

Original Article

Perception and Practices Towards Road Safety Rules and Regulations Amongst Pakistani Population

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ABSTRACT

Background: Road traffic accidents (RTAs) remain a critical public health issue in densely populated urban areas like Latifabad, Hyderabad. Understanding the community's perception and practices towards road safety can inform targeted interventions to reduce RTAs.

Objective: This study aims to explore the perception and practices regarding road traffic rules and regulations among residents of various units in Latifabad, Hyderabad, Pakistan.

Methods: A cross-sectional descriptive study was conducted from March to August 2023 in Latifabad, Hyderabad. It involved 400 commuters aged 18 years and above, from either gender, residing in the area. Participants were included irrespective of their possession of a driving license, provided they consented to participate. Data on their perceptions and practices concerning road traffic were collected using a structured written questionnaire.

Results: The participant demographic included 64.7% males and 35.3% females with an average age of 22.6 ± 1.2 years; the majority were students. Nearly half (48.0%) attributed poor road conditions as a primary cause of RTAs. Over half (57.0%) recognized driving without a valid license as an offense, with females significantly more aware ($p < 0.05$) of the risks of improper overtaking and the links between illiteracy, irresponsible behavior, and increased RTAs. There was no significant difference in the scores for violations and lapses related to injury exposure, though a significant association was found between errors and injury exposure.

Conclusion: Despite possessing adequate knowledge, participants frequently displayed a dismissive attitude towards compliance with traffic laws, normalizing risky behaviors and potentially increasing the risk of road traffic accidents and injuries.

Keywords: Behavior, Driving License, Perception, Road Safety, Road Traffic Accidents, Traffic Rules, Urban Health

INTRODUCTION

Road traffic accidents (RTAs) constitute a multifactorial public health issue that has garnered significant attention due to its contribution to disability-adjusted life years and mortality, particularly in low and middle-income countries such as Pakistan (1). The World Health Organization has identified RTAs as the tenth leading cause of death globally, asserting a pronounced impact in nations like Pakistan where they are the foremost cause of death among individuals aged 15 to 29 years (2, 3). Factors such as over speeding, driving under the influence of alcohol or psychotropic substances, distracted driving, and the non-use of seatbelts predominate among the behaviors associated with these fatal incidents (4). The prevalence of such behaviors varies by gender, highlighting the importance of considering demographic variables in addressing the challenges of road safety among youth.

Pakistan, a densely populated and rapidly urbanizing country, faces a severe burden from RTAs, with mortality rates up to three times higher than those in high-income countries. This alarming situation is compounded by poor infrastructure, deteriorating road conditions, and vehicle unfitness, which collectively contribute to a high incidence of traffic accidents (1, 5, 8, 9). In response to this escalating crisis, the government of Pakistan implemented its first National Road Safety Strategy (2018-2030), aiming to significantly reduce the number of fatalities and injuries from road traffic incidents (6, 7).

Studies have shown that a substantial percentage of RTAs in Pakistan—67%—can be attributed to human error, with the remaining accidents linked to infrastructural issues and vehicle conditions (1, 8, 9). Research further suggests that improving drivers' knowledge, attitudes, and practices can lead to a decrease in accident rates. A notable correlation has been observed between positive driving attitudes and a reduction in RTAs, particularly among younger drivers, who are implicated in 60% of accidents. These findings underscore the critical roles of age and education level in influencing RTA rates, indicating that human factors are implicated in up to 95% of traffic incidents (10-12, 14).

The grave statistics surrounding RTAs in Pakistan—ranking as the second, sixth, and twelfth leading causes of disability, healthy-life-year losses, and premature fatalities, respectively—underscore the urgent need for targeted interventions. This study was conducted in the populous city of Hyderabad, specifically within its various units in Latifabad, to explore residents' perceptions and practices regarding road traffic rules and regulations. The objective was to assess how these factors correlate with the high rates of traffic incidents, aiming to inform future strategies for enhancing road safety in the region.

