

RESEARCH ARTICLE

IMPACT OF ROAD TRAFFIC INJURY ON JOB LOSS AND FINANCIAL COSTS: A PILOT STUDY FROM A TERTIARY CARE CENTRE

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Abstract: Introduction: Global studies have shown that majority of those affected in road traffic accidents (RTA) are young and bread winners of their families. Depending on the part afflicted, most non-fatal injuries have either temporary disability or life-long sequels, which require job modification, rehabilitation and integration back into work and society. However, despite recovery the traumatic experience and disability impact the affected individual and their family. Through this pilot study, an attempt was made to understand the impact of RTA on an individual's financial status, cost cutting behaviour and sleep affection. **Methods:** Data was collected during follow-up of patients who were treated for traumatic injuries. Patients were assessed by a self-designed questionnaire regarding their financial burdens arising out of injury and treatment, sacrifices in regular life, return to work and losses incurred due to the trauma. **Results:** A total of 162 patients volunteered to be a part of the study and 76.5% earned below ₹25,000 per month. Data indicated 25% had to pledge their valuables to pay for hospital charges, 79% cut costs on luxury goods and 75% cut on non-essential and recreational activities. At the end of one-month post-accident, more than 43% of participants needed to spend more than thirty minutes to fall asleep and 21% had disturbed sleep. **Conclusion:** Lower economic status, rural place of residence, lack of insurance and treatment at private health facilities are the key drivers for increased risk of high healthcare expenditure on road traffic injuries. On an individual basis, these cause costly rehabilitation, difficult work atmosphere, sacrifices in personal life and delayed comeback to societal living.

KEYWORDS: road traffic accidents (RTA), road traffic injuries (RTI), job loss

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INTRODUCTION:

According to a recent data published by the World Health Organization (WHO), approximately 1.3 million succumb to road traffic injuries (RTI), and about 20 to 50 million people are impacted by non-fatal injuries that may result in permanent or substantial disability due to the trauma.^[1] In most instances, majority of the road traffic deaths occur in pedestrians, cyclists, and motorcyclists, which together are a vulnerable population among road users.^[1] Disturbing facts suggest that RTI is a major cause for death of children and young adults in the range of 5-29 years and worse, about 73% of succumbed are young males under the age of 25 years.^[1,2] Death and disability caused by road traffic accidents (RTA) significantly impacts the individual, their family and the society at large.^[1,2] From financial view point, RTA related injuries cost 3% of the gross domestic product to most countries.^[1]

From a global perspective, reports suggest that 93% of the world's road traffic deaths occur in low- and middle-income countries,^[1] and India although having only 1% of the world's vehicles is the leading country and contributes to 11% of all road crash deaths in the world.^[3] Worse reports suggest that majority of the deaths are in the age group of 15-44 years.^[4] Detail analyses suggests that in India, nearly 53 road crashes occur every hour and that one person succumbs to RTI every four minutes, and that these are very high numbers when compared with developed economies.^[3] In the absence of a national trauma registry, it is difficult to clearly ascertain the magnanimity of long term and short term disability in people who have been injured.^[5]

Global reports indicate that RTI affects the career choice/option, productivity, professional and personal progress, income and all of this can affect the physical and psychological status of the affected person.^[1-3] RTA are also a major contributor to socio-economic losses, increase the disability burden and hospitalisation which, in most instances

are huge and often life changing.^[3] Worse, in addition to the physical disability, the psychological scars affect the person to the extent that they become apprehensive to return to work or go out following an RTI.^[5,6]

Depending on the part afflicted, most non-fatal RTI have either temporary disability or life-long sequels which in most cases are life changing to the afflicted individual and their family.^[7] In addition to this, reports also suggest that work environment, health care requirements/dependency, social and familial factors also play a role in the integration of an RTA affected individual back to the society.^[8] One of the most neglected and less investigated aspects especially in Indian context is the impact of RTA on the survivors. This study is an attempt is made to understand the immediate financial impact and job loss and the period survivors of RTI have had to suffer. As a parallel comparator of people who had accidental fall were considered.

