Original Research Article

Social and economic impact of road traffic accidents on patients: A longitudinal study at tertiary care center

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Abstract

Background: Road traffic accidents contribute major part in non-communicable disease burden in India. The survivors of non fatal road traffic accident suffer huge loss in the form of disability, loss of job, loss of daily wages. The change in attitude of family members towards victims after RTA like negligence, blaming them for their condition and if a person is handicapped then it has additive effect on worsening his/her present and future significantly. **Aim and objective:** To study social and economic impact of non-fatal Road traffic accidents on patients **Methodology:** Present study is a longitudinal study carried out in victims of non-fatal accidents. Patients attending casuality after accident in a tertiary health care center were recruited. Data collected with pre tested questionnaire. Data included sociodemographic data, type of injury and impact on social and economic factors after 3 months follow up. **Results:** In almost ½ victims most common site of injuries was extremities (47.2%). More than 2/5th of the study subjects (40.4%) had a single site fracture. Mobility was affected among all the age groups but more among extremes of age group (<20 and >50). Majority of victims who had more income changed the pattern of job/quit the job as compared to the victims with low income. Attitude of family members towards victim was caring in low income group and negligence towards the victim by family members was more among high income group. Majority of the victims who had psychological disturbance after accident belonged to higher income group.
Key Word: road traffic accidents.

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INTRODUCTION

Non fatal road accident is defined as, "A road accident in which death of the patient has not occurred." Road accidents are human tragedies which involve high human suffering. They impose a huge socio-economic cost in terms of untimely deaths, injuries and loss of potential income. The negative impact of road traffic accident is felt not only on individuals, their health and welfare but also on the economy. Motor vehicle accidents ranking was ninth (9th) in order of causing death in 2004 and are projected to be ranked fifth (5th) in the year 2030.[1] Most commonly affected road users are pedestrians, passengers and cyclists as opposed to drivers who are involved in most of the deaths and disabilities. This ever expanding epidemic targeting the young and productive generation is likely to take heavy burden on the quality of life and the socio-economic growth of the region.[2,3] In India Road traffic accidents (RTA) are predicted to increase by 2.5 times by the year 2020, RTA is yet not considered as a serious public health issue by the policy makers in India. Major reason for this lack of appropriate policy and intervention response by policy makers is the non-

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availability of comprehensive RTI data that can highlight the magnitude of RTI burden. A detailed assessment of the risk factors for RTA in general population is needed to plan informed RTA prevention strategy.[3] India has a world's highest younger population but this younger population contributes to the larger extent in the road traffic accident. It has greater social, economic and psychological impact on accident victims. Ultimately it is a big unrecoverable loss of country. The psychological impact of these road accidents is also a cause of many behavioral and emotional problems and precursor to some non-communicable diseases[4]. Very little literature is Indian scenarios and the impact of these road traffic accidents on physical, social and psychological life of individuals so this study was conducted to study social and economic impact of non-fatal Road traffic accidents.

Aim and objective: To study social and economic impact of non-fatal Road traffic accidents on patients

MATERIAL AND METHODS

Present study is a longitudinal study conducted on victims of non-fatal road traffic accidents. The study was planned in a 2200 bedded tertiary care hospital attached to a teaching medical institute located in a metropolitan city. It was a multispecialty hospital with an excellent casualty and Emergency surgical, orthopedic and other medical set up. Any patient coming to the hospital with a road traffic accident was referred to the casualty. From casualty road traffic accident patients were referred to emergency surgical resuscitation (E.S.R.) or orthopedic surgical care depending on the type of injury. Patients with minor injuries were treated and sent to home. Patients who require in-patient care were admitted in surgical or orthopedics ward as per requirement.

Annual load of road traffic accident patient in this casualty was around 3000 - 3600. In present study, subjects had been recruited from casualty. All patients with road traffic injury were enumerated. Patients with non-fatal road traffic accidents who were admitted in hospital were interviewed, thus the patients with nonfatal road traffic accidents were included in the study. Last 2months hospital record of road traffic accident patient in a casualty showed the proportion of 42.87%. Thus, expected prevalence for the study purpose was taken as 42%. Considering DE*T*P*q/d2/za2*(n-1) +p*q formula for calculation of sample size, our sample size was 476.

Inclusion criteria: Patients with nonfatal serious road traffic accidents irrespective of their age/sex were included in the study.

