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INJURY AND ITS CONTRIBUTING FACTORS AMONG URBAN SLUM DWELLERS IN SOUTH INDIA THROUGHOUT THE FESTIVAL MONTH: A COMMUNITY BASED SURVEY

N. Sasi , **V. Mariamma

**Dept. of medical surgical nursing, college of Nursing,*

Mother Theresa Post Graduate and Research Institute of Health Sciences, Puducherry.

***Dept. of community health nursing, College of nursing, East coast institute of medical sciences, Puducherry.*

Email:meenaavenugopal@gmail.com , nsasi0109@gmail.com

ABSTRACT

Both in developing and industrialized nations, including India, the morbidity and mortality from injuries have been gradually rising. The goal of the current study was to evaluate the frequency of injuries and pinpoint the risk factors connected to those injuries during the festival month in a selected urban region, Puducherry. ***Methods:****It is a cross-sectional study that was done among locals in a Puducherry medical college's urban field practice region. A pretested questionnaire was used for the participant interviews. Information on injury incidence and the contributing factors was gathered. Data were entered into EpiData, and Stata was used for analysis. To determine the risk factors that go along with injury, generalized linear models with a Poisson distribution were utilized.* ***Results:*** *Interviews were conducted with a total of 1380 participants from two chosen clusters. Injury incidence was 5.2% (95% CI: 4.0 - 6.4). Male gender and student status were independently linked with experiencing an injury in the adjusted analyses (RR-1.96, 95% CI: 1.15 - 3.37) and (RR-2.91, 95% CI: 1.13 - 7.54), respectively. The majority of the wounds were incidental and inadvertent.* ***Conclusion****: 52 injuries per 1000 people were reported as occurring each month, and the majority were unintentional. During the festival week, it was higher. Injury prevention and reduction efforts should focus on adult males and school-aged children through primary healthcare initiatives.*

INTRODUCTION

A wide definition of injury is "body damage due to sudden transfer of energy (physical, mechanical, chemical, thermal, or radiant), resulting from an interaction of agent, host, and environment and exceeding an individual's physiological tolerance." It can also happen when someone drowns and is suddenly deprived of a critical need like oxygen.[1] Injury rates have been rising sharply in both industrialized and developing nations, and they constitute a serious public health concern worldwide. Every six seconds, someone dies in the world as a result of an injury, and more than 5 million people worldwide pass away each year as a result of injuries. Injury- related mortality account for 9% of all fatalities worldwide and almost all new cases of HIV/AIDS.
According to the National Crime Record Bureau (NCRB), 15-20% of all deaths and 20 million hospital admissions in India occur as a result of injury-related causes each year, killing about one million people.[3,4] India is expected to contribute more injuries and deaths globally in the future if current patterns hold, and none of its states would be able to achieve the Sustainable Development Goals by the year 2030.[5] Minor non-medical injuries go unreported because NCRB reports are based on police records, which primarily document fatal injuries of medical and legal significance. No one agency has complete and all-inclusive data on injuries from all causes, including hospitalizations, deaths, and impairments. Additionally, numerous research and reports have revealed the massive under reporting.

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MATERIALS AND METHODS

Study design and setting:

A community based cross-sectional study was carried out among residents in urban field practice area of JIPMER, Puducherry. Around 9500 people live in the field practice area as a whole. In the neighbourhood, there are about 1750 households. The Urban Health Centre offers the public services for prevention, promotion, treatment, and rehabilitation..

Sample size and sampling: The sample size was calculated to be 1350, using the formula $N=(Z_{1-\alpha/2})^2 p(1-p)/d^2$, where $Z_{1-\alpha/2}$ is the value of normal deviate at 95% confidence level, p is the minimum proportion (p) of any type of injury occurring in a month as 10% based on previous study[8] and d is relative precision of 20% and design effect of 1.5 for the type of sampling adopted. Out of four wards present in the area, two wards were selected randomly. Systematic random sampling was adopted to select household in the area into the study. All the individuals residing in the selected household for more than six months were included in the study.In case the house was locked, two more visits were made before excluding the same.

