

**Study of Accidents on NH-140 and Its Preventive Measures**

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Abstract- Road accidents are treated as one of the main reasons for deaths globally. Nearly half a million people have been killed in road related accidents every year. Studies on road accidents have indicated that the rate of accidents in developing countries high compare to those in developed countries. The probability of accidents taking place is influenced by many factors viz., the basic structure of roads, vehicle characteristics, condition of pavements and weather condition; each of these factors contribute its own share in the occurrence of accidents important cause of accidents. The present study mainly deals with accident analysis on National Highway-140 (NH-140) and its preventive measures. NH-140 is a National Highway in the state of Andhra Pradesh in India and it starts at Puthalapattu and terminates at Tirupati road. It has a total length of 58.85 km. After preliminary survey of the highway four major accident zones namely, Kasipentla zone, Nendragunta zone, Kalroad Palli zone and Mungilipattu zone were selected for detailed study. Accident data for a period of six consecutive years were collected from the concerned police stations for analysis. Various studies carried out to know the actual causes of accidents. From this analysis suitable preventive measures were suggested.

Key words: Accident analysis, Accident zones, Accident causes, Accident prevention.

I. INTRODUCTION

Transportation is a non detachable piece of any general public. It displays a nearby connection to the style of life, the range and area of exercises and the products and ventures which will be accessible for utilization. Advances in transportation has rolled out conceivable improvements in the method for living and the route in which social orders are sorted out and thusly have an incredible impact in the improvement of human advancements. This section passes on a comprehension of the significance of transportation in the cutting edge society by introducing chose attributes of existing transportation frameworks, their utilization and connections to other human exercises.

Transportation is in charge of the improvement of civic establishments from extremely old circumstances by meeting travel prerequisite of individuals and transport necessity of products. Such development has changed the way individuals live and travel. In created and creating countries, a substantial division of individuals travel day by day for work, shopping and social reasons.

The negative impacts of transportation are more overwhelming than its valuable perspectives to the extent transportation is concerned. There are various classifications into which the ecological impacts have been sorted. They are clarified in the accompanying segments.

Life is a gracious blessing bestowed by God onto everyone. Just a few may feel that life is implied living well and not losing to disastrous, melancholy and unexpected damages. Live, one ought to be extremely watchful and fastidious in making one's life important and agreeable. However, the majority of the general population is confronting untimely and it is pitiful to take a gander at the rep strikingly and shockingly passing away in road accidents particularly the youth are losing their valuable lives in the middle because of careless driving and improper road setup. It is time we individually, and collectively and the central and state governments should take are and sincere steps to prevent mishaps on roads. sorts of mischance and occurrences being happened day by day on the roads, So ample opportunity has already past to make thinks about a considerable measure on the most proficient method to keep the street mishaps to spare the lives ,other than property harm as well.

1.1 About Accidents

An accident or mishap is an unforeseen, unplanned, unexpected and undesirable event, especially one resulting in damage or harm and even death too. When a person meets with an accident and afterwards goes through the mental trauma, the first thing that comes to his mind on recovering is that he is having a bad time and/or the planetary positions are not favorable to him

Road accidents are treated as one of the main reasons for untimely deaths globally. Nearly half a million people have been killed in road related accidents every year. Studies on road accidents have indicated that the rate of accidents in developing countries is high compare to those in developed countries.

