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Original Research Article

Under-reporting of road traffic accidents in traffic police records- a cross sectional study from North India

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ABSTRACT

Background: Underreporting of deaths and injuries resulting from road traffic accidents is a major issue globally. Understanding the extent of underreporting and the causes along with the assessment of quality of data available will help in developing a better system of reporting and accurate estimation of burden and risk factors which aid in developing prevention programmes.
Methods: A cross sectional study was done keeping hospital records as a baseline data to which the under reporting in the police records on traffic injuries was measured. The population under study was the total number of accidents that took place in Chandigarh in the month of June-July 2011 and had reported to the emergency department of three major government hospitals. These three hospitals have been selected purposefully as majority of the road traffic accident victims are being admitted/ treated in these hospitals.
Results: A total of 537 cases and 375 cases were recorded in police and hospital records respectively for the month of June-July 2011. Only 15% cases from the police records were matched with the hospital records. Among the matched 64% were completely matched and 36% were partially matched cases. None of fatal injuries registered in both the records were among the matched cases. Most of the road traffic accident cases (79.4%) involved males aged 20-49 years. The official records of road accidents have been found to be incomplete in terms of number of accident and information on age, sex, address of the victim, type and severity of injury.
Conclusions: A standardised reporting format of all RTIs should be developed and maintained by both the police and hospitals. All hospitals should mandatorily report all RTI cases reported to them to the police to ensure completeness.

Keywords: Under-reporting, Road traffic accidents, Police records, Hospital records

INTRODUCTION

Road traffic injuries have increased exponentially in past ten years. They are predicted to rise from the 9th position to 7th position on the chart of leading causes of death by 2030.[1] Road traffic accidents are a huge global public health and developmental problem causing mortality in 1.2 million people a year and morbidity between 20-50 million people. India, the largest country in South East Asia region, has the highest rate of RTI per 1000 vehicles in the world. The total number of road accident in the year 2015 were 501,423 which resulted in 146,133 deaths and 500,279 injuries.[2]

As per National Transportation Planning and Research Centre (NTPRC), India, the number of road accidents in India is thrice as that of developed countries. The number of accidents are as high as 35 per 1000 vehicles in India as compared to 4 to 10 in developed countries.[3] The road traffic accidents are grossly underreported in India primarily by the police department.[4] The same is the case

with high income countries also.[5] Road traffic deaths in rural areas and accidents which result in deaths after discharging from hospital, due to the effect of morbidity, are not recorded.[6] In one of the studies by Indian Institute of Technology, Delhi, it was found that official government statistics of road traffic deaths in India under-represent pedestrians and motorised two wheeler riders.[7]

Worldwide, under reporting of road traffic accidents is believed to be a significant problem affecting many developing and developed countries. It has a serious implication on the correct estimates for identification of the vulnerable group, prioritising the public health issues and formulation of cost effective interventions for promoting road safety. The absence of reliable data on the magnitude and nature of the problem is a serious handicap that needs to be overcome as a priority.[7-17] In India, the National Crime Record Bureau (NCRB) is the nodal agency responsible for the collection of data from the police in each state/city and compilation, analysis, and dissemination of injury-related information.[18]

METHODS

A cross-sectional study was conducted to estimate the extent of under-reporting of road traffic accident cases in police records with hospital records as a baseline. The population under study were total number of accident that took place in Chandigarh in the month of June-July 2011 and had reported to emergency department of three major government hospitals PGIMER, Government Medical College and Hospital 32 and Government Multi-Speciality Hospital 16. These three hospitals have been selected purposefully as majority of the road traffic accident victims are being admitted/ treated in these hospitals.

Road traffic injuries victim who did not go to any health facility or who reported outside the hospitals under study (which includes; private hospitals, nursing homes, private practitioners etc.) were not included in the study.

