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A STUDY ON RISK FACTORS OF ROAD TRAFFIC ACCIDENTS IN KOTTAYAM DISTRICT, KERALA STATE

¹Shibu Puthenparambil and ²Krishnapriya, K.

¹Lecturer, Dept. of Public Health, SME, Kottayam

²MPH scholar, SME, Kottayam

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ABSTRACT

Background: The process of rapid and unplanned urbanization has resulted in an unwanted revolution in the growth of motorvehicle worldwide. The alarming increase in morbidity and mortality showing to Road Traffic Accident over the past fewdecades is a matter of great concern in Kerala. Day by day road traffic accidents are increasing in Kottayam district. The study will add knowledge on understanding what risk factors contribute to the occurrence of road traffic accidents and related injuries in Kottayam district.

Materials and Method: The study were conducted among the victims of road traffic accidents occurred in Kottayam district during the study period of 15 days, who are in both IP and OP of orthopaedic and surgery department of Private super speciality hospital in Kottayam District. From the population 48 were taken as sample. Census method were adopted for selecting sample.

Result: Majority of road accident victims are under the age group 20-30. Males are more subjected to road traffic accidents and this may be because males are using vehicles more than that of females. In the case of accidents most of the accidents are occurred in state highways and at the peak time of traffic(4pm-8pm). From the study it is learnt that most of the accidents are occurred between two wheelers and cars. Over speed is the major cause of accidents. And disregard of traffic rules, drunken driving, distracted driving, poorly maintained vehicles, poor conditions of road are other reasons. Majority of accident victims are drivers.

Conclusion: The road safety authorities should have to focus on the root cause of occurrence of road traffic accidents and take corresponding steps to solve them.

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INTRODUCTION

Road Traffic Accidents (RTA) are a major cause of death and injuries worldwide, but while they are declining in many parts of the developed world, fatalities are still on the rise in many developing countries including India. In our state more than half of the road accident victims are in the age group of 20 to 55, the key wage earning and child raising age group. The loss of the main bread winner and head of household due to death or disability can be catastrophic, leading to lower living standards and poverty. Road traffic accidents are the most frequent causes of injury-related deaths worldwide. According to the World Report on Road Traffic Injury Prevention, traffic

accidents account for about 3000 daily fatalities worldwide. Statistical projections show that during the period between 2000 and 2020, fatalities related to traffic accidents will decrease with about 30% in high income countries. The opposite pattern is expected in developing countries, where traffic accidents are expected to increase at a fast rate in the years to come. World Health Organization (WHO) strategy of 2001 reports that currently road traffic injuries are the leading cause of deaths and injuries, the 10th leading cause of all deaths and 9th leading contributor to the burden of disease worldwide based on disability adjusted life years. The numbers of deaths resulting from road traffic crashes have been projected to reach 8.4 million in the year 2020. Worldwide reports reveal the problem of accidents being equally serious. According to research carried out by Pierce and Maunder (1998), under the auspices of Road Research Laboratory in

*Corresponding author: Shibu Puthenparambil
Lecturer, Dept. of Public Health, SME, Kottayam

UK, they found out that, road accidents worldwide are estimated to a total of 20,000,000 victims for a time period which 70% of the accidents occurred in developing countries. The number of accidents per registered vehicles was 10% to 20% higher in developing countries than in the developed world. The more general reasons advanced by these researchers for an increase of accidents in developing countries were as follows, 1. Rapidly urbanisation process in these countries, 2. High growth rates of traffic and 3. Poor road conditions, 4. Reckless driving, 5. Non-adherence to the traffic regulations by the motorist and the traffic officers. The majority of people in developing countries were dependant on public transport for their daily movement. This study will add knowledge on understanding what risk factors contribute to the occurrence of road traffic accidents and related injuries in Kottayam district. The data obtained in this study, can be used by the road safety authorities for planning and evaluating road safety measures. If recommendations given are considered that will going to benefit the public at large on prevention of road accidents. The data can also be utilised as baseline data in future related researches.

