CHAPTER I: INTRODUCTION

A road traffic accident is any injury due to crashes originating from, terminating with or involving a vehicle partially or fully on a public road. It is projected that road traffic injuries will move up to the third position by the year 2020 among the leading causes of the global disease burden. The term traffic accident widely refers to an accident that occurs during transportation. not only in cars but also in trains, aircraft and ships. This causes a fatality or injury that occurs while travelling in vehicles due to increasing number of vehicle, changes in lifestyle and the risk behaviour among general population. They are considered economic losses to victims, their families and to countries as a whole. [7]

There is a phone call or a knock on the door that we all dread, in which we are told that a loved one has been killed or seriously injured in traffic crash. We shiver as emergency vehicles past us on the road to attend a crash. Our heart misses a beat as we hear about a road accident on the news. But road traffic crashes are not accidents. They are completely preventable. This report shows us that the problem is getting worse. Millions of people are injured or disabled every year, people who suffer life altering injuries with long-lasting effects. These losses take a huge toll on families and communities. [2]

There are many reasons for this trend: rapid urbanization, poor safety standards, lack of enforcement, people driving distracted or fatigued others under the influence of drugs or alcohol, speeding and a failure to wear seat belts or helmet, break failures, due to bad road conditions and rash driving in ghats and curvy roads etc.. Strict action is taking against the rule breakers then people will start taking caution when driving which may not completely stop road collisions from happening but it could definitely reduce the amount of accident that takes place. Accidents do not just happen because of ignorance but also due to over confidence, thoughtlessness. They also can be collisions between two vehicles, between vehicle and pedestrian, between vehicle and animal, or between a vehicle and an architectural obstacle. [3]

World Health Organization has defined accident as an unplanned occurrence which may involve injury. The global status report on road safety 2018, launched by

World Health Organization in 2018, highlights that the number of road traffic death has reached 1.35 million. Road traffic injuries are now the leading killer of people aged 5 to 29 years. The burden is disproportionately borne by pedestrians, cyclists, and motorcyclist, in particular those living in developed countries. The report says that the price paid for mobility is too high, especially because proven methods exist. Drastic action is needed to put these measures in place to meet any future global that might be set and save lives. Majority of the world's fatalities on the road occurs in low income and middle income countries, even though these countries have approximately half of the world's vehicle. [13]

In India Uttar Pradesh is the state with the most number of accidents (63,805) after Tamil Nadu (69,059). According to provisional police data provided by states, Uttar Pradesh recorded the maximum number of road deaths (17,666) followed by Tamil Nadu (15,642), Maharashtra (13,212), Karnataka (10,856). [10]

In 2018, Kerala's roads saw 40,181 accidents, 4,303 deaths and 45,458 were injured. From January – December last year Kerala was in ninth position among selected countries around the world. In which less than 10% of the road network handle 80% of the traffic and it takes a heavy toll on both motorists and pedestrians. Every single day, Kerala loses as many as 12 lives and another 150 get injured in 106 road accidents. Kerala has 120.42 lakh registered motor vehicles as on March 2018 and the number per 1000 population is 361. Ernakulum district has topped the district with 5,976 accidents, followed by Thiruvananthapuram with 5,608 accidents and Thrissur with4, 444 accidents. In fatalities, Thiruvanthapuram is on top with 440 deaths, followed by Kollam (435) and Thrissur (422). Most of the victims fall in the productive age group of 18 to 40 years.

This study aims to analyse the road traffic accident severity in Malappuram, a district of Kerala. From this analysis, it covers one of the most negative impacts of transportation system, namely the accidents. This study first presents some introductory stuff including some salient accident statistics, causes of accidents, accident data collection, safety measures or preventive measures to reduce accidents. Through this project it has mainly included possible countermeasures to reduce accident severity results from the accident data of 2018 & 2019 by the comparison. With increased usage of private vehicle the number of road accidents has shown increasing trends. The data

for analysis is obtained from the District Crime Record Bureau, Malappuram. Studies have been conducted to identity the major causes and trends associated with road accidents. Further experiments have been carried out to analyse the major causes of accident times and weekdays/weekends. On the basis of the results obtained, certain recommendations which aid in reducing the accident rate have been put forward.

The statistical analysis of accident is carried out periodically at critical locations or road stretches which will help to arrive at suitable measures to effectively decrease accident rates. It is the measure or estimate of the number and severity of the accident. The accident data collection is the first step in the accident study. The data collection of the accident is primarily done by the police. The data to be collected should comprise all of these parameters:

- General – date, time, person involved in accident, classification of accident like fatal, serious, minor.
- Location - description and detail of location of accident.
- Details of vehicle involved – registration number, description of vehicle, loading detail, vehicular defects,
- Nature of accident – details of collision, damages, injury and casualty.
- Road and traffic condition – details of road geometry, surface characteristics, type of traffic, traffic density etc...
- Primary causes of accident – details of various possible causes which are the main causes of accident.
- Accident cost – financial losses injured due to property damage, personal injury and casualty.

Forensic Significance

The main purpose of whole forensic investigation of accident is to establish the cause of the incident. The information obtained from it might be required for a number of following reasons:

- Investigate the case.
- Either the victims or their family members want to know how the accident takes place and how they were injured or killed.

- Police or regulatory authorities might wish to fix responsibility and take appropriate action against the guilty.
- The safety authorities might always be looking forward for improvement to prevent a reoccurrence of accident.

In forensic investigation of road accident cases, it is necessary to establish the following:

- That an accident has actually taken place. It may not be a subterfuge to conceal some other crime.
- The identity of the location where accident took place, particularly on highways.
- The identification of the vehicle in a 'hit and run' case.
- To identify the driver in a case were the owner of the vehicle alleges theft. [8]

The main purpose of whole forensic investigation of accident is to establish the cause of the incident. In the investigation of road accidents involving vehicles, physical evidences play a very important role. Their nature there for needs to be understood properly before the physical evidence are collected. In most of the hit and run or accident cases the vehicle involved may carry traces from the scene of occurrence or from other vehicle involved, or the victim.[5] Skid marks are the marks left by wheels, which are no longer rotating. These marks are characteristics in appearance and caused due to the wheels sliding across the surface of the road. Vehicle damage alone will not enable the exact speed of a car to be calculated as extend of the damage depends on the change in speed brought about by the collision. [4]

There are punishments mentioned under the Indian Motor Vehicle Act, 1988 and Indian Penal Code for various motor vehicle related offenses. [9]

Punishments for traffic accidents are mentioned in the Indian penal code under the following sections:

a) Section 279 of IPC: Rash driving or riding on a public way – whoever drives or rides any vehicle in a rash and negligent manner endangering human life or likely to cause hurt or injury to any other person, shall be imprisoned for six months or with fine of thousand rupees or both.

