

ROAD SAFETY – IMPACT ON HUMAN LIFE AN OVER VIEW

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ABSTRACT

In recent days road accidents are common in all part of the world and experts are trying their level best to reduce the road accidents and accidental deaths with the help of state and central government. From the report of national crime record bureau (NCRB) shows the shocking statistics that accidents and accidental deaths in road are higher than the accidents and fatalities in factories. Many authors analysed the root cause of accidents is unsafe act or unsafe condition. This paper takes in depth study and discussion about reason for accidents. It includes drunk and driving, usage of mobile phones while driving, over speed, driver attitude, health problems of drivers, climatic conditions and vehicle condition are discussed in this paper. In this study some road safety measures and suggestions were given to the drivers to prevent accidents in road.

KEY WORDS: Over speeding, State crime records bureau (SCRB), Behavioural study, Road and climatic problem, Accident, Risk, Automated vehicles, Analysis of vehicles, Reaction time, National crime records bureau (NCRB).

1. INTRODUCTION

India is one of the fastest growing countries in the world. This growth is mainly achieved by the people strength. In India 123 crore people were living in recent survey. [2] As per census report, ratio of male and female in India is 1000:940 [2]. Those above people are using a mode of transportation from one place to another place. There are four modes of

transportation. They are by air using airplanes, by water by using ships, small boats, and land is by train and other one which is transporting maximum people from one place to another place by road. Because it is the easiest way of transportation to reach each houses and living areas. So 90% and above people were using the road transport. So only the road transport is difficult in populated countries. The road users are majorly using four wheelers and two wheelers to move from one place to another place.

Being tamilnadu placed the record in various fields in human resources, agriculture, education and etc.,[3] but the worst situation is that tamilnadu also ranked as first position in road accidents [1] from the report released by ministry of road transport and high ways (National highway authority of India (NHAI)) [4]. These pictures that an accident occurs for every single minute in India and there is a death in every four minutes because of road accidents. Totally 4,86,476 accidents occurred for which 1,37,572 life were lost in last year's report. More over in tamilnadu for the last year the number of accidents occurred are 66,238 in which 75,681 were injured. Tamilnadu ranked 2nd place in accidental deaths in number 15,563 after up in India. Because of these reasons only India places first place in accidents with 1,30,000 death per annum. In India Tamilnadu is having 7.2 crore (sixth populated state in India) people in population and 11th place in area. In tamilnadu many types of road transports are used. So only tamilnadu stands first place in road accidents and accidental deaths in India. In last year 15,563 fatalities in 14,504 recoded accidents [1]. The highest for any state in India many of the death by the driver behaviour like over

speeding and driving under influence of alcohol [5]. There are some other reasons for road accidents and accidental deaths like weather conditions, road conditions and vehicle conditions. This paper reviewed about the reasons for accidents and impact of accident in human life.

2. OBJECTIVE

The main objective of this study is to analyse the behaviour issues of drivers and pedestrian(Road users) like over speeding, drunk and driving, using mobile phone while driving , drivers attitudes, aggressive driving, driver habits and other distractions in road like climatic conditions, road conditions, vehicle problem and to give solutions and prevention for those habits and accidents.

3. METHODOLOGY

Observation related to speed variations among drivers to understand how individual responds in emergency cases. Drunk and driving people how they are differ from other drivers in behaviour of drivers in road. Various other reasons can be find out the reason for accident without drivers fault.

4. REASONS FOR ROAD ACCIDENTS AND ACCIDENTAL DEATHS

4.1. DRUNK AND DRIVING

It is the behaviour that makes significant contributions to drivers' risk and is assessed with increased rates of risky driving behaviour. Alcohol consumption leads to decreased reaction time, poor eye hand co ordinations and impaired driver performance [6]. Increased risk of both motor vehicle and unsafe driving practices the road accidents happens. The pattern of behaviour are consisting of risky driving behaviours, involvement in crime, illicit substances abuse, anti social optional of the driving created a problem [7]. Drink driving leads to speeding, unsafe and Careless and reckless driving and that the higher rate of accidents due to this above reasons. Exceeding speed limits by more than 20 kmph, driving without seat belts, driving without a license, with suspended license driving without vehicle registration, over taking without a clear view of road ahead, driving too close to other vehicle are due to drink and driving [7].

