ELSEVIER

CrossMark

Cognitive-behavioral determinants of using helmet by motorcyclists in a rural community

Sadegh Ghasemzadeh[a], Towhid Babazadeh[a], Hamid Allahverdipour[b,*],
Homayoun Sadeghi-Bazargani[c], Kamiar Kouzekanani[d]

[a] Department of Health Education & Promotion, Tabriz University of Medical Sciences, Tabriz 14711, Iran
[b] Department of Health Education & Promotion, Clinical Psychiatry Research Center, Tabriz University of Medical Sciences, Tabriz 14711, Iran
[c] Road Traffic Injury Research Center, Statistics & Epidemiology Department, Tabriz University of Medical Sciences, Tabriz, Iran
[d] College of Education & Human Development, TAMUCC, 6300 Ocean Dr., Unit 5818, FC 223, Corpus Christi, TX, 78412-5818, USA

ARTICLE INFO

ABSTRACT

Background: Wearing a helmet while riding a motorcycle is influenced by various factors such as the existing traffic rules, environmental factors, law enforcement by the police, social norms, and the community's common beliefs. The purpose of this study was to identify the cognitive-behavioral factors of not using helmet in a rural community and to investigate whether the Theory of Planned Behavior (TPB) could predict not wearing helmets by motorcyclists.
Methods: The sample for this cross-sectional study consisted of 150 motorcyclists. The setting was a rural community in Charoymag, located in North-West of Iran. A written questionnaire, interviews, and personal observations were used to collect the data. Two types of modeling approaches, general SEM and multi-groups SEM, were used to address the specific aims of study based on the theory of planned behavior.
Results: Approximately, 47% of the motorcyclists did not wear helmets during the prior 30 days and only 8% stated that they always used a helmet while riding. Subjective norms supporting the use of helmets ($p < 0.001$) and perceived behavioral control ($p < 0.001$) were the statistically significant predictors of wearing helmets. Perceived behavioral control ($p = 0.14$), positive attitudes towards wearing helmet ($p = 0.86$), and subjective norms in support of using helmet ($p = 0.33$) were not statistically significant in predicting the intention to wear the helmet in the near future. Additionally, intention to wear helmet could not predict wearing helmet in this study.
Conclusions: Perceived behavioral control and social norms can be influential in using the helmet in a traditional rural setting, which can be used in planning head injury prevention programs for motorcyclists in rural communities.

1. Introduction

Across the globe, especially in developed countries, injuries resulting from non-traffic and traffic accidents not only impose social and economic costs on individuals, families, and societies, but also incur heavy economic costs on public health services (Ketabi et al., 2011; Moghisi et al., 2014) and are considered as threatening situation through increasing mortality, resulting in one of the greatest

challenges to public health (Reddy et al., 2014; Sudaryo et al., 2012). For instance, in countries such as Nepal and Thailand, 46.6% and 71% of all traffic injuries and fatalities involve people riding motorbike, respectively (World Health Organization, 2015). According to the World Health Organization, 40% of recorded vehicles in Iran were motorbikes and motorcyclists had the highest per-passenger-kilometer (PKM) mortality rate (World Health Organization, 2015). Wearing helmets can decrease the intensity of brain trauma and motorcyclists' deaths for up to 70% and 40%, respectively (World Health Organization, 2015). Most of the motorcyclist fatalities are due to head and neck injuries (World Health Organization, 2009); for example, a study in Nigeria reported that the injured motorcyclists in an emergency ward in a rural area were not wearing helmet (Dongo et al., 2013).

Worldwide, reasons such as being ridiculed by others, feeling that using helmet is not needed for short distances, heat and discomfort, cluttered hair, interest in using traditional headwear (e.g., Amameh), the probability of helmet being stolen (Gururaj, 2008; Ramli et al., 2014), high cost of helmet and lack of proper information (Germeni et al., 2009), lack of police control (Robertson et al., 2014), and lack of commonness of wearing helmets (Gururaj, 2008; Ramli et al., 2014; Singh, 2014) have been reported as the root causes of not wearing helmets. In three studies, the most common reasons for avoiding helmets were sweating and difficulty in hearing (Faryabi et al., 2014; Oruogi et al., 2011; Ranney, Mello et al., 2010).