MATERIAL AND METHODS:

Study design

This was a prospective study and was carried out from February 2016 to March 2016 in accordance to the Helsinki Declaration and after obtaining permission from the Institutional Ethics Committee (FMMC/IEC/988/2016). Data was collected from patients during follow-up at the orthopaedic and surgery out-patient departments of a tertiary-care hospital, who had been earlier treated under the departments on an in-patient basis for traumatic injuries, sustained due to RTA or an accidental injury before the study time period and visited the hospital for follow up evaluation and care.

Inclusion and exclusion criteria

The inclusion criteria consisted of adults above the age of 18 and who had completed their treatment following RTA or fall, were working before the trauma and had a Karnofsky Performance Scale of 50 or more. The exclusion criteria included people who had severe head injuries and spinal cord

injuries, were hemiplegic or paraplegic, people affected with mental illness or terminally ill ailments like cancer, severe diabetes, tuberculosis and other major illness. For the accidental injury, the inclusion criteria included people who have had physical injury due to accidental falls. People with minor injury, sprains and bruises were not considered.

Methodology

When patients who have had met with accidental injuries visited the hospital for follow up care, the trained student investigator approached them with a request to volunteer to be a part of the study. The volunteers were informed about the research objective and written informed consent was taken from all the willing volunteers. They were then requested to fill the questionnaire addressing several topics regarding their education, socioeconomic status, income, financial burdens arising out of injury and treatment, sacrifices in regular life as an outcome of trauma and recuperation, return to work, losses incurred due to loss of work and changes in spending and sleep activities.

Statistical analysis

Data on injuries was retrieved from hospital records. Informed consent from the volunteers was collected. The data was entered in to Microsoft Excel 2013, transferred to SPSS 17 (IBM, Chicago, USA) and analysed.

RESULTS:

In the study, 162 patients consented for their participation in the study. Majority of the population was observed to be males (87.6%, n=142). Of the 162 patients, 93% of the patients had matriculated (cleared tenth grade) and less than 35% attended college. Of the participants, 58% of them were daily wage earners, 21% were office-goers, while the rest were self-employed and running their own businesses. Majority of the study

population (76.5%), earned below Rs 25,000 per month, with less than 28% of the volunteers earned less than Rs 10,000/month (Table 1). The Karnofsky Performance Scale Index allows patients to be classified as to their functional impairment. In the study, 10.5% were able to carry on with their normal activity, with hardly any signs or symptoms of injury (near normalcy). While 21% were able to return to normal activity with some effort and signs of injury, 29% were just able to care for themselves while being unable to carry out their usual activity (Table1). Importantly, 35% required regular assistance, but were able to care for most of their personal needs, and 4.5% required considerable assistance and frequent medical care (Table 1).

More than 50% patients spent above Rs 25,000 solely on hospital expenses, and 40% patients spent between Rs 25,000 to Rs 75,000 on treatment. Almost 16% of patients brought with accidental injury spent more than Rs 25,000 on treatment charges, while 70% of those brought with RTA incurred the losses in the same range (Table 2).

In the study, 60% patients were able to pay by themselves, while 25% had to pledge their valuables/property to pay for hospital expenses. Almost 23% patients had to cut costs on food, 11% cut costs on children's education, 79% cut costs on luxury goods, 75% cut on recreational activities, while religious activities and family events were affected to a lesser extent (52% and 57% respectively). Nearly 52.5% had difficulty in paying rent or regular bills. From work perspective, 42% patients brought with accidental injury lost less than 30 days at work, compared to 29% admitted for RTA injuries. Almost 39% of both groups of patients lost more than two months of work as a result of their injury (Table 2). With regard to sleep, with more than 43% of them needed to spend more than 30 minutes to fall asleep and 21% reported that they had disturbed sleep (Table 2).

