DOI: https://doi.org/10.54393/pjhs.v7i3.3036

PAKISTAN JOURNAL OF HEALTH SCIENCES
(LAHORE)
https://thejas.com.pk/index.php/pjhs
ISSN (E): 2790-9352, (P): 2790-9344
Volume 7, Issue 03 (March 2026)

Original Article

OPEN ACCESS

Prevalence of Childhood Unintentional Injuries Presenting to the Emergency Department of a Tertiary Care Hospital

Mamoona Nasr[1*], Muhammad Nadeem Hameed[1], Hina Nasir[2], Muhammad Kashif Butt[3] and Nayab Hussain[1]

[1]Department of Pediatrics, Shalamar Hospital, Lahore, Pakistan
[2]Department of Pediatric Medicine, Mayo Hospital, Lahore, Pakistan
[3]Department of Forensic Medicine and Toxicology, Shalamar Medical and Dental College, Lahore, Pakistan

ARTICLE INFO

Keywords:
Childhood Injuries, Unintentional Injuries, Emergency Department, Pediatric Injuries, Injury Prevention, Transport Injuries, Falls, Injury Severity

How to Cite:
Nasr, M., Hameed, M. N. ., Nasir, H., Butt, M. K., & Hussain, N. (2026). Prevalence of Childhood Unintentional Injuries Presenting to the Emergency Department of a Tertiary Care Hospital: Prevalence of Childhood Unintentional Injuries Presenting to the Emergency Department. Pakistan Journal of Health Sciences, 7(3), 69-74. https://doi.org/10.54393/pjhs.v7i3.3036

***Corresponding Author:**
Mamoona Nasr
Department of Pediatrics, Shalamar Hospital, Lahore, Pakistan
mamoonanasr123@gmail.com

Received Date: 15th April, 2025
Revised Date: 8th January, 2026
Acceptance Date: 31st January, 2026
Published Date: 31st March, 2026

ABSTRACT

Childhood unintentional injuries are one of the leading public health concerns worldwide. These injuries need immediate medical attention to prevent any adverse outcomes. **Objectives:** To determine the prevalence, types, severity, and outcome of unintentional injuries in children presenting to the Emergency Department at Shalamar Hospital, Lahore. **Methods:** This cross-sectional study was conducted at the Department of Pediatrics, Shalamar Hospital, Lahore. Non-probability consecutive sampling was used to include a total of 242 children with unintentional injuries up to 12 years of age. Validated questionnaires filled out by attending doctors, covering demographic details, injury type, injury setting and circumstances, primary caregiver, and clinical outcomes were used to collect the data. SPSS version 25.0 was employed to analyze the data. **Results:** Out of 242 children, males accounted for 55% of the cases. The mean age of children was 6.5 ± 3.2 years. 35% of the injuries were transport-related injuries, followed by falls, which accounted for 30% of injuries. Minor injuries (40%) were most frequent, followed by moderate (35%) and severe injuries (25%). The average time between injury and hospital presentation was 3.2 ± 1.5 hours. 45% of the children presented within 1st hour of the injury, and 25% presented after 3 hours. There was no significant difference in injury severity by gender. C**onclusions:** Transport-related injuries and falls are the leading causes of unintentional injuries, which are more common in boys, occurring more frequently among young children.

INTRODUCTION

Unintentional injuries are unexpected and violent events affecting children with or without a visible lesion requiring urgent medical assistance. These injuries may be diverse, resulting from drowning, animal bite, fall, poisoning, road traffic injuries, burns, or electrocution [1]. Injury is a physical damage that occurs when the human body is subjected to an amount of energy that exceeds the physiological threshold or is deprived of any vital element, such as oxygen. The energy can be mechanical, thermal, chemical, or radiant [2]. According to the World Health Organization, out of 4.4 million injury-related deaths, 81.8% fatalities occur due to unintentional injuries, the majority of which belong to the less than 12-year age group [3]. A mini review by Emad et al. conducted in Karachi revealed that 1.1 million unintentional injuries occur in children annually; 72% to 84.4% of injuries occurred at home, out of which 54% were contributed by fall from height, 21.5% to 77.0% due to poisoning, drowning was responsible for 3% of injuries and RTA injuries accounted for 31.7% of all injuries among children aged 0-14 years [4]. Due to the exploratory nature of toddlers, unintentional injuries are far more common in preschool children. According to a vast data

