

Assessment of Caregiver's Knowledge, Attitude, Practices and Prevalence of Unintentional Childhood Injuries Among Children in Surat District, Gujarat

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ABSTRACT

Background: Unintentional injuries are a leading cause of morbidity and mortality among children and a major public health concern. Most childhood injuries are preventable through supervision, safe home environments, and first-aid measures. This study assessed injury prevalence among children aged 0–14 years and evaluated caregivers' knowledge, attitudes, and practices in selected urban and rural areas.

Materials and Methods: A community-based cross-sectional study was conducted among 206 caregivers of children aged 0–14 years residing in urban and rural field practice areas. Participants were selected using convenience sampling. Data were collected through face-to-face interviews using a pretested semi-structured questionnaire and analysed using descriptive and inferential statistics.

Results: Among 206 caregivers, the 6-month prevalence of unintentional injuries was 26.69% (95% CI: 20.8–33.1). The mean age of mothers and fathers was 28.52 ± 5.16 years and 31.58 ± 5.73 years, respectively, while the mean age of children was 7.27 ± 3.32 years. Falls were the most common injury (23/55, 41.8%), followed by burns (12/55, 21.8%) and cuts (10/55, 18.2%). Most caregivers demonstrated fair knowledge (133, 64.56%), positive attitudes (113, 54.85%), and good preventive practices (122, 59.22%). Knowledge regarding first aid for falls (191, 92.7%), poisoning (190, 92.23%), and animal bites (178, 86.40%) was satisfactory, whereas knowledge of burns (45, 21.84%) and electrical injuries (27, 13.10%) was poor. Knowledge was significantly associated with father's occupation ($p=0.014$), while attitude was associated with father's education ($p=0.004$), mother's occupation ($p=0.007$), and socioeconomic status ($p=0.008$).

Conclusion: Unintentional childhood injuries remain common and largely preventable. Strengthening caregiver education, home safety promotion, and first-aid training may improve injury prevention practices and reduce the burden of childhood injuries.

Keywords: Child; Unintentional injuries; Caregivers; First aid; Injury prevention; Knowledge, attitude and practice

INTRODUCTION

Childhood injuries constitute a major yet largely preventable public health problem worldwide. According to the Convention on the Rights of the Child, every child has the right to a safe environment and protection from injury and violence. (1) UNICEF estimates that more than 1,600 children and adolescents under 19 years of age die every day due to preventable injuries, accounting for over 580,000 deaths annually worldwide. (2) Recent global analyses further indicate that more than 900,000 children and adolescents die each year due to injuries, with unintentional injuries accounting for nearly 90% of these deaths. (1) Road traffic injuries, drowning, burns, falls, and poisoning are among the leading causes of injury-related mortality and morbidity among children. The burden is disproportionately higher in low- and middle-income countries (LMICs), where injury-related mortality among children is estimated to be four to six times greater than in high-income countries. (1)

An injury is defined as physical damage that occurs when the human body is suddenly exposed to intolerable levels of energy or deprived of essential elements such as oxygen, heat, or water, resulting in conditions such as drowning, strangulation, or hypothermia. (1) According to the International Classification of Diseases, Tenth Revision (ICD-10), injuries may be classified as unintentional, intentional, or of undetermined intent. Unintentional injuries include falls, burns, poisoning, drowning, road traffic injuries, and injuries caused by sharp objects. (3)

India bears a substantial burden of childhood injuries owing to its large paediatric population. According to the Census of India 2011, children aged 0–14 years constitute approximately 31% of the total population, making them a particularly vulnerable group for injury. (4) Recent evidence suggests that the prevalence of

childhood injuries in India ranges from 11% to 64% across different settings, with falls being the most frequently reported mechanism of injury. However, the majority of available data originate from hospital-based studies and therefore underestimate the true burden because many injuries occurring within the community are not reported to healthcare facilities. (5) Furthermore, the absence of a comprehensive injury surveillance system limits accurate estimation of childhood injury burden and hinders the development of effective prevention strategies. (6)

The contribution of injuries and other non-communicable diseases to the overall disease burden among children in developing countries has increased substantially, rising from approximately 13% in 1990 to 22% in 2020. Despite this growing burden, available epidemiological information largely reflects mortality statistics, while the burden of morbidity remains inadequately documented and represents only the “tip of the iceberg.” Consequently, childhood injuries continue to impose significant physical, psychological, social, and economic consequences on affected children, families, and communities. (7)

Childhood injuries result from a complex interaction of environmental, behavioural, and socio-demographic factors. Among these, parental supervision has been identified as an important modifiable determinant of injury risk. A study by Schnitzer et al. demonstrated that lower levels of supervision were associated with a higher risk of unintentional injury among young children. The study further highlighted that caregiver proximity was the most important dimension of supervision, with children being at greater risk of injury when caregivers were farther away. (8) Inadequate parental monitoring has been associated with an increased risk of falls, drowning, pedestrian injuries, and other

forms of unintentional injuries among children aged 0–14 years. (9) Therefore, understanding parental attitudes and supervision practices is essential for identifying opportunities for injury prevention.

