

Original Research Article

Risk perception and practice towards road traffic safety among medical students

Syed Hasan Nawaz Zaidi^{1*}, Pandab Chandra Paul², Pankaj Mishra¹, Ankur Srivastav¹

¹Department of Community, ²Department of Orthopaedics, Medicine, Mayo Institute of Medical Sciences, Barabanki, Uttar Pradesh, India

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***Correspondence:**

Dr. Syed Hasan Nawaz Zaidi,

E-mail: dr.hasanz@rediffmail.com

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ABSTRACT

Background: Road traffic injuries are a major but neglected epidemic. WHO has declared road traffic accidents (RTA) as the number one cause of death among those aged 15-29 years. India has witnessed 31.3% of the road traffic deaths among 15 to 29 years individuals in the year 2011 as reported by national crime records bureau. This study is aimed to learn and study risk perception and practice of road safety measures among medical students.

Methods: A Cross-sectional study was conducted among medical students with an objective A 297 M.B.B.S. students were selected by convenient sampling technique. The study period was May-August, 2016. The information collected was analysed using SPSS version 16 & Microsoft excels 2007 software.

Results: Majority of boys (82% and 98%) and girls (55% & 66%) had a satisfactory understanding of traffic rules and traffic signs & signals, respectively. While exploring on the helmet use, only 36% of girls were aware of its importance. About the factors responsible for the crash severity, participants showed a lesser concern to the seat-belts & child restraints (59% boys and 39% girls). Notably only 52% of male participants were in view that alcohol consumption sometimes increases the severity while driving.

Conclusions: Abidance to road safety was not found satisfactory. Adequate interventions and reorientation training towards road safety need to be introduced among young drivers.

Keywords: Accidents, Alcohol, Helmet, Road safety, Speed, Traffic

INTRODUCTION

Road traffic injuries are a major but ignored epidemic, requiring concrete efforts for effective and sustainable prevention to overcome the social, economic and health implications.

The WHO's Global status report on road safety 2015 indicates that worldwide the total number of road traffic deaths has plateaued at 1.25 million per year, with the highest road traffic fatality rates in low-income countries. Urgent action is needed to achieve the determined target

for road safety reflected in the newly adopted 2030 Agenda for Sustainable Development (goal 3 & 11) and halving the global number of deaths and injuries from road traffic crashes by 2020.¹ India a middle income country with a population of more than a billion witnessed 31.3% of the road traffic deaths among 15 to 29 years individuals in the year 2011 as reported by national crime records bureau (NCRB).² Refusal to follow traffic rules, drunken driving and over speeding are main reasons for road accidents. Therefore, a study was carried out with an aim to assess the knowledge, perception and practices by adolescents while driving a

vehicle and to motivate them to follow traffic rules to prevent future road traffic accidents.

METHODS

A Cross-sectional study was conducted among medical students. The participants (4th and 6th semester of M.B.B.S. students) were selected by convenient sampling technique, who are studying in Mayo medical college, Barabanki, India. Out of the total 328 students, 297 (193 boys & 104 girls) participated in the study. Those who didn't give complete information and those who were not available were excluded from the present study. The study period was May-August, 2016. A predesigned and pretested questioner was used and it was comprised of three parts, the first part included the characteristics of the participant and their particulars related to road traffic safety, second part contained the query related to knowledge regarding risk factors and the associated severity in relation to RTA, and the last part inquired

about their attitude and practice of road traffic safety. The information collected was analyzed using SPSS version 16 and Microsoft excel 2007 software. The percentage and chi-square test had been employed in the analysis of data. The ethical clearance was taken from the Institutional ethical committee before the start of the study.

RESULTS

Table 1 shows the baseline characteristics of the participants and the particulars on road safety related to them. While considering the age and sex profile of participants, 193 were boys and the rest 104 girls. The mean age of the respondents was 20.3±1.5 years. 58% participants have own their vehicle, 69% of them were having valid driving license. Only 36% were having more than two years of experience on driving. Among all participants, 4.73% got injured in past with no report on mortality.