DOI: https://doi.org/10.54393/pjhs.v7i3.3036

collection in tertiary care hospitals of China, 64.6% children with unintentional injuries are less than 6 years old. Results showed that unintentional fall was the most common reason for unintentional injuries among both genders, accounting for 72.2% cases [1]. Research on injuries in Pakistan remains limited, and data are scarce. Certain factors, such as poverty, political instability, frequent natural disasters, lack of legislation, paucity of preventive measures, lack of awareness and knowledge, make the Pakistani population more vulnerable to injuries [5]. The purpose of this study is to determine the prevalence of children less than 12 years of age who present with unintentional injuries to the emergency room of a tertiary care facility. This study helps to document socio-demographic risk factors, patterns, and types of unintentional injuries so that a proactive and preventive approach can be formulated to reduce the mortality and long-term morbidity in Pakistan's pediatric population [6].

There is no national data on childhood unintentional injuries in Pakistan, and the majority of the literature is single-center studies with a non-probability sampling that makes generalization not very broad. There is no long-term follow-up, multicentric studies, and research is related to prevalence rather than an evaluation of preventive measures. Sampling bias (out of convenience sampling), recall bias (out of caregiver-reported data), and observer bias (because of multiple clinicians gathering data) are the primary methodological problems. Research is descriptive and lacks data on the community level and standardized procedures, thus impacting reliability and inhibiting testing of the preventive remedies. This study aimed to determine the prevalence, types, severity, and outcome of unintentional injuries in children presenting to the Emergency Department at Shalamar Hospital, Lahore.

METHODS

This cross-sectional study was conducted at the Department of Pediatrics, Shalamar Hospital, Lahore, from July 2024 to January 2025. The study was approved by the Institutional Review Board (IRB Number: 0491) and Ref no: SMDC-IRB/AL/2024-070 at Shalamar Medical and Dental College, Lahore. Informed consent was obtained from the parents or guardians of the participating children. A total of 242 children of both genders and ages up to 12 years presenting with unintentional injury (as per operational definition) were included in the study via non-probability consecutive sampling assuming the prevalence of transport injuries as 4.1% at 95% confidence interval and 2.5% margin of error (calculated by formula $n=Z2 \cdot p \cdot (1-p)/d2$, where n = required sample size, Z = Z-score corresponding to 95% confidence level = 1.96, p = estimated prevalence of the outcome of interest (transport injuries) = 0.041, d = margin of error = 0.025) [1]. Children who had congenital anomalies or an injury as a result of child abuse were excluded. A validated questionnaire (pilot-tested on a sample of n = 70 respondents) was employed as a data collection tool. It comprised of 16 items, encompassing five main domains: (1) Socioeconomic and demographic variables including age, gender, weight, height, parental education, area of residence, family income; (2) Type of Injury (e.g., fall, burn, road traffic accidents, animal bites, sport injuries, foreign body aspiration); (3) Injury setting and circumstances including location of injury, time of day, season of injury, time between injury and hospital presentation; (4) Primary caregiver; and (5) Clinical outcomes including the need for hospitalization, severity of injury and the treatment received). The resources used to design this questionnaire included WHO Injury Surveillance Guidelines (2001), previously published research, and discussions with senior consultant pediatricians and public health experts. International Classification of Diseases (ICD-10) codes, which range from S00 to Y34, and cover a broad spectrum of traumatic injuries, were used to categorize the injuries. The interviewer was a doctor on duty at the time of presentation of the patient, who filled out all the related details on the questionnaire based on the patient's or caregiver's described history. According to clinical presentation and the degree of medical intervention needed, Unintentional injuries in this study were categorized as minor, moderate, or severe. Cases recorded to have acquired minor injuries included those where functioning was not affected significantly and were managed in an outpatient department without the need for hospitalization or specialized care, including superficial bruises and cuts that didn't need suturing. Cases recorded with moderate injuries needed clinical attention, including suturing, short-term stay for observation, or emergency room visits, and included patients with brief loss of consciousness or foreign body removal without the need for extended hospitalization. Severe injuries comprised cases with prolonged unconsciousness, a Glasgow Coma Scale (GCS) score of less than 13, signs of neurological compromise, life-threatening emergencies, or significant trauma requiring hospitalization in the ICU or surgery. SPSS version 25.0 was employed to analyze the data. Quantitative data, including age, height, and weight, were presented as mean ± standard deviation (S.D). Qualitative data, including the type of injury, gender, parental education, area of residence, family income, location of injury, time of day, season of injury, Time between injury and hospital presentation, Primary caregiver, need for hospitalization, severity of injury, and treatment received, were presented as frequencies and percentages. Age and gender stratification of the data was done to account for potential effect modifiers. The chi-square test was applied