Caregivers play a pivotal role in ensuring child safety and are often the first responders when injuries occur. Knowledge and appropriate first-aid practices among caregivers are therefore essential for reducing the severity and consequences of childhood injuries. First aid refers to the immediate assistance provided to an injured individual before professional medical care becomes available. Prompt and appropriate first-aid measures can prevent complications, minimize disability, and improve recovery outcomes. However, inappropriate traditional remedies and inadequate awareness regarding injury management continue to be reported in many communities. (9, 10)

Despite the preventable nature of most childhood injuries, several studies have reported inadequate knowledge, unfavorable attitudes, and unsafe practices among caregivers regarding injury prevention and first-aid management. Caregivers often lack awareness about common household hazards, age-appropriate supervision, and evidence-based first-aid measures for burns, poisoning, falls, and cuts. (9-12) Furthermore, positive knowledge does not always translate into safe preventive practices because attitudes, risk perception, socio-cultural beliefs, and environmental constraints influence caregiver behaviour. (9,11,12) Improving caregiver knowledge and promoting positive preventive practices may substantially reduce the occurrence and severity of childhood injuries. Identifying gaps in caregiver's knowledge, attitudes, and practices is therefore essential for designing effective educational and community-based interventions aimed at reducing the burden of unintentional childhood injuries. (9-12)

In many LMICs, injuries are frequently perceived as unavoidable accidents rather

than preventable events. Consequently, injury prevention receives less public health attention than communicable diseases, resulting in inadequate surveillance, limited research, and insufficient preventive interventions. Peden et al. and Kumar et al. emphasized that childhood injury prevention has historically received inadequate public health attention in many low- and middle-income countries because injuries are often considered unavoidable rather than preventable, leading to weak surveillance systems and limited preventive efforts. (1,13) Basak et al. further reported that inadequate evidence, poor awareness, and weak injury surveillance systems remain major barriers to reducing childhood injury rates in India. (6) Kumar et al. highlighted that most available studies in India have primarily focused on injury occurrence, risk factors, and hospital-based outcomes, while relatively few have explored caregivers' knowledge, attitudes, and preventive practices at the community level. (13) Furthermore, data regarding caregivers' knowledge, attitudes, and practices related to prevention and first-aid management of unintentional childhood injuries are limited in community settings comprising both urban and rural populations. Inbaraj et al., Nour et al., Pathak et al., and Lafta et al. have emphasized the need for community-based research to understand caregivers' knowledge, attitudes, and preventive practices in different settings and to inform effective injury prevention strategies. (10–12,16) Understanding caregiver's knowledge, attitudes, and practices regarding injury prevention and first-aid management is essential for developing evidence-based educational interventions and community-level preventive strategies. Such information can help policymakers and health professionals design targeted programs to improve child safety and reduce the burden of childhood injuries. Assessment of caregivers' knowledge, attitudes, and practices in both urban and rural settings may further help identify context-specific gaps and guide the

development of locally appropriate injury prevention strategies. Therefore, the present study was undertaken to assess the knowledge, attitude, and practices regarding prevention and first-aid management of unintentional injuries among caregivers of children and to identify factors influencing injury prevention in the community.

Objectives:

1. To determine the proportion of children aged 0–14 years who experienced unintentional injuries during the preceding six months.
2. To assess the knowledge, attitude, and practices of caregivers regarding prevention and first-aid management of unintentional childhood injuries.
3. To identify the socio-demographic and residential factors associated with caregiver's knowledge, attitude, and practices regarding prevention and first-aid management of unintentional childhood injuries.

MATERIALS & METHODS

Study Design and Setting-

A community-based cross-sectional study was conducted in the urban and rural field practice areas of the Department of Community Medicine, Government Medical College, Surat.

The urban study area comprised the Urban Health Training Centre (UHTC), Althan, including Indiranagar, Rasulabad, and Azad Nagar. The rural study area comprised the Rural Health Training Centre (RHTC), Sachin, including Aahir Faliyu, Hanuman Faliyu, and Halpati Vas of Vanz village, and Halpati Vas and Chhavis Gara Faliyu of Vaktana village.

Study Population-

The study included parents/caregivers whose children aged 0–14 years residing in the study areas.

Inclusion Criteria

- Parents/primary caregivers of children aged 0–14 years who had been residing

in the study area for at least six months prior to data collection.

- Parents/primary caregivers who were available during the survey and provided written informed consent to participate.

Exclusion Criteria

- Parents/primary caregivers who could not be contacted after three consecutive home visits.
- Parents/primary caregivers who declined to participate in the study.
- Parents/primary caregivers of children with a history of intentional injury.

Study Duration-

Data collection was carried out from April 2023 to August 2023.

Sample Size and Sampling Technique-

The sample size was calculated using OpenEpi version 3.01 based on the formula $n = Z^2pq/d^2$, with a 95% confidence level ($Z = 1.96$) and 5% absolute precision. The calculation was based on the prevalence of childhood unintentional injuries reported in a previous study from Gujarat, which found a prevalence of 5.9% in urban areas and 8.5% in rural areas. Accordingly, the required sample size was 86 participants from the urban area and 120 participants from the rural area, giving a total sample size of 206 participants. No additional allowance for non-response was included because participants who could not be contacted after three home visits or who declined to participate were replaced with other eligible participants until the required sample size was achieved. (5)

In the urban area, participants were selected from Indiranagar ($n=28$), Rasulabad ($n=29$), and Azad Nagar ($n=29$). In the rural area, 55 children were selected from Vanz village, including Aahir Faliyu ($n=18$), Hanuman Faliyu ($n=18$), and Halpati Vas ($n=19$), while 65 children were selected from Vaktana village, including Halpati Vas ($n=32$) and Chhavis Gara Faliyu ($n=33$).

