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Original Research Article

Pattern of traffic rules violations and the risk of fatal injuries in Mysuru city

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ABSTRACT

Background: In India, Road safety is an issue of national concern. Road accidents create negative impact on the economy, public health and the general welfare of the people. Every year the lives of approximately 1.25 million people are cut short as a result of road traffic accidents. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury. Reliable road traffic injury surveillance is an important component of evidence based road safety policy making.
Methods: A cross sectional study was conducted for the period of 3 months in Mysuru city. The present study included all the 5 Traffic Police stations coming under Mysuru city. Before conducting the study, permission to collect all the relevant information is obtained from the in charge of the stations. Retrospective data regarding the traffic rules violations, fatal and non-fatal injuries are obtained in the fixed format prescribed by the government which is maintained uniformly by all the police stations. Data collected was entered in MS office excel sheet and analyzed using statistical package for social sciences (SPSS) software version 22.0.
Results: From the study we can observe that there is a drastic increase in the total number of traffic crimes in 2015 compared to 2014. Case fatality of road traffic accident showed decreasing trend from the year 2013. It was evident from the study that there was no significant correlation between total number of accidents every year with violation of traffic rules ($r = -0.86$ $p = 0.338$). Similarly There was no significant correlation between the number of persons killed every year with violation of rules by riding two wheeler without helmet($r = -0.380$ $p = 0.752$).
Conclusions: With massive investment in roads and the exponential growth in the number of vehicles it has become necessary to have a system, which integrates all disciplines that influence road safety. In depth evaluation of the road traffic accidents to build infrastructures and to reinforce the regulations specific to local needs is required.

Keywords: Cross-sectional study, Retrospective data

INTRODUCTION

One of the modern man-made epidemics posing a grave threat to the economically productive age group in every country is road traffic accidents. This has made Road safety as one of the vital concern for many developing and developed countries.

The newly adopted 2030 agenda for sustainable developments has set an ambitious road safety target of halving the global number of deaths and injuries from road traffic crashes by 2020. Without action, road traffic crashes are predicted to rise to become the 7th leading cause of death by 2030.[1]

In India, road safety is an issue of national concern. Road accidents create negative impact on the economy, public health and the general welfare of the people.[2]

Every year the lives of approximately 1.25 million people are cut short as a result of road traffic accidents. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury.[1] Road traffic injuries were calculated as the leading causes of disability adjusted years of life lost (DALYs) according to the national burden of disease study done by the Ministry of Health and Medical Education (MOHME) in 2002.[3]

Globally, one of the leading causes of death among adolescents is road traffic injuries. In 2012 an estimated 1.3 million adolescents died, down from 1.5 million in 2000.[4] This ever expanding epidemic targeting the young and productive generations is likely to take a heavy burden on the quality of life and socioeconomic growth of the region.[5]

There are few global estimates of the costs of injury, but research carried out in 2010 suggests that road traffic crashes cost countries approximately 3% of their gross national product. This figure rises to 5% in some low- and middle-income countries.[2]

Road traffic injuries have been neglected from the global health agenda for many years, despite being predictable and largely preventable. The United Nations has rightly proclaimed 2011-20 as the decade of action on road safety so that the present rising trend of road accident stabilizes and is reversed by the year 2020. Decline in the number of road accidents per lakh population from 39.9 in 2012 to 38.9 in 2013 indicates the continual effort by government of India in this context.[1]

In India, the Motor vehicle population is growing at a faster rate than the economic and population growth. The surge in motorization coupled with the expansion of the road network has brought with it the challenge of addressing adverse factors such as the increase in road accidents.[6] Apart from this many RTA are linked to improper road safety law and policy, even when a policy or law exists its implementation takes the back bench. Many a times these events are linked with substance abuse also.

Reliable road traffic injury surveillance is an important component of evidence based road safety policy making. In many developing countries, such estimates are derived from police and crime reports.[3] Such reports are used in the current study which are reliable estimates in estimating burden of accidents.

Significant reduction in accident rates is possible only by a wide variety of improvements in design of vehicles, operating environment and infrastructure and enforcement of safety regulations and standards.[1] With this back ground the present study was carried out to find the pattern of traffic rules violations and the risk of fatal injuries in Mysore city with the objectives

1. To estimate the prevalence of traffic rules violations.
2. To describe the trends of accidents in last three years (2013-2015).
3. To evaluate the association between traffic rules violations and adverse events (accidents).

