

RESEARCH TITLE: “A STUDY TO ASSESS RISK FACTORS AFFECTING MOTHERS’ BEHAVIOURS REGARDING HOME ACCIDENTS AMONG UNDER FIVE CHILDREN AT SELECTED RURAL AREA IN ANAND DISTRICT GUJARAT STATE”

Ms. Binal Joshi¹, Dr. Anil Sharma²

¹Assistant Professor, Manikaka Topawala Institute of Nursing, Charotar University of Science and Technology (CHARUSAT), CHARUSAT campus, Changa 388421, India

²Professor, Manikaka Topawala Institute of Nursing, Charotar University of Science and Technology (CHARUSAT), CHARUSAT campus, Changa 388421, India

ABSTRACT

Background: Unintentional injuries occurring within the home environment are a leading cause of morbidity and preventable disability among under-five years of age globally. Young children are especially vulnerable due to their developmental immaturity, curiosity, lack of hazard awareness, and reliance on caregivers for supervision. In economically developing countries, unsafe housing conditions combined with limited caregiver awareness further increase the risk of home accidents such as falls, burns, poisoning, cuts, and foreign body ingestion. **Purpose:** To identify household environmental hazards and caregiver safety practices associated with home accidents among children below five years of age in a rural community of Gujarat, India. **Methods:** A community based cross-sectional analytical study was conducted among 440 mothers of under-five children in selected rural villages of Anand district, Gujarat. Data were collected using a structured questionnaire consisting of items related to the participants’ sociodemographic characteristics, self-reported home accidents in the preceding six months, and a researcher-developed 55-item checklist assessing room-wise household hazards and caregiver safety practices. Descriptive statistics summarized participant characteristics and accident patterns. **Findings:** More than half of the children were below three years of age, and falls were the most commonly reported type of home accident. Kitchens, living rooms, and staircases were identified as high-risk locations. Unsafe household practices, including accessible stove controls, improper storage of detergents and sharp objects, slippery bathroom floors, and inadequate balcony safety, were frequently observed. Emergency preparedness was poor, with fewer than one-fifth of households reporting a fire escape plan or readily available first aid supplies. **Conclusion:** Home accidents among under-five children in rural India are strongly associated with modifiable household environmental hazards and caregiver safety practices. The findings underscore the need for nurse-led home safety education and targeted environmental modifications to reduce preventable childhood injuries.

KEYWORDS: Home accidents; under-five children; household hazards; caregiver practices; rural India

INTRODUCTION

Home accidents (HAs) are important and growing source of childhood traumatic injuries and long term disability in children, they are under recognized and underreported.^{1,2,3,4,5,6} Their widespread occurrence has led public health experts to characterize them as a “modern-day epidemic.”⁵ Domestic or home-based accidents constitute a pressing public health issue in India, especially for children younger than five years of age.² The young developmental age of younger than five years of age and their exploratory behaviours make them particularly vulnerable to hazards found in household settings such as open flames, unsecured stairs, floor-level cooking stoves, poor lighting, and absence of physical barriers.⁶

Recent epidemiological evidence from India underscores alarming prevalence and identifies key household and caregiver risk factors. A study carried out in community setting of Aligarh in 2019–20 found that maternal education significantly predicted occurrence of domestic accidents in under-five children with falls being the most frequent mechanism, followed by sharp injuries and burns.⁷ In a rural area of Delhi in 2021, nearly 29.3% of under-five children experienced an unintentional injury in the preceding year; important risk factors included lack of a separate kitchen and poor lighting conditions in the home.⁸ Children of working mothers and boys also showed significantly higher injury prevalence.⁹ These findings are consistent with the fact that domestic environments lacking structural safety features and insufficient supervision elevate the risk of injury.⁹

In Ujjain, a community-based household survey reported an overall annual incidence of home injuries of 7.78% among children up to 18 years. Although the study included older children, the under-five age group remained at high risk. Additional risk associations included rural residence, smaller family size, and death of the mother.¹⁰ A study revealed that 58% of childhood injuries occurred in the course of agricultural activities, while 34% took

place within the home environment.¹¹ The “World Health Organization (WHO)” has projected a significant rise in global injury-related deaths, increasing from 5.1 million to 8.1 million.¹² Existing literature highlights a lack of comprehensive data on childhood injuries in developing countries.^{13 14}