For the purpose of study, the road traffic accident cases occurring in the month June-July 2011 and reported to the hospitals under study were taken as reference. Each case reported in these hospitals was matched with the police records by using personal identifiers like name, age, sex, address of the victim etc. to estimate the extent of under-reporting of road traffic accidents.

Prior permission was taken from every department before collection of the road traffic accident data. For hospital reported road traffic injuries, data was collected from the CRD department of PGIMER and GMCH 32 and from emergency OPD register of GMSH 16. For police road traffic accident records, the data was collected from monthly road traffic accident register at traffic police department, Chandigarh.

The information on name, age, gender, address of the patient, date, time, place of accident and type of vehicle involved was collected from both the records. The data for the type of vehicle involved was available in police records but not available for most of the cases in the hospital records and thus it was not used for matching the data.

The records collected from hospital and police source were matched individually after looking for spelling errors. Completely matched cases were the police cases which matched entirely with hospital records for every variable with or without matching of the time of accident. Partially matched cases were the police cases which were not completely matched but matched with the hospital records for all of the variables except for the variable for which the data was not available in one of the data sets. The completely matched and partially matched cases were considered as the overall matched cases of hospital and police records for the purpose of the study. The cases which were neither completely nor partially matched were unmatched cases.

The minimum expected number of accident cases was calculated by summing the hospital cases and the police cases and subtracting the number of matched cases to avoid duplication of the cases.

The calculated expected number of cases was used to estimate the level of under-reporting that can occur if either one of the hospital or police records is considered for the number of road traffic accidents in Chandigarh.

The percentage under-reporting was calculated as follows:

- Percentage of under-reporting if only hospital cases were considered = 100 – (Hospital cases/Total cases * 100)
- Percentage of under-reporting if only police cases were considered = 100 – (Police cases/ Total cases * 100)

The reported and un-reported cases in the police records were then compared to find out the determinants for reporting by police.

The socio-demographic characteristics of the injured person/ victim, type of vehicle and the severity of the injury were compared between reported and un-reported cases in police records to find out the determinants for reporting of the road traffic accidents by the police. The data entry and data analysis was done on MS Excel 2007. Chi-square test was used for comparing categorical variables.

RESULTS

The data was collected from three major government hospitals and traffic police department of Chandigarh for

two months according to name, age, sex, address, date, and place of accident. The data was then matched between the two records to determine the percentage of under-reporting of road accident cases in Chandigarh police record. The number of cases reported by various data sources during June-July 2011 is given in Figure 1.

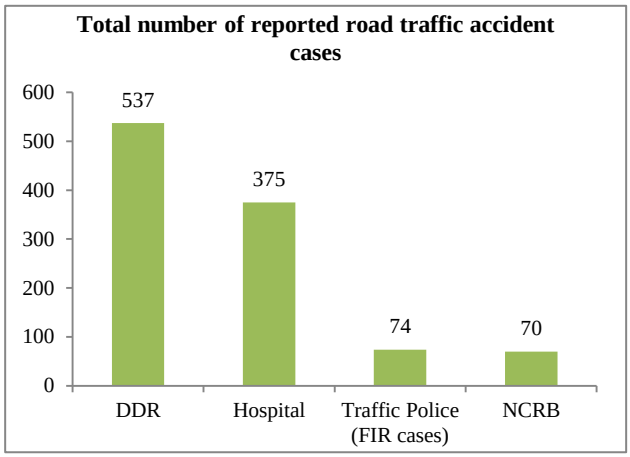

Figure 1: Total number of road traffic accident cases reported for month of June-July 2011 in police and hospital records of Chandigarh.

DDR=Daily dairy report, FIR: First information report, NCRB: National Crime Record Bureau

Table 1: Missing data of road traffic accidents in police and hospital records for the month of June-July 2011, Chandigarh.

