

SHORT ARTICLE

Road traffic accidents: a lifetime financial blow the victim cripples underPreeti Verma¹, S C Gupta², Sunil Kumar Misra³, Renu Agrawal⁴, Vishal Agrawal⁵, Gagan Singh⁶Assistant Professor¹, Professor ², Department of Community Medicine, Sarswathi Institute of Medical Sciences , Hapur , Professor & head ³, Assistant Professor⁴, Resident⁵, Department of Community Medicine, S. N. Medical College , Agra

Abstract	Introduction	Methodology	Results	Conclusion	References	Citation	Tables / Figures
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Source of Funding : Nil, **Conflict of Interest:** None declared**Article Cycle****Submission:** 13/03/2015; **Revision:** 15/05/2015; **Acceptance:** 25/06/2015; **Publication:** 30/06/2015**Abstract****Introduction:** WHO states that the proportion of deaths and casualty registrations of RTA cases represents only the tip of the iceberg. A similar tip of the iceberg phenomenon exists between the visible expenses incurred due to the accidents and the much larger invisible losses are there that imperceptibly disable the family budget.**Objective:** (1) To estimate the total expenditure on treatment of RTA cases and its proportion to their monthly family income on treatment.(2) To estimate the loss of wages of RTA cases and project the other losses.(3) To enquire reimbursement of losses of RTA cases. **Materials and methods:** A hospital based cross sectional study, conducted at ED and Hospital of S.N. Medical College, Agra. Data were collected by using semi structured questionnaire from RTA cases or their attendants. **Results:** Out of 425 admitted RTA cases, 318 (74.8%) had spent Rs > 5,000 on the treatment and 304(71.5%) had lost their wages Rs >1, 000. 73.2% had incurred hospital expenses from 1to10 times or even more of their monthly family income. About 1/4th cases recovered completely and 64.01% recovered with temporary physical deficit. 3.5% had health insurance. 75.8% cases had remained hospitalized for more than1 week or up to a month duration and a strong positive correlation (r = 0.83) was found between the length of stay in the hospital and the amount spent on the treatment. **Conclusion:** The financial assault suffered by the road traffic accident cases and their families even if they are treated in Government Hospital are so huge that cannot be ignored.**Key Words**

Road traffic accidents, loss of wages, out of pocket expenditure, Emergency department, insurance, outcome

Introduction

Ever since man has ridden on the wheels of speed, accidents on road have appeared as an accompanying evil. The proportions of Road traffic accident cases attending the casualty departments of various hospitals are on a steady rise, both within India and globally. WHO states that the proportion of deaths and casualty registrations of RTA cases represents only the tip of the iceberg (1). A much larger unexpected proportion lies hidden in the community. A similar tip of the iceberg phenomenon exists between the visible expenses incurred due to

the accidents and the much larger invisible losses that imperceptibly disable the family budget.

The number of vehicles on Indian roads has crowded up to enormous figures where majority of the pedestrians not only lack life insurance but also an assured income source. The most productive age group belonging to the economically weaker section, being the most mobile, is the worst hit by this imbalance. There is limited data available about the economic impact of RTA cases. Hence, the present study was undertaken to estimate the economic burden on RTA cases and their families.

Aims & Objectives

1. To estimate the total expenditure on treatment of RTA cases and its proportion to their monthly family income on treatment.
2. To estimate the loss of wages of RTA cases and project the other losses.
3. To enquire reimbursement of losses of RTA cases.

Material and Methods

The present study is a hospital based cross sectional study, conducted from April 2012 to March 2013 on cases admitted due to RTA in Emergency Department and Hospital of S.N.Medical College, Agra. By using purposive sampling technique, a total of 425 RTA cases or their attendants were interviewed by using a semi structured questionnaire after obtaining informed and written consent. The Road traffic accidents cases were operationally defined as “injuries occurring on road involving two or more objects one of which was any kind of moving object” (WHO: World report 2004) (3).

Inclusion Criteria: Road traffic accidents cases or their attendants who gave voluntary written consent for interview and were ready for follow up after being transferred to the various wards.

Exclusion Criteria

1. Cases / relatives who did not give written consent to participate in the study.
2. Cases who attended the Emergency Department between 5 PM to 8AM and were not admitted formally for treatment.

Sample Size - A sample size of 425 was obtained by considering that 30% of admissions to the Emergency department were due to RTA (2). The 15% relative error at 95% confidence and 5% non-response error were considered for measurement of sample size by using formula-

$$n = Z_{\alpha\%}^2 \frac{pq}{D^2}$$

Methodology - It was found out that in ED/Hospital of S.N. Medical College, Agra, the number of RTA cases admitted was approximately 1500 per annum, i.e. around 125 per month. In order to achieve the desired sample size (n=425), three visits on alternate days of week, between 8AM-5PM, were made. The RTA cases found admitted on the day of visit were interviewed. For first and third weeks of every month, the days selected were Monday, Wednesday and Friday while for second and fourth weeks of the

month, the cases were interviewed on Tuesday, Thursday, Saturday and Sunday.

