ABSTRACT

Road accidents are one of the most important problems being faced by developing countries. Road traffic accidents involve high human suffering and socio economic costs in terms of premature deaths, injuries, loss of productivity. The rapid population growth, increasing economic activities and improvement in socio economic status of the people have resulted in the tremendous growth of motor vehicles. The extravagant increase in the number of motor vehicles and lower rate of improvements on road facilities is one of the primary factors responsible for road accidents in many road stretches, towns and cities in India. In order to reduce the increasing number of accidents and fatality rates, it becomes essential to analyse the accidents.

This work deals with the study of accident data in Salem city which is a Municipal Corporation comprising of about 100 sq. kilometre area. It also presents a macro level identification of accident spots at different places of NH 47 comprising the stretch from Salem to Coimbatore.

The main objectives are to carryout analysis of the accident data, to identify the factors that contributing to the accidents, to identify the major accident spots in Salem city and in NH47 Salem-Coimbatore study stretch and to suggest suitable remedial measures for overcoming the deficiencies that lead to such accidents. Multiple linear regression model also has been developed to predict the accidents.

The accident details in Salem city have been collected for the four years (from 2008 to 2011), from the traffic investigation wing of Salem. From the accident details collected, 16 major accident prone locations with higher rate of occurrence of accident are identified within Salem city.
Accident data have also been collected for the past five years (from 2010-2014) for the study stretch of NH 47 (Salem-Coimbatore) from the traffic investigation wing of Salem and also from the Police Stations of Erode, Tiruppur and Coimbatore districts. The road accident data for the five years from 2010 to 2014 was collected including location, time, type, number of vehicles and other road users involved etc. The road inventory data such as number of intersections, access roads and number of curves were collected. Classified traffic volume count survey was carried out at Vaikundam and Vijayamangalam, also the spot speed study was conducted for all the type of vehicles along the study stretch.

The collected accident data from Salem city have been analysed based on different types of accidents. It is found that about 55% of total accidents occurred in Salem city are minor accidents. It is also analysed based on different categories of roads, number of persons and other road users involved in accidents, spectrum of vehicles involved in accidents, day wise distribution of accidents.

From the statistics it is identified that most of the accidents have occurred in State Highways and only about 5% of total accidents have occurred in other roads. Even though most of the people involved are slightly injured, involved persons killed in accidents on an average are 16% and those of severely injured are 21%. Two wheelers are primarily involved in accidents which hold about 29%, whereas buses hold about 19% of total accidents. The data has been analysed based on number of accidental deaths by different age group of people. It is identified that there is a mixed trend over the period among the age groups of 15-29, 30-44 and 45-59 suffering from accidental death. There is also a shifting trend among the age group of 15-29 to 30-44 who are suffering from accidental injury.
The accident data collected for NH 47, Salem-Coimbatore stretch of 155km have also been analysed based on various criteria. The phase of the day during when more number of accidents registered was from 04.00 PM to 12.00 AM. Accidents occurred during night accounts for about 50% of total accidents. Maximum numbers of accidents are caused by the age group of 30 to 40 followed by the age group of 18 to 30. Most of the type of accidents occurred in the study stretch is hit to side which accounts for about 32% of the total accidents.

The linear regression model was developed selecting Average Daily Traffic (ADT), percentage of heavy vehicles, vehicle speed in kmph, segment length, number of intersections, number of access roads and number of curves as the independent variables.

The developed multiple linear regression model indicates that out of the 6 explanatory variables, two variables namely, Percentage of heavy vehicles and Vehicle speed (kmph) have more impact with number of accidents, the variable Segment length has got no effect and the three variables namely, ADT, No. of intersections and Number of horizontal curves have less impact with number of accidents.

The accident reduction measures suggested for NH 47 Salem-Coimbatore study stretch in order to minimize accidental deaths and injury are discussed. The major accident spots in Salem city and in NH 47 Salem-Coimbatore study stretch have been identified and suitable remedial measures were suggested to reduce accidents. The multiple linear regression model developed by this study would be definitely useful for highway/transportation engineers to predict the accidents and for further planning to control the accidents in future. The sensitivity analysis carried out will be useful to choose the suitable planning strategy in order to control the accidents.