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ASSESSMENT OF PARENTS' KNOWLEDGE REGARDING FIRST AID MANAGEMENT OF BURN INJURIES IN CHILDREN

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Abstract

Background: *Burn injuries are a significant global public health concern and impose a substantial burden on healthcare systems, particularly in low- and middle-income countries. They contribute to increased morbidity and mortality; however, many complications can be reduced through appropriate first aid management.*

Objective: *To assess parents' knowledge regarding first aid management of burn injuries in children.*

Methodology: *A descriptive cross-sectional study was conducted at the British Public School, Muzaffargarh. A sample size of 87 participants was calculated, and convenience sampling was used to recruit willing parents of children enrolled in the school. Data were collected using a structured questionnaire. Ethical approval was obtained before data collection, and informed consent was taken from all participants. Data were analyzed using SPSS version 24. Descriptive statistics were applied. Categorical variables such as gender and family structure were presented as frequencies and percentages, while continuous variables such as age were expressed as mean and standard deviation.*

Results: *A total of 87 parents participated in the study. The age (mean±SD) of participants was 31.66±7.93 years. Almost half 47 (54%) of the participants were females. Approximately one-third, 30 (34.5%) of the participants had secondary level of education. Most participants demonstrated poor knowledge of burn first aid, with 80.5% incorrectly identifying toothpaste as treatment and 72.4% not applying water to burns. Only 3.4% correctly identified the recommended duration of water application (15-20 minutes).*

Conclusion: *Parents demonstrated inadequate knowledge regarding first aid management of burn injuries in children. There is a need for educational interventions to improve awareness and promote appropriate burn first aid practices.*

INTRODUCTION

Burn injuries remain a major global public health concern and are widely recognized as one of the most painful and distressing forms of injury (Barrett et al., 2019). Each year, millions of burn cases are reported worldwide, with an estimated prevalence of 140 cases per 100,000 populations (Crowe et al., 2016). The burden of burn injuries is disproportionately higher in low- and middle-income countries, where the majority of cases and related deaths occur (James et al., 2019).

The World Health Organization estimates that burn injuries contribute to approximately 180,000 deaths annually, with nearly 90% of

these occurring in low- and middle-income countries. Globally, children are particularly vulnerable, accounting for a substantial proportion of burn cases, with an estimated incidence of 42.4% (Joseph S. et al., 2021). In Pakistan, the burden is even greater than the global average, where pediatric burn injuries constitute approximately 54.51% of all burn cases (Mohammad Aslam et al., 2016). This highlights that children are at a significantly higher risk of burn-related injuries compared to other age groups (Egberts et al., 2020). Burn injuries are also among the leading causes of mortality in children aged 0–19 years, ranking thirteenth globally in causes of death (Gurler, 2019). Additionally, studies have shown a higher incidence of burn injuries among females across different age groups (Gessesse & Yitayew, 2020).

Most burn injuries occur in domestic settings, with scalding being the most common mechanism, accounting for approximately 62.4% of cases. Flame injuries account for 28.7%, while electrical and chemical burns each represent about 3.3% of cases (Almarghoub et al., 2020). In terms of severity, a significant proportion of burns are second-degree injuries, and in many cases, burn wounds involve 39% or more of the total body surface area (Almarghoub et al., 2020). Similarly, scald injuries alone account for more than 70% of pediatric burns, with the upper extremities being the most commonly affected site (45.3%). A considerable proportion of affected children (18%) require hospitalization due to severe complications (Alemayehu et al., 2020). Burn injuries in children are associated with a wide range of serious complications, including pneumonia, sepsis, renal failure, acute respiratory distress syndrome, and multi-organ failure. These complications significantly contribute to both morbidity and mortality among burn patients (Deeter et al., 2019). Among these, infection remains the most common and critical complication (Alemayehu et al., 2020).

Beyond physical consequences, pediatric burn injuries also have profound psychological and social impacts. The treatment process is often complex, prolonged, and distressing for both children and their families (Woolard et al., 2021). Regardless of age, burn injuries in childhood represent a traumatic experience that requires long-term, multidisciplinary management to reduce complications and restore optimal functional outcomes (Özer & Vural, 2018). In this context, parents play a crucial role in providing immediate first aid at home, which can significantly influence outcomes. Therefore, adequate parental knowledge regarding burn first aid and management is essential for improving early care and reducing complications (Habeeb & Alarfaj, 2020).

METHODOLOGY

A descriptive cross-sectional study was conducted over a period of three months from January to March 2024 at British Grammar School, Muzaffargarh, Punjab, Pakistan. The study population included parents of children enrolled in the selected school. A sample size of 87 participants was determined using G*Power software version 3.1.9.7. A convenience sampling technique was used to recruit participants. Parents who had previously received formal training in first aid management of burn injuries were excluded from the study, along with those who were unable to provide informed consent.

Ethical approval was obtained from the Ethical Review Committee (ERC) of Ziauddin University prior to data collection. Permission to conduct the study was obtained from the principal of the selected school. Written informed consent was obtained from all participants before their inclusion in the study. Data collection was carried out in a well-ventilated and quiet room within the school premises to ensure participant comfort and confidentiality. The purpose and objectives of the study were explained to all participants prior to data collection.

Data were collected using an adapted structured questionnaire (Mishra & Mahmood et al., 2018). The questionnaire consisted of two sections: the first section included eight items on socio-demographic characteristics such as age, gender, education level, and language; the second section contained seven items assessing participants' knowledge regarding first aid management of burn injuries in children.

Data were analyzed using SPSS version 24. Descriptive statistics were used to summarize the data. Categorical variables such as gender and family structure were presented as frequencies and percentages, while continuous variables such as age were expressed as mean and standard deviation.

