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POLICY PROPOSAL TO SOLVE ROAD TRAFFIC ACCIDENTS IN PAKISTAN

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Abstract

The road traffic accidents (RTAs) have raised concern globally and become worsen with the passage of time that expedite issues of social exclusion and public health. There are approximately 1.35 million people involved annually in road crashes and 3,700 people died on daily basis. A ratio of happening an accident has found greater in developing countries due to govern of their socio-economic factors. It would contribute in long-lasting cost of pain and sufferings at micro to macro level at large. Pakistan has been experiencing the same with an annual trend of increase in RTAs. There are many demographic factors involved particular to urbanization, and willingness to pay etc. where policies had contributed a major role. A loss of 30 thousand lives on annual basis has placed Pakistan at 67th position on global ranking of having higher percentage of RTAs. This number could expect to be doubled with the functional operation of road projects associated with China Pakistan Economic Corridor (CPEC). Currently, the main challenge is to sustain the growing number of RTAs by promoting mitigation measures that aimed to move ahead on sustainable and balanced development. An adequate response to address these challenges will require best available scientific knowledge and constant re-evaluation of the developments. It will fulfil the scope of this study to identify frequent causes and propose strategies for traffic calming measures in light of those findings, and also to make ensure that it would respond to emerging needs. A comparative investigation into the literature has assisted to identify key issues for occurrence of road accident fatalities (RAFs) and severe injuries. It has highlighted and recommended those gap areas either in policy or strategy domain that need to consider in dealing with RTAs mitigation tactics (e.g., licencing system upgradation, enforcing safety laws, and etc.).

Keywords: road safety issues, safety policy proposal, Pakistan, road traffic accidents

1 Introduction

Road traffic accidents are one of the leading public health issues in all continents of the world. The rate of long-term disability, severe injuries and mortality highly depends upon the injuries caused by RTAs. According to World Health Organization (WHO), the number of deaths because of RTAs increases from 1.15 million in 2000 to 1.35 million in 2016 and the death rate has reached to 18.2 per 1,00,000 population. About 3,700 individuals lost their lives on daily basis and the majority of people become victims of long-lasting treatment. Currently RTA is marked the 8th leading cause of mortality for all ages of people and 1st leading cause of mortality for young and adult (age 5-29 years) [1]. If proper immediate actions are not taken to control RTAs then it will be the 5th leading cause of mortality for all ages of people in the year of 2030 [2]. Low and middle-income countries contribute about 85 % of

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the total road traffic injuries and fatalities. The rate of fatalities linked with RTAs is drop by 27 % in high income countries while rise by 83 % in low and middle income countries [3]. In low and middle income countries, the budget of road traffic injuries (RTIs) is predicted to be more than US$100 billion per year which is five percent of the gross national product and globally estimated to be three percent of Gross Domestic Product (GDP) [4]. WHO estimated 59 % of the total vehicles belongs to middle income countries where population is 76 % and the road traffic death is 80 % of the world [1]. Thus, determining the root causes of RTAs both at countrywide and worldwide is a key concern for policymakers and researchers [5]. Safe traveling is the major concern of national transportation system that eventually related to the nation development so the rectification of this burning issue is the need of the day [6].

In developing countries with jointed family's system like Pakistan where one or two bread earning member/s commonly play a significant role in supervising their families financially. These bread earning members of the families go outside for earning and they are mostly expose to disabilities, injuries and even death because of RTAs. RTAs disproportionality affects the lower class of Pakistani families and push them into further poverty due to the loss of their earning member/s. Therefore, RTAs nowadays a public health problem as well as economic issue in term of medical and vehicles damaged [7].Pakistan is a developing nation where roads carry a wide range of vehicles from bicycles to heavy goods vehicles without any separation. That is why, RTAs are the major cause of economic loss, disability and mortality. Younger population which play a major role in the growth of socio-economic are mostly vulnerable to RTAs among pedestrians [6]. In 2004 the total number of RAFs were 7,000 while the number of fatalities increases to 26,751 in 2009 [8]. In a recent survey, WHO predicted the loss of 30,310 lives annually. This shows the death rate due to RTA is about 20 per 100,000 population and making Pakistan rank 67th higher percentages of RTAs in the world [9].

