

## **Factors affecting knowledge and practices of road safety rules among adolescent students studying in Varanasi**

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### **ABSTRACT**

**Introduction:** Road traffic accidents (RTAs) are considered as one of the important public health problems around the world. Currently, road traffic accidents are the 9th leading cause of death and are predicted to become the 5th leading cause of death by the year 2020. Globally road traffic injuries are the leading cause of death among young people aged 15-19 years and second leading cause among 5-14 year olds. **Objective:** To assess the factors affecting knowledge and practices of school going students about road safety in Varanasi. **Methodology:** This article is a part of an intervention study carried out in urban area of Varanasi city among school children. The study was carried out among 911 students studying in class IX to XII from 4 different co-ed schools which were registered with government in Varanasi. Schools were randomly selected to get the sufficient number of children as was calculated with the help of standard formula for sample size. All the students present in the school on the day of data collection were included in the study with approval of the concerned school authority. **Result:** Findings of the present study revealed that mother occupation and kind of vehicle present at students home played a significant role in contribution of knowledge status of students regarding road safety measures ( $p < 0.05$ ) whereas in context of practices followed by them, it was found affected by their gender, age, type of vehicle they drove, source of information and among family members who drives vehicle. **Conclusion:** The findings of the study concluded that demographic factors are much contributing source in shaping students minds to learn something about road safety measures and follow practices accordingly.

**Key Words :** Road safety, Knowledge, Demographic factors, Practices, Adolescents

### **INTRODUCTION**

Over 1.2 million people die each year on the world's roads, with millions more sustaining serious injuries and living with long-term adverse health consequences. Globally, road traffic crashes are a leading cause of death among young people, and the main cause of death among those aged 15–29 years. Road traffic injuries are currently estimated to be the ninth leading cause of death

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across all age groups globally, and are predicted to become the seventh leading cause of death by 2030 (WHO, 2015).

Most young people killed in road crashes are vulnerable road users – pedestrians, cyclists, motorcyclists and passengers of public transport – with those from the African and Eastern Mediterranean regions most at risk. In many parts of the world children and young adults and other vulnerable road users have been given inadequate consideration in urban planning decisions. As a result, they are often forced to share transport space with motorized vehicles, increasing their chances of being involved in a road traffic crash. A combination of physical and developmental immaturity among children, and inexperience and youth-related lifestyles further increase the risk of young road users—particularly males—to road traffic collisions (WHO, 2007). It is in this background that the UN General Assembly has declared 2011 to 2020 as the “Decade of Action for Road Safety” which seeks to halt the increasing trends in road traffic deaths and injuries worldwide (WHO, 2009 and WHO, 2008).

Road safety in India is a matter of concern. Road accidents in the country have decreased by around 4.1% during 2016, with the year seeing 4, 80,652 road accidents as against 5, 01,423 in 2015. However fatalities resulting from these accidents have risen by about 3.2% during the same period. Nearly 1, 50,785 persons were killed in 2016 as against 1, 46,133 in 2015 as per report of road accidents in India, 2016 (Press Information Bureau, 2017).

During 2016, 13 States accounted for 86 per cent of the total road accidents in the country. These are Tamil Nadu, MP, Karnataka, Maharashtra, Kerala, Uttar Pradesh, Andhra Pradesh, Rajasthan, Telangana, Gujarat, Chhattisgarh, West Bengal and Haryana. Similarly, 13 States accounted for 84 per cent of the total persons killed in road accidents during 2016. These are Uttar Pradesh, Tamil Nadu, Maharashtra, Karnataka, Rajasthan, Madhya Pradesh, Andhra Pradesh, Gujarat, Telangana, West Bengal, Punjab, Haryana and Bihar (Press Information Bureau, 2017).

The studies in relation to road safety measures among young adults are very few in India. In Uttar Pradesh the number of deaths and injuries due to road traffic injuries is on the rise and tops the list in 2016 as mentioned earlier. The knowledge and efficient practices of road traffic rules are, therefore, essential to bring down such accidents. The present study is aimed to assess the factors affecting knowledge and practices of road safety measures among the students of High school and Intermediate.

### **Objective :**

To identify the factors which are affecting the knowledge and practices of school going adolescents regarding road safety rules in Varanasi.

## **METHODOLOGY**

Two stage sampling technique was used in this study. First schools were selected randomly from the prepared list of co-ed schools registered with government in Varanasi city. On the basis of prevalence of knowledge and practices of a study carried out by C.K. Priyanka Raj *et al.* on Study of knowledge and behaviour pattern with regard to road safety among high school children in a rural community in Tamil Nadu, India in 2011, sample size was calculated which was 869 and then 10% loss of data was added to make the sample size 956. However, in this study information was gathered from 911 students finally selected from 4 schools who were studying in IX to XII standard including both boys and girls. All the students present in the school on the day of data collection

were included in the study with approval of the concerned school authority.