Review of Literature

Every year the lives of approximately 1.25 million people are cut short as a result of a road traffic crash. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury. Road traffic injuries cause considerable economic losses to victims, their families, and to nations as a whole. These losses arise from the cost of treatment (including rehabilitation and incident investigation) as well as reduced/lost productivity (e.g. in wages) for those killed or disabled by their injuries, and for family members who need to take time off work (or school) to care for the injured. There are few global estimates of the costs of injury, but research carried out in 2010 suggests that road traffic crashes cost countries approximately 3% of their gross national product. This figure rises to 5% in some low- and middle-income countries. Road traffic injuries have been neglected from the global health agenda for many years, despite being predictable and largely preventable. Evidence from many countries shows that dramatic successes in preventing road traffic crashes can be achieved through concerted efforts that involve, but are not limited to, the health sector. Road traffic accidents (RTAs) are a global public health problem. Currently ranked ninth, RTAs are predicted to be the fifth leading cause of death in 2030. Every year, more than one million people die worldwide because of RTAs, more than 2500 deaths every day. 90 % of RTA related fatalities occur in low and middle income countries (WHO, 2004).

Recent years have witnessed rapid motorisation, urbanisation, industrialisation, migration and other changes consequent to globalisation and liberalising economic policies of successive governments in India. An accompanying effect of these changes is the increasing road crashes and deaths due to lack of safety policies and programmes. During 2007, nearly 1, 50,000 persons lost their lives and an estimated 5 million persons have been hospitalised across the country. Data from the recent Bangalore RTI / Injury surveillance programme indicate that 30 % of hospitalisations are due to Injuries, with a preponderance of RTIs. Majority of the killed and injured are young persons in their economic productive years and are pedestrians, two wheeler riders / pillions and bicyclists. Nearly 1/3rd of disabilities are due to RTIs and need care and services

for long periods of life. The social and economic costs are high, though unmeasured. It is estimated that RTIs alone account for economic losses of Rs.55, 000 crores in Indian region, equivalent to 3 % of GDP. The psychological suffering of individuals and families are hard to measure and are better realised with interaction of survivors.

Objectives

- To study the influencing factors of Road traffic accidents (over speed ,overtaking ,poor conditions of vehicle, distracted driving, poor condition of road, drunken driving, disregard of traffic rules etc..)
- To study of safety measures adopted by accident victims while driving just before accidents.
- To study time at which accidents occurred.

Table 1. Accident time

ACCIDENT TIME	NO OF ACCIDENTS
1AM-4AM	3(6.2%)
4AM-8AM	7(14.6%)
8AM-12PM	12(25%)
12PM-4PM	10(20.8%)
4PM-8PM	12(25%)
8PM-12AM	4(8.3%)
Total	48(100%)

The above table shows the time of road traffic accidents. In between 1am-4am only 6.2% accidents are occurred. 14.6% and 25% of accidents are occurred at the time from 4am-8am and 8pm-12am respectively. From the time 8am-12pm about 25% accidents are occurred. And from 12pm -4pm, 20.8% accidents are occurred. 25% of accidents are occurred at the time in between 4pm-8pm. From 8pm-12am, 8.3% accidents are occurred. Majorities of accidents are occurred at the time interval from 8pm-12am and from 4pm-8pm, that is about 25%.

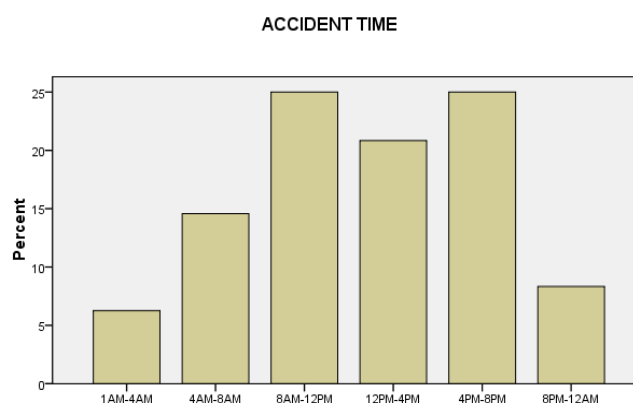


Table 2. Over Speed

Over speed	No of accidents
PRESENT	24(50%)
ABSENT	24(50%)
Total	48(100%)

The table given above shows the one of the risk factors of RTA, over speed. There are 50% of the accidents are occurred because of over speed. Rest of the accidents are occurred due to many other reasons. 50% of accidents are occurred because of over speed.