In Pakistan, the growth rate of motor vehicle is growing at much faster rate as compared to infrastructure of roads and economy. The population of motor vehicle has jumped from 5.3 million to 11 million in the year of 2002-12 respectively [10]. The increment observed in the last decade for different types of vehicles are about 30 %, 45 %, 150 % and 110 % for buses, trucks, passenger cars and motorcycles respectively [11]. A rapid increase has been observed in the RTAs with the increase in population and motorization. The burning issue which is facing nowadays is RTAs and RTFs that cost the economy about Rs 100 billion per year [12]. A national health survey was conducted and their results showed that injuries occur as a result of RTAs are greater in number than any other source. This emerged challenge require speedy attention and remedial action by policy makers [13].

2 Key issues of road traffic crashes

2.1 Driver behaviour

Numerous researches have been carried out to find the major factors which contributes to the occurrence of RTAs. It shows that in total of five accidents, three are mostly related to driver behaviour. It is also predicted that 95 % of the total RTAs are due to driver behaviour factors [14]. A wide range of factors influences the performance of drivers including mood, distraction and fatigue etc. but distraction is recognised as utmost critical factor founded in RTAs [15]. Driver experience and age results different outcomes in interaction between roadside advertising and drivers. Several studies have founded that drivers (aged greater than 65 years) are greatly distracted by roadside advertising signs than younger drivers [16]. A wide range of research declared that the use of mobile phone during driving also influence driver behaviour. Drivers being busy in using mobile phone or in-vehicle communication delay drivers response by 15 % and are not capable to quickly respond to a traffic light turning red, brake lights of a vehicle ahead, important stop and yield sign [17]. Among these, more

emotional/sensitive discussions on mobile phones lead to higher possibilities of RTAs in a controlled environmental condition than normal discussion or no mobile phone discussion at all [18].
Young drivers are over represented in RTAs showing their higher risk of vulnerability to crashes [19]. Though, it is universally accepted fact that young drivers are at higher risk than old drivers in a simulated environment. The rate of fatal and non-fatal crashes is higher in younger drivers (age 16-20 years) and the rate is declining abruptly with increasing the age of drivers [20]. Younger drivers mostly involved in RTAs is the combination of both young age and inexperience [21]. The decrease in the rate of RTAs related with age can be better explained by changes in particular attitudes and behaviour of risk taking. Among young drivers, male drivers are mostly involved in RTAs due to violation of road and traffic laws and their aggressive nature [10]. The results of analysing risk attitudes showed that male young drivers feel comparatively immune to the hazards than older drivers and they overestimate their own competence level compared to females young drivers [22]. A study reported a total of 1296 road accidents and after conducting interviews from police officers concluded that risk taking attitude of young drivers leads to higher percentages of RTAs instead of poor driving skills [23].

2.2 Accident data management

A number of research studies have determined that there is a high level of underreporting in accident data available with police sources compared with health sectors [24]. In developing countries like Pakistan the official sources only reported 56 % of fatal and 4 % of severe RTAs [25]. A lot of inconsistencies in the injury and fatality figures exist by comparing the estimates with external organizations. For example, In the period of 2009-2010 Federal Bureau of Statistics (FBS) Pakistan stated 11,173 injuries and 5,280 deaths due to RTAs. One the other hand, WHO 2013 reported 41,494 deaths for the same period of time [26]. The same inconsistencies are further explained in Table 1, where WHO reported higher number of fatalities in 2013 than 2010 while comparing with FBS reported RTFs. The difference in RTF between FBS and WHO is 17.55 % and 49.13 % in 2010 and 2013 respectively. FBS and WHO reporting rate tend to decreased by about 10.2 % and 16.9 % respectively, despite with the increase in registered vehicles by 22 % and population density by 9.54 % for the year of 2010 to 2013.

