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Investigating medical student's attitudes about road accident risks: A cross-sectional study

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Abstract

Background and Aims: Given that unsafe human actions are the main cause of accidents, it is essential to comprehend the attitudes of medical students toward the risks of road accidents, particularly given their potential influence as future healthcare professionals. Therefore, this study was carried out to investigate the attitudes of medical students towards road accidents.

Methods: This cross-sectional study was conducted on 300 Zahedan University of Medical Sciences students in 2021 as available sampling. The required information was collected using a researcher-made questionnaire with a content validity ratio of 0.9, a content validity index of 0.9–0.8, and a reliability (α) of 0.79, which was presented online in the university systems. Statistical analysis was done using SPSS 23 software, data description was done as frequency and percentage, and analytical analysis was done with the χ^2 test.

Results: The average age of the participants was 21.7 (4.2) years; 45.7% of the participants were male and 11.3% were married; 79.7% had less than 300 km of driving experience; 76% had less than 3 years since receiving their license; 14% stated that they drive faster than others; 18.3% reported a history of fines; and 28.3% reported an accident history. The most incorrect attitudes of students regarding low-risk using mobile phones (86%), text sending (84.3%), eating and drinking while driving (74.6%), driving after consuming alcohol or drugs (73%), and driving when tired and sleepy (85.4%) were reported.

Conclusion: Based on the results, it is suggested to plan to correct wrong attitudes, especially among young and educated drivers, through education and culture, so that we can move in the direction of reducing accidents.

KEYWORDS
accidents, attitude, students

1 | INTRODUCTION

Road traffic accidents (RTAs) are defined as injuries incurred either fatally or nonfatally due to road traffic crashes. A crash is a type of collision or incident that could lead to injury or not, whether it happens on a public road, and must involve at least one moving vehicle.[1,2]

According to the report of the World Health Organization in 2018, the death rate due to road accidents is still increasing. In 2016, about 1.35 million people (3700 people per day) were killed and more than 50 million people were injured worldwide. Road accidents are the primary cause of death for children aged 5–29 years, which is the eighth cause of death worldwide. In addition, 93% of road accident deaths in the world occur in low- and middle-income countries (particularly in Africa and the Eastern Mediterranean region).[3] This is even though these injuries are both predictable and preventable.[4]

Apart from death, injuries, and disabilities, traffic accidents cause many other health, social, psychological, economic, and other consequences at the individual, family, and national levels.[5] So that, for every death caused by road injuries, at least 20 people suffer nonfatal injuries that are either treated or suffer some kind of disability orout of work. It is estimated that between 20 and 50 million people suffer such injuries every year.[5]

Iran is one of the countries that has the highest death rate related to transportation in the world and spends about 6 billion US dollars annually on traffic accidents,[6] and 5% of the national gross product is spent on death and injury damages caused by accidents.[7]

Accidents account for the majority of unnatural deaths and the second-most common cause of death in Iran.[8] According to the statistics of the Forensic Medical Organization of Iran, in the first 9 months of 2019, the highest number of casualties from road accidents were reported in the provinces of Tehran, Fars, Khorasan Razavi, Isfahan, Kerman, and Sistan and Baluchistan, respectively, and the percentage of road casualties in Sistan and Baluchistan province compared to the last year 2018, it was 1.4%.[9]

Driving performance measures are influenced by both driver characteristics and road geometry.[10] The influence of human factors in road accidents was reported 49% and was related to inattention to regulations, alcohol consumption and drug use, and then fatigue and sleepiness.[11] Vardaki and Yannis have related the difference in attitudes and behaviors toward traffic violations to factors such as age, gender, and the region of residence.[12]

The probability of an accident is greatly influenced by both age and driving experience. Middle-aged drivers are more prone to accidents, but as they gain more experience, the risk level decreases.[13] Compared to adults, younger drivers have a greater chance of being involved in fatal crashes caused by distracted driving.[14] The driver's attitude and behavior are related to sustainable development, and conducting research with such approaches informs policymakers of the need to implement interventions to improve driver behavior and reduce the incidence of accidents with regard to better socioeconomic conditions.[15] An attitude is a way of relating to someone or something, or a way of behaving that is influenced by that feeling or opinion.[16]

Medical science students make up a significant portion of the young population of any society. In their capacity to affect the health status of communities in the future, they must increase young people's awareness about various healthy behaviors, such as road safety, and also be responsible for emergency care.[17]

Traffic accidents in the world, particularly in Iran, are a major issue that affects society's health. Also, considering the high statistics of road accidents and fatalities in Sistan and Baluchistan Province and the important role of students of the University of Medical Sciences in promoting the correct patterns of behaviors related to health and health care providers, knowing their attitude in the field of factors influencing the occurrence of traffic accidents and Road accidents are of particular importance. This study was designed to investigate the attitude of students at Zahedan University of Medical Sciences towards the risk factors of road accidents.

