

REVIEW ARTICLE

Road traffic accidents: An overview

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Received: 13 March, 2022

Accepted: 11 April, 2022

ABSTRACT

Road traffic injuries have emerged as a significant public health issue in many low and middle income countries in recent years. Approximately 1.3 million people die each year as a result of road traffic crashes. In India, the number of road accidents in the city rose from 796 in 2020 to 874 in 2021. Road crash injury is common among the young aged population leading to premature deaths. Road traffic accidents can cause enormous morbidity and mortality. Road traffic accidents are a result of an interaction among different factors which include the environment, vehicle and the human being. Traditionally road traffic accidents were considered unpredictable, inevitable and not preventable. But road traffic accidents are indeed predictable and preventable in majority of the cases. This just requires the knowledge of factors contributing and leading to road traffic accidents. There are certain preventive measures which if adopted can lead to decrease in morbidity and mortality resulting from RTA.

Keywords: Road traffic accidents; Road traffic injuries; Roads in India, Road safety; Vehicular registration.

INTRODUCTION

Road accidents are one of the major causes of death, injury and disability in all over the world both in developed and developing countries. With a broad estimate, in every 1 min, 2 people are killed and 95 people are severely injured or permanently disabled in traffic accidents worldwide. Nearly 1.3 million people die every year on the world's roads and 20 to 50 million people suffer non-fatal injuries, with many sustaining a disability as a result of their injury (UNDARS 2011-20). Over 93% of the world's fatalities occur in low-income and middle - income countries ⁽¹⁴⁾. Road traffic injuries are the leading cause of death among young people aged 5- 29 years and cost country's 3% of the gross domestic product (GDP) ⁽¹⁴⁾.

“A road traffic injury is a fatal or non-fatal injury incurred as a result of collision of at least one road vehicle in motion on a public road or private road to which the public has right of access resulting in at least one injured or a killed person”. ^[1] Socially these accidents are considered as inevitable and a part of life which occur randomly. But in reality, these are results of a complex set of interaction among the public with their vehicles and the prevalent environmental conditions along with the existing legal provisions. Although road traffic

accidents can be preventable, it is projected that road traffic injuries will be among the top five leading cause of death by the year 2030.

In India, road traffic accidents are one of the most leading cause of death. Most frequently, it occurs among the age group of 18 to 45 years, which accounts for about 70% of total accidental deaths. Although, India has 60% of world's registered vehicle, accidents rate is highest in India. At least, 1 out of 10 people killed on roads across the world is from India (WHO). During the year 2020, the total number of recorded 3,66,138 road accidents caused loss of 1,31,714 persons lives and injured 3,48,279 persons.

It is estimated that the number of road accidents in 2020 decreased by 18.46% compared to 2019, number of person killed decreased by 12.84% and number of injures decreased by 22.84%, compared to 2019. The state which are mostly occurring accidents are Tamilnadu(45,484), Madhya Pradesh(42,396), Karnataka(34,178), Uttar Pradesh(28,653), Kerala(27,799), Maharashtra(22,211), Telangana(19,172), Rajasthan(19,121), A.P.(17,924), Gujarat(13,407), Chattisgarh(11,674), West Bengal(10,843), Odisha(9,817).

During the year 2020, the rapid fall of accidents case was due to the collaboration between the government of ministry and public and Covid pandemic compared to the 2019. In the year 2021, the accident rate has increased by 10% compared to the 2020. The number of road accidents in the city rose from 796 in 2020 to 874 in 2021, according to the official data. The rise was due to easing of mobility restrictions and offices beginning to call back employees.

As per the month wise data, maximum accidents occurred in October and December when the public places were bustling with people. The number of fatal road accidents also increased from 347 in 2020 to 389 in 2021, a jump of 10%. While fatal road accidents killed 375 people in 2020, some 409 people died in 2021. The fatality ratio also increased from 43% of total accidents in 2020, it was 45% in 2021. However, still the data of 2021 are lower than the pre pandemic stage (1073 in 2019).