A Convenience sampling technique was employed for participant selection because a

complete sampling frame of eligible children was not available in the selected field practice areas and the study was conducted within a limited study period. Although this method facilitated recruitment of eligible participants, it may have introduced selection bias and limited the generalizability of findings.

Data Collection Procedure-

Information regarding children aged 0–14 years was obtained from Anganwadi records available in the urban and rural field practice areas. House-to-house visits were conducted, and mothers or any adult caregiver present in the household were interviewed using a pre-tested semi-structured questionnaire.

Information regarding unintentional injuries occurring during the preceding six months was collected. In cases where a child had experienced multiple injuries during the recall period, details of the most recent injury were recorded. If more than one eligible child was present in the household, the youngest child was selected. However, if any child had sustained an injury during the preceding six months that required outpatient or inpatient medical treatment, that child was included.

Only children whose primary caregiver (mother, father, grandparent, or other adult family member) was available during the visit were included in the study.

Study Tool

A pre-tested semi-structured questionnaire was used for data collection. The questionnaire was developed after an extensive review of the published literature and relevant World Health Organization recommendations on childhood injury prevention.

The questionnaire was independently reviewed by faculty members from the Department of Community Medicine during the departmental protocol presentation meeting to assess whether the questions were appropriate, clear, easy to understand, and covered all important areas. The

suggestions provided by the experts were incorporated, and necessary modifications were made before field implementation.

The questionnaire was translated into the local language (Gujarati & Hindi) and back-translated into English to ensure conceptual equivalence. A pilot study was conducted among approximately 10% of the calculated sample size in a similar population outside the study area to assess the clarity, feasibility, and comprehensibility of the questionnaire. Based on the pilot findings, minor modifications were made to improve wording and sequencing of questions. Data obtained during the pilot study were not included in the final analysis.

Internal consistency of the questionnaire domains was assessed using Cronbach's alpha coefficient. The knowledge, attitude, and practice domains demonstrated Cronbach's alpha values of 0.431, 0.300, and 0.872, respectively. The relatively lower alpha values observed for knowledge and attitude domains may be attributed to the heterogeneous nature of items assessing different dimensions of childhood injury prevention and first-aid management. Items were retained based on expert validation and their relevance to the study objectives.

The knowledge, attitude, and practice scoring system was developed based on the maximum obtainable scores for each domain after reviewing previously published KAP studies and considering the objectives of the present study. The cut-off scores were predetermined before data analysis to facilitate interpretation of respondents' performance.

For Knowledge Assessment

Knowledge regarding first-aid management was assessed using five injury-specific questions. Each question had a maximum score of 2, with a total obtainable score of 10. Correct responses were assigned a score of 2, whereas incorrect responses and "don't know" responses were assigned a score of 0. The total knowledge score was calculated by summing the scores obtained for all items.

The cut-off scores for categorizing knowledge levels were predefined during questionnaire development and finalized after expert validation. A total score of 8–10 was categorized as high knowledge, 5–7 as fair knowledge, and 0–4 as poor knowledge. These categories were developed to differentiate caregivers based on the extent of their understanding regarding first-aid measures for common unintentional childhood injuries.

For Attitude Assessment

Attitude regarding prevention of unintentional childhood injuries was assessed using a three-point Likert scale consisting of agree, uncertain, and disagree responses. For positively worded statements, responses were scored as agree = 2, uncertain = 1, and disagree = 0. For negatively worded statements, reverse scoring was applied, with disagree = 2, uncertain = 1, and agree = 0. The total attitude score was calculated by summing the scores of all attitude items, with a maximum obtainable score of 16.

The cut-off scores for categorizing attitude levels were predefined during questionnaire development and finalized after expert validation. A total score of 12–16 was categorized as a positive attitude, 9–11 as a neutral attitude, and 0–8 as a negative attitude. These categories were developed to differentiate caregivers according to the extent of favourable perceptions and preparedness towards prevention and first-aid management of unintentional childhood injuries.

For Safety Practice Assessment

Safety practices regarding prevention of unintentional childhood injuries were assessed using dichotomous response options (Yes/No). For positively worded safety practice items, a response indicating safe practice was assigned a score of 1 and an unsafe response was assigned a score of 0. For negatively worded items, reverse scoring was applied, where absence of unsafe behaviour was assigned a score of 1

and presence of unsafe behaviour was assigned a score of 0.

The total practice score was calculated by summing the scores of all practice items, with the maximum obtainable score being 9. The cut-off score for categorizing practice levels was predefined during questionnaire development and finalized after expert validation. A score of >6 was categorized as good safety practice, whereas a score of ≤6 was categorized as poor safety practice. These categories were developed to differentiate caregivers according to the level of adherence to recommended household safety measures for prevention of unintentional childhood injuries.

For Source of Information

An additional section assessed the sources from which caregivers obtained information regarding prevention and first-aid management of unintentional injuries.

Ethical Considerations:

The study was conducted after obtaining approval from the Institutional Ethics Committee of Government Medical College, Surat (Approval No. GMCS/STU/ETHICS-3/Approval/5559/23)

Written informed consent was obtained from all participating children's parents/primary caregivers after explaining the study objectives and participant information sheet in a language they could understand. Participation was entirely voluntary, and participants were free to withdraw from the study at any stage without any consequences.

As information was collected from caregivers and children were not interviewed directly, child assent was not applicable.

Unique identification numbers were assigned to all participants, and all personal identifiers were removed before data analysis. Confidentiality and privacy of the participants were maintained throughout the study, and the collected data were accessible only to the researcher and guide.