b) Section 338 of IPC: Causing hurt by an act that endangers life or personal safety of others. Causing hurt to any person by doing an act in a rash and negligent manner that endangers the life and safety of any other person, shall be imprisoned for six months or with fine of five hundred rupees or both.

c) Section 338 of IPC: Causing grievous hurt to any person by doing an act in a rash and negligent manner that endangers the life and safety of any other person, shall be punished with imprisoned which may extend to two years or with fine of one thousand rupees or both.

d) Section 304 (A) of IPC: Causing death by negligence whoever causes death of any person by doing any act in a rash and negligent manner not amounting to culpable homicide, will be punished with imprisonment of a term which will extend to two years with fine or both. [1]

CHAPTER II: LITERATURE REVIEW

W.H. D. Morgan (1984) studied on forensic science assistance in investigating road accidents it explains how an awareness of the capabilities of a modern forensic science laboratory can be of great help to a police officer investigating a vehicle accident. Forensic examination of damaged metal components, tyres, samples of paint and glass can yield significant information which will help to reconstruct the true events leading to the events leading to the accident. It therefore follows that the careful examination and collection of relevant material from an accident scene is of vital importance to the forensic laboratory.

When a road accident occurs, the police are in many cases, required to carry out an investigation with a view to establishing, if possible, the causes of the accident. This may provide information to show whether or not the accident was unavoidable or if there was some degree of negligence which may constitute an offence under the Road Traffic Act. Knowledge of the capabilities of a modern forensic science laboratory is essential to the police officer in his evaluation and collection of evidence at the scene of a vehicle accident.

Causes of Accidents

Although no two accidents are exactly similar certain generalization can be made when the causes of road accident are considered. These can be categorised as follows:

a) Personal reactions.
b) Mechanical failure of the components of a vehicle,
c) Lack of vehicular control due to tyre factors,
d) Bad car handling properties induced by tyres,
e) Faulty illumination of vehicles.eg: no tail lights on parked vehicles.

Dandona R, et al. J Safety Res (2006) studied on risky behaviour of motorized two wheeled vehicles in India and it shows that the Motorized two wheeled vehicles (MTV) was account for a large proportion of road traffic in India and the riders of these vehicles have a high risk of traffic injuries. They have reported on the availability of driver's licences, use of helmet, driver behaviour and conditions of vehicles for MTV drivers in Hyderabad, a city in India.

Jain A, et al. J Forensic leg Med. (2009) in this study two wheeler accidents on Indian roads – a study from Mangalore, India. It shows the alarming increase in mortality and morbidity owing to traffic accidents has been a matter of great concern globally. This study was undertaken to find the trend of two wheeler accidents over the five years (2000-2004) with respect to age and sex of the victim, type of injury sustained, type of vehicle involved and time distribution of accidents.

Manisha ruikar (2013) shows that it studied on National Statistics of Road Traffic Accidents in India and the National reports published annually by transport Research Wing of the Ministry of Road Transport & Highways and National Crimes Record Bureau of Ministry of Home affairs, government of India describe national statistics trends and normalized indicators of road accidents, injuries & fatalities. This article highlights trends, indicators, interstate comparisons and the latest characteristics of road traffic accidents in India. While the official road traffic fatality data may be close to the actual number, the injury data are gross underestimates. As per bibilometric analysis, India contributed only 0.7 per cent papers on road traffic injuries and had less than one article on road traffic injuries per 1,000 road traffic related deaths. To be effective, policies on injury prevention and safety must be based on local evidence and research. Health professionals and their professional bodies across wide disciplines need to take an initiative for the same with active commitment.

P.Shruthi, V.T Venkatesh, B.Viswakanth, C.Ramesh, P.L. Sujatha, I.R.Dominic, (2013) studied on Analysis of Fatal Road Traffic Accidents in a Metropolitan City of South India and this says that the Road Traffic Accident is a cause of unnatural death and is the third major preventable one amongst all deaths. Road deaths in India are publicly glaring, while road safety is professionally lacking and politically missing. A retrospective observational study was conducted in the department of forensic medicine and toxicology, kempegowda institute of medical sciences, Bangalore between January 2010 to December 2012, with an objective to study the injury profile and mortality pattern in autopsy cases with an alleged history of RTA and to draw public attention and awareness in order to prevent or control RTA. Out of 225 autopsied RTA victims, 55.11% victims were between 21 to 30 years of age, males constituted 78.22% of the total victims, and four wheeler vehicles were involved in 68.44% RTAs. Maximum RTAs occurred during the daytime, between 6AM to 12PM. Head injuries constituted 30.22% of the total injuries, followed by injuries involving abdomen, thorax and limb. Haemorrhagic shock caused 63.11% of deaths, while head injury caused death in 30.22% of cases.

This study emphasizes that interventions in RTA should include combined efforts from the community, public and private sector, governmental and non-governmental organizations.

Kazuhiko Kibayashi, (2014) conducted a study on the topic "Fatal Traffic Accidents and Forensic Medicine". Here, the event of traffic accident fatality, the death is reported as an 'unusual death' an inquest is conducted, and if necessary, a forensic autopsy is performed to prove any causal relationship between the accident and the death, identify the vehicle fault, and determine the cause of the accident fatality needs to both determine the cause of death and identify the mechanism of injury, an analytical task that requires observation of three major traffic accident. Also crucial to determining the cause of death is the process of looking into whether the people involved in the accident had any diseases that might affect their driving performance or were under the influence of drug or alcohol. In order to reduce the number of people killed in traffic accidents, it will be important to promote joint research uniting forensic medicine, clinical medicine, automotive engineering and road engineering take

measures to limit the impact of inebriated pedestrians and ensure proper screening of alcohol and illegal drug consumption in drivers.

Harnam Singh, A.D Aggarwal, (2015) studied on Fatal Road Traffic Accidents among young children which says that the fatal road traffic accidents in childhood constitute a significant public health problem. Young children are extremely vulnerable to such injuries which are vastly preventable. 59 cases of fatal road traffic accidents in children aged below 16 years, autopsied during 1 year period were studied. Males accounted for 83.1% cases with male female ratio of 4.9. The most common age group involved was 13-16 years. The most frequent victims of road traffic accidents were pedestrians (61%) followed by cyclists (13.6%). More than half of the cases that occurred in winter season and majority occurred at12 -4pm. Children themselves were at fault in majority of cases. Head injury of victims died within 6 hrs. Of accident. The study highlights the pattern of fatalities due to road accidents in children and suggests suitable preventive measures to reduce burden of childhood mortality due to road accidents.

