

## ORIGINAL ARTICLE

# Knowledge, Attitude, and Practices regarding Road Traffic Laws in Indore City: A Cross-Sectional Study

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## ABSTRACT

**Introduction:** Traffic injuries are among the leading causes of death and disability in many countries. The knowledge, attitude, and practice of general population toward traffic laws are key factors in decreasing traffic injuries and deaths. The objectives of this research were to study the knowledge, attitude, and practice of general population toward traffic laws and to determine the relationships between demographic features and knowledge, attitude, and practice. **Methodology:** A cross-sectional study was conducted among 380 young adults (above 18 years) from four areas of Indore city as study subjects for a duration of 6 months. All persons were interviewed by a pretested predesigned semi-structured questionnaire which included demographic questions and questions related to knowledge, attitude, and practice of traffic laws. Data were analyzed using SPSS 25.0 trial version, Chi-square test, Mann–Whitney U-test, and Kruskal–Wallis test. Ethical clearance from the college committee was taken and written informed consent was taken from the participants. **Results:** Among the total participants, 91.1% had good knowledge about road traffic light. About 46.4% were very convinced in using seat belt. About 45.5% people agreed that regular maintenance of vehicle was necessary. While driving, 45.7% occasionally were using phone and 25.5% were using seat belt always. About 42.4% were alcoholic while driving. Males were having more knowledge than females regarding traffic lights and traffic signs (Chi-square test;  $P < 0.05$ ). Literates had more positive attitude than illiterates (Mann–Whitney U-test;  $P < 0.05$ ). Age significantly affected the practices (Kruskal–Wallis test;  $P < 0.05$ ). **Conclusion:** Inadequate knowledge, less positive attitude, and risky practice toward traffic laws were the main cause of road traffic injuries. Overall findings of this study will be useful for planning accident prevention programs in the future. Measures imposed on violators of traffic rules, checks on driving vehicles without license, and focus on drunk driving should be strengthened.

**Key words:** Attitude, knowledge, practice, traffic laws

## INTRODUCTION

Road traffic accidents (RTAs) are one among the “biggest killers” across the world, according to the first global status report on road safety, the World Health Organization.<sup>[1]</sup> Traffic injuries are the leading cause of death and disability in many countries and they are major public health problems.<sup>[2]</sup> It is relatively easy for people to get a license without proper driving skills in India.

According to statistics MoRTH 2019.<sup>[3]</sup>

India – India alone accounts for 449,002 RTA burden, 151,113 deaths, and 451,361 injured people per year.

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Madhya Pradesh - (MP) account for burden, 11,249 deaths, and 52,816 injured people per year. MP holds 2<sup>nd</sup> rank in RTA in India.

Indore – Indore 3383 RTA burden, 328 deaths, and 2991 injured people per year.

Reviewing various literature, it significantly showed that in developing countries, people in the age group of 18–44 years,

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especially the males are carrying out a greater share of the burden of RTA. Motorcycle is the most vulnerable vehicle along with bus and truck, and pedestrians and passengers are the main sufferers in RTA. Various studies have previously demonstrated that there are many reasons that affect RTA, such as violating traffic laws and signals, novice drivers, excessive speed, faulty road and management, and lack of knowledge. Among all these factors, lack of knowledge and awareness, and violation of traffic law are identified as the most important cause behind RTA in India as well as globally.

Therefore, the importance of knowledge, attitude, and practice of traffic laws needs to be emphasized in prevention of RTA. This study aims to identify the current level of awareness and perception of drivers related to various road signs and rules, to detect whether there is any difference in perceptions across different regions of Indore city, to find out the magnitude of fine (penalty) issued by traffic police to people of Indore, and to assess the various perceptions regarding RTA.

**METHODOLOGY**

A cross-sectional study was conducted among 380 adults (above 18 years) from different areas of Indore city as study subjects for a duration of 6 months from August 2019 to January 2019. Sample size was calculated using the following formula based on the prevalence of RTAs.<sup>[4]</sup>

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} * p * q}{d^2} = \frac{(1.96)^2 * 44.3 * 55.7}{(5)^2} = 379 \approx 380$$

$Z^2_{1-\frac{\alpha}{2}}$  = Critical value at 95% confidence level (standard  $1-\frac{\alpha}{2}$  value = 1.96)

p = Prevalence of road traffic accident (44.3%)\*

q = 100-p

d = Margin of error (5%)

\*Prevalence based on the previous study

Persons were selected from four different areas of Indore city which reported high burden of RTAs, that is, Vijay Nagar, Bengali Square, Rajwada Circle, Jawahar Marg (data were obtained from the traffic police record). The first 95 individuals who gave consent were selected from each area. All persons were interviewed by pretested predesigned semi-structured questionnaire which included demographic questions and questions related to knowledge, attitude, and practice of traffic rules.

**Statistical Techniques**

Setting at  $P < 0.05$  level of significance, the association between knowledge and awareness about traffic rules and various background characteristics were assessed by several statistical tests.

On the other hand, respondent’s age, gender, residence, education, occupation, economic status, categories of victims, and awareness of RTA were treated as explanatory variables. Data were analyzed using SPSS 25.0 trial version.