Table 1 Road fatalities, pop density and registered vehicles from 2010 to 2013

Fatalities					
Source	**2010**	**Difference b/w WHO & FBS**	**2013**	**Difference b/w WHO & FBS**	**Variation [%]**
FBS Pakistan	4280	17.55%	3884	49.13%	-10.2
WHO (2015)	30131		25781		-16.9
Population Density (Persons/square.km)					
WHO (2015)	208		241		9.54
Registered Vehicles (Thousands)					
WHO (2015)	10443		13388		22

2.3 Vehicle factors

Vehicle factors such as defects in tyres, brake and gear etc. are other contributory factors which leads to RTAs mostly in developing countries. Those vehicles having some type of technical or mechanical defects are mostly vulnerable to road traffic crashes [26]. Defects in brakes and tyres of vehicles occurred mainly due to lack of timely maintenance. Although the design and standard of vehicles also matters a lot which needs improvement with time in developing countries [27]. Defective vehicle is also one of the primary cause of RTAs. Different studies were carried out in developing nations and reported about 8.5 to 14 % of the accidents is directly related to vehicles defects [28]. According to the European Commission, 50 % of the fatalities and injuries can be avoided by fitting crash safety system in all vehicles [29]. High income countries have standard regulations of safety for all vehicles such as airbags and seat belts etc. Conversely, lack of such standard regulations of safety in middle and low-income countries which leads to serious injuries and fatalities. Due to these reasons the rate of fatal RTAs is higher in middle and low income countries [2].
In Pakistan the manufacturing standards of vehicles set by Motor Vehicle Regulation 1969 and Motor Vehicle Ordinance 1965 but still the locally manufactured motor vehicles have poor structural standards. Most of the vehicles are lacking in safety technologies such as side impact protection, advance braking systems, crumple zones, child restraint fixtures, seat safety belts, airbags and electronic stability control. The unsafe modification and overloading of heavy vehicles are very common, which increases the probability of RTAs. In the last decade, the number of locally manufactured cars increases four to five times faster as compared to the population growth. These locally cars manufacturing companies work under CKD (Complete Knock Down kits) license given by parent companies. There are 3 major manufacture companies which produce number of cars from mid-sized 1600/1800cc sedans to 660cc/800cc hatchbacks. These local manufactured cars do not meet the same structural standards and safety as compare to their parent company/ international manufacturing company. However, if they are importing from the parent company then the standard does not meet that is exported to America, Europe and East Asia from parent company.

2.4 Motor cycle helmet

Head injury is one of the chief and predominant cause of death in RTAs [30]. Numerous studies have founded that major causes of mortality due to RTAs is multiple fractures, head trauma and bleeding which were more dominant causes in pedestrians, motorbike drivers or pillion riders and car drivers respectively [31]. According to a survey carried out in Pakistan stated that among the motorcycle accidents 10.2 % were of severe nature, 35.9 % of face injuries and 41.5 % suffered head injuries [32]. The possibility of head injury is increasing by three to four times for motorcycle riders who do not use helmet [33]. In 2013, a research study reported that there were 1130 fatalities and the involvement of motorcycle drivers and pillion riders was about 51 % [34]. It is noticeable in Pakistan that driver's pillion riders mostly do not wear helmets which makes them more vulnerable to head injuries. Among the motorcycle accidents the reported injuries indicated that the percentage of pillion riders were more than drivers [35]. The percentage of motorcycles are about 75 % of total registered vehicles. The National Highway Safety Ordinance (NHSO) and Motor Vehicle Regulation (MVR) 1969 mandate helmet wearing by all drivers and pillion riders but there is no specified technical standard for helmet. A helmet wearing survey was conducted by Centre for Communication Programs of Pakistan in September 2018 among six different cities of Pakistan (Quetta, Rawalpindi, Karachi, Peshawar, Lahore and Islamabad) for both drivers and pillion riders and their summary is shown in Table 2 [36]. Thus, it is concluded that in Pakistan 66 % (61 % +5 %) of the motorcycle drivers and 97 % (96 % + 1 %) of the pillion riders do not wear helmets.

