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Road Safety and Traffic Regulation Awareness among Road Users of Baraigram Upazila, Natore

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Abstract

Road traffic accidents are one of the public health problems all over the world, especially in developing countries like Bangladesh. There is great importance for knowledge and traffic regulations awareness in the reduction of road accidents. The study aims to determine the road users' knowledge of Road Safety and Traffic regulation knowledge of Baraigram Upazila, Natore District. Two National Highway sections from N6 and N507 were selected for the study. A questionnaire survey was conducted among 384 road users in the study area. It was observed that parking areas, traffic signals or traffic police boxes, and emergency lanes were not present in all selected zones. Most respondents (65%) travel 3-6 times daily. Their preferred vehicle was found CNG (25%), Auto Rickshaw (25%), and Van (24%). According to the respondent's responses, the current road safety problems of Baraigram Upazila were found lack of driver skills (obeying driving rules, crossing speed breaker), carrying more passengers than limited seats, lacking road signs, and vehicle fitness. In 2022 at Baraigram Upazila, it was found that the accidents occur in this area mainly caused by three-wheelers (23%), 14% were reported dead mostly was children (40%), and 36% highly injured from all the accidents.

Keywords: *Awareness; Road safety; Road Users; Traffic knowledge; Traffic regulations.*

1 Introduction

Road safety issues are major economic, social, and health problems, especially in developing countries like Bangladesh. It is reported that on average, 3287 people die from road accidents worldwide every day. Of which most of them are young people whose age is between 15 to 29 years. Govt. of low- and middle-income countries spend approximately 3-5% of GDP on traffic accidents, where 90% of the world's fatalities occur on the roads of these countries. However, they have only 54% of the world's registered vehicles (WHO, 2015). Road traffic accidents must be prevented to improve the quality of life (Singh, 2018). The road transportation system of Bangladesh is important for the economy as this country is the 9th most densely populated country (www.statista.com) whose population is 149.8 million with 1015 persons per sq. km (BBS, 2021). With the construction of high-speed roads, a rapid rise in population, urbanization, motorization, and inadequate road safety, the number of traffic accidents is alarmingly rising. In Bangladesh today, 1.5 million non-motorized and about 0.70 million motor cars are registered (NRSSAP, n.d.). In the next ten years, the number of automobiles in the nation is anticipated to double at the current growth rate. Another aspect of road transportation in Bangladesh is the complexity of the road environment with mixed motorized and non-motorized transport traffic, where road designs are unsuitable for mixed traffic rules (BRAC, 2007).

It was reported that 32 people died and 101 people were injured in 17 road accidents in 13 districts in Bangladesh during 21- 24 August 2018. On 25 August 2018, A head-on collision between a bus and a laguna traveling at high speeds in opposing directions at Kadam Filler on the Rajshahi-Pabna Highway under the Lalpur upazila in Natore resulted in 13 fatalities, including two children and six women, and over 20 injuries (Kabir, 2018). For this finding, the present study is focused on determining the knowledge of the road users on Road Safety and Traffic regulation knowledge of Baraigram Upazila, Natore District, so that the local authority can take necessary action to reduce accidents.

2 Methodology

2.1 Study Area

Baraigram is an upazila of Natore District in Rajshahi Division located between 24°10' and 24°21' north latitudes and in between 88°01' and 89°17' east longitudes (Figure 1). The total area of Baraigram Upazila is 299.61 sq.

km. Gurudaspur bounds it and Natore Sadar upazilas on the north, Lalpur, Bagatipara upazilas on the west, and Pabna district on the south and east side. The total population of Baraigram Upazila is 2,94,623. For the present study, the surrounding area of two National Highway sections from N6 and N507 were selected from Baraigram Upazila (Figure 1) and divided into three zones shown in Table 1. The N6 road starts from Kashinathpur and ends at Rajshahi Highway, totaling 204 km. At the same time, the N507 road started from Hatimkamrul to Bonara with a total length of 51 km. (<http://baraigram.natore.gov.bd>).

