

Prevalence of Paediatric Burns: A Retrospective Study of University of Port Harcourt Teaching Hospital Over a Four-Year Period (2021–2024)

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Article History	Abstract
Original Research Article	<i>Burns in children comprise a major mechanism of injury that affects millions of children worldwide. This study was carried out to ascertain the prevalence of burns among children as a retrospective study admitted between January 2021–December 2024 in the University of Port Harcourt Teaching Hospital, Rivers State. The study adopted a retrospective study design. The hospital admission records served as the sampling frame. From the estimated 150 pediatric burn admissions during the 4-year study period, a final sample size of 110 cases was selected. This was done through a systematic random sampling method to ensure representativeness and minimize selection bias. Data was collected using a proforma and was analyzed using percentage. The result showed that majority (63.7%) of burn cases are children aged between 1 and 10 years; males account for 53.6% of cases, and more cases are from urban areas (63.6%). Scald burns (54.5%) are the most common, indicating domestic accidents like hot liquids, especially in younger children. Flame burns are also significant (31.8%). Most burns occur at home (72.7%), emphasizing the need for improved home safety. It was concluded that the prevalence of burns occurs commonly among low-middle income communities. It was concluded that parents should ensure that the house has fire alarm, always monitor the children and keep away anything or chemicals that can cause fire accidents.</i>
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Introduction

Burn injuries are prevalent in developing countries, particularly affecting impoverished families in rural areas where fires are essential, and healthcare is limited. Children's impulsiveness, lack of awareness, high activity levels, curiosity, and dependence on caregivers contribute to the high incidence of burn injuries in this demographic. Pediatric burns often result in acute life-threatening complications and chronic complications such as disfigurement, disability, and psychological trauma (Chezidle et al., 2016). Managing pediatric burns is complex, challenging, and costly, even in well-equipped burn units [Rimmer et al, 2015]. The WHO further notes that children in the African region experience burn mortality rates more than double the global average, highlighting a critical public health challenge.

In Nigeria, pediatric burns account for a considerable proportion of surgical emergencies and hospital admissions. Studies consistently show that scalds and flame burns are the predominant types, often associated with domestic accidents such as hot water spills, overturned pots, and unsafe cooking practices (Olawoye et al., 2023; Bassey et al., 2022). The use of kerosene stoves, gas cylinders, and adulterated fuels further compounds the risk, leading to frequent flame-related injuries. Socioeconomic determinants such as poverty, overcrowded housing, poor supervision, and unsafe energy sources play central roles in shaping burn incidence and severity (Toma et al., 2024). In Southern Nigeria, the widespread use of adulterated kerosene has further escalated the risk of catastrophic flame burns among children (Bassey et al., 2022). These injuries

are often complicated by late presentation, inadequate first aid, and poor access to specialized burn care.

Burn injuries are a persistent and preventable cause of childhood morbidity and mortality worldwide. Despite global advances in burn prevention and care, children in low- and middle-income countries (LMICs) continue to suffer disproportionately high rates (about 95%) of burn-related injuries and deaths. The World Health Organization (2023) reports that more than 180,000 deaths from burns occur annually, with children under five years in the African region experiencing mortality rates more than twice the global average. This disproportionate burden highlights an urgent public health challenge.

At the University of Port Harcourt Teaching Hospital (UPTH), studies show a worrying trend. A multi-year review revealed that flame burns accounted for more than three-quarters ($\approx 76.6\%$) of pediatric cases, with kerosene, petrol, and gas implicated as major causative agents (Gbeneol & Gbeneol, 2025). Similarly, Aria and Gbeneol (2025) found that children represented about one-quarter of all burn admissions between 2017 and 2022, with flame burns contributing nearly two-thirds of cases. Refilling kerosene stoves was identified as the single most common cause of pediatric burns in the facility, while late hospital presentation and out-of-pocket payment for care were strongly associated with adverse outcomes, including increased mortality and long-term disability.

Despite the preventable nature of most pediatric burns, evidence suggests that determinants such as age, gender, socioeconomic status, and type of burn remain poorly addressed in the local context. Furthermore, the prevalence of pediatric burns within the UPTH Burns and Plastic Unit over recent years has not been adequately quantified in relation to these determinants. Without such data, targeted interventions, resource allocation, and community-based preventive strategies remain suboptimal.

