

Original Article

Awareness and Practice of Road Safety Rules among Secondary School Students in Jaipur, Rajasthan

Maharaj Singh

Associate Professor, Department of Paediatric Nursing, NIMS Nursing College, NIMS University, Shoba Nagar, Jaipur-Delhi highway, (NH-11C), Jaipur-303121, Rajasthan, India.

Corresponding Author: Maharaj Singh, Associate Professor, Department of Paediatric Nursing, NIMS Nursing College, NIMS University, Shoba Nagar, Jaipur-Delhi highway, (NH-11C), Jaipur - 303 121, Rajasthan, India.

Mobile: +91 98881 66279 E-mail: maharaj2009@yahoo.com

Received : 11.09.2017

Review Completed : 14.12.2017

Accepted : 05.05.2018

Keywords : Awareness, Practice, Road safety rules, Secondary school students

Abstract :

Introduction: More than 1.2 million people die each year on the world's roads. Most of these deaths are in low- and middle-income countries where rapid economic growth has been accompanied by increased motorization and road traffic injuries. Prevention of road traffic accidents thus becomes very crucial in order to improve the longevity and the quality of life of the individuals concerned.

Objectives: To assess the level of awareness and practice of road safety rules among secondary school students.

Methods: A cross sectional study was conducted among 150 secondary school students aged between 13-17 years studying in selected government and private secondary schools of Achrol, Jaipur district, Rajasthan. The samples were selected through simple random sampling technique. A pre-designed and pre-tested structured multiple choice questionnaire and checklist was used for assessment of awareness and practice of road safety rules. The collected data was analysed by using descriptive and inferential statistics.

Results: With regards to awareness regarding road safety rules, 9(6%) had had poor awareness, 103(68.7%) had average awareness and 38(25.3%) had good awareness. With regards to practice regarding road safety rules, 6(4%) had had unsatisfactory practice, 108(72%) had partially satisfactory practice and 36(24%) had satisfactory practice.

Conclusion : Majority of secondary school students had average awareness and partially satisfactory practice regarding road safety rules. Education reminding and strict enforcement of traffic rules can increase awareness and motivate them to strictly adhere to the traffic norms and help to reduce the morbidity and mortality due to road traffic accidents.



Introduction

India is a global leader of deaths in road accidents!

Road Traffic Accident can be defined as "An event that occurs on a way or street open to public traffic resulting in one or more persons being injured or killed, where at least one moving vehicle is involved".¹ Road accidents are an outcome of the interplay of various factors, some of which are ignorance, carelessness, thoughtlessness, over confidence, length of road network, vehicle population and human population etc. Road accident causes injuries, fatalities, disabilities and affects children's growth and development.²

According to the global status report on road safety 2015, reflecting information from 180 countries, indicates that worldwide the total number of road traffic deaths has plateaued at 1.25 million per year 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 and second leading cause of death in 10–14 years and 20–24 years age groups. Motorcycle crashes are the leading cause of mortality and morbidity among teenagers. Road traffic injuries are currently estimated to be the ninth leading cause of death across all age groups globally, and are

predicted to become the seventh leading cause of death by 2030.³

Road traffic death rates in low and middle income countries are more than double in comparison with high income countries. Worldwide, India has the worst road traffic accident rate, where every day about 1,374 accidents and 400 deaths take place, which have earned a dubious distinction with over 1,30,000 deaths annually. In terms of absolute numbers, highest number of deaths had taken place in Uttar Pradesh ((17,666), and Rajasthan (10,510) had ranked fifth in the country. About 54.1 percent of all persons killed in road accidents are in the age group of 15 – 34 years.⁴

As per May 2017 report released by Dainik Bhaskar in Rajasthan, every year 10,000 people die due to road accidents. Among them 35% are motorcycle riders. This year till March 2017, 2564 people died in road accidents. Among them highest number of deaths are from Jaipur North, Jaipur South, Hanumangarh, Bundi Bara, Chittorgarh and Pali district. In comparison with 2016 report, there is a rise of 83% in deaths in Hanumangarh and 71% in Jaipur North. This is an alarming sign, because either people do not have awareness regarding road safety rules or do not obey the traffic rules.⁵

The United Nations has rightly proclaimed 2011-20 as the Decade of Action on Road Safety. India is a signatory to Brasilia Declaration and is committed to reduce the number of road accidents and fatalities up to 50 percent by 2020. Simple measures like awareness and practice of road safety measures can effectively reduce the impact of RTAs on the lives of people.⁶ Hence, the present study aimed to assess the awareness and practice of road safety rules among secondary school students in Jaipur, Rajasthan so that a better overview of the situation can be made.