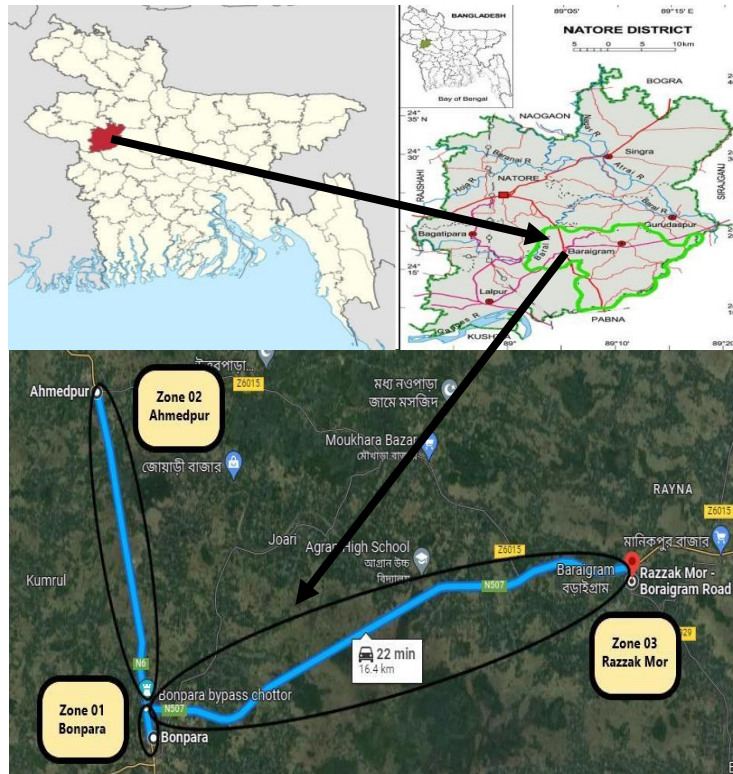


Figure 1: Study area

Table 1: Details of selected zone

Zone	Zone Name	National Highway No	Area	Length (Km)
01	Bonpara	N6	Bonpara Bazar to Bonpara Bypass	1
02	Ahmedpur	N6	Ahmedpur to Bonpara Bypass	5.4
03	Razzak Mor	N507	Bonpara Bypass to Razzak Mor	10

2.2 Data collection

The primary data was collected through a questionnaire survey. The questionnaire had 27 questions which included opinions about the surrounding environment, road conditions, users' awareness, demographic profile of the respondent, etc. Bill Godden's formula for the infinite population has been used to determine the sample size (Godden, 2004), which was found to be 384. Among 384 samples, 184 were collected from Zone 1 and 100 from Zone 2 and Zone 3 each. The secondary data was collected from the local police station about the annual accident rate, annual death report, and vehicle list of all accidents over the year.

2.3 Data Analysis

This study used Cronbach's Alpha methods for reliability tests (Cronbach, 1951) by using IBM SPSS (Statistical Package for the Social Sciences). Data processing and analysis were carried out using Microsoft Office Excel 2019.

3 Result and Discussion

3.1 Physical Observation of Road Condition

Two National Highways, N6, and N507, are inside Baraigram Upazila. There was an intersection point of these two National Highways named Bonpara Bypass, as shown in Figure 2a. No traffic control devices (Figure 2b), parking area beside the road, traffic light, traffic police present on the Highway, or emergency lane were observed during the study. Drivers of heavy vehicles like buses and trucks have a high overtaking tendency (Figure 2c) to reach their destination early, which sometimes causes terrible accidents. Although N6 and N507 both were busy highways, no pedestrian crossing mechanism such as zebra crossings, overbridges, or underpasses was found (Figure 2d). A single service road was beside National Highway N507 from Hatimkamrul to Bonara, totaling 51 km (Figure 2e). According to highway police, two or three-wheeler vehicles are illegal to run on the highway, but they were run on both highways, which caused many accidents, as shown in Figure 2f.