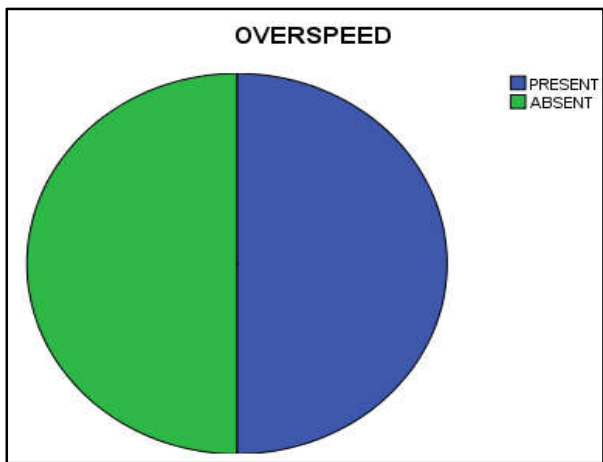


Table 3. Disregard of traffic rules

Disregard of traffic rules	No of accidents
Present	13(27.1%)
Absent	35(72.9%)
Total	48(100%)

The table given above shows the one of the risk factors of RTA, disregard of traffic rules. There are 27.1% of the accidents are occurred because of disregard of traffic rules. Rest of the accidents that is about 72.9% are occurred due to many other reasons.



Table 4. Drunken Driving

Drunken driving	No of accidents
Present	4(8.3%)
Absent	44(91.7%)
Total	48(100%)



The table given above shows the one of the risk factors of RTA, drunken driving. There are 8.3% of the accidents are occurred because of drunken driving. Rest of the accidents that is about 91.7% are occurred due to many other reasons.

Table 5. Distracted driving

Distracted driving	No of accidents
Present	7(14.6%)
Absent	41(85.4%)
Total	48(100%)

The table given above shows the one of the risk factors of RTA, distracted driving. There are 14.6% of the accidents are occurred because of distracted driving. Rest of the accidents that is about 85.4% are occurred due to many other reasons.

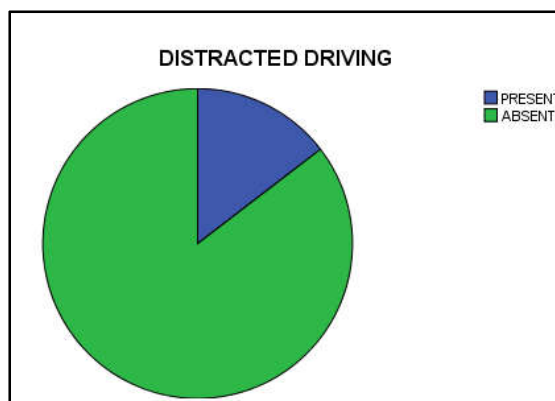


Table 6. Poorly maintained vehicle

Poorly maintained vehicle	No of accidents
Present	3(6.2%)
Absent	45(93.8%)
Total	48(100%)

The table given above shows the one of the risk factors of RTA, poorly maintained vehicles. There are 6.2% of the accidents are occurred because of poorly maintained vehicles. Rest of the accidents that is about 93.8% are occurred due to many other reasons.

