

Accidents & driving

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Abstract

India is ranked 1st in world in road traffic accident, with just 1% of world's vehicle, India accounts for 11% of the global deaths, highest in the world. We witness 53 crashes every hour and one person is killed every 4 minutes. This study was conducted in Department of Orthopaedics, Muzaffarnagar Medical College Begrajpur Muzaffarnagar from June 2016 to June 2021. Data of 50 road traffic crashes were collected through interview of persons involved in crash or bystanders who have witnessed it happening. We took a stretch of 13 kilometre of National highway no.58 under NHAI from Muzaffarnagar medical college to Muzaffarnagar. A multivariate cause analysis of accidents was done to uncover the catastrophic factors involved. The results revealed that with improved infrastructure of roads there is increase in the numbers of accidents and various factors like age, sex, over speeding, driving under influence (DUI), distracted or fatigued driving, violation of traffic laws, avoidance of safety features like seat belt, Helmet, poor condition of vehicle all are contributing to increase in numbers of road traffic accidents. Fatalities and injuries in accidents are a huge burden on country and families, hence constitute a significant public health problem and loss of property. Facts like, young car drivers run a higher risk of road traffic crash and injuries not only because of lack of experience but also because of their young age and their greater propensity for adapting unsafe driving practice so remedy can be found to avoid such accidents. We have tried to find such causes of road traffic accidents and to formulate policies to reduce the numbers of accidents, fatalities and injuries.

Keywords: Road traffic accident, Driver, Driving, Unsafe practice, Over speeding, DUI, Distracted driving, Vehicle.

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Introduction

“Take it easy driving – The life you save may be mine”.....James Dean

Accident is an unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injuries or bad results, and not directly caused by humans[1].

Accident is just one of the many words in English language to come down to us from Latin word “cadere” meaning to fall .

In 2016 alone in United States of America 3450 people were killed and in 2015, 391000 people were injured in motor vehicle crashes. In a country which have 1/6th of our population and 6 times our land area one can very well imagine what we must have in our country[2]. Road accident is most unwanted thing to happen to a road user though it happens quite often. The most unfortunate thing is that we do not learn from our mistakes on road. Most of the road users are quite well aware of the general rules and safety measures while using roads, but it's only the laxity on the part of road user, which causes accidents and crashes.

Main causes of accident and crashes are due to human error. These are some of the common behaviour of humans which results in accidents

1. Over speeding
2. Drunken driving (DUI)

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3. Distracted driving
4. Red light jumping
5. Avoidance of safety gear like seat belts and helmet.
6. Non adherence to lane driving and overtaking in wrong manner.
7. Cell phone texting[3]

Safe driving requires care and focus always and every time we sit on wheel to drive. But when we do it very often, we become over confident and develop bad habits; dangerous driving behaviour can result in devastating collision injuries and fatalities on road.

Like cell phone texting is quite a common and most alarming distraction. Sending or reading a text takes drivers eye off road for 5

seconds. At 55 miles per hour that's like driving the length of an entire foot ball field with eyes closed, meaning driver is driving 105 meters and not aware of the changed circumstances when he again look at road.

One cannot drive safely unless the task of driving has our full attention. Any non-driving activity one engages in is a potential distraction and increases the risk of crashing. Table no 1 discloses number of accidents on Indian roads from 2015 to 2019 according to ministry of surface transport report.

Table 1: Road Accidents, number of persons killed and injured from 2015 to 2019 in India

Year	Total no. of road accidents	%change	Total no. of person killed	%change	Total no. of person injured	% change
2015	501,423		146,133		500,279	
2016	480,652	-4.14	150,785	3.18	494,624	-1.13
2017	464,910	-3.28	147,913	-1.90	470,975	-4.78
2018	467,044	0.46	151,417	2.37	469,418	-3.3
2019	449,002	-3.86	151113	-0.20	451,361	-3.85

Courtesy-Road Accidents in India-2019 Ministry of road transport and highway, Government of India

Death from road accident is one of the major current issues in our country. According to world health ranking, there are 25 countries that have more than 31 deaths / 100,000 population and Namibia tops the list with 53.4 deaths /100,000 populations[4].Death from road accidents occurs due to collision between vehicles, pedestrians or any roadside signage and billboards. According to National Institute of statistics and Economic Studies[5]. A road accident refers to any accident involving at least one person who is injured or killed.