Variables	Traffic police N (%)	Hospital N (%)
Name of patient	137 (25.5)	12 (3.2)
Age	170 (31.6)	25 (6.7)
Sex	27 (5.1)	13 (3.4)
Address	202 (37.6)	62 (16.5)
Place of accident	0 (0)	183 (48.8)
Time of accident	0 (0)	55 (14.7)
Date of accident	0 (0)	25 (6.7)
Total	537 (100.0)	375 (100.0)

Both hospital and police department were incomplete in records regarding road traffic accident cases. The desired quality of information was partly found in both the sources. The missing data of road traffic accidents in police and hospital records for each variable under which the data was collected is presented in Table 1. Personnel details were recorded in majority of the hospital records whereas accident details were not properly recorded/ missing in majority of the hospital cases. Among police records, the details of the accident were well maintained for all cases whereas personnel details were not properly recorded. Only 2.5% of all the cases were either completely or partially matched between hospital and police records.

Table 2: Socio-demographic characteristics and outcome of road traffic accident cases in police and hospital records for the month of June-July 2011, Chandigarh.

	Matched cases N (%)	Unmatched police cases N (%)	Unmatched hospital cases N (%)	Total cases N (%)
Gender				
- Male	8 (72.7)	48 (76.2)	268 (73.6)	324 (73.9)
- Female	3 (4.8)	10 (15.9)	85 (23.4)	98 (21.5)
- Missing	0 (0.0)	5 (7.9)	11 (3.0)	16 (3.6)
Age				
- 0-19years	0 (0.0)	5 (7.9)	51 (14)	56 (12.7)
- 20-49years	9 (81.8)	21 (33.3)	248 (68.1)	278 (63.4)
- 50+ years	2 (18.2)	6 (9.5)	44 (12.1)	52 (11.8)
- Missing	0 (0.0)	31 (49.2)	21 (5.8)	52 (11.8)
Address				
- Urban	5 (45.4)	19 (30.2)	213 (58.5)	237 (54.1)
- Rural	3 (27.3)	5 (7.9)	73 (20.0)	81 (18.4)
- Slum	3 (27.3)	2 (3.2)	25 (6.9)	30 (6.8)
- Missing	0 (0.0)	37 (58.7)	53 (14.6)	90 (20.5)
Outcome				
- Fatal	0 (0)	21 (33.3)	9 (2.5)	30 (6.8)
- Serious	6 (54.5)	33 (52)	64 (17.6)	103 (23.5)
- Injury	5 (45.5)	0 (0)	291 (79.9)	296 (67.5)
- Slight Injury	0 (0)	9 (14.2)	0 (0)	9 (2)
- Non-Fatal	0 (0)	0 (0)	0 (0)	0 (0)

Table 3: Factors determining police reporting of road traffic accidents.

Variables	Reported cases N (%)	Un-reported cases N (%)	Chi-Square	df	P value
Sex					
- Male	56 (81.2)	268 (76.4)	0.89	1	0.3455
- Female	13 (18.8)	85 (24.2)			
Age					
- 0-19 years	5 (11.6)	51 (14.9)	1.236	2	0.5388
- 20-49 years	30 (69.8)	248 (72.3)			
- 50+ years	8 (18.6)	44 (12.8)			
Address					
- Urban	24 (64.9)	213 (68.5)	0.2	1	0.6547
- Rural and Slum	13 (35.1)	98 (31.5)			
Outcome					
- Fatal	21 (28.4)	9 (2.5)	64.69	1	<0.001
- Non-fatal	53 (71.6)	355 (97.5)			

The distribution of socio-demographic characteristics and outcome of the RTI cases reported in police and hospital records is shown in Table 2. Most of the road traffic accident cases (79.4%) involved males aged 20-49 years who contribute the productive population of the city. Majority of the accidents (69.5%) occurred in the urban area of Chandigarh. The case fatality rate was 6.8%. Injured cases cannot be classified as serious injuries and non-injuries from police records. None of the fatal cases from police records matched with the fatal cases from the hospital.