Statistical Analysis

Data were entered into Microsoft Excel and analysed using IBM SPSS Statistics version 23. Descriptive statistics were used to summarize the data and included frequency, percentage, mean, standard deviation, range, and mode.

Associations between categorical variables were assessed using the Chi-square test when the assumptions of the test were fulfilled. Fisher's exact test was applied for variables where the expected cell frequencies did not meet the assumptions required for the Chi-square test. A p-value

<0.05 was considered statistically significant.

RESULT

Prevalence of Unintentional Injuries:

The mean age of children was 7.27 ± 3.32 years. Out of 206 children, 55 experienced unintentional injuries during the previous six months, giving an overall prevalence of 26.69% (95% CI: 20.8–33.1%). The prevalence was 22.09% (95% CI: 14.6–32.0%) in urban areas and 30.0% (95% CI: 22.5–39.0%) in rural areas, indicating a higher occurrence of unintentional injuries among children residing in rural areas.

Table 1: Socio-demographic characteristics of caregivers (N=206)

Variable	Category	n (%)
Marital status	Married	200 (97.1)
	Others*	06 (02.9)
Mother's age (years)	≤30	145 (70.4)
	>30	61 (29.6)
Mother's education	Primary or below	170 (82.5)
	Secondary and above	36 (17.5)
Mother's occupation	Homemaker	129 (62.6)
	Working	77 (37.4)
Father's age (years)	≤30	105 (51.0)
	>30	101 (49.0)
Father's education	Primary or below	135 (65.5)
	Secondary and above	71 (34.5)
Father's occupation	Skilled/Semiskilled and above	178 (86.4)
	Unskilled/Unemployed	28 (13.6)
Type of family	Nuclear	111 (53.9)
	Joint/Three-generation	95 (46.1)

*Others include divorced, separated, and widowed caregivers.

Table 1 summarizes the socio-demographic characteristics of the caregivers. Among the 206 caregivers, the majority were married (97.1%). The mean age of mothers was 28.52 ± 5.16 years, with 70.4% aged ≤30 years. Most mothers had primary education or below (82.5%) and were homemakers (62.6%). The mean age of fathers was 31.58

± 5.73 years, and 51.0% were aged ≤30 years. Nearly two-thirds of fathers had primary education or below (65.5%), while the majority were engaged in skilled or semiskilled occupations (86.4%). More than half of the families were nuclear (53.9%), whereas 46.1% belonged to joint or three-generation families.

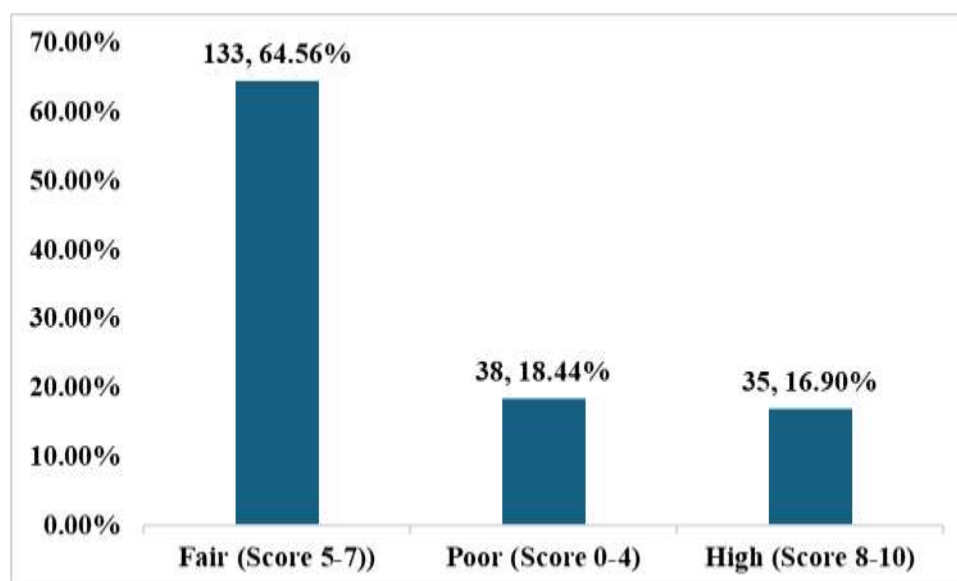


Figure 1: Level of Caregiver's Knowledge Regarding First Aid for Unintentional Injuries (N=206)

Figure 1 shows the distribution of caregivers according to their overall knowledge scores regarding first-aid management of unintentional injuries. Among the 206 caregivers, the majority (64.56%) demonstrated fair knowledge, while (18.44%) had poor knowledge and (16.99%)

exhibited high knowledge. The findings indicate that although most caregivers possessed a moderate level of knowledge regarding first-aid measures for unintentional injuries, only a small proportion demonstrated a high level of knowledge.

Table 2: Caregiver's Knowledge Regarding First Aid for Unintentional Injury-Related Conditions (N=206)

Type of injury	Right answer (n, %)	Wrong answer (n, %)
Fall down	191 (92.7)	15 (07.28)
Burn	45 (21.84)	161 (78.15)
Short-circuit	27 (13.10)	179 (86.89)
Animal bite	178 (86.40)	28 (13.59)
Chemical poisoning	190 (92.23)	16 (07.76)

Table 2 depicts the caregiver's knowledge regarding first-aid measures for common unintentional injuries among children. The assessment revealed varying levels of awareness across different injury types. The majority of caregivers correctly identified appropriate first-aid measures for injuries due to falls (92.7%), chemical poisoning (92.23%), and animal bites (86.40%).