Although the research is available, there is still a huge gap in the targeted age specific research concentrating on under-five children in a range of Indian setting. This research aims to identify the factors predisposing children below five years of age to home accidents in rural Gujarat by considering the condition of the household environments, awareness of the caregivers, demographic, and socio-economic status. The results will inform the design of interventions - including structural enhancements and educational programs - that are specifically designed to apply to high-risk families in order to reduce the number of preventable injuries and ensure the creation of safer home environments among young children.

However, most existing studies focus primarily on injury prevalence and general risk factors, offering limited insight into specific, modifiable household environmental hazards and caregiver safety practices, particularly in rural settings. Comprehensive room-wise assessments of household risks are scarce, despite their importance for designing effective prevention strategies. Moreover, evidence linking caregiver practices and household environments to accident occurrence remains limited in rural Indian contexts.

Therefore, this study aimed to identify household environmental hazards and caregiver safety practices associated with home accidents among under-five children in a rural community of Gujarat, India. By examining modifiable risk factors, the study seeks to generate evidence relevant for community health nursing practice and injury prevention programs.

METHODOLOGY

A community-based cross-sectional survey was conducted on mothers residing in the rural villages of Bandhani, Piplav, and Sihol in the District of Anand, Gujarat, between July and September 2025. The mothers who met the following requirements were included into the study: mothers having one child below five years of age who had at least one self-identified home accident and were informed consent participants registered beneficiaries of the respective Primary Health Centre at least six months before the time when data were collected.

The study sample size was calculated based on the formula $N = \frac{4pq}{d^2}$ where p represents the estimated prevalence, $q = 1 - p$, and d is the allowable margin of error. Based on previous literature, the prevalence (p) of home accidents was taken as 46.3% (0.463), with q being 0.537 and a precision level (d) of 5% (0.05). Substituting these values into the formula yielded an early sample size of 398. An additional 10% was included to accommodate potential attrition non-response rate, the final sample size of approximately 440 participants.⁴ The study was conducted after getting clearance from the Institutional Ethics Committee (IEC/CHARUSAT/22/118) and informed consent was obtained from eligible participants. House-to-house visits were conducted in each selected rural area, starting from the first house and proceeding systematically using the right-hand rule to ensure comprehensive coverage. With the assistance of ASHAs, eligible participants were identified based on the inclusion criteria. The data collection process continued in each area until the predetermined sample size was achieved. Semi structured questionnaire with purposive sampling technique comprised three sections. The first section addressed the socio-demographic characteristics of the mother and child. The second section elicited information regarding self-reported domestic accidents experienced during the preceding six months. The third section consisted of a checklist comprising six components and 55 parameters for assessing household hazards and the safety practices adopted by mothers. As no standardized instrument was available for assessing household hazards and safety practices, the researcher developed the items based on evidence obtained from previous studies.^{1,4}

RESULTS

Table 1 denotes Most mothers were aged 26–35 years (63%) and 83% had two or fewer children. Nearly half (54%) of the children were below 3 years, indicating high vulnerability. Maternal education was low, with 50% having only primary schooling or less, and 93% were housewives. A majority of households (58%) earned below ₹10,000 monthly, and 79% lived in joint families, reflecting low socioeconomic status and limited awareness of safety practices.

Table 1: Distribution of Demographic Data of the Mothers

N=440

Sr no	Mother demographic profile	Frequency	Percentage
1	Mother's Age in years		
	18-25	151	345%
	26-35	236	54%
	36-45	47	11%
	> 45	3	1%
2	Number of people living in the house		
	≤5	219	50%
	>5	221	50%
3	Child age (Month)		