Nowadays, the numbers of road accidents are increasing because of more people are driving than ever before. Fatalities and injuries resulting from road traffic accidents are a major cause and public health problem in India. In 2013 137,423 peoples died and 469,900 peoples were injured due to road traffic accidents. We in India have earned a dubious distinction with nearly 140,000 deaths annually; country has over taken China to top in the world in road fatalities. We have 15 fatalities and 53 injured every hour as a consequence of road side crashes.

Our study was conducted with main aim of analysis of the road traffic accident to identify the factor or factors causing accident and influencing it. We took a 13 kilometres road stretch of national highway number 58 under NHAI. This highway is example of improved road condition in our country. It is a 4 lane highway with proper condition, by lanes, traffic signals, and over bridge at all transverse crossing of highway from nearby villages who have underpasses to continue their traffic without interruption. The stretch we choose is from Muzaffarnagar Medical College Begrajpur to Muzaffarnagar. We conducted this study from June 2016 to June 2021. In this period of 5 years we tried to visit accident site and interview either a person who was not injured or some eyewitness as to how the accident happened. We collected the data and then identified the causes. Once the causes are known strategies can be devised to prevent them and reduce the number of accidents.

I had the misfortune to get into car truck crash and that typical noise of metal hitting the metal and deforming is a never forgotten sound. However due to slow speed and safety profile of my car, seat belt application I was able to escape unhurt.

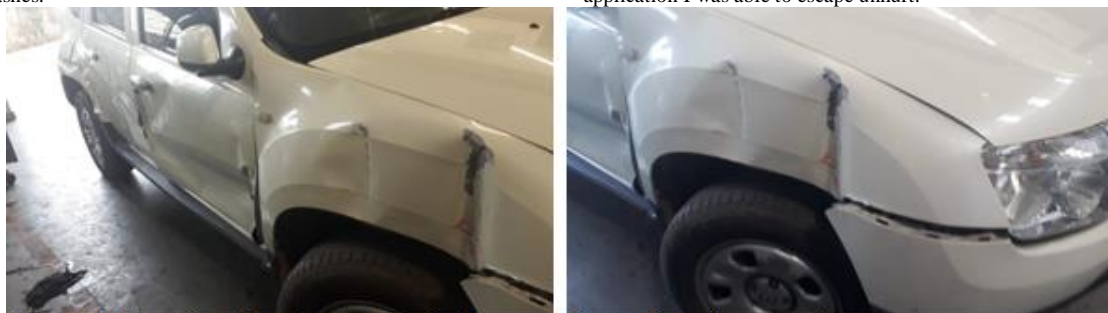


Fig 1: Accident

Accident My Car was hit side to front by a Lorry but because of slow speed we all were saved.

Profiling of road accidents can be done by road category, Type of impacting vehicle, Type of collision, Age of victim, Gender and road user category. Table 2 is one such example in which profiling of road accident is done upon road category.

Table 2: Number of accidents, Number of person killed and those injured by the category of roads in 2019

Category of roads	Length as on 31.03.2018		Accidents		Person killed		Person injured	
	KMt.s	%share in total	Number	% share in total	Number	% share in total	Number	% share in total
National highway	126,350	2.03	137191	30.6	53872	35.7	137549	30.5
State highway	186,908	3.01	108976	24.3	38472	25.5	111831	24.8
Others	5900858	94.96	202835	45.2	58769	38.9	201981	44.7
TOTAL	6214116	100	449002	100	151113	100	451361	100

Courtesy: Road traffic accidents report 2019 Ministry of road transport and highway, Government of India

It will be seen from the above table that National Highways which comprise of only 2.03 % Of total road network accounted for 30.6% of total road accidents and 35.7 % of deaths in 2019. State highways which account for only 3.01% of the road length were home to 24.3 % of accidents and 25.5 % of deaths in crashes. Other roads like made in cities, villages, municipality, and metros which constitutes about 95

% of the total roads were responsible for balance 45 % Of accidents and 39 % of deaths respectively.

