



ISSN: 2349-9141

### Full Length Research Paper

## A CROSS SECTIONAL STUDY ON THE KNOWLEDGE, AWARENESS & PRACTICE OF SAFETY RULES AMONG THE YOUNG COLLEGE STUDENTS IN TRICHY CITY, TAMILNADU

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Received 27<sup>th</sup> August 2015; Published 30<sup>th</sup> September 2015

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#### Abstract

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**Introduction:** In India the number of accidents and the number of fatalities due to road traffic accidents is increasing day by day. But the general population is reluctant to follow certain safety measures that have to be followed during driving. The younger generation in particular is not willing to wear the helmets or seat belts while riding in two wheelers or four wheelers.

**Aim and Objectives:** To study the knowledge, attitude and practice of road safety rules among the college students in Trichy district, Tamilnadu, India. The objectives are to assess the knowledge and awareness regarding the current safety rules and regulations with respect to driving among the college students of Trichy city and to understand the extent of adherence to those safety rules and regulations among the college students of Trichy city.

**Materials and Methods:** Study design-Cross sectional study.

**Study site:** Medical college and Engineering college students in Trichy.

**Study Tool:** Standardized semi structured Pre tested questionnaire.

**Duration of study:** 2 months.

**Sample size:** 511. All the collected data were then entered in SPSS 17 and analyzed using the same software. Considering that the data were of categorical nature, descriptive statistics was used to describe the data.

**Results and Conclusion:** The knowledge regarding the safety rules and practice of the safety rules was found to be very inadequate among the study participants. Further research is needed to validate these findings. Overall the findings of this study will be useful for planning accident prevention programs in the future.

Keywords:

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**To cite this paper:** Karthikeyan Kulothungan, 2015. "A cross sectional study on the knowledge, awareness & practice of safety rules among the young college students in Trichy City, Tamilnadu", *International Journal of Information Research and Review*. Vol. 2, Issue, 09, pp.1162-1169, September, 2015.

### INTRODUCTION

Road safety is a major public health issue in India. Every day thousands of people are killed and injured on our roads. Road traffic injuries are a growing public health issue, disproportionately affecting vulnerable groups of road users, including the poor. More than half the people killed in traffic crashes are young adults aged between 15 and 44 years – often the breadwinners in a family (WHO, 2012). But road traffic crashes and injuries are preventable by enforcement of legislation to control speed and alcohol consumption, mandating the use of seatbelts and crash helmets, and the safer design and use of roads and vehicles (Lardelli-Claret *et al.*, 2009; Cummings *et al.*, 2002; Cummings *et al.*, 2006; Thompson *et al.*, 1996; Petridou *et al.*, 1998; Thompson *et al.*, 2000; Liu *et al.*, 2004). Every year 1.5 lakh people die due to road traffic accidents in India. Tamilnadu is a state wherein the incidence of road traffic accidents is gradually rising every year. On an average every month approximately 8500 people

die due to road traffic accidents (Riding reckless, 2012). The economic consequences of motor vehicle crashes have been estimated between 1% and 3% of the respective GNP of the world countries, reaching a total over \$500 billion. Reducing road casualties and fatalities will reduce suffering; unlock growth and free resources for more productive use (WHO, 2012).

The number of vehicle population is increasing day by day in Tamilnadu. A report by Institute of Financial Management Research says that on an average 1,780 vehicles are being added to Chennai roads every day without a corresponding increase in motorable road space. The increase in number of vehicles adds further pressure on the traffic and is seen as an increasing cause of accidents and mental trauma. Further a report in Deccan Chronicle (Riding reckless, 2012) newspaper says that out of 446 two-wheeler riders who lost their lives in accidents in the Chennai city during the first eight months of 2012, 436 of them — accounting for 97.75 per cent — were

not wearing helmets (Riding reckless, 2012; De Andrade *et al.*, 2003; Derrick, 2009; Motor vehicle safety, 1994; O’Keeffe *et al.*, 2007; Liu *et al.*, 2008). The number of accidents and the number of fatalities due to road traffic accidents is increasing day by day. The common reasons for the accidents are very well known. But the general population is reluctant to follow certain safety measures that have to be followed during driving (Petridou *et al.*, 1998; Derrick, 2009; Motor vehicle safety, 1994; O’Keeffe *et al.*, 2007; Ker *et al.*, 2003).

