

Domestic Accidents among the Tribal Adults: A Cross-sectional Study from a Block of Murshidabad District, West Bengal, India

RAJARSHI DAS¹, MRINMOY ADHIKARY², MALAY KUMAR DAS³, DILIP KUMAR DAS⁴

ABSTRACT

Introduction: Domestic accidents are a significant yet often overlooked public health issue, particularly among tribal communities.

Aim: To estimate the magnitude and pattern of domestic accidents among rural tribal adults and to assess the health care-seeking behaviour among the victims.

Materials and Methods: A community-based cross-sectional study was conducted over a period of five months (15th July- 15th November 2025) in Nabagram block, Murshidabad district, West Bengal, India among a calculated sample of 220 tribal adults selected through multistage random sampling. The participants were interviewed using a predesigned schedule on domestic accidents; care-seeking behaviour was assessed for the most recent accident. Multivariable logistic regression was used to identify correlates of domestic accidents. Statistical Package for the Social Sciences (SPSS) version 23.0 was used for analysis.

Results: A total of 33 domestic accidents occurred among 28 participants, with a period prevalence of 12.7% (28/220) and an accident load of 1.2/person. Incised wound 16 (48.5%), insect bite 6 (18.2%), animal bite 6 (18.2%) and fall 5 (15.2%) were the types of accidents; most commonly affected site being head/neck 10 (30.3%) and 17 (51.5%) accidents occurred in the morning. Significant correlates of domestic accidents were found to be alcohol consumption (aOR 6.58, 95% CI: 2.21-19.56) and family type (aOR 3.07; 95% CI: 1.17-7.98). The majority of accident-victims received first-aid at home 17 (60.7%); attended public health facility 15 (53.6%); received medical treatment 27 (96.4%).

Conclusion: Domestic accidents still remain as a substantial health burden among rural tribal adults in the area and underscore the need for targeted public health interventions.

Keywords: Alcohol consumption, First-aid treatment, Incised wound, Public health facilities, Tribal communities

INTRODUCTION

Accidents are defined as unintentional events caused by sudden external forces [1]. Domestic accidents account for a major proportion of injuries and include incidents that take place at home and/or in its immediate surroundings, and not accidents that occur due to traffic, vehicles, or sports [2]. These include burns, falls, poisoning, drowning, animal bites, and injuries due to sharp objects. Falls are the second most common cause of death due to unintentional injuries after road traffic accidents, followed by drowning, poisoning, and burns [2]. These domestic accidents contribute significantly to the country's disease burden, accounting for over 16% of total Disability-Adjusted Life Years (DALYs) [3]. Domestic accidents are a significant but under-researched public health issue, particularly among India's tribal populations. These communities face a unique intersection of environmental, socio-economic, and cultural vulnerabilities that distinguishes their safety profile from that of the general population.

Murshidabad district in West Bengal also has a sizable tribal population. According to the census data, the Nabagram block in Murshidabad district, West Bengal, has a total population of 211,000, of which 7.9% belong to the scheduled tribe community, accounting for 16,700 people. This block includes 109 census villages and 10 Gram Panchayats (GPs), of which 43 have resident tribal populations [4-6]. The tribal communities are primarily engaged in cultivation, agricultural labour, household work, or marginal work. They live in concentrated areas within the villages according to their needs and occupational perspectives [7]. There is a critical lack of published, community-based data specifically regarding domestic accident/injury burden and pattern among tribal populations. In this perspective, the present study has been undertaken with the following specific objectives: to estimate the prevalence of domestic accidents, to identify the patterns and correlates of domestic

accidents among tribal adults, and to examine the care-seeking behaviour of accident victims in a block of Murshidabad District, West Bengal, India.

