

Assessment of Risky Traffic Behaviors in Kashan Population in 2018

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Background & Aims of the Study: Risky driving behaviors are a set of actions that put drivers at the risk of death or injuries which are caused by the violations of legal standards. These kinds of behaviors are the key factor leading to a higher risk of traffic crashes and injuries. The present study aimed to investigate the situation of some high-risk traffic behaviors and the related factors in Kashan.

Materials and Methods: In this descriptive cross-sectional study, 400 people were selected from among Kashan population by convenience sampling method. The self-reporting questionnaire consisted of two parts: demographic information (e.g., gender, age, marital status, level of education of the person and parents, and family income) and the number of traffic violations (e.g., paid fines, running red lights, parking prohibited in specified places, as well as unauthorized overtaking and speeding).

Data were analyzed in SPSS software (version 16) using descriptive statistics (e.g., frequency distribution, central and dispersion indices) and inferential statistics (e.g., independent t-test, analysis of variance, and chi-square).

Results: The current study was conducted on 400 drivers who were selected from among Kashan population (314 men and 86 women) with the mean age of 38.15 ± 10.29 . The obtained results indicated that women were safer drivers. Moreover, it was found that people in older age groups committed fewer violations. In addition, the frequency of unauthorized speeding and overtaking was significantly higher among single people, as compared to the married ones. Regarding educational level, the frequency of unauthorized parking and overtaking was higher among the people with higher levels of education. Moreover, the frequency of unauthorized speeding was significantly higher among those with higher family income ($P < 0.05$).

Conclusion: Based on the results of the present study and the relationship between demographic variables and risky traffic behaviors, it is suggested that the general public be trained on driving principles and regulations with respect to their age and educational level. In addition, the implementation of appropriate measures for the prevention of road accidents and injuries is recommended.

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Background

Road traffic accidents are one of the major

health problems of the 21st century endangering the health of millions of people annually. This challenge is so serious that these accidents are referred to as "War on the roads"

(1). According to a report released in 2018 by the World Health Organization (WHO), road traffic injuries which claim the lives of nearly 1.35 million people worldwide annually are the eighth leading cause of death (2).

In Iran, road traffic accidents are the leading cause of injuries and the second major cause of death, and its prevalence is four times higher, as compared to high-income countries (3). Moreover, it has been reported that road traffic crashes incur costs of more than \$ 4 billion annually on Iran's health care system accounting for more than 2% of gross domestic product (GDP) of the country (4). Influential factors affecting traffic accidents are divided into three general categories: road, vehicle, and human factors. Out of these three factors, the human factor is the main cause of numerous traffic accidents to the point that 97.5% of accidents in Iran have occurred as the result of the human factor (5).

Human beings contribute to traffic accidents in a myriad of ways out of which the disregard of traffic regulations is one of the most important and well-known factors. It refers to the great disparity between drivers' behaviors and the desired behavior in the traffic system. The cases which are reported as the violations of traffic regulations vary considerably. Nevertheless, based on various studies, the factors which directly affect road accidents include unauthorized speeding, running red lights, unauthorized overtaking, the insufficient distance ahead, and non-attention to vehicles in front (6-9). Out of the abovementioned issues, for instance, unauthorized speeding is one of the most important factors in the occurrence of surgical and fatal accidents.

Research suggests that unauthorized speeding is responsible for 30% of road car crashes resulting in death or serious injury (8). In addition, intersections as the location of traffic flow interference have been identified as one of the most important accident sites. The most important cause of accidents at intersections is

the failure to observe the right-of-way at intersections without traffic lights or entering an intersection in spite of the traffic signal indicating red (9).

Unsafe driving behaviors are the most important cause of traffic accidents that can be mitigated by applying scientific methods and highlighting the importance of safety in road transport (2, 5). Moreover, proper driving education, apart from the reduction of human and financial losses, exerts an undeniable impact on the improvement of driver's behavior (10). To this end, it is required to identify high-risk traffic behaviors and its related factor, an aim that the present study sought to achieve.

The current study aimed to study the risky traffic behaviors of drivers in Kashan in 2018. It tried to focus on a group of violations that are associated with individuals' internal control center since driving violations that occur in the absence of police officers and traffic cameras cannot be recorded. Furthermore, the use of surveillance equipment is not practical in every nook and corner of cities; therefore, it was decided to investigate such cases as unauthorized speeding and overtaking, and parking in prohibited places which are among sensitive violations resulting in death.