Highways, both national and state which accounted for only 5 % of total road network witnessed a disproportionately large share of accidents of 55 % and accident related killings of 61 % during year 2019 and hence becomes the focus of our attention.

As our study was conducted on a national highway we also present statistics of road accident related deaths on various categories of national highway in table number 3.

Table 3: Road Accidents and Road Accident related Death on different Categories of National highways during 2019 Courtesy; Road Traffic accident

Serial number	Categories of NH	Total Accidents	Road Accidents fatalities
1.	National Highway under NHAI	87,966	35,605
	Share in total	64.12%	66.09%
2.	National highway under state PWD	38,352	13,495
	Share in total	27.96%	25.05%
3.	National highway under other department	10,873	4,772
	Share in total	7.93%	8.86%
4.	total	137,191	53,872

Report – 2019 Ministry of road transport and highway, government of India

The data in above table reveals that National Highway under NHAI account for 64 % of road accident related deaths followed by National Highway falling under state PWD which account for nearly 28 % of road accidents and 25 % of road accident related deaths. The remaining 8 % accidents and 9 % of road accident deaths are accounted for by other National Highways under other departments[6].

For the interstate comparison absolute number of road accidents and no of persons killed across states and Union Territories varies widely. It largely depends upon size of state /UT, in terms of population, road length, road transport, economic activity in the state/ UT, quality of safety related infrastructure and enforcement in place. Our state UTTAR PRADESH ranks 3rd in 2018 and in 2019 in terms of accidents among top 5 states in India and Tamilnadu stand 1st.

Table 4: Position in respect of top 5 states in accidents

Serial number	States	2018	2019	Change in 2019 over2018	%of change
1.	Tamil Nadu	63,920	57,228	-6692	-10.5 Rank 1
2.	Madhya Pradesh	51,397	50,669	-728	-1.4 Rank 2
3.	Uttar Pradesh	42,568	42,572	+4	0.0 Rank 3
4.	Kerala	20,181	41,111	+930	+2.3 Rank 4
5.	Karnataka	41,707	40,658	-1049	-2.5 Rank 5

Courtesy; Road traffic accident report- 2019, Ministry of road transport and highway, Government of India

UTTAR PRADESH ranks 1st among all other states / UT in2019 in terms of accident related deaths and had shown an increase of 1.8 % over previous year. However in respect of numbers of persons lost life in accidents related deaths TAMILNADU has shown greatest reduction on 2019 over 2018 of 1691 less deaths. In year 2018, 12,216 deaths were recorded in Tamil Nadu and were reduced to 10,525 deaths in 2019. In Uttar Pradesh 22,256 deaths were recorded in 2018 and 22,655 deaths were noted in 2019 in road traffic accidents. .

Among cities Delhi showed maximum number of deaths1690 in 2018 and 1463 in 2019. Kanpur stood 5th having a death toll in accident related deaths 698 in 2018 and 692 in 2019 with a marginal reduction of 6 deaths.

In international comparison India stood 3rd behind United States of America 1st and Japan 2nd. India had 4, 80,652 road traffic crashes in 2019 in which 1, 50,783 people lost their life and 4, 94,624 people were injured. In India we had 36 accidents/lack of population as compared to 684accidents/lack population in US of A. The reason India stood 1st in number is because of more accidents due to its population[7].

“We take life for granted, sleep walking until a shattering event knocks us awake. Zen says do not wait until the car accident, the cancer diagnosis or the death of a loved one to get your priorities straight. Do it now.”Philip Toshio Suda

Aims and objectives

Every year the lives of approximately 1.3 million peoples are cut short as a result of road traffic crashes worldwide and between 20 and 50 million more people suffer from trivial to nonfatal serious injuries. Many of these injured people incur a disability as a result of their injuries.

Road traffic injuries cause considerable economic losses to individual, their families, and to nation as a whole. These losses arise from the cost of treatment as well as lost productivity for those killed or disabled by their injuries, and from family members who need to take time off work or school to care for the injured. Road traffic crashes cost most countries 3% of their gross domestic product.

Aim of the present study is that road traffic accidents can be prevented if we uncover causes leading to crashes and educate people based upon them. Governments need to take action to address road safety in a holistic manner. This require involvement from multiple sectors such as Transport, Police, Health, Education and actions that address the safety of Roads, vehicle and road user.