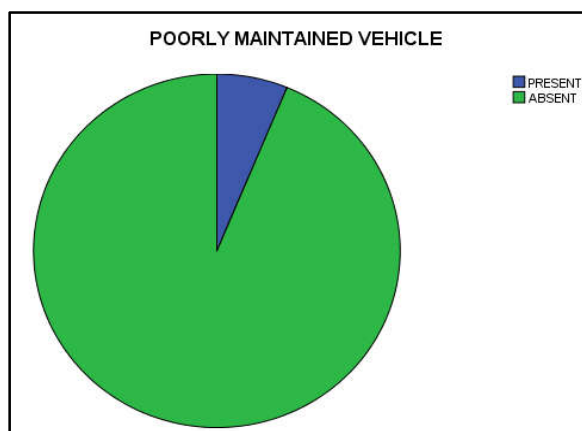


Table 7. Overloaded

Overloaded	No of accidents
Present	4(8.3%)
Absent	44(91.7%)
Total	48(100%)

The table given above shows the one of the risk factors of RTA, overloaded vehicles. There are 8.3% of the accidents are occurred because of over loaded vehicles. Rest of the accidents that is about 91.7% are occurred due to many other reasons.

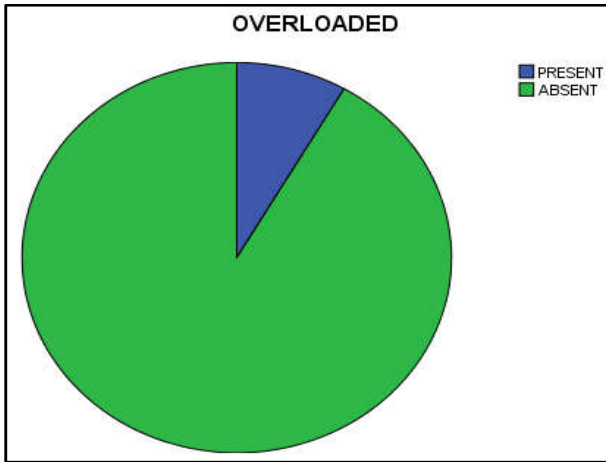


Table 7. Poor condition of road

Poor condition of road	No of accidents
Present	6(12.5%)
Absent	42(87.5%)
Total	48(100%)

The table given above shows the one of the risk factors of RTA, poor conditions of road. There are 12.5% of the accidents are occurred because of poor conditions of road. Rest of the accidents that is about 87.5% are occurred due to many other reasons.

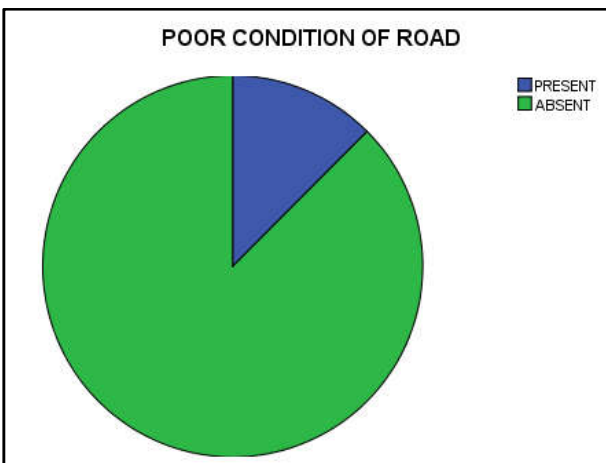


Table 8. Causes of accident

Causes of accident	No of accidents
Over speed	11(22.9%)
Over speed and disregard of traffic rules	5.0(10.4)
Overtaking and over speed	8(16.7%)
Distracted driving	7(14.6%)
Poorly maintained vehicle	3(6.2%)
Drunken driving , overloaded and disregard traffic rules	4(8.3%)
Disregard traffic rules	4(8.3%)
Poor condition of road	6(12.5%)
Total	48(100%)

The table given above dealing with different causes of road traffic accidents. There are 22.9% of the accidents are occurred because of over speed. 10.4% are occurred because of over

speed and disregard of traffic rules and 16.7%are occurred due to over speed and overtaking. 14.6% of accidents are occurred due to distracted driving. Poorly maintained vehicles are also responsible for road traffic accident that is about 6.2%. 8.3% of accidents are occurred due to drunken driving , overloaded and disregard traffic rules. 8.3% by disregard of traffic rules and 12.5% by poor condition of road. Majorities of road traffic accidents are occurred due to over speed that is 22.9%.