	≤36 (below 3 years)	290	66%
	>37 (Above 3 years)	249	57%
4	Mother's education level		
	Primary school or lower	221	50%
	Secondary school	151	34%
	High school	38	9%
	University	31	7%
5	Number of children		
	≤2	367	83%
	>2	73	17%
6	Child Gender (Under five and Youngest)		
	Girl	216	49%
	Boy	224	51%
7	Mother's occupation		
	Housewife	409	93%
	Working	31	7%
8	Income in Rupees		
	< 5000 per month	127	29%
	5-10,000 per month	194	44%
	10-20000 per month	116	26%
	> 20000 per month	02	1%
9	Type of family		
	Nuclear	73	17%
	Extended	20	5%
	Joint	347	79%
10	Chronic disease in the parent		
	Mother	11	3%
	Father	12	3%

Figure 1: Distribution of patterns of Home Accidents by type among Children

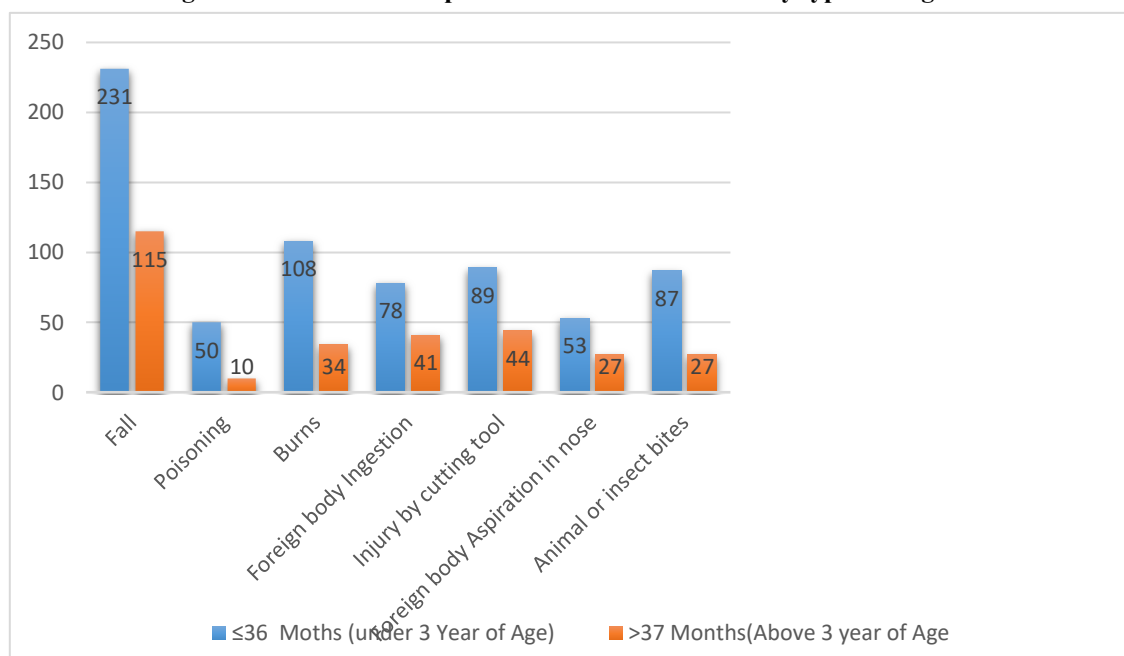


Figure 2: Bar Graph Depicting the Distribution of Home Accidents by Time of Occurrence

