



Traffic risk behavior and perceptions of Thai motorcyclists: A case study

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ABSTRACT

This study aimed to investigate Thai motorcyclists' traffic risk behavior and their perceptions of it, information of value in the design and implementation of public health policies and campaigns for the reduction of road injuries. Data was collected by a self-administered questionnaire completed by 399 motorcyclists in Muang Krabi district, Krabi province, Thailand. The questionnaire focused on the respondents' perceptions of general traffic risks and the specific risks at 3 identified hazardous sites. The results of the survey indicated that the correct fastening of helmet straps had a relationship with responsible traffic risk perceptions.

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1. Introduction

Injuries are one of the world's major public health concerns alongside communicable diseases, non-communicable diseases, mental health, and malnutrition. Understanding road-users' perceptions of traffic risk behavior is an effective means of contributing to traffic safety campaigns, especially the perceptions of risk of motorcyclists. In Thailand, motorcycles are a popular form of transport but are involved in a disproportionate number of the nation's accidents, injuries, and fatalities.

The paper is divided into five parts – an introduction, a literature review, a methodology section, an outline of results, and a discussion and conclusion section.

2. Literature review

Road accidents are the world's most common cause of injury-related fatalities [1]. By 2020 they are predicted to be the world's third leading cause of mortality. Currently, about 85.0% of road accident

fatalities occur in low- and middle-income countries [2]. In Thailand, accidents involving motorcycles account for more than 80.0% of traffic injuries [3]. Accidents involving motorcyclists in Thailand are increasing not only in number but also in severity [4] due to the vulnerability of the riders' exposed situation, speed, limited driving experience, and risk-taking behavior [5].

Behavioral factors have been recognized as a major contributor to 95.0% of traffic accidents [6] and an understanding of traffic risk behaviors and traffic risk perceptions may predict drivers' actions. Deery (1999) [7] defined traffic risk perceptions as subjective interpretations of the risks involved in various traffic situations (p. 226). It was found that a higher level of perceived risk for a particular behavior was associated with a lower chance of an individual's participation in that behavior [8]. Rundmo (1999) [9] recognized that changing perceptions of risk was an important factor in the change of behavioral patterns. Risk perception is closely related to social psychology [10 p. 409] as it is believed to relate to drivers' behavior in different groups of society [11].

The assessment of road-users' perceptions of individual hazards helps public health administrations to take into account the expectations, perceptions, and needs of road-users when designing and implementing policies, messages, and actions [12]. However, evidence-based investigations of motorcyclists' perceptions of traffic risks in developing countries are rare [13], including Thailand. Krabi province, a rural area, is located on the west coast of southern Thailand with 408,898 residents (year 2008 statistics). Local employment is mainly dependent on agricultural plantations of palm and rubber trees. The province has 8 districts and the downtown area of Muang Krabi has the highest number of road crashes in the province. From October 2008

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to July 2009, there were 656 recorded cases of road crashes in Muang Krabi, an average of 65.6 per month or between 2 and 3 per day, resulting in 25 deaths and 427 injuries. Collisions between motorcycles and automobiles accounted for 43.1% of these crashes and 65.0% of road accidents took place on straight roads.

There are few scientific publications on the public's perceptions of general traffic safety features in Krabi, especially from the local motorcyclists' point of view [14]. This study aimed to investigate the traffic risk behavior and perceptions of it of 399 motorcyclists in Muang Krabi district in general and at three identified hazardous traffic sites in particular.

3. Methodology

3.1. Study area, study period, and study design

Muang Krabi district was selected as the geographical area for this study due to its high number of road accidents. Data collection occurred over two periods. The first was from August 2009 to January 2010 and involved the collection of primary and secondary data by the Ethical Review COA number 131/2552 from the Ethics Review Committee for Research Involving Human Subjects, Chulalongkorn University, Bangkok, Thailand. This first period of data collection used local public participation to identify three hazardous traffic sites in the study area. These were Muang Krabi School, Klong Ji-lard Intersection, and in front of Krabi Hospital. To optimize the data collection of the entire project according to road safety principles, the second period of data collection was in April 2010 and involved a separate survey on general and site-specific traffic risk perceptions of 399 motorcyclists. A questionnaire based on a number of sources in the literature [15] was used to collect data from the motorcyclists. In addition to general demographic data, the questionnaire included questions related to different hazardous situations and risky human factors, unsafe infrastructure (road surfaces and roadside conditions), motorcycle conditions, and traffic environment. The questionnaire was pre-tested in Chonburi province in Eastern Thailand and produced a satisfactory reliability value of higher than 0.75. The required number of participants in the study was calculated by a statistical formula from Daniel (2005, p.189) [16] with the assumption of maximum variance of the proportion of traffic risk perception prevalence in Thai motorcyclists at 0.5. This indicated a required sample size of 384 and 400 motorcyclists were surveyed to account for any incomplete questionnaires. The number of completed questionnaires was 399.