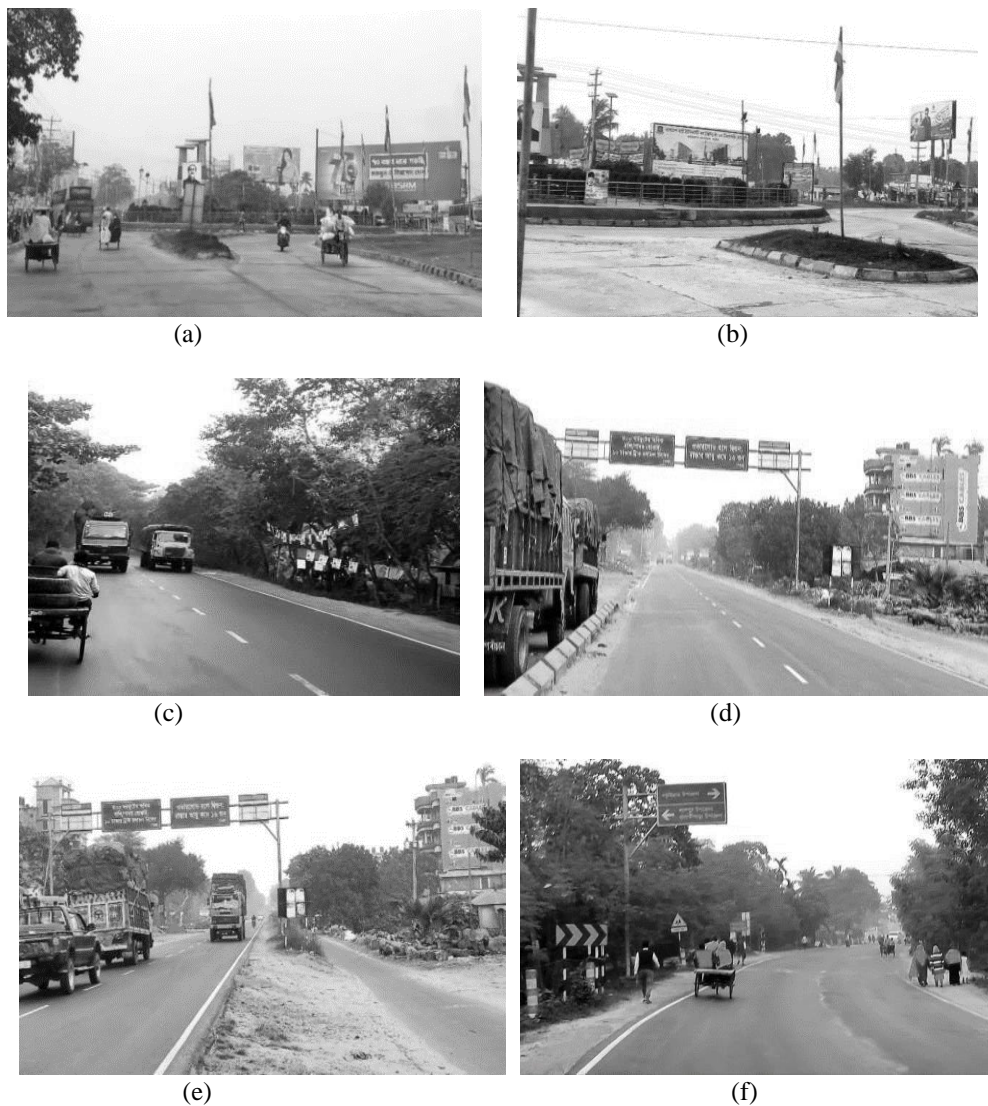


Figure 2: (a) Bonpara bypass, (b) no traffic control device, (c) overtaking tendency, (d) no road crossing mechanism, (e) service road is parallelly connected to N507, and (f) illegal three-wheeler vehicle.

3.2 Reliability of Data

The Cronbach's Alpha coefficient of 26 questions was found to be 0.797, indicating the data's reliability is within the "acceptable" limit. This concludes that the data collected during this study is reliable.