Materials & Methods

In this descriptive cross-sectional study, 400 drivers were selected from among Kashan population by non-probability and convenience sampling method. The researcher randomly selected three urban districts of Kashan (1, 3, and 4) out of five districts. He referred to the busy streets of the selected districts in the morning and evening and distributed questionnaires among the drivers who were willing to cooperate. Data were collected using a researcher-made questionnaire whose face validity and content validity were assessed. These narratives were studied in a qualitative

manner. In order to measure the content validity of the instrument, the experts and professors in this field were initially asked to comment on traffic accidents which are associated with internal sources.

Thereafter, the experts' opinions were discussed in a specialized panel, and five of them were selected. The selected items will be sent back to the professors via email, and they will be asked about the adequacy of the questions, the ease of understanding, and the grammatical structure. The final version of the questionnaire was prepared after applying experts' opinions and confirming its face and content validity. In addition, the questionnaire was filled out for 10 target group drivers, and the questions with understanding problems were modified based on their opinions in an effort to examine the face validity from the perspective of the target group.

The reliability of the instrument was assessed by Cronbach's alpha coefficient. To measure Cronbach's alpha coefficient, a questionnaire was completed for 100 taxi drivers in Kashan, and it was calculated as 0.765 indicating the acceptable reliability of the questionnaire. The data collection tool consisted of a two-part researcher-made questionnaire, the first part of which included demographic information (sex, age, marital status, level of education of the person and parents, occupation, family income level, and driving history). The second part of the questionnaire encompassed traffic behaviors with the internal control center, including paid fines, running the red lights, prohibited parking in specified places, as well as unauthorized speeding and overtaking. The questionnaires were self-reported.

The current study was designed and implemented in accordance with the Helsinki Declaration. Drivers were initially provided with the aims of the study, and they were assured that the results of the study would be published only in general. They were also asked

to complete an informed consent form to participate in the current research project. The data were collected and analyzed in SPSS software (version 16) using descriptive statistics (frequency distribution, central and dispersion indices) and inferential statistics (independent t-test, ANOVA, and Chi-square). Kolmogorov-Smirnov test was used to determine the level of normality of the data, and $P > 0.05$ indicated the normal distribution of data.

Results

The current study was conducted on 400 drivers selected from among Kashan population (314 men and 86 women) with the mean age of 38.15 ± 10.29 years (within the age range of 18-78 years). Table 1 depicts the frequency distribution of individuals in terms of demographic variables.

As depicted in Table 1, the majority of participants (82.8%) were married, had bachelor's and higher education (52.1%), their parents had primary education, were employees (62.8%), and their family income ranged from 2-3 million tomans (54.5%). The results illustrated in Table 2 show that more than half of the participants (55%) committed unauthorized speeding at least once in the past year, and this value was reported to be less than 50% in other violations.

In addition, gender was significantly correlated with all of the traffic violations which were considered ($P < 0.01$) indicating that women were safer drivers. There was also a significant relationship ($P < 0.05$) between age and all traffic violations (except for fines), and the average age of those with fewer violations was higher. In addition, the frequency of unauthorized speeding and overtaking was significantly higher among single people ($P < 0.01$). Regarding the level of education, the frequency of parking in prohibited places and

Table 1) Distribution of participants according to demographic variables

Variable	Frequency (%)
Marital status	Single 69 (17.2)
	Married 331 (82.8)
Educational level	Below diploma 78(19.6)
	Diploma 113 (28.3)
	Bachelor's degree and higher 208 (52.1)
Paternal education	Illiterate 61 (15.2)
	Primary school 134 (33.5)
	Under diploma 106 (26.5)
	Diploma and higher 99 (24.8)
Maternal education	Illiterate 92 (23.0)
	Primary school 179(44.8)
	Under diploma 81(20.2)
	Diploma and higher 48(12.0)
Occupation	Employee 251 (62.8)
	Non-employee 149 (37.2)
Family income	Less than 2 million tomans 74 (18.5)
	2-3 million toman 218 (54.5)
	More than 3 million tomans 108 (27.0)