Effective interventions include designing safer infrastructure and incorporation of road safety features into land use and transport planning, improving post-crash care for victims of road crashes, setting and enforcing laws relating to key risk factors and raising public awareness[8].

To identify the causes leading to road traffic accidents visit of accident site was done and information was collected through interview of persons involved but not injured or eyewitness account. Information was collected by taking photographs, watching tyre marks and direction of vehicle accident scene was created and information collected on following points-

1. Age of person dead or injured.
2. Sex
3. Human error.
4. Over speeding.
5. Driving under influence (DUI) alcohol or other Psychotropic substance.
6. Distracted driving
7. Non use of motor cycle helmets, seat belts, and child restraint.
8. Unsafe road infrastructure.
9. Unsafe vehicle

- 10. Human error
- 11. Inadequate law enforcement.
- 12. Socio economic status along with education status
- 13. Other factors

All the above mentioned factors were evaluated in conversation with those involved in accident but not injured in it or eyewitness and an accident report was made to find out reason or reasons behind crash.

We conducted this study in Department of Orthopaedics from June 2016 to June 2021. Every time crash site was visited and a report is made to assess the factors involved behind road side accident. A total of 52 accidents were assessed out of which 2 were not included in study as neither eyewitness were found nor people who were involved could be approached to converse.

After reconstruction of accident scene we tried to analyze the cause of accident to found out how crashes can be reduced, come out with good driving practices or safety strategy regarding road travel.

“A REDESTRIAN HIT ME AND WENT UNDER MY CAR”..... UNKNOWN

Results

- 1. Out of these 50 accidents fatalities were 19 and 48 people were injured with nonfatal road traffic injuries. It is comparable to national average according to Road traffic accident report - 2019.

