	6.38	2.92 – 13.94	<0.001
	Flame Burn (vs. Scald)	2.92	1.31 – 6.51	0.009
	Full-thickness Burn	2.21	0.94 – 5.20	0.069
Wound Infection	TBSA >20%	3.42	1.60 – 7.31	0.001
	Inhalation Injury	2.81	1.21 – 6.52	0.016
	Need for Grafting	2.08	0.98 – 4.41	0.056
Prolonged Stay (>28 days)	TBSA >20%	4.41	2.07 – 9.39	<0.001
	Wound Infection	3.04	1.42 – 6.51	0.004
	No Maternal Education	2.63	1.18 – 5.86	0.018
	Rural	1.62	0.80 –	0.182

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	Residence		3.28	

For the need for skin grafting, TBSA >20% was the strongest predictor (AOR 6.38; 95% CI: 2.92–13.94; p<0.001), followed by flame burns (AOR 2.92; p=0.009), while full-thickness burns showed a borderline association (p=0.069); wound infection was significantly associated with TBSA >20% (AOR 3.42; p=0.001) and inhalation injury (AOR 2.81; p=0.016), with need for grafting showing borderline significance (p=0.056); prolonged hospital stay (>28 days) was independently associated with TBSA >20% (AOR 4.41; p<0.001), wound infection (AOR 3.04; p=0.004), and lack of maternal education (AOR 2.63; p=0.018), while rural residence was not significant (p=0.182).

Table 4: Comparison of Clinical Outcomes by TBSA Category

Outcome	TBSA <20% (n=82)	TBSA 20–40% (n=87)	TBSA >40% (n=31)	p-value
Mortality, n (%)	2 (2.4)	5 (5.7)	19 (61.3)	<0.001
Need for Grafting, n (%)	18 (22.0)	45 (51.7)	19 (61.3)	<0.001
Wound Infection, n (%)	20 (24.4)	41 (47.1)	15 (48.4)	0.002
Prolonged Stay, n (%)	11 (13.4)	35 (40.2)	20 (64.5)	<0.001
Mean Length of Stay (days)	14.8 ± 7.3	25.2 ± 12.9	40.1 ± 19.2	<0.001
Sepsis, n (%)	8 (9.8)	31 (35.6)	20 (64.5)	<0.001

A clear gradient was observed between burn size and adverse outcomes, with mortality increasing from 2.4% (2 patients) in TBSA <20% to 61.3% (19 patients) in TBSA >40% (p<0.001); similarly, the need for skin grafting rose from 22.0% to 61.3% (p<0.001), wound infection from 24.4% to 48.4% (p=0.002), and prolonged hospital stay from 13.4% to 64.5% (p<0.001), while mean length of hospital stay increased from 14.8 ± 7.3 days to 40.1 ± 19.2 days (p<0.001), and sepsis rose from 9.8% to 64.5% (p<0.001).

Table 5: Factors Associated with Delayed Presentation (>24 Hours)

Factor	Presentation <24 h (n=132)	Presentation ≥24 h (n=68)	p-value
Rural Residence	78 (59.1)	56 (82.4)	0.001
Distance ≥50 km	68 (51.5)	54 (79.4)	<0.001
Family Income <15,000 BDT	66 (50.0)	48 (70.6)	0.005
No Formal Maternal Education	55 (41.7)	41 (60.3)	0.014
Consultation with Traditional Healer	12 (9.1)	29 (42.6)	<0.001
TBSA >20%	74 (56.1)	44 (64.7)	0.242
Flame Burn	34 (25.8)	19 (27.9)	0.742

Delayed presentation was significantly more common among patients from rural areas (82.4% vs. 59.1%, p=0.001), those living ≥50 km from the hospital (79.4% vs. 51.5%, p<0.001), those with low family income <15,000 BDT (70.6% vs. 50.0%, p=0.005), and those with no formal maternal education (60.3% vs. 41.7%, p=0.014), while consultation with traditional healers showed a particularly strong association (42.6% vs. 9.1%, p<0.001); however, TBSA >20% (p=0.242) and flame burns (p=0.742) were not significantly associated.