Table 2) Relationship between demographic characteristics and traffic violations

Variable		Imposed fine			Running the red lights			Inhibited parking			Unauthorized speeding			Unauthorized overtaking		
		less than 100 thousand tomans	100 to less than 300 thousand tomans	300 thousand tomans and more	Never	Once or twice	More than three times	Never	Once or twice	More than three times	Never	Once or twice	More than three times	Never	Once or twice	More than three times
Gender	Male	206 (65.6)	56 (17.8)	52 (16.6)	156 (49.7)	61(19.04)	97 (30.9)	146 (46.5)	68 (21.7)	100 (31.8)	121(38.5)	48 (15.3)	145 (46.2)	148 (47.1)	51 (16.2)	115 (26.7)
	Female	73 (84.9)	6 (7.0)	7 (8.1)	60 (69.8)	12 (14.0)	14 (16.3)	56 (56.1)	18 (20.9)	12 (14.0)	59 (68.6)	13 (15.1)	14 (16.3)	63 (73.3)	7 (8.1)	16(18.6)
	P		0.003			0.003			0.002			P<0.001			P<0.001	
Age	P	38.1±10.0	39.1±9.4 0.674	37±12.36	39.2±10.2	38.7± 10.0 0.016	35.8±10.3	39.5±10.5	36.1±8.9 0.016	37.2±10.6	39.9±10.0	41.2±11.0 <0.001	35.0±9.5	40.0±10.3	36.9±9.7 <0.001	5.6±9.9
	P															
Marital status	Single	46 (66.7)	8 (11.6)	15 (21.7)	34 (49.3)	9 (13.0)	26 (37.7)	30 (43.5)	17 (24.6)	22 (31.9)	22 (31.9)	6 (8.7)	41 (59.4)	26 (37.7)	10(14.5)	33(47.8)
	Married	233 (70.4)	54 (16.3)	44 (13.3)	182 (55.0)	64 (19.3)	85 (25.7)	172 (52.0)	69 (20.8)	90 (27.2)	158 (47.7)	55 (16.6)	118 (35.7)	185 (55.9)	48 (14.5)	98 (29.6)
	P		%158			0.103			0.439						<0.001	
Education	Below diploma	53 (67.9)	12 (15.4)	13 (15.9)	50 (64.1)	12 (15.4)	22 (28.2)	46 (59.0)	8 (10.2)	24 (30.8)	45 (57.7)	11 (14.1)	22 (28.2)	50 (64.1)	4 (5.1)	22 (30.8)
	Diploma	71 (62.8)	24 (21.3)	18 (15.9)	54 (47.8)	24 (21.2)	24 (21.2)	57 (50.4)	34 (30.1)	22 (19.5)	46 (40.7)	20 (17.7)	47 (42.6)	59 (52.2)	23 (20.4)	37 (27.4)
	P	154 (74.0)	26 (12.5)	28 (13.5)	111 (53.4)	37 (17.8)	2.67	99 (47.6)	44 (21.1)	65 (31.2)	89 (42.8)	29 (13.9)	90 (43.3)	101 (48.6)	31 (14.9)	76 (36.5)
Father's education	Illiterate	46 (54.4)	9 (14.8)	6 (9.8)	32 (52.2)	10 (16.4)	19 (31.1)	35 (57.4)	10 (16.4)	16 (26.2)	28 (45.9)	8 (13.1)	25 (41.0)	34 (55.7)	6 (9.8)	21 (34.4)
	Primary school	93 (69.4)	26 (19.4)	15 (11.2)	74 (55.2)	24 (17.9)	36 (26.9)	69 (51.5)	27 (20.1)	38 (28.4)	69 (51.5)	20 (14.9)	45 (33.6)	81 (60.4)	16 (11.9)	37 (27.6)
	Below diploma	68 (64.1)	15 (14.2)	23 (21.7)	57 (53.8)	21 (19.8)	28 (26.4)	49 (46.2)	29 (27.4)	28 (26.4)	51 (48.1)	19 (17.9)	36 (34.0)	55 (51.9)	19 (17.9)	32 (30.2)
	P	72 (72.7)	12 (12.1)	15 (15.2)	53 (53.5)	18 (18.2)	28 (28.3)	49 (49.5)	20 (20.2)	30 (30.3)	31 (32.2)	14 (14.1)	53 (53.5)	41 (41.4)	17 (17.2)	41 (41.4)
Mother's education	Illiterate	64 (69.6)	15 (16.3)	13 (14.1)	51 (55.4)	19 (29.7)	22 (23.9)	49 (53.3)	21 (22.8)	22 (23.9)	51 (55.4)	16 (17.4)	25 (27.2)	55 (59.8)	12 (13.0)	25 (27.2)
	Primary school	127 (70.9)	25 (14.0)	27 (15.1)	95 (53.1)	31 (17.3)	53 (29.6)	91 (50.8)	37 (20.7)	51(28.5)	79 (44.1)	29 (16.2)	71 (39.7)	97 (54.2)	25 (14.0)	57 (31.8)
	Below diploma	56 (69.1)	14 (17.3)	11 (13.6)	45 (55.5)	16 (19.8)	20 (24.7)	40 (49.4)	18 (22.2)	23 (28.4)	35 (43.2)	14 (17.3)	32 (39.5)	15 (18.5)	15 (18.5)	28 (34.6)
	P	32 (66.7)	8 (16.7)	8 (16.7)	25 (52.1)	7 (14.6)	16 (33.3)	22 (45.8)	10 (20.8)	16 (33.4)	15 (31.2)	2 (4.2)	31 (64.6)	6 (12.5)	6 (12.5)	21 (43.8)
Occupation*	Employee	180 (71.7)	37 (14.7)	34 (13.5)	135 (53.8)	49 (19.5)	67 (26.7)	127 (50.6)	58 (23.1)	66 (26.3)	113 (45.0)	45 (17.9)	93 (37.1)	131 (52.2)	44 (17.5)	76 (30.3)
	Others	99 (66.4)	25 (16.8)	25 (16.8)	81 (54.4)	24 (16.1)	44 (29.5)	75 (50.3)	28 (18.8)	46 (30.9)	67 (45.0)	16 (10.7)	66 (44.3)	80 (53.7)	14 (9.4)	55 (36.9)
	P		0.526			0.646			0.470			0.111			0.062	
Family income	Less than 2 million tomans	52 (70.3)	15 (20.2)	7 (9.5)	48(64.9)	8 (10.8)	18 (24.3)	44 (59.5)	14 (18.9)	16 (21.6)	46 (62.2)	7 (9.5)	21 (28.4)	44 (59.9)	10 (13.5)	20 (27.0)
	2-3 million tomans	148 (67.9)	31 (14.2)	39 (17.9)	112 (51.4)	42 (20.2)	62 (28.4)	110 (51.5)	43 (19.7)	65 (29.8)	95 (43.6)	35 (16.1)	88 (40.4)	117 (53.7)	26 (11.9)	75 (34.4)
	P	79 (73.1)	16 (14.8)	13 (12.1)	56 (51.9)	21 (19.4)	31 (28.7)	48 (44.4)	29 (26.9)	31 (28.7)	39 (36.1)	19 (17.6)	50 (46.3)	50 (46.3)	22 (20.4)	36 (33.3)
			0.283		0.272			0.285			0.014			0.194		