Sanjay Kumar Sing, (2017) the study of this paper was to analyse the road accidents in India at national, state and metropolitan city level. This analysis of Road Traffic Accidents in India: Issues and Challenges explains that the distribution of road accidental deaths and injuries in India varies according to age, gender, month and time. Age group 30-59 years is the most vulnerable population group, though males face higher level of fatalities and injuries than their female counterparts. Moreover, road accidents are relatively higher in extreme weather and during working hours. Analysis of road accident scenario at state and city level shows that there is a huge variation in fatality risk across states and cities. Fatality risk in 16 out of 35 states and union territories is higher than the all India average. Although, burden of road accidents in India is marginally lower in its metropolitan cities, almost 50% of the cities face higher fatality risk than their mofusil counterparts. In general while many developed and developing countries including china, road safety situation are generally improving, India faces worsening situation. Without increased efforts and new initiatives, the total number of road traffic death in India is likely to cross the mark of 250,000 by the year

2025. There is thus an urgent need to recognise the worsening situation in road deaths and injuries and to take appropriate action.

Subbiah Elango (2018) studied an analysis of road traffic injuries in India from 2013 to 2016 which shows that the accidents are killing more people in India than terrorism or natural disasters. Risk factors can be grouped as human and environmental causes. Better road safety plans for execution since morbidity mortality disability and economic impact of road traffic accidents. This study analyses the available data on road traffic accident and find out the epidemiological factors, morbidity and mortality pattern from 2013 – 2016 and to assess the possibility of achievement in Brasilia declaration in India by 2020.

Deyu wang, Qinyi Liu, Liang Ma,YijingZhang, Haozhe (2019) conducted a study in china on Road traffic accident severity analysis: A census based study in china despite the decrease in average road traffic fatalities per capita, the fatality rate and injury rate have been increasing until 2015. This study has aimed to analyse the road traffic accident severity in china from a macro view point and various aspects and illuminate several key causal factors. From this analysis they proposed possible countermeasures to reduce accident severity.

Maya John, Hadil Shaiba (2019) studied Dubai road accident analysis which shows increased usage of private vehicles, the number of road accidents has shown an increasing trend. Through this study they applied data mining techniques to analyse the traffic accident data pertaining to Dubai for the year 2017. The data for analysis has been obtained from the official open data protocol of United Arab Emirates. Appropriate algorithm has been employed to mine frequent item sets. Studies have been conducted to identify the major causes and trends associated with road accidents. It has been observed that majority of accidents involve vehicle hitting another vehicle due to inadequate space between vehicles. Another finding was that youth were involved in majority of accidents. The result show that accidents peak time was during weekend's peak accident time, majority of the drivers were intoxicated, while during peak days peak accident time, the maximum number of accident occurred due to lack of enough space between vehicles.

Md. Sharif Hossen (2019) studied on the analysis of road accident in Bangladesh that the recent road accidents are regular occurrences in all over the world. With the growth of motorization, urbanization and number of road users, the number of accident and fatalities on road are increasing with the passage of time. In Bangladesh, thousands of people die every year due to street accidents. Most of the road accidents takes place in the urban areas and the highways. Proper and rational rates of accidents and corresponding trends are required to understand or judge the situation accordingly. In this paper an investigation has been done to evaluate the rate of road traffic accidents and fatalities trends in term of total number of registered vehicles per year using police reported accident data. Here investigated result show the proportion of accident and fatalities from year 2010 to 2016 is approximately 1. It is very alarming situation in Bangladesh for increasing the number of fatalities with the equal number of accidents. Besides, number of fatalities is greater than number of accidents (equal to2027) in the year 2014. The rate of accident, fatality, injury and causality is increasing in the year from 2014 to 2016under the calculation of excluding motor cycles compared to including motor cycles.

Monusha Chowdri N, Brahmananda Rithika Rohit and Saritha D'souza. (2019) is a research article which was published in the Journal of Forensic Science and Criminal Investigation has given a very detailed study on the extend of road accidents in Mangalore city, Karnataka, India which says that the traffic congestion is contributed due to increase of motor vehicle for travel, increase of population in urban areas and increased popularity of motor vehicles and they are purchased by people of even ordinary means. The road accidents were caused mainly due to rash and negligence driving as they do not follow traffic rules and laws. The road accident had occurred during peak hours of time as everyone rushes to work or school.

CHAPTER III: AIM AND OBJECTIVES

Aim:

To do a statistical analysis and comparison of accidental cases in the year 2018 and 2019 at Malappuram, Kerala.

Objectives:

- To identify and compare the total number of accidents classified to the year 2018 and 2019 respectively.
- To identify the road accidents, fatalities and injury by road category.
- To identify the time of occurrence of road accidents.
- To identify the gender and age profile of fatal road accident victims.
- To suggest the preventive measures to reduce road accidents.

CHAPTER IV: MATERIALS AND METHODOLOGY

Materials

Data of accident cases from District Crime Record Bureau (DCRB).

Methodology

The study is undertaken with the permission of Superintendent of Police, Malappuram city Superintendent Office. Malappuram police unit is sub divided into 3 sub divisions and 34 police stations. After taking the appointment from the respective sub-divisions, the comparative statistics of 2018 and 2019 with regard to road traffic accidents has been collected from the District Crime Record Bureau (DCRB).