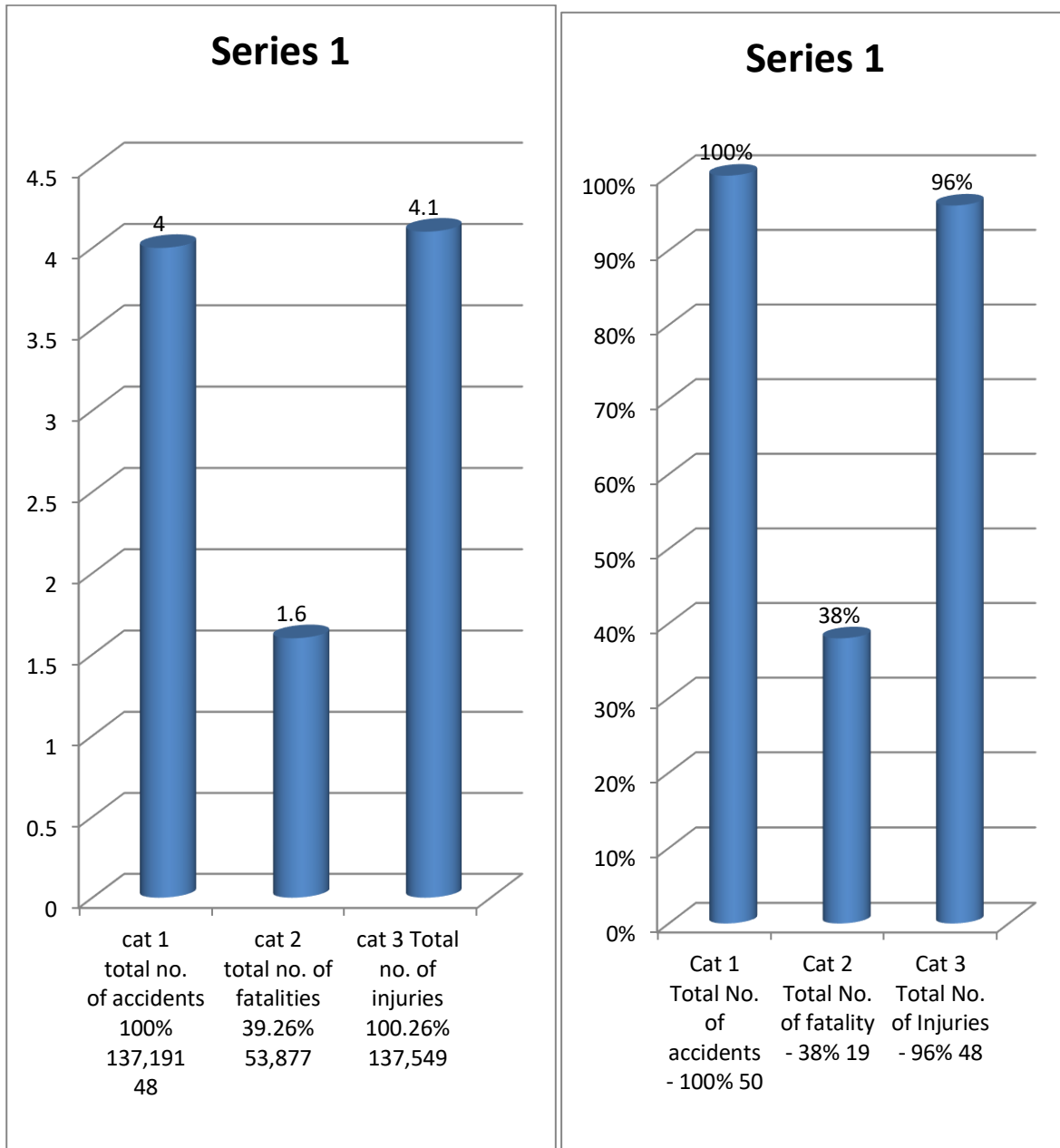


Fig 2: Comparison between national statistics and our study showing total no. Of accidents, no. of people died, no. of people injured

- 2. Age and sex group involved in road accident-

Table 5: Age and sex distribution in crashes

Serial Number	Common age group	Male/Female	Percentage in total
1.	21yrs. -30 years	18 male/0 Female	36%
2.	31yrs.-40 years	20 male/0 Female	40%
3.	41 yrs. - 50 years	06 male/0 Female	12%
4.	51 yrs -60 years	06 male/0 Female	12%

TOTAL NUMBER OF CRASHES-50

Males outnumbered females. In our study we did not find any vehicle driven by female driver.

1. Place of accident; all accident site visited were in a stretch of National Highway -58 from Muzaffarnagar Medical College to Muzaffarnagar a 13 kilometres, a 4 lane newly constructed highway. So all accidental statistics were compared form data taken from report of ROAD TRAFFIC ACCIDENTS – 2019 by Ministry of Road Transport and Highway which provided data of accidents on national highway among other data too.
2. The factor of human error is most significant. 74% crashes in which drivers were at fault as against fault of others on road comprising only 18%. Rest 8% were due to other faults like poor condition of vehicle, temporary substitutes for driver to name few.
3. In the present study the commonest fault of driver responsible for accident were –

Table 6: Factors of road accidents Intoxicated driving

Over speeding	24 accidents	48% of total accidents
Rash driving	15 accidents	30% of total accident
Alcohol (DUI)	10 accidents	20% of total accidents
Loss of control	00 accidents	00 of total accidents
Fatigue & Sleepiness	01 accident	2% of total accidents
Wrongly parked Vehicle	00 accidents	00 of total accidents
TOTAL	50	100 %

1. As the national highway is a newly constructed 4 lane highway which is in perfect condition so the road were not responsible for any accident.
2. Whether condition were also not a factor in present series.
3. Through wrong anticipation could be a factor in at least 3 of road accidents.
4. In this study vehicle failure because of break or steering failure or tyre bust was not found to be a reason for accident.
5. Regarding the effect of poor weather 44 % (22) accidents occurred during night so poor vision can be attributed to them, fog or mist were about 20% (10), a cause for crash. In rest weather could not be ascertain as factor.