Exclusion criteria: 1. All those patients whose information could not be collected due to difficulty in understanding language 2. If no reliable source of information was available / In case patient can't speak/No eye witness/ No complete information was available from Police record. Simple random sampling was used for recruiting patients. Data was collected with pretested questionnaire. Data included sociodemographic data of patients, clinical examination of patients, agent, host and environmental factors related to road traffic accidents. Patients were treated according to type of injury. They were followed up after 3 months form discharge. For follow up, a short supplementary interview schedule was used. Patients were contacted on telephone. Data was collected regarding social and economic impact of accident on patients. Data was analysed with appropriate statistical tests.

RESULTS

Out of 476 road accident cases 307 (64.4%) victims were involved in non-fatal road accident and 169 (35.6%) were involved in fatal road accidents. Among 307 Study subjects most common age group was 21-30 years comprising 110(35.8%) followed by 31-40 years comprising 81 (26.4%) patients. Among 307 study subjects 269 (87.6%) were male and 38 (12.4%) were female. In present study it was found that most common site of injuries was extremities 145 (47.2%) and next common site were the head, neck and face region accounting for 83 (27.1%) followed by 52 (16.9%) road accident victims had multiple injuries. Only 27 (8.8%) of cases had injury to thorax and abdomen.(table 1) Among 307 study subjects 124 (40.4%) had single site fracture, 87 (28.3%) had two site fracture, 50 (16.3%) had multiple site fracture while 46 (15%) subjects did not have any fracture.(table 2) In present study among 307 study subjects 200 (65.2%) were hospitalized for <10 days, 60 (19.5%) were hospitalized for 11-20 days and 47 (15.3%) hospitalized for more than 30 days. (table 3) From table 4 it was found that mobility was affected among all the age groups but more among extremes of age group <20 years and >50 years. This may be due to the dependence of individuals on middle age group, immunological response of older and children are weaker than the middle age group. Mobility of middle age group was also affected which had impact on victims daily life works and also contributed to the socioeconomic loss of individual in the form expenditure on treatment, change of job, etc. Among those who had changed job (58.8%) victims had family income <5000, (69.4%) had income between 5001-10000, (75.6%) had income between10001-20000, (100%) change of job who had income 15001-20000. In our study it was found that maximum number of victims had changed job those who had more income as compared to the victims with low income. On chi square application for above two variables p value was 0.001. It shows significant relationship between monthly income of victims and change in job after accident.(table 5) Attitude

of family members was caring in 12 (70.5%) victims who had monthly income of <5000 (R.s), 104 (61.1%)cases who had income between 5000-10000 (R.s), 50 (64.1%) cases who had income 10001-15000 (R.s) and 3(42.8%) case had income between 15001-20000(R.s). Negligence of road accident victim by family members was more 3 (42.8%) among the income group 15001-2000 (R.s).Blaming to accident victims was more who had income < 5000 (R.s) and between 5001-10000(R.s). (table 6) In table 7 it was found that the sense of insecurity after accident was found more among low income group <10000 R.s On chi square application to above two variables the p value was 0.01.t shows the significant relationship between monthly income of accident victim and sense of insecurity.

Table 1: Distribution of non fatal RTA victims with reference to site of injury

Site of injury	No. of cases	Percentage
Head ,neck and face	83	27.1
Thorax and abdomen	27	8.8
Extremities	145	**47.2**
Multiple injuries	52	16.9
TOTAL	**307**	**100.0%**

Table 2: Distribution of non fatal RTA victims by occurance of **fracture**

occurrence of fracture	No. of cases	Percent
Single site fracture	124	**40.4**
two site fracture	87	28.3
multiple site fracture	50	16.3
No fracture	46	15.0
Total	**307**	**100.0**

Table 3: Distribution of non fatal RTA victims by duration of hospital stay

Duration of hospital stay	No. of cases	Percent
<10 days	200	**65.2**
11-20 days	60	19.5
>30 days	47	15.3
Total	**307**	**100.0**

Table 4: Relationship of age of non fatal RTA victims with impact on mobility of after 3 months of accident

Age (years)	Mobility affected after accident				Total
	Yes	%	No	%	
1-10	4	**100**	0	0	4
11-20	57	**83.8**	11	16.2	68
21-30	100	78.7	27	28.3	127
31-40	30	76	9	8.7	39
41-50	8	57.1	6	42.9	14
51-60	12	**92.3**	1	7.9	13
>60	7	**100**	0	0	7
Total	**207**	**76.1**	**65**	**23.9**	**272**

Table 5: Relationship of monthly income with change pattern of job/quit job after 3 months of accident

