



AWARENESS ON TRAFFIC RULES AND SAFETY MEASURES AMONG BACHELOR LEVEL STUDENTS IN SELECTED COLLEGES

Milina GAIRE¹, Taniya THAPA^{2*}, Alisha JOSHI³

¹Lumbini Pradeshik Hospital, 32907, Butwal, Nepal

²Department of Women's Health and Development, Faculty of Nursing, Chitwan Medical College, 44200, Chitwan, Nepal


³Department of Psychiatric Nursing, Faculty of Nursing, Chitwan Medical College, 44200, Chitwan, Nepal


Abstract: Road Traffic safety and Traffic rules refers to the methods and measures used to prevent road users from being killed or seriously injured which are found to be higher in young adults which is directly or indirectly associated with level of awareness of an individual. This study aimed to find out the awareness on traffic rules and safety measures among Bachelor level students. A descriptive cross-sectional study was conducted among randomly selected 250 bachelor level students from selected colleges of Bharatpur, Chitwan that used structured questionnaire administered by researchers for collecting the data. Obtained data were analyzed in Statistical Package for Social Science (SPSS) version 20, using descriptive and inferential statistics. The result of this study showed that more than half (59.6%) of the students had adequate level of awareness regarding traffic rules and safety measures. Statistically significant association was found between awareness regarding Traffic rules and Safety measures with sex, personal experience/involvement in RTA and educational experience or training regarding RTA/Traffic rules/Road safety measures. It is concluded that nearly half of the students have inadequate awareness regarding road traffic rules and safety measures. Awareness is the major contributing factor for RTA prevention. Hence, all the stake holders, Ministry of Education, Ministry of Health, local government bodies, various government and private colleges need to expand further awareness programmes regarding traffic rules and safety measures to prevent the morbidity and mortality due to the accidents.


Keywords: Awareness, Road traffic accident, Traffic rules, Safety measures

*Corresponding author: Department of Women's Health and Development, Faculty of Nursing, Chitwan Medical College, 44200, Chitwan, Nepal

E mail: thapa.taniya@cmc.edu.np (T. THAPA)

Milina GAIRE  <https://orcid.org/0000-0001-5562-7132>

Taniya THAPA  <https://orcid.org/0000-0002-1139-9681>

Alisha JOSHI  <https://orcid.org/0000-0002-7421-4971>

Received: October 06, 2021

Accepted: November 01, 2021

Published: January 01, 2022

Cite as: Gaire M, Thapa T, Joshi A. 2022. Awareness on traffic rules and safety measures among bachelor level students in selected colleges. BSJ Health Sci, 5(1): 24-30.

1. Introduction

A Road Traffic Accident (RTA) is any injury due to crashes originating from, terminating with, or involving a vehicle partially or fully on a public road (Kharde et al., 2018). Road traffic accidents are the outcome of the factors associated with the traffic system namely road users, road environment and vehicles (Adhikari, 2016). Every year the lives of approximately 1.35 million people are cut short globally as a result of a road traffic crash making it the fourth leading cause of death (WHO, 2018). These accidents are higher in young adults (WHO, 2018) and highest among people between 15 to 40 years of age in Nepal (Choulagai et al., 2015).

Nearly 1.3 million people die each year as a result of Road Traffic Accidents (RTAs). More than nine in every ten (91%) of the world's RTA fatalities were from low and middle income countries such as Nepal. The trend in RTA injuries and death is increasing at an alarming rate in Nepal (Choulagai et al., 2015). Majority (93%) of the world's fatalities on the roads occur in low- and middle-income countries, even though these countries have approximately 60% of the world's vehicles (WHO, 2018). Road safety has been identified as an essential

component which should be integrated in road management system. Road safety is an important public health concern and attention must be given on Road safety measures (Maqbool et al., 2019). Road safety is a complex process that not only depends on technical and environmental improvements, but in a major part from human factors (Alonso et al., 2017).