The younger generation in particular is not willing to wear the helmets or seat belts while riding in two wheelers or four wheelers. In our country the legal age for driving is 16 years. Young people can get their driving licence only after the age of 16 years and after clearing the rigorous driving tests. However it is questionable that how far their training is effective in incorporating the knowledge about driving rules and safety measures that has to be followed. In general in the younger age group it is the college students who drive more number of two wheeler and four wheeler vehicles. Hence there is an urgent need to study about the knowledge, awareness and practice of safety rules in driving among the college students of Trichy. With this background the present study was planned. In this study a pre-tested questionnaire was prepared with the help of experts and consultants in this field. With the help of this questionnaire college students were interviewed regarding their knowledge, attitude and practice towards driving and practice of safety rules.

**Aim**

To study the knowledge, attitude and practice of road safety rules among the college students in Trichy district, Tamilnadu.

**Objectives**

- To assess the knowledge and awareness regarding the current safety rules and regulations with respect to driving among the college students of Trichy city.
- To understand the extent of adherence to those safety rules and regulations among the college students of Trichy city.

**MATERIAL AND METHODS**

**Study design:** Cross sectional study

**Study site:** Medical College (Chennai medical college hospital & research centre) and Engineering college (TRP engineering college) students in Trichy.

**Study Tool:** Standardized semi structured Pre tested questionnaire

**Duration of study:** 2 months

**Sample size:** 511

**Inclusion criteria:** College students who are willing to participate

**Exclusion criteria:** College students who do not want to participate

**Choice of subject:** A total of 511 students were chosen non-randomly using convenience sampling method.

**Informed consent procedure:** Written informed consent from each participant was obtained prior to filling up of the questionnaire. The study was cross sectional and does not involve patient intervention methods; hence, ethical issue does not arise.

**Methodology and procedure employed**

A questionnaire was prepared by consulting with experts in the field of road traffic accidents, academicians such as professor of community medicine, Forensic medicine and General medicine. This questionnaire was then pretested by a pilot study. With the help of this standardized pretested questionnaire data was collected. After obtaining prior permission from the head of the institution, a suitable time for data collection was fixed. Usually this time will be a free period for the students. After obtaining written consent from the student the data was collected by self-administered pre tested questionnaire. The data was entered in SPSS 17 after every two days of data collection. All the collected data were then entered in SPSS 17 and analyzed using the same software. Considering that the data were of categorical nature, descriptive statistics was used to describe the data.

**RESULTS**

The results are subdivided into 4 subparts

- Demographic details
- Driving profile of the respondents
- Vehicle usage profile of the respondents
- Practice of safety rules

**Demographic details**

Majority of the respondents belong to the age group of 17-18 years (97.1%) (Figure 1). Males (51.8%) and Females (48.92%) were almost equally distributed in the study group (Figure 2). Majority of the respondents belong to rural area (69.47%) and the remaining participants belong to urban area (24.07%) (Figure 3). In the study group 58.1% were studying BE and 39.7% of the participants were studying MBBS (Figure 4).