Materials and Methods

This was a quantitative non-experimental study with cross sectional survey design conducted in the month of April 2017 among secondary school students of Achrol, Jaipur District of Rajasthan. The sample size was calculated based

on the pre interventional knowledge on road safety rules and regulations ($p=54\%$) in a study among School Going Teenagers in Indore by Mahawar P et al [7] using the formula $N = [Z1 - (a/2) 2 pq] / d2$ and was derived as 150. (CI- 95%, $d=10\%$ of p , 10% non-response rate). The study subjects were selected by two-stage stratified sampling method. One government and one private secondary school were selected from Achrol, in Jaipur North Region by lottery method to provide a representative sample. 75 students from the student lists of 9th and 10th class were selected randomly. The inclusion criteria for sample selection included: male and female students of 9th and 10th class in the age group of 13 to 17 years. The exclusion criteria included: Students who were suffering with some form of disability and were not willing to participate in the study. The study protocol was approved by institutional review board and institutional ethical committee of NIMS University, Jaipur, Rajasthan, India.

A pre-designed and pre-tested structured questionnaire was used for data collection and it consisted of three sections. Section A: Socio-demographic variables of secondary school students: It consisted of 9 variables including class, gender, residential area, father education, mother education, source of information, and mode of travelling to school. Section B: Structured awareness questionnaire, to assess awareness of road safety rules among secondary school students. It consisted of 40 items related to various aspects of road safety rules i.e. traffic signals, road safety laws and road sign's. Each item was carrying a score of one for correct answer and a score of zero for wrong answer. The awareness score was arbitrarily classified in to three categories viz. poor awareness (0-13), average awareness (14-26) and good awareness (27-40). Section C: Structured practice checklist, to assess practices of road safety rules among secondary school students. It consisted of 10 items related to various aspects including use zebra crossing to cross the roads, obey road traffic rules and signs, wear helmet/seatbelt while travelling, cross the road when vehicle are at a safe distance etc. Each item was carrying a score of one for presence of practice and a score of zero for absence of practice. The practices

score was arbitrarily classified in to three categories viz. unsatisfactory practice (0-3), partial satisfactory practice (4-6) and satisfactory practice (7-10). The tool was translated in to Hindi and tested by back translation into English. The content validity of tool was obtained from the six experts in the field of medicine and nursing. The reliability co-efficient of awareness questionnaire was found to be $r=0.88$ by split half method and the reliability co-efficient of practice checklist was found to be $r=1$ by cronbach's alpha method. Hence tool was considered reliable for data collection.

To execute the study, the researcher obtained official written permission from Principals of selected secondary schools and written informed assent/consent from study sample and their parents after explaining the study purpose and assuring for confidentiality and anonymity. The data were collected through structured self administered questionnaire. The collected data were tabulated and analyzed in accordance with objectives of the study by using descriptive and inferential statistics with the help of Statistical Package for the Social Sciences version 16 software (SPSS Inc., Chicago, IL, USA) and Instat.

Results

The findings of the present study are discussed under the following headings:

Section I: Distribution of secondary school students according to their socio-demographic characteristics

The analysis of socio-demographic characteristics of secondary school students presented in table 1 shows that equal numbers of students (i.e.50.0%) were taken from 9th and 10th class. Majority of students (57.3%) were male. Majority of the students (68%) were residing in urban area. Almost one third of the students fathers were educated up to higher secondary (32%) and primary (29.3%) level. Almost half of the students (44%) mothers were educated up to primary level. Maximum numbers of students fathers were serviceman (65.3%) and mothers were house wife (62%). Maximum one third of the students (32%) acquired the information regarding road safety rules through

multiple sources i.e. through television, newspaper and textbooks. Maximum numbers of students (40.0%) were coming to school through bicycles.

Section II: Description of level of awareness and practice regarding road safety rules among secondary school students:

The study findings of awareness regarding road safety rules among secondary school students revealed that 9(6%) had had poor awareness, 103(68.7%) had average awareness and 38(25.3%) had good awareness. The mean and standard deviation of the awareness score regarding road safety rules was 23.6 ± 3.46 . The item wise awareness regarding road safety rules is depicted in table 2.