According to Gopalakrishnan (2012) injury and deaths due to road traffic accidents (RTA) are a major public health problem in developing countries where more than 85% of all deaths and 90% of disability adjusted life years were lost from road traffic injuries. According to a WHO report (WHO, 2018), wearing a helmet reduces chances of death by 40% and that of severe injury by 70%, using child restraints reduces likelihood of a fatal crash by 70% among infants and up to 80% in young children, wearing a seatbelt can reduce fatal injuries by 50% for front seat occupants and up to 75% for those sitting in rear seats. Education and awareness are used to provide the information regarding road safety. Driver's behaviour can be improved through safety educational programs (Maqbool et al., 2019).

Simple measures such as awareness and practice of road



safety measures can effectively reduce the impact of RTAs on the people's lives. Awareness generation and orientation towards road safety issues among the students should be done through periodic trainings (Ratna et al., 2017). Nepalese roads are one of the most dangerous in the world and chances of vehicle crashes are more than 100 times higher than in Japan and 10 times higher than in India. Main contributing factors of road accidents in this road are: carelessness, over speeding, defective vehicle, drink driving and overtaking. The rate of accident is decreasing after passage of sometime as a result of awareness program conducted by the project office and media partners focusing safety of school children, bike riders, drivers and pedestrians (Adhikari, 2016).

Nepal Road Safety Action Plan 2013-20 (Thapa, 2013) has proposed awareness for the public and stake-holders as the integral part of the road-safety interventions. Continuous reinforcement and education reminding them of traffic rules can bring about a positive change and motivate them to strictly adhere to the traffic norms and help reduce the morbidity and mortality regarding road traffic accidents (Ranjan et al., 2018). The knowledge and awareness regarding traffic rules and safety measures reduces the mortality and morbidity related to RTA. Through the basic institution like school colleges, it is important to reinforce the students on traffic norms and rules. These simple measures can effectively reduce the impact of RTA's on people's lives. Thus, this study is focused to assess the awareness on Traffic rules and Safety measures among Bachelor level students in selected colleges.

2. Material and Methods

Descriptive cross sectional research design was used to assess the awareness regarding traffic rules and safety measures among Bachelor level students of selected Colleges of Bharatpur, Chitwan. This study was carried out in the Presidency College, Boston International College and Balkumari College of Bharatpur. The population were 250 Bachelor level students studying BBA in the selected colleges of Chitwan district (71 students from Boston International College, 124 students from Presidency College and 54 students from Balkumari College).

2.1. Sample Size and Sampling Technique

According to Yamane (1967) for finite population (equation 1),

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

where, n is the sample size, N is the size of population as 510 (146 from Boston International College, 255 from Presidency College, 109 from Balkumari College) and e is the permissible error (0.05). By using above mentioned formula for calculation of sample size, sample of 225 students was adequate for the study. After nonresponse error (10%) sample size n was 248 (≈ 250).

Since the students were selected proportionately, numbers of students per college were:

- Boston International College: 71 (Total students: 146)
- Presidency College: 124 (Total students: 255)
- Balkumari College: 54 (Total students: 109)

Among 13 Colleges of Bharatpur, total three colleges (Boston International College, Presidency College, Balkumari College) were selected purposively. Stratified proportionate simple random sampling technique was used to select the sample where the strata was made for the students studying BBA of different academic years (first, second, third, fourth). Number of students were drawn proportionately from each strata and lottery method was used to select the sample from the number of students drawn proportionately. Data collection was done within two weeks in different colleges.

2.2. Instrumentation

Structured, self-administered questionnaire for the awareness regarding traffic rules and safety measures was developed by the researcher herself after extensive reviewing of related literature. The instrument consisted of four parts where part I was related to questions on socio demographic factors, Part II on road traffic accident experience (in family, self, witness and information/knowledge), part III on awareness on traffic rules and part IV was related to safety measures. The instrument was translated into Nepali language and retranslated to English by seeking help from expert and research guide before the application. The content validity of the instrument was established on the basis of literature review, by consulting the research advisor and subject expertise. Pretesting was done among 25 bachelor level students from similar setting in Chitwan. Necessary modification was done in the instrument after feedback of pre-testing.