Table 1: Baseline characteristics of the participants and related particulars on road safety (N=297).

| Variable | | Number | Percentage |
|---|-------------|--------|------------|
| Age | 18-20 years | 68 | 23% |
| | 20-25 years | 229 | 77% |
| Sex | Male | 193 | 65% |
| | Female | 104 | 35% |
| Having driving licence | Yes | 205 | 69% |
| | No | 92 | 31% |
| Own a vehicle | Yes | 171 | 58% |
| | No | 126 | 42% |
| Experience of driving (yrs.)* | <2 yaers | 135 | 64% |
| | >2 years | 75 | 36% |
| Exposure to previous RTA and related injury | Male | 11 | 3.7% |
| | Female | 3 | 1.0% |

* Values differ as only 210 participants had their experience on driving

A male preponderance was seen when query on road traffic safety was seeked in the table 2. Majority of boys (82% & 98%) and girls (55% & 66%) had a satisfactory understanding of traffic rules and traffic signs & signals respectively. Again, for other variables, boys were seemed to have a better awareness and understanding over girls.

While exploring the helmet use, only 36% of girls appeared to be aware of the safety provided by the helmet while driving. However, drunken driving emerged to be the most discussed determinant among others, as majority of participants (86%) were aware of its detrimental effects when driving. Boys (89%) and girls (80%) had a nearly common consensus over the role of alcohol. Among all, the overall knowledge appeared to be satisfactory and statistically significant ($p < 0.05$), except

on few determinants like mobile use and the condition of vehicle.

Participant's knowledge, when enquired for the risk assessment of crashes, revealed variable information as evident in table number 3. A good number of male participants responded satisfactorily and stated that road crashes with inappropriate & excess speed (88%) and alcohol consumption (64%), always appeared to be an important determinant in RTA. Likewise, on external factors, almost all of the boy participants had a common belief that the darkness and poor visibility (92%), defect in road design & layout & maintenance (73%) do contribute to the RTA. Boys also identified subjective factor like poor eyesight (92%) and being young (72%) as added significant factors. Girl participants were in consensus with male participants on the role of

inappropriate & excess speed (90%) and alcohol consumption (74%).

However, for other external factors, girls provided variable conclusions. When enquired about the factors responsible for the crash severity, participants showed a lesser concern to the seat-belts & child restraints (59% boys & 39% girls). However, boys considered inappropriate or excessive speed (91%) as an important determinant for the severity in a road crash. Notably only 52% of male participants were in view that alcohol

consumption sometimes increases the severity while driving. Along with inappropriate or excessive speed (97%), use of alcohol (95%) was also perceived by the female participants as an important factor in increasing the severity of RTA while driving. However, nearly half of participants (40% boys & 55% girls) stated that severity of crash and helmet use can be linked sometimes while driving and equal number of them presumed vehicle crash protection to be an important safety measure that always reduces the severity of crash.

Table 2: Awareness among participants regarding road traffic safety with a positive response.

| Awareness regarding | Boys (193) | Girls (104) | Total |
|--------------------------|------------|-------------|-----------|
| Traffic rules | 158 (82%) | 57 (55%) | 215 (72%) |
| Traffic signs & signals | 188 (98%) | 69 (66%) | 257 (87%) |
| Rules for pedestrians | 96 (50%) | 19 (18%) | 115 (39%) |
| Legal age at driving | 150 (78%) | 73 (70%) | 223 (75%) |
| Crash- helmet | 179 (93%) | 37 (36%) | 216 (73%) |
| Drunken driving | 171 (89%) | 83 (80% %) | 254 (86%) |
| Driving while mobile use | 83 (43%) | 29 (28%) | 112 (38%) |
| Condition of vehicle | 117 (61%) | 25 (24%) | 142 (48%) |

Chi-square: 30.862; p-value: 0.000065

Table 3: Perception of participants regarding risk factors.