A structured questionnaire based on demographic characteristics, questions on knowledge and practices of students regarding road safety measures was used during data collection and this was developed based on the objectives of the study and through review of literature.

## RESULTS AND DISCUSSION

While defining demographic characteristics of the study subject from the apparent table shown above, it reflects that out of total 911 students, maximum (75%) of them were in the age group of 15-17 years with the mean age of  $15.62 \pm 1.23$ . Boys' (59.2%) were more as compared to girls *i.e.* (40.8%). Most of the students were in X standard (29.3%) followed by XI (25.3%). Majority of students (99%) had vehicle at their home which includes bicycle, two-wheeler and four-wheeler. In context of parents' occupation, (58.3%) students had service/professional fathers whereas (41.7%) belonged to business class. While talking about mothers' employment, majority of students (82%) had homemaker moms and 18% moms were employed. They gained knowledge about road safety from different sources which included human and media both. Most of them (92.4%) had

**Table 1 : Socio demographic status of study subjects**

Socio demographic characteristics of students (n=911)		
Variables	N	%
<b>Age</b>		
12-14	174	19.1
15-17	683	75.0
18-19	54	5.9
Mean age	15.62±1.23	
<b>Gender</b>		
Boys	540	59.2
Girls	371	40.8
<b>Class</b>		
IX	219	24.0
X	267	29.3
XI	230	25.3
XII	195	21.4
<b>Have any vehicle at home</b>		
Yes	902	99.0
No	9	1.0
<b>Father occupation</b>		
Service	531	58.3
Business	380	41.7
<b>Mother occupation</b>		
Employed	165	18.1
Homemaker	746	81.9
<b>Source of information*</b>		
Single source	69	7.6
2 or more source	842	92.4

\*Source of Information included human and media sources

exposure to more than one sources.

Apart from these 67.3% students were aware of the fact that maximum adolescents died every year due to road accidents. One-third of students use bicycle (31.3%) as a major conveyance mode for going to school followed by 20.3% pedestrian students, 15.7% go by two wheeler and rest by other means.

In the present study 85.7% students were found with average knowledge of road safety rules, (7.7%) had poor knowledge and only (6.8%) had good knowledge score. At the same time it was discovered that only a little portion of (18.6%) students follow best practices regarding road safety.

Further analysis was carried out to assess the independent variable which was in actuality affecting knowledge and practices of road safety rules among students and its significant contribution with the help of binary logistic regression.

Table 2 shows that students with background of employed mothers came out as 1.6 times more likely to have knowledge of road safety rules in comparison to students with homemaker moms and it was found significantly associated with their knowledge (AOR = 1.618, 95% C.I. = 1.139 – 2.300,  $p < 0.05$ ). Likewise it demonstrates that students who had all kind of vehicles available at their home (bicycle, two-wheeler and four-wheeler) were 3.1 times more likely to have good knowledge of road safety rules as compared to students who had bicycles only and it was found statistically significant (AOR = 3.154, 95% C.I. = 1.927 – 5.163,  $p < 0.001$ ).

Table 2 : Adjusted Odds Ratio (AOR) for binary logistic regression of independent factors associated with Knowledge regarding Road Safety rules among students				
Independent variables		Knowledge of road safety rules among students		
		AOR	95% C.I.	p value
Father occupation	Business	1	-	-
	Service	1.294	(.987 – 1.698)	0.062
Mother occupation	Homemaker	1	-	-
	Employed	1.618	(1.139 – 2.300)	0.007
Kind of vehicle available at home	Bicycle only	1	-	-
	All vehicles	3.154	(1.927 – 5.163)	0.000

In relation with above mentioned 2 independent variables (mother's occupation and type of vehicle available at home), students whose father were in service appeared as 1.2 times more likely to have knowledge against students of business class fathers but it was found statistically insignificant in relation with knowledge of road safety rules among students ( $p > 0.05$ ).