MATERIAL AND METHODS

This cross-sectional study was conducted among commuters residing in Latifabad, a densely populated urban area of Hyderabad, Pakistan. Home to over 700,000 residents, Latifabad is administratively segmented into 12 units and seventeen union councils, with a slight male majority comprising 52% of the population. The study population included individuals aged 18 years and above from both genders who had been residing in selected units of Latifabad for more than a year. Participants, whether they possessed a driving license or not, were eligible if they regularly operated vehicles such as bikes, cars, rickshaws, or loaders, and if they consented to participate in the study. The sample size was determined using the formula $n=N/[1+N(e)^2]$, where N was the total population aged 18-64 years according to the 2018 census, and e was the margin of error at a 95% confidence interval. Cluster sampling was employed to select participants from four administrative units, and selection within each cluster was conducted using a non-random consecutive sampling technique.

A semi-structured written questionnaire, developed after a review of relevant literature, was used to gather data. This questionnaire was divided into four sections: socio-demographic details of participants, knowledge about road safety, attitudes towards road safety regulations, and driving practices. Additionally, the Manchester Driver Behavior Questionnaire (MDBQ) was utilized to gain deeper insights into driving practices. The study adhered to the ethical guidelines outlined in the Declaration of Helsinki and received ethical clearance from the Ethical Review Committee of Liaquat University of Medical and Health Sciences, Jamshoro. Informed consent was obtained from all participants prior to data collection. Data was compiled and analyzed using SPSS version 24. Descriptive categorical data were presented as frequencies and percentages and analyzed using the Chi-square test. Quantitative variables were presented as mean \pm standard deviation and analyzed using the Student's t -test to compare means between different groups. Multiple Linear Regression models were applied to predict the relationship between awareness, attitude, and practice concerning road safety rules, with a significance level set at $p<0.05$ (15).

RESULTS

In this study, a total of 400 participants were involved, with a mean age of 22.6 ± 1.2 years. A significant portion, 46.0%, fell within the 22-29 age group, and 64.7% of the participants were male. Nearly half of the participants, 48.0%, were students, while 13.0% had no formal education. The primary mode of transportation for 45.0% of participants was motorbikes. Additionally, 28.5% of the participants did not possess a driving license, and 39.2% had experienced injuries in the past year, with 20.4% requiring medical care. The participants' knowledge of road safety rules was evaluated, showing notable strength in certain areas: 93.7% understood the speed limits on highways/motorways, 86.0% recognized the importance of seat belts for car drivers, and 83.7% acknowledged the necessity of helmets for motorcyclists' safety. However, knowledge gaps were apparent in other critical areas; only 12.5% were aware of the correct side to walk on in the absence of a pavement, and just 37.5% correctly identified the penalty for driving without a license.

A gender-wise analysis revealed statistically significant differences ($p<0.05$) in knowledge between males and females concerning several aspects of road safety. These included the correct side for overtaking other vehicles, the compulsory use of seat belts and helmets, the ideal side for walking on roads, the meaning of pedestrian crossings, the implications of using a mobile phone while driving, the maximum penalty for driving without a license, and the correct side to walk on when pavements are absent. This analysis underscores the variability in road safety awareness across different demographic groups and highlights specific areas where targeted educational interventions could significantly improve safety outcomes.

Table I: Gender wise knowledge of road safety rules among study participants (n=400)

	Reply	Male 259	Female 141	p-value
Ideal lane to overtake the vehicle	Correct	119	99	0.000
	Incorrect	140	42	
Average driving speed limit in the city	Correct	160	81	0.397
	Incorrect	99	60	
Use of seat-belt is compulsory for car drivers	Correct	216	128	0.042
	Incorrect	43	13	
Use of helmet is compulsory for bikers	Correct	230	105	0.000
	Incorrect	29	36	
Ideal side to walk on roads	Correct	140	130	0.000
	Incorrect	119	11	
Speed limit in Motorway / highway	Correct	245	130	0.344
	Incorrect	14	11	
Traffic signal light colour Yellow denotes	Correct	200	119	0.088
	Incorrect	59	22	
Pedestrian crossing	Correct	183	131	0.000
	Incorrect	76	10	
Maximum penalty for driving without driving license	Correct	130	20	0.000
	Incorrect	129	121	
Using mobile phone during driving is the reason of distraction	Correct	179	132	0.000
	Incorrect	80	09	