**RESULTS**

The following tables illustrate the bivariate distribution of respondents who were involved in RTA and knowledge, attitude, and practice about traffic rules according to different explanatory variables. The total number of participants in this study was 380 people from the general population of Indore city. Minimum age was 18 years and maximum was 58 years. More than half of the participants (81.8%) are educated. Majority of the persons (75.3%) were businessmen by occupation [Table 1].

Majority of the participants (91.1%) mentioned that they had good knowledge about road traffic light but regarding traffic signs only (35.8%) had knowledge. Very few people (20%) knew about motor vehicle act. Very few people knew the correct side to overtake and correct side to walk for pedestrians (68.9% and 33.7%, respectively) [Table 2].

**Table 1: Sociodemographic of the participants (n=380)**

Variable	Frequency	Percentage
Age		
18–28	88	23.2
28–38	84	22.1
38–48	152	40.0
48–58	56	14.7
Sex		
Male	256	67.4
Female	124	32.6
Education		
Literate	311	81.8
Illiterate	69	18.2
Occupation		
Job	94	24.7
Others (businessman)	286	75.3

**Table 2: Knowledge of the participants toward road traffic regulations (n=380)**

Knowledge	Yes (n, %)	No (n, %)
Knowledge of traffic light	346 (91.1)	34 (8.9)
Knowledge about motor vehicle act	76 (20.0)	304 (80.0)
Knowledge about all traffic signs	136 (35.8)	244 (64.2)
	Right (%)	Left (%)
Correct side to overtake	262 (68.9)	118 (31.1)
Correct side to walk for pedestrian	128 (33.7)	252 (66.3)

When the participants were asked about the importance of the use of seat belt, only 46.4% were very convinced of its importance. However, only 10.5% of people strongly agreed that eating and drinking while driving were dangerous. About 45.5% of people agreed that regular maintenance of vehicle was necessary while 35.5% did not agree to the fact that increment in penalty was good [Table 3].

While driving, majority of people (45.7%) occasionally used mobile phones and 25.5% used seat belt always. About 31.3% occasionally used to smoke while 42.4% occasionally used to consume alcohol while driving. About 55% occasionally drove over speed. About 52.4% occasionally obeyed all traffic signals and signs. About 61.3% were looking into side mirror while overtaking another vehicle [Table 4].

**Bivariate analysis**

Bivariate analysis using the Chi-square test showed that gender was significantly associated with the knowledge of the people. Males were having more knowledge than females regarding traffic light and traffic signs ( $P = 0.034$  and  $0.0001$ , respectively, i.e.,  $<0.05$ ) [Table 5].

Attitude was significantly associated with education; literates had more positive attitude than illiterates (Mann–Whitney U-test;  $P$  value  $< 0.05$  for attitude in fastening seat

belt, eating and drinking while driving and maintenance of vehicle, increment in penalty for breaking rules) [Table 6].

Age significantly affected the practice (Kruskal–Wallis test;  $P < 0.05$ ); over speeding was observed among people aged 18–28 years ( $2.52 \pm 0.572$ ); majority of people who used indicators and who looked into both sides before turning belonged to age group above 48 years ( $2.39 \pm 0.652$ ). People who overtook from the wrong side belonged to 38–48 years of age group ( $2.30 \pm 0.540$ ). Gender also significantly affected the practice ( $P < 0.05$ ); males were having good driving practice than females [Table 7].

**DISCUSSION**

In our study, 91.1% mentioned that they had good knowledge about road traffic light but they had poor knowledge regarding traffic signs (35.8%) as compared to a similar study conducted by Basavaraju *et al.*, in which majority (77.7%) answered correctly that traffic light signal yellow color denoted to get ready. Majority (68.45%) answered  $\geq 3$  road signs correctly. Majority (61.2%) of the students had adequate knowledge, that is, answered (8–14) questions correctly, 38.2% of students had inadequate knowledge, that is, answered  $< 7$  questions correctly.<sup>[5]</sup>

In our study, about 46.4% were very convinced with the use of seat belt and 10.5% of people strongly agreed that eating and

**Table 3:** Attitude of the participants toward road traffic regulations ( $n=380$ )

Attitude	Strongly agree (%)	Agree (%)	Neither agree nor disagree (%)	Disagree (%)	Strongly disagree (%)
I feel discomfort while wearing seat belt during driving	34 (12.2)	129 (46.4)	42 (15.1)	62 (22.3)	11 (4.0)
Eating and drinking are dangerous while driving	40 (10.5)	134 (35.3)	158 (41.6)	48 (12.6)	0
Maintenance of vehicle is necessary	103 (27.1)	173 (45.5)	92 (24.2)	12(3.2)	0
Increment in penalty money is good for breaking traffic rules	53 (13.9)	53 (13.9)	72 (18.9)	135 (35.5)	67 (17.6)