| Factors influencing crash involvement | Response | | | | | | Chi-square test | P-value |
|--|------------|------------|----------|-------------|------------|----------|-----------------|---------|
| | Boys (193) | | | Girls (104) | | | | |
| | Always | Some-times | Never | Always | Some-times | Never | | |
| Excessive speed | 171 (88%) | 9 (5%) | 13 (7%) | 93 (90%) | 10 (9%) | 1 (1%) | 7.376 | 0.025 |
| Alcohol | 123 (64%) | 48 (25%) | 22 (11%) | 77 (74%) | 23 (22%) | 4 (4%) | 5.685 | 0.058 |
| Fatigue | 37 (19%) | 153 (79%) | 3 (2%) | 97 (93%) | 3 (3%) | 4 (4%) | 158 | 0.000 |
| Young age | 139 (72%) | 23 (12%) | 31 (16%) | 93 (89%) | 1 (1%) | 10 (10%) | 14.693 | 0.000 |
| Poor vehicle factors | 24 (12%) | 87 (45%) | 82 (43%) | 12 (12%) | 47 (45%) | 45 (43%) | 0.055 | 0.972 |
| Darkness & inadequate visibility | 177 (92%) | 15 (7%) | 1 (1%) | 47 (45%) | 31 (30%) | 26 (25%) | 85.135 | 0.000 |
| Poor eyesight | 177 (92%) | 15 (7%) | 1 (1%) | 45 (43%) | 34 (33%) | 25 (24%) | 89.36 | 0.000 |
| Defects in road design, layout and maintenance | 140 (73%) | 43 (22%) | 10 (5%) | 39 (38%) | 58 (56%) | 7 (6%) | 36.33 | 0.000 |
| Factors influencing crash severity | Always | Some-times | Never | Always | Some-times | Never | Chi-square test | P-value |
| Inappropriate or excessive speed | 176 (91%) | 15 (7%) | 2 (2%) | 101 (97%) | 3 (3%) | 0 (0%) | 3.99 | 0.135 |
| Seat-belts & child restraints | 113 (59%) | 73 (38%) | 7 (3%) | 41 (39%) | 46 (44%) | 17 (17%) | 18.99 | 0.000 |
| Crash-helmets | 99 (51%) | 78 (40%) | 16 (9%) | 27 (26%) | 57 (55%) | 20 (19%) | 19.97 | 0.000 |
| Vehicle crash protection | 117 (61%) | 43 (22%) | 33 (17%) | 63 (61%) | 29 (28%) | 12 (11%) | 2.25 | 0.323 |
| Alcohol & other drugs | 85 (44%) | 101 (52%) | 7 (4%) | 99 (95%) | 4 (4%) | 1 (1%) | 75.23 | 0.0000 |

Assessment of attitude followed the level of understanding of factors related to road traffic safety and

accidents. Figure-1 describes the participant's attitude and behaviour to road safety and its regulations. Most of

the participants revealed to follow traffic rules (82% and use of helmet (85%).

However, majority of participants admit that exceed speed limit (62%) and avoid following lane discipline (73%). Moreover, they even didn't practice to wear seatbelts (92%) when on four-wheelers. A few students (25%) disclosed that they did drunken driving.

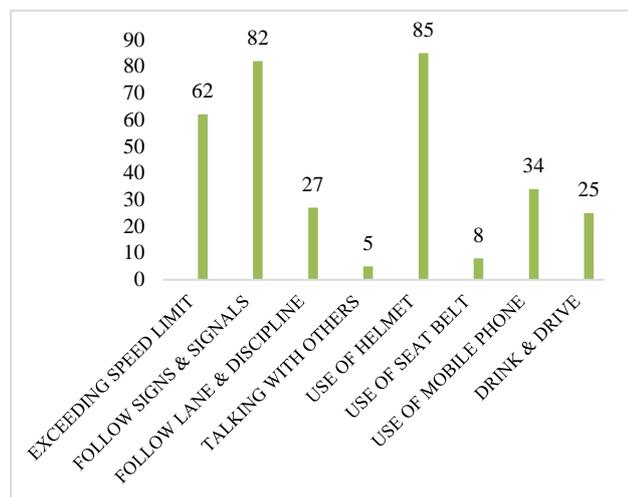


Figure 1: Practice of participants concerning road traffic regulations and RTAs with a positive response.