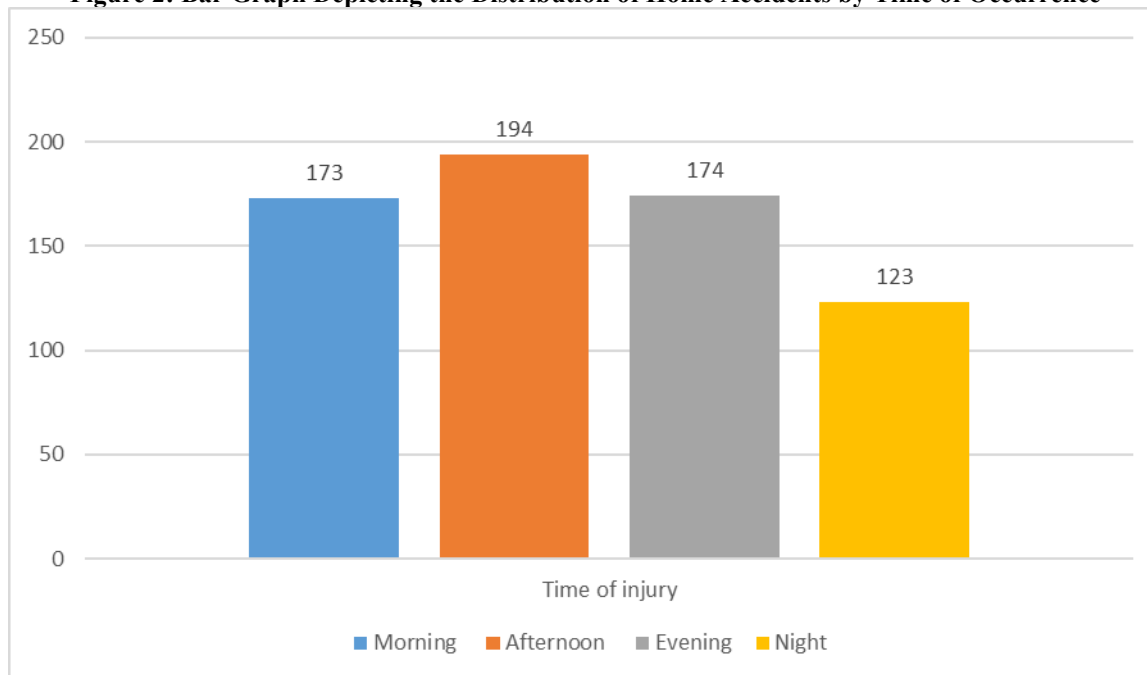


Figure 3: Bar chart showing Frequency of time of Home accidents

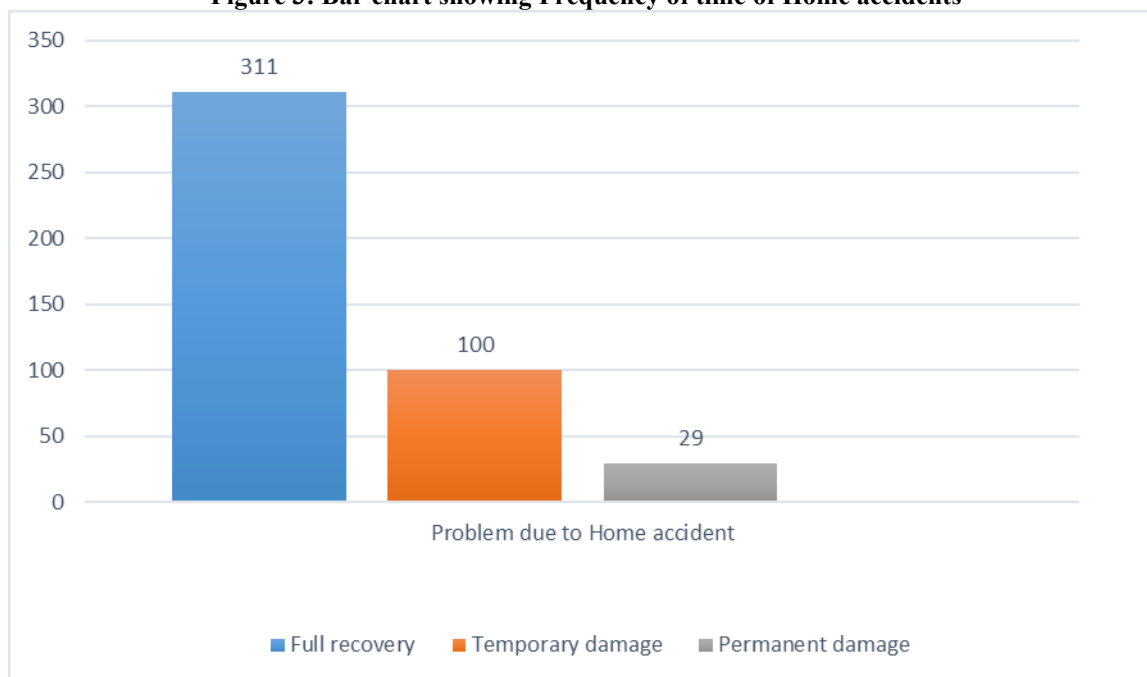


Table 2: Frequency of Home Accidents by Place

Sr. No.	Location	Frequency
	Living room	174
	Kitchen	280
	Bedroom	81
	Varanda	78
	Garden	115
	Hallway/stairs	132
	Terrace	98
	Child room	74
	Bathroom	84

