



Determinants of Behavior of Students as Pedestrian and Car Occupants in Relation to Traffic Laws in 2013, Gorgan, Iran; An Application of Health Belief Model

Hashem Heshmati^{1*}, Nasser Behnampour², Golnaz Binaei², Samane Khajavai³

¹Department of Public Health, Faculty of Health, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

²Department of Public Health, Faculty of Health, Golestan University of Medical Sciences, Gorgan, Iran

³Department of Management, Payamnour University, Gorgan, Iran

*Corresponding author: Hashem Heshmati

Department of Public Health, School of Health, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran. Tel: +98-913-4512051
e-mail: heshmatih1@thums.ac.ir

Received: April 11, 2014

Revised: June 10, 2014

Accepted: June 21, 2014

▶ ABSTRACT

Objectives: To determine the behavioral pattern of Golestan University of Medical Science (GUMS) students as pedestrian and car occupants in relation to traffic law based on Health Belief Model.

Methods: This cross-sectional study was performed during 2012 in GUMS. A total of 370 students of GUMS were selected using multi-stage sampling method including stratified and random sampling. Data were collected by using a reliable and valid questionnaire. All the participants filled the questionnaire and the data was extracted according to previously described method. Data were analyzed by using SPSS 18 Software. Descriptive statistic and Spearman correlation was used for analyzing the data.

Results: Mean age of the participants was 20.92±1.98 (range 17-32) years. Mean score of perceived susceptibility was 81.87±17.18, being in desirable level. Mean score of perceived severity was 73.39±18.4, being also in desirable level. Mean score of perceived benefits was 77.22 ±16.13, which was also assumed to be in desirable level. Mean score of perceived barriers was 53.46±16.27, assumed as moderate level. In the same way the mean score of practice was 66.17±17.51, so practice in students was in moderate level. Television was the most important cues to action.

Conclusion: Perceived susceptibility, perceived severity, perceived benefits regarding safety behaviors was in good level but perceived barriers and behavior was in moderate level and according to the importance of Television, we recommended appropriate intervention such as health education and advocacy, especially through national Television.

Keywords: Traffic Law; University students; Health belief model; Behavioral pattern.

Please cite this paper as:

Heshmati H, Behnampour N, Binaei G, Khajavai S. Determinants of Behavior of Students as Pedestrian and Car Occupants in Relation to Traffic Laws in 2013, Gorgan, Iran; An Application of Health Belief Model. *Bull Emerg Trauma*. 2014;2(3):115-120.

Introduction

More than 1.2 million deaths occur every year on the roads of the world, and 20 to 50 million

nonfatal injuries sustain due to road traffic crashes. These injuries and deaths have an immeasurable impact on the affected families. It is estimated that road traffic injuries are the eighth leading cause of

death in the world. They are the leading cause of death for young people especially aged 15–29 years, and as a result take a heavy toll on those entering their most productive years and 59% of global road traffic deaths have accounted for young adults aged between 15–44 years [1]. In Iran, traffic injuries are one of the most important causes of unintentional injuries that cause 70 deaths in every day [2]. Approximately half of the road traffic deaths in the world occur among motorcyclists (23%), pedestrians (22%) and cyclists (5%) [1].

Safety behavior such as wearing seat belts, attention to pedestrian light and walking across the street, using pedestrian bridges or underpasses are very effective in decreasing of the road accidents and injuries but considering to the above subject safety behaviors in pedestrian and car occupants is not in a desirable level. For example, the risk of a fatal injury is reduced by 40–50% for drivers and front seat occupants as a result of wearing a seat-belt [1]. Approximately 13.8% of Iranian people do not use seat belts [3]. Another study revealed that 63.3% of female high school students do not use seat belts [4]. A study showed 33.8% of the injured people as a result of traffic accidents were in 20–29 years age group [5]. On the other hand, University students are amongst the most vulnerable groups as they are categorized in 15–29 age groups and their behavior play an important role in content of society behavior.

In spite of the importance of the subject, understanding behaviors of pedestrian when crossing remains as a challenge [6]. So using appropriate theories and model for assessment of the behaviors is necessary. Since the early 1950s, the Health Belief Model (HBM) has been one of the most widely used conceptual frameworks in health behavior research, both for explaining change and maintenance of health-related behaviors. Key Concepts of HBM include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy. Perceived susceptibility refers to belief about the chances of experiencing a risk or getting a condition or disease, perceived severity refers to belief about how serious a condition and its sequel are, perceived benefits refers to belief in efficacy of the advised action to reduce risk or seriousness of impact, perceived barriers refers to belief about the tangible and psychological costs of the advised action, cues to action refers to strategies to activate “readiness” and self-efficacy refers to confidence in one’s ability to take action [7].