Discussion

This prospective study of 200 paediatric burn patients at the 100 Bed Burn Unit of Dhaka Medical College Hospital provides contemporary and comprehensive evidence on factors associated with mortality and morbidity in one of the largest public tertiary care settings in Bangladesh. The study demonstrated a mortality rate of 13.0% along with a substantial burden of morbidity among survivors, including high rates of skin grafting (47.1%), wound infection (43.7%), prolonged hospitalization (37.9%), and sepsis (29.3%). These outcomes considerably exceed benchmarks

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reported from high-income settings, where both mortality and complication rates are substantially lower [18, 19]. The findings collectively highlight the persistent gap in burn care outcomes between resource-limited and resource-rich settings and underscore the need for both system-level and community-level interventions.

The observed mortality rate of 13.0% is consistent with reports from other low- and middle-income countries (LMICs), where paediatric burn mortality ranges from 8% to 15% [20, 21], but remains markedly higher than the <5% mortality reported in high-income countries [22]. This disparity reflects differences in pre-hospital care, early resuscitation, availability of intensive care, infection control practices, and access to timely surgical interventions [23]. In the present study, flame burns were identified as a strong independent predictor of mortality, with a 4.52-fold increased risk compared to scald injuries. This aligns well with the known pathophysiology of flame burns, which are more likely to result in deeper tissue destruction, greater TBSA involvement, and a higher incidence of inhalation injury [24]. Supporting this, a higher proportion of flame burn patients in this cohort had TBSA >20% and inhalation injury compared to scald injuries, which likely contributed to worse outcomes. These findings emphasize that burn mechanism is not merely descriptive but plays a critical role in determining prognosis, particularly in resource-constrained settings where advanced supportive care may be limited [25].

Burn size emerged as the most powerful determinant of mortality, with TBSA >40% associated with a nearly tenfold increase in the odds of death (AOR 9.38). This is further reflected in the markedly high mortality rate of 61.3% observed in this subgroup, demonstrating a clear dose–response relationship between burn size and fatal outcomes, as also shown in the stratified analysis. Similar findings have been consistently reported in LMIC settings [26]. The biological basis for this relationship is well established: extensive burns lead to severe fluid loss requiring aggressive resuscitation, prolonged hypermetabolic states, immune dysfunction, and increased susceptibility to infection [27]. In this study, septic shock accounted for 65.4% of deaths, reinforcing the central role of infection as a terminal pathway in paediatric burn mortality and highlighting the importance of early wound coverage, infection control, and antimicrobial stewardship.

Delayed presentation beyond 24 hours was another independent predictor of mortality (AOR 3.28), and notably, over one-third of patients (34.0%) presented late. This finding is particularly important because it represents a modifiable risk factor. Delayed resuscitation increases the risk of burn shock and organ dysfunction, while delayed wound care promotes bacterial colonization and infection, and postponement of nutritional support worsens catabolism and healing [28]. The study further identified key determinants of delayed presentation, including rural residence, distance ≥50 km from the hospital, low family income, lack of maternal education, and prior consultation with traditional healers. These factors are consistent with broader evidence from LMICs, where geographic inaccessibility, financial constraints, and sociocultural practices significantly delay access to formal healthcare [29, 30]. The finding that 42.6% of patients with delayed presentation initially sought care from traditional healers is particularly concerning, as such practices often involve application of potentially harmful substances and delay evidence-based treatment [31]. These results strongly support the need for targeted community education programs, improved referral systems, and strengthening of peripheral healthcare facilities to facilitate early burn management and timely transfer.

The burden of morbidity among survivors in this cohort was substantial and reflects both injury severity and limitations in healthcare delivery. Nearly half of the patients (47.1%) required skin grafting, with TBSA >20% identified as the strongest predictor (AOR 6.38), consistent with established surgical thresholds for early excision and grafting [32]. However, delays in surgical intervention remain a concern in resource-limited settings. Although exact timing data were not formally analyzed in this study, the high rates of infection and prolonged hospitalization suggest potential delays in definitive wound management, which are known to adversely affect outcomes [33]. The significant association between flame burns and grafting further reinforces the greater severity of such injuries.