4.2. USING OF MOBILE PHONES



Figure 1. Bus accident caused by usage of mobile phone while driving

Figure 1 shows the photographic evidence of an accident caused by the misuse of cell phone while driving by the driver. Usage of mobile phone causes accident with buses face to face which caused 40 major injuries and four fatal accidents.

The mobile phone has been playing a vital role in road accidents. This is due to that physical distraction that may be less for hand free phones than for handheld phones only. This both phones modes can cause cognitive consequences for drivers. Handheld phone was the most difficult the drivers slowed down when talking on the handheld [8]. The poorest speed control and reaction times to warning signs at road side were slower for drivers due to using of phones. The conversation created increased mental workload and physical demand of body conditions for hand held phone has been put the driver in threat [8]. Dialing a call during driving may have more serious consequences than conversation does.

4.3. SPEEDING OF VEHICLES

Motor vehicle killed more than 1 million people [9]. Population at risk if injury due to racing in streets, poor vehicle maintenance, not having any speed controls devices. This creates injury and the means of various sources available like death certificates, hospital records, police reports shows severity of

injury, capture recapture method can help estimate more complete and valid information on the number of motor cycle injury [9].

Figure 2 Road accident due over speed



Figure 2 show that a vehicle accident due to over speed and ignorance of traffic signal causes a fatal accident.

4.4. DRIVER ATTITUDES

Number of accidents by young drivers are decreasing whereas, accidents of experienced drivers increased. There are commercial systems developed to support drivers such as adaptive cruise control, lane keeping assistants, vehicle stability control systems, adaptive front lighting systems and vision enhancement systems [10]. There are due to factors such as late detection, judgment errors and operating errors. They met with accidents of front to side collisions, rear end side collisions, collisions where turning right and left. They are uncomfortable with modern support system in vehicle [11].

Figure 3 Road accident due to a bad attitude of a driver



Figure 3 shows that a road accident is caused by the bad attitude of the driver where he cannot keep the lane discipline on road.

4.5. DROWNING AND ROAD TRAFFIC INJURIES (RTI)

Drowning and road traffic injuries (RTI) are two large causes of injury and risk. The more number of trips is from origin to destination, mode of transport and vehicle used, time spent on road per day whatever it may be is measured for road using pattern, it creates crash, collisions of vehicle, vehicle skid, pedestrians risk are phone to this road using pattern [12].

Table.1 Characteristics of crash that resulted in the most recent non-fatal road traffic injuries (RTI) using 12-month recall period among children aged 5-14 years in Hyderabad

Variable	Non-fatal RTI as				All RTI (237) (%) ^a
	Cycle user (109) N(%) ^a	Pedest-rian (101) N (%) ^a	Motoris-ed two-wheeled vehicle user (20) N(%) ^a	Other vehicle occupant (7) N(%) ^a	