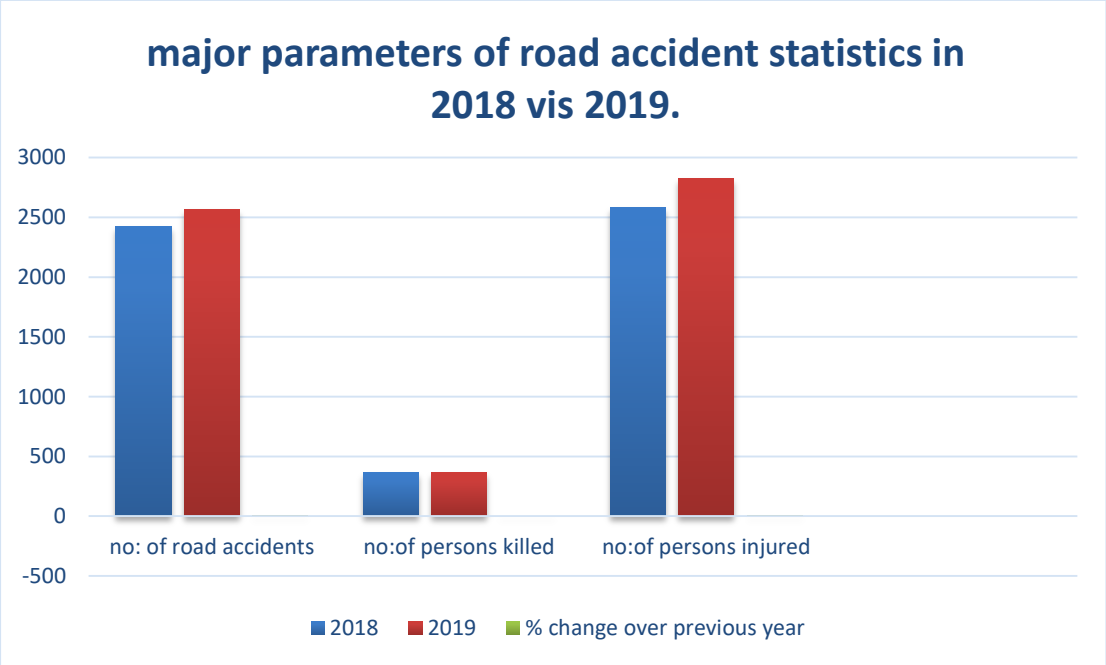
A total number 2423 accident cases was reported in the year 2018 and 2561 accident cases in the year 2019. Based on the objective the comparison and correlation of the statistical data has been done that is represented in form of graphs.

CHAPTER V: OBSERVATIONS

- The total number of accidents classified to the year 2018 and 2019 respectively.

Parameter	2018	2019	% change
No:of road accidents	2423	2561	2.76%
No:of persons killed	367	364	-0.42%
No:of persons injured	2581	2826	4.54%

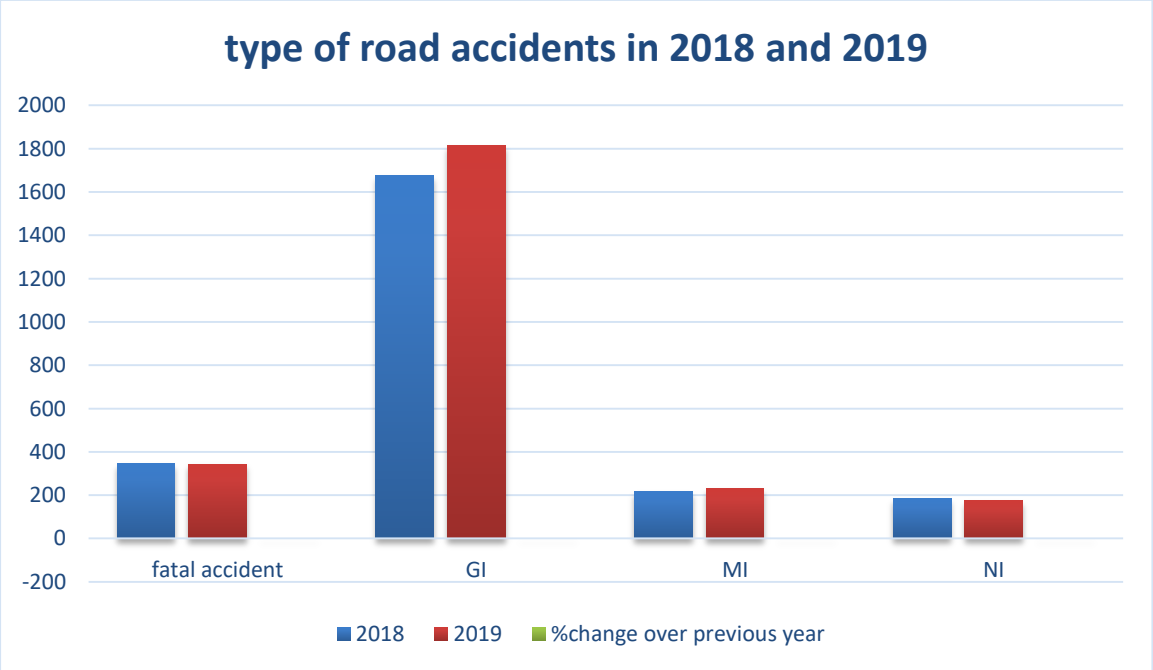
Table 1: Total number of accident classified to the year 2018 & 2019.



Graph 1: Total number of accident classified to the year 2018 & 2019.

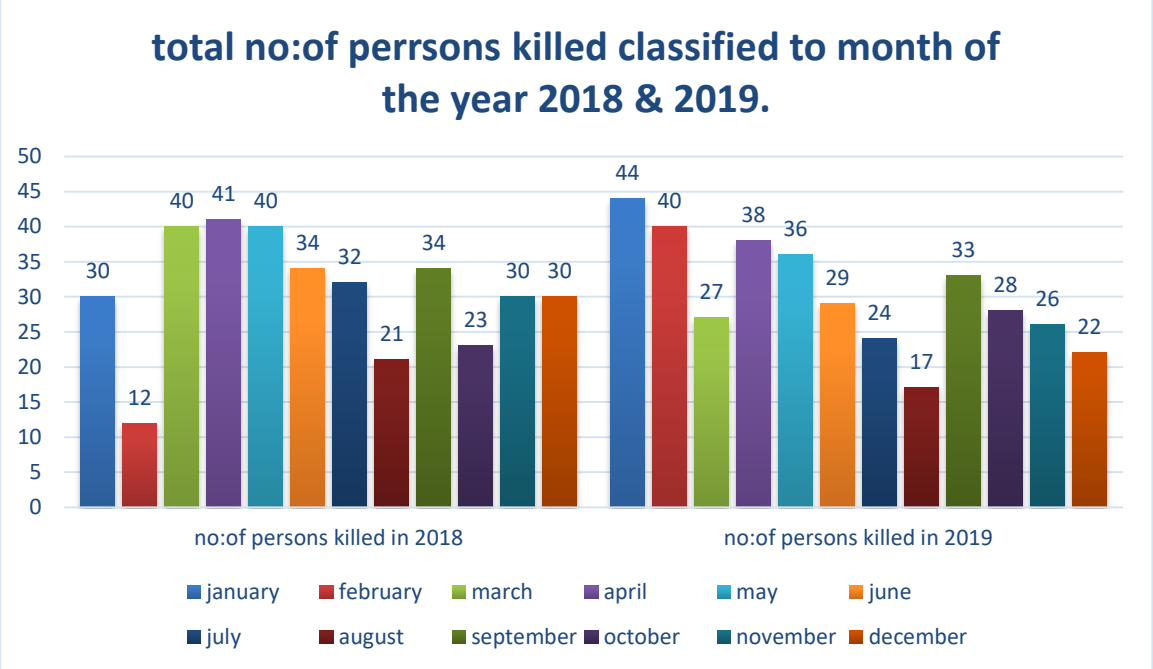
Parameters	2018	2019	% change
Fatal accident	346	343	-0.44%
Grievous Injury (GI)	1677	1815	3.96%
Minor Injury (MI)	217	229	2.70%
Non-Injury (NI)	183	174	-2.52%

Table 2: Type of road accidents in 2018 and 2019.