2.3. Statistics

Data was collected by using structured, self-administered questionnaire. Verbal consent was taken from each respondent after explaining the purpose of the study. Distribution of questionnaire was done by the researcher herself among selected students at different dates in students' study room of respective colleges in leisure period. Filled questionnaire was collected from students in each study room within 20 minutes of questionnaire distribution by researcher herself. Data collection in each college was done in 3 days of time duration. Data from selected three colleges was collected within two weeks of time period.

The collected data was checked, reviewed and organized for accuracy and completeness. The organized data was entered by using IBM statistical package for social science (SPSS) version 20.0. The further data was analyzed by using descriptive statistics (frequency, percentage, mean, median and standard deviation) for socio-demographic variables, information regarding RTA experience, awareness regarding traffic rules and safety measures and inferential statistics (χ^2 test, Fisher's exact

test) for finding the association between selected variables.

3. Results

Among 250 respondents, 52.8% were more than or equal to 21 years with median age of 21. Regarding the sex of the respondents, 54.4% were female and 45.6% were male. Majority of the respondents were Brahmin (45.2%) whereas 92.8% were unmarried. Most of the respondents were from fourth year (36.8%) and first year (33.2%) whereas 18.8% were from second year and 11.2% were from third year. Almost half (44.8%) of the respondents' father had secondary level education whereas mother had basic educational status (44.4%). Most of the respondents (60.8%) were not involved in Road Traffic

Accident (RTA) and majority (76.5%) of the vehicle involved during recent RTA was Motorbike/Scooter but 78.4% had witnessed RTA and majority of the vehicle were Motorbike/Scooter. More than half of the respondents (55.2%) never experienced RTA in family members. Among 44.8% respondents who had experienced RTA in between family members 66.1% experience were involved with Motor-bike/Scooter accident. Few of the respondents (29.6%) had attended educational experience or training regarding RTA/Traffic rules/ Road safety where majority of them (58.1%) had attended it more than or equal to 2 years ago. The awareness regarding different traffic rules by 250 respondents are shown in Table 1.

Table 1. Awareness regarding traffic rules among respondents (n=250)







Traffic rules (Pre-requisites)	Correct response	
	Frequency	Percentage
Maximum person can be carried in two-wheeler according to traffic rule	228	91.2
Physical condition in which one shouldn't ride motorbike	183	73.2
Condition that one should follow before taking the vehicle on the road for the first time	174	69.6
Minimum age (in years) to get a license	59	23.6
Person having right to proceed their vehicle first while at circle/round about	96	38.4
Frequency that should be given to pedestrians to cross the way first at zebra crossing	192	76.8
Frequency that should be looked for speed limit indicator while driving	174	69.6
Meaning of the given Traffic sign 	86	34.4
Meaning of the given Traffic sign 	45	18.0
Meaning of the given Traffic sign 	105	42.0
Meaning of the given Traffic sign 	143	57.2
Meaning of the given Traffic sign 	200	80.0
Meaning of the given Traffic sign 	139	55.6
Meaning of the flashing amber light while driving	45	18.0
Maximum frequency of puncture in license needed to get your license ceased	98	39.2
Charge (in Rupees) when stopping the vehicle on the road in such a way that it can cause obstruction (e.g. going into a shop for a short while)	86	34.4
Charge (in Rupees) in case of not wearing helmet while riding two-wheeler or seat-belts while driving four-wheeler	94	37.6
Charge (in Rupees) while driving without getting your vehicle's lights on during night time	37	14.8

Table 2 shows that among 250 respondents only 34 (13.6%) were aware of maximum speed limit per hour of motorcycle. Less than half (47.2%) of the respondents were aware of the Road condition that may cause

accident. Only 43.2% were aware of criteria for overtaking. Less than half (44.0%) respondents were aware that a helmet should have minimum 20mm thickness in thermocelle padding.

Table 3 shows that there was statistically significant association between sex of the respondents and awareness regarding traffic rules and safety measures. Table 4 shows that among 250 respondents 59.6% had

adequate level of awareness and 40.4% of the respondents had inadequate level of awareness regarding traffic rules and safety measures.