Time of crash (h)	12(11)	21(20.8)	2(1)	1(14.3)	36(15.2)
0600-1100	21(19.3)	21(20.8)	6(30)	1 (14.3)	49(20.7)
1101- 1500	57(52.3)	41(40.6)	4(20)	3(42.9)	105(44.3)
1501-1800	13(11.9)	9 (8.9)	1 (5)	0	23 (9.7)
1801-1900	6(5.5)	9 (8.9)	7 (35)	2(28.6)	24 (10.1)
1901-0559					
Reason for being on the road ¹					
Going/coming from school/word	11 (10.1)	31 (30.7)	1(5)	2 (28.6)	45 (19)
Going/coming from elsewhere	98 (89.9)	70(69.3)	19 (95)	5 (71.4)	192(81)
Activity at the time of crash					
Driving a vehicle	103 (94.5)	Not applicable	3 (15)	1(14.3)	107 (45.1)
Riding a vehicle (passenger)	6 (5.5)	Not applicable	17 (85)	6 (85.7)	29 (12.2)
Walking	Not applicable	Not applicable	Not applicable	Not applicable	41 (17.3)
Crossing road	Not applicable	Not applicable	Not applicable	Not applicable	31 (13.1)
Playing on road	Not applicable	41(40.6)	Not applicable	Not applicable	25 (10.5)
Other	Not applicable	31 (30.7)	0	0	4 (1.7)
	Not applicable	25 (24.8)			
	0	4 (4)			
Cause of crash					
Collision with a vehicle	37 (33.9)	97(96)	10 (50)	2 (28.6)	146(61.6)
Vehicle skid/fell due to reasons not related to road	22 (20.2)	Not applicable	2(10)	0	24(10.1)
Vehicle skid due to road related reasons	26 (23.9)	Not applicable	3(15)	0	29(12.2)
Other	24(22)	4(4)	5(25)	5 (71.4)	38 (16)
Other party in the crash					
Cycle	11(26.8)	30(29.7)	0	0	41(17.3)
Motorised two-wheeled vehicle	20(018.3)	51(50.5)	5(25)	1(14.3)	77(32.5)
Motorised three-wheeled vehicle	4(3.7)	17(16.8)	2(10)	0	23(9.7)
None	70 (64.2)	0	9(45)	5(71.4)	84(35.4)
Other	4(3.7)	3(3)	4(20)	1(14.3)	12(5.1)

The table 1 shows that the most of the non-fatal road traffic injuries (RTI) among children aged 5-14 years in Hyderabad. Many of the accidents are happened in evening time that is 3-6. At the time many of the children are using road by Cycle and by Walk. Many children were met with accident while roaming after school time by cycle and hit pedestrians. Comparatively many children are using motorized two wheelers and easily met with accidents by in experience.

4.6. MEDICAL REASONS (OR) PERSONALITY TRAITS

There are certain personality traits and gender related issues which is the reason for riskier in driving and accident, skills and driving abilities towards willingness to take risks, the negative effect might influence his or her interpretation of traffic environment and driving behaviour. Personality traits consisting of irritability, normalness, aggression, anxiety and excitement seeking [13]. There are some situations in which traffic rules are neglected. The

gender issues such as males are more willing to take risks than females. Irritability was found to be a predictor of young drivers' involvement in car crashes. There are also problems with drivers like chronic medical conditions; visual impairment kidney disease, strokes and many other which are mainly in older drivers cannot control the vehicle in low light situations and other emergency situations.

Figure 4 Driver saves lives in emergency situation.



Figure 4 shows that the awareness for driver to react during emergency which has saved lives of 50 passengers. He stopped the bus when he felt that he is going to get a heart attack and saved lives of the passengers.

4.7. WEATHER CONDITIONS

There are situation during at night time in which there will not be any lights where should proper lighting facility in the vehicle, the fog and mist also creates a problem and a vision problem and health problem. The rainy season also has lot of risk such as water in roads are very much, which creates skating of vehicle while applying brake if there is no wiper than the vehicle will be under pathetic situations [14].

Table -2 Table Showing Average Driver Reaction at different weather conditions

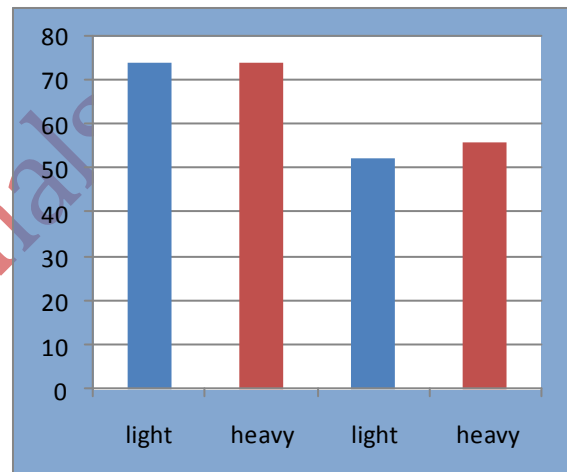
Weather Conditions	2 Lane	3 Lane	4 Lane
Clear	2.6	2	3.2
Cloudy day	3.9	3.1	2.9

Rainy Day	4.6	3.4	3.0
Foggy day	3.2	2.2	1.8

Table-2 shows that the average reaction time of the drivers in various road and climatic conditions. In this 4 lane is good for rainy, cloudy and foggy conditions. In clear weather conditions 2 and 3 lanes are comparatively good than 4 lane roads.

