

Traffic Rule Awareness Among Bachelor-Level Two-Wheeler Riders in Kathmandu

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Abstract

Traffic rules are planned to expedite the flow of traffic and prevent collisions among traffic. These road rules are important as they help in preventing crashes. Most traffic rules are for everyone's safety. But still, road traffic injuries and accidents remain an important public health problem at global and national levels. The objective of this study was to find out the awareness level of traffic rules among bachelor-level two-wheeler rider students. A descriptive cross-sectional study was conducted in which 400 two-wheeler riders were selected among bachelor-level students from colleges of ward number seven of Kathmandu Metropolitan City. A self-administered pre-tested and reverse-translated questionnaire was used. Data were entered and analysed in the IBM SPSS 20.0 version. There were 78.2% male and 21.8% female riders of two-wheelers. Of the participants, 85.8% were more than 23 years of age, and the rest 14.2% were less. The study found that 51.5% of participants exhibited adequate awareness of traffic rules while 48.5% exhibited inadequate awareness. There was a significant association between the level of awareness of traffic rules with years of bachelor's education, past experience of accidents, and the presence of a license. This study revealed the existence of inadequate knowledge of traffic rules among bachelor-level two-wheeler rider students. This suggests a need to design and implement a regular road safety campaign for these two-wheeler riders.

Keywords: Bachelor, Knowledge, Rules, Traffic, Two-wheelers.

Introduction

Traffic rules are planned to expedite the flow of traffic and prevent collisions (Dictionary, 2023). Traffic rules are important as they help in preventing crashes. Most traffic rules are for everyone's safety but it is also an attempt at maintain a sense of fair play. Disobeying traffic rules leads to road traffic injuries with serious

consequences such as road traffic injuries (RTIs) related morbidity and mortality. Also, road traffic crashes in most countries cost 3% of their gross domestic product (WHO, January 28, 2023).

Each year, an estimated 1.2 million people are killed due to road traffic accidents while 50 million are injured (Peden, 2004). Among them, nearly half of those dying are vulnerable road users i.e., pedestrians, cyclists, and motorcyclists. RTA is also predicted to be the 7th leading cause of death by the year 2030 (WHO, January 28, 2023). According to WHO, Road traffic injuries among people under 25 years rank as the eighth leading cause of death around the world. The highest burden of road traffic death rate, i.e., 90% of road traffic deaths is among low- and middle-income countries even though these countries have only 54% of the world's vehicles (WHO, January 28, 2023; Dhakal, 2018).

In Nepal, the case fatality rate in year 2009-2010 was 17 per 10,000 registered vehicles which is one of the highest rates in both Asia and the world. According to the police statistics report, there were 8656 RTA in 2010-2011 resulting in 1689 fatalities 4071 serious injuries, and 91333 minor injuries. The fatality rate is higher than 17 if the number of old vehicles or under-reporting is considered. Kathmandu Valley has the maximum number of accidents in comparison to major places in Nepal. There were 53,494 motorbikes registered in the whole Baghmata zone in 2070/71 (NHRC, 2018). More than 3000 motorbike accidents occur every year in Kathmandu Valley and there are increasing numbers of motorcycle casualties in the valley in comparison to the other means of transportation.

There were 1,801 accidental cases of road crashes during the 82 days of lockdown in Nepal, which included 2,602 vehicles with 256 deaths and 1,824 injuries (Sedain, 2021). There were 95, 902 crashes, 1,00,499 injuries, and 14,512 fatalities over the twelve-year duration from 2001 to 2013 (Karkee, 2016). Road traffic-related mortality has increased from 2007 onwards in Nepal (Dhakal, 2018). Out of the total motorcycle accidents in Nepal, more than 50% occur in Kathmandu Valley (Sapkota, 2016).

Awareness campaigns on road rules could make users conscious of the violations, bringing about changes in behaviors, particularly among motorbike and pedestrian users. Awareness will make people more accustomed to following them and reducing the chance of accidents because of negligence or unawareness. It is not only for prevention against immediate crashes, but increased awareness to promote a culture of safety.

The selection of Kathmandu Metropolitan City for the assessment of traffic rules awareness among two-wheel riders is thus justified in this study. This assessment is helpful in road safety policy formulation on traffic rules for youths, especially in major cities of Nepal. Owing to this, the study aimed to assess the

awareness and associated factors on traffic rules among two-wheel riders bachelor level students in Kathmandu Metropolitan City.