3.3 Demographic, Road Safety, and User Awareness

The age of the respondents was mainly from the 30–60year age range (75%), and most of them were male (99%). Most of the respondents live inside this upazila (81%), and the rest, 19%, live outside this upazila. Figure 3a shows that 65% of the respondents use the road 3 to 6 times per day, 23% use it less than three times, and 13% of respondents use it more than six times. It was seen from Figure 3b that CNG (25%), Auto Rickshaw (25%), and Van (24%) were the preferred vehicles among the respondent, although they were not allowed to run on the highway according to highway police. Only 8% of respondents chose Bus as their preferred vehicle. 51% of respondents said drivers cross the speed breaker correctly, but the rest, 49%, did not agree with the previous group. Most of the respondents (74%) agreed that the speed breaker is safe to use on Highway. However, the Communications Ministry’s Road transport advisory council has decided to remove speed breakers built on highways to stop road accidents. (<https://bdnews24.com/>). 36% of respondents (Figure 3c) said that they do not obey driving rules while using highways. During road construction and road maintenance work, 95% of respondents face problems such as traffic jams (42%), pollution areas by dust (38%), and roadblocks (15%) shown in Figure 3d.

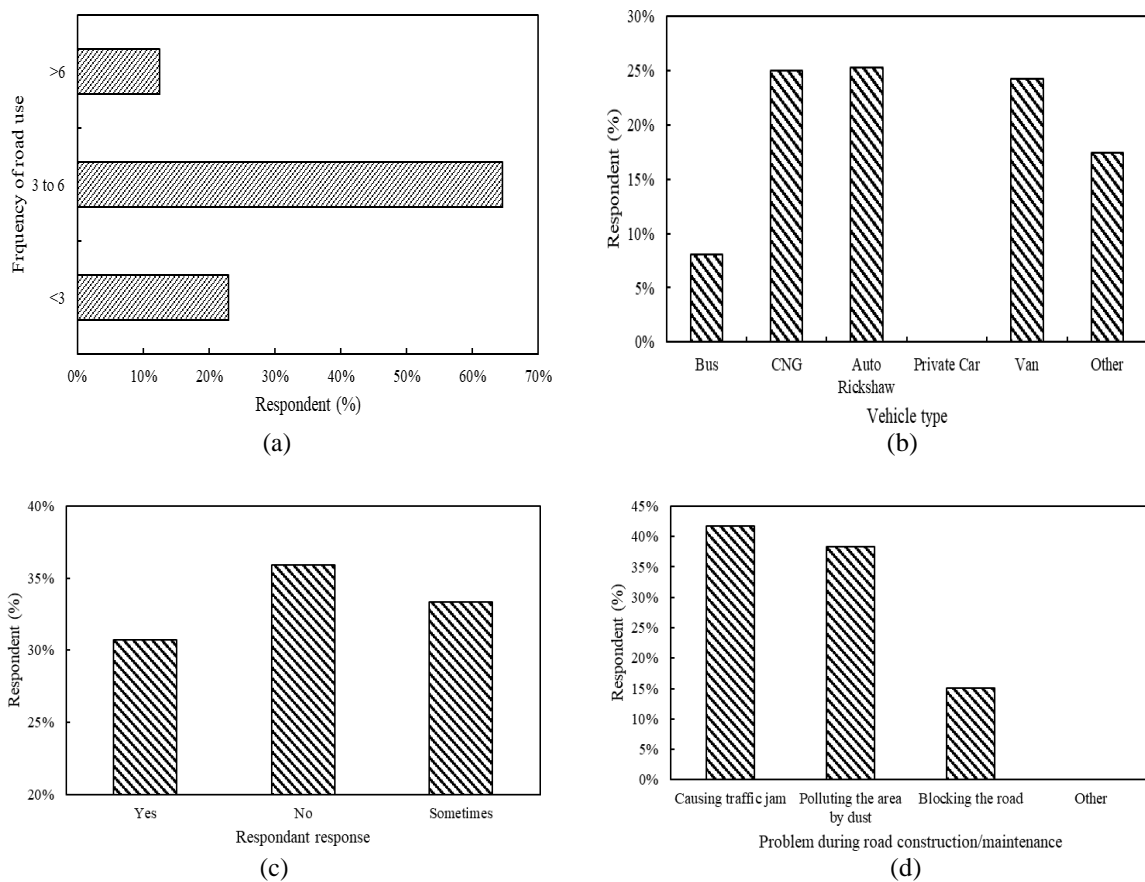


Figure 3: (a) Frequency of road use, (b) preferred vehicle of respondents (c) respondents’ perception of drivers obeying rules and (d) type of problems