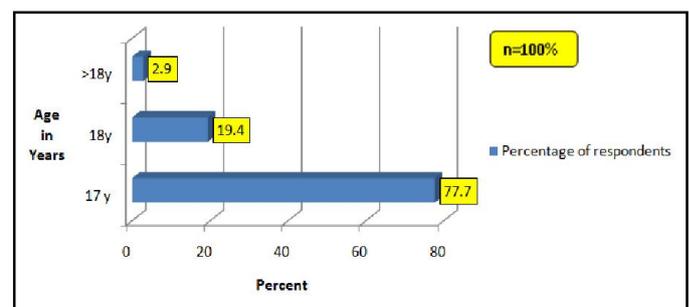


Figure 1. Age of the respondents in the study sample

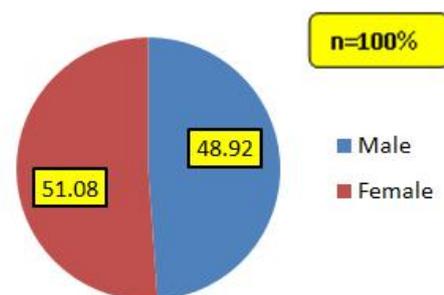


Figure 2. Gender wise percent distribution of respondents

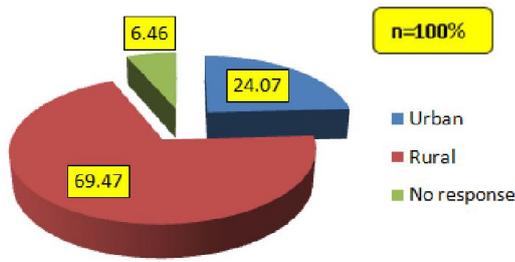


Figure 3. Distribution of participants according to their permanent address

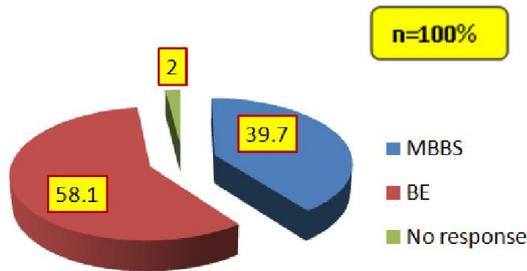


Figure 4. Distribution of participants according to their education

Driving Profile of the Respondents

Table 1. Percent distribution of participants according to their driving status

	Yes	No	No response
Driving any vehicle	78.7	17.4	3.9
Whether trained for driving	47.2	46.2	6.7
Possession of a driving licence	37	55.6	7.4

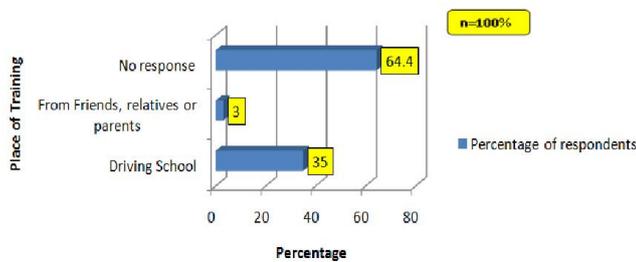


Figure 5. Distribution of participants according to their driving training status

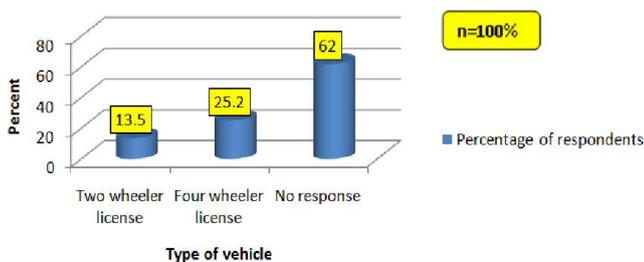


Figure 6. Distribution of participants according to the possession of driving licence

In the study group 78.7 % of the respondents told they drive some vehicle. Only 47.2% of the respondents told that they were trained for driving. One another finding was that only

37% of the study participants had a driving licence (Table 1). The analysis revealed that only 35% of the participants had training from a driving school (Figure 5). Further 25.2 % of the participants told they have a driving licence for four wheeler vehicles and 13.5% of the participants said that they have two wheeler driving licence (Figure 6).

Vehicle Usage Profile of the Participants

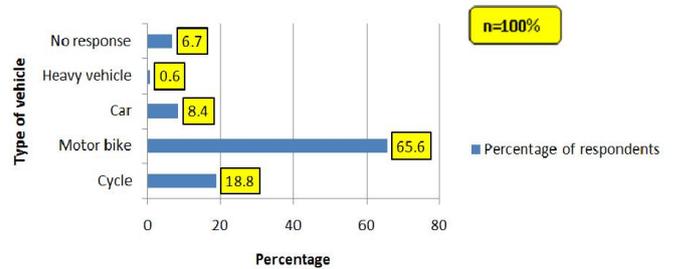


Figure7. Distribution according to the type of vehicle usually driven by the respondents