Graph 2: type of road accidents in 2018 and 2019.

Month wise no: of persons killed by accident in the year 2018 & 2019.



Graph 3: total no: of persons killed classified to month of the year 2018 & 2019.

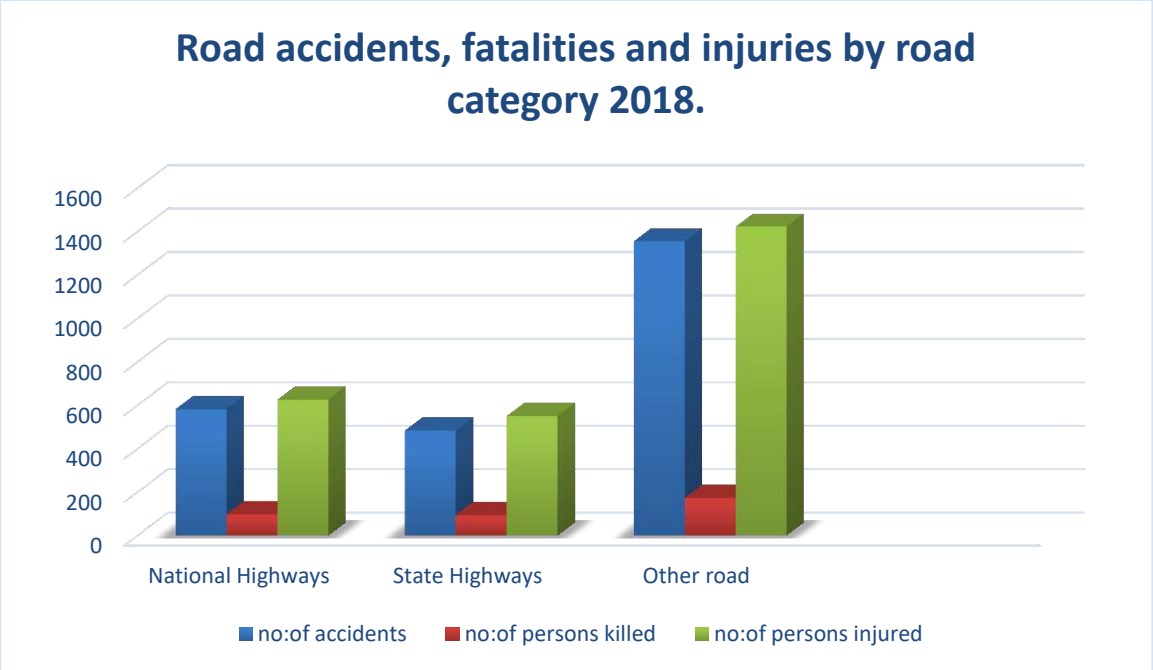
- Total no: of the road accidents, fatalities and injury by road category.

Road Network in Kerala

The roads in Kerala are maintained by National Highways/Public Works Department (R&B), Local Bodies, Department of Forests, Railways etc… other agencies dealing with transport sector are National Transportation Planning and Research Centre (NATPAC), Motor Vehicles Department, Kerala State Road Transport Corporation (KSRTC), Kerala Transport Development Finance Corporation (KTDFC) and Roads & Bridges Development Corporation of Kerala(RBDCK).Kerala, southernmost state of India has a network of 11 National Highways, 72 State Highways and many district roads.

Parameters	No:of accidents	No:of persons killed	No:of persons injured
National Highways	583	98	627
State Highways	484	95	551
Other Highways	1356	174	1423

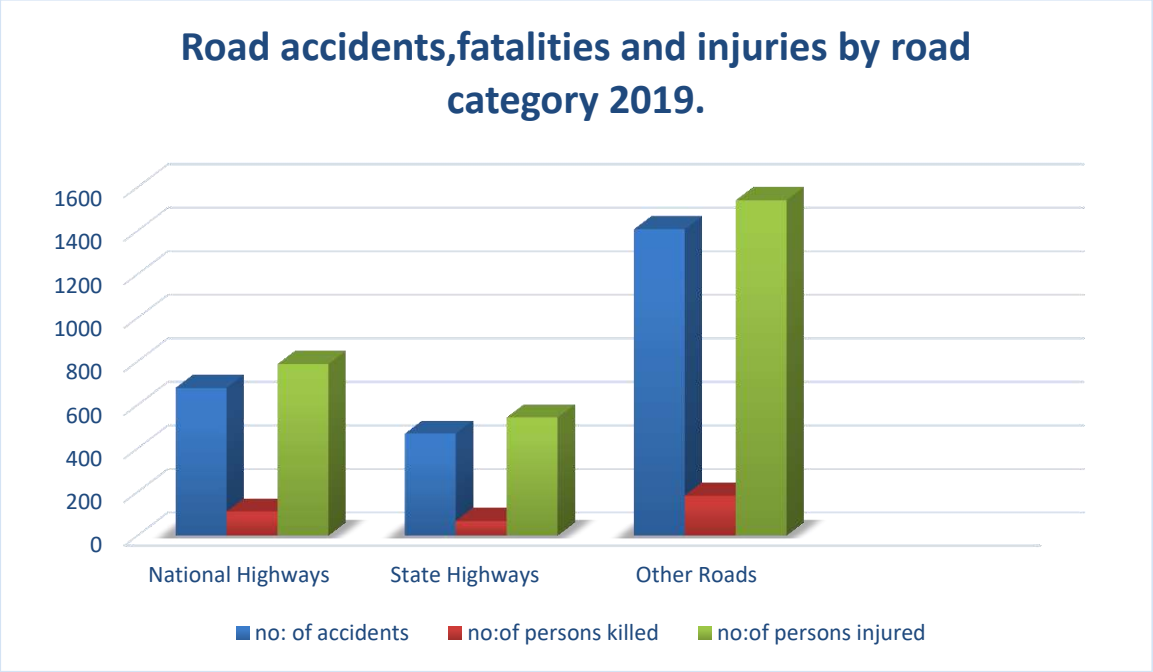
Table 3: road accidents, fatalities and injuries by road category 2018.



Graph 4: road accidents, fatalities and injuries by road category 2018.