unauthorized overtaking was higher among people with higher levels of education (P<0.05).

Furthermore, the frequency of unauthorized speeding was significantly higher among those with higher parental education (P<0.05). Finally, the frequency of unauthorized speeding was significantly higher among those with

higher family income (P<0.05). The results displayed in Table 3 show that there is no significant relationship between paid fines and traffic violations (P> 0.05); nonetheless, a significant relationship was detected among traffic violations themselves (P <0.001). 64.9% of those who have parked in prohibited places more than three times in the past year have run

Table 3) Relationship among traffic violation variables

Variable	Running the red lights			Prohibited parking			Unauthorized speeding			Unauthorized overtaking			
	Never	Once or twice	More than three times	Never	Once or twice	More than three times	Never	Once or twice	More than three times	Never	Once or twice	More than three times	
Imposed fine	Less than 100 thousand tomans	148 (53.0)	51 (18.3)	80 (28.7)	140 (50.2)	63 (22.6)	76 (27.2)	127 (45.5)	49 (17.6)	103 (36.9)	148 (53.0)	44 (15.8)	87 (31.2)
	100 thousand-less than 300 thousand tomans	38 (61.3)	8 (12.9)	16 (25.8)	31 (50.0)	11 (17.7)	20 (32.3)	24 (38.7)	7 (11.3)	13 (50.0)	31 (50.0)	7 (11.3)	24 (38.7)
	300 ≥ thousand tomans	30 (50.8)	14 (23.7)	15 (25.5)	31 (52.2)	12 (20.3)	16 (27.2)	29 (49.2)	5 (8.5)	25 (42.3)	32 (54.2)	7 (11.9)	20 (33.9)
	p		0.559			0.890			0.166			0.725	
Running the red lights	Never			167 (77.3)	28 (13.0)	21 (9.7)	146 (67.6)	29 (13.4)	41 (19.0)	167 (77.3)	24 (11.1)	25 (11.6)	
	Once or twice			18 (24.7)	36 (49.3)	19 (26.0)	22 (30.1)	18 (24.7)	33 (45.2)	30 (41.1)	16 (21.9)	27 (37.0)	
	More than three times			17 (15.3)	22 (19.8)	72 (64.9)	12 (10.8)	14 (12.6)	85 (76.6)	14 (12.6)	18 (16.2)	79 (71.2)	
	p			<0.001			<0.001		<0.001		<0.001		
Prohibited parking	Never						145 (71.8)	23 (11.4)	34 (16.8)	156 (77.2)	22 (10.9)	24 (11.9)	
	Once or twice						25 (29.1)	28 (32.6)	33 (38.3)	39 (45.3)	26 (30.2)	21 (24.4)	
	More than three times						10 (8.9)	10 (8.9)	92 (82.2)	16 (14.3)	10 (8.9)	86 (76.8)	
	p						<0.001		<0.001		<0.001		
Unauthorized speeding	Never									162 (90.0)	11 (6.1)	7 (3.9)	
	Once or twice									29 (47.5)	23 (37.7)	9 (14.8)	
	More than three times									20 (12.6)	24 (15.1)	115 (72.3)	
	p										<0.001		

the red lights three times, as compared to those who have never parked in prohibited places (15.3%). In addition, 73% of people with more than three unauthorized overtaking have accepted that they committed unauthorized speeding for more than three times.