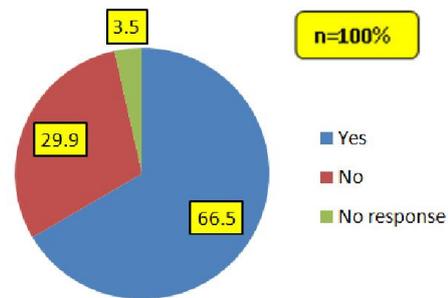


Figure 8. Percent distribution according to the possession of own vehicle

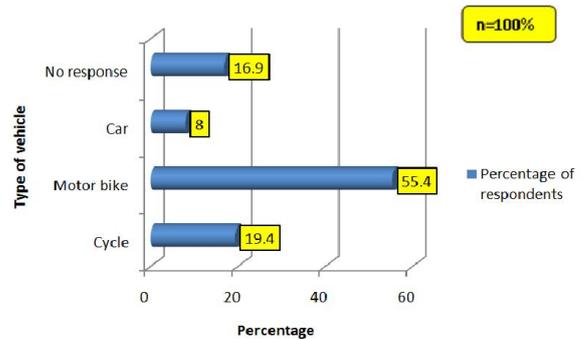


Figure 9. Distribution according to the type of vehicle owned by the respondents

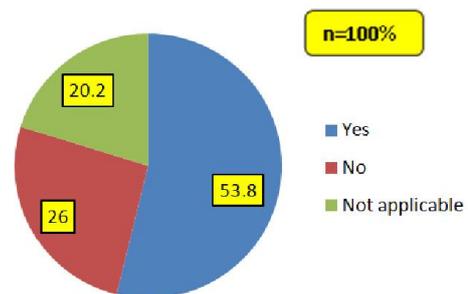


Figure 10. Distribution according to the status of insurance of the own vehicle

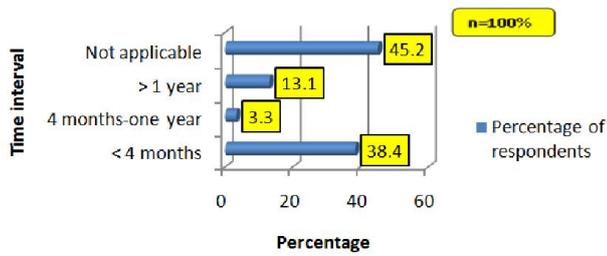


Figure 11. Distribution according to the status of service for the vehicle

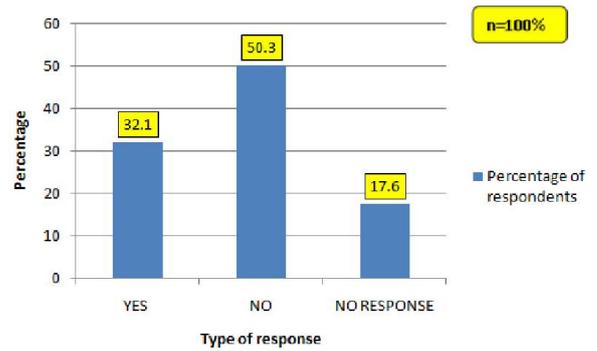


Figure 13. Distribution according to the first aid information given during training for driving

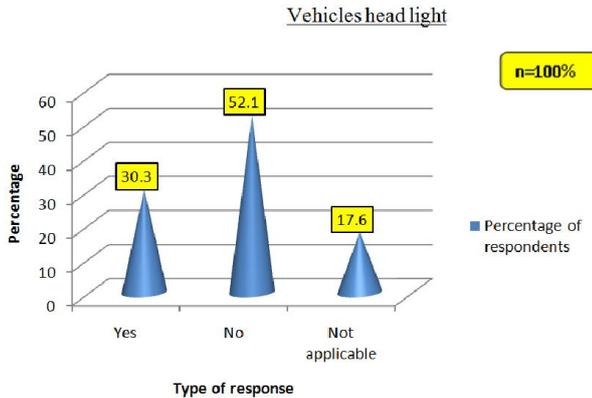


Figure 12. Distribution according to the status of fixation of bulls' eye sticker over the

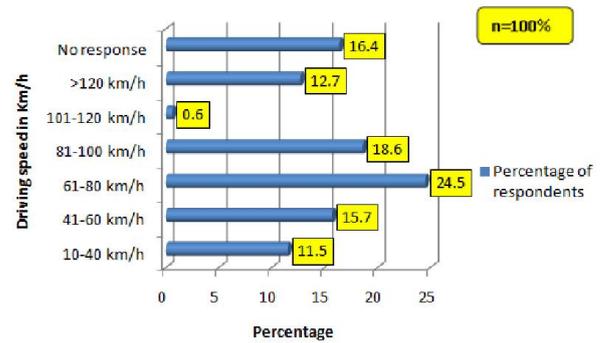


Figure 14. Distribution according to the maximum driving speed

Although the previous analysis revealed that the most common type of license possessed by the respondents was four wheeler licenses, the most common type of vehicle driven by the study participants was motor bike (65.6%). Coming at distant second was cycle which was driven by 18.8% of the respondents. Only 8.4% of the participants drive a car. The analysis showed that 66.5% of the respondents had a own vehicle. Among those participants who owned a vehicle 55.4% of the respondents had a bike, 19.4% had a cycle and 8% of the respondents owned a car (Figure 7,8,9). Only 53.8% of the respondents told that their vehicle was insured (Figure 10). Only 38.4% of the respondents told that they serviced their vehicle within the past 4 months. About 13.1% of the respondents told that it has been a year since they last serviced their vehicle (Figure 11). Only 30.3% of the respondents told that they have fixed the bulls eye sticker over their vehicles head light (Figure 12).