METHODS

A cross sectional study was conducted for the period of 3 months in Mysuru city. The present study included all the 5 Traffic Police stations coming under Mysuru city area such as Devaraja traffic police station (S1), Lakshmipuram traffic police station (S2), V. V Puram traffic police station (S3), Narasimharaja traffic police station (S4), Siddharthanagar traffic police station (S5). Response rate was 100%. Before conducting the study, the in charge persons of all the police stations are contacted and explained about the study procedure, its importance and permission to collect all the relevant information is obtained. Information regarding the traffic rules violations, fatal and non-fatal injuries are obtained in the fixed format prescribed by the government which is maintained uniformly by all the police stations. Retrospective data of all the five police stations from 2013-2015 was collected but two of the five police stations had data of 2014-2015 only.

Considering 2013 as the baseline data regulations which had at least 20 violations or more were considered under the present study. Total of the selected violations contributed more than 50% of the total violations every year.

Data collected was entered in MS office excel sheet and analyzed using statistical package for social sciences (SPSS) software version 22.0.

RESULTS

Out of five police stations Retrospective data from 2013 to 2015 was available for only 3 police stations. Two of the five police stations had data of 2014-2015 only. From the study we can observe the rising trend in the total traffic crimes. There was a drastic increase in the total number of traffic crimes in 2015 compared to 2014 (Table 1). Case fatality of road traffic accident showed decreasing trend from the year 2013 (Table 2). Although the number of non-fatal accidents and total accidents are decreasing, number of fatal accidents remains the same (Figure 1). It was evident from the study that there was no significant correlation between total number of accidents every year with violation of traffic rules ($r = -0.86$ $p = 0.338$) (Figure 2). Similarly there was no significant correlation between the number of persons

killed every year with violation of rules by riding two wheeler without helmet(r= -0.380 p=0.752) (Figure 3).

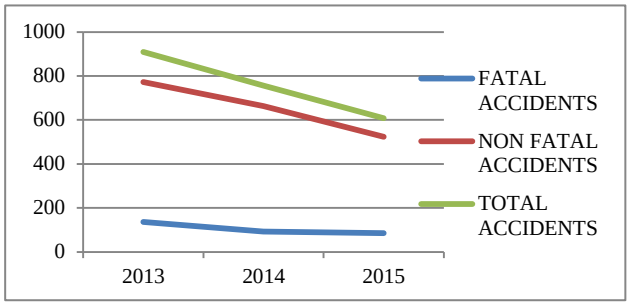

Figure 1: Trends of fatal, non-fatal and total accidents.

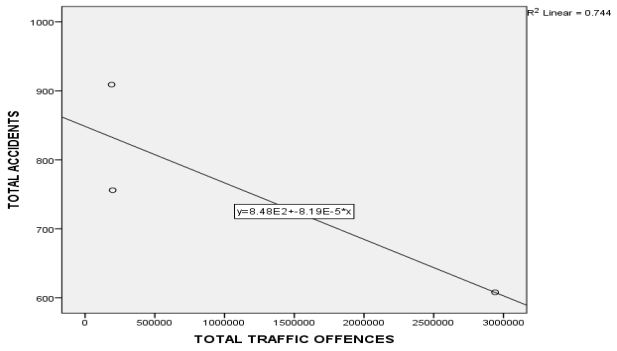

Figure 2: Correlation between the total accidents and total traffic offences.

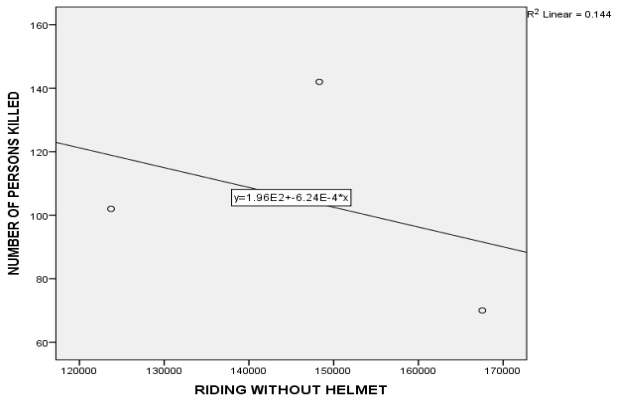

Figure 3: Correlation between the number of persons killed and riding without helmet.