Results

It was found in the study that out of total 425 RTA cases, 1/3rd (33.0%) had spent between Rs 5,000 to 10,000 on treatment including cost on medicine, surgery, investigation, transportation and diet of cases during hospitalization, whereas another 40.2% had spent Rs > 10,000, out of which 10.1% had spent Rs > 20,000. The average expenses per case during hospitalization were Rs 12,137 on the treatment [table 1].

A large proportion (64.0%) of RTA cases had loss of their wages between Rs 1,000 to 5,000 during their stay in the hospital and another 7.3% had lost more than Rs 5,000. On the other hand, 28.5% had lost less than Rs 1,000. The average loss of wages was Rs 2,297 [table 2]. Thus during hospital stay total average financial loss per case was Rs 14,434 (12137+2297).

This loss amounts to be very high if measured in the form of proportionate loss of the family monthly income. Table 3 shows that 56.5% of the RTA cases had incurred hospital expenses from 1 to 4 times of their monthly family income and 26.8% had incurred from less than half to full. On the other hand 14.1% had incurred losses from 5 to 9 times of their monthly family income [table 3].

According to table- 4, it was found that maximum (40.5%) of RTA cases remained hospitalized for 1-2 weeks out of which majority (60.5%) spent Rs. 5,000 to 10,000 on treatment. On the other hand 35.3% stayed for 3-4 weeks of which 55.3% cases spent Rs. 10,000 to 20,000. Less than 1/4th (23.3%) cases were hospitalized for less than a week and they spent less than Rs. 5,000. Only 3 cases who were hospitalized for more than 30 days spent more than Rs. 30,000 during their stay in hospital. Average length of stay was 13.56 days per case [table 4]. There is a strong positive correlation ($r = 0.83$) between the length of stay in the hospital and the total amount spent on treatment during the hospitalization (figure 1). The value of coefficient of determination is 0.69 which shows a moderate positive correlation. This presents a statistically significant result and describe that there is a tendency that high length of stay in the hospital score go with high amount of expenses on treatment and vice versa.

Regarding status of insurance, it was found that only 3.5% admitted cases had health insurance covering

their hospital expenses and only 8.8% had vehicle insurance (other than third party) for reimbursement of their losses [table 5]. On considering the total financial loss due to RTA, it comes out that besides expenses on treatment, loss of wages and vehicle damages, there are further expenses also like ongoing treatment cost and further loss of wages. Table 6 shows that only a quarter (24.7%) of the cases had recovered completely at the time of discharge. While, 62.2% of cases had discharged with some temporary physical deficit. 10.6% were either referred to higher centers or left hospital for treatment elsewhere. Thus 72.8% cases have to spend more on treatment. Few cases (2.5%) had permanent disability or died [table 6].

Discussion

The present study was conducted to know the economic burden of RTA cases in the form of expenditure on treatment and loss of wages and its reimbursements if any. Study was conducted on 425 cases admitted in Emergency Department and Hospital of S. *et al*/N Medical College, Agra. It was found that on an average Rs. 12,650 per case was spent on treatment during hospitalization. Out of total 425 cases, 40.2% had spent Rs > 10, 000 and of which 10.1% had spent Rs > 20,000. Jolly J *et al* (4) in their study found that total amount spent to treat a RTA case was Rs.6124.45 per case and Reddy GMM *et al* (5) found that total expenditure incurred on the treatment was Rs.8, 55,644 which comes per case as Rs. 9006.77. Gururaj G in his article mentioned that the cases due to road traffic accident spend Rs. 17,000 – 35,000 (2) during hospitalization. This reflects the large iceberg base of the economic burden considering that the vast majority of the RTA cases are managed in the private health care facilities. Many cases admitted in the Emergency department/Hospital run by of the government belong to the economically weaker sections, so this absolute amount incurred on the treatment actually amounts to an enormous proportion of their family monthly income.

In the present study on an average there is loss of wages of Rs. 2,308 due to the workdays lost of RTA case and 73.2% of the cases had incurred hospital expenses from one to ten times or even more of their monthly family income during hospital stay. This actually amounts to a lofty proportion of the family monthly income being lost because most of the cases earned money on the daily bases. The present study

has not taken into account the loss of wages and other expenses of those family members who attend to the cases at the hospital, also the ongoing expenses on treatment which may further reflect the economic disbalance that, the family suffers. Reddy GMM *et al* (5) in their study found that total lost wages was Rs. 1,40,230 and per case it was Rs.1476.10. According to Junaid A. *et al* (6) the average out-of-pocket healthcare costs were US\$ 271 and average work loss was US\$ 67.1 (SD = 132.1). Srivastava DK *et al* (7) found in their study that the average financial loss was Rs.7060± 1084 per case (Range from Rs 10400- 3500).

The average length of stay in the hospital was 13.56 days per case in the present study and as the length of hospital stay increases the expenses incurred for the treatment also rises. Almost similar to present study Mishra B *et al* (8) estimated an average of 12.83 days for hospitalization for each case. Jolly J *et al* (4) in their study found that the total number of days that a patient spent in hospital was between 1 and 365 days and the average was 21.5 days, which is higher than the present study and this variation may be due to variation in the severity of accidents or type of hospital.