Methodology

A descriptive cross-sectional study was conducted to assess the knowledge of traffic rules among two-wheeler rider bachelor-level students in Kathmandu Metropolitan City. The cross-sectional design was chosen as it allowed for assessing awareness at a specific point in time. The study was conducted in ward No. 7 of Kathmandu due to its high density of bachelor-level colleges. The study population comprised 400 students from eight colleges, selected by purposive sampling method from 685 riders, with data collected via a self-administered questionnaire after obtaining verbal consent. Data collection took place over two weeks during college hours, and the questionnaire, developed through an extensive literature review, was pre-tested and adjusted accordingly. Ethical approval was obtained from Chitwan Medical College's Institutional Ethical Review Committee. Data was analyzed using IBM SPSS 20.0, employing descriptive and inferential statistics, with the Chi-square test for inferential analysis. Despite limitations in literature and the restricted study area, the research provided valuable insights into traffic rule awareness.

Results

Level of knowledge of traffic rules

The level of knowledge among bachelor-level students was measured using a scoring system. While scoring, each correct response was coded as 1, and the incorrect response as 0. Out of a total of 22 questions related to awareness of traffic rules for two-wheeler riders, 3 questions had multiple answers where incorrect answers were also coded as incorrect responses. The normality of the knowledge score was checked using the Sapiro-Wilk test. Since the data were found to be negatively skewed, the median was taken as the cut-off point. The median of the total score was found to be 14 and the level of knowledge was categorized as below.

Inadequate knowledge: $<$ median of the total knowledge score i.e., (0-13)

Adequate knowledge: \geq median of the total knowledge score i.e., (14 – 22)

More than half, (51.5%) of participants had adequate knowledge and 48.5% had inadequate awareness about traffic rules. The median, interquartile range, maximum, and minimum scores were 14, 4, 19, and 1 respectively (Table 2).

Table 1

Level of knowledge of traffic rules among participants in Kathmandu Metropolitan City Ward No. 7, 2019 (n=400)

Level of knowledge	Frequency	Percentage
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Adequate (≥ 14)	206	51.5
Inadequate (< 14)	194	48.5

Median= 14, Inter Quartile Range= 4, Maximum= 19, Minimum=1

Duration of driving experience

Thirty-eight percent of drivers have less than one year of experience, 31.5% have one to two years of experience, and 30.5% have more than two years of experience. Further, 53.8% of Participants had no experience with accidents while 46.3% had experienced some form of accident. (Table 3).

Table 2

Duration of driving experience of participants in Kathmandu Metropolitan City Ward No. 7, 2019 (n = 400)

Variables	Frequency	Percentage
Driving experience		
More than one year	152	38
One to two years	126	31.5
More than two years	122	30.5
Past experience of accidents		
Yes	185	46.2
No	215	53.8

License holding status

Majority of participants (77.7%) possessed a valid driving license in their disposal, whereas 22.3% did not. (Table 3).

Table 3

License holding status of participants in Kathmandu Metropolitan City Ward No. 7, 2019 (n = 400)

License holding status	Frequency	Percentage
Yes	311	77.7
No	89	22.3

Knowledge about the cause of RTIs

The majority of participants, i.e.; 55.5% mentioned that the accident occurs mostly while overtaking followed by changing lanes suddenly, 41.8%. Most of the participants (91.8%) mentioned that environmental factors like the slippery road were responsible for accidents followed by animals on the road (72.8%), dense fog (70.5%),

windy environment (55%), and lack of zebra crossing (42.5%). While talking about the road conditions that may cause accidents, 28.6% said that roads without traffic signals cause accidents followed by rough roads (26.7%), narrow roads (22.5%), and roads without white dotted lines (13.8%). Only a few, i.e., 8.5% mentioned that wide roads as the cause of accidents (Table 5).

Table 5

Knowledge of participants about the cause of RTIs in Kathmandu Metropolitan City Ward No. 7, 2019. [Multiple responses were possible. (n = 400)]

Variables	Frequency	Percentage
Driving activity		
Changing lane suddenly	167	41.8
While overtaking	222	55.5
While driving within speed limit*	58	14.5
Environmental factors		
Dense fog	282	70.5
Slippery road	367	91.8
Animals on the road	291	72.8
Windy environment	220	55.0
Lack of zebra crossing	70	42.5
Road conditions		
Road without traffic signals	226	28.6
Road without white dotted lines	109	13.8
Rough road	211	26.7
Wide road*	67	8.5
Narrow road	178	22.5

**Wrong Response*

Association of traffic rules knowledge with selected variables

The causal relationship between the independent variable and knowledge regarding traffic rules was measured using a chi-square test. The level of significance of the causal relationship was set at a P-value of 0.05. There was a significant association between traffic rule knowledge of the presence of the license, years of bachelor's education, and past experience with accidents. However, there was no

significant association between traffic rules knowledge with demographic variables and driving experience (Table 6).