2 | METHOD

2.1 | Type of study, sample size, and sampling

In this cross-sectional (descriptive-analytical) study, the statistical population included students of medical sciences in Zahedan University of Medical Sciences in 2021. Based on the investigation of the current situation of the province, the most human factors of accidents in the Zahedan area in 2018 compared to 2017 were related to violation of the safe speed with 83% of changes. Therefore, according to the following formula, the sample size was estimated to be 217 students. Finally, by taking into account the possibility of dropping out, 300 students were selected through convenience sampling.

$$N = \frac{z^2_{1-\alpha/2}P(1-p)}{d^2} = \frac{1.96 \times 1.96 \times 0.83 \times 0.17}{0.0025} = 216.81,$$

where N = sample size; z = level of confidence according to the standard normal distribution (for a level of confidence of 95%, $z = 1.96$); p = estimated proportion of the population that presents the characteristic; and d = tolerated margin of error (e.g., we want to know the real proportion within 5%).

2.2 | Study implementation

Due to the COVID-19 pandemic, an online questionnaire was designed (under the website of the virtual education system of the educational Vice Chancellor of the University). An announcement was made in the virtual groups of students (WhatsApp groups of colleges and MEFDA system of the educational Vice Chancellor) about the study objectives, how to conduct the study, and the confidentiality of the information. Then, students who wanted to

participate in the study were requested to complete the questionnaire. Subjects were voluntarily included in the study by complying with ethical codes and obtaining informed consent. The duration of completing the questionnaire was 10–15 min.

2.3 | Data collection

Data collection in this study was done using a researcher-made questionnaire including demographic information (eight questions) and attitude (13 questions). The validity of the questionnaire was evaluated based on the Kendall coefficient and the opinion of 10 experts, the content validity ratio (CVR) was 0.9, and the content validity index (CVI) was 0.8–0.9. The reliability of the questionnaire after a preliminary study on 20 students and determining the variance of the questions, Cronbach's α was calculated as 0.74.

2.4 | Statistical analysis

Statistical analysis was done using SPSS 23 software; data description was done as frequency and percentage; and data analysis was done with the χ^2 test.

2.5 | Ethical considerations

This study was approved by the National Agency for Strategic Research in Medical Education (NASR), Tehran, Iran, Grant No. 984130. In addition, if the participants were satisfied, they completed the questionnaire and they were assured that their information would be confidential and that individual results would not be reported.

3 | RESULTS

The average age of the participants was 21.7 ± 4.2 years; 45.7% of participants were male and 11.3% were married; 79.7% had less than 300 km of driving experience; 76% had less than 3 years since receiving their license; 14% stated that they drive faster than others; 18.3% reported a history of fines; and 28.3% reported an accident history. More details are provided in Table 1.

As presented in Table 2, more than a quarter of male students and 2.5% of female students reported that they drive faster than the speed limit and other drivers. In addition, 86.3% of boys and 16.4% of girls reported a history of fines and 56.5% of boys and 43.5% of girls reported a history of accidents. Driving speed, history of fines, and history of accidents were significantly higher in boys than in girls ($p < 0.05$).

The results of the χ^2 test showed that students who drove at a higher speed than others had significantly more accident history than students who drove at the same speed as others or slower than others ($p < 0.05$) (Table 3).

TABLE 1 Demographic characteristics of participant students.

Characteristics	N (%)
Gender	
Male	137 (45.7)
Female	163 (54.3)
Marriage status	
Married	34 (11.3)
Single	263 (87.7)
Driving kilometers per week	
≥300	239 (79.7)
>300	61 (20.3)
Number of years of certification	
≥3	228 (76.0)
>3	72 (24.0)
Driving speed compared to other drivers	
Slower	108 (36.0)
Similar	150 (50.0)
Faster	42 (14.0)
History of fines	
Yes	55 (18.3)
No	245 (81.7)
Traffic accident history	
Yes	85 (28.3)
No	215 (71.7)

TABLE 2 Frequency distribution of driving speed, history of fines, and accidents by gender.