REASONS OF ROAD ACCIDENTS

In India Road traffic accident results from a combination of many factors which cause the fatal death and injuries / disabilities when they interact. These can be grouped under the following heads:

Factors influencing exposure to risk: The mode, mean, duration of travel as well as the layout and design of the road along with insufficient traffic knowledge like speed limits, road sign can have an influence on exposure to risk of road traffic accidents. ^[5, 6]

Human Factors in RTA: Human factors in RTA that are likely involved can be the medical condition (sudden heart attack, myocardial infarction, etc.), drivers fatigue, sleepiness, younger age (15–29 years), male sex, inadequate use of helmets and safety belts, psychological factors (risk taking, impulsiveness), defective judgment, delayed decisions, aggressiveness, poor perceptions, family dysfunction, and distraction while driving (using mobile phones) also are responsible human factors in RTA. ^[1, 8, 9]

Environmental risk factors: These are related to the roads like defective and narrow roads, defective layout of crossroads, poor lighting, and lack of familiarity, poor construction, bad design etc. Another factor in India is the outsourcing of road construction to contractors. Some of the contractors are very much profit oriented resulting in low quality roads. Ditches and pot holes also contribute to RTA. ^[5, 9]

Vehicles factors: Conditions of the vehicles plying on the roads plays a major role in road traffic accidents. Excessive speed, poorly maintained vehicles, large number of vehicles, low driving standards and overloaded buses are some of the factors associated with vehicles. ^[5, 10]

Contributing Factors: The road accidents are happening most often due to the reckless and speedy driving of the vehicles, not obeying or following traffic rules, the attitudes of the

“right of the mighty” bigger vehicles toward the smaller vehicles, overburdened or overcapacity hauling of public and transport vehicles, poor maintenance of the vehicles, drunk and driving, driver fatigue, and above all the appalling condition of the already choked roads with every inch encroached by unauthorized persons and properties .

Drunk and Driving: Drunken driving is one of the major causes of road accidents. The statistics also show that most of the road accidents in the highways are due to drunken driving only. In contrast, studies in low- and middle-income countries like India have shown that between 33% and 69% of fatally injured drivers and between 8% and 29% of non-fatally injured drivers had consumed alcohol before their crash.^[8] In Bangalore, 28% of crashes involving males over 15 years were attributable to alcohol. Drunken driving has been responsible for 70% of road fatalities in Mumbai and Delhi.^[9]

Speed: An increase in average speed is directly related both to the likelihood of a crash occurring and to the severity of the consequences of the crash. Some other facts are as below.
- Pedestrians have a 90% chance of surviving a car crash at 30 km/h or below, but less than a 50% chance of surviving an impact of 45 km/h or above. 30 km/h speed zones can reduce the risk of a crash and are recommended in areas where vulnerable road users are common (e.g. residential areas, around schools). - Apart from reducing road traffic injuries, lower average traffic speeds can have other positive effects on health outcomes (e.g. by reducing respiratory problems associated with car emissions).

Weather: Weather also one of the important cause of road traffic accidents in India. Such as heavy rain, flood, storm, lightening, earthquake, etc. are the leading cause of fatality and injuries.

Disobeying the traffic rules: In India people are not obeying the traffic rules specially the youth age between 18 to 25 years are more vulnerable group which break the traffic rules, like not wearing helmet or seatbelt, riding above the speed, not following traffic signals, over taking etc. are the important factors.

PREVENTIVE MEASURES

It is high time for us to look into the various issues of the RTA in this perspective so that corrective and preventive measures can be undertaken in an urgent manner so that further damages can be lessened. Road Safety is A Public Health Issue, World’s first RTA have occurred in 1896. Everybody concerned at that time reported to have said, “This should never happen again.” But more than a century later, 1.2 million people were killed on roads every year and up to 50 million more are injured.