However, knowledge regarding first-aid management of burns and electrical injuries was considerably lower, with only 21.84% and 13.10% of caregivers, respectively, providing correct responses. Incorrect responses were most frequently observed for electrical injuries (86.89%) and burns (78.15%).

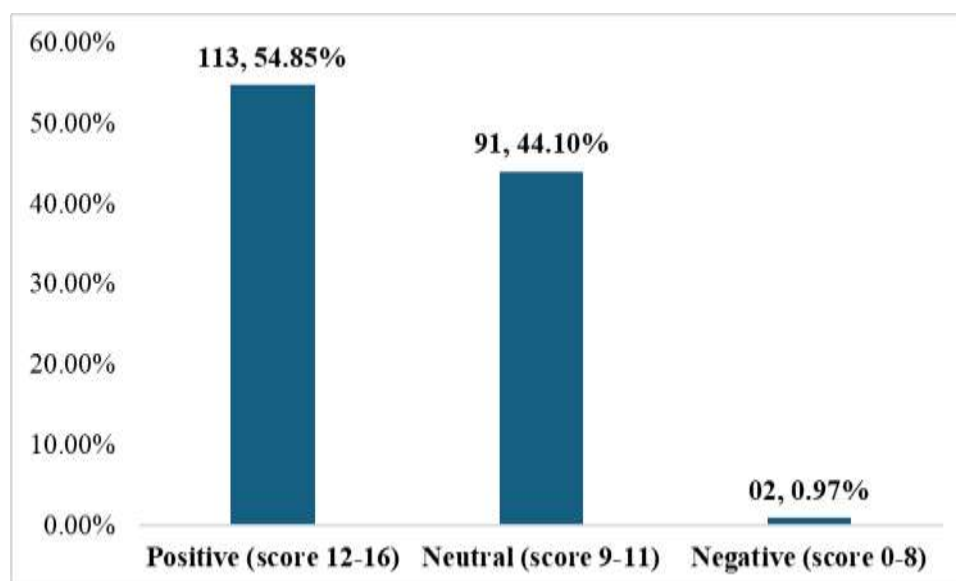


Figure 2: Caregiver's Attitude level based on score to prevent unintentional injuries among children (N=206)

Figure 2 shows the distribution of respondent's attitudes based on their scores. More than half of the respondents demonstrated a positive attitude (54.85%, n=113), while 44.10% (n=91) exhibited a

neutral attitude. Only 0.97% (n=2) showed a negative attitude. These findings indicate that respondents generally held favorable attitudes, with very few expressing negative attitudes.

Table 3: Caregiver's Attitudes regarding childhood unintentional injury prevention and management among caregivers (N = 206)

Attitude statement	Agree n (%)	Uncertain n (%)	Disagree n (%)
Adequate knowledge of home injury prevention	77 (37.4)	23 (11.2)	106 (51.5)
Precautions should be taken to prevent childhood injuries at home	181 (87.9)	23 (11.2)	2 (1.0)
Preference for electric stove over kerosene stove	29 (14.1)	40 (19.4)	137 (66.5)
Rapid response from ambulance/emergency services	205 (99.5)	0 (0.0)	1 (0.5)
Confidence in handling emergencies	104 (50.5)	91 (44.2)	11 (5.3)
Domestic accidents affect children psychologically	108 (52.4)	42 (20.4)	56 (27.2)
Importance of training on unintentional injuries	203 (98.5)	2 (1.0)	1 (0.5)
Importance of sharing injury-related experiences	206(100.0)	0 (0.0)	0 (0.0)

Table 3 shows the caregiver's attitudes regarding the prevention and management of childhood unintentional injuries. A large majority of caregivers agreed that precautions should be taken to prevent childhood injuries at home (87.9%). Nearly all participants perceived ambulance and emergency services to provide a rapid response (99.5%), considered training on unintentional injuries important (98.5%), and emphasized the importance of sharing injury-related experiences with others (100.0%).

About half of the caregivers expressed confidence in handling emergencies (50.5%) and believed that domestic accidents could have psychological effects on children (52.4%). However, only 37.4% reported having adequate knowledge of home injury prevention, while more than half (51.5%) disagreed with this statement. Additionally, two-thirds of the caregivers (66.5%) did not prefer using an electric stove over a kerosene stove. Overall, the findings indicate a positive attitude towards childhood injury prevention and emergency

preparedness despite perceived gaps in prevention.
knowledge regarding home injury