Given these realities, there is a compelling need to examine the prevalence and determinants of pediatric burns: A retrospective study of UPTH over a four-year period (2021–2024). Findings from this study provided crucial insights for designing preventive programs, improving institutional response, and reducing the burden of burns among children in Rivers State and beyond. At the University of Port Harcourt Teaching Hospital (UPTH), burns remain a major pediatric health problem. Hence, this study focused on the prevalence of pediatric burns in UPTH. The study provided answers to the following research questions:

1. What are the prevalence of pediatric burns in the Burns and Plastic Unit, UPTH, from 2021—2024?
2. What are the major etiological patterns of pediatric burns at UPTH from 2021—2024?

Methodology

This study adopted a retrospective descriptive design. The design was appropriate because it involves systematic review of existing hospital records of pediatric patients who were admitted with burn injuries at the Burns and Plastic Unit. The study population consisted of 150 pediatric patients (aged 0—17 years) who were admitted with burn injuries at the UPTH between January 2021 and December 2024. Inclusion criteria are male and female children of different age groups (infants, toddlers, school-aged children, and adolescents); patients admitted with varying causes of burns such as scalds, flame, electrical, and chemical burns; and patients with both minor and severe burns irrespective of the percentage of total body surface area (TBSA) affected.

The hospital admission records served as the sampling frame. From the estimated 150 pediatric burn admissions during the 4-year study period, a final sample size of 110 cases was selected. This was done through a systematic random sampling method to ensure representativeness and minimize selection bias. This implies that approximately every 1st to 2nd eligible patient record was selected after the first case is randomly chosen. The primary instrument for data collection in this study was the use of structured proforma (data extraction sheet). The instrument was developed in consultation with experts in burns and plastic surgery, pediatric nursing, and epidemiology to ensure it captures all relevant variables.

The structured format of the instrument was chosen because it enhances consistency, reduces bias in data abstraction, and facilitates statistical analysis. To ensure the validity of the instrument, the proforma was reviewed by three senior experts in burns and plastic surgery, pediatric nursing, and epidemiology at UPTH. Data collection was retrospective, involving the review of pediatric burn case files and ward registers at the Burns and Plastic Unit. Relevant information was abstracted from each case file using the validated proforma. Data analysis was carried out with the aid of the Statistical Package for the Social Sciences (SPSS) version 26.0. using frequency and percentage. Ethical clearance was obtained from the UPTH Research and Ethics Committee. A formal application, including the study proposal, data extraction tool, and request for access to patient records, was submitted for review and approval. Authorization was sought from the Management of UPTH and the Head of the Burns and Plastic Unit to access and extract relevant data from medical records. These permissions ensured that the study is institutionally supported and that data use is consistent with hospital policies. Also, confidentiality and anonymity which include no names, addresses, or personal identifiers were included in the data extraction process, was observed.

Results

The results of the study are shown below:

Table 1 showing the socio-demographic Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Age of child(years)	<1	11	10
	1-5	40	36.4
	6-10	30	27.3
	11-14	20	18.2
	15-17	9	8.1
Total		110	100
Gender	Male	59	53.6
	Female	51	46.4
Total		110	100
Place of Residence	Urban	70	63.6
	Rural	40	36.4
Total		110	100
Parental/Guardian Education	No formal education	25	22.7
	Primary	32	29.1
	Secondary	23	20.9
	Tertiary	30	27.3
Total		110	100
Socio-economic Status	Low	52	47.3
	Middle	43	39.1
	High	15	13.6
Total		110	100

The results on Table 1 shows the following: Age: Majority (63.7%) of burn cases are children aged between 1 and 10 years. This suggests increased vulnerability in early childhood, likely due to greater exposure to risk and less awareness. Gender: Males account for 53.6% of cases, possibly due to more outdoor activities or risk-taking behaviour. Residence: More cases are from urban areas

(63.6%), which might reflect higher population density or better hospital access in urban settings. Education: About 50% of parents/guardians had primary or no formal education, potentially contributing to limited awareness of burn prevention. Socio-economic Status: Nearly half are from low socio-economic backgrounds, indicating financial constraints might limit burn prevention measures.