MATERIALS AND METHODS

A community-based cross-sectional study was conducted over a period of five months (15th July- 15th November 2025) in Nabagram Community Development Block of Murshidabad district, West Bengal, India. The study was conducted with prior permission of Project Officer cum District Welfare Officer, Backward Classes Welfare and Tribal Development (vide memo no. 1322/BCW/MSD Dt. 14/07/2025) and the residence of the tribal population in the block was identified, and necessary assistance was obtained from the block development office as per the order. The specified scheduled tribe group was identified by the provided list. Migration status was also verified with the assistance of the department's block-level officials. Ethical clearance was obtained from the Institutional Ethics Committee. The approval number is (No. 01/APR/2025 Date 02/04/2025).

Inclusion criteria: Tribal adults aged 18 to 64 years who had resided in the area for more than one year were included in the study.

Exclusion criteria: Individuals who were seriously ill, did not consent, or remained unavailable after two home visits were excluded from the study.

Sample size: A required sample of 220 study subjects was selected through multistage random sampling as follows:

In the studied Nabagram Block, out of a total of 109 villages, 43 villages had a tribal resident population. At the first stage, of these 43 villages, 10 villages were selected by Simple Random Sampling (SRS). In the second stage, in each of the identified villages, a list of households with tribal people was prepared with the help of peripheral health workers (Auxiliary nurse-midwives, accredited

social health activists, etc.). It was decided to include an equal number of eligible study subjects from each of the 10 villages. Thus, from the sampling frame of households in each village, an equal number, i.e., $220/10 = 22$ households, were selected by SRS. Finally, in each selected household, adult members (aged 18 years to 64 years) were listed by age and gender, and one member was recruited as a study participant by SRS.

Data collection: A pretested and predesigned interview schedule was used to collect data. The questionnaire was developed and validated by expert faculty to ensure its validity. It was translated into Bengali and back-translated into English to ensure consistency and accuracy. A pilot study was conducted among 22 subjects (10% of the 220-sample size) in a similar population and setting. Necessary modifications were made before data collection.

It included items on socio-demographic characteristics (age, sex, education, occupation, and socio-economic status) and housing characteristics (type of house). The behavioural factors, including the handling of sharp instruments, sleeping locations, and alcohol use in daily life, were considered. The health care-seeking behaviour was also taken into consideration, including the availability of first aid, the place of treatment, and the type of treatment.

In this study, domestic accidents were defined as unintended injuries occurring within the home or its immediate surroundings, excluding those related to traffic, occupation, or intentional violence.

Data on domestic accidents were requested for the reference period of one year (January -December 2024), and, accordingly, other details were elicited. However, for health care-seeking practices, the most recent accident event was considered.

STATISTICAL ANALYSIS

SPSS version 23.0 was used for analysis. Descriptive statistics were applied. Categorical variables, such as gender and type of house, were expressed as frequency and percentage. Continuous variables such as age were summarised using the mean and standard deviation. To identify predictors of domestic accidents, independent variables, including socio-demographic, environmental, and behavioural factors, were considered. Bivariate analysis was performed using the Chi-square test, followed by multivariate logistic regression analysis to determine significant predictors. Odds ratio, 95% Confidence Interval (CI) and p-values were reported.

RESULTS

All 220 study participants were interviewed, with no dropouts. Socio-demographic characteristics of the participants depicted that the mean age was 38.72 ± 10.7 ; (64.5%) were male, the majority were daily labourers (76.4%) and belonged to the lower socio-economic class (90.9%); and only 23.2% had secondary and above level of education [Table/Fig-1].

Among 220 study participants, 28 people experienced any domestic accidents with a total of 33 episodes of domestic accidents during the reference period of one year; yielding a period prevalence of 12.7% (28/220) and an accident load of 1.2 per person (33/28) [Table/Fig-2].

On bivariate analysis, out of the various socio-demographic factors, family type (cOR: 2.83; 95% CI: 1.22-6.58) and alcohol consumption habit (cOR: 5.32; 95% CI: 1.94-14.6) were found to be significantly associated with the occurrence of domestic accidents [Table/Fig-3]. On multivariable logistic regression, Tribal adults belonging to a nuclear family had three times higher odds of having accidents as compared to a joint family (aOR:3.07; 95% CI: 1.17-7.98). Participants with a habit of daily alcohol consumption had 6.58 times higher odds of domestic accidents as compared to non-consumers (aOR:6.58; 95% CI: 2.21-19.56) [Table/Fig-3].