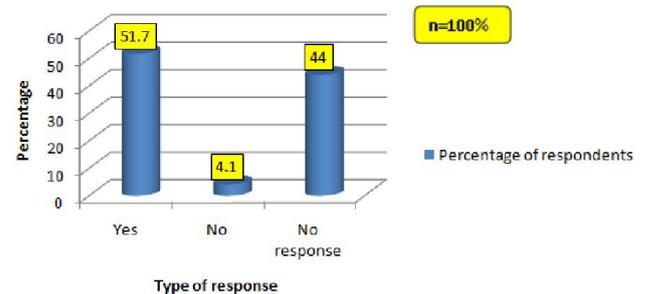


Figure 15: Distribution according to the status of fast driving under certain circumstances

Only 32.1% of the respondents told that they received information regarding first aid during their training for driving (Figure 13). Only 32.9 % of the respondents told that they always use dim and dip signal during night driving.

Practice of Safety Rules

Table 2. Tabulation of practice of safety rules

	Always	At times	Rarely	Never	No response
Usage of dim and dip signal in night	32.9	27	14.3	16.8	9
Slowing down the vehicle when yellow signal is on	48.3	22.3	11.7	9.6	8.0
Usage of indicator light before turning	65.9	14.5	5.5	8.6	5.3
Overtaking other vehicles in their right side	33.1	18.8	14.1	27.6	6.5
Overtaking other vehicles in curves and bends	3.1	10.4	20.5	58.1	7.8
Travelling as Tribles	3.7	17.8	26	43.2	9.2
Asking for lift from unknown persons	6.5	14.7	24.1	50.1	4.7

Table 3: Profile of mobile phone usage during driving

	Always	At times	Rarely	Never	No response
Talking in mobile phone while driving	0.8	7	20.2	67.1	4.9
Attending the mobile calls while driving	3.3	11.9	20.2	60.9	3.7
Hearing music in mobile phone while driving	6.8	12.7	15.3	59.1	6.1

About 41% told that they do not use it regularly while 16.8% told that they never use this signal during night driving. Only 48.3 % of the respondents told that they always slow down the vehicle when the yellow signal is on. About 34% told that they do not use it regularly while 9.6% told that they never follow this rule. Only 65.9 % of the respondents told that they always use indicator before turning. About 20% told that they do not use it regularly while 8.6% told that they never follow this rule. Only 33.1 % of the respondents told that they always overtake the vehicles in their right side.

About 32.9% told that they do not follow it regularly while 27.6% told that they never follow this rule. Only 58.1 % of the respondents told that they never overtake other vehicles in curves and bends. About 30.9% told that they do overtake but not always while 3.1% told that they always overtake other vehicles in curves and bends. Only 43.2 % of the respondents told that they never travel as tribles. About 43.8%. told that they do travel as tribles but not always while 3.7% told that they always travel like this. Only 50.1 % of the respondents told that they never ask for lift from unknown persons. About 38.8%. told that they do ask for lift from unknown persons but not always while 6.5 % told that they always ask for lift from unknown persons if needed (Table 2).

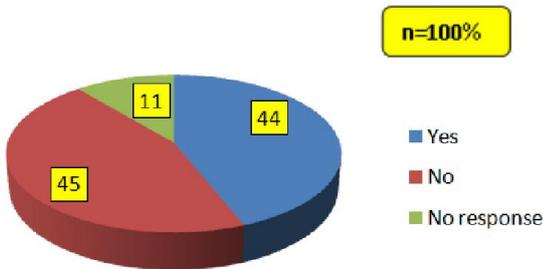


Figure 16. Percent distribution according to the status of having first aid kit in the vehicle