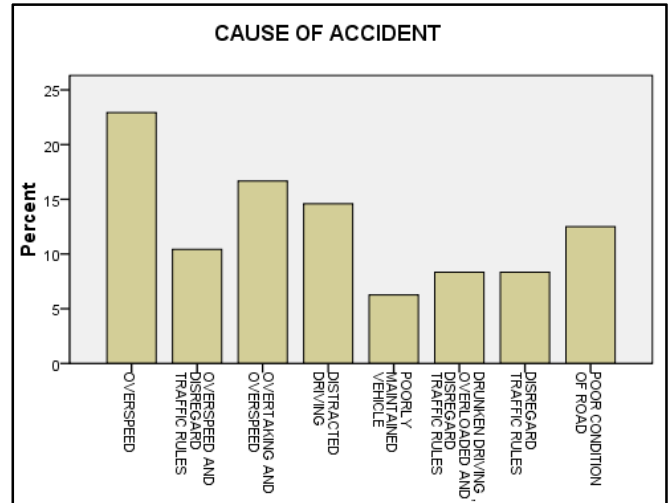
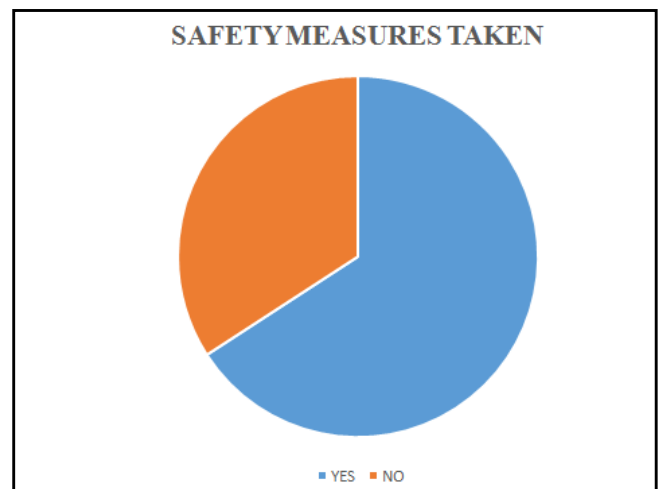


Table 9. Safety measures taken

Safety measures taken	No of victims
Yes	27(56.25%)
No	21(43.75%)
Total	48(100%)

safety measures like helmet and seat belt are mentioned. Pedestrians are excluded

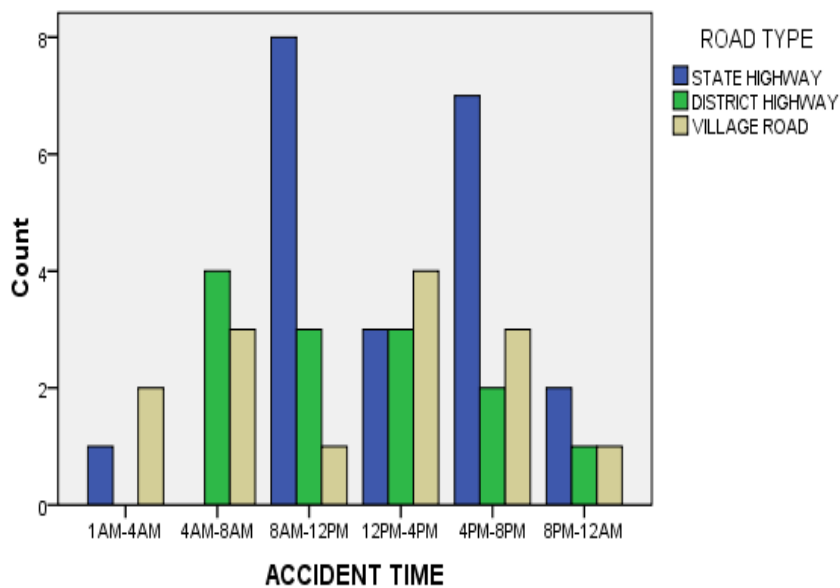
The above table shows safety measures taken by the victims while driving just before accidents. 65.85% of victims were used safety measures. 34.15% were not used safety measures. Majorities of victims were used safety measures that are about 65.85%.