Table7: Causes of road crashes

Causes of Accidents	Cases	Percentage (%)
1. Human error		
a. Fault of driver	37	74%
b. Fault of pedestrian	0	0
c. Fault of passenger	0	0
2. Fault in vehicle	0	0
Factor related to weather	22	44%
	10	20% fog/mist
4. Factor related to road (Good condition of highway)	0	0

“Consider the death of Princess Diana. This accident involved an English citizen, with Egyptian boyfriend, crashed in a French tunnel driving a German car with a Dutch engine, driven by a Belgian, who was drunk on scotch whiskey, followed by Italian paparazzi, on Japanese Motor cycles and finally treated with Brazilian Medicine by an American doctor. In this case, even leaving aside the fame of the victims, a mere neighbourhood canvas would hardly have completed the Forensic picture, as it might have a generation before”.....Mark Rebling

Discussion

The study of male /female drivers has been the core of various research workers. Their findings have established the concept that male and female driving has altogether different characteristics. Male drivers have significantly higher accident rate than that of female counter part[9,10,11]. It is know that male drivers have 3 times more accident rate per 1000/male drivers as compared to female driver.

In our study in all 50 accidents we encountered were male drivers. Among the most persuasive reason for low female driven road accidents is low speed driving on much less dangerous road, smaller distance driving and careful driving.

Impact of road structure on accident

Apart from the weather, vehicle speed, driver age and road type are other substantial factors. Various road parameters like length of road

section, average speed limit, road lanes, road width, intersections and pavement type have a prominent impact on accident rates[12,13,14]. The analysis of accidents regarding road type where the accident occurred could be describe the relationship between the type of road and its impact.

94.6% Of road length is not a state or national highway account for 45.2%of accident in which fatalities occurred in 2019. But a smaller percentage of National and State Highway length of 5.4%, accidents happening on them contribute to 54.8% of fatalities related accidents[15]. So the number of accidents are much more even with improved road structure.

All accidents studied in present study occurred on 4 lane newly built National highway -58 under NHAi ration where there proper segregation of traffic moving to and fro direction.

Drivers Age and Road Accident

Observations can be found were the risk of accident is associated with age factor[16,17,18]. The common notion is that young people are more susceptible to inspirational pressure and thrill, poor decision making in emergency condition, drunken driving, over speeding and other traffic violations compared to mature drivers. On the other hand, elderly people are prone to fatigue and unable to do proper estimation while braking or overtaking vehicle. More over lack of control by

elderly drivers in suddenly altered scenario may lead to disastrous outcome[19,20].

In present study all drivers involved were between 21.5 years to 58 years of age with mean age 39.4 years table -6 shows age distribution of drivers involved in accidents in our study.

Distracted driving

This mode of driving consists of any activity which takes drivers eye away from the road, hands away from steering wheel and/or mind away from primary task of operating vehicle. Cell phone distraction

accounts for one in four car accidents in USA. So whenever a person is driving avoid using your cell phone until you arrive at your destination.

Intoxicated Driving

Driving under influence (DUI) of alcohol or drugs is one of the leading causes of accidents or fatalities in accident. These substances impair reflexes and reasoning, which is why many drivers overestimate their ability to drive safely. If drinking cab is a safe alternative.



Fig 3: Example of Alcohol Intoxication and distracted driving as they were eating wild driving.

Alcohol and Driving

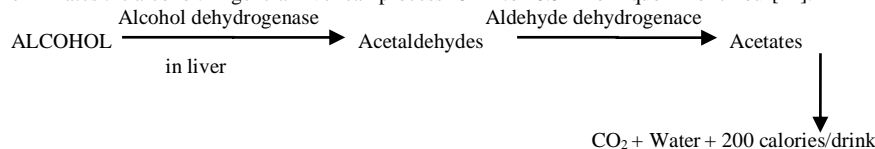
The Blood Alcohol Content (BAC) legal limit is .03% or 30 mg. alcohol in 100 ml of blood. Motor Vehicle Act Amendment Bill 2016 Government of India, the union cabinet approved to increase penalties. Fine was increased from 2000 Rs. To 10,000 Rs. And there is provision of imprisonment from 6 months to 4 years. For USA BAC legal limit is .08% ml of blood. Just to give an example 660 ml of beer raises BAC to .03% for one hour [18].

It does not take a car to transform a fun filled night to a lethal one only few drinks can do it.