**Table 4:** Practice of the participants toward road traffic regulations ( $n=380$ )

Practice	Always (%)	Occasionally (%)	Never (%)
Using a phone while driving	43 (11.3)	174 (45.7)	163 (42.9)
Using a seat belt	71 (25.5)	110 (39.6)	97 (34.9)
Smoking while driving	6 (1.6)	119 (31.3)	255 (67.1)
Driving over the speed limit	29 (7.6)	209 (55.0)	142 (37.4)
Opening a car door without paying sufficient attention	42 (15.1)	137 (49.3)	99 (35.6)
Failure to wear glasses by drivers with poor eyesight	35 (14.8)	184 (78.0)	17 (7.2)
Obey all traffic signals and signs	62 (16.3)	199 (52.4)	119 (31.3)
Driving a vehicle when alcoholic	10 (2.6)	161 (42.4)	209 (55.0)
Using indicators and looking both sides before turning	48 (12.6)	211 (55.5%)	121 (31.8))
Overtake from left side	30 (7.9)	261 (68.7)	89 (23.4)
Blow horn before overtaking	106 (27.9)	203 (53.4)	71 (18.7)
Sudden braking	26 (6.8)	234 (61.6)	120 (31.6)
Not looking into side mirror while overtaking another vehicle	73 (19.2)	74 (19.5)	233 (61.3)

**Table 5: Factors influencing the knowledge of study participant (n=380)**

Knowledge	Variables	Adequate knowledge (%)	Inadequate knowledge (%)	Chi-square test (P-value)
Knowledge about traffic light	Male	239 (69.1)	17 (50)	0.034
	Female	107 (30.9)	17 (50)	
Knowledge about traffic signs	Male	119 (87.5)	137 (56.1)	0.0001
	Female	17 (12.5)	107 (43.9)	

**Table 6: Factors influencing the attitude of study participants (n=380)**

Attitude	Variable	Mean±SD	Mann-Whitney U-test p-value
I feel discomfort while wearing seat belt during driving	Literate	2.37±0.961	0.0001
	Illiterate	3.47±1.087	
Eating and drinking are dangerous while driving	Literate	2.51±0.834	0.005
	Illiterate	2.80±0.850	
Maintenance of vehicle is necessary	Literate	2.52±0.655	0.0001
	Illiterate	1.93±0.790	
Increment in penalty money is good for breaking traffic rules	Literate	3.19±1.251	0.0001
	Illiterate	3.75±1.398	

drinking while driving were dangerous. Only 45.5% of people agreed that regular maintenance of vehicle was necessary while 35.5% did not agree to the fact that increment in penalty was good as compared to the similar study conducted by Al-Naggar and Al-Jashamy, Malaysia,<sup>[6]</sup> where 93.6% of participants were very strongly/strongly convinced of using of seat belt. For using seat belts, 52.3% were convinced of its use, followed by seat belt has become compulsory practice (20.2%), and 17.4% of participants liked to comply with regulations.

In our study, while driving, majority of people (45.7%) occasionally used mobile phones and 25.5% used seat belt always. About 31.3% always used to smoke while 42.4% used to consume alcohol while driving. About 55% occasionally drove over speed. About 52.4% occasionally obeyed all traffic signals and signs. About 61.3% were looking into side mirror while overtaking another vehicle as compared to a similar study conducted by Kulkarni *et al.*, in which, 25% were involved in drunken driving in the past 1 year. 20% of people were using mobile phone with hands free devices while driving. Nearly two-third of participants (68%) admitted to have crossed

**Table 7: Factors influenced the practice of study participant (n=380)**

Practice	Age group (in years)	Mean±SD	Kruskal-Wallis test P-value
Driving over speed	18–28	2.52±0.572	0.0001
	28–38	2.13±0.617	
	38–48	2.47±0.574	
	>48	2.02±0.502	
Using indicators and looking both sides before turning	18–28	1.88±0.543	0.0001
	28–38	2.24±0.573	
	38–48	2.28±0.663	
	>48	2.39±0.652	
Overtake from left side	18–28	1.95±0.501	0.0001
	28–38	2.06±0.449	
	38–48	2.30±0.540	
	>48	2.21±0.594	
Using a phone while driving	Male	2.38±0.487	0.009
	Female	2.52±0.501	
Using a seat belt	Male	2.00±0.765	0.0001
	Female	2.45±0.699	
Driving over speed	Male	2.19±0.584	0.0001
	Female	2.52±0.577	
Driving over speed	Literate	2.26 ± 0.611	0.015
	Illiterate	2.46 ± 0.531	

speed limits on multiple occasions<sup>[7]</sup> while in another study conducted by Sharma and Saini, in which, 78.7% of students used indicators while turning, 77.3% always blew horn before overtaking, 85.3% did not prefer driving after drinking alcohol, and 66.7% always obeyed all traffic signals. Many of them endangered their life by never practicing very crucial road traffic safety regulations such as never wearing helmet (36%), seat belts (34%), sticking to zebra crossing (24.7%), and following specified speed limits (10.7%) and sometimes using mobile while driving (32.7%).<sup>[8]</sup>

**CONCLUSION**

It was found that very few people had knowledge about traffic signs and motor vehicle act. Hence, awareness should be spread among people to improve their behavior and motivate them to follow road safety rules through advertisements, short films and time to traffic safety campaigns.

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