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ORIGINAL RESEARCH ARTICLE

PREVALENCE OF INJURY AND ITS ASSOCIATED FACTORS IN A RURAL AREA OF EASTERN NEPAL

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ABSTRACT

Injury is a serious public health threat as it is one of the leading cause of death globally. This study aims to assess the prevalence of injury, pattern of injury and its associated factors among people residing in a rural area of Aurabani VDC of Eastern Nepal. A population based cross sectional study was carried out among 552 people residing in selected wards with door to door visit. The prevalence of minor injury was 3.1% and major was 0.4% per year in the study.Most common mode of injury was fall and most common type was incised wound. Injuries mostly occurred in extremities, in morning time, autumn season and in roads while most of the injuries were accidental in nature.

Key words: *Aurabani, Injury, Nepal, Prevalence.*

INTRODUCTION

Injury is considered a health problem only when a person comes in health institution for treatment. Injuries are a focus of public health practice because they pose a serious health threat, occur frequently and are preventable. Injury is defined as damage or harm to the body resulting in impairment or destruction of health; specifically, any unintentional and intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical, or chemical energy that exceeds a threshold of tolerance in the body or from the absence of such essentials as heat or oxygen" (Society for the Advancement of Violence and Injury Research and Safe States Alliance, 2005).

Injury that prevented victim from carrying out his/her normal activities at least for one day and lasting maximum up to 30 days is considered as minor injury while injury that prevented victim from carrying out his/her normal activities at least for one day and lasts more than 30 days is considered as major injury.

Injury and violence cause five million deaths annually in the world which is around 9% of the global mortality. Eight out of fifteen leading causes of deaths in the age group 15-25 years are injury related. World Health Organisation (WHO) has predicted that by 2020, road traffic accidents will be the fifth leading cause of deaths with 3.6% of all deaths, self-inflicted injuries will be in the 12th position with 1.5% and violence will take the 16th rank with 1.2% of total deaths worldwide. Together, injuries and violence will cause 6.3% of total deaths, which is definitely a huge proportion. Likewise, about 1.2 million people die every year as a result of road traffic crashes and up to 50 million more are injured or disabled. According to national publication of healthy people, every five second a worker is injured, and each day 17 die from work place injuries. The magnitude and burden of injuries and violence is more devastating in the developing countries. There is no doubt about the high intensity of the threat and problem brought by injuries and

violence in Nepal.[1]

A study conducted in a post mortem centre in Nepal found that 32% of all the post mortem cases were accident related, more than half of which were road traffic accidents. Likewise in a study performed by Sharma et al., suicides accounted for 25% and homicides for 9% of the total cases.[2]

Nepal is passing through a major social, epidemiological, technological and media transition. The political, economic and social changes have altered the health scenario. In the past two decades, Nepal has witnessed rapid urbanization, motorization, industrialization and migration of people resulting from socioeconomic growth and development. With mechanization and revolution in technology, traditional ways of living and working are being altered. Injuries are a major public health problem in Nepal and disabilities due to violence and injuries are increasing. Underlying causes include traffic accidents, domestic accidents and violence, rapid urbanization and lifestyle changes.

Injuries account to 8% deaths in Nepal. Road traffic accidents are the major cause of injuries followed by occupational injuries, burns, violence and suicide related, poisoning, falls and drowning respectively(WHO 2002).Injuries accounted for as many number of death as tuberculosis and many times more than malaria or HIV/AIDS in Nepal.[3]

Lack of reliable and good quality national or regional data has thwarted their recognition. Injuries, disabilities and deaths are not systematically recorded or used for the purpose of prevention. The precise number of deaths and injuries due to specific causes, or any scientific estimates of injury deaths in Nepal are not available from any single source. There is no National Crime Records Bureausas such in Nepal that should be responsible for the collection, compilation, analysis and dissemination of injury-related information. Very few studies have been done on injuries in Nepal and data collected from those studies are even not reliable. There are no official data on the number of injuries in Nepal except for the road traffic accidents.

This study might be useful in knowing the prevalence and pattern of injury and its associated factors in Aurabani VDC, Sunsari. This study might be useful in formulating and implementing policies to prevent injury in Nepal.

MATERIALS AND METHODS

A population based cross-sectional study was carried out among 552 people residing in some selected wards of Aurabani VDC of Sunsari district of Eastern Nepal. The sample size was estimated based on a similar research conducted by Bhattarai et al. and the sample was selected by using convenient sampling method. Data was collected with door to door visit using a pretested questionnaire which included socio-demographic characteristics and injury related questions. Data was entered in MS Excel and analyzed in SPSS version 17.Ethical approval was taken from the Institutional Review Committee, B. P. Koirala Institute of Health Sciences and confidentiality was maintained throughout after taking informed consent.