Variables	Frequency (%)
Age (years)	
18-40	176 (80)
>40	44 (20)
Mean $\pm$ SD	38.72 $\pm$ 10.7
Gender	
Male	142 (64.5)
Female	78 (35.5)
Family type	
Nuclear	101 (46)
Joint	119 (54)
Education	
Up to middle school	169 (76.8)
Secondary and above	51 (23.2)
Occupation	
Service and business	52 (23.6)
Daily labour	168 (76.4)
Socioeconomic status*	
Lower middle and above	20 (9.1)
Lower class	200 (90.9)

[Table/Fig-1]: Background characteristics of the study participants (n=220).
Note: * Modified BG Prasad Scale Nov.24

Attributes/characteristics	Frequency (%)
Prevalence of domestic accidents	28 (12.7)
Person with single episode of domestic accidents (N=28)	23 (82.1)
Person with two episodes of domestic accidents (N=28)	5 (17.9)
Total domestic accidents	33
Domestic accidents load	33/28=1.2/Person
Pattern of domestic accidents (N=33)	
Incised wound	16 (48.5)
Insect bite	6 (18.2)
Animal bite	6 (18.2)
Fall	5 (15.2)
Site of injury (N=33)	
Head/neck	10 (30.3)
Chest	8 (24.2)
Face	2 (6.1)
Upper extremities	6 (18.2)
Pelvis with lower extremities	7 (21.2)
Time of injury (N=33)	
Morning	17 (51.5)
Afternoon	3 (9.1)
Evening	11 (33.3)
Night	2 (6.1)

[Table/Fig-2]: Magnitude and pattern of domestic accidents among the tribal adults (n=220).

Of 28 participants having such domestic accidents/injuries, most of them availed first aid services (60.7%) at their home. Among the victims, 21.4% lost their daily wages [Table/Fig-4].

DISCUSSION

In the present study, 12.7% prevalence of domestic accidents was found, with a domestic accident load of 1.2 per person among the tribal participants. Studies conducted in different rural communities in Bellur, South India, by Sudhir K et al., reported a 9.4% prevalence of domestic accidents among the non-tribal population [8]. In a study by Stalin P et al., the prevalence of domestic accidents was 12.7%. Out of 500 domestic accidents, falls (54.4%) was the most common type of domestic accident.

Variables	Total subjects	Domestic accidents No (%)	cOR (95%CI)*	p-value	aOR (95%CI)*
Age in years					
18-40	176	24 (13.6)	1.58 (0.52-4.81)	0.418	1.76 (0.53-5.75)
> 40	44	4 (9.1)			
Gender					
Male	142	21 (14.8)	1.76 (0.71-4.35)	0.216	1.45 (0.55-3.81)
Female	78	7 (9.0)			
Education					
Up to middle school	169	23 (13.6)	1.45 (0.521-4.03)	0.475	1.83 (0.53-4.39)
Secondary and above	51	5 (9.8)			
Occupation					
Service and business	52	8 (15.4)	1.53 (0.64-3.83)	0.319	1.53 (0.53-4.39)
Daily labour	168	20 (11.9)			
Family type					
Nuclear	101	19 (18.8)	2.83 (1.22-6.58)	0.013	3.07 (1.17-7.98)
Joint	119	9 (7.6)			
Socio-economic status					
Lower middle and above	20	5 (25)	2.56 (0.85-7.71)	0.084	0.88 (0.23-3.33)
Lower class	200	23 (11.5)			
House condition					
Semi pucca/pucca	211	25 (11.8)	0.27 (0.063-1.143)	0.058	0.16 (0.02-1.03)
Kutcha	09	3 (33.3)			
Alcohol consumption					
Daily consumed	112	23 (20.5)	5.32 (1.94-14.6)	0.001	6.58 (2.21-19.56)
Not consumed	108	5 (4.6)			

[Table/Fig-3]: Correlates of domestic accidents among the tribal adults (n = 220).