Figure 4a shows that 65% of respondents chose a foot-over bridge as a road-crossing method, which was also found by Shamim *et al.* (2020). Next, 33% of respondents choose the Zebra crossing method to cross the road, and 3% of respondents choose Underpass for crossing the road. Most of the respondents (79%) preferred driver of the age range 25-40 as shown in Figure 4b. Figure 5 shows that 37% of accident occurs for drivers with overtaking tendency, 21% of accident occurs for drivers who are rough driving, 16% of accidents happen for giving permits to inexperienced drivers, 13% of accidents for over speeding, and 9%, occur for a distracted driver.

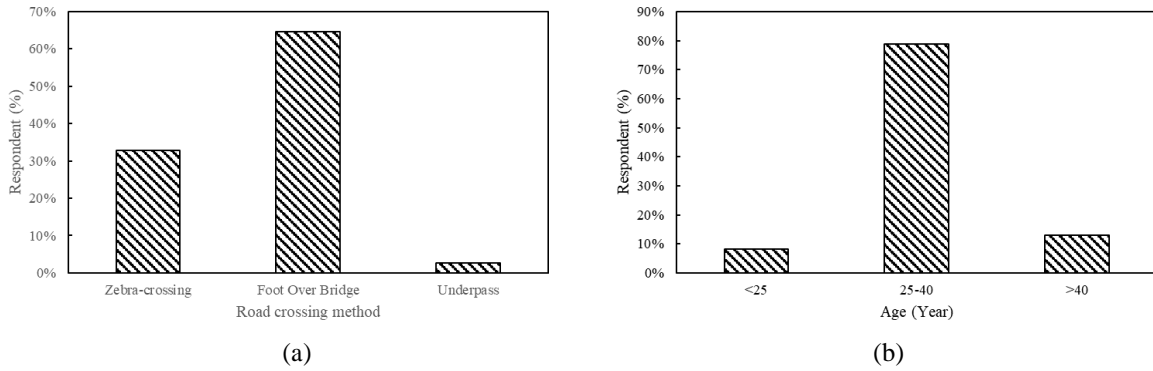


Figure 4: (a) Preferred Road crossing method and (b) preferred driver age

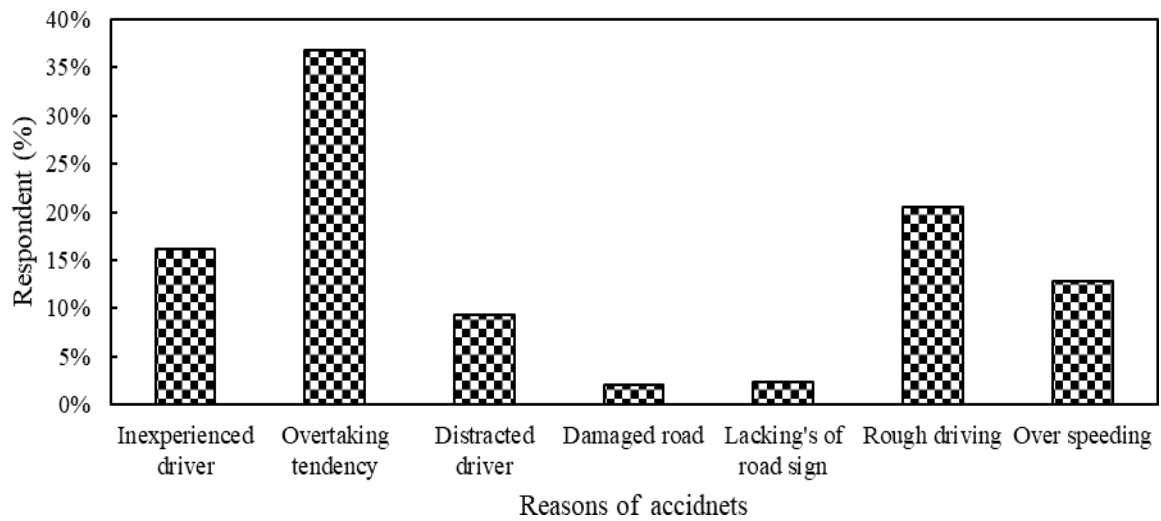


Figure 5: Causes of accidents according to road users.