Variable	Gender		p Value χ^2
	Male N (%)	Female N (%)	
Driving speed compared to other drivers			
Slower	33 (24.1)	75 (46.0)	0.001
Similar	66 (48.2)	84 (51.5)	
Faster	38 (27.7)	4 (2.5)	
History of fines			
Yes	46 (83.6)	9 (16.4)	0.018
No	91 (37.1)	154 (62.9)	
Traffic accident history			
Yes	48 (56.5)	37 (43.5)	0.001
No	89 (41.4)	126 (58.6)	

Moreover, 23.3% of students considered driving at high speed as a way to reach their destination faster, 8% considered fast driving as a reason for independence and freedom, 17.4% as a way to increase self-confidence, and 33.6% considered fast driving as exciting. According to 18.3% of students, maintaining the distance between the car and the car in front is unpleasant for other drivers. Only 10% of the students considered it effective to change the car's lane without following the rules by increasing the possibility of damaging other cars. In addition, 14.4% considered illegal overtaking as a way to escape from traffic; 73% of the students reported that they do not feel in control of the car when they consume drugs or alcohol; 86% of students did not associate using a cell phone while driving with an increased chance of being fined by the police; 84.3% stated that they disagreed with the belief that "texting while driving increases the possibility of serious accidents"; 74.6% did not report eating and drinking while driving as a reason for increasing the probability of an accident; 85.4% stated that driving while tired and drowsy do not disturb their driving performance (such as decision-making and quick reaction); 15% reported that using a seat belt limits their comfort.

In general, there was a wrong attitude among students regarding using mobile phones, texting, and eating and drinking while driving, as well as driving after consuming alcohol or drugs and driving when tired and drowsy (Table 4).

TABLE 3 Frequency distribution of accident history according to driving speed.

	Accident history		
Driving speed	Yes *N* (%)	No *N* (%)	*p* Value χ^2
Slower	29 (34.1)	79 (36.7)	0.001
Similar to others	34 (40.0)	116 (54.0)	
Faster	22 (25.9)	20 (9.3)	

4 | DISCUSSION

The evidence shows that human factor such as illegal speed is the main cause of 85% of accidents leading to death,[18] and sleep quality and drowsiness are the second cause of traffic accidents,[19] including driving in the early morning or late at night (15% of cases) and lack of sleep (6% of cases).[20] The results of Narimani et al.'s study indicated a significant relationship between distraction and fatigue in accident victims.[21] In this study, only 5.6% of students had a wrong attitude about driving when tired and sleepy. Also, among the human factors, carelessness, inattention, and distraction of the driver are one of the causes of driving accidents, which are involved in 20%–50% of accidents.[22,23] Meanwhile, a low percentage of students had the opinion that eating and drinking (9.7%), using mobile phones (0.6%), and sending text messages (4.3%) led to an increase in accidents and the possibility of fines by the police.

The use of alcoholic beverages and drugs can play a role in carelessness and increasing the risk of driving leading to accidents.[24]

TABLE 4 Frequency percentage of students' attitude responses.

	Percentage				
Attitude	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
Driving fast helps me reach my destination faster.	3.0	20.3	14.7	36.7	25.3
Keeping the distance between my car and the car in front is inconvenient for other drivers.	1.3	17.0	23.3	37.3	21.0
Driving fast gives me independence and freedom.	0.7	7.3	13.7	39.0	39.3
Driving fast gives me confidence.	0.7	16.7	16.3	34.7	31.7
Changing the line of my car without following the rules increases the possibility of damaging other cars.	2.7	6.3	8.0	41.0	42.0
Overtaking enables me to stay in traffic less often.	2.7	11.7	1.7	41.3	30.7
If I take drugs or alcohol, I lose control of the car.	5.3	1.3	20.3	22.3	50.7
Using a cell phone while driving can lead to a higher chance of being fined by the police.	1.7	4.3	8.0	45.0	41.0
If I text while driving, it increases the chance of serious accidents.	1.3	3.0	11.3	38.3	46.0
Wearing a seat belt limits my comfort.	4.7	10.3	13.0	37.7	34.3
Eating and drinking while driving increases my chances of having an accident.	2.7	7.0	14.0	42.7	33.7
Driving fast is exciting for me.	11.3	22.3	24.3	22.0	20.0
Driving while tired and drowsy impairs my driving performance such as decision-making and quick reaction.	3.3	2.3	9.0	38.7	46.7

But the opinion of the majority of students (73.0%) was that the consumption of alcohol and drugs does not affect the driver's driving control. Another human factor is not wearing a seat belt, if using it, accidents leading to death in the front passengers of the vehicle are reduced by 60% and those in the rear by 40%.[25] In this study, 15% of students mentioned that wearing a seat belt causes restrictions and they did not have a proper attitude in this regard.