Table 2 suggests the analysis of home accidents among children below five years of age shows that the kitchen is the most frequent site of accidents with 280 incidents, followed by the living room (174) and hallway/stairs (132). The garden (115) and terrace (98) also show notable occurrences, while the child's room (74), varanda (78), bedroom (81), and bathroom (84) report fewer accidents. This highlights that high-activity and hazard-prone areas require enhanced supervision and safety measures to reduce the risk of accidents in young children.

Table 3: Assessment of safety practices followed by Mothers of under five children
(N = 440)

Sr no	Characteristics	Frequency	Percentage
General home safety			
	All house floors are in uniform condition and not slippery or damaged.	376	85%
	Electrical and telephone cords are kept out of the way to avoid blocking walkways.	357	81%
	Electrical cords are routinely inspected for damage and good condition.	351	80%
	Wires are not exposed, all electrical outlets and switches are covered..	313	71%
	Heavy or unbalanced objects in the home are properly anchored to prevent tipping	291	66%
	Bookshelves and furniture are wall-supported to stop furniture falling over.	296	67%
Entrance and exit			
	The entrance and exit are same	300	68%
	The doors are auto locked	157	36%
	The entrance or exit have stairs or slight elevation	321	73%
	Room entryways do not have raised door thresholds	291	66%
3. Kitchen			
	There is a standing kitchen in the house	322	73%
	The height of the cooking area is out of child reach	322	73%
	Cords of kitchen appliances are kept out of reach of children.	269	61%
	Electrical sockets are properly installed and kept in place.	332	75%
	The buttons of the oven/stove/gas /chula are accessible to children	297	68%
	The detergents in the locked cupboard	210	48%
	Knives and sharp objects are kept out of reach of children in well secured drawers or cabinets.	220	50%
	Young children do not have access to nuts, carrots, raisins and other solid foods.	223	51%
	Climbable furniture (e.g., chairs and tables) are kept away from windows.	218	50%
	Baby is properly strapped into the feeding chair with a suitable safety harness	173	39%
	The tablecloth has a position that can be pulled by children	254	58%
Bathroom			
	The floor of the bathroom is wet	276	63%
	The floor of the bathroom is slippery	255	58%
	The toilet covers have safety locks	301	68%
	Electrical appliances are safely out of reach from water and children.	305	69%
	Medicines are well kept and kept out of reach of children.	241	55%
	Cosmetics products are stored safely out of the reach of children.	230	52%
	Razors and scissors keep out of children's reach	224	51%
	The toilet covers closed	310	70%
	The bathroom have locks within a reach of child	330	75%
Living room			
	The furniture of the living room is hassle free	315	72%
	Electrical outlet is closed with cover	269	61%
	Children play with toys suitable for their age	315	72%
	The flowers keep out of reach of children	202	46%
	If there is a licensed weapon, is it keep out of children's reach	176	40%
	Furniture used to keep children away from windows.	305	69%
	Toys are fall into place	306	70%
	The mirrors and glass doors secured	336	76%

Bedroom		
Beds and loft beds are equipped with guardrails	269	61%
The child's bed contains toys.	321	73%
There are security locks in the windows	282	64%
Heavy and long furniture's fixed on the wall	300	68%
Power outlets have safety cover	205	47%
Balcony		
High of balcony railings are with rails	206	47%
Chair or table on the balcony that children can climb on	255	58%
Stair case		
The stair case have railings	301	68%
No steps are loose, damaged or worn,	327	74%
There is adequate lighting on the stairs; switches are located at both end of the stairs.	272	62%
The stair case have slippery surface	256	58%
Garden		
The house have garden area	165	38%
All houseplants are kept away from children	192	44%
The garden area is protected with pest control	244	55%
Additional		
There any specific hazards in the home, such as pets, that need to be addressed	138	31%
House have fire escape plan in place	81	18%
First aid supplies readily available	86	20%