Since the present study was conducted on different people, there was a high diversity of occupations. Moreover, regarding the significant number of employees, the job variable was divided into two groups of employees and non-employees.

Discussion

The present study investigated some risky road traffic behaviors in Kashan population. One of the findings was a significant relationship between gender and different driving violations signifying that women were safer drivers, as compared to men. Consistent with this finding, studies on gender differences of drivers indicated that women are more cautious drivers and exhibit less risky behaviors. Lower driving violations in women can be attributed to their social restrictions on the use of motor vehicles and bicycles in Iran. On the other hand, men in Iran have more responsibilities outside home exposing them to more serious violations (11-13).

Another finding of the present study was a significant relationship between age and risky

traffic behaviors indicating that more violations are observed at lower ages. A study conducted by Alavi et al. reported that the chance of accidents decreases by 2% per year (14). Nevertheless, studies performed on the elderly pointed out that the rate of driving accidents in the elderly is higher than in other age groups. It can be ascribed to slower decision making, sensory impairment, and slower speed of putting thought into action. This is in contrast to the findings of the present study (15).

The occurrence of road traffic accidents can be interpreted as that people become more experienced and cautious as they age. According to previous research, inexperience and sensation seeking is very common among young drivers, while less experienced groups are considered to be high-risk drivers. The higher rate of accidents in younger age groups can be ascribed to this fact (16). Consistent with the results of previous studies, the findings of the current study revealed that the rate of driving violations in married people is lower than single ones (16-18). It can be interpreted to the lower age of single people.

The lower age of drivers and their inexperience along with emotional behaviors, especially in single male youth, make them more prone to driving violations, as compared to other age groups. Furthermore, married drivers are usually accompanied by their wives who stop them from committing driving violations, thereby lowering the rate of

accidents and car crashes (19). In addition, the results of the present study indicated that people with lower levels of education committed less driving violations (e.g., prohibited parking in specified places), as compared to those with higher education. Studies carried out in different cities of Iran have reported that people with high and intermediate levels of education are at higher risk of accidents (18-21).

It can be also attributed to more self-reporting among educated people; in other words, people with higher levels of education report their results more accurately. The present study has also been suggested that people report their violations more frequently as their levels of education go up (13). Nonetheless, the results of the studies conducted outside Iran have contradicted the findings of the present study. They reported that the rate of traffic accidents in educated people was lower due to their better understanding of social laws and regulations.

In addition, the results of the performed studies have indicated that educated people have higher IQs, as compared to uneducated or low educated ones. This may affect individuals' ability to make decisions about driving violations (22). Furthermore, the higher rates of traffic violations (unauthorized speeding) in people with higher parental education can be interpreted as that learning and educational performance of children increases with higher parental education (23, 24). Consequently, the level of education of people increases as well. The findings of the present study showed that the rate of traffic violations is higher in people with higher education.

On the other hand, people with higher levels of education usually have higher incomes. Accordingly, their children have access to better and more up-to-date vehicles capable of traveling at high speeds which can give rise to high speed violations. Another finding of the present study was a significant relationship

between income with unauthorized speeding implying that higher income individuals are more likely to admit unauthorized speeding which is consistent with the findings of previous studies (13, 25).

Higher-income groups typically use more expensive and up-to-date vehicles which have high capabilities, especially in generating power and speeding. Furthermore, it can be hypothesized that in Iran, the imposed traffic tickets are relatively low and they are not deterrent enough for higher-income groups.

Conclusion

Many traffic accidents occur as a result of aberrant driving behavior. Driving is a complex process in which different actions and deviant driving behaviors lead to traffic accident occurrence. Consequently, training and obliging drivers to comply with driving laws and regulations can play a significant role in mitigating accidents which lead to death or injury. In addition, focusing on the role of the internal source can contribute more significantly to controlling traffic accidents. The internal source of control can be considered the best factor in reducing traffic accidents, especially in places where cameras and police forces are not present.

Footnotes

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Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of the current article.

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