The study findings of practice regarding road safety rules among secondary school students revealed that 6(4%) had had unsatisfactory practice, 108(72%) had partially satisfactory practice and 36(24%) had satisfactory practice. The mean and standard deviation of the practice score regarding road safety rules was 5.86 ± 0.96 . The item wise practice regarding road safety rules is depicted in table 3.

Section III: correlation between awareness and practice score of road safety rules among secondary school students:

The correlation between awareness and practice score of road safety rules revealed that there was a significant positive correlation ($r = 0.334$, $p < 0.001$) between awareness and practice, which indicates that as awareness level increases practice level also increases.

Section IV: Relationship of awareness and practice score of road safety rules with selected socio-demographic variables of secondary school students:

The study result of relationship between awareness of road safety rules and selected socio-demographic variables of secondary school students showed that residential area ($t=2.13$ $p=0.05$), father education ($t=2.26$ $p=0.05$), mother education ($t=2.42$ $p=0.01$) and source of information ($t=2.98$ $p=0.01$) had a significant relationship with awareness score of secondary school students.

As well as the study result of relationship between practice of road safety rules and selected socio-demographic variables of secondary school students showed that father education ($t=2.31$ $p=0.05$), mother education($t=2.38$ $p=0.01$) and source of information ($t= 2.87$ $p=0.01$) had a significant relationship with practice score of secondary school students.

Table 1 : Frequency and percentage distribution of secondary school students according to their socio- demographic characteristics N = 150

Sr. No.	Socio-demographic variables	n	%
A	Class		
1.	9 th	75	50%
2.	10 th	75	50%
B	Gender		
1.	Male	86	57.3
2.	Female	64	42.7
C	Residential area		
1.	Rural	48	32
2.	Urban	102	68
D	Father education		
1.	Primary	44	29.3
2.	Secondary	32	21.3
3.	Higher Secondary	48	32.0
4.	Graduate & Above	26	17.4
E	Mother education		
1.	Primary	66	44
2.	Secondary	42	28
3.	Higher Secondary	30	20
4.	Graduate & Above	12	08
F	Father occupation		
1.	Service	98	65.3
2.	Business	32	21.3
3.	Farmer	20	13.4
G	Mother occupation		
1.	Service	42	28
2.	House Wife	93	62
3.	Business	15	10
H	Source of Information		
1.	Television	44	29.3
2.	Newspaper	26	17.3
3.	Textbook	32	21.4
4.	All of above	48	32.0
I	Mode of travelling to school		
1.	Scooty / Motorcycle	32	21.3
2.	Pedestrians	26	17.3
3.	School Bus	32	21.4
4.	Bicycle	54	40.0

Table 2: Item wise awareness regarding road safety rules among secondary school students N= 150

Item No.	Items	Number with correct response	%
1.	Meaning of road traffic rules	98	65.3
2.	Red traffic signal indicates	115	76.7
3.	 indicates	35	23.3
4.	Right way for crossing the road by Pedestrians.	102	68
5.	Legal age for driving a vehicle	88	58.7
6.	 indicates	78	52
7.	Yellow traffic signal indicates	110	73.3
8.	While crossing a road person should always look	85	56.7
9.	 indicates	46	30.7
10.	Right approach to cross the speed breaker with vehicle	116	77.3
11.	Number of person can travel on bike/ scooty	109	72.7
12.	 indicates	72	48
13.	 indicates	73	48.7
14.	The side should be used by pedestrians while walking on road	140	93.3
15.	 indicates	28	18.7
16.	While travelling on two or four wheelers head injuries can be prevented by the use of	128	85.3
17.	Safer speed limit of vehicle	100	66.7
18.	 indicates	80	54
19.	 indicates	118	78.7
20.	Green traffic signal indicates	120	80
21.	Indicator to be used	71	47.3
22.	 indicates	28	18.7