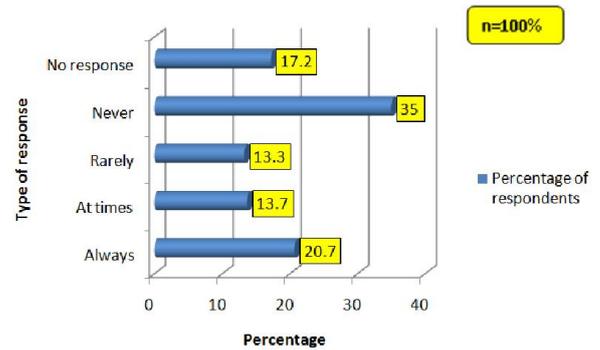


Figure 20. Percentage distribution of participant's usage of seat belt

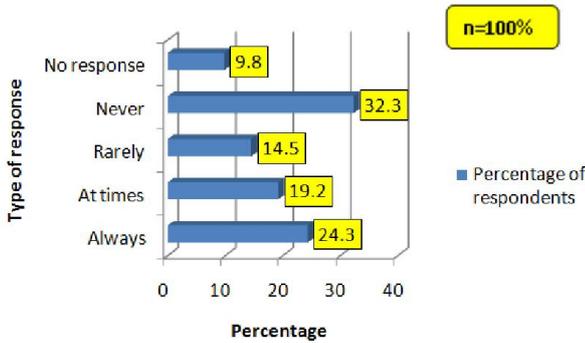


Figure 17. Percentage distribution of participant's usage of helmet

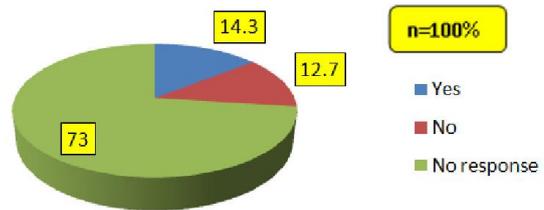


Figure 21. Percent distribution of participants who feel that use of seat belt is uncomfortable

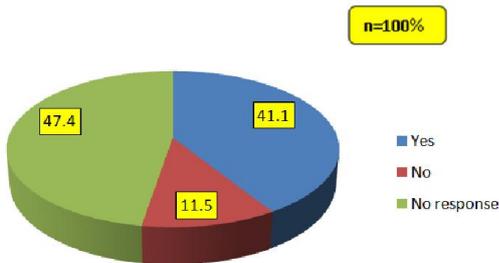


Figure 18. Percent distribution of participants who feel that use of helmet is uncomfortable

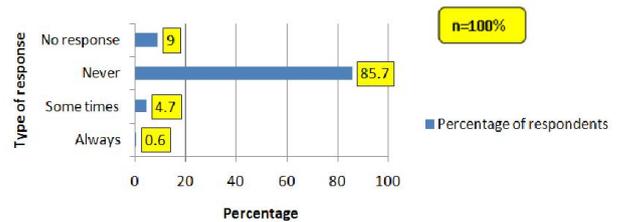


Figure 22. Distribution of participants who feel that minimum amount of alcohol consumption before driving is safe

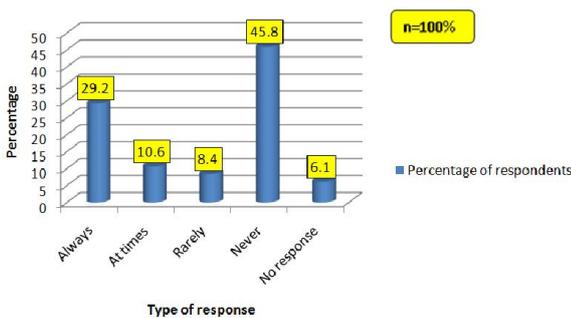


Figure 19. Distribution according to the usage of spectacles by the participants

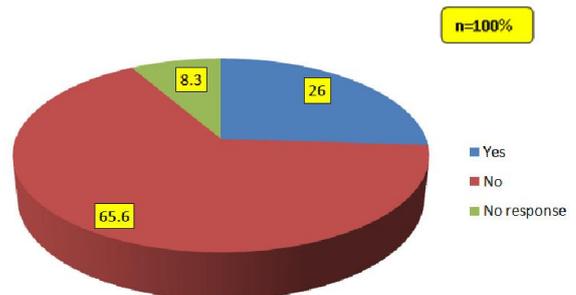
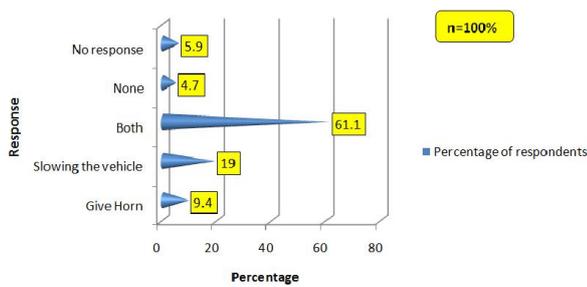


Figure 23: Percent distribution of participants having friends who consume alcohol before driving