A substantial proportion of the study participants recognized certain road safety concerns, with 77.7% agreeing that talking on a cell phone while driving is a major distraction. Among female participants, 65.7% believed that loud music in the automobile could distract the driver. Male participants demonstrated significantly greater awareness, with 60.4% acknowledging the importance of stopping safely to yield to an ambulance displaying flashing lights.

However, awareness of other critical road safety measures was notably low. Only 26.5% of participants understood that the left lane should be used for driving at normal speeds, and a similarly low percentage (26.2%) knew that overtaking should be done from the right-hand lane only. Regarding road signs, 51.0% of participants could correctly interpret mandatory signs, 57.4% accurately understood warning signs, and 67.0% were able to correctly interpret informative signs.

Overall, the data revealed that 248 participants (62.0%) possessed an adequate level of knowledge concerning road traffic safety rules and regulations, while 152 (38.0%) demonstrated inadequate knowledge. When participants were asked about the causes of road traffic accidents (RTAs) in Hyderabad, nearly half attributed the high rate of accidents to poor road conditions. However, only a small fraction (14.3%) acknowledged that non-compliance with traffic laws by drivers was a contributing factor to RTAs. This disparity in the recognition of different causes underscores the need for comprehensive education and stricter enforcement of traffic regulations to enhance road safety in the region.

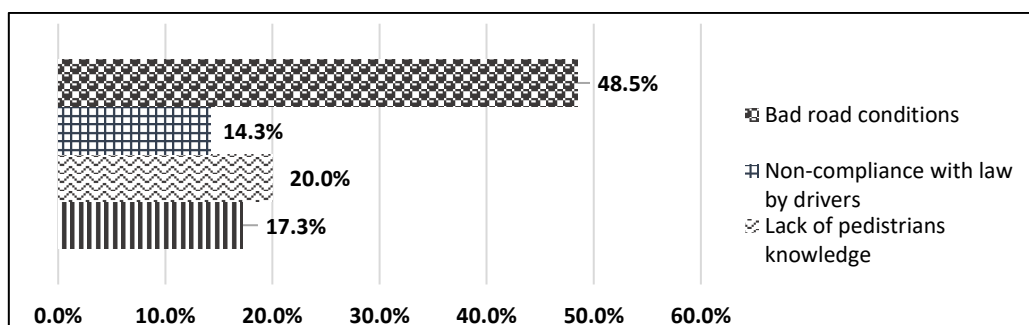


Figure 1: Participants believe about the cause of RTAs in Hyderabad, Pakistan

A large majority of participants (88.7%) in the study believed that road traffic injuries (RTIs) could be prevented. Specific risky behaviors, such as using a cellphone while driving and riding a motorcycle without a helmet, were identified as increasing the risk of injuries, acknowledged by 54% and 61.2% of participants, respectively. Female participants were significantly more likely to recognize these risks compared to male participants ($p < 0.05$). Furthermore, over two-thirds (65.7%) of participants acknowledged the effectiveness of seat belts in reducing injuries and complications related to road traffic accidents (RTAs). More than half (57.0%) understood that driving without a valid license is illegal, with a significantly higher acknowledgment among females than males ($p < 0.05$). However, a concerning finding was that a substantial proportion of participants (65.5%) believed there is no harm in taking risks in traffic when in a hurry, and 67.2% felt that adhering to traffic rules could sometimes seem childish. These attitudes reflect a markedly negative stance towards safety precautions, evident in both male and female participants.