Item No.	Items	Number with correct response	%
23.	Leading cause of road traffic accidents	128	85.3
24.	 indicates	82	54.7
25.	Bright dippers are always used at	99	66
26.	 indicates	48	32
27.	The city where traffic rules are mostly followed	100	66.7
28.	 indicates	72	48
29.	 indicates	76	50.7
30.	Recommended colour for head lights of vehicle	98	65.3
31.	 indicates	73	48.7
32.	Recommended intensity of the horn	88	58.7
33.	 indicates	85	56.7
34.	Right direction of focusing headlight	88	58.7
35.	 indicates	92	61.3
36.	The way safety belt protect the person	120	80
37.	 indicates	52	34.7
38.	Right way of crossing one vehicle by another	49	32.7
39.	 indicates	45	30
40.	The sign "L" on car indicates	107	71.3

Discussion

Road safety awareness is one of the most important aspects towards safety concerning traffic rules among adolescent children. Adolescent age group is rapidly emerging as a major population of vehicle owners and may derive a thrill out of taking risks on road without realizing

Table 3: Item wise practices regarding road safety rules among secondary school students N=150

Item No.	Items	Number of participants who practice	%
1.	Use zebra crossing to cross the roads	97	64.7
2.	Obeys road traffic rules and signs	106	70.7
3.	Wear seatbelt when travelling in a four wheeler	62	41.3
4.	While crossing the road avoid talking/reading	65	43.3
5.	Wear helmet when travelling on a two wheeler	68	45.3
6.	Look left, right and left again before crossing a road/street.	102	68
7.	Watch for turning vehicles	140	93.3
8.	Cross the road when vehicles are at a safe distance.	138	92
9.	Always walks on the right side of road	103	68.7
10.	Stay on the footpath at earmarked bus stoppage.	124	82.6

the consequences, hence it is very important to assess awareness and practice on road safety rules and sensitize this population as they are future of the nation.

The findings of present study showed that majority of secondary school students i.e. 68.7% had average awareness and only 25.3% had good awareness. This finding is similar to the study conducted among school children in Indore, Chandigarh, Chennai and Guntur city.⁷⁻¹⁰ 65.3% of the students were aware about the traffic rules. This finding is consistent with findings of the study conducted among medical students in Barabanki, Utta Pradesh.¹¹ 56.7% of the students were aware about the rules for pedestrians. This finding is contradictory to study conducted among medical students in Barabanki, Utta Pradesh where the awareness was high.¹¹ 58.7% students knew the legal age for driving vehicles. This finding is similar with the studies conducted in Indore, Chandigarh, Guntur city and rural Tamil Nadu, whereas this was low as compared to study conducted among medical students in Barabanki, Utta Pradesh.^{7-8, 10-12} 32.7% of students were aware about right way of overtaking. This finding is similar to the study conducted among school going students in Indore and Chandigarh.⁷⁻⁸ Almost half of the students were

able to identify the road signs correctly. Similar findings were observed in the study conducted among high school students in Guntur city and rural area of Tamil Nadu, whereas good knowledge on road signs was observed among medical students in Barabanki, Uttar Pradesh.¹¹⁻¹² Zebra crossing sign was known to half (50.7%) of the students which was high as compared to study conducted in Chandigarh (39.5%) and Indore (21%).^{8,13} 76.7% and 73.3% of students had correct awareness of red and yellow traffic signals respectively, this awareness was much higher than the study conducted among school going teenagers in Indore.⁷

As per findings of the present study, majority of secondary school students i.e. 72% had partially satisfactory practice, 24% had satisfactory practice and 4% had unsatisfactory practice. These findings are contradictory with the findings of the study conducted among primary school children in Chennai where the road safety practice was very poor.⁹ 70.7% of the students reported that they obey road traffic rules and signs. This finding is almost consistent with the findings of the study conducted in Barabanki Uttar Pradesh.¹¹ 41.3% of the students wear seatbelt when travelling in a four wheeler and 45.3% of the students wear helmet during riding or travelling on two-wheelers. Such high risk taking behaviour among the study participants is alarming. These findings are consistent with the findings of the study conducted in Chandigarh and Guntur city.^{8,10} While as these findings are contradictory with findings of the study conducted in Chennai and Chandigarh, where the practice of wearing helmet/seatbelt while travelling was high and in Barabanki, Uttar Pradesh it was low.^{14-15,11} 43.3% of the students reported that they avoid talking/reading while crossing the road. This finding is consistent with the findings of the study conducted in Guntur, South India.¹⁰ and Saudi Arabia as well as contradictory with findings of

the study conducted in Barabanki Uttar Pradesh and Chandigarh where majority of students avoid talking on mobile phones.^{11,15}