Table 2. Awareness regarding safety measures among respondents (n=250)

Safety Measures	Correct response	
	Frequency	Percentage
Maximum speed limit per hour of motorcycle according to regulation	34	13.6
Maximum speed limit per hour for all the vehicles at the area with dense population	179	71.6
Environmental factor that may cause accident	175	70.0
Road condition that may cause accident	118	47.2
Condition in which accident may occur in one sided road	143	57.2
Importance of looking vehicles coming from the right	185	74.0
Criteria one should follow while overtaking	108	43.2
Activity that shouldn't be followed during driving	66	26.4
Thickness of padding of motorcycle should a helmet have in minimum	110	44.0

Table 3. Association between level of awareness regarding road traffic rules and safety measures and socio-demographic variables of respondents' (n=250)

Variables	Level of Awareness		χ^2	P-value
	Adequate No (%)	Inadequate No (%)		
Age in years				
<21	67(56.8)	51(43.2)	0.738	0.390
≥21	82(62.1)	50(37.9)		
Sex				
Male	76(66.7)	38(33.3)	4.346	0.037
Female	73(53.7)	63(46.3)		
Ethnicity				
Brahmin/Chhetri	92(56.4)	71(43.6)	1.940	0.164
Others	57(65.5)	30(34.5)		
Marital status				
Married/Divorced	11(61.1)	7(38.9)	0.018	0.892
Others	138(59.5)	94(40.5)		
Academic year				
First year	48(57.8)	35(42.2)		
Second year	38(56.7)	29(43.3)	1.095	0.778
Third year	34(60.7)	22(39.3)		
Fourth year	29(65.9)	15(34.1)		
Father's education				
Illiterate	3(75.0)	1(25.0)	0.418	0.880*
General and basic	39(58.2)	28(41.8)		
Secondary and above	107(59.8)	72(40.2)		
Mother's education				
Illiterate	2(50.0)	2(50.0)	0.325	1.000*
General and basic	78(60.0)	52(40.0)		
Secondary and above	69(59.5)	47(40.5)		
Family income per month per thousand				
<50	40(54.8)	33(45.2)	0.989	0.320
≥50	109(61.6)	68(38.4)		

Significance level at $\alpha = 0.05$, *Fisher's Exact test.

Table 4. Level of awareness regarding traffic rules and safety measures among respondents

Level of Awareness	Frequency	Percentage
Adequate (score ≥ 13)	149	59.6
Inadequate (score < 13)	101	40.4
Median =13, IQR= (Q ₃ -Q ₁)= (16-11), Min= 4 Max=22	250	100

Table 5 shows that there was statistically significant association between personal experience/involvement in RTA of the respondents and awareness regarding traffic rules and safety measures. Association was also found

between educational experience or training regarding RTA/Traffic rules/Road safety and awareness regarding Traffic rules and Safety measures.

Table 5. Association between Level of Awareness regarding Traffic Rules and Safety Measures and RTA Experience (n=250)

Variables	Level of Awareness		χ^2	P-value
	Adequate No (%)	Inadequate No (%)		
Personal experience/involvement in RTA				
Yes	67(68.4)	31(31.6)	5.146	0.023
No	82(53.9)	70(46.1)		
Witnessed RTA				
Yes	117(59.7)	79(40.3)	0.003	0.954
No	32(59.3)	22(40.7)		
Experience of RTA in family members				
Yes	72(64.3)	40(35.7)	1.850	0.174
No	77(55.8)	61(44.2)		
Attended educational experience or training regarding RTA/Traffic rules/Road safety				
Yes	57(77.0)	17(23.0)	13.258	<0.001
No	92(52.3)	84(47.7)		

Significance level at $\alpha = 0.05$.

4. Discussion

The aim of this study is to find out the level of awareness on Traffic rules and Safety measures among bachelor level students in selected colleges of Bharatpur, Chitwan. The study population consisted of 250 bachelor level students among selected colleges of Bharatpur. All the data obtained were analyzed and interpreted.