Monthly income	Job pattern change/quit of job after accident				Total
	Yes	%	No	%	
<5000	10	58.8%	7	41.2%	17
5001-10000	118	69.4%	52	30.6%	170
10001-15000	59	75.6%	19	24.4%	78
15001-20000	7	100%	0	0%	7
Total	**194**	**71.3%**	**78**	**28.7%**	**272**

Chi-square = 68. Degree of freedom= 6 p = <0.001

Table 6: Distribution of monthly income v/s Attitude of family members after 3 months of accident

Monthly income (Rs.)	Attitude of family members						Total
	Caring	%	Negligence	%	Blaming	%	
<5000	12	70.5	0	0	5	29.5	17
5001-10000	104	61.1	19	11.8	47	27.1	170
10001-15000	50	64.1	28	35.9	0	0	78
15001-20000	3	42.8	3	42.8	1	14.4	7
Total	166	61.0	47	17.2	59	21.8	272

Table 7 : Relationship of monthly income with sense of insecurity after accident

Monthly income	Sense of insecurity after accident				Total
	Present	%	Absent	%	
<10000	65	**34.7%**	122	65.3 %	187
>10000	19	22.3%	66	77.7%	85

Chi-square = 4.2 degree of freedom =1 p value = 0.01

DISCUSSION

The proportion of non fatal road to fatal accidents is 1.8:1. Similar results were seen in Gururaj *et al.* where more than (60%) victims were involved in nonfatal road traffic accidents.[1] Out of 307 study subjects more than 60% of road traffic accidents victims were between 21-40 years age group. This may be due to fact that persons of 21-40 years of age group had more active life and were involved in outdoor activities most of the time. Similar findings were seen in a study at Chandigarh where 33.96%respondents were the victims from age from age group (21-30) and 20.10% were from age group 31-40.[5] In our study male preponderance was seen (87.6%) in road traffic accidents. It may be due to more outdoor activities of male. Similar findings were seen in In Ganveer G *et al.*[6] where 363 (85.8%) were males while only 60 (14.2%) were females. In present study it was found that most common site of injuries were extremities 145 (47.2%) and next common site were the head, neck and face region accounting for 83 (27.1%). The reasons are that, in case of two wheelers wheel strikes a lower limb, in case of four wheelers bumper strikes lower limb, limbs also injured due to the reflex action of victim at the time of accident. Head, neck and face region involved due to non usage of safety devices at the time of accident. A Study conducted by Pramod Kumar Verma *et al.* at delhi found that limbs were the most affected part (62.2%) followed by head injury.[7] Among 307 study subjects 124 (40.4%) had single site fracture followed by two site fracture 87 (28.3%). In present study among 307 study subjects 200 (65.2%) were hospitalized for <10 days, 60 (19.5%) were hospitalized for 11-20 days and 47 (15.3%) hospitalized for more than 30 days. A study conducted by Pramod Kumar *et al.* in Delhi found that more than 80% were discharged within 10 days of hospitalization. Those who were admitted for longer duration required major surgical treatment, prolonged immobilisation.7 We found that mobility was affected among all the age groups but more among extremes of age group <20 years and >50 years. This may be due to the dependence of individuals on middle age group, immunological response of older and children are weaker than the middle age group. Mobility of middle age group was also affected which had impact on victims daily life works and also contributed to the socioeconomic loss of individual in the form expenditure on treatment, change of job, etc. Our study revealed that maximum number of victims had changed job those who had more income as compared to the victims with low income. It shows relationship between monthly income and job change after accident was found significant.($p< 0.05$) Attitude of family members was caring in 12 (70.5%) victims who had monthly income <5000 (R.s), 104 (61.1%) cases who had income between 5000-10000 (R.s), 50 (64.1%) cases who had income 10001-15000 (R.s) and 3(42.8%) case had income between 15001-20000(R.s). Negligence of road accident victim by family members was more 3 (42.8%) among the income group 15001-2000 (R.s). Blaming to accident victim was more by the family members who had income < 5000 (R.s) and between 5001-10000(R.s). A study from PGIMER found that winter 2010 found that Families can experience several interpersonal difficulties such as family friction or poor tolerance after accidents.[8] Table 7 shows relationship of monthly income of road accident victim with Sense of insecurity after accident .It was found that the sense of insecurity after accident was found more significant among low income group <10000 R.s ($p<0.05$)

CONCLUSION

Non fatal road traffic accidents have a major impact on social, psychological and economic life of patient in terms of attitude of family members , change of job pattern and psychiatric disorders.

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