The findings of present study showed that there was a significant positive correlation ($r=0.334$, $p<0.001$) between awareness and practice of road safety rules. This finding is consistent with the findings of study conducted among primary school children in Chennai.⁹

The present study result revealed that the awareness and practice regarding road safety rules had significant relationship with residential area, father education, mother education and source of information of secondary school students. The present study findings are consistent (source of information) as well as contradictory (age, education and mode of transport) with the findings of study conducted among primary school children in Chennai.⁹

Conclusion

The majority of secondary school students had average awareness and partial satisfactory practice; so there is a need to sensitize this population. Efforts should be made in improving this issue through inclusion of traffic chapter in syllabus of students, re-orientation training, signboards, posters and mass media. Strict enforcement of laws and periodic organization of traffic awareness campaigns and practice relating to road safety should be encouraged to reduce the morbidity and mortality related to road traffic accidents.

Acknowledgements

The author expresses deep sense of gratitude and thanks to principal, faculty and children of Government secondary school, Achrol, Jaipur, and Marigold public school, Achrol, Jaipur, Rajasthan for granting permission and cooperation in conducting this study.

References

1. Transport Research Wing, Ministry of Road Transport and Highways. Road Accidents in India 2011. New Delhi: Ministry of Road Transport and Highways, Government of India; 2012. Available at URL: <http://www.jotr.in/article.asp>. Accessed on 15 March 2017.
2. Transport Research Wing, Ministry of Road Transport and Highways. Road Accidents in India 2010. New Delhi: Ministry of Road Transport and Highways, Government of India; 2010. Available at URL: <http://indiagovernance.gov.in>. Accessed on 20 March 2017.
3. World Health Organization. Global status report on road safety. 2015. Available at URL: http://www.who.int/violence_injury_prevention/road_safety_status/2015/en/. Accessed on 20 March 2017.

4. Transport Research Wing, Ministry of Road Transport and Highways. Road Accidents in India - 2015. New Delhi: Ministry of Road Transport and Highways, Government of India; 2015. Available at URL: <http://pibphoto.nic.in/documents/rlink/2016/jun/p20166905.pdf>. Accessed on 10 April 2017.
5. Kataria GC, Home Minister Rajasthan. Report on road accidents in Rajasthan. Danik Bhaskar. May 08; 2017.
6. World Health Organization. Global plan for the decade of action for road safety, 2011-2020, Version 3. Available at URL: http://www.who.int/roadsafety/decade_of_action/plan/global_plan_decade.pdf. Accessed on 25 April 2017.
7. Mahawar P. An education intervention to improve awareness on road safety: a study among school going teenagers in Indore. Natl J Community Med 2013; 4: 529- 32.
8. Swami HM, Puri S, Bhatia V. Road safety awareness and practices among school children of Chandigarh. Indian J Commun Med 2006; 31:199.
9. Thenmozhi P. Assess the knowledge and practice on road safety regulations among primary school children in rural community. SSRG-IJMS 2016; 3:1-5.
10. Dulipala P, Gujjarlapudi C. Awareness and practice of road safety measures among college going students in Guntur City. International Journal of Medical Research and Review 2016; 3: 1-5.
11. Zaidi Nawaz SZ, Paul Chandra P, Mishra P, Srivastava A. Risk perception and practice towards road traffic safety among medical students. Int J Community Med Public Health 2017; 4: 1-6.
12. Raj C, Datta S, Singh Z, VS. Study of knowledge and behavioural patterns with regard to road safety among high school children in a rural community in Tamil Nadu, India. Indian J Med Spec 2011; 2: 1-5.
13. Mahawar P, Dixit S, Khatri AK, Rokade R, Bhurra R, Kirar S et al. An educational intervention to improve awareness on road safety: A study among school going teenagers in Indore. National Journal of Community Medicine 2013; 4: 529-32.
14. Padankatti S, Narayan U, Babu JS, Thomas K. Road safety practices among school going children in Chennai. International Journal of Emergency Medicine 2014; 7: 2.
15. Kumar M, Baweja M, Singh A, Sharma VL. Awareness and practice on road safety among students of Punjab University Chandigarh, India. Asian Journal of Multidisciplinary Studies 2014; 2: 1-4.