Table 3: A comprehensive evaluation of home safety for under-five children revealed generally safe environments, with 85% reporting even, slip-resistant floors and 81% keeping cords out of reach. Kitchen and hazardous substance safety were suboptimal, with only 61% securing appliance cables and 48–50% storing detergents and sharp tools safely. Bathroom and balcony risks included slippery floors (58–63%) and climbable furniture (58%), while only 47–64% had outlet covers or window locks. Emergency preparedness was low, with 18% having fire escape plans and 20% keeping first aid supplies accessible. Overall, supervision and targeted safety improvements are needed to reduce domestic accidents.

DISCUSSION

This study offers a comprehensive evaluation of home safety practices and environmental risk factors contributing to domestic accidents among under-five children. The study finding indicates home accidents were present in both the genders almost equally. While studies by Krishna et al., Bhandari and Choudhary, George et al., and Radhakrishnan and Nayeem have reported a higher incidence of injuries among females, research by Netra et al., Kumarasamy and Prabhakar, and Shawon has indicated a greater prevalence among males.^{16–21} Falls as the most common type of home accident among children, followed by burns, injuries by cutting tools, and foreign body ingestion. Poisoning and insect bites were less frequent.²² Kitchen, living room, Stairs, Garden and Bathroom are the most common places for home injury.^{23,24} Boys were more prone to accidents than girls, and in preschool children, the highest incidence of accidents was among the two- to three-year-olds of both sexes.²⁵ The risk factor analysis indicates children under three years were observed to be at the highest risk, which aligns with reports from Indian community-based studies showing that toddlers experience the majority of unintentional injuries due to their mobility, curiosity, and lack of risk perception²⁶. Families with multiple children and larger household sizes were also associated with increased accidents, likely due to divided caregiver attention, as highlighted in recent studies linking larger families to reduced supervision quality²⁷. Easily accessible control buttons of ovens and stoves, along with poor storage of detergents, knives, and medicines, mirror the findings from New Delhi and Puducherry, where more than half of households had stoves or gas pipes within reach of children and 78% lacked locked storage for hazardous materials^{26,28}. The risky positioning of the tablecloths and heavy items is also reminiscent of the previously reported unsafe kitchen and dining conditions²⁸. Bathrooms became another crucial concern of our study, as the wet and slippery floors appeared prevalent. The same has been observed in a Puducherry study, in which the majority of bathrooms did not have anti-slip mats and grab bars, which predisposed them to falls²⁸. The physical arrangement of furniture like chairs that could be climbed that were placed close to balconies and windows also were a contributor to fall risks. These observations can be compared to previous studies describing poor consideration of structural changes and child-proofing in Indian households²⁸. Fire escape plans or easy access to first aid kits were reported in only a part of the households. This disparity has been noted in the literature too: although a great number of mothers were aware of such safety measures, only 41.8% of them said they kept a first aid kit in their house²⁹. Equally, in Ujjain, even though two-thirds of injured children obtained some type of first aid treatment, few

households used formal emergency treatment, with the use of ambulance reported in only 1 in 30 instances³⁰. These results highlight a major gap in preparedness and response in relation to public health.

CONCLUSION

This paper indicates that children under the age of three are especially prone to accidents at home because they are at this development stage.. Poor maternal education, large family size, high number of young children in the family, inadequate supervision, and dangerous home conditions are some of the major risk factors. The risk is also aggravated by improper safety measures. The findings confirm the significance of putting up powerful preventive strategies like parental education and home safety measures. Increased awareness and support using the help of healthcare workers, in particular, nurses, can greatly contribute to minimizing the number of accidents at home and raising the general safety of children.