Study tool and data variables: Date was collected with the help of structured pretested questionnaire. Questionnaire was developed by the investigators through review of literature and also based on WHO injury surveillance guidelines.[1] Initially it was developed in English and later translated to Tamil which was the vernacular language of study participants. Tamil version of the questionnaire was back-translated to English in order to ensure accuracy of the questions. Face and content validity was ensured and pilot testing of the questionnaire was done and necessary modifications were made. Study tool collected information on detailed socio-demographic variables, occurrence of injury, the causes, nature and place of injuries, details regarding the medical care services availed and place of treatment. Centres for Disease Control and Prevention (CDC) classification was used to define the type of injuries.[9]

Data collection procedure:

Data was gathered over the course of a month by distributing questionnaire to the participants. The major respondents were the household's homemakers (women), who were better informed than anybody else about health-related concerns affecting the entire family. The homemakers of a particular family gave their verbal informed consent before the questionnaire was given to them at home.

Data entry and analysis: Data were entered in Epi Data (version 3.1, Epi Data Association, Odense, Denmark) and analysed using Stata version 12.0. Incidence of injuries was calculated and reported with 95% confidence interval (CI). Bivariate analysis was carried out to find out the unadjusted association between the injury status and various independent variables then adjusted multivariate analysis was carried out using Generalized Linear Models with Poisson distribution and log link function adjusting for clustering at household level. Those study variables that had p value of <0.10 in the bivariate model were included for the multivariate Generalized Linear Models to assess the independent effect of study variable on injury status. Findings were considered statistically significant at a p value of <0.05.

RESULTS

In the urban field practice area, there were 1380 study participants drawn from 351 families in the two randomly chosen wards. Among them, 720 (52.2%) were women. 668 (48.4%) of the population was between the ages of 18 and 44, followed by 408 (29.6%) individuals under the age of 18, 204 (14.8%) individuals between the ages of 45 and 59, and the remaining 100 (7.2%) individuals were 60 years of age or over. 1311 (95%) of the study's participants were Hindus, 61 (4.4%) were Christians, and 8 (0.6%) were Muslims.

72 participants reported at least one injury occurrence throughout the course of the month. The monthly incidence rate was 52 per 1000 people (95% CI: 40-64). Seventy-two percent of the total 72 injuries were accidental, one was homicidal, and two more were suicide. The two most common causes of damage among the 72 injured people were falls (34.8%) and burns (26.4%). There were 15 (20.8%) people who suffered from road traffic injuries (RTI), 2 (2.7%) from dog bites, 2 more (2.7%) from assaults, and 9 (12.6%) from injuries from other sources. Regarding the locations of the injuries, 48.6% occurred at home, and 36.1% were RTI. Only a few injuries were reported at work (6.9%) and schools (4.2% each). the types of injuries

Figure 1 depicts the distribution of injuries over the study period. The local festival "Deepavali" period, which runs from the latter week of October to the first week of November 2013, is when injuries peaked. The graph shows that other causes of injuries were also common during the festival season, in addition to burns from crackers.

Unadjusted analysis revealed significant associations between the incidence of injury and males (RR 2.3; 95% CI: 1.4-3.8), employed urban slum dwellers (RR 2.7; 95% CI: 1.1-6.3), and students (RR 4.3; 95% CI: 1.8-10.4). Table 1 displays the relationships between many additional socio demographic factors and injury status. After controlling for clustering at the household level, the multivariate analysis took gender and occupation into account.

Discussion:

According to researcher, 52 injuries per 1000 people in Puducherry's urban slums occurred each month throughout the festival season (95% confidence interval: 40–64). One week prior to the event, there was an uptick in injuries. During the festival season, there was an upsurge in both cracker-related and other types of injuries. The majority of injuries were unintentionally inadvertent. Fall and burn injuries accounted for about one third of all injuries. Nearly half of the injuries happened on or near the home's property. The most frequent kind of injuries were abrasions and/or bruises. Both being a student and being a man were individually linked to an increased risk of getting hurt.

Community based cross-sectional studies conducted in urban and semi-urban areas of India showed one-year prevalence of injuries in the range of 10-21%[10–14] and in rural areas it ranged from 9 to 25%.[15–18] The occurrence of injuries in the present study is higher than that reported in the urban and rural parts of India. The major reason could be the difference in the recall

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period, the operational definitions used, the age group studied, difference in awareness and practice related to socio-cultural aspects and the intentions of the injuries captured. However the incidence of injuries in the current study was relatively high compared to previous national and international studies mentioned, the most likely reason for this difference could be due to the fact that the study was conducted during the local festival, i.e., '*Deepavali'.* Deepavali is a festival when people burst crackers, thus accidental burn injuries are expected to increase.