RESULTS

A total of 552 people participated in this study with the mean age of 29.38 years with SD ±19.09 years. In this study, the prevalence of minor injury was found to be 3.1% while 0.4% of major injuries 0.4 %. (Table 1)

Table 1: Prevalence of injury in the study population (n=552)

Type of injury	Frequency	Percentage (%)
Minor Injury	17	3.1
Major Injury	2	0.4

A. Socio-demographic characteristics of victim and injury prevalence

Of the 552 participants 10.10% were from age group 25-29 years and 30-34 years. The mean age of the respondents was 29.38 years and standard deviation ±19.09 years. Female were higher in comparison to male in the study (52.40 Vs 47.60). One-third of the respondents had secondary education. More than half (54.52%) of the respondents were farmer by occupation. With regard to ethnicity around two-third (66.50%) belonged to Janajati Terai group. More than half (53.40) of the respondents (53.40%) were married and all of the participants were Hindu.

The prevalence of the injury was compared with the selected socio-demographic variables in the study i.e. age, sex, education, occupation, education, marriage etc. No any statistical significance found with any of the variables selected. However age specific prevalence was found to be higher in age above 65 years. The prevalence of injury was more in illiterate group (5.9%). (Table 2)

Table 2: Prevalence of injury as per socio-demographic characteristics of victim (N=552)

Characteristic	Category	Injury		P-value(95% CI)	Remarks
		Yes (%)	No (%)		
Age	<15 Year	2(1.4%)	137(98.6%)	0.070	NS
	15-65 year	15(3.9%)	373(96.1%)		
	>65 year	2(8%)	23(92%)		
Sex	Male	8(3%)	255(97%)	0.623	NS
	Female	11(3.8%)	278(96.2%)		
Education	Illiterate	8(5.9%)	128(94.1%)	0.200	NS
	Literate	10(2.9%)	340(97.1%)		
	Not Applicable	1(1.5%)	65(98.5%)		
Occupation	Skilled	8(5.9%)	128(94.1%)	0.484	NS
	Farmer	7(2.3%)	294(97.7%)		
	Business	3(6.1%)	46(93.9%)		
	Student	65(98.5%)	1(1.5%)		
Ethnicity	Dalit Terai	4(4.3%)	88(95.7%)	0.221	NS
	JanajatiTerai	14(3.8%)	353(96.2%)		
	Madhesi	1(1.1%)	92(98.9%)		
Marital status	Unmarried	6(4.6%)	125(95.4%)	0.410	NS
	Married	13(3.1%)	408(96.9%)		

B. Distribution of Injured Person as per Socio-demographic Characteristics

Among the injured person most (78.80%) were from working age (15-65) years. More than half (57.90) were female by sex. Similarly, all the injured persons were Hindu and most of them (73.70) were belonged to JanajatiTerai ethnic group. Almost two-fifth (41.10%) of the injured persons was below poverty line. Among all injured persons 52.60% were married and 42.40% were farmer by occupation.(Table 3)

Table 3: Distribution of Injured Person as per Socio-demographic Characteristics (N=19)

SN	Characteristics	Percentage
1	**Age**	
	0-14	10.60
	15-65	78.80
	>65	10.60
2	**Sex**	
	Male	42.10
	Female	57.90
3	**Religion**	
	Hindu	100.00
4	**Ethnicity**	
	Dalit Terai	21.10
	JanajatiTerai	73.70
	Madhesi	5.30
5	**Family Income**	
	<1.25$/day	41.10
	≥1.25$/day	59.90
6	**Marital Status**	
	Married	52.60
	Unmarried	47.40
7	**Occupation**	
	Farmer	42.40
	Skilled	37.10
	Business	15.90
	Student	5.30

C. Factors associated with risk of injury

Among all injured persons 68.40% were living in Kachha house, very few (5.30%) used to keep chemicals, poisons unsafely. Among all injured case 52.60% had lakes, ponds, ditches around their home and 52.60% had poor indoor lightening system. Out of 19 injured person 36.80% were alcoholics and 10.50% had hypertension, visual problems and hearing problems and 15.80% had physical disability. (Table 4)

Table 4: Risk factors of injury and its distribution among injured person

SN	Risk of Injury	%
1.	**Type of house**	
	Kachha	68.40
	Semi-Pucca	21.10
	Pucca	10.50
2.	**Unsafely stored chemicals in home**	
	Yes	05.30
	No	94.30
3.	**Lakes/Ponds/ditches around Home**	
	Yes	52.60
	No	47.40
4.	**Poor natural light**	
	Yes	52.60
	No	47.40
5.	**Alcoholism**	
	Yes	36.80
	No	63.20
6.	**Co-morbid disease/disorder**	
	Hypertension	10.50
	Visual Problem	15.80
	Hearing Problem	10.50
	Physical Disability	15.80

In the study it was found that fall was the most common mode of injury (36.84%) followed by cuts (31.57%), RTA (21.05%) and violence (10.05%). With regard to the season of injury mostly injury occurred in autumn season (36.18%) followed by winter (26.31%) and summer (10.52%) and spring (4.5%). Nearly half of the injury (47%) occurred in morning

followed by night (32%) and evening (21%). The place of injury was road in 47% of cases, similar to other findings[8] followed by home in 32% and workplace in 21%. Similarly most of the injuries (89%) were accidental and only 11% were inflicted by others. Out of all injuries nearly one third (31.6%) were incised wounds followed by abrasion/contusions, fracture and multiple site injury.More than half (53%) of injury occurred in extremities followed by head and neck (31.60%) and trunk (15.8%). With regard to place of consultation for injury 58% had consulted in hospital whereas 42% consulted at local medical shop.