When cases were interviewed regarding status of insurance coverage it was found that only 3.5% had health insurance, while 9.7% had vehicle insurance (other than third party). Maximum (62.2%) of the cases were left with some temporary physical deficit at the time of discharge, so they might not be able to fully resume their work duties for a substantial time period. Hence, either they have to compromise to an alternate work or rest till they fully recover, thus compromising with the wages that they may lose. All these factors further increase economic burden on the RTA cases and on their families.

Conclusion

The financial burden suffered by the road traffic accident cases and their families are so huge that it cannot be ignored, as the fact is that a little has been said and done to anodyne this pain. Hence, there is an urgent need of affordable health insurance policies to be made available by the Government for the economically weaker sections and also increased awareness among people regarding the insurance facility available.

Recommendation

Every district should have the trauma centre and all government health facilities should have the provision of free treatment of RTA cases.

Limitation of the study

As the data was collected between 8 am to 5 pm, the cases with minor injuries managed in E.D. remaining period, were not included in the study.

Relevance of the study

There is limited data available about the economic impact of RTA cases which is the burning issue of present time, hence the present study was undertaken to estimate the economic burden on RTA cases and their families.

Authors Contribution

All the co- authors helped in planning & designing the study, in data compilation, analysis, and interpretation of data; and also helped in drafting the article.

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Tables

TABLE 1 TOTAL EXPENDITURE OF RTA CASES DURING THE HOSPITAL STAY (INCLUDING COST ON MEDICINE/SURGERY/INVESTIGATION/TRANSPORTATION AND DIET OF CASES)

Expenditure (in Rs.)	Road traffic accident cases		
	Number (n=425)	Percent (%)	
<5000	114	26.8	Average Expenditure = Rs. 12,137 SD = Rs. 791 Mode = Rs. 10,000
5000-10000	140	33.0	
10001-20,000	128	30.1	
20,001-30,000	24	5.6	
>30,000	19	4.5	

TABLE 2 LOSS OF WAGES OF RTA CASES DURING THE HOSPITAL STAY (INCLUDE CASES ONLY)

Loss of wages (Rs)	Road traffic accident cases		
	Number (n)	Percent (%)	
<1000	122	28.7	Average loss of wages = Rs. 2,297 SD = Rs. 154 Mode = Rs. 2,000
1000-5000	272	64.0	
5001-10000	22	5.2	
10001-20000	5	1.2	
>20000	4	0.9	
Total	425	100	

TABLE 3 OUT OF POCKET EXPENDITURE ON TREATMENT IN PROPORTION TO THE TOTAL FAMILY MONTHLY INCOME

Expenses proportionate to Total family monthly income	Road traffic accident cases	
	Number (n)	Percent (%)
< half the monthly income	77	18.1%
Half to full monthly income	37	8.7%
1to 4 times the monthly income	240	56.5%
5- 9 times the monthly income	60	14.1%
>10 times the family monthly income	11	2.6%
Total	425	100

TABLE 4 DISTRIBUTION OF RTA CASES AS PER DURATION OF HOSPITALIZATION WITH TOTAL MONEY SPENT ON TREATMENT

Duration of Hospitalization*	Total cost on treatment (Rs.)					Total
	< 5000	5000-10000	10001-20000	20001-30000	>30000	
≤ 7 days	91(91.9)	8(8.1)	0(0.0)	0(0.0)	0(0.0)	99(23.3)
8 – 15 days	19(11.0)	104(60.5)	45(26.2)	4(2.3)	0(0.0)	172(40.5)
16 – 30 days	4(2.7)	28(18.7)	83(55.3)	19(12.7)	16(10.6)	150(35.3)
>30 days	0(0.0)	0(0.0)	0(0.0)	1(25.0)	3(75.0)	4(0.9)
Total	114(26.8)	140(33.0)	128(30.1)	24(5.6)	19(4.5)	425 (100)

* Average length of stay was 13.56 days per case.

TABLE 5 STATUS OF HEALTH AND VEHICLE INSURANCE

Insurance status	Road traffic accident cases	
Health insurance (n=425)	Number(n)	Percent (%)
Insured	15	3.5
Not insured	410	95.5
Vehicle insurance*(n=226)		
Insured (other than third party)	20	8.8
Not insured	139	61.6
Not known	67	29.6

*for motorized vehicle

TABLE 6 OUTCOME OF RTA VICTIMS AT THE TIME OF DISCHARGE

Outcome	Road traffic accident cases	
	Number (n)	Percent (%)
Recovered completely	105	24.7
Recovered with temporary deficit	264	62.2
Absconded/ LAMA/Referred to higher center	45	10.6
Permanent disability	4	0.9
Dead	7	1.6
Total	425	100

Figures

FIGURE 1 CORRELATION BETWEEN THE LENGTH OF HOSPITAL STAY AND THE AMOUNT SPENT ON THE TREATMENT DURING HOSPITAL STAY

