Road Traffic Accidents And Fatal Injuries: A Global Burden

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INTRODUCTION

The invention of motor vehicles has raised the bar of civilization and living standard to the unprecedented level. In contemporary times, use of motor vehicles are regarded as a necessity. On the other hand, they can cause a large number of injuries and damage to property, which has exacerbated the global burden.

According to Word Health Organization (WHO), an average of Approximately 1.25 million deaths due road traffic accidents are recorded annually[1]. It is a leading cause of mortality among the young populace of ages between 16 and 35 years[2].

Low and middle-income countries are the more adversely affected, because road traffic accidents are associated with a range of factors; poor road infrastructure, inappropriate mixing of vehicle types, inadequate traffic law enforcement and delayed implementation of road safety policies[3].

Factors influencing RTAs

Following factors are associated with RTAs:

Age and Gender: Gopalakrishan et al found that males drove more miles than females and adopted fewer safety precautions[5]. About ¾ of all road traffic deaths occur in males under the age of 25 years. Only a quarter of females of the same age group are affected[1].

Increased number of vehicles: 90% of the world's fatalities on the roads occur in low and middle-income countries, even though these countries contribute to 54% of the global share of vechiles[6]. Mainly due to rapid increase in vehicle numbers and inadequate implementation in urban management and road safety strategies, road injuries occur twice as often in low and middle-income countries when juxtaposed with developed ones[7].

Road Infrastructure: Proper road structure and its adequate condition (road surface, speed breaker, pedestrian track, zebra crossing, road lights, traffic signals, and sign boards) is an important factor influencing the rate of RTAs. Olsen et al studied the data of reported RTA from the period 1997–2014 from a UK database extensively. They concluded that owing to the construction of quality M74 motorway, Glasgow and surrounding local authorities saw a 50.6% reduction in annual RTAs during the time period[8].

Lack of education about traffic regulations: Novoa et al found that the risk of death from injury is higher among uneducated drivers compared to educated ones[9]. Nearly half of global deaths due to RTA comprise of pedestrians, cyclists, and motorcyclists (also known as vulnerable road users)[1].

Timings: According to one New Zealander study, routine timings is another important factor in RTAs. According to the study, accidents occurred largely during the morning rush hour, i.e. 7:45 and 08:30. Second and third larger one occurred at around 15:00 and 17:30 that coincides with the school and office close time. More school-aged pedestrians are killed in the afternoon than in the morning[10].

Economic and Social Development: More than 90% of deaths due to RTA occur in low and middle-income countries. RTA rates are highest in the Sub-Saharan Africa. Even within developed countries, population from lower socioeconomic stratum are more vulnerable to RTAs[11].

Pattern of Injuries in RTAs:

Two major patterns of injuries are often seen in RTAs are:

1) Primary impact injuries: caused by the impact between the vehicle and the pedestrian.

Sites: Head in children and trunk and legs in adults due to collision with part of the car i.e bumper, lights, radiator or bonnet. The height of the pedestrian often determines the site and the nature of injuries[12].

2) Secondary impact injuries: caused when struck victim falls on the ground or any other stationary object.

Sites: Lower trunk and pelvic bone is more likely to be fractured. The vehicle speed and centre of gravity of collision plays a vital role[13].

Types of impacts of crash:

The driver and passenger injuries depend upon the types of impact of crash that are:

1) **Front impact crash:** The injuries in this impact are due to the car strikes on another or it strikes fixed object and resulting in impact of knees against dash board commonly causes fractures of tibia fibula femur, hips and pelvis. The circular rim of steering causes fractures of teeth, jaws, and facial bones as well as imprint abrasions, minor bruises and contusions of the chest or rib fractures. Fractured steering wheel may spokes may penetrate the chest and lacerate the heart and lungs[14].

2) **Side impact crash:** A vehicle that is struck on the side by another vehicle or that skids sideways into a fixed object sustains a side impact .Diced injuries are characteristic right

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angled or v shaped cuts caused by the diced or cubical fragments of tempered class of a broken side windows being struck by or the victim. Cervical spine fractures are common as well as fractured ribs, contusion, laceration and explosive tearing of the lungs, on the side of the impact[15].

3) **Rear impact crash:** Low velocity rear impact are relatively common resulting in whiplash or acceleration deceleration injury and causes muscle spasm and possible ligamentous injury in the neck[16].

4) **Roll over crash:** Although the automobile may suffer severe damage in a roll over crash, the occupants receive surprisingly moderate impact as the vehicle is not brought to a sudden stop and impact is spread over period of time. The belted occupants frequently survive the crash. Non belted occupants are subject to either injury due to tumbling around inside the vehicle or from striking the interior of the vehicle. Fracture and subluxation of cervical spine may occur[17].

Measures to cope up the fatal injuries

Drivers in Pakistan have poor knowledge about traffic signs and pay little attention to them, which increases the likelihood of road crashes. It is noted with concern that even the licensed drivers are involved in about 80% of fatal crashes. It implies that driving licensing system is vague and unable to ensure the proper driving skills among the licensees. This is because of the reason that licensees in Pakistan are not required to attend driving theory courses and no for - mal test is administered to assess their theoretical knowledge about road markers and traffic signs.

Even the practical tests are not stringent enough, and people get easily driving licenses by approaching the licensing authorities directly or by paying small bribes. There is an obvious need to make these criteria more stringent. The test instructors should also be trained to judge applicants' ability. Commercial passenger-carrier and goods-carrier companies must also provide road safety training to their drivers as a regular feature to update the drivers' knowledge about the traffic rules and regulations.

Conclusion

In a nutshell, education, awareness, and strict compliance with and enforcement of traffic rules and regulations are required to counter this menace. In addition, uplifting the socioeconomic dimension of worldwide populace can counter RTAs in a significant manner.

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