RESULTS

A total of 87 parents participated in the study. The findings revealed that the majority of participants had inadequate knowledge regarding first aid management of burn injuries in children. Most participants (80.5%) incorrectly identified toothpaste as an appropriate first aid treatment for burns. Additionally, a large proportion (72.4%) reported that they would not apply water to a burn injury, while only a small percentage (3.4%) correctly identified the recommended duration of water application (15–20 minutes). Significant misconceptions were also observed in other areas of burn management. The majority of participants demonstrated incorrect knowledge regarding the use of cool water in cold weather, appropriate escape methods during fire incidents, and safe evacuation from multi-storey buildings. Furthermore, incorrect practices were reported in relation to the removal of adhered clothing and the management of burn blisters (Table-2).

Table 1: Distribution of demographic variables (n=87)

Variables	Frequency	Percentage
Age (mean±SD)	31.66±7.93	
Gender		
Male	40	46.0
Female	47	54.0
Monthly income		
10000	30	34.5
10000-25000	44	50.6
25000-50000	13	14.9
Qualification		
No formal Education	7	8.0
Primary	22	25.3
Secondary	30	34.5
Higher Secondary	28	32.2
Language other than Urdu		
Saraiki	82	94.3
English	1	1.1
Other	4	4.6
Children in the home		
Yes	87	100.0
Previous history of burn/self/family member		
Yes	45	51.7
No	42	48.3
Family members		

1-2 people	1	1.1
2-5 people	42	48.3
5-10 people	33	37.9
>10 people	11	12.6

Table 2: Parents' knowledge of first aid management of burn injuries in children (n=87)

Statement	Frequency	Percentage
Which of the following do you think is the best item for first aid in case of a burninjury?		
Toothpaste	70	80.5
Salt	3	3.4
Honey	3	3.4
Gel	7	8.0
automotive oil	1	1.1
Other	3	3.4
In case of water lavage, what is the ideal time duration for which it should beapplied to the burn area?		
5-10 minutes	21	24.1
15-20 minutes	3	3.4
never apply water	63	72.4
Can we apply cool water to a large burn area in cold weather?		
No	74	85.1
Using a cool towel	11	12.6
Can be applied as usual	2	2.3
What is the best way to escape from a building in a fire?		
Running as quickly as possible	52	59.8
Running and covering your face with a wet towel	33	37.9
Crawling on the floor with a face covered with a wet towel	2	2.3
How to escape from a multiple-floor building in a fire?		
Using Stairs	15	17.2
Using Lift	23	26.4
Through Window	49	56.3
Is it necessary to remove clothes and other accessories sticking to the body followinga burn injury?		
Yes	72	82.8
No	8	9.2
Don't Know	7	8.0
If a burn blisters, what should you ideally do?		
Break the blisters and apply petroleum jelly	38	43.7
Apply Petroleum jelly without breaking the blister	37	42.5
Leave the blisters alone unless they break	12	13.8

DISCUSSION

Burn injuries remain a major global public health concern, with an estimated 265,000 deaths annually. A significant proportion of burn-related disability occurs among children aged 0–14 years worldwide. In low- and middle-income countries, including Ethiopia, burns are among the leading causes of injury-related mortality in children (Alemayehu et al., 2020). Similarly, the burden of pediatric burn mortality remains higher in developing countries compared to high-income countries (Ochoa et al., 2023). Although most burn injuries are preventable, they continue to pose a serious threat to child health, particularly in resource-limited settings. Early and appropriate first aid has been shown to significantly improve recovery outcomes, reduce pain, and minimize tissue damage (AlQahtani et al., 2019).

In the present study, the mean age of participants was 31.66 ± 7.93 years, which is comparable to a study conducted in Bahawalpur, Pakistan, where the mean age was 37.14 ± 8.51 years (Rabia et al., 2022). The slight variation may be attributed to differences in study settings and population characteristics. In terms of gender distribution, the current study included 40 males and 47 females, which is consistent with findings reported by Riaz et al. (2020) in Karachi, Pakistan, where a similar gender distribution was observed among participants assessing knowledge of burn first aid.

Regarding educational status, nearly one-third (34.5%) of participants had secondary-level education. This finding differs from a study conducted in Egypt, where a higher proportion of participants (55.9%) had secondary education (Nashaat et al., 2023). Such differences may be influenced by variations in literacy rates and socio-demographic characteristics across regions. Furthermore, more than half of the participants (51.7%) reported a previous history of burn exposure, which is comparable to findings from a study conducted in Turkey, where 46.1% of participants had experienced burns (Çetinkaya et al., 2021). Prior exposure to burn injuries may influence awareness and attitudes toward first aid management.

According to current clinical guidelines, immediate first aid for burn injuries involves cooling the affected area with running water for 15–20 minutes. Evidence suggests that this intervention is most effective when applied within the first hour of injury and may still provide benefits up to three hours post-injury. Water is the recommended agent for initial burn management, as it helps reduce tissue damage and improves healing outcomes (AlQahtani et al., 2019). However, awareness of these guidelines among parents remains essential to ensure timely and appropriate home-based intervention.

Limitations of the study

The present study was conducted in a single setting with a relatively small sample size. The study duration was limited, and a convenience sampling technique was used for participant selection, which may introduce selection bias. Therefore, the findings may not be generalizable to a wider population

Conclusion

The study concludes that parents have inadequate knowledge regarding first aid management of burn injuries in children, with widespread misconceptions and unsafe practices observed. The findings highlight the urgent need for targeted educational interventions to improve parental awareness and promote appropriate first aid practices. Enhancing knowledge in this area may help reduce burn-related complications and improve outcomes among children.

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