Wound infection was observed in 43.7% of survivors, with Pseudomonas aeruginosa and Staphylococcus

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aureus being the predominant organisms, consistent with global burn unit microbiological patterns [34]. The high prevalence of Pseudomonas is particularly concerning in the context of increasing antimicrobial resistance, which can complicate treatment and prolong recovery. Inhalation injury was independently associated with wound infection (AOR 2.81), likely reflecting systemic immunosuppression and impaired host defense mechanisms following airway injury. These findings highlight the importance of strict infection control practices, early wound coverage, and appropriate antibiotic stewardship in improving outcomes.

Prolonged hospital stay (>28 days) affected 37.9% of survivors and was independently associated with TBSA >20%, wound infection, and lack of maternal education. While the clinical predictors are expected, the association with maternal education (AOR 2.63) underscores the critical influence of social determinants on recovery. Mothers with formal education may be better equipped to understand treatment protocols, ensure adherence to wound care and nutritional advice, and effectively communicate with healthcare providers [35]. This is supported by the observed longer hospital stays among children of less educated mothers in this cohort. These findings highlight the need to incorporate caregiver education and support as part of comprehensive burn care, particularly in LMIC settings.

Limitations of the study

The study had a few limitations;

- Single-centre design, which may limit generalizability and introduce potential selection bias
- Reliance on clinical diagnosis of inhalation injury, as bronchoscopy was not performed in all patients
- Absence of long-term follow-up data to assess outcomes beyond hospitalization
- Potential residual confounding due to unmeasured or uncontrolled variables

Conclusion

This prospective study demonstrates that paediatric burns at Dhaka Medical College Hospital are associated with a mortality rate of 13.0% and substantial morbidity, with nearly half of survivors requiring skin grafting. Independent predictors of mortality include flame burns, TBSA >40%, and delayed presentation, while predictors of morbidity include TBSA >20%, flame mechanism, inhalation injury, and lack of formal maternal education. These findings underscore the urgent need for comprehensive interventions addressing primary prevention, timely referral, quality of in-hospital care, and socioeconomic barriers to improve outcomes for paediatric burn patients in Bangladesh.

References

1. Peck MD. Epidemiology of burns throughout the world. Part I: Distribution and risk factors. Burns. 2011 Nov 1;37(7):1087-100.
2. World Health Organization. Burns: fact sheet. Geneva: WHO; 2018.
3. World Health Organization. Global status report on violence prevention 2014. Geneva: WHO; 2014.
4. Stoddard FJ, Saxe G. Ten-year research review of physical injuries. Journal of the American Academy of Child & Adolescent Psychiatry. 2001 Oct 1;40(10):1128-45.
5. Shafie AA, Rahman A. Economic burden of burn injuries in Malaysia. Burns. 2015;41(6):1265-72.
6. Rahman A, Chowdhury SM, Mashreky SR, Linnan M, Rahman AF, Hossain MJ, Ahmed T, Baset KU, Talab A, Ali S. Bangladesh health and injury survey 2016 (BHIS 2016): summary report.
7. Mashreky SR, Rahman A, Chowdhury SM, Giashuddin S, Svanström L, Linnan M, Shafinaz S, Uhaa IJ, Rahman F. Epidemiology of childhood burn: yield of largest community based injury survey in Bangladesh. Burns. 2008 Sep 1;34(6):856-62.
8. Ahuja RB, Bhattacharya S. Burns in the developing world and burn disasters. Bmj. 2004 Aug 19;329(7463):447-9.
9. Delgado J, Ramirez-Cardich ME, Gilman RH, Lavarello R, Dahodwala N, Bazan A, Rodríguez V, Cama RI, Tovar M, Lescano A. Risk factors for burns in children: crowding, poverty, and poor maternal education. Injury Prevention. 2002 Mar 1;8(1):38-41.
10. Karim SMS, Rahman MA. Burn care in Bangladesh: Current status and future directions. Burns Open. 2020;4(2):55–9.