1.2 Causes of Accidents

There are four factors which are responsible for these types of road car accidents which are-

i). Equipment Failure:-

The failure of some equipment inside the machine working of a car resulting into serious car accident is known as Accident due to Equipment Failure. These could be of various types such as failing of break, bursting of tire, tread separations or the problem could occur in steering/suspension.

ii). Roadway Design:-

The accidents which occur due to the irregular design of roads are known as accidents due to Roadway Design. It could occur through hazardous visibility which consists of merging lanes, livestock or pedestrian crossings, crests and troughs etc. The accident also occurs due to the irregular surface of the roads which causes imbalance of the vehicle and results into collision with another vehicle or infrastructure.

iii). Poor Roadway Maintenance:-

Poor roadway maintenance also contributes to some of the car accidents. There could be debris in the way of the road which could create problems for the traveler which is responsibility of local highway department, faded road sign and potholes could be another cause for the major road accident.

iv). Driver Behavior:-

The main and foremost cause is driver's behavior other than three causes discussed above which constitutes only 5% of the cause of the road accidents and 95% depends on this one. Various surveys has been done in which there is a study which comes out to be that only 5% driver's committed their own mistake in the accident and a major of 80 % believe that the other driver should have done something to stop the accident to occur.

1.3 Summaries of accidents

One serious road accident in the country occurring every minute and 16 die on Indian roads every hour.

1214 road crashes occur every day in India.

Two wheelers account for 25% of total road crash deaths.

20 children under the age of 14 die every day due to road crashes in the country.

377 people die every day, equivalent to a jumbo jet crashing every day.

II. LITERATURE REVIEW

Dhiraj Borole et al. (2017) studied on Road Accidents on National Highway No.6. Found that, there is an increasing trend in road accidents in Jalgaon over a few years. GIS used to locate the accident hotspots and also in analyzed the trend of road accidents in Jalgaon.

Athira Mohan and Dr. V.S. Landge (2017) identified the accident prone locations along Amravati - Nagpur road stretch from Asian highway 4. The pinnacle accident prone spots were selected as black spots based on Weighted Severity Index Method and some suggestions are made to improve the transportation system.

Rajat Sharma and O. P. Mittal (2016) carried detailed analysis on accident case studies for NH-1. Collected data for the years 2007 to 2011 from NHAI, Ambala and analyzed. Suggested various remedial measures and concluded that out of total 5% accidents are fatal, 30% involve serious injuries and 49% accidents results in no injury.

Dr.A.S.kanagalakshmi et al. (2016) studied on highway NH-5. They concluded road accidents on NH5 avoided by advanced marking and signaling systems and make the people to follow the road rules, giving speed limit to vehicles, giving a high road grip, giving correct elevations and curves, designing proper super elevation.

Naqvi, H. and Tiwari, G (2015) were done investigation on accidents on two-lane NH-8 stretch (from Beawar at km 64.000 to Gomti chouraha at km 162.000 in Rajasthan) using data from 2008-2012. They suggested various remedial measures to prevent accidents.

Saransh and S.S kazal (2015) studied on road NH-71A from Panipat to Rohtak. They concluded that 77.5 percent of road accidents in India are caused due to driver's error. Estimated that fatalities caused by truck is 59% followed by other (26%) and bike (7%) and jeep (5%) and bus (3%).

Kiran.R et ai. (2014) analyzed number of road accidents, persons killed and injured in the national highways and state highways using data from 2009-2012. The NH accounts for the highest number of accidents, persons killed and injured in the road accidents in Bangalore. Bangalore alone accounted for 1/6th of total accidents. One tenth of persons killed in accidents and one seventh of the highest number of accidents.

Vigneshkumar K and P.Vijay (2014) studied on Road Safety Improvement in India highlighting the lack of road safety awareness for the public, drivers and the basic concepts for improving the road safety management in India.

Kundan Meshram and H.S. Goliya (2013) investigated on NH-3 (Indore to Dhamnod) using data collected for the period of 2009 to September 2011. They concluded that the trend of accidents occurring in urban portion (Indore) is more than 35 % to rate of total accidents in each year due to high speeds and more vehicular traffic and More number of accident observed in 6 p.m. to 8 p.m. duration because in that time more buses are travels between villages and city.

Shaik Salauddin, Reshma. E. K (2013) identified Black Spots on National Highway 209 Kanakpura Road Bangalore for a Stretch of 15km based on the data collected from the Police department. a minimum of 30 fatal accidents do happen at the black spots with in the road stretch of 15 km. Traffic surveys, road inventory data collection, alignment surveys and local enquiries were carried out to identify the major causes of accidents.