Female participants also showed a significantly more pronounced awareness regarding the inappropriateness of overtaking from the left and linked illiteracy and irresponsible behavior as major contributors to the increasing rate of RTAs ($p < 0.05$). This indicates a critical need for targeted interventions to modify such perceptions and enhance compliance with road safety regulations. Interestingly, an overwhelming majority (90.3%) of participants expressed dissatisfaction with the performance of traffic wardens in enforcing road safety rules, and 85.3% believed that government-led campaigns for road safety awareness had no positive impact on the population. These findings suggest a potential disconnect between road safety enforcement efforts and public perception of their effectiveness, highlighting an area for significant improvement in public safety initiatives.

Table II: Participants attitude towards road safety measures gender wise

Questions	Male 259	Female 141	p-value
RTIs can be prevented	231 (89.2%)	124 (88.0%)	0.70
Cell phone use during vehicle driving increase the chances of accidents and injuries	128 (49.4%)	88 (62.4%)	0.01
Motorbike riding without a helmet increases the chance of an injury	141 (54.4%)	104 (73.7%)	0.00
Using seatbelts can reduce injuries and complications of RTA	163 (63.0%)	100 (71.0%)	0.10
Driving vehicle without driving license / valid license is an offence	129 (50.0%)	99 (70.2%)	0.00
While in a hurry, there is no harm in taking risks in traffic	174 (67.2%)	88 (62.4%)	0.33
Driving in accordance with traffic rules might feel childish sometimes	176 (68.0%)	93 (66.0%)	0.16
Overtake from left is not a good practice for the drivers?	140 (54.0%)	103 (73.0%)	0.00
Illiteracy and irresponsible behavior are lethal sources of road accidents in Hyderabad	154 (59.4%)	99 (70.2%)	0.03
Traffic wardens are effectively performing to implement road safety rules	22 (8.5%)	17 (12.0%)	0.25
Government led campaign have positive impact	40 (15.4%)	19 (13.5%)	0.28

The study detailed variations in the average scores for participants' driving behaviors, revealing a range from 0.64 ± 1.12 for disregarding speed limits late at night or early in the morning, to 2.51 ± 6.30 for crossing a junction when the traffic lights had already turned red. Notably, specific demographic groups exhibited higher mean scores for violations, particularly males, individuals residing in rural areas, those without formal education, and participants lacking a driver's license. In terms of driving errors and lapses, rural residents displayed markedly higher scores, a trend that was also observed among the non-educated and those without a driver's license. This suggests that these groups may be less aware of or less compliant with standard driving practices, potentially increasing their risk of engaging in unsafe driving behaviors.

Additionally, participants who had been exposed to injuries demonstrated higher scores across all categories of driving behavior, although the statistical analysis revealed that this difference was significant only in the context of errors. There was no statistically significant correlation found between the scores for violations and lapses and the exposure to injury. This finding underscores the complex relationship between driving behaviors and the occurrence of injuries, highlighting the need for targeted educational and enforcement strategies to address the specific risks associated with these demographic groups. The data suggests that interventions focusing on improving driving knowledge and compliance among rural, uneducated, and unlicensed drivers could significantly enhance road safety outcomes.

Table III: Participant’s behavior and practices assessment and their relationship with other variables using Manchester Driver Behavior Questionnaire (n=400).

		n	Error	p-value	Violation	p-value	Lapses	p-value
			Mean ± SD		Mean ± SD		Mean ± SD	
Gender	Male	260	17.2±6.5	0.622	25.5 ± 11.5	0.091	17.5±5.8	0.347
	Female	140	17.5±5.4		21.1 ± 6.4		18.6±3.4	
Residence	Urban	296	16.3±4.7	0.001	23.6 ± 10.7	0.231	17.1±3.9	0.001
	Rural	104	21.7±3.2		24.9 ± 8.1		19.8±7.1	
Driving License	Yes	286	16.1±6.2	0.105	23.4±8.6	0.040	17.4±4.3	0.015
	No	114	17.2±5.9		25.3±7.7		18.7±5.9	
Exposed to injury	Yes	157	18.5±6.3	0.007	25.5±12.2	0.177	18.3±6.2	0.179
	No	243	16.8±6.1		24.1±8.5		17.6±4.2	
Educated	Yes	348	16.1±6.3	0.013	20.4±3.3	0.001	16.8±3.9	0.394
	No	52	18.4±5.3		23.1±2.2		17.3±4.2	

Linear regression models were utilized to assess the impact of driving education and practice on participants' attitudes towards traffic laws and to identify factors influencing accident rates among participants. The results, detailed in Tables IV and V, showcase the findings from two specific models—Models I and II. Model I focused on the relationship between participants' driving education and practice and their attitudes towards traffic laws. The results indicate that both knowledge and practice significantly influenced ($p < 0.05$) participants' attitudes, highlighting the pivotal role that education and consistent practice play in shaping positive attitudes towards adherence to traffic regulations.