Parameters	No:of accidents	No:of persons killed	No:of persons injured
National Highways	679	110	788
State Highways	468	68	543
Other Highways	1407	184	1540

Table 4: road accidents, fatalities and injuries by road category 2019.

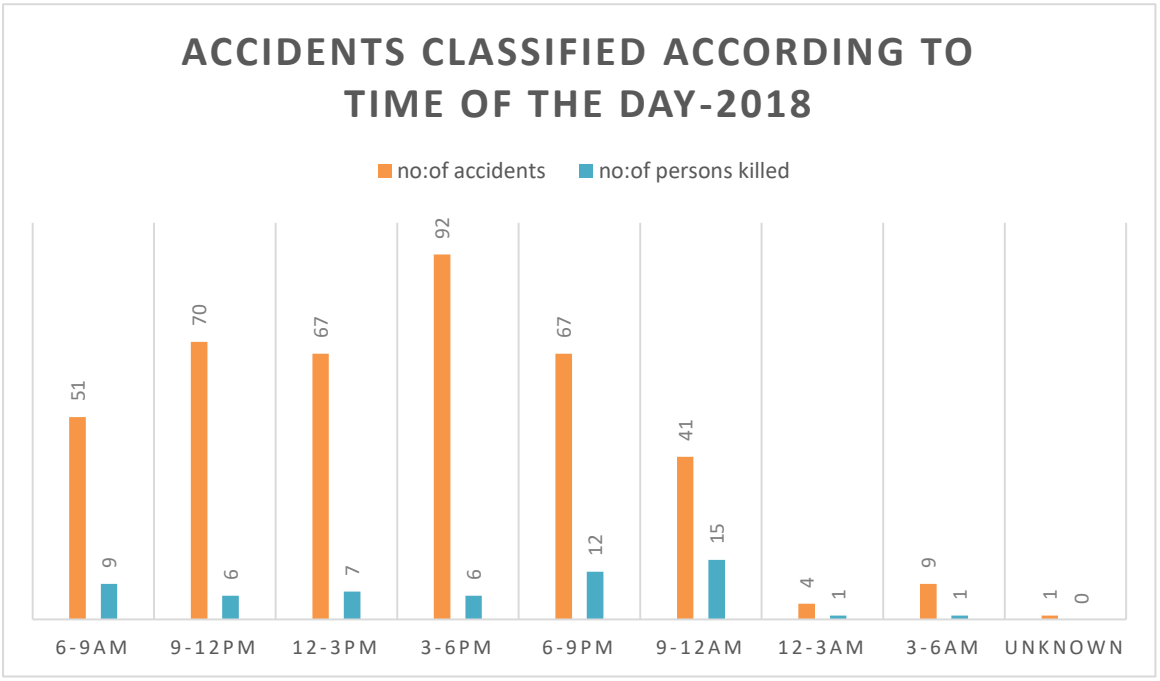


Graph 5: road accidents, fatalities and injuries by road category 2019.

- The time of occurrence of road accidents.

Parameter	No: of accidents	No: of persons killed
6-9am	51	9
9-12am	70	6
12-3pm	67	7
3-6pm	92	6
6-9pm	67	12
9-12am	41	15
12-3am	4	1
3-6am	9	1
unknown	1	0

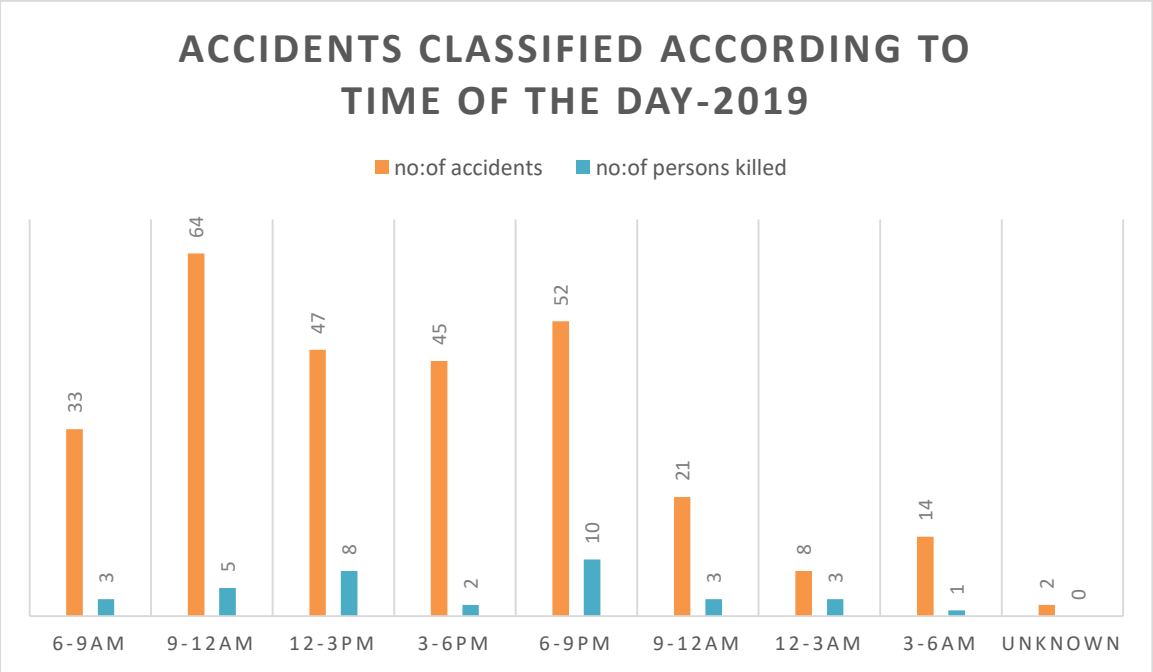
Table 5: accident classified according to time of occurrence 2018.



Graph 6: accident classified according to time of occurrence 2018.