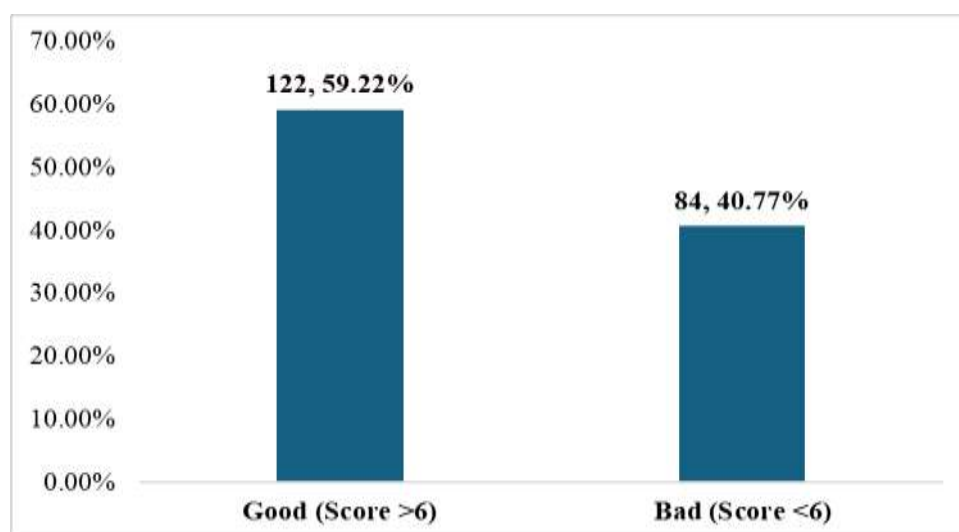


Figure 3: Level of safety practices for prevention of UIs among caregiver of total children (N=206)

Figure 3 illustrates the level of safety practices adopted by caregivers for the prevention of childhood unintentional injuries. More than half of the caregivers (59.2%, n=122) demonstrated good safety practices, whereas 40.8% (n=84) exhibited

poor safety practices. These findings suggest that although a majority of caregivers follow appropriate safety measures, a substantial proportion still lack adequate preventive practices.

Table 4: Caregiver's Safety Practices for Prevention of Childhood Unintentional Injuries (N = 206)

Safety practice	Yes	n (%)	No	n (%)
Child left alone at home	03	(1.5)	203	(98.5)
Child plays with small objects	71	(34.5)	135	(65.5)
Window guards installed	190	(92.2)	16	(7.8)
Carry/drink hot liquids while holding child	04	(1.9)	202	(98.1)
Medicines stored safely/disposed properly	203	(98.5)	03	(1.5)
Emergency helpline numbers available	12	(5.8)	194	(94.2)
Electrical safety measures practiced	1	(0.5)	205	(99.5)
Matches/lighters kept out of reach	200	(97.1)	06	(2.9)
Child allowed to swim unsupervised	00	(0.0)	206	(100.0)

Table 4 presents caregiver's safety practices related to the prevention of childhood unintentional injuries. Most caregivers reported adopting safe practices, including safe storage or disposal of medicines (98.5%), keeping matches and lighters out of children's reach (97.1%), and installation of window guards (92.2%). Nearly all caregivers reported not leaving children alone at home (98.5%) and not carrying or drinking hot liquids while holding a child (98.1%). However, only 5.8% had emergency helpline numbers readily

available, and 34.5% reported that their child played with small objects. None of the caregivers allowed their child to swim unsupervised.

Practice-related questions were scored based on recommended safety practices for the prevention of childhood unintentional injuries. Safe practices were assigned a score of 1 and unsafe practices a score of 0, with negatively worded items reverse-coded. The total practice score ranged from 0 to 9. Caregivers scoring >6 were classified as having good safety practices, while those

scoring ≤ 6 were classified as having poor safety practices.

Table 5: Association of socio-demographic characteristics with knowledge, attitude, and practice levels regarding unintentional injury among caregivers (N=206)

Father's occupation	Level of Knowledge			p value
	Good (n, %)	Fair (n, %)	Poor (n, %)	
Employed	32 (15.76)	133 (65.51)	38 (18.71)	0.014
Unemployed	1 (33.33)	2 (66.66)	00 (0.0)	
Father's Education	Level of Attitude			p value
	Positive (n, %)	Neutral (n, %)	Negative (n, %)	
Illiterate	06 (66.7)	03 (33.3)	00 (0.00)	0.004
Primary & Secondary	92 (51.68)	84 (47.19)	02 (1.13)	
Higher Secondary and above	15 (78.94)	04 (21.05)	00 (0.00)	
Mother's occupation				p value
	Good (n, %)	Fair (n, %)	Poor (n, %)	
Employed	30 (39.47)	46 (60.52)	00 (0.00)	0.007
Unemployed	83 (64.34)	45 (34.88)	01 (0.78)	
Socioeconomic class				0.008
	Good (n, %)	Fair (n, %)	Poor (n, %)	
	Class 1	00 (0.00)	00 (0.00)	00 (0.00)
	Class 2	13 (72.2)	5 (27.8)	0 (0)
	Class 3	27 (73)	9 (24.3)	1 (2.7)
	Class 4	65 (48.5)	69 (51.5)	0 (0)
	Class 5	8 (47.1)	8 (47.1)	1 (5.9)
Socioeconomic class	Level of Safety Practice			0.013
	Good (n, %)	Bad (n, %)	-	
	Class 1	00 (0.00)	00 (0.00)	-
	Class 2	11 (61.1)	7 (38.9)	-
	Class 3	15 (40.5)	22 (59.5)	-
	Class 4	89 (66.4)	45 (33.6)	-
	Class 5	7 (41.2)	10 (58.8)	-

Table 5 shows the association between socio-demographic characteristics and levels of knowledge, attitude, and practice regarding prevention of unintentional childhood injuries among caregivers. Knowledge level was significantly associated with father's occupation ($p=0.014$).

Attitude level was significantly associated with father's education ($p=0.004$), mother's occupation ($p=0.007$), and socioeconomic status ($p=0.008$). Positive attitudes were more frequently observed among caregivers

whose fathers had higher educational attainment and among homemakers. Attitude levels also varied significantly across socioeconomic classes.