Model II explored the factors contributing to the frequency of traffic accidents among the participants. Similar to the findings in Model I, the participants' knowledge and practice were significantly associated with the incidence of traffic accidents ($p < 0.05$). This suggests that better-informed and more practiced drivers are likely to have fewer accidents, affirming the importance of comprehensive driving education as a crucial element in reducing traffic-related incidents. These models underline the critical connection between informed and practiced driving behaviors and the enhancement of road safety, suggesting that interventions aimed at improving both knowledge and practical driving skills are essential for reducing accident rates and fostering more positive attitudes towards traffic control measures.

Table IV:

Regression Model-I for predicting impact of awareness and practice towards attitude				
	β	S.E (β)	t	p-value
Intercept	7.394	0.249	29.610	0.001
Practice	-0.093	0.028	-3.438	0.002
Awareness	-0.120	0.039	-2.989	0.004
$YATD = \alpha + \beta_1 XPRC + \beta_2 XKNW$				
Participant’s attitude = 7.394 – 0.093 – 0.120				
Regression Model-II for predicting effect of awareness, attitudes and practices towards traffic accident				
	β	S.E (β)	t	p-value
Intercept	3.230	0.489	6.589	0.001
Practice	-0.181	0.041	4.371	0.001
Awareness	-0.130	0.070	-1.825	0.003
Attitude	-0.012	0.098	-0.137	0.892
$YR.ACID = \alpha + \beta_1 XPRC + \beta_2 XKNW + \beta_3 XATD$				
Road Accidents = 3.230 – 0.181 – 0.130 – 0.012				

DISCUSSION

Road traffic accidents continue to be a significant public health concern globally, particularly in densely populated urban areas like Latifabad, Hyderabad, Pakistan. The present study focused on exploring the perceptions, attitudes, and practices towards road traffic

rules and regulations among the residents of various units in Latifabad, revealing critical insights into the community's road safety awareness and behavior (16).

The findings of this study highlighted that only a minority of participants possessed an adequate understanding of key road safety practices such as the correct side for overtaking and pedestrian movement, consistent with other regional studies (19-21, 23, 24). Interestingly, while a substantial number of participants were aware of the legal implications of driving without a license, compliance with this rule remains low, reflecting a broader trend of knowledge-practice discrepancies reported in other studies (17, 18, 22).

In terms of safety equipment usage, the study identified a worrying trend among motorcyclists, with only a small fraction consistently wearing helmets. This is particularly concerning given the increasing popularity of motorcycles as an economical and fast means of transport in Pakistan, where helmet use could significantly reduce the risk and severity of injuries in accidents. Similar trends have been observed in other studies conducted within the region and internationally (31). Additionally, the usage of mobile phones while driving was alarmingly high among the study participants, mirroring findings from other research indicating that this behavior is a significant risk factor for road traffic accidents (26, 27). This is despite a majority acknowledging the dangers associated with mobile phone use while driving.

A notable strength of this study is the use of the Manchester Driver Behavior Questionnaire, which provided a nuanced measurement of driving behaviors and attitudes. However, the study's reliance on self-reported data may introduce bias, as participants might have either overestimated their knowledge or underreported their risky behaviors. The non-random sampling method and the focus on a single urban area might limit the generalizability of the findings to other regions. Moreover, while the study revealed substantial awareness of road safety rules among participants, the persistence of unsafe practices underscores the complexity of translating knowledge into behavior. This suggests a need for targeted interventions that not only enhance awareness but also actively promote behavioral change. Such interventions could include more robust enforcement of traffic laws, educational campaigns tailored to specific demographic groups, and infrastructural improvements to enhance road safety.