DOI: https://doi.org/10.54393/pjhs.v7i3.3036

to determine the significance of any associations, with a p-value of less than 0.05 considered significant.

RESULTS

A total of 242 patients were included in the study, with a mean age of 6.5 ± 3.2 years, ranging from 1 to 12 years. Male represented 133 (55%) of the sample, while female accounted for 109 (45%), showing a decreased number of injuries in growing girls. The mean weight and height of the children were 22.4 ± 7.1 kg and 110 ± 15 cm, respectively. A majority of the participants (60%) lived in urban areas, while 40% were from rural regions. Regarding the season of injury, 35% of injuries occurred in summer, 30% in spring, 25% in winter, and 10% in fall. 50% of children with unintentional injuries belonged to a group having a family income of less than 100000/month, 40% belonged to a group having a family income of less than 50000/month, while 10% children belonged to a group of families earning more than 100000/month (Table 1).

Table 1: Demographic Analysis

Category	Frequency (%), Mean ± SD
Age Group	
1 to 12 Years	6.5 ± 3.2
Gender	
Male	133 (55%)
Female	109 (45%)
Others	
Weight (kg)	22.4 ± 7.1 kg
Height (cm)	110 ± 15 cm
Residence	
Urban Areas	60%
Rural	49%
Season of Injury	
Summer	35%
Spring	30%
Winter	25%
Fall	19%
Family Income	
100000/Month	50%
50000/Month	40%
100000/Month	10%

The age distribution of injuries showed that most children, accounting up-to 40 %, were young (1-4 years), including toddlers and pre-schoolers. Among this group, 58% were females. In terms of injury classification, the Canadian Triage and Acuity Scale was applied; the majority of the injuries were minor, accounting up-to 40 % of all the reported injuries, with a higher proportion of males (55%) experiencing these injuries (Table 2).

Table 2: Age Group and Injury Severity: Gender-based Distribution

Category	Male, Frequency (%)	Female, Frequency (%)	Total, Frequency (%)
Age Group			
1–4 Years	40 (42%)	57 (58%)	97 (40%)
5–8 Years	49 (57%)	36 (43%)	85 (35%)
9–12 Years	30 (50%)	30 (50%)	60 (25%)
Injury Severity			
Minor Injuries	53 (55%)	44 (45%)	97 (40%)
Moderate Injuries	51 (60%)	34 (40%)	85 (35%)
Severe Injuries	30 (50%)	30 (50%)	60 (25%)

The distribution of mechanisms of injury revealed that transport-related injuries were the most common, accounting for 35% of the cases. Falls followed closely at 30%, while burns represented 15% of the injuries. The majority of injuries were reported to have occurred outside the home, with a peak observed during the evening hours. Among the affected children, 59% required surgical intervention, while the majority were discharged home safely following an appropriate management (Table 3).