Practice level showed a statistically significant association only with socioeconomic status ($p=0.013$). The distribution of good and poor safety practices differed significantly across socioeconomic classes, indicating variation in preventive practices among caregivers from different socioeconomic backgrounds.

Table 6: Comparison of Knowledge, Attitude, and Practice Levels Regarding Unintentional Injuries Between Urban and Rural Caregivers (N=206)

Variable	Category	Urban (n=86) n (%)	Rural (n=120) n (%)	p value
Knowledge	Good	26 (74.30)	09 (25.70)	<0.001
	Fair	47 (35.30)	86 (64.70)	
	Poor	13 (34.20)	25 (65.80)	
Attitude	Positive	73 (64.60)	40 (35.40)	<0.001
	Neutral	13 (14.30)	78 (85.70)	
	Negative	00 (0.00)	02 (100.0)	
Practice	Good	37 (44.00)	47 (56.00)	0.579
	Poor	49 (40.20)	73 (59.80)	

Table 6 shows the comparison of knowledge, attitude, and practice levels regarding prevention of unintentional injuries among urban and rural caregivers. A significantly higher proportion of urban caregivers had good knowledge (74.3%) compared to rural caregivers (25.7%), whereas fair and poor knowledge levels were more commonly observed among rural caregivers. The association between place of residence and knowledge level was statistically significant ($p < 0.001$). Similarly, positive attitudes towards prevention of unintentional injuries were

observed more frequently among urban caregivers (64.6%) than rural caregivers (35.4%). In contrast, neutral and negative attitudes were predominantly found among rural caregivers. This difference was statistically significant ($p = 0.00$).

Regarding safety practices, good practices were reported by 44.0% of urban caregivers and 56.0% of rural caregivers. However, the difference in practice levels between urban and rural caregivers was not statistically significant ($p = 0.579$).

Table 7: Sources of information regarding first aid and prevention of childhood unintentional injuries among caregivers (N = 206)

Source of information	n (%)
No information received	197 (95.6)
Friends and family members	9 (4.4)
Media (internet, television, newspaper)	0 (0.0)
Healthcare providers	0 (0.0)

Table 7 shows the sources of information regarding first aid and prevention of childhood unintentional injuries among caregivers. The majority of caregivers (95.6%) reported not receiving any information on the topic. Only 4.4% received information from friends and family members, while none reported obtaining information from media sources or healthcare providers.

DISCUSSION

The present study found that 26.69% of children experienced at least one unintentional injury during the preceding six months. This estimate was comparable to the one-year prevalence reported by Mahalakshmy et al. in rural Puducherry (23%) and Bhatia et al. in Delhi (29.3%). (14,15) Despite the longer recall period in these studies, similar estimates were observed. Pant et al. reported an injury proportion of 24.6% among children in Nepal. (16) In contrast, Dave et al. reported a substantially lower prevalence of 7.62% in Gujarat. (5) Differences in recall periods, study settings, sociodemographic characteristics, environmental conditions,

and injury definitions may explain the variation in findings across studies.

The proportion of children experiencing unintentional injuries was higher in rural areas (30.0%) than in urban areas (22.09%). Similar findings were reported by Dave et al. in Gujarat, who observed a higher proportion of injuries among rural children (8.5%) compared with urban children (5.9%). (5) Likewise, Pant et al. reported a higher injury proportion among rural children (26.0%) than urban children (17.2%) in Nepal. (16) The higher occurrence of injuries in rural areas in the present study may be attributed to greater exposure to environmental hazards, inadequate safety measures, and reduced supervision resulting from caregiver's occupational commitments.

Regarding knowledge of first-aid management of unintentional injuries, the present study found that nearly two-thirds of caregivers (64.6%) had fair knowledge, while 16.9% had good knowledge and 18.4% had poor knowledge. Similar findings were reported by Nour et al., who observed that 54.3% of mothers had fair knowledge, 9.8% had good knowledge, and

35.9% had poor knowledge regarding first-aid management of childhood injuries. (11) The predominance of fair knowledge among caregivers highlights the need for strengthening community-based educational interventions and first-aid training programs to improve caregiver's preparedness for managing childhood injuries.

In the present study, knowledge level was significantly associated with father's occupation ($p=0.014$). In contrast, Nour et al. reported significant associations between first-aid knowledge and mothers' education and occupation. (11) The observed differences may be attributable to variations in study populations, socio-demographic characteristics, and assessment methods. While the reference study included only mothers, the present study assessed knowledge among caregivers, including mothers, fathers, grandparents, and other adult family members. Additionally, differences in sample size and study settings may have contributed to the variation in findings.

Assessment of caregiver's knowledge regarding first-aid measures for common unintentional injuries revealed considerable variation across injury types. The majority of caregivers correctly identified appropriate first-aid measures for falls (92.7%), chemical poisoning (92.2%), and animal bites (86.4%). However, knowledge regarding first-aid management of burns (21.8%) and electrical injuries (13.1%) was notably poor. Poor knowledge regarding burn injury management observed in the present study is consistent with the findings reported by Lafta et al. (12)

The relatively high level of awareness regarding first-aid measures for falls, animal bites, and poisoning may be attributed to the frequent occurrence of these injuries and greater exposure to health education messages. In contrast, the poor knowledge observed for burns and electrical injuries is of concern, as inappropriate first-aid measures may increase the severity of injury and delay appropriate treatment. These findings highlight the need for targeted

educational interventions and community-based first-aid training programs focusing particularly on burn and electrical injury management.