As mentioned above; understanding behaviors of pedestrian remains as a challenge. So assessment of the safety behavior is very important. Moreover, each countries and population has a unique socioeconomic and cultural condition, so behavior assessment in each population is necessary. Several studies have used this method for determining the behavioral pattern of population toward road traffic rules [8–16]. For instance in Turkey it was revealed that

perceived benefits had a positive relationship to seat belt use but perceived barriers and cues to action had a negative relationship to seat belt use [8]. This subject has been evaluated internationally to a great extent [17–36]; however data in this regards is scarce in Iran. Therefore, the current study was designed and performed in order to determine the behavior predictors of Golestan University of medical science students as pedestrian and car occupants based on Health Belief Model in related to traffic laws.

Materials and Methods

Study Population

This is was a cross-sectional study being performed in Golestan University of Medical Sciences (GUMS) during 2013. Three hundred and seventy students of GUMS were selected using multi stage sampling method including stratified and random sampling, so that according to students’ number of each school, sample size in every school was calculated and then by using random sampling method, samples were selected in each school. Students who had disability and unwillingness to participate in the study were excluded. The study protocol was approved by the institutional review board and medical ethics committee of GUMS. All the recruited students gave their informed written consents before inclusion in the study.

Questionnaire

Data was collected by means of a questionnaire being designed according to the Health Belief Model. Validity of the questionnaire was evaluated by experts’ viewpoints and reliability of the questionnaire was evaluated on the basis of Cronbach’s alpha that was calculated to be 0.78. The questionnaire included demographic characteristics (3 questions), perceived susceptibility (5 questions), perceived severity (8 questions), Perceived benefits (6 questions), Perceived barriers (7 questions), Cues to action (7 questions) and practice (12 questions).

Perceived susceptibility, perceived severity, perceived benefits and perceived barriers questions were developed on the basis of five point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree), so scores was between zero to four. The highest score and lowest score was related to the most desirable and most undesirable responses respectively and a total score of 100 was justified. Cues to action questions were developed as two answer choices (yes, no) that one and zero score were used for yes and no response respectively. Thus the total score was calculated based on the percentage of each option question. Practice questions were developed as three answer choices (yes, somewhat, no) that two, one and zero score were used for yes, somewhat and no response respectively and a total score of 100 was justified. According to range score in component of perceived susceptibility, perceived severity, perceived

benefits and perceived barriers was between 0 to 100 scores. The scores between 0 and 33.99 were considered as low, 34 and 67.99 as moderate and 68 and 100 as high levels.

Statistical Analysis

All the information recorded in the questionnaires was entered into a computer database. Data were analyzed by Statistical package social sciences (SPSS Inc., Chicago, USA) version 18. Data is reported as mean±SD and proportions as appropriate. Spearman correlation test was used for assessing the linear correlation between the corresponding variables and the correlation coefficients were calculated. A 2-sided *p*-value of less than 0.05 was considered statistically significant.

Results

Overall we included 370 students who all finished the study. Mean age of participants was 20.92±1.98 (range 17 to 32) years. Among them there were 238 (64.3%) women and 320 (86.5%) singles. The baseline characteristics of the participants are summarized in Table 1.

Table 1. Baseline characteristics of 370 students of GUMS participating in the study.

Variables	Value
Age (years)	20.92±1.98
Gender	
Men (%)	132 (35.7%)
Women (%)	238 (64.3%)
Marital status	
Single (%)	320 (86.5%)
Married (%)	42 (11.4%)
Unknown (No Response)	8 (2.2%)

Mean score of perceived susceptibility was 81.87±17.18, so perceived susceptibility in students

was considered to be desirable level. In the same way the perceived severity in students was found to be in desirable level when the mean score was 73.39±18.4. Mean score of perceived benefits was 77.22±16.13, so perceived benefits in student was in desirable level. Mean score of perceived barriers was 53.46±16.27, thus the perceived barriers in students was in moderate level. Mean score of practice was 66.17±17.51 showing moderate level of practice in medical students. In related to cues to action, television was found to the most important cues to action (96.5%) and university professors was lowest important cues to action (55.4%) (Table 2).

There was no significant linear correlation between perceived susceptibility and behaviors (*r*=-0.021; *p*=0.682). In the same way, we did not find any significant linear correlation between perceived severity and behaviors (*r*=0.094; *p*=0.720). There was significant linear positive correlation between perceived benefits and behaviors (*r*=0.185; *p*<0.0001). There was significant linear negative correlation between perceived barriers and behaviors (*r*=-0.233; *p*<0.0001). There was significant association between behavior (*p*=0.018) and Perceived severity (*p*=0.008) with gender, but there was no significant association between perceived susceptibility, perceived benefits and perceived barriers with gender (Table 3). There was significant association between perceived benefits (*p*=0.003) and marital status, but there was no significant association between perceived susceptibility, perceived severity, perceived barriers and behavior with marital status (Table 4).

Discussion

Although vehicle crashes cannot be prevented completely but some of the injuries and severity can be prevented or minimized by simple protective ways such as using seat belts for car users [37]. The findings of the current study reveal that behavior

Table 2. Frequency of cues to action according to the point of view of 370 students of GUMS.