DISCUSSION

The present study was conducted to assess the knowledge, the risk factors, related severity and practice of road safety measures among under-graduate medical students. Majority of the study subject who were injured in RTA, showed a male preponderance. A similar observation was made in the studies conducted in Nepal and Delhi Jha et al. reported that the highest number of RTA victims were found between the age group of 20 and 29 years and the rates were 4.9 times higher in males than females.^{3,4}

Mehta et al. in his hospital based study too observed that male to female ratio of Road Traffic Accidents was high (9:1).⁴ Similarly, S.B. Salve et al. in his study on road safety awareness among young adults, reported that the prevalence of accidents was more than double (68.44%) among males as compared to females (31.56%).⁵ Present study revealed road traffic accidents prevalence to be less than 5%. However, other studies reported higher prevalence.⁶⁻¹⁰ Reason might be the greater awareness among the participants, strict enforcement of traffic rules and regulations and the better external conditions pertaining to commuting on the city roads.

Relationship of age with experience on driving showed significant importance. Nearly, two-thirds of the participants were having less than two years of experience on driving. Correspondingly, study conducted in Malaysia revealed that only a fewer number of

students who got injured were having more than two years of experience on driving. This demonstrated a less docility to speed rules and immature driving skill relative to those experienced over years. Yilmaz and Eray also revealed same finding in their study stating that the years of experience were significantly associated with the exposure to road traffic accident.¹¹

Present study shows that nearly one-third participants drive vehicle without a valid driving license. A greater awareness on traffic rules and their strict implementation by city traffic police is the possible explanation. Another reason is that the participants were above the lawful age for possessing a license to drive. Similar observation was made in other related studies stating that more than Fifty percent of the participants had driving licenses.^{3,6-10,12,13} However, in contrast, S.B. Salve et al., shows that 68 percent participants drive the vehicle without valid driving.⁵

In the present study, majority of the participants had a satisfactory knowledge about road traffic regulations. Overall, male participants had shown a good awareness over their female counterpart. A comparable finding was observed by Reang and Tripura in his study stating that the majority of the students identified traffic signs correctly and males had significantly ($p=0.035$) better knowledge (81.8%) as compared to females (71.7%).¹⁴ This observation was supported by findings from other authors also.^{5,7,15} However, other studies carried out by V. Kulkarni et al, Mahawar et al. and Swami et al revealed that the observed awareness was much less than the expected satisfactory level.¹⁶⁻¹⁸ The better knowledge of traffic sign among participants, and that is too in male students, might be due to the habit of going out more frequently than girls and more of their exposures to traffic signs in city.

Majority of the participants straightway identified high speed as a most important determinant of RTA. These findings were in accord with what had been reported in previous studies.^{6-9,14} In contrast, Redhwan and Karim, reported that the speeding inside the city or in the highways was not significantly influenced by the exposure to traffic road accident among university students.⁶ A high risk taking behaviour while driving for sensational and thrill seeking is not only dangerous to drivers but also to others.

It is more than documented that the alcohol found to be an important factor influencing both the risk of a road crash as well as the severity of the injuries that result from crashes, as it impairs driving ability. In addition, the risk of accident is higher in youngsters. In concordance, 86% of participants in our study, considered it as an important risk factor and knew that driving after consuming alcohol was dangerous. Similar observation was made by Reang and Tripura; Kulkarni et al and Hijar M et al.^{14,16,19}

Old and badly maintained vehicles might be among the important reasons for increasing road traffic fatalities in developing countries like India.²⁰ Awareness towards vehicles maintenance observed to be low among participants of the present study. About 43% of all participants did not consider maintenance of vehicle as an important condition to keep one safe on road. However, in contrast, S.B. Salve observed that 63.27% had good awareness about their vehicle condition. Moreover, on sex wise distribution for the maintenance of vehicles, he observed that 61.45% were the boys and 38.35% were girls.⁵ Similarly, Kulkarni et al. also observed that more than 2/3 had got their vehicles serviced regularly.¹⁶