Table 8: Meaning of BAC

Serial Number	BAC	Effects of alcohol
1.	.02 to .03%	Feeling good, a little less inhibited, relaxed, and slightly euphoric.
2.	.04 to .06%	Feeling warm, more deeply relaxed, euphoric, more extrovert and elevation in sense of well being. At the same time emotions and behaviour become more exaggerated, caution begin to slip.
3.	.07 to .09%	DUI- The first sense to go is hearing (this is why drunk people are loud) beginning to have slightly impaired balance, vision, hearing and speech. Reaction time is slow and most people believe at this time that they are fine. Euphoria is high, reason; memory and self control are low.
4.	.1 to .12%	Say good bye to good judgment, graceful coordination and clear speech, slurring is evident and balance is compromised. Likely to tell all secrets and feeling, people at this level seems energetic.
5.	.13 to 15%	Things are not fun anymore. Person loses physical control and motor skill. This is the point people are stumbling, vision is blurred and euphoria that made this fun is giving way to anxiety and restlessness. Perception and judgment are strongly impaired.
6.	.16 to .19%	Moniker are indisputable, person does not feel well emotionally or physically. Nausea can occur.
7.	.20%	Emotional turmoil, confusion, black out likely, anger, sadness and big rides on emotional roller coaster.
8.	.25%	Blackout, vomiting, choking.
9.	.25 to .35%	Drunken stupor, reasonable comma risk or surgical anaesthesia.
10.	.4%	Possible death.

It is also important to note certain other facts. 15 ml of alcohol an hour from the first drink can be subtracted since that is the rate at which body eliminates the alcohol. In general liver can process 15 ml to 28.5 ml of liquor in one hour[21].



The enzyme cytochrome P450 2E1 (CYP2E1) also catalyzes break down of alcohol to acetaldehyde[22].

Table 9: Blood alcohol levels in male and females

	Male	57 KG	68KG	Female	57KG	68KG
1 Peg	34 ML	29 ML	1Peg	50 ML	40 ML	
2 Peg	69 ML	58 ML	2Peg	108ML	80 ML	
3 Peg	103 ML	87 ML	3 Peg	152 ML	120 ML	
4 Peg	139 ML	116 ML	4 Peg	203 ML	163 ML	
5 Peg	173 ML	145 ML	5Peg	253 ML	202 ML	

So as the table indicates after drinking same amount of alcohol with similar weight females tend to have higher BAC levels than males. The effect occurs more quickly than male and lasts longer. Here 60 ml peg was taken as one peg[23].

As shown in table-10 average male weighting 65 kg. Can stay within legal limit if he drinks

1. 2pints of beer 660 ml of less than 5% of alcohol.
2. 1 large peg (60 ml) of whiskey.
3. 2 glasses (about 200ml) of wine.

It should be noted that a full stomach may slow the absorption of alcohol, but it does not mean that alcohol cannot creep upon. Coffee will not make sober only time will. Carbonated beverages have found to cause quicker alcohol absorption. Stress can cause alcohol to enter blood stream faster. In general women have less body water than men of similar body weight so women achieve higher concentration of alcohol in blood after drinking equivalent amount of alcohol[24,25].

As shown in Table 10 average male weighting 65 kg. Can stay within legal limits if he drinks and some other facts are-

1. 2 pints of beer (660 ml.) of less than 5% alcohol.
2. 1 large peg (60 ml.) of whisky.

3. 2 glasses (200 ml) of wine.
4. It should also be noted that a full stomach may slow the absorption of alcohol but it does not mean that alcohol cannot creep upon.
5. Coffee will not make sober only time will.
6. Carbonated beverages have been found to cause quicker absorption.
7. Stress can cause alcohol to enter blood stream faster.
8. In general women have less body water than men of similar body weight so women achieve higher concentration of alcohol in blood after drinking equivalent amount of alcohol[24,25].

Accidents by violation type of driving vehicle

There exist two major characteristics of the drivers that are errors and violation which seem responsible for accidents. Errors are flaws in human judgment and acts, according to situation while violations are deliberate actions to bypass the system. The violations of traffic laws often lead to aggravating the number of accidents. Table 11 contain 5 severe and 5 minor violations that are in part responsible for road accidents in India.



