

The Burden of Injury in terms of Economic Loss and Disability Days: A Community Based Study from Eastern Nepal

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INTRODUCTION

Injury has become a leading cause of death and disability worldwide. It is estimated that 5.8 million people die annually from road traffic crashes, burns, falls, unintentional injury, violence, and suicide. Injury accounts for 10% of the world's deaths. Millions more are disabled, temporarily or permanently, from injury. In addition to deaths and disabilities, there is a very significant economic loss from injury, both from treatment costs as well as lost wages and economic productivity. These costs are especially severe as many of those injured are working aged adults. In Low- and middle-income countries (LMICs), the economic cost of road traffic injuries alone has been estimated at nearly US\$100 billion, which is twice the sum of all development

assistance. Most countries lose one to two percent of their GDP in injury related consequences from road traffic crashes. In addition to these macroeconomic costs, there is an enormous toll of economic hardships on the part of injured persons and their families. This is especially severe in LMICs. A severe illness or injury is often the event that sinks a family living on the margin into deeper poverty.¹

Injuries are already a substantial public Health problem all over the world and are expected to increase in the 21st Century. They are major causes of deaths and disability in the population and also involve high societal costs.² The toll of human suffering from injury is usually measured by

ABSTRACT

Background

Injuries are already a substantial public Health problem all over the world and are expected to increase in the 21st Century. They are major causes of deaths and disability in the population and also involve high societal costs.

Objectives

This study was designed to assess the economic loss due to the injury and the disability days due to different types of injuries.

Methods

A systematic random sampling technique was used to select 1388 households from 19 wards. A detailed questionnaire was used to collect information related to injuries to the persons suffered from injuries including treatment obtained, cost of treatment (direct/indirect cost) and length of disability.

Results

Among the minor injured persons, majority (93.2%) did not spend any indirect cost. 36.7% of the major injured persons spent Nepalese rupees 10,001 to NRs 100,000 as direct treatment costs. But 50% spent less than 5000 NRs as indirect cost for major injury treatment. Maximum number (67.4%) of major injured persons had disability days of 31 to 90 days.

Conclusion

The high incidence of injuries, especially road traffic injuries, adds a huge economic burden to nation.

KEY WORDS

injury, disability days, economic burden

mortality and disability rates, economic costs of treatment and lost of productivity but limited attention has been directed towards the economic costs of injury in low income countries like Nepal.³Nepal is one of the poorest countries in the world, with a per capita GDP of US \$ 200 and life expectancy at birth of 54 years in 1994(World Bank 1996). On average, health care accounts for about 5.5% of total household expenditure. The share of total expenditure devoted to health care increases with the level of household income. In terms of the role of households in the total health economy, out of pocket contributions account for almost three-quarters of the total funds used to finance Nepals health care sector.⁴

Due to political instability of the country, the government has been failure to provide social and economic justice and welfare to millions of people living under condition of deprivation. Failure to do work in this direction within a reasonable time frame may generate social burden and chaos.

In this study, minor injury is considered as an injury that results in disability less than 30 days and major injury is as an injury that results in a disability lasting more than 30 days.⁵ This study is designed to assess the economic loss due to the injury and the disability days due to the different types of injuries.

METHODS

Dharan is a town situated at the foot of the mighty Himalayas in the Eastern region of Nepal. The population of Dharan Municipality is 95332 with 13853 household. It has mixed ethnicity comprising of Rai, Newar, Limbu, Brahmin, Chhetri, Tamang, Magar, Gurung and others.⁶

This community based cross-sectional study was conducted during 2004 to 2005. Where 10% of the households of Dharan i.e. 1388 households were taken as a sample size. To select the required sample size from 19 wards, systematic random sampling technique was used. Detailed questionnaires were used among injured persons to collect information on treatment obtained, cost of treatment (direct/indirect cost) and length of disability.

The injured persons were asked about the place they went for treatment of their injury. They were also asked about the treatment costs which included direct total cost was calculated from doctor’s fee, medicine, any undergone operations, hospital charges and investigation charges. Indirect total cost was calculated from transportation cost, loss of daily wages of the person, lodging and fooding of the attendants, etc.

The collected data was entered in Microsoft Excel. SPSS version 11.5 was used for analysis and percentage, proportions and prevalence rates were calculated. Chi-square test was applied to examine significance of the variables. P value was set at 5% level of significance.