Nearly all participants believed that the bad road condition, poor visibility and darkness have been proved to be important external factors in RTA. Similarly, Singh and Bhardwaj reported that majority (84.41%) of the victims responded that the bad road condition was the main reason for RTA.¹² According to Trivedi, 34% of participants identified poor road condition for the road traffic accidents.¹³ However, in contrast, S.B. Salve et al. reported that a few participants believed bad constructed roads (7%) to be responsible for the RTA.⁵

Regarding the use of seat belt as risk factors for the fatalities and injuries that result from road crashes, nearly half of the participants were less convinced of its importance. However, Karim et al; Al-zahrani et al. in their study, stated that the majority of participants were aware of the importance of the use of seat belts and identified it as one of the most effective way to prevent RTA related morbidity and mortality.^{6,7,18} Importance of wearing seat belt in our region has not gain much importance as it lacks commuter's commitment to the road safety. Furthermore, while country has legal limits, the police may not conduct any enforcement activity possibly because they do not consider it to be worthwhile or they do not have the appropriate support by their superiors.

Present study has showed that the majority of the participants (73%) carried a good understanding over the use of helmet, considering it as a vital safety measures. Awareness towards helmet use was good among boys (93%) in contrast to girl participants (36%). Enforcement of traffic laws especially for the helmet use, making it as an integral part of road safety, is firmly implemented and this could be one of the reasons for its higher usage among the participants.

Unsafe driving practices like high driving speed, not using helmet while driving and using mobile phone while driving is very common among young drivers and consequently a higher prevalence of Road Traffic Accidents. When enquired about the knowledge regarding RTA, it was observed to be quite high among participants of the study. Contrary, the way they practiced road safety measures was not desirable and satisfactory. Researchers from other studies observed related findings

and believed that the attitudes remain the most significant factor in increasing the rate of road traffic accidents. A considerable number of the participants admitted to have exceeded speed limit (62%), showed non-compliance to lane discipline (73%) and avoided the use of seat belt (92%) as a safety gear. Same result was observed in other similar studies regarding the practice of exceeding speed limit.^{14,16} In compliance to our study, S.B. Salve also reported that the traffic signals were followed by more than 68 percent and lane discipline were followed by only 43 percent participants.⁵

A dissimilar observation was made by S.B. Salve; Singh et al and Trivedi as against to present observation of high usage of helmets by the study subjects (85%).^{5,12,13} In present study, a higher compliance to the helmet wear may incurred as a result of the more stringent action on the offenders by the traffic police and consequently more abidance to the traffic rules.

Comparable result on practice of drunken driving was observed by related studies. Kulkarni et al, observed that 1/4 of study participant were involved in driving in drunken state.¹⁶ Singh et al reported that 18% gave history of having consumed alcohol within 6 hours before RTA.¹² Jha et al. reported that 15% of driver involved in RTA had consumed alcohol.³ However, these observation was in a higher proportion compared to Ghosh and Sood they reported 4.6% and 8%, respectively.^{21,22}

In present study, while evoking the response on mobile use while driving, a considerable number of participants denied the practice while driving and it was observed to be low (34%). A similar observation was made by Mahawar et al. stating that only fifteen participants admitted that they used mobile phones without hands free devices while driving.¹⁷ Trivedi reported that 42% of young drivers use mobile while driving.¹³ A low wearing could be explained by the fact that majority of participants drive while helmet is on their head, giving little space to mobiles or headphones. Further, in contrast to the present study, other authors observed that majority had got their vehicles serviced regularly.^{7,14,16}

CONCLUSION

The knowledge regarding RTA was quite high among participants; however, abidance to road safety was not satisfactory. Accidents among adolescents results in physical, psychological and economic loss to the victim itself, family and relatives. Ample interventions and reorientation training towards road safety need to be introduced to prevent and encourage their rationale behaviour. Adequate interventions and reorientation training towards road safety need to be introduced among adolescents to prevent and promote their rationale behaviour. As traffic safety is an essential part of public health and accident preventions, further research is recommended in the field of traffic safety. Irrespective of the high standard of education, still there is a scope to

reintroduce the concept of road safety among young to prevent their losses and to motivate them in their active participation in spreading the knowledge to others.

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