In India, drunken driving is customary in commercial vehicle drivers. Private car owners and youngsters are also major players in the game. Small bars along the Indian highways are of prime concern to control drunken driving. India has laws to check the drunken driving but its effective implementation is still to be worked upon. The risk of being involved in a crash increases significantly above a blood alcohol concentration (BAC) of 0.04 g/dl. - Laws that establish BACs of 0.05 g/dl or below are effective at reducing the number of alcohol related cases. The WHO in 2004 came out with a theme of “Road Safety is No Accidents” to highlight the urgency to tackle the issue on a priority basis.^[11]

Wearing a motorcycle helmet correctly can reduce the risk of death by almost 40% and the risk of severe injury by over 70%. - When motorcycle helmet laws are enforced effectively, helmet wearing rates can increase to over 90%. - Requiring helmets to meet a recognized safety standard is important to ensure that helmets can effectively reduce the impact of a collision to the head in the event of a crash.

Wearing car seat-belt reduces the risk of fatality among front-seat passengers by 40-50% and of rear-seat passengers by between 25-75%. - Mandatory seat-belt laws and their enforcement have been shown to be very effective at increasing seat-belt wearing rates. - If correctly

installed and used, child restraints reduce deaths among infants by approximately 70%, and deaths among small children by between 54% and 80%.

Well-maintained vehicles with good breaks, lighting, tyres etc. will reduce accidents. Older vehicles and highly polluting vehicles should be phased out. Vehicles should be provided with seat belts and other necessary safety provisions like airbags. [^{2, 4, 11}]

Roads should be well maintained with frequent relaying of road surfaces and markings of road safety signs. Provide proper footpaths for pedestrians and pedestrian crossings at intersections. Provide separate lanes for slow moving and fast moving vehicles. Roads and junctions should be wide and well-lit so that visibility is good. [^{1, 9, 10}]

Mobile phones by drivers that is becoming a growing concern for road safety. The distraction caused by mobile phones can impair driving performance in a number of ways, e.g. longer reaction times (notably braking reaction time, but also reaction to traffic signals), impaired ability to keep in the correct lane, and shorter following distances. - Text messaging also results in considerably reduced driving performance, with young drivers at particular risk of the effects of distraction resulting from this use.

The Ministry has been implementing the Motor Vehicle (Amendment) Act 2019, the long due amendment was done almost after 30 years to meet the need of the changing transport system and environmental scenario. The Ministry has also been working on identifying Black Spots on National Highways and on short term and long-term rectification of these black spots, through its organisation like NHAI (National highways Authority of India) and NHIDCL (National Highways and Infrastructure Development Corporation Limited). Moreover, the Ministry is also working to collect accidents data through Integrated Road Accidents (iRAD)/e-Detailed Accidents Report (e-DAR) projects to provide a real-time causative analysis of road accidents in line with the international practices. These are some of the efforts of the Ministry to strengthen road safety scenario in the country, provide for citizen facilitation, transparency, reduction in corruption, empowerment of States, strengthening public transport, insurance & compensation related reforms and removing intermediaries etc. Education should be given to the drivers, especially to the youngsters while providing driving licenses regarding the traffic rules and regulations. If the drivers are not following the rules should cancel the driving license.

CONCLUSION

Road traffic injuries take the lives of nearly 1.3 million people every year and at the same time injured 20-50 million people globally. India, being a rapidly developing country has one of the highest motorization growth rates which is accompanied by rapid expansion in road networks and urbanization. Consequently the country is faced with various issues and impacts on road traffic accidents and road safety level. It takes a heavy financial toll on the economy over and above the mortality and morbidity associated with road traffic accidents. Road traffic accidents are predictable and preventable. For it understanding the different factors leading to RTA is a must. Strict implementation of traffic rules and stringent punishments alone will not solve the persisting problem. Change in the mind set of riders and drivers and road users realizing their responsibilities alone will bring about a change. It requires strong political commitment and multipronged strategies to address the current demands and needs of six E's of road safety such as education, engineering (roads), engineering (vehicles), enforcement, emergency care and enactment. We all have a role in preventing RTA.

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