The table above shows that relationship between road type and accident time. By this it is clear that about 6.2% are of accidents occurred at the time interval 1am-4am. Among these accidents 33.33% are occurred in state highways and 66.67% are occurred in village road. About 14.6% are occurred at the time interval 4am-8am, among this 57.14% are occurred in

Table 10. Accident time and road type

		Road type			Total
		State highway	District highway	Village road	
Accident time	1am-4am	1(33.33%) (4.76%)	0 (0%)	2(66.66%) (14.28%)	3 (6.2%)
	4am-8am	0 (0%)	4(57.14%) (30%)	3(42.86%) (21.43%)	7 (14.6%)
	8am-12pm	8(66.66%) (38.09%)	3(25%) (23.08%)	1(8.33%) (7.14%)	12 (25.0%)
	12pm-4pm	3(30%) (14.28%)	3(30%) (23.08%)	4(40%) (28.57%)	10 (20.8%)
	4pm-8pm	7(58.33%) (33.33%)	2(16.67%) (15.38%)	3(25%) (12%)	12 (25%)
	8pm-12am	2(50%) (9.52%)	1(25%) (7.70%)	1(25%) (7.14%)	4 (8.3%)
Total		21(43.8%)	13(27.1%)	14(29.2%)	48

Bar Chart

district highways and 42.86% are occurred in village road. 25% are occurred at the time interval 8am-12am . Among this 66.66% are occurred in state highways, 25% are occurred in district highways and 8.33% occurred in village highways. 20.8% are occurred at the time interval 12pm-4pm, among this 30% are occurred in state highways, 30% are occurred in district highways and 40% occurred in village highways. 25% are occurred at the time interval 4pm-8pm, among this 58.33% are occurred in state highways, 16.67% are occurred in district highways and 25% occurred in village highways. 8.3% are occurred at the time interval 8pm-12am, among this 50% are occurred in state highways, 25% are occurred in district highways and 25% occurred in village highways. In 43.8% of road accidents in state highways , 4.76% are occurred in time interval 1am-4am, 38.09% are occurred in time interval 8am-12pm, 14.28% are occurred in time interval 12am-4am, 33.33% are occurred in time interval 4pm-8pm, and 4.76% are occurred in time interval 8pm-12am. From this it is clear that there is a relation between road type and accident time.

DISCUSSION

In the case of accidents most of the accidents are occurred in state highways and at the peak time of traffic(8am-12-pm and 4pm-8pm). Over speed is the major cause of accidents. And disregard of traffic rules, drunken driving, distracted driving,

poorly maintained vehicles, poor conditions of road are other reasons. Lack of taking safety measures while travelling in vehicles is the major reason for increased severity of injuries occurring in road traffic accidents. In general, accidents reported due to over speed all are seemed to be associated with overtaking and drunken driving. Most of the accidents were occurred in state highways during the time from 8am to 12pm. In state highways maintenance of the roads are paving the way for road accidents.

Conclusion

The process of rapid and unplanned urbanization has resulted in an unwanted revolution in the growth of motor vehicle worldwide. The alarming increase in morbidity and mortality showing to Road Traffic Accident over the past few decades is a matter of great concern globally. Currently motor vehicle accidents rank ninth in order of disease burden and are projected to be ranked third in the year 2020. In India, more than 70,000 people get killed due to Road Traffic Accident every year, and this needs to be recognized as an important public *health* issue. The loss of the main bread winner and head of household due to death or disability can be catastrophic, leading to lower living standards and poverty. Road Safety Activities such as accident site improvement scheme, road safety audit, junction improvements, safety

assessment of maintenance roads, demonstration signs and markings, improvement of hazardous locations, road safety awareness programme and road safety action plans are to be conducted to reduce road traffic accidents.

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