Strength of the study:

The research was carried on the rural parts of the Anand district where different safety problems are largely neglected; therefore, the results are of more value. Although the authors concentrate on under-five children, one of the most vulnerable classes, the study contributes to the topicality of the information it includes in building the required prevention strategies. An observational checklist and structured questionnaire allowed the investigation to obtain the data concerning home safety practices both on a subjective and objective level. The findings can be applicable in the community health programs and policy-making to enhance child safety in the domestic level.

Financial support and sponsorship

Self-funded

Conflicts of interest:

The authors declare no competing interests.

REFERENCES:

- 1 Parental perceptions of barriers and facilitators to preventing child unintentional injuries within the home: a qualitative study. Ablewhite J, Peel I, McDaid L, et al. BMC Public Health. 2015; 15:280. doi: 10.1186/s12889-015-1547-2.
- 2 Mirahmadizadeh A, Hemmati A, Zahmatkesh S, et al. Incidence of accidents and injuries in children under 6 years old in southern Iran: a population-based study. J Inj Violence Res 2020;12(2):135-44.
- 3 Laffoy M. Childhood accidents at home. Ir Med J 1997;90(1):26-7.
- 4 Krishnamurthy, K. V.; Murthy, M. R. Narayana; Kulkarni, Praveen; Shree, Amogha; Gopi, Arun. A Study on the Prevalence of Accidents among Under-Five Children in an Urban Field Practice Area of Mysuru. Indian Journal of Medical Specialities 12(1):p 25-30, Jan–Mar 2021. DOI: 10.4103/injms.injms_125_20
- 5 WHO HECA issue Briefs Series. 2019Last accessed on 2019 Mar 11 Available from: https://www.who.int/heca/infomaterials/issue_briefs/en/
- 6 Annmariya TA, Arya GK, Binni V, et al. A study to assess the knowledge regarding the prevention of home accidents among the mothers of under-five children in a selected community, Mangalore. Int J Adv Nurs Manag 2021;9(4):408-12.
- 7 Khan, S., Tauheed, N., Nawab, S., Afzal, S., & Khaliq, N. (2019). Domestic accidents among under-5 year children: a study on the modern day epidemic. International Journal Of Community Medicine And Public Health, 6(4), 1529–1535. <https://doi.org/10.18203/2394-6040.ijcmph20191379>
- 8 Banerjee S et al. Unintentional injuries among under-five children in a rural area in Delhi. Indian Pediatr. 2021;[Volume]:560–563. (Indian Pediatrics)
- 9 Bhatia J, Singh MM, Marimuthu Y, Garg S, Sharma P, Rajeshwari K. Unintentional injuries among under-five children in a rural area in Delhi. Indian Pediatr. 2021;58(6):560–563.
- 10 Pathak A, Agarwal N, Mehra L, Mathur A, Diwan V. Incidence, Risk and Protective Factors for Unintentional, Nonfatal, Fall-Related Injuries at Home: A Community-Based Household Survey from Ujjain, India. Pediatric Health Med Ther. 2020 Feb 20;11:65-72. doi: 10.2147/PHMT.S242173. PMID: 32110140; PMCID: PMC7039069.
- 11 Mohan D, Kumar A, Varghese M. Childhood injuries in rural north India. Int J Inj Control Saf Promot. 2010;17(1):45-52.
- 12 World Health Organization. Projections of mortality and burden of disease, 2004–2030 [Internet]. Geneva: WHO; 2014 [cited 2018 Mar 11]. Available from: http://www.who.int/healthinfo/global_burden_disease/projections2004/en/
- 13 Sawe HR, Milusheva S, Croke K, Karpe S, Mfinanga JA. Pediatric trauma burden in Tanzania: analysis of prospective registry data from thirteen health facilities. Inj Epidemiol. 2022;9(1):3.
- 14 Peden M, Oyegbite K, Ozanne-Smith J, Hyder AA, Branche C, Rahman AF, Rivara F, Bartolomeos K. Child injuries in context. In: World Report on Child Injury Prevention 2008. Geneva: World Health Organization; 2008.