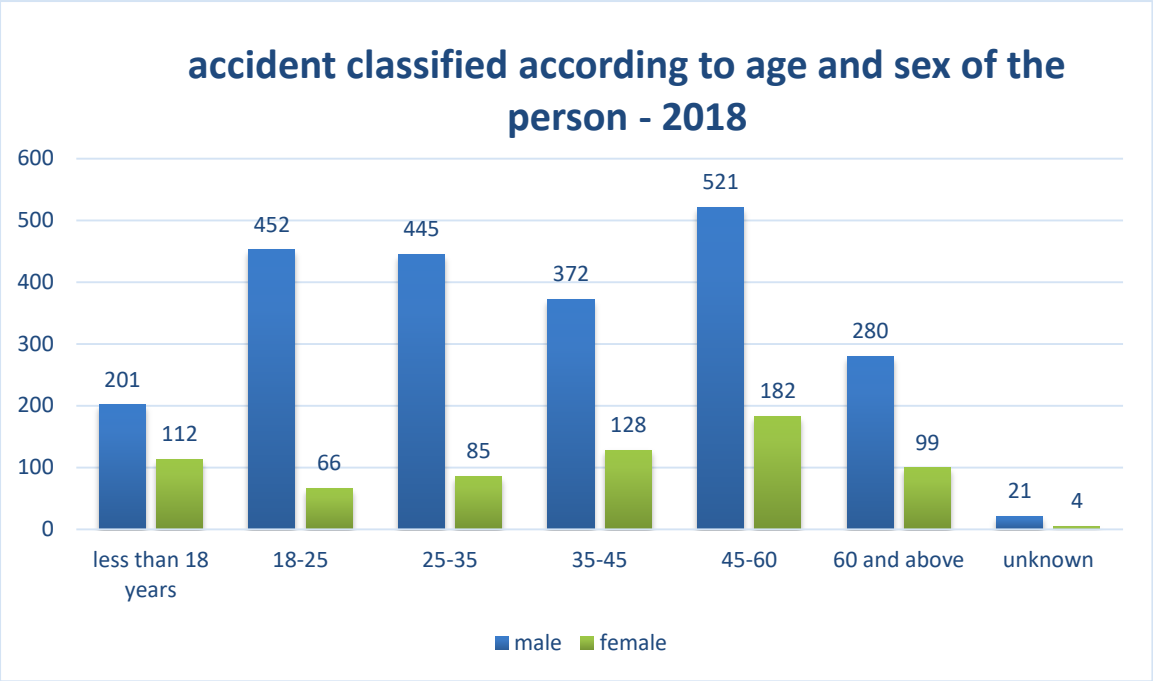
Parameters	No: of accidents	No: of persons killed
6-9am	33	3
9-12am	64	5
12-3pm	47	8
3-6pm	45	2
6-9pm	52	10
9-12am	21	3
12-3am	8	3
3-6am	14	1
unknown	2	0

Table 6: accident classified according to time of occurrence 2019.

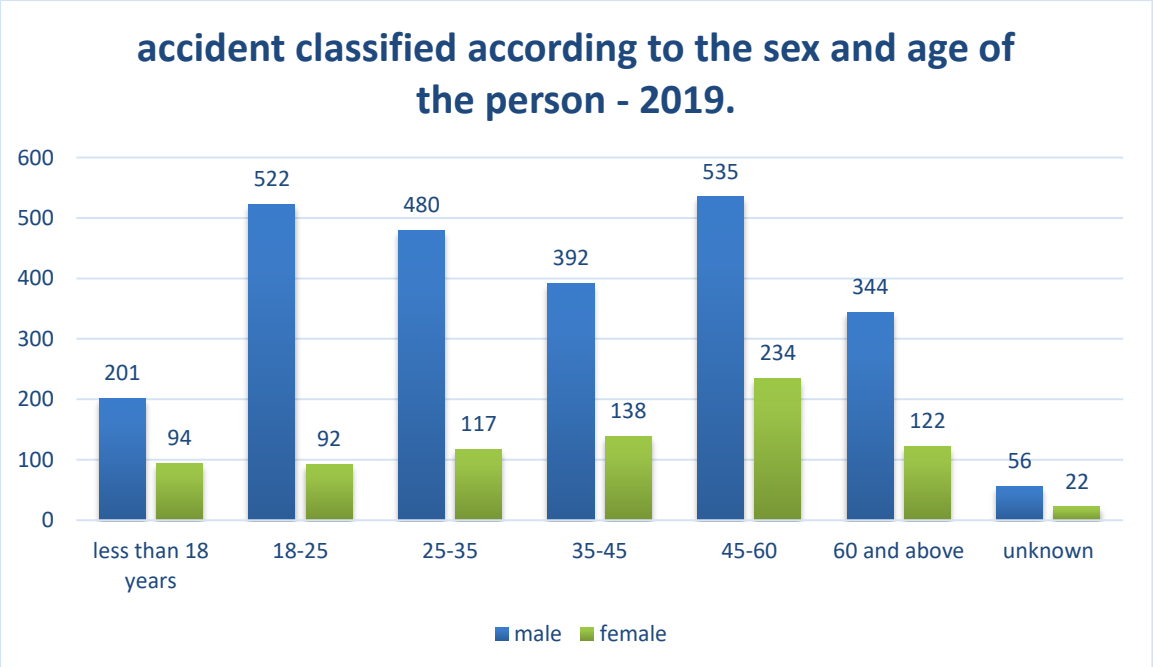


Graph 7: accident classified according to time of occurrence 2019.

- To identify the gender and age profile of fatal road accident victims.



Graph 8: gender and age profile of fatal road accident victims 2018.



Graph 9: gender and age profile of fatal road accident victims 2019.

CHAPTER VI: RESULTS AND CONCLUSION

Result

a. Incidence of road accidents have increased by 2.76% in 2019 as compared to 2018 and the number of fatal accidents declined by 0.42% and there is a significant increase of 4.54% in the number of persons injured in 2019.
b. Majority of the accidents are taking place in road category of other roadways followed by National Highways and State Highways.
c. Most of the road accidents have been occurred in the time between 9-12pm and 3-6pm in the day time, this is mainly due to the rush hour of school and office timings.
d. The safest time to travel was found to be between 12-6 am in the morning.
e. Most of the accidents was in males than females and they were caused by the persons between the age group of 45-60 years and 18-25 years.
f. The accused aged between less than 18years and 60 above years are least involved in accidents.
g. The main cause of road accidents is drivers fault such as rash and negligence.

Conclusion

On the basis of fatality and injury

A road accident may cause loss of lives or grievous injury or minor injury or non-injury to road users. An accident which resulted in death of one or more person is a fatal accident. Grievous injury accident is one in which one or more victim suffer serious injury requiring hospitalization. Minor injury is when victim does not require hospitalization.

The total number of accident cases that was reported were classified into categories such as fatal, grievous injury, minor injury and killed. All these data was given in month wise (**Graph: 3**) and the total was taken in order to represent in the form of graph. From the graph **(Graph: 1& 2)** it is clear that there was no much change in the no; of persons who were fatal and no: of persons that were killed in the year 2018 & 2019. But there was an increase in the no: of people with Grievous injury and Minor injury in the year 2019.

On the basis of road category

From the graph (**Graph:4&5**) it is very clear that most of the accidents are taking place in the other road which consist of district roads, rural roads, urban roads and project roads. Though the percentage share of these three broad categories of roads in the total road length is heavily uneven, the distribution of the number of road accidents, fatality and injury in other road is more. Followed by National Highways and State Highways.