Based on purposive and convenience sampling, the researchers approached motorcyclists at each hazardous site. Those who made themselves available and were willing to participate were asked to complete the questionnaire. The motorcyclists were informed in writing that their voluntary participation in the study would have no detrimental effect on them, all information was confidential and given anonymously, and data would be used for academic purposes only. To be included in the study, participants had to be over 18 years of age, have lived in the area for more than 6 months, own their motorcycle, and be regular motorcyclists. The participants were required to consider the items about perceptions of traffic risks generally and at specific hazardous sites in their neighborhood as 'risky,' 'not sure,' or 'not risky.' Opinions on potential causes of road crashes in Muang Krabi district, especially among young (less than 25 years old) male motorcyclists, were also obtained. It took on average of 30 min to complete the questionnaire.

3.2. Statistical analysis of the survey

Descriptive statistics used were frequencies, percentages, means, and standard deviations. The statistical association between the variables was assessed by means of Fisher's Exact Test, odds ratio

(OR), and 95% confidence interval (CI). For all analyses, a *p*-value of <0.05 was considered statistically significant.

4. Results

In terms of the general demographic data, the respondents were on average 28 years old, mostly male (60.5%), with secondary school and bachelor degree educational levels (29.0% and 31.0% respectively). About one-quarter was wage-earners (24.7%), 31.3% were students, and the average length of riding experience was 13 years. Most (70.4%) rode daily and approximately half (50.4%) of this riding was done in Muang Krabi district. The majority (92.2%) held a valid license. Around two-thirds of them (66.2%) had never had an accident resulting in severe physical injury or serious property damage and those who had had accidents (33.8%) had an average of two accidents in the past 7 years. In general, their perceptions of traffic risks were very high.

At the three specific hazardous traffic sites, the majority of the respondents also perceived existing hazardous conditions as 'risky'. Of importance, more than half (52.9%) of the participants 'always' wore a helmet when riding. Of these, 60.9% 'always' fastened the helmet strap. The use of the helmet strap had a statistical relationship with traffic risk perceptions of the respondents at *p*-value 0.021 (see Table 1) and the riders who fastened their helmet straps 'every time' when riding perceived traffic risks 3.39 times (95% confidence interval = 0.841–12.193) greater than those who did not fasten their helmet straps (see Table 2). They viewed the main causes of traffic accidents among young motorcyclists in Muang Krabi district as the results of human behavioral factors, for instance, violating safety traffic laws (76.8%) and drunk riding (65.0%). Most of the respondents (82.8%) wanted to see a re-emphasis on the policy of cultivating an awareness and conscience of 'shared' road use to increase the importance of other people's safety regarding life and property. Also, the majority of the respondents wanted strict enforcement of traffic laws (79.0%) and the promotion of helmets and helmet strap use when riding (65.0%) as solutions to the reduction of road crashes in Muang Krabi district.

5. Discussion and conclusion

About half (53.0%) of the adult male respondents in this study wore helmets when they rode their motorcycles. This percentage is the same as the average national rate of helmet use in Thailand (year 2010 from a sample size of 954,956 motorcyclists and passengers through a nationwide observational study) [17]. The majority (61.0%) of the riders fastened their helmet straps and these riders perceived traffic risks at a rate 3.4 times greater than those riders who did not

Table 1
Relationship between the use of helmet straps when riding and perceptions of traffic risks.
(*n* = 399).

Items	Traffic risk perception			Fisher's exact test <i>p</i> -value
	High	Medium	Low	
How often do you fasten the helmet strap when riding?				
Every time	237	5	1	0.021*
Mostly	89	2	0	
Sometimes	53	1	2	
Never	7	2	0	

p-value < 0.05.

It was found that motorcyclists who wore helmets and 'every time' fastened their helmet straps had perceptions of traffic risks 3.39 times (95% confidence interval = 0.841–12.193) greater than those who did not fasten the helmet straps when riding (see Table 2).

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