Table 6: Association of traffic rules knowledge with selected variables in Kathmandu Metropolitan City Ward No. 7, 2019 (n = 400)

Independent characteristics	Knowledge on traffic rules		Chi-square value	p-value
	Adequate	Inadequate		
Year of bachelor’s education				
First year	86 (21.5)	112 (28)	11.175	< 0.01*
Second year	50 (12.5)	40 (10)		
Third and fourth year	70 (17.5)	42 (10.5)		
Duration of driving experience				
Less than 1 year	25 (6.2)	24 (6)	1.178	0.555
One to two years	49 (12.2)	55 (13.8)		
More than two years	132 (33)	115 (28.8)		
Past experience of accidents				
Yes	107 (26.8)	78 (19.5)	5.535	0.019*
No	116 (24.8)	99 (29)		
Presence of license				
Yes	172 (43.0)	139 (34.8)	8.104	< 0.01*
No	55 (13.8)	34 (8.5)		

**Statistically significant at p < 0.05 (Applying Pearson’s Chi-square Test at 95% CI level)*

Discussion

The present study revealed the overall adequate knowledge of traffic rules among participants was 51.5%, which is little more than inadequate knowledge of traffic rules found as 48.5%. It meant that around half of the youths had inadequate knowledge of traffic rules leading to road traffic injuries. This situation entails that imparting knowledge regarding traffic rules is indispensable to college youths.

A more or less similar finding can be observed in the study conducted in Faridabad, India found that 41% of the participants had adequate knowledge of road safety measures (Jacob, 2018). Another study conducted in Malaysia found that the majority of the participants, 78% mentioned that they had moderate knowledge about road traffic regulations (Redhwan, 2010). This may be because that study included participants who drove four-wheelers as well and were not categorized as having adequate knowledge or inadequate knowledge. For this reason, 78% of moderate knowledge may be linked with 51.5% of adequate knowledge of our study.

In contrast, a study conducted in Nigeria showed that only 32.6% possessed a good knowledge of road traffic codes and safety (Adogu, 2006). That’s because the

study was conducted among commercial motorcyclists who were mostly illiterate and were also living in poor economic conditions. Another previous conducted in Nagpur; India found that 98.3% of the students were aware of road safety measures (Kasulkar, 2017). However, the study was simply about general awareness of road safety measures which was not categorised as inadequate and adequate. Furthermore, that study was also conducted among medical students which may indicate a higher awareness level.

The present study reveals that bachelor-level two-wheeler user students in Kathmandu ward-7 are not adequately aware of the traffic rules. In other words, this study found inadequate knowledge of traffic rules among bachelor-level two-wheeler riders students in Kathmandu. The findings suggest a need to design and implement a regular road safety campaign for these two-wheeler riders. Emphasis should be given to both licensed and unlicensed riders with a focus on high-risk behaviours like overtaking and sudden lane change. Two-wheeler drivers should be trained and given the proper knowledge of traffic rules before the licensing examination from the institutional level as well as every time their licenses are ceased. Behavioural interventions like counselling and awareness programs to riders after accidents may make drivers more reflective towards unsafe practices and adopt safer behaviour.

Furthermore, vehicle licensing can be strengthened through comprehensive traffic rule assessment system. Also, road improvement through the installation of traffic lights and improved road surfaces could further reduce RTA by decreasing environmental factors causing RTA. Knowledge about traffic rules must be given in both formal and informal ways to all two-wheeler youth riders in colleges. To further ascertain the level of knowledge of traffic rules among college two-wheeler riders, qualitative studies exploring attitudes and perceptions toward traffic rules could provide deeper insights into behavioural motivations. For that, there is a need to incorporate more variables and participants in future studies that have not been covered in this study.

Conclusion

This study found that there exists a poor knowledge of road rule among bachelor level two-wheeler users. Knowledge was found statistically significant with year of bachelor's education, past experience with accidents and presence of license. There was no significant association between knowledge and demographic variables as well as driving experience.

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