Table 1: Socio-economic, professional and financial status of the volunteers

| Parameter | Choices | Accidental injury + RTA injury N (%) | Accidental injury N (%) | RTA injury N (%) |
|--|---|---|----------------------------|---------------------|
| Education | <7th std | 11(6.79) | 4(7.27) | 7(6.54) |
| | 7th to 10th | 95(58.64) | 31(56.36) | 64(59.81) |
| | PUC | 29(17.9) | 12(21.82) | 17(15.89) |
| | Degree | 23(14.2) | 8(14.55) | 15(14.02) |
| | Masters/Professionals | 4(2.47) | 0(0) | 4(3.74) |
| | Total | 162(100) | 55(100) | 107(100) |
| Profession | Business | 33(20.37) | 13(23.64) | 20(18.69) |
| | Working in Office | 35(21.6) | 9(16.36) | 26(24.3) |
| | Daily Wages | 94(58.02) | 33(60) | 61(57.01) |
| | Total | 162(100) | 55(100) | 107(100) |
| Monthly Income | < 10000 | 45(27.78) | 17(30.91) | 28(26.17) |
| | 10000-25000 | 79(48.77) | 28(50.91) | 51(47.66) |
| | 25001-35000 | 28(17.28) | 8(14.55) | 20(18.69) |
| | 35001-45000 | 5(3.09) | 1(1.82) | 4(3.74) |
| | >45000 | 5(3.09) | 1(1.82) | 4(3.74) |
| | Total | 162(100) | 55(100) | 107(100) |
| Part affected | Cervical spine | 4(2.47) | 1(1.82) | 3(2.8) |
| | Thoraco-lumbar spine | 4(2.47) | 1(1.82) | 3(2.8) |
| | Right upper limb | 44(27.16) | 16(29.09) | 28(26.17) |
| | Left upper limb | 36(22.22) | 14(25.45) | 22(20.56) |
| | Hip | 4(2.47) | 4(7.27) | 0(0) |
| | Right lower limb | 48(29.63) | 15(27.27) | 33(30.84) |
| | Left lower limb | 32(19.75) | 12(21.82) | 20(18.69) |
| | Total | 162(100) | 55(100) | 107(100) |
| Karnofsky Performance Status Scale Rating Criteria | KPS 50 (Requires considerable assistance and frequent medical care) | 7(4.32) | 4(3.74) | 3(5.45) |
| | KPS 60 (Requires occasional assistance, but is able to care for most of his personal needs) | 57(35.19) | 38(35.51) | 19(34.55) |
| | KPS 70 (Cares for self; unable to carry on normal activity or to do active work) | 47(29.01) | 35(32.71) | 12(21.82) |
| | KPS 80 (Normal activity with effort; some signs or symptoms of disease) | 34(20.99) | 23(21.5) | 11(20) |
| | KPS 90 (Able to carry on normal activity; minor signs or symptoms of disease) | 17(10.49) | 7(6.54) | 10(18.18) |
| | Total | 162(100) | 107(100) | 55(100) |

Table 2: Financial burden, expense management, sleep pattern in the volunteers.