Table 3: Mechanism, Environment, Clinical outcome of Injury, and Time between Injury and Hospital Presentation

Parameters	Frequency (%)
Type of Injury	
Transport Related	85 (35%)
Falls	73 (30%)
Burns	36 (15%)
Drowning	24 (10%)
Animal Bites	12 (5%)
Others (Poisoning Struck by Objects)	12 (5%)
Location of Injury	
Home	58 (24%)
Outside	183 (76%)
Time of Injury	
Morning	90 (37%)
Evening	118 (49%)
Night	34 (14%)
Primary Caregiver	
Both Parent	191 (79%)
Mother	27 (11%)
Father	17 (7%)
Other	7 (3%)
Clinical Outcome	
Discharged	94 (39%)
Admitted in Pediatric Dept.	32 (13%)
Referred to the Other Dept.	48 (20%)
Referred to Another Hospital	68 (28%)
Treatment Received	
Surgical Intervention	142 (59%)
Supportive Care	39 (16%)
Burn Care	22 (9%)

DOI: https://doi.org/10.54393/pjhs.v7i3.3036

Gastric Lavage	19 (8%)
Antidote	5 (2%)
CPR	15 (6%)
Time Between Injury and Hospital Presentation	
Within 1hr	109 (45%)
1h-3h	73 (30%)
More Than 3h	60 (25%)

Age showed a significant association with severe injuries (p=0.002), while gender was significantly associated with minor and moderate injuries (p=0.046 and p=0.032, respectively)(Table 4).

Table 4: Injury Severity by Age Group and Gender

Injury Severity	1–4	5–8	9–12	Male	Female	Total	χ^2 (Age)[a]; p-value[b]	χ^2 (Gender)[c]; p-value[d]
	Years, n (%)							
Minor	42 (43%)	29 (34%)	26 (43%)	53 (55%)	44 (45%)	97 (40%)	1.68[a]; 0.432[b]	4.01[c]; 0.046[d]
Moderate	30 (31%)	36 (42%)	19 (32%)	51 (60%)	34 (40%)	85 (35%)	3.04[a]; 0.219[b]	4.62[c]; 0.032[d]
Severe	25 (26%)	10 (12%)	25 (42%)	30 (50%)	30 (50%)	60 (25%)	12.34[a]; 0.002[b]	0.05[c]; 0.824[d]

(a: Chi-square (χ^2) test statistic for association between injury severity and age groups (1–4 yrs, 5–8 yrs, 9–12 yrs). b: Corresponding p-value for χ^2 (Age). c: Chi-square (χ^2) test statistic for association between injury severity and gender (Male, Female). d: Corresponding p-value for χ^2 (Gender))

DISCUSSION

This study reveals important findings that can lead to improved emergency care services and preventive strategies for children presenting with unintentional injuries. According to this study, young children such as toddlers and pre-school children were affected the most, accounting for 40% of unintentional injuries. 35% injuries occurred in the early to middle childhood age group, and 25% in the late childhood age group. Previous studies have also revealed the same that younger children are more susceptible to unintentional injuries due to lack of coordination and curiosity [7]. The gender distribution of injuries in this study showed that males were affected more, accounting for 55% of the cases. Worldwide data states the same. Male sustain more injuries due to their active and risk-taking behaviours. In this study, 35% of injuries were transport-related, making them the most common type of injury. Falls accounted for 30% of cases. However, according to previous research, falls were found to be the most common type of unintentional injury [8]. Transport-related injuries can be prevented by encouraging safe behaviors such as the use of helmets and child restraints [9, 10] and the regulation of school transportation. School curricula should include road safety education. Falls can be prevented by the use of stair gates and window guards at home and at school, and improved supervision. Maintenance of safe playgrounds is crucial to encourage a safe and healthy environment for the kids to grow. Health screening should be mandatory to identify predisposing conditions [11-13]. Simulation-based technologies that mimic real-life scenarios can enhance children's comprehension of safety procedures [14]. In terms of injury severity, 40% of the injuries were minor, including minor bruises and cuts, followed by 35% of moderate injuries. Severe injuries accounted for 25% of the cases, including head trauma and internal injuries. Similarly, in previous studies, a significant proportion of childhood unintentional injuries was contributed by fractures and head trauma [15]. Head injuries require urgent clinical attention in young children to prevent complications. The average time between injury and hospital presentation was 3.2 hours in this study. 45% of the children presented within 1st hour of the injury, resulting in effective management that minimized the risk of complications. 25% of children reached the hospital with a delay of 3 hours, which can result in worse outcomes. However, a study conducted in Northern Tanzania reported a median time of 10.2 hours when seen at local clinics, 8.0 hours via regional hospitals, and 1.4 hours when presented to the referral hospital [16]. Community awareness campaigns can emphasize the need for urgent clinical attention for unintentional injuries. Family circumstances may play a role in childhood unintentional injuries, as per this study. In 21% of the cases, one or both parents were not present at the time of injury. This implies that variations in the presence of a caregiver could impact children's risk exposure. Most families reported earnings below 50,000 PKR or between 50,000 and 100,000 PKR per month. It demonstrates that the financial constraints may increase the risk of harm. These findings are in line with earlier studies that linked the risk of childhood injuries to home circumstances and caregiving behaviors [17, 18]. The analysis of injury severity by gender in this study showed that the severity distribution was quite similar for both male and female. There was no significant difference between the two groups. This suggests that both genders are equally susceptible to moderate and severe injuries. However, the overall frequency of injury in males was higher. However, unintentional injury-related death rates were consistently higher in boys than girls, i.e, 27.0 vs. 22.9 per 100,000 among the 1–4 years age group and 16.4 vs. 12.2