It was found that fatal cases were more likely to be reported in police records and this association is found to be statistically significant as shown in Table 3.

DISCUSSION

Underreporting of deaths and injuries resulting from road traffic accidents is a major issue globally. The official records of road accidents have been found to be incomplete in terms of number of accident and information on such as age, sex, address of the victim, type and severity of injury etc.

The present study showed that only 15% of the hospital cases were reported in police records. Among the Indian studies on under-reporting of RTA in police records, under-reporting in Chandigarh was maximum (85%) as compared to the other studies conducted in different cities of India where it varied from 81% in Hyderabad to 50% in Banglore.[2,15] Under-reporting is found at all levels of injury severity with fatal cases being more likely to be reported by the police.

Police records are the main source of road traffic injury related deaths and injuries information in India.[16] Road traffic accident cases reported to the hospital were MLC and are being reported to the police. But still there was high under-reporting in the police records as only FIR cases are being reported to NCRB which is the nodal agency responsible for the collection of the data from police in every state/city, compilation and analysis of injury related information and official agency providing information on regular basis.[18] Registering a FIR in India is generally not considered easy by people as they are reluctant to interact with the police. It is widely known that the tedious administrative process of attending in the court of law is a major rein for people to report RTA to police, therefore, not reporting it or outside settlement between those involved are the preferred choices for the majority.[15]

It was found that the male victims in age group of 20-49yrs from urban sectors reported maximally in both in police and hospital records. Similar results were identified in studies from different parts of the country.[17-21] This can be attributed to factors such as the fact that, this group constitutes the maximum individuals using vehicles. Other factors such as lack of experience, risk taking behaviour, impulsiveness and aggressiveness also come into play.[17]

The reason for gaps between daily diary report (DDR) and hospital records might be because the hospital data is collected only from the 3 major hospitals of Chandigarh excluding all the private hospitals.The hospital data includes only the road accident injury cases. It does not include the accidents with no injury. The information on RTAs from DDR was provided in readily available tables which had information on total number of RTAs per month of every police station of Chandigarh. Data from DDR, which contains personnel identifiers of every case, could not be extracted as this information is available in narrative form in the records maintained in the police stations and it is not feasible to collect the data from each police station during the limited data collection period. Hence the details of DDR were not used for matching. But as DDR contains maximum information, the information on key identifiers of the RTA cases should

be maintained in tabular form for each month by the police department and this data should be forwarded to NCRB. It will thus represent the more accurate picture of the burden of RTA in Chandigarh.

The details of the referring hospital were mentioned for 33 accident cases in police records. But only 8 cases among them matched with the hospital cases. The reasons for mismatch might be due to improper recording of MLC data in the OPD register of the hospitals or improper data retrieval by the Central Registration Department of the hospitals who provided the records for the study. As the accident cases are MLC, the hospitals were not ready to share the information which can lead to underestimation of cases by the hospital.

The hospital data included three major government hospitals of Chandigarh and cases reported to other private hospitals of Chandigarh are unknown for matching with the police record. Data was missing for key variables like name, age, sex and address of the patient and place, time and date of the accident. This hindered the matching between the two records due to incomplete data.

The matching of the RTA cases would have been better if the data has been collected in a uniform manner by the hospital and police for all RTAs. There should be a universal reporting format for all agencies involved in the collection of data on Road Traffic Accidents. The information should be complete for the socio-demographic variables namely, name, age, sex, address of the victim, whether the case is a directly reported case or a referral case(with information on referral institution if any), and key accident details namely, type of vehicles and persons (driver/ occupant of the vehicle/ pedestrian) involved in the accident, incurrence of property damage, injury, severity of injury, date, time and place of accident, whether the victims of the accidents were following safety precautions like wearing helmets/seatbelts and the breath analyser test results to rule out drunken driving.

The information thus available can not only be used not only for estimating burden of road traffic accidents but on planning and evaluating of road safety programmes for decreasing the number of road traffic accidents.

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