In the investigation, almost all injuries were unintended and unintentional, which was consistent with earlier studies of a similar nature conducted in India.[11–15] In our study, falls were the most frequent cause of injuries, and similar findings were published in studies from rural and urban Pondicherry,[13,16], rural Tamil Nadu,[17], urban Karnataka,[10], and rural Wardha district of Maharashtra[18]. In our analysis, RTI made up 5% of all reported injuries, but in earlier investigations, it ranged from 15.2% to 25.4%.[5,7,16,18] In this study, people under the age of 18 (7.8%) were more likely to sustain injuries than people in the intermediate age groups, according to studies from other parts of India.[16,18] In our study and in the past, men had two times as many injuries as women.

Most injuries were incidental and unintended in nature, occurring frequently among males and small children on domestic property. Family doctors and primary care physicians have a great opportunity to be more pro-active in helping to avoid and manage these domestic injuries.[22] They can first get involved in the creation of context-specific, efficient information, education, and communication (IEC) initiatives for injury prevention and control that emphasize the application of safety precautions to avoid accidents both linked to crackers and unrelated to them. Second, family doctors have a significant impact on the community's and the family's education and application of first aid techniques. When delivering reproductive and paediatric healthcare at clinics for children under five, these services can be provided to parents.

Strengths and limitations:

The study had several strengths. First, the study had good sample size to precisely estimate the incidence of the injuries during the study period. Second, standard proforma adapted from WHO injury surveillance was used and trained medical trainees were involved in data collection. Third, data quality was ensured using EpiData software and best fit models were used to assess the factors independently associated with having an injury. The study had few limitations. The reference period being only thirty days was very narrow and the estimates might have been influenced due to the festival activity during the same period. However, the interest of study was to capture the clustering effect during the festival period and also to avoid recall bias due to longer recall period.

Conclusion:

The results of the current study indicated that there was a significant incidence of injuries during the festival month, and they were not just caused by crackers but by other factors as well. Children and men were both independently related with harm. Most of the reported injury types were of a preventive nature. As a result, family doctors and primary care physicians have a crucial role in teaching patients' families about their potential risk for unintentional injuries depending on their age, awareness, and context-specific sociocultural factors.

Table -1: Description of intent, cause, nature and place of injuries and the details of treatment taken of the injured (N=72).

Characteristics	Frequency (%)
Intent of injury	
Accidental	70 (97.2)
Homicidal	1 (1.4)
Suicidal	1 (1.4)
Cause of injury	
Fall	25 (34.8)
Burns	19 (26.4)
RTA	15 (20.8)
Others	9 (12.6)
Assault	2 (2.7)
Dog bite	2 (2.7)
Place of injury	
Home	35 (48.6)
Roads	26 (36.1)
Work Place	5 (6.9)
School	3 (4.2)
Others	3 (4.2)
Nature of injury	
Abrasion/ Bruise	29 (40.3)
Burns	19 (26.5)

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Open(Cuts/Bites/laceration)	14 (19.4)
Fracture	6 (8.3)
Sprain	4 (5.5)
Treatment details	
Received first-aid	58 (80.5)
Received treatment	45 (62.5)
Place of treatment (N=45)	
Public sector	39 (86.6)
Private sector	6 (13.3)

Table-2: Association of socio-demographic variables with injury status among the study subjects (N=1380).

Characteristics	Total, N=1380	Injured N=72	Unadjusted RR (95% CI)	p value
Age in years				
<18	408	32 (7.8)	2.3 (1.0-5.1)	0.043
18-44	668	28 (4.2)	1.2 (0.5-2.8)	0.630
45-59	204	7 (3.4)	1	--
≥60	100	5 (5)	1.5 (0.5-4.5)	0.511
Gender				
Male	660	49 (7.4)	2.3 (1.4-3.8)	0.001*
Female	720	23 (3.2)	1	--
Religion				
Hindu	1311	70 (5.3)	1.6 (0.4-6.0)	0.489
Christian	61	2 (3.3)	1	--
Muslim	8	0	NA	NA
Education				
NA (<6years)	103	4 (3.9)	1.0 (0.3-3.3)	0.987
Illiterate	195	7 (3.6)	0.9 (0.3-2.5)	0.895
1-8th standard	456	37 (8.1)	2.1 (0.9-4.5)	0.064
9-12th standard	444	17 (3.8)	1.0 (0.4-2.3)	0.992
Graduates	182	7 (3.8)	1	--
Occupation				
Unemployed	189	10 (5.3)	2.6 (1.0-7.3)	0.055
Employed	622	33 (5.3)	2.7 (1.1-6.3)	0.025*
Home maker	301	6 (2)	1	--
Students	268	23 (8.6)	4.3 (1.8-10.4)	0.001*
Socio-economic status				
Class - I	132	10 (7.6)	2.2 (0.9-5.5)	0.097
Class – II	205	7 (3.4)	1	--
Class – III	313	18 (5.8)	1.7 (0.7-3.8)	0.232
Class - IV	459	24 (5.4)	1.5 (0.7-3.3)	0.312
Class - V	271	13 (4.8)	1.4 (0.6-3.2)	0.460
Ward				
I	608	33 (5.4)	1.1 (0.7-1.6)	0.754
II	772	39 (5.1)	1	--