Table 2 Percentage of driver and pillion rider wearing helmet

	Motorcycle Driver [%]	Pillion Rider [%]
Correctly wear and strap their helmet	06	0
Wear but do not strap their helmet	28	03
Carry but do not use a helmet	05	01
Do not use a helmet	61	96

2.5 Law enforcements

Many countries have enacted strict laws to modify risk taking behaviour of possible accident victims. However, the effect of these laws is not uniform in all the countries [37]. This problem is very common in middle and low-income countries and greater than 85 % of our legislation system (if it exist) is imperfect and poor implementation in many countries of the world. Numerous research studies have stated that reforms in road traffic legislation can help to avoid the occurrence of RTAs and its consequences [38]. Despite the positive benefits resulting from traffic enforcement efforts and community support, fewer resources are being allocated to traffic safety enforcement. In Pakistan political, financial, and cultural factors may affect the level of engagement in traffic safety enforcement by these agencies. For example, leaders of such agencies that are appointed or elected may feel political pressure not to enforce laws that are perceived to be unpopular amongst voters, or changes in the workforce like a reduction in staff through budget cuts or retirement may result in changes in the level of engagement with traffic safety. Traffic safety enforcement may be viewed as a lower priority than criminal enforcement [39]. There are too many traffic regulations and laws, which are enforced by different government agencies. When organizations take different approaches to the law, its interpretation varies and it becomes fragmented and incoherent. Consequently, traffic law appears to be enforced ineffectively due to legal issues lacking clarity. The problem of poor resource sharing occur when there is lack of celerity in distribution of responsibilities among agencies [40]. Another research study demonstrate the same, that mostly in Pakistan each agency makes its own plans individually and having no coordination with other agencies [41]. The performance of any law enforcement agency is gauged by number of plenty permits issued each day or number of plenty permits against a particular violation instead of reduction in violation or improvement in road discipline. Comparison in terms of quantity of plenty permits in a month of existing year is made with the permits issued in the month of preceding year. The officers are rewarded on the basis of quantity of traffic challans rather than quality of enforcement of traffic law. Resultantly, an unending and blind race of issuance of traffic challans is started among the officers to grab awards. Quality of enforcement of traffic laws may be evaluated by any unprejudiced third party for improvement [42].

3 Conclusion

The findings can be summarized as follows:

1. One of the primary factor toward safe driving is attitude, which effect the driving behaviour in Pakistan. Issues such as aggressiveness and lack of self-assessment among drivers emerged as consistent attitudinal problems.
2. Crash control can save more lives than saving injuries after the crash and the key to control crash is changing the road user's behaviour.
3. An integrated road safety data system needs to be established at the national level to ensure that road traffic fatality data will be more accurately reported to policy makers. This data will be used by all stakeholders to develop evidence-based traffic injury reporting.

4. True and effective maintenance of both public and private vehicle should be ensured and inspired by the government.
5. Having and maintaining good materials for vehicles should be monitored by strict government rules to confirm desired standard of vehicle
6. Helmet reduce the possibility of occurring severe head injury. To increase the rate of wearing helmet should be the utmost aim of policymakers for motorcyclists.
7. Strict monitoring by law enforcement agencies is mandatory and violations of traffic rules & regulations should be strictly punished on the spot to control crashes.
8. Laws should be more strengthen for all traffic offenses and training program with an evaluation mechanism should be established for traffic police officers.

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