Regarding attitudes towards prevention of unintentional injuries, more than half of the caregivers (54.9%) demonstrated a positive attitude, while 44.2% exhibited a neutral attitude and only 0.9% had a negative attitude. Similar findings were reported by Nour et al., who observed that 47.4% of mothers had a positive attitude and 38.1% had a neutral attitude towards childhood injury prevention. (11) However, the proportion of caregivers with negative attitudes in the present study was considerably lower than that reported by Nour et al. (14.5%). (11) The predominance of positive attitudes among caregivers is encouraging, as favorable attitudes play an important role in promoting safe behaviors and injury prevention practices.

The present study demonstrated significant associations between attitude level and father's education ($p=0.004$), mother's occupation ($p=0.007$), and socioeconomic status ($p=0.008$). Similarly, Nour et al. reported a significant association between attitude and maternal occupation. (11) The observed associations may be explained by differences in access to health-related information, educational opportunities, awareness regarding child safety, and exposure to preventive health messages. Caregivers with higher educational attainment and better socioeconomic status may be more likely to recognize potential injury risks and develop favourable attitudes towards injury prevention. These findings highlight the importance of considering socio-demographic factors while designing community-based educational and injury prevention programs.

Analysis of individual attitude statements indicated that most caregivers recognized the importance of childhood injury prevention, first-aid training, and timely emergency care. However, only a minority perceived themselves as having adequate knowledge regarding home injury

prevention. These findings suggest that although caregivers generally exhibited favourable attitudes towards injury prevention and management, gaps remain in their confidence and perceived preparedness to prevent and manage childhood injuries. Strengthening community-based educational and training programmes may help improve caregiver's awareness and promote safer practices.

Regarding safety practices for prevention of unintentional injuries, 59.2% of caregivers demonstrated good practices, while 40.8% had poor practices. In contrast, Nour et al. reported that only 29.0% of mothers had good safety practices regarding childhood injury prevention. (11) The higher proportion of caregivers with good practices observed in the present study may be attributed to differences in study populations, socio-demographic characteristics, and study settings.

The present study found a significant association between safety practices and socioeconomic status ($p=0.013$). Similar findings were reported by Nour et al., who observed that higher family income was significantly associated with better safety practices. (11) Families belonging to higher socioeconomic groups may have better access to resources, safer home environments, and greater opportunities to implement preventive measures for childhood injuries. These findings highlight the importance of socioeconomic factors in influencing injury prevention practices among caregivers.

Analysis of individual safety practices indicated that most caregivers followed recommended measures for prevention of childhood unintentional injuries, particularly regarding safe storage of medicines, keeping matches and lighters out of children's reach, installation of window guards, and supervision of children. However, important gaps were identified in emergency preparedness and electrical safety practices. These findings are consistent with the overall observation that while the majority of caregivers demonstrated good safety

practices, specific areas of household safety and emergency readiness require further improvement through targeted health education and training programs.

The present study demonstrated significant differences in knowledge and attitude levels between urban and rural caregivers. Urban caregivers were more likely to have good knowledge and positive attitudes towards prevention of unintentional injuries compared to rural caregivers. These differences may be attributed to better access to educational opportunities, health information, mass media, and healthcare services in urban areas, which can enhance awareness regarding childhood injury prevention. Similar observations have been reported in studies assessing parental knowledge and perceptions regarding childhood injury prevention, where education and access to information were important determinants of knowledge and attitudes towards child safety. (11)

In contrast, no statistically significant difference was observed in safety practices between urban and rural caregivers. This finding suggests that although knowledge and attitudes differed according to place of residence, these differences did not necessarily translate into variations in preventive practices. Safety practices may be influenced by multiple factors, including household environment, socioeconomic conditions, family support systems, and cultural practices, which may be similar across the study settings.

The present study found that only a small proportion of caregivers had received information regarding prevention and first-aid management of unintentional injuries. This finding highlights the need for strengthening community-based health education and awareness programs related to childhood injury prevention.

Overall, the findings indicate that unintentional injuries remain a significant public health concern among children. Although caregivers generally demonstrated fair knowledge, positive attitudes, and good safety practices, important gaps were

identified in first-aid knowledge and specific injury prevention measures. These findings highlight the need for targeted educational interventions to strengthen caregiver awareness and promote child safety.

Study limitations

The study was conducted in selected urban and rural field practice areas using convenience sampling; therefore, the findings may not be generalizable to all populations. Information regarding injuries was based on caregiver recall over the preceding six months and may be subject to recall bias. The cross-sectional design also limits causal inference

CONCLUSION

The present study found that more than one-fourth of children experienced at least one unintentional injury during the preceding six months, indicating that childhood unintentional injuries remain an important public health concern. Although the majority of caregivers demonstrated fair knowledge, positive attitudes, and good safety practices regarding prevention and first-aid management of unintentional injuries, important gaps were identified, particularly in knowledge related to burn and electrical injury management and certain household safety practices.

Caregiver's knowledge, attitudes, and practices were significantly influenced by selected socio-demographic factors, including parental education, occupation, and socioeconomic status. Urban caregivers demonstrated better knowledge and more positive attitudes than rural caregivers, while safety practices were comparable between the two groups.

These findings highlight the need for targeted community-based health education, first-aid training, and injury prevention programs, particularly among socioeconomically disadvantaged families. Strengthening caregiver awareness and promoting evidence-based safety practices

may contribute to reducing the burden of childhood unintentional injuries and improving child safety in the community.

Declaration by Authors

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