The given Table 3 shows that female students were originated as 2.9 times more likely to follow road safety rules as compared to male students which indicates gender of students played statistically significant role in relation with practices followed by them on road safety (AOR = 2.913, 95% C.I. = 2.081 – 4.077,  $p < 0.001$ ). Similarly students who belonged to a family where all members (elders, siblings, self) drove vehicle were seems 2.4 times more likely to follow road safety rules in comparison to students who were the only driving person (self) in the family and it was found significantly associated with their practices followed (AOR = 2.474, 95% C.I. = 1.183 – 5.173,  $p < 0.05$ ). In the same way students who were introduced to two or more sources of information regarding road safety rules (human and media sources including guardians, teachers, print and electronic media etc.) were found 1.7 times more likely to follow safe practices on road safety rules as compared to students with exposure to single source only which was found statistically significant (AOR = 1.776, 95% C.I. = 1.000 – 3.153,  $p < 0.05$ ). Apparently younger students of

**Table 3 : Adjusted Odds Ratio (AOR) for binary logistic regression of factors independently associated with Practices regarding Road Safety rules among students**

Independent variables		Practices followed by students regarding road safety		
		AOR	95% C.I.	p value
Gender	Male	1	-	-
	Female	2.913	(2.081 – 4.077)	0.000
Who drives vehicle in family	Self	1	-	-
	All family members	2.474	(1.183 – 5.173)	0.016
Source of information	Single source	1	-	-
	2 or more sources	1.776	(1.000 – 3.153)	0.050
Age	Above 15yrs	1	-	-
	Up to 15yrs	1.689	(1.081 – 2.641)	0.021
Which vehicle student drive	All vehicles	1	-	-
	Bicycle only	2.588	(1.782 – 3.758)	0.000
Class	Intermediate	1	-	-
	High school	1.051	(.670 – 1.647)	0.829

below 15yrs of age were originated as 1.6 times more likely followers of road safety rules practices as counterpart to elder students of above 15yrs age and it emerged as statistically significant. (AOR = 1.689, 95% C.I. = 1.081 – 2.641,  $p < 0.05$ ). Evidently students who ride bicycle only were found 2.5 times more likely to follow road safety practices against those students who drove all vehicles (bicycle, two wheeler and four wheeler) and it was observed significantly associated (AOR = 2.588, 95% C.I. = 2.081 – 4.077,  $p < 0.001$ ).

Junior students of High school were appeared as 1.05 time more likely to follow road safety practices in opposition of Inter class students and supported age variable but didn't emerged as significantly associated factor.

### Discussion :

The present study was carried out to assess the factors which affect knowledge and practices of road safety rules among school going adolescent students. The result of the present study showed that there was significant association between two demographic variables, mother's occupation and type of vehicle available at home with knowledge of school going adolescents regarding road safety measures.

In one of the KAP study done by Dr. A. Evangeline Mary *et al.* on road safety rules and regulations among Higher Secondary school students in Chennai (2016) it was found that among the socio demographic details, sex of the participants and educational status of their parents had statistically significant association with adequate knowledge regarding road safety rules and regulations whereas in the present study it's mother's occupation and type of vehicle present at home were found playing significant role in contributing students good knowledge regarding road safety.

In another study carried out in Chennai by Mrs. Agin Navis Mary in 2016, on the effectiveness of child to child programme on road safety measures among middle school children in selected school at Kanyakumari district but could not lead to significant association between knowledge and demographic variables such as age, sex, education of parents, occupation of parents, Income, types of family, Area of living and source of information obtained at the 0.05 level of significance in

contradiction to findings of the present study

In another study to evaluate the effectiveness of Video Assisted Teaching on Road Safety Measures among students in selected schools of Rohtak, Haryana by Heaven Dahiya *et al.* in 2015 was done. The association of 'at risk' behavior regarding road safety with various socio-demographic factors (Age, Sex, Standard/ Class, Type of School – Government/ Private School, Parent's Education, Parent's Occupation and Income, Ever attended any educational program on Road Safety Measures) was explored. Findings of present study revealed that the difference was found to be statistically non significant among all selected demographic variables whereas in present study gender of the students, who drives vehicle in the family, source of information, age of students and which vehicle students drive were found significantly associated with practices of road safety among students.

### **Conclusion :**

The findings of the present study could be concluded that mother's occupation and kind of vehicle available at home were significant factors contributing in shaping students minds to gain knowledge about road safety. While in terms of practices followed by them, demographic factors- age, gender, who drove vehicle in the family, source of information and which vehicle students drove were found more significantly associated with practices of road safety among students. Though these factors were not found contributing a lot in overall result of the study.

### **Recommendation :**

Considering the high prevalence of Road Traffic Accidents among young drivers, school based Road Safety awareness programmes should be periodically conducted. As in this study mentioned factors were found significant but were not contributing much in overall so further research can be recommended to find out more significant factors which in reality are responsible for students' knowledge and practices on road safety. Following strictly the regulations before issue of Driving License (Learning or Permanent) will facilitate people to learn about all rules regulations for road safety programme and may reduce the events of road traffic accidents in Varanasi and all over India as well.

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### **Ethics approval :**

This study was conducted with the approval of The Ethical Research Committee of the Institute of Medical Sciences, Banaras Hindu University, Varanasi.

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