4.8. AUTOMATED VEHICLES:

The automated vehicles by reducing the visual and attention demands of the other driver such system have the potential to engineer a more pleasurable environment for motorist. It creates more stimulating driving environment [15].



MANUAL VEHICLES AUTOMATED VEHICLES

Figure.1. Percent road centre (error bars show 95% confidence intervals)

Figure.1 shows that with high automation, although generally spending longer periods fixated away from the road, drivers were motivated to demonstrate additional visual attention in heavy traffic [16].

Mean reckless driving scores



Figure 2. **Driver type**

Figure 2 shows that many of non professional drivers are involved in reckless driving. The certain number of cognitive skills and on their depends automation level and mainly drivers expertise. The professional driving between non professional drivers is clearly shown [16].

4.9. VEHICLE PROBLEMS

The severity of the injury can be reduced from accidents is one of the effective ways to improve highest safety. There are reasons such as not using of seat belt or helmets, using sport utility vehicles in heavy traffic, high speed (more than allowable speed to particular vehicle). Changes and modification in vehicle, Non availability and non usage of indicators in the vehicle, Poor maintenance of vehicle, improper maintenance of emergency brakes, pass lights can lead to major accidents and injuries [17].

5. ROAD SAFETY MEASURES

Road traffic accidents (RTA) are the 9th leading cause of death and are predicted become 5th by year 2020 [18]. The prevention of RTA is very crucial in order to improve longevity and quality of the life of people. The road safety measures are given [18]. The safety measures are to be improved from present level, the knowledge about safety is higher among females than males. There must be clear cut awareness about the traffic signs to have accidents free driving [18]. The most important thing is maintaining a vehicle by servicing regularly. Reduction by engineering measures both macro and micro levels by steps following like identifying hazardous features contribution to road accidents formulation of a road safety improvement program [19]. The need of road safety audit to have accident data and existing road

way intersection characteristics that is geometry control, sight distance, travel speeds, lane widths etc [19].

6. SUGGESTIONS FOR REDUCING THE ROAD ACCIDENTS [20-22]

1. Following of road signal and road safety instructions are very useful in reducing road accidents.
2. By creating awareness to the drivers and public about road safety can reduce many accidents.
3. Drunk and drive is a main reason for road accidents. By avoiding drunk and driving can reduce many accidental deaths on road.
4. Usage of helmets while driving two wheelers and usage of seat belts while driving four wheelers are very important in saving life in road accidents.
5. By giving continuous training to drivers regarding road safety and conducting yoga classes can be effective in reducing road accidents and fatalities.
6. By maintaining health checkup of the drivers like eye checking, heart function test is useful in avoiding road accidents due to medical reasons.
7. By maintaining roads and vehicles in good condition can reduce road accidents other than the behavioural accidents.
8. Avoid driving in adverse weather conditions will be safe for drivers because in rainy conditions the braking of the vehicle will be not good.

7. CONCLUSION:

The road safety has to be made important and, the heavy and through analysis of driving equipments and maintenance of vehicle to be given importance. The drivers should be properly trained and evaluation to be done once in a year at least. Awareness programs about road safety and campaigns regarding road safety periodically are required to create awareness to public and used to reduce accidents. The drivers should be tested their eye sight and heart functioning in every six months is needed to maintain the drivers health condition. Conducting yoga classes to drivers are very useful in reducing mental stress to drivers. The analysis of vehicles and drivers behaviour in very clear way helps to reduce road accidents and accidental deaths in India.

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