Note= *,*: Last categories are cited as reference for calculating odds ratio & adjusted odds ratio; aOR: Adjusted odds ratio;cOR:Crude odds ratio

Health care seeking behaviour	Frequency (%)
First aid provision at home	
Provided at home	17 (60.7)
Not provided	11 (39.3)
Treatment facility type where individual taken services	
Public facility	15 (53.6)
Private facility	13 (46.4)
Treatment type	
Medical treatment	27 (96.4)
Surgical treatment	1 (3.6)
Number of patient attended follow-up visit	
No follow-up visit	2 (7.1)
Attended follow-up visit	26 (92.9)
Number of individuals lost daily wages	
Individuals with no daily wage loss	22 (78.6)
Individual with daily wage loss	6 (21.4)

[Table/Fig-4]: Healthcare seeking behaviour of the victims of domestic accidents among the study participants (n=28).

Note: += simple wound management, burn care.

Females and respondents aged 21-40 years were more commonly affected [9].

A study by Divya BV et al., showed 8.5% domestic accidents among the study population [10]. Whereas, the prevalence reported in other rural settings by Latha H and Prabhakar R in Tamil Nadu was 4.8% [11]. A study by Radhakrishnan S and Nayeem A in rural Salem found that domestic accidents accounted for 13% of all accidents. About 50.4% of domestic accidents were owing to falls, and 82 accidents were seen in female subjects [12]. However, all these studies were conducted in general populations; none were specifically among tribal adults.

In the present study, the leading cause in this tribal community was incised wounds caused by sharp objects. The study conducted by Radhakrishnan S and Nayeem A among the general population also showed that injury from sharp instruments was 20.8% in rural Tamil Nadu [12], compared with a much higher proportion of 48.5% in the present study among tribal adults.

In a study by Rehman T et al., 10.2% of households reported domestic accidents, most of which involved adults (42%), were caused by falls (37%), affected the upper limbs (45%), and commonly occurred in the kitchen (43%) [3].

In the present study, 53.6% domestic accident victims preferred the public health facilities for treatment and rest (46.4%) were treated at private facilities; in comparison, the study on health care seeking behaviour among tribal adults in rural West Bengal by Taraphdar P et al., more than half (57%) of all respondents preferred government institutions for moderate illness, and the rest equally opted for private practitioners and quacks. However, for emergencies, dog bites, and snake bites, all key respondents in the three study villages unanimously preferred government institutions [13].

The inherent strength of this study is its novelty, as it is conducted among a vulnerable population.

Limitation(s)

Despite this, the study also had limitations, being in comparison undertaken in a restricted geographical area, which might restrict its generalisability.

CONCLUSION(S)

Domestic accidents with their various nature and types are yet a special health concern among rural tribal populations in the area of Murshidabad district. Findings highlight the need for some strategic measures to address the challenges of domestic accidents among rural tribal people. Targeted, culturally appropriate public

health interventions, such as safe handling of household tools, fall prevention, and specialised first-aid training for snake and dog bites, may be implemented.

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PARTICULARS OF CONTRIBUTORS:

1. Postgraduate Trainee, Department of Community Medicine, Murshidabad Medical College Murshidabad, Berhampore, West Bengal, India.
2. Assistant Professor, Department of Community Medicine, Murshidabad Medical College Murshidabad, Berhampore, West Bengal, India.
3. Assistant Professor, Department of Community Medicine, Murshidabad Medical College Murshidabad, Berhampore, West Bengal, India.
4. Professor and Head, Department of Community Medicine, Murshidabad Medical College Murshidabad, Berhampore, West Bengal, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Rajarshi Das,
Postgraduate Trainee, Department of Community Medicine, Murshidabad Medical College, Berhampore, West Bengal, India.
E-mail: drajarshi621@gmail.com

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