RR-Relative risk, CI-Confidence interval, * Statistically significant (p value <0.05), NA-Not applicable.

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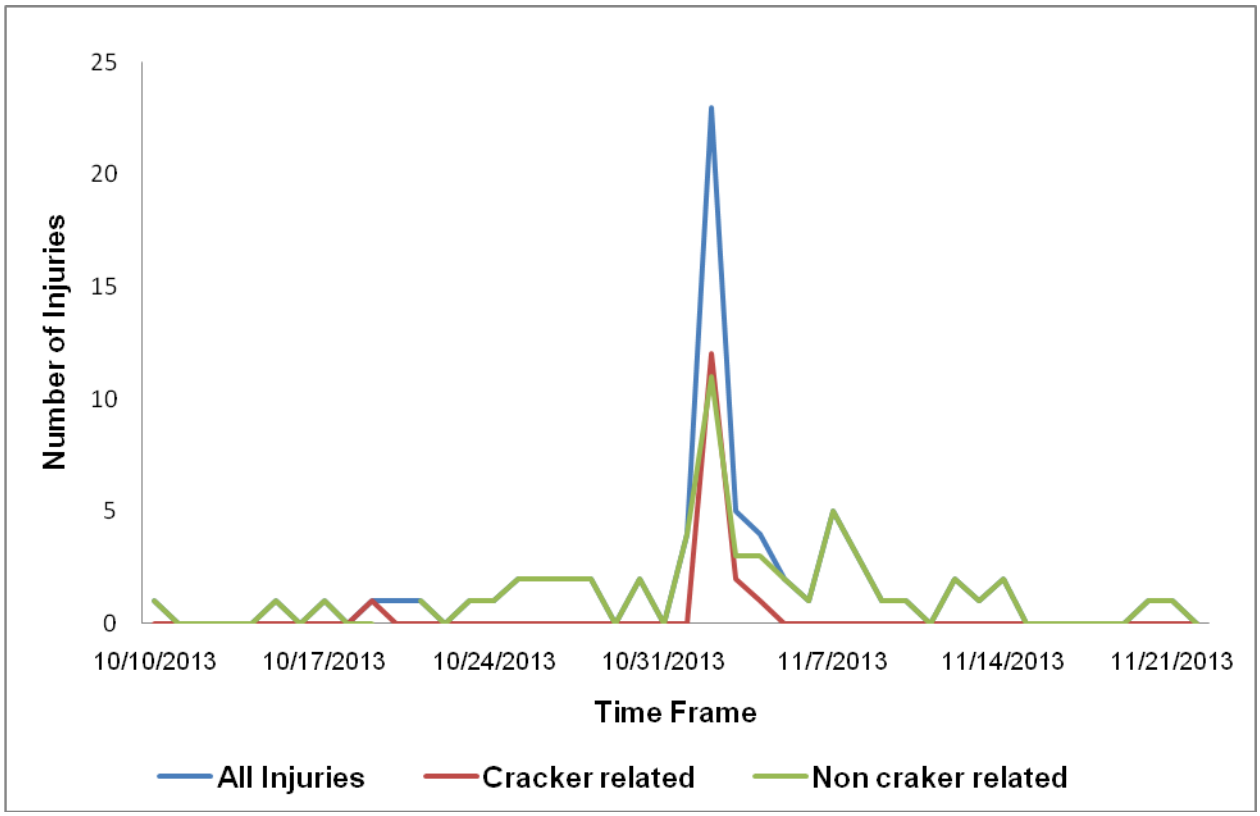
Figure-1: Distribution of injuries during the study period.



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