The disparity between knowledge and practice remains a significant challenge in improving road safety in Pakistan. Future research should aim to identify and address the barriers to behavior change, particularly among high-risk groups, to reduce the incidence and severity of road traffic accidents effectively. Additionally, extending the scope of research to include diverse geographic settings within the country could provide a more comprehensive understanding of road safety challenges and opportunities.

CONCLUSION

The findings of this study indicate that although participants possess sufficient knowledge regarding road safety, there is a notable disconnect between this understanding and their actual compliance with traffic regulations. This discrepancy often leads to the normalization of risky behaviors, which, in turn, contributes to a higher incidence of traffic-related injuries and fatalities. The study underscores a significant gap between the theoretical knowledge of road safety and the practical application of safe driving and pedestrian practices. This misalignment exposes both drivers and pedestrians to increased risks on the roads, highlighting the urgent need for stricter enforcement of existing traffic laws to mitigate such dangers. Furthermore, the results suggest that merely enhancing road safety awareness is inadequate. Effective interventions must also address the social and cultural factors that perpetuate unsafe practices. To foster safer mobility, it is crucial to implement comprehensive strategies that not only educate but also actively engage the community in adopting and adhering to safer road behaviors.

REFERENCES

1. Ali SMH, Aasim N, Malik A. Road traffic accident trauma: A model for road safety management utilizing the artificial intelligence with geo-mapping and geospatial data in Pakistan. *Journal of the Pakistan Medical Association*. 2022;72(3).
2. Wontorczyk A, Gaca S. Study on the relationship between drivers' personal characters and non-standard traffic signs comprehensibility. *International journal of environmental research and public health*. 2021;18(5):2678.
3. (WHO) WHO. Road traffic injuries 2022 [cited 2022]. Available from: <https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries>.
4. Ashraf I, Hur S, Shafiq M, Park Y. Catastrophic factors involved in road accidents: Underlying causes and descriptive analysis. *PLoS one*. 2019;14(10):e0223473.
5. Hammad HM, Ashraf M, Abbas F, Bakhat HF, Qaisrani SA, Mubeen M, et al. Environmental factors affecting the frequency of road traffic accidents: a case study of sub-urban area of Pakistan. *Environmental Science and Pollution Research*. 2019;26(12):11674-85.
6. Arain SM, Arain AM. National Highways and Motorway Police in Pakistan: An Illuminative Study: Lulu. com; 2016.