This study revealed that 59.6% of the respondents had adequate level of awareness regarding traffic rules and safety measures. The study finding is supported by similar study (Ratna et al., 2017) which revealed that the awareness regarding road safety measures among the study participants was satisfactory but interpretation of traffic signs was poor (30.5%). The findings variation might be due to variation in setting, socio demographic characteristics of the respondents. This finding is also almost similar to the findings of the study done among adolescent students of a selected Pre-university College in Raichur city (Ranjan et al., 2018), which revealed that more than half (52.8%) of respondents had adequate knowledge on the road safety rules and regulations. The finding is inconsistent with another study conducted among motorists in Mangaluru suburbs (Shetty et al., 2017) which revealed that more than two-thirds (67.2%) had insufficient awareness about road traffic rules. Again, another study conducted in Multan, Pakistan (Riaz and Shahid, 2018) was contradictory to the findings of the

researcher which revealed that the maximum number of professional drivers had inadequate knowledge about traffic sign boards (87.64%) and were less aware. The difference in results might be due to the difference in driving experience, literacy rate of the population or road safety education might not be a part of their school curriculum and the reduced exposure to IEC activities.

Regarding the traffic rules (prerequisites), only 23.6% responded correctly for the minimum age of getting license which is supported by the study conducted among the drivers (Kharde et al., 2018), where 10.6% of the respondents were aware of minimum age of getting license. Out of 250 respondents, interpretation of signboards was done correctly by 18.0% for stop and 55.6% for no stop which is contradictory to the findings of same study conducted among the drivers (Kharde et al., 2018) where 51.7% were aware of the sign of stop whereas 64.7% were aware of signboard for no stop. Similarly, contradiction is still seen on the awareness of criteria for overtaking where this study shows awareness on 43.2% of respondents but in others studies shows 95.2% (Kharde et al., 2018). Further, contradiction can be seen in the study done on Bangalore, India (Ramya et al., 2017) which concluded that 90.7% of participants were aware of the lane rules that over-taking should be done from the right side only.

This study had revealed that there is a significant

association between gender with awareness regarding Traffic rules and Safety measures which is supported by the similar study conducted among adolescent students of a selected Pre-university College in Raichur city (Ranjan et al., 2018) which also concluded that there is significant association between gender with awareness regarding Traffic rules and Safety measures.

Similarly, this study had concluded that the experience/ training regarding Traffic rules and Safety measures had significant relationship and no relationship of father's and mother's education with awareness regarding Traffic rules and Safety measures which is consistent (source of information) as well as contradictory (father education, mother education) with the findings of study conducted among Secondary School Students in Jaipur, Rajasthan (Singh, 2018) which revealed that the awareness and practice regarding road safety rules had significant relationship with the source of information of secondary school students.

This study, which was conducted in three colleges of Bharatpur in two weeks, had also found the significant association between personal RTA experience with awareness regarding traffic rules and safety measures whereas no significant association was found with other variables. Variation in the findings with other studies might be due to population, setting differences and lacking in total time duration for the completion of the study.

4. Conclusion

On the basis of the findings it is concluded that more than half of the students have adequate awareness regarding traffic rules and safety measures. Male respondents are more aware than female. Students who had experienced RTA are more aware than others. Respondents who had attended educational programme or training regarding RTA/Traffic rules/ Road Safety were found more aware than those who hadn't attended educational programme or training regarding RTA/Traffic rules/ Road Safety. The findings of the study would be helpful to the selected college's administrator for planning and implementing the awareness programme to increase awareness regarding traffic rules and safety measures among students. The study findings could be helpful for nurses and other health personnel to plan and implement awareness raising program related to awareness regarding Traffic rules and Safety measures. The findings of the study might be helpful to provide baseline data for future research. The findings of the study might be helpful for the local government bodies to plan and organize awareness programme to the community and for young adults regarding awareness on Traffic rules and Safety measures and also to improve the road status, taking actions like adding the extra traffic symbols on the road, involvement of educational programme in the curriculum of the students. It is recommended to raise the awareness program in the form of IEC materials distribution, behaviour change communication by

government bodies and need based counseling on traffic rules and safety measures in every college, especially for bachelor level students.