- 15 Joseph A, Peter RM, Kumar D. A community based cross-sectional study on the magnitude of childhood injuries during the past one year among tribal children aged 1–14 years in Dharmapuri district, Tamil Nadu. *Clin Epidemiol Glob Health*. 2025;33:101910. doi:10.1016/j.cegh.2024.101910.
- 16 Netra G, Nawaz AS, Kumar A, Kusum M, Varadaraja Rao BA. A cross-sectional study on domestic accidents in the urban field practice area of a private medical college, Davangere, Karnataka. *Int J Community Med Public Health*. 2017;4(9):3354–9.
- 17 Bhandari DJ, Choudhary S. A study of occurrence of domestic accidents in semi-urban community. *Indian J Community Med*. 2008;33(2):104–6. doi:10.4103/0970-0218.40878.
- 18 Shawon SR, Hossain FB, Rahman M, Ima SZ. Domestic accidents in a rural community of Bangladesh: a cross-sectional study on their incidence and characteristics. *Dev Ctry Stud*. 2012;2(7):14–9.
- 19 George S, Paul N, Francis PT, Leelamoni K. Prevalence of domestic accidents in a rural area of Kerala: a cross-sectional study. *Int J Community Med Public Health*. 2017;4(4):949–53.
- 20 Sudhir, Krishna D, Ashok NC, Dhar M. Prevalence of domestic accidents in rural India: a cross-sectional study. *Sch J Appl Med Sci*. 2014;2(2B):657–9.
- 21 Radhakrishnan S, Nayeem A. Prevalence and factors influencing domestic accidents in a rural area in Salem district. *Int J Med Sci Public Health*. 2016;5(8):1688–92.
- 22 Carter YH, Jones PW. Accidents among children under five years old: a general practice based study in north Staffordshire. *Br J Gen Pract*. 1993 Apr;43(369):159-63. PMID: 8323803; PMCID: PMC1372360.
- 23 Alamr F, Alzahrani HMA, Alghamdi AMA, Alzhrani ASA, Alzahrani FAA, Alkhediwi LMA, Alghamdi MAA, Alhomrani MAM, Aburaida OM. Prevalence and Risk Factors of Home Accidents Among Children Under Five Years of Age in Al-Baha, Saudi Arabia. *Cureus*. 2023 Oct 11;15(10):e46846. doi: 10.7759/cureus.46846. PMID: 37954756; PMCID: PMC10637285.
- 24 Effective parental supervision and child proofing as accident prevention strategies for physical wellbeing of preschool children in Port Harcourt metropolis, Rivers State. Amadi AG, Azunwena RN. *Int J Home Sci*. 2020;6:500–505.
- 25 Children domestic accidents profile in Jazan region, a call for new policies to improve safety of home environment. Ghailan K, Almalki MJ, Jabour AM, et al. *Saudi J Biol Sci*. 2021;28:1380–1382. doi: 10.1016/j.sjbs.2020.11.074.
- 26 Singh RP, Singh R, Kumar V, et al. Assessment of home hazards for childhood injuries in an urban population in New Delhi. *Indian J Community Med*. 2022;47(2):162-166.
- 27 Patel V, Solanki D, Shah P. Household and caregiver determinants of unintentional injuries among under-five children: Evidence from Gujarat. *J Family Med Prim Care*. 2024;13(2):556-562.
- 28 Rehman, Tanveer & Sulgante, Sudheera & Kar, Sitanshu. (2019). Prevalence and pattern of domestic accidents in the field practice area of Jawaharlal Institute of Urban Health Centre, Puducherry: a cross-sectional analytical study. *Journal of injury & violence research*. 12. 10.5249/jivr.v12i1.1182..
- 29 Gauthamme Sai LM, Kumar R, Harsha V. Knowledge and practice of mothers regarding child safety at home among under-five children and its correlation with sociodemographic details. *J Pharm Res Int*. 2021;33(48A):57-65.
- 30 Pathak A, Agrawal N, Mehra L, Mathur A, Diwan V. First Aid Practices and Health-Seeking Behaviors of Caregivers for Unintentional Childhood Injuries in Ujjain, India: A Community-Based Cross-Sectional Study. *Children (Basel)*. 2018 Sep 6;5(9):124. doi: 10.3390/children5090124. PMID: 30200628; PMCID: PMC6162460.