RESULTS

Of the total surveyed population (7063), prevalence of minor injuries were 3.5% during the preceding recall of one month and major injuries were 0.7% during preceding recall of one year.

Among minor injured persons, most common treatment place (52.4%) was home, followed by medical shop 22.0% and hospital 13.6%. Common treatment place for major injuries were hospital (87.8%), followed by local medical practitioner (12.2%).

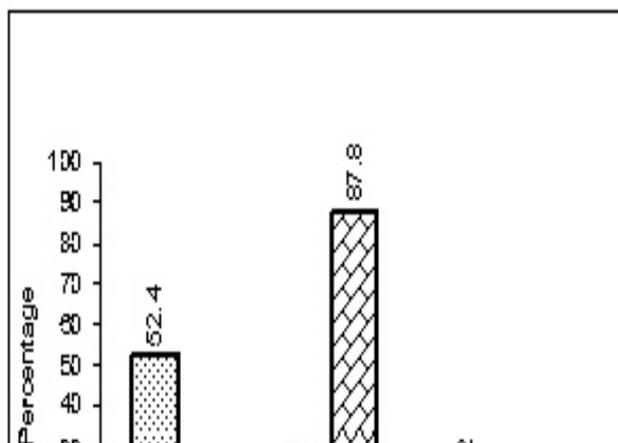


Fig.1. Distribution of injuries according to the place of management.

In terms of direct treatment costs, most of the minor, injured victims (69.6%) spent below 100 Nepalese rupees. Likewise, 24.8% victims spent from 101 to 1000 NRs for treatment and only 6.4% spent more than 1001 to 10000 NRs for their treatment (Table 1). On the basis of three categories, <100 NRs., (101 to 1,000) NRs. and (1001 to 10,000) NRs., the direct and indirect costs are significantly associate with the minor injures (chi square = 63.63, p<0.001).

Table 1. Direct / Indirect treatment costs among the persons with minor injuries.

Rupees (NRs.)	Direct cost No. (%)	Indirect cost No. (%)
None	0 (0)	233 (93.2)
<100	174 (69.6)	8 (3.2)
101-1000	60 (24.0)	7 (2.8)
1001-10000	16 (6.4)	2 (0.8)
Total	250 (100.0)	250 (100.0)

Table 2. Direct / Indirect treatment costs among the persons with major injuries.

Rupees (NRs.)	Direct cost No. (%)	Indirect cost No. (%)
None	17 (34.7)	19 (50.0)
<100	7 (14.3)	5 (13.2)
101-1000	18 (36.7)	13 (34.2)
1001-10000	7 (14.3)	1 (2.6)
Total	49 (100.0)	38(100.0)

Among the minor injured persons, majority (93.2%) did not spend any indirect cost. But 3.2% spent less than NRs 100 as indirect treatment cost. Similarly, 2.8% and 0.8% victims spent indirect cost of NRs 101 to 1000 and more than NRs 1001 to 10000 for their treatment respectively.

Table 2 shows that 36.7% of the major injured persons spent (10,001 to 100,000) NRs as direct treatment costs for treatment. In case of indirect cost, 50% spent less than 5,000 NRs as for major injury treatment. Very less numbers (2.6%) of persons spent more than 100,000 as indirect cost for treatment. But, the direct cost and indirect cost are not statistically associated with the costs involved in major injuries.

Table 3. Days lost due to disability among the persons with minor injuries.

Days	No. (%)
None	221 (88.4)
1-7	22 (8.8)
8-14	6 (2.4)
≥15	1 (0.4)
Total	250 (100.0)

Table 4. Days lost due to disability among the persons with major injuries.

Days	No. (%)
31-90	33 (67.4)
91-180	10 (20.4)
181-270	5 (10.2)
≥271	1 (2.0)
Total	49 (100.0)

Disability days due to injuries

The injured persons were also asked about how many days they could not perform normal work (going toilet, taking bath, eating etc), could not go to school, working place and any restriction to social activities.

The disability days among minor injured people were very less. Most of them (88.4%) did not have a disability day (Table 3).

Maximum number (67.4%) of major injured persons had disability days of 31 to 90 days. Likewise, 20.4% of injured had 91 to 180 days of disability and 10.2% had 181 to 270 days of disability. Only (2.0%) had the disability days to more than 271 days (Table 4).