On the basis of time of occurrence of Road Accident

Most of the road accidents occur during the weekends as there is less traffic and people tend to over speed and drive in a rash and negligent way. They also tend to go out of the city and there could be many road accidents in the highways as there would be parties during weekends which would lead to drinking and driving. During weekdays minor traffic accidents take place as there will be heavy traffic. Also, many road accidents take place at night as there is no traffic and road will be empty so people will tend to over speed. During peak hours of traffic i.e., when it is time for schools or offices or when they leave, there will be heavy traffic which could lead to minor accidents has been considered as an important variable for the analysis.

The graph compares the occurrence of road accident with regard to time of the day. The data also reveals that the majority of the accidents are taking place in the urban areas when compared to rural areas. Here, the graph (**Graph: 6&7**) shows that most of the accidents are taking place in the day time when compared to night.

While comparing the two graphs the majority of the accidents that took place in the time between 9-12am this may be due to the rush hour of school and office time in morning and 3-6pm in the evening. 6-9pm is also showing an increase of accident cases. The least number of road accidents have occurred during the time span of 12-3am 3-6am.

On the basis of gender and age wise profile

The bar diagram (**Graph: 8&9**) shows the age and sex of people involved in the accidents. As male are most commonly into driving vehicles, they are considered to be more with the accidents.

Age profile of fatal road accident victims of 2018 remains largely same with that of 2018. Road accident victim largely constitute young people in the productive age groups underscoring major implication on economic cost of road accidents, apart from their emotional and psychological impact. Young adults in the age group of 18-45 years accounted for the high share. Around 26.92% of accidents are by the age group of 45-60 years.

It reveals that majority of road accidents were caused by person between the age group of 45-60 years and 18-25 years. The main cause of it is drivers fault such as rash and negligent driving. The accused aged between below 18 years and above 60 years are least involved in road accidents.

Preventive measures to reduce road accidents

Death is the ultimate truth of life. Injuries and fatalities are killing around 1.2 million people every year and injuring 50 million people worldwide. These victims occupy 30-70% of orthopaedic beds in developing country's hospitals. The financial costs to the communities for Road Traffic Accidents (RTA) are greater than required for the treatment of any other major diseases. These are the most common cause of death below the age 50 years in developed countries. With contribution of present trends, road traffic injuries are predicted to be the third leading contributor to the global burden of disease, just behind clinical depression and heart disease by 2020.

Road traffic accidents are the number one killer in India taking away precious lives. The role of road traffic injuries in India is significant and is clearly responsible for loss of life, disability and has an undefined negative impact on economic and social resources. Efforts are needed to better define the specific characteristics of the problem in a uniformly manner so that corrective measures could be tested and implemented accordingly. As road deaths and injuries are preventable. A wide range of effective road safety interventions exist and a scientific system approach to road safety is essential to

tackle the problem. This approach should address the traffic system as a whole and look into interactions between vehicles, road infrastructure to identify solution.

VEHICLES

1. Well maintained vehicles with good breaks, lighting, tyres etc... Will reduce accident.
2. Older vehicles and highly polluting vehicles should be phased out.
3. Vehicles should be provided with seat belts and other necessary safety provisions (like air bags).

CONDITIONS OF ROADS

1. Roads should be well maintained with frequent relaying of road surfaces and markings of road safety signs.
2. Provide proper footpaths for pedestrian crossings at intersections.
3. Provide separate lanes for slow moving and fast moving vehicles.
4. Road and junctions should be wide and well lit so that visibility is good.

HUMAN FACTOR

1. Drivers can significantly contribute to reducing the accidents.
2. Issuing of the driving licence should be strictly based on the minimum proficiency acquired by the learners from designated driving schools.
3. Minimum qualifications should be fixed for different categories of drivers.
4. Educate the drivers and travelling public about traffic rules.
5. Carry out periodic medical check-up especially vision and hearing for the drivers.
6. Training on the first aid should be compulsory along with health education and for the general public to prevent the accidents.
7. Indiscriminate honking to be avoided, except as a means of greeting or in dire emergencies.

LEGISLATION

1. Rules for compulsory wearing of helmets by two wheelers and seat belts by four wheelers must be implemented.
2. Enforce traffic rules by the concerned authorities strictly.
3. Removal of stray animals like cattle and removal of encroachments on footpath and road margins will enable smooth flow of traffic.

4. Preventing haphazard parking of vehicles on busy roads and intersections to ensure free flow of traffic.

MANAGEMENT OF ACCIDENT VICTIMS

1. The importance of the 'golden hour' in giving adequate treatment to the accident victim in saving the injured should be highlighted to both the health personals and the community.
2. Provisions or medical care/first aid care facilities on highways and busy roads.
3. Provision of ambulances and trained health personals in shifting and transporting the injured person to nearby hospitals for treatment.
4. Awareness creation among all sections of the society to treat with sympathy and without fear so that the morbidity and mortality can be reduced.

FIRST AID IN ROAD ACCIDENTS

Many deaths and impact of injuries can be prevented with first aid if causalities are treated immediately.

The basic aims of first aid are:

1. To save life.
2. To protect the casualty from getting more harm.
3. To reduce pain and priorities of casualty treatment.

To sum up, the road traffic injury prevention can be achieved by

1. Avoiding over speeding and following speed limits.
2. Avoiding drunken driving.
3. Use of helmets by two wheeler drivers.
4. Use of seat belts and child restraints in cars.
5. Improving visibility, appropriate headlights and road lightings.
6. Obeying traffic rules.

It should take a ''zero tolerance'' policy towards the most common transgressions – dangerous and reckless driving; disregard for traffic rules; jumping red lights; driving under the influence of liquor, failing to use seatbelts; and driving without a helmet – to bring about a visible change.

But strictly implementation of traffic rules and stringent punishments alone will not solve the persisting crisis. Change in the mind set of riders and drivers and road users realizing their responsibilities alone will bring about a change.

Most countries have a multi-disciplinary approach to traffic planning and road design, it is done by psychologists, engineers, doctors, sociologists, vehicle experts etc... In India, road traffic is still a civil engineering issue. Lessons can be learnt from the eminent guidelines and good practices for good behaviour on the roads practised in developed countries where safety, orderliness and discipline are ingrained in the citizens, come what may. Mere celebration of the annual road safety week during the first week of January does not serve any purpose. Drivers should learn to show consideration and respect to co vehicle drivers and pedestrians so that our roads become safer. But it looks a long way to go.

CHAPTER VII: REFERENCES

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