| Parameter | Choices | Accidental injury + RTA injury N (%) | Accidental injury N (%) | RTA injury N (%) |
|----------------------------|--|---|----------------------------|---------------------|
| Money spent on treatment | Less than 25,000 INR | 79(48.77) | 46(83.64) | 33(30.84) |
| | 25000-50000 INR | 29(17.9) | 8(14.54) | 21(19.63) |
| | 50000-75000 INR | 34(20.99) | 0(0) | 34(31.78) |
| | 75000-100,000 INR | 11(6.79) | 0(0) | 11(10.28) |
| | More than 100,000 INR | 9(5.56) | 1(1.82) | 8(7.48) |
| | Total | 162(100) | 55(100) | 107(100) |
| Payment for treatment | Self/Family | 97(59.88) | 38(69.09) | 59(55.14) |
| | Borrowed from friends and family | 24(14.81) | 15(27.27) | 9(8.41) |
| | Pledged gold or land | 41(25.31) | 2(3.64) | 39(36.45) |
| | Cutting costs on food | 37(22.84) | 8(14.55) | 29(27.1) |
| | Cutting costs on children's education | 18(11.11) | 7(12.73) | 11(10.28) |
| | Cutting costs on luxury goods | 128(79.01) | 41(74.55) | 87(81.31) |
| | Cutting costs on recreational activities | 121(74.69) | 42(76.36) | 79(73.83) |
| | Cutting costs on religious activities | 84(51.85) | 27(49.09) | 57(53.27) |
| | Cutting costs on family events | 93(57.41) | 26(47.27) | 67(62.62) |
| | Difficulty in paying bills, rent | 85(52.47) | 27(49.09) | 58(54.21) |
| Absence from work | < 30 days | 54(33.33) | 23(41.82) | 31(28.97) |
| | 31- 60 days | 45(27.78) | 11(20) | 34(31.78) |
| | 61-90 days | 28(17.28) | 8(14.55) | 20(18.69) |
| | More than 90 days | 35(21.60) | 13(23.64) | 22(20.56) |
| | Total | 162(100) | 55(100) | 107(100) |
| Time needed to fall asleep | < 10 mins | 25(15.43) | 11(20) | 14(13.08) |
| | 11-30 mins | 67(41.36) | 17(30.91) | 50(46.73) |
| | 31-45 mins | 28(17.28) | 9(16.36) | 19(17.76) |
| | 46-60 mins | 21(12.96) | 9(16.36) | 12(11.21) |
| | > 60 mins | 21(12.96) | 9(16.36) | 12(11.21) |
| | Total | 162(100) | 55(99.99) | 107(100) |
| Sleep satisfaction | Very good | 24(14.81) | 11(20) | 13(12.15) |
| | good | 50(30.86) | 18(32.73) | 32(29.91) |
| | Fair | 53(32.72) | 11(20) | 42(39.25) |
| | Poor | 28(17.28) | 12(21.82) | 16(14.95) |

| | | | | |
|--|-----------|----------|---------|----------|
| | Very Poor | 7(4.32) | 3(5.45) | 4(3.74) |
| | Total | 162(100) | 55(100) | 107(100) |

DISCUSSION:

Road accidents are unplanned events that occur suddenly, unexpectedly and inadvertently, in unforeseen conditions. Reports indicate that injuries collectively caused 11.2% of disability-adjusted life years with many different injuries making important contributions. Road injuries account for 27% of the injury total and causes significant number of hospitalization days, and loss of productivity affects the socioeconomic status of the individual and the family.^[7,9] In low- and middle-income countries, financial protection against any medical expenditure cannot be generalized. So is India with poor coverage of health insurance and low budgetary allocations for health in the country, this results in a high proportion of private out-of-pocket expenditure, among which India is the highest in the world.^[6] The burden of out-of-pocket expenditure on healthcare is inequitably high among the poor.^[10]

The factors associated with delayed return to work after injury include individual characteristics of the injured person and his or her family, the injured person's social and economic environment and job characteristics, and the extent to which disability compensation is received.^[11,12] Education, in addition to being correlated with income, may reflect the individual's level of understanding about the consequences of the injury, expectations for recovery, or ability to adapt to changing circumstances. Mortality rate from RTI among educated individuals is lower than illiterates.^[13] A study in Sweden revealed that young motorcyclists with poor financial status have higher risk of moderate or severe injury when compared to wealthier individuals.^[14] While in Sudan, 15.8% of patients of lower socioeconomic strata reported to have lost their jobs, against about 5.4% in the higher socioeconomic strata following RTI.^[7]