**Figure 24. Distribution according to the participant’s response to pedestrian crossing the road**

The most common maximum driving speed in which the participants drive their vehicle is in the range of 61-80 km/hr (24.5%) while about 13.3% of the respondents told that they drive their vehicle at speeds greater than 100 km/hr (Figure 14). About 51.7% of the respondents told that they drive fast under certain circumstances. (Figure 15). Only 44% of the respondents told that they have a first aid kit in their vehicle while a whopping 45% of the respondents told they don’t have any first aid kit in their vehicle (Figure 16). Only 24.3% of the study participants told they always use helmet while 33.7 % told they use helmet but not always while 32.3% told they never use helmet while driving two wheelers (Figure 17). About 41.1 % of the respondents felt that the use of helmet is uncomfortable (Figure 18). Only 20.7% of the participants told they always use seat belts while about 27% of the participants told that they use seat belt but not always. About 35% of the participants told that they never use seat belt (Figure 20). Although 67.1% of the participants told that they never use mobile phone while driving about 21.7% of the participants told that they don’t mind using mobile phone while driving. Some 60.9% of the participants told that they don’t attend the incoming calls while driving while 35.4% of the participants told that they will answer the call while driving. Another matter of concern is that about 34.8% of the respondents hear music in mobile phone while driving (Table 3).

While 85.7% of the participants felt that it is not safe to consume even minimal amount of alcohol before driving, some 5% of the respondent felt it is ok to consume little alcohol before driving (Figure 22). About 26% of the participants told that they have friends who consume alcohol before driving (Figure 23). Majority of the participants told that they will either slow down the vehicle or give horn or both (89.5%) while 4.7% of them told they will not do anything (Figure 24).

**DISCUSSION**

Majority of the respondents belong to the age group of 17-18 years. In India legal age for driving two wheelers such as mopeds is 16 completed years and the legal age for driving motorized two wheelers and cars is 18 completed years. Considering that most of the study populations are early birds who have just entered the legal age for driving, this study assumes significance. Their driving is behavior is directly going to affect the society. Males and Females were almost equally distributed in the study group. Majority of the respondents belong to rural area. Many studies have reported more accidents happening in the urban areas (WHO, 2012; Romão *et al.*, 2003; Odero *et al.*, 2003).

One study conducted in Ghana showed that majority of road traffic accidents happened in rural areas (Afukaar *et al.*, 2003). Considering this fact the information that majority of the study participants are from rural areas assumes significance. In the study group students studying BE and MBBS were equally distributed.

**Driving profile of the participants**

In our study it was found that only 47.2% of the respondents were trained for driving and only 37% of the study participants had a driving licence. Studies have demonstrated that driving without valid driving licence is associated with higher risk of accidents (Lardelli-Claret *et al.*, 2005; de Andrade *et al.*, 2003). Our study participants are still very young and in the early stage of their driving career. This could be one of the reason for the low rates of driving licence possession. The analysis revealed that only 35% of the participants had training from a driving school. Further 25.2 % of the participants told they have a driving licence for four wheeler vehicles and 13.5% of the participants said that they have two wheeler driving licence.

**Vehicle usage profile of the participants**

Although the previous analysis revealed that the most common type of license possessed by the respondents was four wheeler licenses, the most common type of vehicle driven by the study participants was motor bike. This finding is in contrast to western studies where car is the most common type of vehicle owned by the students<sup>(10)</sup>. Coming at distant second was cycle used by 18.8% of the respondents. Only 8.4% of the participants drive a car. The analysis showed that 66.5% of the respondents had a own vehicle. Among those participants who owned a vehicle 55.4% of the respondents had a bike, 19.4% had a cycle and 8% of the respondents owned a car. In our study the number of car licences possessed by the participants exceeds than the two wheeler licencees although majority of the participants drive motorized two wheelers. In Tamilnadu the licences are usually obtained through driving schools who charge exorbitant fees for facilitating licence acquisition. For example the fees for obtaining two wheeler licence from the regional transport office (RTO) is only INR 100. However driving schools charge 3000 INR for facilitating the licence process. The problem here is corruption and people are reluctant to directly approach RTO office. They prefer driving schools for licence acquisition. Because of the exorbitant fees charged by the driving schools people prefer to take both two wheeler and four wheeler licence at one go because the fees would be considerable higher if both the licences taken separately.

Only half of the respondents told that their vehicle was insured. Only slightly more than a quarter of the respondents told that they serviced their vehicle within the past 4 month while another quarter of a respondents told it has been a year since they last serviced their vehicle. Regular maintenance of the vehicle is one of the key factor in preventing accidents and the response of the study participants show that they are not very keen in maintaining the condition of their vehicle. Only a quarter of the respondents told that they have fixed the bulls eye sticker over their vehicles head light. Fixing bulls eye sticker over the centre point of the vehicles head light is a new rule introduced by the Government.

The purpose is to reduce glare to the opposite vehicle during drive in the night. It has been proved to reduce accidents. Following new guidelines implemented by the Government is a key factor in prevention of accidents. However our study participants seem to be paying little attention to these new rules.