There are several cognitive-behavioral and environmental reasons for not using helmet. Recognition of these factors may be instrumental in keeping the motorcyclists safe. One of the most significant factors in using helmet is the perception and judgment of motorcyclist towards traffic events and the role of helmets in prevention of probable damages. Along this line, in identifying cognitive as well as behavioral reasons for not using the helmets, theories and behavior change models can not only be useful in understanding cognitive and behavioral factors, but also helpful in introducing effective intervention. Theory of Planned Behavior (TPB), which explains healthy behaviors, provided the study's theoretical framework. The TPB (Ajzen, 1987; Ambak et al., 2016; Barati et al., 2015; Bashirian et al., 2013) measures individual attitudes (positive or negative evaluation of the behavior by individuals), perceived behavioral control (the sense of having control over a given behavior by individuals), and subjective norms to decide whether or not to conduct a certain recommended behavior are suggested as the predictors of behavior or intention to carry out a behavior. Various studies have employed the TPB in explaining safety behaviors and helmet use by motorcyclists (Lajunen and Räsänen, 2004; Mehri et al., 2011; Quine et al., 1998). For instance, it is reported that a TPB-based intervention is effective in promoting helmet use among bicyclists (Quine et al., 2001). Additionally, it is reported that the TPB's cognitive factors predict 38.3% of the variation in the intention of motorcyclists in using helmet (Ahmed et al., 2013). Another Iranian study reported that the TPB explained nearly 49% of the variation in future intention of helmet use among motorcyclists (Mehri et al., 2011).

Based on the abovementioned background and because of using the motorbike as a main source of transportation in rural areas, the primary purpose of our study was to determine how perceived behavioral control, attitudes, and subjective norms predict helmet use, directly and indirectly, via the mediation of intention, among motorcyclists in a traditional rural community. The secondary purpose of the study was to propose suggestions for increasing helmet use.

2. Methods

2.1. Subject selection

The study was predictive in nature, delimited to males, and conducted between October and December of 2014 in the city of Charoymagh. The non-probability sample consisted of 150 motorcyclists, ranging in age from 14 to 67 (Mean = 28.57, SD = 9.00), who were recruited in various motorcycle repair shops while waiting for the service. Specifically, 10 of the existing 20 repair shops were selected randomly and in each, based on convenience sampling, 15 motorcyclists voluntarily agreed to participate in the study and all completed the study's survey instrument, resulting in 100% response rate. The inclusion criterion was the minimum of one year of motorcycling riding experience. Permission to conduct the study was obtained from the Ethics Committee of Tabriz University of Medical Sciences (9370). A written survey questionnaire was used to collect data.

3. Measures

3.1. Demographic and motor biking Information

The following demographic data were obtained: age at the time of learning to ride motorcycles, age at the time of participating in the study, employment status (unemployed, civil servant, self-employed, student, a job which requires using motorcycles), income, level of education, years of motorcycling, wearing helmet (yes or no), motorcycle license (yes or no), a history of fines for not wearing helmet (yes or no), wearing helmet for the fear of being fined (yes or no), previous accident with motorcycles (yes or no), and wearing helmet when having an accident (yes or no).

3.2. Theory of planned behavior constructs

The TPB constructs were measured by using a 16-item scale, which had been developed by Mehri et al. (2011). Cronbach's Coefficient Alpha (α) was used to estimate the internal consistency of the constructs. Three items, α = 0.72, (e.g., obstacles and difficulties cannot prevent me from using helmets) measured the construct of perceived behavioral control for wearing helmet. Positive attitudes towards wearing helmet was measured by five items, α = 0.81, (e.g., wearing helmet is tiresome for me). There were four items, α = 0.83, (e.g., my family members encourage me to wear helmets) which measured the subjective norms supporting the