Following RTA, upper and lower limbs injuries amounted to 66%,^[7] whereas in the current study 47% of patients injured their upper and lower limbs. As there are inadequate tertiary care services in rural India, patients are forced to travel to cities for specialized care, incurring enormous costs on ambulances and transport in addition to medical care. Rural population is forced to choose cheaper alternatives such as traditional medicine, which eventually lead to unfavourable outcome and dire complications.^[6] The public health sector often lacks the infrastructure and expertise to cover far-reaching healthcare needs. This is where private hospitals step in, with their heavy financial repercussion.^[15] Reports suggest that private healthcare facilities (61%) were predominantly used for treatment of RTI rather than government healthcare facilities.^[15,16]

In terms of share of expenses on treatment for each ailment in total healthcare expenditure, RTI showed the highest contribution (13%).^[6] However, even in 2018, insurance helped only about 4% Indian households that had inflicted loss from RTI.^[6] Households from lower economic strata resorting to borrowing money and selling belongings, is common in countries where out-of-pocket payments represent more than 95% of health expenditure.^[7,17] This was in close relationship with the present study which depicted 14.8% patients were forced to borrow money from friends and family, while 25% pledged their valuables/property to pay for hospital charges.

India is no exception, with poor coverage of health insurance and low budget allocations for health care in the country.^[18,19] This causes a high proportion of personal out-of-pocket expenses, in which India ranks among the highest in the world.^[20] In our study, 51% patients spent above ₹25,000 solely on hospital expenses which included 16% of patients brought with accidental injury against 70% of those

brought with RTA. In Sudan, a total of 9.3% lost their jobs as a consequence of RTI, 34% of whom were heads of households.^[7] The current study indicates that patients were keen not to compromise on children's education and food, while recreational activities and luxury spending were reduced.

“Return to work” is a practice that was introduced by many workers’ compensation boards in North America and Europe throughout the 1990s. This approach means that workers are back in their workplace in some capacity, often modified, while they may still be undergoing physiotherapy, and or taking medication. Return to work is seen as good practice because it promotes better recovery, leads to less time off work for the worker and lower compensation for the employer. Physical recovery is obligatory in complicated ways with modifications in workplace processes and practices.^[21] On the other hand; employees with musculoskeletal disabilities still go to work despite the feeling that, in the light of their health, they should have taken sick leave. This causes productivity loss resulting from decreased performance at work. This phenomenon is known as *sickness presenteeism*.^[22] Although they are available at their desk, their productivity could be reduced due to functional limitations and thereby reduce work effectiveness.^[23]

Patients aged 18 to 24 were nearly three times more likely to return to work than patients with similar impairments who were 45 years old or more. An inverse correlation between recovery and age has been documented and may reflect not only increased difficulty in recovering from a major physical insult but also increased difficulty in securing a job after a long absence from work.^[24] In a study conducted in Sudan, the 13.4% of men lost their jobs compared to 4.2% of the women.^[7] The present study express 42% patients brought with accidental injury lost less than 30 days at work, compared against 29% of patients presenting with history of RTA.

One of the strongest correlates of return-to-work is the receipt of workers' compensation. Most studies

depict a negative relationship between receipt (and amount) of compensation and the likelihood and rate of return to work.^[11] In regions where workers' compensation and unemployment insurance wage are well in place, studies have shown losing over eight weeks' work received workers' compensation benefits covering less than 40% of their losses.^[25]

Limitations

The study had its primary focus on patients who were injured and their financial expenditure. Therefore, the type and severity of extremity fractures are not likely to be representative of those treated at non-trauma hospitals. Furthermore, the clinical outcomes may not have been as positive with a broader sample of patients. Recall bias leading to underestimation of the consequences of minor injuries has also been noted.

CONCLUSION:

Increased understanding of the causal pathway is essential if we are to reduce the high societal costs associated with injury and improve the overall well-being of the injured. Lack of insurance, treatment at private health facilities, lower economic status, and rural place of residence are the key drivers for increased risk of high healthcare expenditure due to RTA. The economic burden and health consequences of RTI have to deal with to address emergency care in India at the policy level.

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