7. Subhan F, Zhao S, Diop EB, Ali Y, Zhou H. Public intention to pay for road safety improvement: A case study of Pakistan. *Accident Analysis & Prevention*. 2021;160:106315.
8. Faizan K, Abid A. Forensic Investigation of Road Traffic Accident Cases in Pakistan and Types of Physical Evidence. 2021.
9. Talpur MGA, Qayyum SA, Mangi A, Ram H, Qadri NA, Nahyoon AWA. Forensic Evaluation of the patterns of fatal injuries among pedestrians in road traffic accidents in Hyderabad, Pakistan. *Journal of Muhammad Medical College*. 2020;11(2):62-7.
10. Gautam P, Mytton JA, Joshi SK, Pilkington P. Adolescent's perception of road risk on their routes to school in Makwanpur, Nepal; a qualitative study. *Journal of transport & health*. 2021;20:101009.
11. Alonso F, Esteban C, Montoro L, Useche SA. Knowledge, perceived effectiveness and qualification of traffic rules, police supervision, sanctions and justice. *Cogent Social Sciences*. 2017;3(1):1393855.
12. Jagnoor J, Sharma P, Parveen S, Cox KL, Kallakuri S. Knowledge is not enough: barriers and facilitators for reducing road traffic injuries amongst Indian adolescents, a qualitative study. *International Journal of Adolescence and Youth*. 2020;25(1):787-99.
13. Janstrup KH. Road Safety Annual Report 2017. Technical University of Denmark: Lyngby, Denmark. 2017.
14. Mohammed AA, Ambak K, Mosa AM, Syamsunur D. A review of traffic accidents and related practices worldwide. *The Open Transportation Journal*. 2019;13(1).
15. Tavakoli Kashani A, Sokouni Ravasani M, Ayazi E. Analysis of drivers' behavior using Manchester driver behavior questionnaire based on roadside interview in Iran. *International Journal of Transportation Engineering*. 2016;4(1):61-74.
16. Ahmad MF, Javed M, Iqbal J. Awareness and Practices of Students about Road Signboards in Pakistan. 2020.
17. Senthil V, Ganapathy D. Knowledge, awareness, and practice of road traffic safety among the dental students. *Drug Invention Today*. 2020;13(6).
18. Sharma S, Sharma N, Vyas S, Semwal J. A cross-sectional study to assess the knowledge, attitude, and practices towards road traffic safety regulations among college going students of himalayan region, Uttarakhand, India. *Journal of public health and primary care*. 2020;1(1):30.
19. Basavaraju V, Patil V, Gangadarappa N, Kavalibasappa A, Masali P. A cross-sectional study to assess the knowledge, attitude, and practice toward road safety rules and regulations among higher secondary school students in rural field practice area of a medical college. 2020.
20. Cacodcar J, Naik A. A study to assess knowledge, attitude, and practices regarding road safety among college students in Goa. *Int J Med Sci Public Health*. 2020;9:616-20.
21. Jothula KY, Sreeharshika D. Knowledge, attitude, and practice toward road safety regulations among college students in Telangana state. *Journal of education and health promotion*. 2021;10.
22. Riaz I, Shahid S, editors. Knowledge, attitudes, and practice of drivers towards traffic rules and regulations in Multan, Pakistan. 7th International RAIS Conference on Social Sciences; 2018.
23. Singh P, Swain P. Assessment of the level of knowledge and practice towards road traffic safety among male adolescents in urban slums of delhi. 2020.
24. Ranjan DP, Fahim M, Kirte RC. A cross sectional study to assess the knowledge, attitude and practice towards road traffic safety among adolescent students of a selected Pre-University college in Raichur city. *Int J Community Med Public Health*. 2018;5:2446-52.
25. Helal R, El-Khawaga G, El-Gilany A-H. Perception and practice of road safety among medical students, Mansoura, Egypt. *Osong public health and research perspectives*. 2018;9(1):25.
26. Phanindra D, Chaitanya G. Awareness and practice of road safety measures among college going students in Guntur city. *Int J Public health Res*. 2016;3(2):54-8.
27. Das BR, Bora S, Das AK, Kakoti G. Knowledge and practices towards road safety measures among intern and resident doctors: a cross-sectional study. *International Journal of Community Medicine and Public Health*. 2021;8(11):5456.
28. Ramya M, Jadhav J, Ranganath T. A study to determine the awareness and behavioral patterns/practice about road safety measures among undergraduate medical students, Bangalore, India-cross sectional study. *International journal of community medicine and public health (Gujarat)*. 2017;4(3):825-30.
29. Emmily M, Angolkar M, Swati B. Assessment of knowledge and practice measures regarding prevention of road traffic accidents among undergraduate medical students. *International Research Journal of Interdisciplinary & Multidisciplinary Studies (IR-JIMS)*. 2016;2(9):93-101.
30. Ratna HV, Rajesh S, Jayaram A, Rajanna M, Venkatesh P, Iyengar K. Awareness and behaviour patterns regarding road safety measures among undergraduate students. *International journal of community medicine and public health (Gujarat)*. 2017;4(4):944-8.
31. Ikram M, Fatima R, Ikram A, Shahid F, Rafiq M, Nisar T. Patterns and characteristics of injuries encountered in road traffic accidents and effect of pre-hospital care on their outcome: a tertiary-hospital study in Lahore, Pakistan. *International journal of community medicine and public health (Gujarat)*. 2019;6(7):2755-63.