DOI: https://doi.org/10.54393/pjhs.v7i3.3036

per 100,000 among the 5-14 years age group, according to the 2023 America's Children report. It indicates that both the frequency and severity of such injuries are greater among male children. [19]. Likewise, a study carried out in Karachi found that children between 2 and 4 years of age sustained the highest number of unintentional injuries, and boys accounted for about two-thirds (66%) of the cases [20].

There are several limitations to this study that should be considered. First, the use of a non-probability sampling technique means that the sample may not be representative of the larger population. Hence, the findings may not apply to different settings or regions. Second, the study is subject to potential recall bias, as details were recorded based on the narration of caregivers, which may be influenced by memory limitations. Additionally, since various clinicians assisted in filling out the questionnaires, observer bias may have been introduced.

CONCLUSIONS

Transport-related injuries and falls are the leading causes of unintentional injuries. These injuries are more common in boys and occur more frequently among young children. Most cases are minor, but a considerable proportion entail moderate to severe trauma, including head injuries. Preventive measures are warranted to reduce morbidity and mortality related to unintentional injuries, as they pose a major public health concern.

Authors' Contribution

Conceptualization: MN
Methodology: MN, HN, MKB, NH
Formal analysis: MN, HN, NH
Writing and Drafting: MN, MNH, HN, MKB, NH
Review and Editing: MN, MNH, HN, MKB, NH

All authors approved the final manuscript and take responsibility for the integrity of the work.

Conflicts of Interest

All the authors declare no conflict of interest.

Source of Funding

The author received no financial support for the research, authorship and/or publication of this article.

REFERENCES

[1] Gong H, Lu G, Ma J, Zheng J, Hu F, Liu J *et al.* Causes and Characteristics of Children's Unintentional Injuries in the Emergency Department and Its Implications for Prevention. Frontiers In Public Health. 2021 Aug; 9: 669125. doi: 10.3389/fpubh.2021.669125.

[2] Sethi, Dinesh, Towner, Elizabeth, Vincenten, Joanne *et al.* European Report on Child Injury Prevention. World Health Organization. Regional Office for Europe. 2008. https://iris.who.int/handle/10665/326500.

[3] World Health Organization. Injuries and Violence: The Facts 2021 [Internet]. Geneva: World Health Organization. 2021. https://www.who.int/news-room/fact-sheets/detail/injuries-and-violence.

[4] Emad Uddin S and Syed Muhammad M. A Short Review on Unintentional Injuries in Pediatric Population of Pakistan. Prim Health Care. 2017; 7: 275. doi: 10.4172/2167-1079.1000275.

[5] Salam A, Aziz DA, Ansar F, Sajjad A, Asjid M. Role of Primary Caregivers Regarding Unintentional Injury Prevention among Preschool Children: A Cross-Sectional Survey in Low-And Middle-Income Country. Cureus. 2022 Aug; 14(8): e28599. doi: 10.7759/cureus.28599.

[6] Jullien S. Prevention of Unintentional Injuries in Children Under Five Years. BioMed Central Pediatrics. 2021 Sep; 21(Suppl 1): 311. doi: 10.1186/s12887-021-02517-2.