3.4 Accident Statistic in Baraigram Upazila

It was reported that in the year 2022, buses caused 16% of accidents, trucks caused 17% of accidents, motorcycles caused 20% of accidents, 23% of accidents were caused by 3-Wheeler like vans, auto rickshaws, CNG, etc., and 24% accidents are caused by private transport like private car, bicycle, scooter, etc., as shown in Figure 6a. In those accidents all over the year 2022, it was found that 14% of people died, 50% of people are injured, and 36% of people were critically injured (Figure 6b).

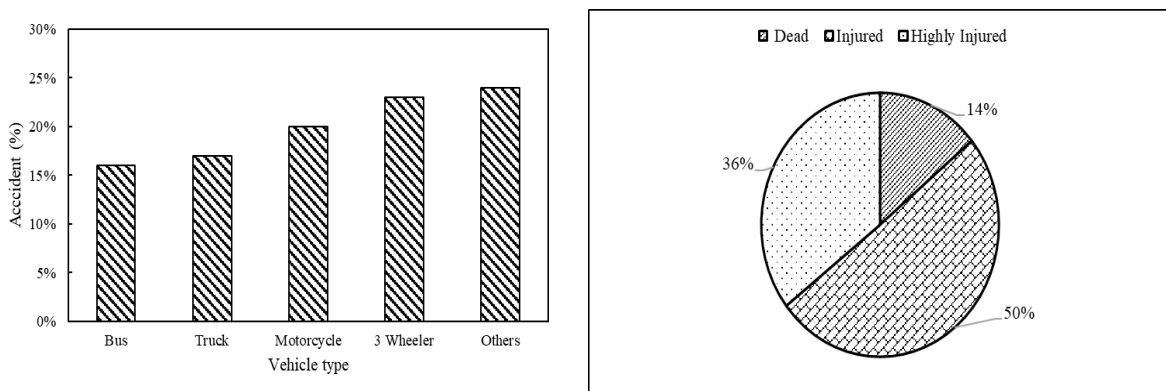


Figure 6: (a) Vehicle-caused accidents during 2022 and (b) affected Road users by accidents

3 Conclusion

The study provides road users' perceptions regarding road safety awareness and provides knowledge of the road user about road safety and traffic rules. The study results showed the road condition of the area in Baraigram Upazilla.

The findings of this study are as follows:

- There was no parking area beside the road found in all selected zones. Also, no traffic signal or traffic police box was present. No emergency lane was linked with the road.
- In this study, most of the respondents (75%) were aged 30-60 years, and 65% traveled 3-6 times per day. Preferred vehicle was found to be CNG (25%), Auto Rickshaw (25%), and Van (24%). According to the respondent's responses, the current road safety problems of Baraigram Upazilla were found to be a lack of driver skills (obeying driving rules, crossing speed breakers).
- In 2022, at Baraigram Upazilla, it was found that the accidents that occur in this area are mainly caused by three-wheelers (23%). Of all the accidents, 14% were dead, and 36% were highly injured.

It could be concluded that the road users of Baraigram Upazilla were unaware of road safety and had less knowledge about traffic regulations or rules. Therefore, the study recommends that safety awareness and knowledge of traffic regulations and instructions at an early stage and age should be emphasized with the increase in the enforcement of traffic regulations.

4 Recommendation

The following recommendations were suggested to improve the road safety and traffic regulation awareness of Baraigram Upzila:

- Emergency lanes need to be constructed.
- Traffic control device and traffic police is highly recommended for these two National Highway.
- A Road Safety Awareness Campaign event can help road users understand traffic regulation knowledge, which can increase their awareness of road safety.
- Road markings are highly recommended on the National Highway.

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