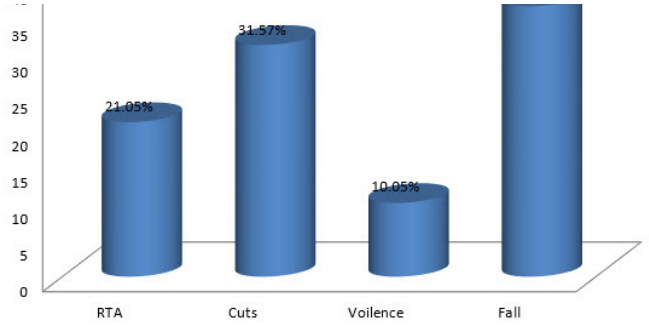

Fig1: Mode of Injury in a Study

DISCUSSION

A cross sectional study was carried out in Aurabani VDC in November 2014 to assess the prevalence of injury among general population. The result obtained in the study can be discussed as follows:

1. Socio-demographic Characteristics

Of the 552 participants 10.10% were from age group 25-29 years and 30-34 years. The mean age of the respondents was 29.38 years and standard deviation ±19.09 years. Female were higher in comparison to male in the study (52.40 Vs 47.60). One-third of the respondents had secondary education. More than half (54.52%) of the respondents were farmer by occupation. With regard to ethnicity around two-third (66.50%) belonged to Janajati Terai group. More than half (53.40) of the respondents (53.40%) were married and all of the participants were Hindu.

2. Prevalence of injury in the study

In this study the prevalence of minor injury was found to be 3.1% and major injury was 0.4%.A study from Ghana[15] showed that the incidence rate of minor injuries among the urban community was 1.3% and that of major injury was 1.7%. Another study done in urban area of Tanzania[13] showed that the incidence rate of minor injury was 1.7% and major injury 0.83%. A study in urban population in eastern Nepal showed that the prevalence of minor injury in a month was 3.5% and major injury was 0.7 per year.[8]

3. Prevalence of injury as per socio-demographic characteristics and its statistical significance

The prevalence of the injury was compared with the selected socio-demographic variables in the study i.e. age, sex, education, occupation, education, marriage etc. No any statistical significance found with any of the variables selected. However age specific prevalence was found to be higher in age above 65 years. This is may be because of decreased sensory-perceptual function at old age. But this data is in contrast with study done by Ghimire A in Dharan Nepal[8].

In this study female has higher prevalence of injury than male which is again in contrast to previous study of Ghimire A[8] and some other studies.[11,12]The prevalence of injury was more in illiterate group (5.9%). In other studies more injury was found in low level of education.[13, 14]

4. Distribution of injured person as per socio-demographic characteristics

Among the injured person most (78.80%) were from working age (15-65) years. More than half (57.90) were female by sex. Similarly, all the injured persons were Hindu and most of them (73.70) were belonged to Janajati Terai ethnic group. Almost two-fifth (41.10%) of the injured persons was below poverty line. Among all injured persons 52.60% were married and 42.40% were farmer by occupation.

5. Risk factors of injury among respondents

Among all injured persons 68.40% were living in Kachha house, very few (5.30%) used to keep chemicals, poisons unsafely. Among all injured case 52.60% had lakes, ponds, ditches around their home and 52.60% had poor indoor lightening system. Out of 19 injured person 36.80% were alcoholics and 10.50% had hypertension, visual problems and hearing problems and 15.80% had physical disability.

6. Pattern of injury in the study and outcomes

In the study it was found that fall was the most common mode of injury (36.84%) which is supported by other study[8] followed by cuts (31.57%), RTA (21.05%) and violence (10.05%). With regard to the season of injury mostly injury occurred in autumn season (36.18%) followed by winter (26.31%) and summer (10.52%) and spring (4.5%). Nearly half of the injury (47%) occurred in morning followed by night (32%) and evening (21%). The place of injury was road in 47% of cases, similar to other findings[8] followed by home in 32% and workplace in 21%. Similarly most of the injuries (89%) were accidental and only 11% were inflicted by others. Out of all injuries nearly one third (31.6%) were incised wounds followed by abrasion/contusions, fracture and multiple site injury. More than half (53%) of injury occurred in extremities followed by head and neck (31.60%) and trunk (15.8%). With regard to place of consultation for injury 58% had consulted in hospital whereas 42% consulted at local medical shop.

CONCLUSION

The prevalence of minor injury was 3.1% and major was 0.4% per year in the study. There was no any significant association between age, sex, education, marital status and injury in the study. Most common mode of injury was fall and most common type was incised wound. Injuries mostly occurred in extremities, in morning time, autumn season and in roads while most of the injuries were accidental in nature. Injuries occurred mostly in illiterate groups and among females. Promotion of safety at work and education for protection at work and safe driving can prevent the major socio-economic loss to the family and community at large.

LIMITATION

As the study is convenient type of study the findings can't be generalised. There may have been a chance of recall bias and information bias, hence more extensive studies can be done in concerned subjects.

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