[7] McGee K, Sethi D, Peden M, Habibula S. Guidelines for Conducting Community Surveys on Injuries and Violence. Injury Control and Safety Promotion. 2004 Dec; 11(4): 303-6. doi: 10.1080/156609704/233/327505.

[8] Juan J, Weijun L, Guifeng H, Xiaojing G, Zhaoxia C, Li S. Prevalence of Unintentional Injury among Left-Behind Children in Mainland China: Evidence from Epidemiological Surveys. Child: Care, Health and Development. 2021 May; 47(3): 387-99. doi: 10.1111/cch.12835.

[9] Banerjee B, Banerjee R, Ingle GK, Mishra P. Unintentional Childhood Injuries and Their Association with Activity and Location at the Time of Injury-A Case-Crossover Study in Delhi. Indian journal of public Health. 2021 Oct; 65(4): 352-5. doi: 10.4103/ijph.IJPH_55_21.

[10] Bou-Karroum L, El-Jardali F, Jabbour M, Harb A, Fadlallah R, Hemadi N *et al.* Preventing Unintentional Injuries in School-Aged Children: A Systematic Review. Pediatrics. 2022 May; 149(Supplement 6): e2021053852J. doi: 10.1542/peds.2021-053852J.

[11] Li L and Yang J. Injury Prevention in China: Government-Supported Initiatives on the Leading Causes of Injury-Related Deaths. American Journal of Public Health. 2019 Apr; 109(4): 557. doi: 10.2105/AJPH.2019.304954.

[12] Zhou HZ, Fan LJ, Wu CA, Luo AF, Mo CQ, He GH *et al.* Understanding the Associations Among Parents

DOI: https://doi.org/10.54393/pjhs.v7i3.3036

Teaching Safety Rules to Children, Safety Behaviors, and Unintentional Injuries in Chinese Preschool Children. Preventive Medicine. 2019 Jan; 118: 98-103. doi: 10.1016/j.ypmed.2018.10.022.

[13] DeGeorge KC, Neltner CE, Neltner BT. Prevention of Unintentional Childhood Injury. American Family Physician. 2020 Oct; 102(7): 411-7.

[14] Santiago A, Matthews B, Chen WS, Keane T, Kaufman J. Immersive Virtual Reality for Unintentional Injury Prevention Training with Children: A Systematic Review. Computers and Education: X Reality. 2024 Dec; 5: 100072. doi: 10.1016/j.cexr.2024.100072.

[15] Pathak P and Joshi SK. Epidemiology of Unintentional Childhood Injuries in Urban and Rural Areas of Nepal: A Comparative Study. PLOS ONE. 2023 Oct; 18(10): e0287487. doi: 10.1371/journal.pone.0287487.

[16] Keating EM, Sakita F, Mmbaga BT, Amiri I, Nkini G, Rent S *et al.* Three Delays Model Applied to Pediatric Injury Care Seeking in Northern Tanzania: A Mixed Methods Study. PLOS Global Public Health. 2022 Aug; 2(8): e0000657. doi: 10.1371/journal.pgph.0000657.

[17] Gallagher L, Breslin G, Leavey G, Curran E, Rosato M. Determinants of Unintentional Injuries in Preschool Age Children in High-Income Countries: A Systematic Review. Child: Care, Health and Development. 2024 Jan; 50(1): e13161. doi: 10.1111/cch.13161.

[18] Mahboob A, Richmond SA, Harkins JP, Macpherson AK. Childhood Unintentional Injury: The Impact of Family Income, Education Level, Occupation Status, and Other Measures of Socioeconomic Status. A Systematic Review. Pediatrics and Child Health. 2021 Feb; 26(1): e39-45. doi: 10.1093/pch/pxz145.

[19] Federal Interagency Forum on Child and Family Statistics. America's Children: Key National Indicators of Well-Being. 2023.

[20] Qayyum SA, Yousuf H, Ali SM, Faisal L, Rehman F. Trends of Patients Admitted to Pediatric Surgery Department Due to Unintentional Trauma at A Tertiary Care Hospital, Karachi. Journal of Bahria University Medical and Dental College. 2023 Jul; 13(03): 181-6. doi: 10.51985/JBUMDC2022154.