Cues to action	Yes (%)	No (%)
Television	355 (96.5%)	13 (3.5%)
Radio	253 (68.9%)	114 (31.1%)
Pamphlet & poster	237 (64.8%)	129 (35.2%)
Police	317 (86.1%)	51 (13.9%)
Friends	260 (70.8%)	107 (29.2%)
University professors	205 (55.4%)	162 (43.8%)
Family	309 (84.2%)	58 (15.8%)

Table 3. Comparing the different scores between men and women medical students of GUMS participating in the study.

	Men (n=132)	Women (n=238)	<i>p</i> value
Perceived susceptibility	81.43±18.6	82.12±16.3	0.715
Perceived severity	76.77±16.48	71.52±19.16	0.008
Perceived benefits	76.51±17.40	77.62±15.41	0.527
Perceived barriers	53.65±16.73	53.36±16.04	0.869
Behaviors	63.28±16.13	67.76±18.07	0.018

Table 4. Comparing the different scores between married and single medical students of GUMS participating in the study.

	Single (n=320)	Married (n=42)	p value
Perceived susceptibility	82.43±15.92	83.92±19.83	0.580
Perceived severity	73.21±18.01	77.38±20.50	0.166
Perceived benefits	76.44±15.91	84.32±16.61	0.003
Perceived barriers	53.53±16.23	50.93±15.63	0.327
Behaviors	65.78±17.55	69.54±15.49	0.187

of the students as pedestrian and car occupants is in moderate level. Another previous study in Iran [38] showed that practice of pedestrians regarding traffic laws is weak. A study that was performed in Kerman showed that more than 50% of college students traveled unbelted [39]. It seems that the practice of university students is not in desirable level, so appropriate action should be undertaken for promoting their behavior regarding the road traffic rules.

We also found that there was no significant correlation between perceived susceptibility and behavior; these findings are contrary to previous reports [40]. Lund *et al.*, [20] showed that the perceived risk and attitudes significantly predicted risk behavior and accident [20]. Lam [21] also showed that parental perception toward road environment as hazardous is associated with their safe road behavior as pedestrian [21]. He also highlighted the importance of cultural factors in risk perceptions, and safety behaviors; he suggested that cultural differences in risk perceptions should be considered kept in mind when designing and educational intervention [41]. It seems that in the present study, variation of perceived susceptibility in university students is not very wide, so the finding is expected. Moreover the difference may be occurring due to cultural differences in different population.

Our finding revealed, that there was no significant correlation between perceived severity and behaviors that is consistent with previous studies [40,42]. In current study, behavior was assessed via self-reports, so it can be under estimated; therefore we recommend that behavior pattern in future studies be assessed through other methods. We found that there was significant positive correlation between perceived benefits and behaviors that is consistent with other studies [40,43]. It seems promoting perceived benefits can be led to appropriate behaviors, so we recommended appropriate intervention especially health education for promoting perceived benefits in regard to proper behavior in related to Traffic laws.

Our findings revealed that there was significant negative correlation between perceived barriers and behaviors that are consistent with other study [44]. In another study, 37.4% of university student avoided wearing seat belts because they did not feel comfortable when they used seat belt [11]. It seems barriers is one of the most important causes for did not implementation of safety measures, so we recommended appropriate intervention such as health education and advocacy for decreasing barriers.

In present study, television was found to be the

most important cues to action that is consistent with another previous study in Iran [10]. Similar study from Pakistan showed that participants believed that TV programs would be the best method for promoting traffic awareness [11]. Another study suggested safety messages by using techniques other than the written word should be considered [45]. So we recommended using Television as most important Cues to action for promotion appropriate behavior.

In the current study, perceived severity in male students was significantly more than female students. In Iranian society, when a traffic crashes occur, other people especially men try to help the injured people, therefore male see more traffic injures and traffic death than women that the subject led to increasing perceived severity in men. In the present study, behavior in female students was significantly more than male students that the subject is consistent with another study in related to Knowledge, attitude and practice of pedestrians about driving laws [38]. So we recommended appropriate intervention especially in men for promoting their behaviors in this regards. Our finding revealed, perceived benefits in married students was significantly more than single one that is consistent with another study in related to helmet use [42]. It seems married people have an interest and attachment to the family that makes them feel have a greater commitment. Self-reporting is the most restriction of the study.

In conclusion, perceived susceptibility, perceived severity, perceived benefits regarding safety behaviors was in good level but perceived barriers and behavior was in moderate level and according to the importance of Television, we recommended appropriate intervention such as health education and advocacy, especially through national Television.

Acknowledgments

The authors would like to thanks the students of Golestan University of Medical Science that participated in the study.

Financial Disclosure

The authors have no financial interests related to the material in the manuscript.

Funding/Support

This study has been supported by Golestan University of Medical Sciences.

Implication for health policy makers/practice/research/medical education

In order to designing appropriate interventional program, especially educational intervention to

reduce the prevalence of the risky behaviors in pedestrian.

Conflict of Interest: None declared.

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