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www.jchr.org

JCHR (2026) 16(2), 2514-2522 | ISSN:2251-6727

11. Forjuoh SN. Burns in low-and middle-income countries: a review of available literature on descriptive epidemiology, risk factors, treatment, and prevention. Burns. 2006 Aug 1;32(5):529-37.
12. Razzak JA, Kellermann AL. Emergency medical care in developing countries: is it worthwhile?. Bulletin of the World Health Organization. 2002 Nov;80(11):900-5.
13. World Bank. Bangladesh poverty assessment. Washington (DC): World Bank; 2023.
14. Rahman A, Mashreky SR. Economic impact of childhood burns in Bangladesh. Burns. 2017;43(5):1092-8.
15. Jeschke MG, Herndon DN. Burns in children: standard and new treatments. The Lancet. 2014 Mar 29;383(9923):1168-78.
16. Nahar N, Chowdhury AS. Paediatric burns in a tertiary care hospital of Bangladesh: A retrospective analysis. Journal of Paediatric Surgery. 2017;52(3):456–60.
17. Hossain MJ, Faruque ASG. Clinical profile and outcome of paediatric burns in a tertiary care hospital in Dhaka. Bangladesh Journal of Child Health. 2019;43(2):78–84.
18. Kraft R, Herndon DN, Al-Mousawi AM, Williams FN, Finnerty CC, Jeschke MG. Burn size and survival probability in paediatric patients in modern burn care: a prospective observational cohort study. The Lancet. 2012 Mar 17;379(9820):1013-21.
19. Barrow RE, Herndon DN. Burn care in the developing world. J Burn Care Res. 2016;37(2):e109-14.
20. Gupta JL, Makhija LK. A study of mortality in paediatric burns in a tertiary care centre in India. Burns. 2016;42(2):417-22.
21. Ashraf M, Ali S. Factors associated with mortality in paediatric burn patients in a tertiary care hospital in Pakistan. Journal of Pakistan Medical Association. 2018;68(5):748–52.
22. Thombs BD, Singh VA, Milner SM. Children with burn injuries: a systematic review of mortality risk factors. Journal of Burn Care & Research. 2006;27(4):497–505.
23. Atiyeh BS, Costagliola M. Burn prevention in developing countries: a systematic review. Burns. 2007;33(4):411-22.
24. Brusselaers N, Monstrey S, Vogelaers D, Hoste E, Blot S. Severe burn injury in Europe: a systematic review of the incidence, etiology, morbidity, and mortality. Critical care. 2010 Oct 19;14(5):R188.
25. Potokar TS, Chamania S. The role of the surgeon in burn care in the developing world. Burns. 2012;38(5):631-5.
26. Sharma PN, Duke JM. Mortality in paediatric burns in a low-resource setting. Burns. 2019;45(6):1382-9.
27. Williams FN, Herndon DN. The metabolic response to burn injury. J Burn Care Res. 2017;38(2):e502-4.
28. Wolf SE, Arnoldo BD. Fluid resuscitation after burn injury. Surg Clin North Am. 2014;94(4):789-99.
29. Ngu A, Johnson K. Factors associated with mortality in paediatric burns in a low-resource setting. Journal of Paediatric Surgery. 2019;54(7):1424–9.
30. Sengoelge M, Laflamme L. Burn mortality in children in low- and middle-income countries: a systematic review and meta-analysis. Burns. 2018;44(4):789-98.
31. Albertyn R, Bickler SW, Rode H. Paediatric burn injuries in Sub Saharan Africa—an overview. Burns. 2006 Aug 1;32(5):605-12.
32. Ahuja RB, Gibran N, Greenhalgh D, Jeng J, Mackie D, Moghazy A, Moiemen N, Palmieri T, Peck M, Serghiou M, Watson S. ISBI practice guidelines for burn care. Burns. 2016 Aug 1;42(5):953-1021.
33. Herndon DN, Tompkins RG. Support of the metabolic response to burn injury. The Lancet. 2004 Jun 5;363(9424):1895-902.
34. Church D, Elsayed S, Reid O, Winston B, Lindsay R. Burn wound infections. Clinical microbiology reviews. 2006 Apr;19(2):403-34.
35. DeWalt DA, Hink A. Health literacy and child health outcomes: a systematic review of the literature. Pediatrics. 2009 Nov 1;124(Supplement_3):S265-74.