DISCUSSION

In this study, more than half (52.4%) persons had treatment at home and 22.0% at medical shop among minor injured. Similar finding was observed by Tiagi C et al. in India, where home treatment was more common, followed by doctor

consultation.⁸ Shaikh MA et al in Pakistan also obtained the similar results.⁹ Common treatment place for major injuries was hospital (87.8%) and medical practitioner (12.2%). None of the major injured went to the medical shop and traditional healers for their treatment. But surprisingly, 5.6% of the minor injured persons still went to the traditional healers for injury treatment.

In terms of direct treatment costs (including doctor fee, medicine, any operation, hospital charge and investigation etc), most of the minor injured person (69.6%) spent below 100 NRs. Similarly 24.0% of the victims spent from NRs. 101 to 1000 for treatment and 6.4% spent more than NRs. 1001 to 10000 for their treatment. Whereas 93.2% did not spend any indirect treatment cost. Only 3.2% spent less than 100 Nepalese rupees as indirect treatment cost. Likewise, 2.8% and 0.8% victims spent indirect cost of NRs. 101 to 1000 and more than NRs. 1001 to 10000 for their treatment respectively. Study done by Rajbhandari SD et al. in rural area of eastern Nepal found that 84.0% minor injured persons spend below NRs. 100 as direct treatment cost whereas 87.0% of the participants did not spend any indirect treatment cost for minor injuries.¹⁰ The estimated median cost (direct and indirect) per minor injury was NRs 150 and range from NRs 2 to NRs 10,500. On the basis of three categories, <100 NRs. (101 to 1,000) NRs. and (1001 to 10,000) NRs., the direct and indirect costs are significantly associate with the minor injures (Chi-square = 63.63, $p < 0.001$).

This study shows that 36.7% of the major injured person spent Nepalese rupees 10,001 to 100,000 as direct treatment cost. Similarly 34.7% spent less than NRs. 5,000 and equal percentage of injured persons (14.3%) spent from 5,000 to 10,000 and more than 100,000 NRs as direct cost for their treatment, where as half of the injured person (50.0%) spent less than 5,000 NRs as indirect cost (including transportation cost, attendants loss, lodging and fooding etc), followed by 34.2% and 13.2% persons spent from 10,001 to 100,000 NRs and 5,000 to 10,000 NRs as indirect cost respectively. Median cost was NRs 15500 per major injury and range from NRs 500 to 220,500. Study done by Salifu IM et al in Ghana found that median cost was US\$ 25 (NRs 1800) and range from US \$3 (NRs 216) to US\$ 1,600 (NRs 115,200) in which minor and major injury treatment cost were combined together.¹¹ These differences between expenditure costs may be because of the two different nations have different cost of medical services. (Chi square = 2.19, $p = 0.33$)

This study shows that disability days among minor injured people were very less. Most of them (88.4%) did not have a disability day. Among disability day due to minor injury 8.8% lost 1 to 7 days and 2.4% people lost 8 to 14 days. Similarly only 0.4% people lost more than 15 days due to minor injury. This is expected because most of the persons

with minor injuries are able to carry on their normal work even after the injury. This is supported by a study of Verma PK in Haryana in which he found 26.5% of the minor injury disabled the victim for 4 to 7 days.¹²

Our study also showed that maximum number (67.4%) of major injured persons had disability days of 31 to 90 days. Likewise, 20.4% of injured had 91 to 180 days of disability and 10.2% had 181 to 270 days of disability. Only 2.0% had the disability days of more than 271 days. This was because fractures / dislocations were common cause of major injuries, which makes a persons disabled for 1 to 3 months or more. Study done by Salifu IM in Kumasi, Ghana found that average disability days for major injuries were 50.7% days due to pedestrian injuries and among 29 injury victims, 8 persons had been disabled for more than three months at the time of the interview and could still not return to normal life.¹¹

The present study may have the probability of under-reporting events such as suicides and assaults, the total costs for the some injured persons could not be estimated accurately as they were under treatment during interview and also, disability due to older injuries occurring in previous years causing permanent impairment was not evaluated, thus, they were under limitation of this study.

CONCLUSION

Injury has become a leading cause of death and disability worldwide. In addition to deaths and disabilities, there is a very significant economic loss from injury, both from treatment costs as well as lost wages and economic productivity. There is an enormous toll of economic hardships on the part of injured persons and their families.

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