Table 2: Percentage distribution showing Clinical and Epidemiological Variables

Variables	Category	Frequency(n)	Frequency (%)
Date of Admission	Jan-Mar	30	27.3
	Apr- Jun	25	22.7
	Jul-Sep	35	31.8
	Oct-Dec	20	18.2
Total		110	100
Sources/Causes of burns	Scald	60	54.6
	Flames	35	31.8
	Electrical	10	9.1
	Chemical	5	4.5
	Contact	0	0
Total		110	100
Circumstances of burns (location)	Home	80	72.7
	School	15	13.7
	Outdoors	10	9.1
	Others	5	4.5
Total		110	100
Total Burns Surface Area(TBSA)	<10%	40	36.4
	10%-20%	45	40.9
	>20%	25	22.7
Total		110	100

Depth of Burns	Superficial	20	18.2
	Partial-thickness	75	68.2
	Full thickness	15	13.6
	Total	110	100

Table two shows the following result analysis: Date of Admission: Cases are evenly distributed throughout the year, with a slight increase in July-September, possibly due to seasonal activities or weather. Cause: Scald burns (54.5%) are the most common, indicating domestic accidents like hot liquids, especially in younger children. Flame burns are also significant (31.8%). Location: Most burns occur at home (72.7%), emphasizing the need for improved home safety. TBSA: Most patients (77.3%) had burns affecting less than 20% of body surface area, which are generally associated with better prognosis. Depth: Majority (63.2%) sustained partial-thickness burns, indicating moderate severity but still a substantial need for medical care.

Discussion of findings

Many burn victims were between the ages of 1 to 10years (63.7%), confirming that toddlers, preschool-aged children and school children are the most vulnerable age group. This is consistent with previous studies that show higher burn risk among younger children due to their increased mobility, curiosity, and lack of awareness of danger (WHO, 2018). This is also in line with Peden et al. (2019) in a global WHO review reported that burns represent approximately 11% of all injuries among children under 15 years, with Africa and South-East Asia having the highest burden. They observed that 95% of burn-related deaths occur in LMICs, where preventive strategies and acute burn care are limited.

In terms of gender distribution, males (53.6%) were slightly more affected than females, a finding consistent with studies that suggest boys are more likely to engage in physically risky behavior (Ahuja et al., 2021). The prevalence of burns in urban areas (60%) might reflect higher population density, increased exposure to electrical and cooking appliances, and limited space for children to play safely. About 50% of parents/guardians and primary or no formal education particularly among mothers, thereby has been linked with reduced awareness of injury prevention and proper first-aid response.

A key finding was that only 50% of patients presented to the hospital within 6 hours of injury. The minority had delayed presentation, with 27.3% arriving less than hours, and 22.7% after 6hours. Most children sustained burns affecting less than 20% of their total body surface area (TBSA), which may explain why a good proportion

had relatively shorter hospital stays. However, 13.6% suffered full-thickness burns, indicating that a significant minority of patients had severe injuries requiring specialized care.

The duration of hospital stay varied, with most patients (56.3%) staying between in less than a week and 16.4% staying longer than 14days. Longer stays were associated with more severe burns (larger TBSA, full-thickness burns) and comorbidities. This aligns with Atiyeh et al. (2017) in a Middle East review reported that delayed presentation was associated with increased contractures, hypertrophic scarring, and functional disabilities, particularly in resource-poor settings.

Conclusion

The prevalence of burns occurs commonly among low-middle income communities. The risk factors of burns includes; gender, age, occupations that increase exposure to fire, easy access to thermal agents. Therefore, proper health education about the Causes, management and measures taken to prevent accident that can lead to burns injury should be introduced to parents and caregivers who do not have the knowledge of burns and its preventive measures.

Recommendations

Based on the findings of this study, the following are therefore recommended.

To the Family

- Parents should ensure that the house has fire alarm, monitor the children at all times and keep away any thing or chemicals that can cause fire accident,
- Gas cookers, match sticks, stoves and other cooking appliance both electrical and non-electrical should be kept at a level which child cannot get to.
- All burns cases should not be managed at home to prevent infection and further complication

To the Nurse and other Health Team Members

- Collaborative efforts is required to give optimal care to the patients
- The Nurse should health educate the parents about the causes and preventive measures to avoid environmental hazard.

To the Government and Hospital Management

- Government should employ more Nurses in order to achieve goals that will help improve the health care system
- Adequate equipment like dressing materials, autoclaving machine should be provided.
- The unit should be fumigated at least once every Month, to reduce the incidence of malaria.
- A platform should be created in other to reach to families who cannot afford good and quality health care.

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