Table 1: Year-wise distribution of total traffic crimes in 5 police stations.

Police stations	2013	2014	2015
Station 1(s1)	74177	43348	44469
Station 2(s2)	54769	61629	70987
Station 3(s3)	-	23775	52974
Station 4(s4)	61219	54431	75595
Station 5(s5)	-	14583	49975
Total	190165	197766	294000

Table 2: Year-wise distribution of accident severity (case fatality).

Year	Accident severity*
2013	15.62
2014	13.49
2015	11.51

* Number of persons killed per 100 accidents.

DISCUSSION

Road safety is a multi-sectoral and multi-dimensional subject. Though relies on modern traffic management systems and practices, improved safety standards in design, construction, operation and maintenance of roads, and production and maintenance of safer vehicles[7], importance of the traffic regulations is been exaggerated in the recent years.

Though the burden of accidents in terms of fatalities are more compared to the communicable diseases like Tuberculosis, Malaria, AIDS, but the plan allocation for combating these diseases draws maximum attention in 10th five year plans.[7]

A study conducted by Patil et al in Western Maharashtra for the period of one year from 2003-2004 with 288 male and 62 female casualties showed that Fatality rate was 0.8%. But current study shows fatality of 11.5% in 2015. This difference could be because of the study setting. Our study included all the fatalities of Mysore city whereas study by Patil et al study was done in hospital setting included only 350 casualities.[8]

Trend of road traffic fatalities in India over the past 45 years reveals that, both absolute number of fatalities and the fatalities per 100,000 populations have been increasing monotonically. But our study shows decrease in the total accidents as well as non-fatal accidents in the past 3 years, whereas number of fatal injuries remains nearly constant. Study conducted by Beevi et al in South Kerala showed number of deaths due to accidents remains stable since 2008 indirectly hints number of fatal accidents remains constant.[6] Mysore city being the important tourist attraction, improved roads and efforts by the traffic control department in reduction in the number of the accidents play a crucial role here.

In the present study we can observe that there was no significant correlation between number of accidents that occur every year with violation of traffic rules (r= -0.86 p=0.338). From this we can conclude that over emphasis on violation of the traffic offences should be removed and combined measures like good engineering techniques, education on traffic rules, improved emergency medical services play a vital role in controlling of traffic offences

A study conducted by Naghavi et al showed almost half of hospital admissions and outpatient visits are

motorcycle riders. Thus motorcycle injuries impose a substantial new burden on medical facilities.[3] Hence the present study gives much attention to the number of people violating the regulation 'riding without helmet' which is mandated by the government as one of the safety measure in preventing the fatalities. But There was no significant correlation between number of persons killed every year with violation of regulation by riding two wheeler without helmet(r = -0.380 p=0.752).

We agree with road traffic safety experts that, in order to get a handle on the road traffic injuries countries need to keep reinforcing traffic safety regulations. But building more public health infrastructure, increase the people's access to health services and control the growth of motorized vehicles is equally important.[3]

CONCLUSION

Though the accident severity is decreasing for past 3 years, number of fatal accident remains constant. This can be attributed to the improved medical care especially emergency medical services. Existing perceptions on the importance of the traffic regulations remains questionable according to the study findings. In depth evaluation of the road traffic accidents to build infrastructures and to reinforce the regulations specific to local needs is required. With massive investment in roads and the exponential growth in the number of vehicles it has become necessary to have a system, which integrates all disciplines that influence road safety.

Recommendations

- Road safety should be developed and implemented using the public health approach of identifying the problem and the risks, identifying the appropriate interventions based on cost effectiveness, sustainability and culture specificity, and finally evaluating these interventions by the actual reduction in injuries and deaths.
- Traffic safety system should integrate all the disciplines of the road traffic such as engineering, education, enforcement, medical and behavioural sciences
- Emergency measures need to be taken for rescue and relief of accident victims to reduce the accident fatalities.

Limitation

- Socio demographic details of the individual accident victims were not available as study was carried out using secondary data.
- Some of the traffic crimes are not included because numbers of violations was very less and in some, data was not clear.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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