### Practice of safety rules

Adherence to safety rules is a key factor in prevention of accidents. However in our study the percentage of respondent who follow the safety rules such as respecting the traffic light and use of dim and dip signal in night was very low. Our finding correlate well with an earlier study which showed the medical students disrespect for traffic lights (Colicchio, 2010; Dandona, 2006). About one third of the participants do not regularly follow rules such as giving indicator before turning, in the curves and bends and overtaking other vehicles in their right side. These factors contribute a lot to accidents. Certain dangerous driving habits such as travelling as tribles (three persons in two wheeler vehicle) is also highly prevalent in the study population. Further many of the participants told that they will ask for lift from unknown persons if needed.

The most common maximum driving speed in which the participants drive their vehicle is in the range of 61-80 km/hr (24.5%) while about 13.3% of the respondents told that they drive their vehicle at speeds greater than 100 km/hr. Our study findings correlated with other studies have proved that over speeding is one of the major risk factor for accidents (Lardelli-Claret *et al.*, 2005; de Andrade *et al.*, 2003; Afukaar, 2003). Only 44% of the respondents told that they have a first aid kit in their vehicle while a whopping 45% of the respondents told they don't have any first aid kit in their vehicle. Regular use of helmets while driving two wheeler was very less (24.3%) among the study participants. Sadly 32% participants told that they never use helmet while driving two wheelers. About 41.1 % of the respondents felt that the use of helmet is uncomfortable. Several studies have demonstrated the beneficial effects of helmets in preventing mortality in two wheeler accidents (Stephan *et al.*, 2011; Lardelli-Claret *et al.*, 2005; Jones, 1991). So our study findings show that there is an urgent need for behavioural change among the two wheeler drivers in Trichy. The surprising fact is that inspite of strict laws for helmet use in trichy city and innumerable campaigns conducted by for-profit and non-profit organisations, the usage of helmet is very low. Only 20.7% of the participants told they always use seat belts while about 27% of the participants told that they use seat belt but not always. About 35% of the participants told that they never use seat belt. Several studies have proved beyond doubt that non use of seat belt is associated with significant mortality and morbidity (Stephan *et al.*, 2011; Jones, 1991).

Inspite of compelling evidence favouring the use of seat belt in cars the use of seat belt was found to be extremely low among the participants. About 14.3% of the participants felt that the usage of seat belt is uncomfortable. Although 67.1% of the participants told that they never use mobile phone while driving about 21.7% of the participants told that they don't mind using mobile phone while driving. Some 60.9% of the participants told that they don't attend the incoming calls while driving while 35.4% of the participants told that they will answer the call while driving.

Another matter of concern is that about 34.8% of the respondents hear music in mobile phone while driving. While 85.7% of the participants felt that it is not safe to consume even minimal amount of alcohol before driving, some 5% of the respondent felt it is ok to consume little alcohol before driving. It has been proved by several studies that alcohol consumption before driving is unsafe and is directly responsible for fatal accidents (Stephan *et al.*, 2011; Lardelli-Claret *et al.*, 2005; Jones, 1991). About 26% of the participants told that they have friends who consume alcohol before driving. Majority of the participants told that they will either slow down the vehicle or give horn or both (89.5%) while 4.7% of them told they will not do anything. In a study conducted in Brazil consumption of alcohol before driving vehicle was found to be 59% (Colicchio, 2010). Compared to this finding in our study this behavior was found to be less.

### Conclusion

In conclusion this study shows the knowledge regarding the safety rules and practice of the safety rules was found to be very inadequate among the study participants. Further research is needed to validate these findings. Overall the findings of this study will be useful for planning accident prevention programs in the future. This study shows that there is an urgent need to conduct educational campaigns to improve the knowledge and adherence to safety rules among the vehicle drivers of Trichy city. Road safety measures include information and education campaigns, improved driver training, road design and maintenance, regular vehicle safety checks, separation of pedestrians from vehicle traffic, speed limits, mandatory use of seat belt, stressing the use of air-bag and helmets, special training and control of public sector vehicle drivers, bicycle lane separation, road lighting, reflectorised materials on clothing, review of the road traffic related legislation and law enforcement, and emergency medical services improvement. Research is required in several areas. There is need to combine data collection methods, such as interview surveys, hospital records, police records, focus group discussions and key informant interviews. An improved facility-based injury recording and reporting system needs to be developed and tested. The outcome of emergency medical care and of different forms of transport and referral needs to be determined. Different combinations of preventive interventions need to be evaluated.

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