Author Contributions

All authors had equal contribution and all authors reviewed and approved the manuscript.

Conflict of Interest

The author declared that there is no conflict of interest.

Ethical Approval/Informed Consent

Prior to data collection, research proposal approval was obtained from Thesis Committee of School of Nursing, Chitwan Medical College. Data collection permission was taken from the principal of selected colleges, Chitwan. Ethical approval was obtained from Chitwan Medical College Institutional Review Committee (CMC-IRC).

Verbal consent was taken from each respondent prior to data collection. The dignity of respondent was secured by giving right to reject or discontinue from the research study at any time. The respondent's anonymity was maintained during data collection by giving code number instead of name, and confidentiality of the information was maintained by not dis-closing the information with others.

References

- Adhikari GP. 2016. Road traffic accidents (RTAs) trends on Kathmandu-Bhaktapur road after addition of lanes. *Open J Civil Eng*, 6(3): 388-396.
- Alonso F, Esteban C, Montoro L, Useche SA. 2017. Knowledge, perceived effectiveness and qualification of traffic rules, police supervision, sanctions and justice. *Cogent Soc Sci*, 3(1): 1393855.
- Choulagai B, Ling H, Sharma P, Mishra SR, Ahmed M, Chand PB. 2015. Epidemiology of road traffic accidents in Nepal: data review and qualitative analysis. *SM J Pub Health Epidemiol*, 1(3): 1014.
- Gopalakrishnan S. 2012. A public health perspective of road traffic accidents. *J Family Med Prim Care*, 1(2): 144-150.
- Kharde A, Jain A, Phulambrikar R, Kharde A. 2018. Study on awareness of road traffic rules among drivers of rural area: A cross-sectional study. *Int J Med Sci Pub Health*, 7(12): 969-973.
- Maqbool Y, Sethi A, Singh J. 2019. Road safety and road accidents: an insight. *Int J Inf Comput Sci*, 6: 93-105.
- Ramya MS, Jadhav J, Ranganath TS. 2017. A study to determine the awareness and behavioral patterns/practice about road safety measures among undergraduate medical students, Bangalore, India-cross sectional study. *Int J Commun Med Pub Health*, 4(3): 825-830.
- Ranjan DP, Fahim MA, Kirte RC. 2018. A cross sectional study to assess the knowledge, attitude and practice towards road traffic safety among adolescent students of a selected Pre-University college of Rainchur city. *Int J Commun Med Pub Health*, 5(6): 2446-2452.
- Ratna HV, Rajesh SS, Jayaram A, Rajanna MS, Venkatesh P, Iyengar K. 2017. Awareness and behaviour patterns regarding road safety measures among undergraduate students. *Int J Commun Med Pub Health*, 4(4): 944-948.

- Riaz I, Shahid S. 2018. Knowledge, attitudes, and practice of drivers towards traffic rules and regulations in Multan, Pakistan. 7th International RAIS Conference on Social Sciences, February 25, 2018, Florida, US, pp: 158-175.
- Shetty SK, D'mello MK, PurushothamaJ, Rent PD, Monisha V. 2017. Awareness and obyeence of road traffic rules among motorists in Mangaluru suburbs, India. *Int J Commun Med Pub Health*, 4(10): 3796-3801.
- Singh M. 2018. Awareness and practice of road safety rules among secondary school students in Jaipur, Rajasthan. *Nitte Univ J Health Sci*, 8(2): 25-31.
- Thapa AJ. 2013. Status paper on road safety in Nepal. DDG, Department of Roads. Kathmandu, Nepal, pp: 22.
- WHO. 2018. Road Traffic Injuries. URL: <https://www.who.org> (access date: September 05, 2021).
- Yamane T. 1967. *Problems to accompany statistics, an introductory analysis*". Harper & Row, New York, US, pp: 919.