Among other effective factors in driving, we can mention driving history. Young drivers (with a maximum of 3 years of license and driving experience) recognize risks later than more experienced drivers (experience of 10 years or more). Driving experience can increase the perception of traffic risks by 46%.[26–28] In this study, the majority of the students were young drivers (with less than 3 years of license and driving experience), and the majority mentioned that they were able to drive at the permitted speed, while more than a quarter of them (28.3%) had a history of accidents during the same period of driving experience.

From the driver's point of view, the previous accident is one of the most important factors involved in road accidents. After the first accident, people drive more carefully. For this reason, getting into an accident reduces the risk of having an accident again. For example, people who had an average of one or more accidents per year have a reduced risk of reaccidents in the following years. Also, the experience of previous accidents may remain in the driver's mind for many years, and this negative mentality can prevent many violations as a deterrent.[29–31] Consistent with other studies, in this study, a significant difference was observed between the driving speed of students with a history of accidents.

Research on gender differences shows that female drivers are more cautious and young female drivers are safer than their male counterparts. Also, female drivers' accidents are more related to vehicle control and men's are more related to illegal speed and alcohol consumption. On the other hand, the tendency to commit mistakes is equal in both sexes.[32] Studies show that between the ages of 16–24, men die twice as often as women in accidents. By getting a driver's license, accidents caused by mistakes in men are reduced by two times, but men do two times more aggressive and dangerous driving than women every year, and the tendency of men to drive after drinking alcohol is three times more than women. Men are angrier than women while driving and wear seat belts less often.[24,30,33] Also, in this study, almost one-third of male students mentioned that they were driving faster than the speed limit and other drivers. Moreover, a significant difference was observed between driving speed, history of fines, and history of accidents according to gender, and these records were significantly more in boys than in girls.

Educated people use seat belts more while driving, but they overtake and drive faster.[34] In this study, students' attitudes toward fast driving were wrong and they mentioned that illegal speed will increase their independence, freedom, and self-confidence and reach their destination faster. Also, the attitude of the majority of students was to overtake illegally to avoid being stuck in traffic. These results are consistent with previous studies.

Different individuals in society have been assigned roles as accident victims, accident makers, traffic service providers, or medical care providers. To prevent and improve traffic accidents and their consequences, it is beneficial to have accurate information on their attitude, as without sufficient knowledge about target group beliefs, programs will be ineffective.[35] In this regard, knowing the attitude of medical science students is of particular importance because: first, medical students have regular and long working hours that add to the academic pressure, which can be reflected in their driving habits and lead to death or injury. Their involvement in traffic accidents means the loss of essential forces in the front line of preventing traffic accidents and caring for patients affected by these accidents[36]; second, their positive or negative attitude has a significant impact on their role in transferring education to the general public; and third, due to the influence of people's attitude on their behavior, their unfavorable attitude can lead to the occurrence of risky driving behaviors in them, which challenges their role as health behavior patterns in societies.[37] Therefore, it is necessary to improve their attitude through the implementation of educational programs and enhance their knowledge and awareness.

5 | CONCLUSION

Considering that the human factor is one of the important factors of driving accidents, to reduce driving accidents, paying attention to the wrong attitudes of drivers, especially young drivers and their correction is very important. Therefore, it is suggested to revise the educational programs on safe driving, road safety, and the consequences of high-risk driving in the curriculum of medical students. Besides, it is necessary to make it mandatory for license applicants to pass training workshops and in these workshops, videos and objective experiences of experienced drivers are presented so that they become a guide for young drivers. Also, training through the media and creating a culture of safe driving can be very effective in this regard. On the other hand, the policy of issuing long-term licenses and renewing them if young drivers do not drive aggressively seems to be a suitable preventive solution for controlling high-risk drivers.

6 | LIMITATIONS

One of the limitations of the study was that the study was conducted at the same time as the COVID-19 pandemic, which made it difficult to collect information and complete the questionnaires completely.

AUTHOR CONTRIBUTIONS

Fariba Shahraki-Sanavi: Conceptualization; data curation; formal analysis; investigation; methodology; project administration; resources; software; validation; visualization; writing—original draft; writing—review and editing. **Seyed Mohammad Nasiraldin Tabatabaei**: Conceptualization; methodology; writing—review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

TRANSPARENCY STATEMENT

The lead author Fariba Shahraki-Sanavi affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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