Fig 4: Accident 2- Wrong anticipation/too closed to vehicle ahead

Table 10: Type of Violation

Violations	Type of violations
Severe	1. Infringement of safe driving. 2. Violation of traffic signal. 3. Too close to vehicle ahead. 4. Improper at intersections. 5. Sudden lane change.
Minor	1. Speed limit violation. 2. Improper overtaking. 3. Pedestrian carelessness. 4. Defect in vehicle maintenance. 5. Driving while fatigued.

Seemingly factors like not using of seatbelt or eating while driving may be considered as trivial but even they may cause accidents.



Fig 5: Accident – 3: Over speeding by a vehicle not meant to be driven fast

Over speeding

Most of the fatal accidents occur due to over speeding. It is natural psyche of humans to excel. If given chance man is sure to achieve

infinity in speed. But when we are sharing road with other users we will always remain behind some or the other vehicle. Increase in speed multiplies the risk of accident and severity of injuries during

accident. Faster vehicles are more prone to accident than slower one and severity of accident will also be more in case of faster vehicle. Higher the speed of vehicle, greater is the risk. At high speed the vehicle needs greater distance to stop than its breaking distance. A slower vehicle comes to halt immediately while faster one takes long way to stop and also skids a longer distance due to law of motion. A vehicle moving on high speed will have greater impact during the crash and hence will cause more injuries. The ability to judge the forth coming events also gets reduced while driving at faster speed which causes error in judgment and finally a crash

Road ahead



Fig 6: Accident Site: Being cleared

“When I was 19, I was in a horrific car accident and it taught me that at the end of our life, we ask all these questions, I discovered were; Did I really live my life? Did I love? Did I matter? And I was unhappy with the answers”.Brendon Burchard

In our study various leading factors are analyzed which might have caused road accidents on this stretch of 13 kilometres on national highway. We tried to ascertain the factors caused accident so that remedy can be found out to reduce its number. Wide spread growth of vehicles affects traffic volume to increase on road not built to handle that load.

It was also noticed that many factors were responsible for an accident and not a single factor in all accidents. Haste in mind lead to high speed driving which could be avoided by starting early. In summary factor contribute in accidents can be categorised as follows –

1. Driver – over speeding, rash driving, violation of rules, failure to understand sign, fatigue, alcohol, distraction.
2. Pedestrian – Carelessness, illiteracy, crossing at wrong places, moving on carriage way, jaywalkers.
3. Passengers – projecting their body outside vehicle, by talking to drivers, alighting and boarding vehicle from wrong side, travelling on foot boards, catching a running bus.
4. Vehicle – Failure of breaks or steering, Tyre burst, insufficient head light, over loading, projecting loads.

More roads are needed to accommodate the increasing demand of traffic day by day. However the government can consider three very effective strategies to reduce the accidents –

1. Restriction of the mobile phone use during driving.
2. Use of speed camera.
3. Variant message system.

The use of mobile phone during driving has a associated risk of 120% compared to driving when mobile phone is not used[25,26]. the deployment of speed camera can make significant decrease of 18% in accidents. The VMS undoubtedly reduces accidents, most profoundly when used for accidents and fog warning messages. Even a warning can be send to driver if found driving rash or over speed or cautioned for low light or rains or potholes on roads.



5. Roads condition – Potholes, damaged roads, eroded roads, merging or rural roads with highway diversion, illegal speed breaker.
6. Weather conditions – Fog, snow, heavy rain fall, wind storm, hail storms.

Once the road traffic accidents are recognised ways can be found out to reduce crashes like

1. Education and awareness about road safety.
2. Strict law enforcement.
3. Engineering improvement like:
 - a) improved vehicle design.
 - b) road infrastructure.

Some good driving habits can avoid road traffic crashes and are to be inculcated in every driver like-

1. Use turn signal and well in advance.
2. Remember when to be patient.
3. Keep with the flow of traffic.
4. Drive free from distraction.
5. Drive only when sober.
6. Realize when too tired to drive.
7. Keep vehicle well maintained.
8. Be aware of surroundings.

“You just have to keep driving down the road. It’s going to bend and curve and you will have speed up and slow down, but the road keeps going,” does it sound like drive no it reverberates like life, so do not risk it.



Fig 7: Accident due to over speeding



Fig 8: Once you are not careful in spite what we do life will be lost so be careful

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