III. METHODOLOGY AND MATERIALS USED

3.1 Study area

National Highway-140 (NH-140) in the state of Andhra Pradesh in India was chosen for the present data. It starts at Puthalapattu and terminates at Tirupati road. It has a total length of 58.85 km. For this study, four major accident zones were selected on NH-140 for data collection and analysis. The study area is shown in Fig. 1 and details of accident zones selected presented in Table 1.



Fig.1 Study Area (NH-140)

Table 1 Details of major accident zones selected for study

S.No	Zone	Nature of road	length	Distance from Tirupati
1	Nendragunta	curved	210 m	48 km
2	Kalroad Palli	curved	65 m	37 km
3	Kasipentla	curved	400 m	29 km
4	Mungilipattu	curved	344 m	26 km

3.2 Collection of accident data

The accident data were collected of the selected four major accident zones on highway from the respective police stations. The accident data collected for a period of six years from 2008 to 2013. The accident data like type of vehicle, type of collision, number of accidents, persons injured, persons died for all the zones. Summary of the data collected were given in Table 2 to 5.

Table 2 Details of accidents at Nendragunta zone

S.No.	Year	Total Number of Accidents	Persons Died	Persons Injured
1	2008	49	14	35
2	2009	62	10	52
3	2010	39	26	13
4	2011	54	19	35
5	2012	46	23	23
6	2013	42	30	12

Table 3 Details of accidents at Kalroad Palli zone

S.No.	Year	Total Number of Accidents	Persons Died	Persons Injured
1	2008	62	28	34
2	2009	54	14	40
3	2010	39	21	18
4	2011	56	19	37
5	2012	42	24	18
6	2013	54	30	24

Table 4 Details of accidents at Kasipentla zone

S.No.	Year	Total Number of Accidents	Persons Died	Persons Injured
1	2008	44	17	27
2	2009	58	16	42
3	2010	47	20	27
4	2011	68	19	49
5	2012	51	26	27
6	2013	50	23	27

Table 5 Details of accidents at Mungilipattu zone

S.No.	Year	Total Number of Accidents	Persons Died	Persons Injured
1	2008	39	14	25
2	2009	33	11	22
3	2010	48	21	27
4	2011	34	13	21
5	2012	49	23	26
6	2013	42	27	15

3.3 Processing data

The collected data processed based on Time of occurrence, Exact area of occurrence, Type of accident. Type of injury, Type of vehicle involved etc.

IV. ANALYSIS AND RESULTS

Based on data analysis at all four zones and sight investigation various reasons for occurring of accidents found. All four zones causes of accidents are same since road stretch at zones are curved in nature. Based on analysis the following remedial measures to evade accidents at the zones were recommended.

1. Widening of the road to be done.
2. Curve improvement has to be done i.e. widening to smoothen the sharp curves
3. Proper super elevation has to be provided.
4. Jungle and bushes inside of the curve to be removed.
5. Footpath on both the sides of the road should be provided.
6. Proper road signs and signals are to be provided.
7. Road divider should be provided along the stretch.
8. Proper lighting should be provided during the night time.
9. Overloading of transport/ passenger vehicles are to be controlled.
10. Regular awareness camps among public about road safety and control.

V. CONCLUSIONS

Most of the accidents were took place in the four zones of Kasipentla zone, Nendragunta zone, Kalroad Palli zone and Mungilipattu of NH-140. Most of accidents are head-on collisions. More number of accidents observed in evening times it may be due to heavy traffic in that time. It is also observed that the curves are narrow curves and sight distance is so small hence drivers may not view the opposite vehicles. Jungles and bushes inside of the curves reducing the sight distance. There is a lack of proper lighting in the night time. Considering all the remedial measures we can evade accidents on the zones considered for the study.

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