

Original Research

## RELATIONSHIP OF SAFE RIDING KNOWLEDGE, PERCEPTION ABOUT DANGER, AND SAFE RIDING BEHAVIOR AMONG SENIOR HIGH SCHOOL STUDENTS IN SAMARINDA INDONESIA

Dina Lusiana Setyowati\*, Ade Rahmat Firdaus, Nur Rohmah Rohmah

Mulawarman University

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**Correspondence:**

Dina Lusiana Setyowati, S.K.M., M.Kes

Mulawarman University

Department of Occupational health and safety

JL. Sambaliung Kampus Gunung Kelua Samarinda, East Kalimantan, Indonesia

Email: [dina.setyowatik3@gmail.com](mailto:dina.setyowatik3@gmail.com)

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### ABSTRACT

**Background:** A traffic accident is a major factor of death of young people, especially in males, and those with physical disabilities. Although there was a decrease of the number of traffic accidents in 2014 (1,094 accidents) compared to a previous year (1,041 accidents), however it still remains high.

**Objective:** This study aimed to identify the relationship of safe riding knowledge, perception about danger, and safe riding behavior in high school students in Samarinda City, Indonesia.

**Methods:** The study employed a survey with cross sectional approach in 315 students. Data were collected using questionnaires to measure safe riding knowledge, perception about danger, and safe riding behavior. Data were analyzed using Chi square with  $\alpha .05$ .

**Results:** The results showed that there was a significant relationship of safe riding knowledge, perception of danger, and safe riding behavior in high school students ( $p < .05$ ).

**Conclusion:** This finding provides the insights to reduce traffic accidents in high school students increasing the knowledge and perception of safe riding by highlighting the involvement of parents, teachers and related institutions.

**Keywords:** safe riding, behavior, perceptions of danger, knowledge

### BACKGROUND

World Health Organization (WHO) stated that approximately 1.25 million people die each year due to traffic accidents. Traffic accidents were the leading cause of death among young people aged 15-29 years. It is 90% of the deaths occurred in low- and middle-income countries, since these countries have about half of the world's vehicles. Half of those who died in traffic accidents were vulnerable road users such as pedestrians, cyclists and motorcyclists. If there is no action, traffic accidents are expected to rise to the leading cause of 7 deaths by 2030 (WHO, 2016).

According to data from the State Police of the Republic of Indonesia in East Kalimantan in 2014 (Pemerintah Provinsi Kalimantan Timur, 2015), the number of motor vehicles were 2,233,278 pieces in total, with the largest number in Samarinda (29.41%), and the single motorcycles are 1,971,629 units. In 2014 the number of traffic accidents decreased compared to the previous year, from 1,094 to 1,041 (Pemerintah Provinsi Kalimantan Timur, 2015).

The number of accidents in East Kalimantan Province in 2011 had been decreased, as reported by Indonesian National Police, the number of accidents reached 1,347 events, while in 2010 it reached 1767 incidents. Of the total number of victims, 2,115, 463 people were died, 517 people were seriously injured, and 1,135 people suffered from minor injuries ([Directorate General of Land Transportation of East Kalimantan Province, 2013](#)). Throughout the year 2013, it is recorded that 83 people died in traffic accidents that occurred in the City of Samarinda, East Kalimantan. Although the incidence of accidents decreased from 2012, but the number of deaths had increased. The Traffic Unit Polresta Samarinda noted that there were 83 people died in 2013, while there were only 67 people died due to traffic accidents in 2012 ([Jalil, 2013](#)).

The traffic accident contributes as the major factor of young people's death, especially males, and it also contributes to make the victims have physical disabilities. High mortality rates of young people due to traffic accidents could be caused by their low perception of hazard risk in traffic. Young riders are more likely put themselves in dangerous situations such as riding motorcycles at high speeds, passing the red lights, and not using helmet and gloves as safety tools. However, this study was to determine factors associated with safety riding in senior high school students in Samarinda Indonesia.

## METHODS

### *Study Design*

This study used a survey with a cross-sectional design, with safe riding behavior as dependent variable, and safe riding knowledge and perception of danger as independent variables.

### *Setting and Sample*

The study was conducted on 22<sup>nd</sup>-24 July 2017 at Senior High School No 2 (SMAN 2)

Samarinda, SMAN 3 Samarinda, SMAN 5 Samarinda, SMAN 6 Samarinda, SMAN 9 Samarinda, SMAN 11 Samarinda, SMAN 12 Samarinda, SMA Islam Samarinda, SMA Kristen Sunodia Samarinda, East Kalimantan, Indonesia. A total of samples from those schools was 315 high school students selected using a proportional random sampling.

### *Instrument*

Data were obtained using questionnaires which have been tested for validity and reliability ( $r > r$  table .2787, and Cronbach alpha .918). The questionnaires were developed based on safe riding behavior theory and the Law of the Republic of Indonesia No. 22 of 2009 on Road Traffic and Transportation ([Presiden Republik Indonesia, 2009](#)). A Likert scale was used, which consisted of 140 valid items.

### *Data Analysis*

Data were not-normally distributed, which therefore analyzed using Chi-square in a computer program with 95% significance level.

### *Ethical Consideration*

The study permission was obtained from the Educational Office of Samarinda City and schools. Prior to data collection, each respondent was given an informed consent about the objective and procedures of the study.

## RESULTS

Based on Table 1, it was found that 59.7% of respondents were female, 1.9% respondents claimed already had a driving license C. It was 30.8% of respondents said that they had traffic accident in the past, and 39.4% of respondents stated that the main reason for riding a motorcycle was because no one can accompany them to the schools. It was also 50.8% of respondents behaved unsafely, 49.2% of respondents had bad knowledge about safe riding, and 42.2% of respondents had positive perception related to dangers (see Table 1).

**Table 1** Characteristics of Respondents

No	Characteristic	n	%
1.	<b>Sex</b>		
	Men	127	40.3
	Women	188	59.7
2.	<b>Ownership of driving license C</b>		
	Yes	6	1.9
	No	309	98.1
3.	<b>Have Experience on Traffic Accidents</b>		
	Yes	97	30.8
	No	218	69.2
4.	<b>Main Reasons to Drive a Motorcycle</b>		
	Nothing to take	124	39.4
	Distance home	37	11.7
	Fast to the school	58	18.4
	No public transports	31	9.8
	Others	65	20.6
5.	<b>Safe Riding Behavior</b>		
	Unsafe	160	50.8
	Safe	155	49.2
6.	<b>Knowledge on Safe Riding</b>		
	Poor	155	49.2
	Good	160	50.8
7.	<b>Perception About Danger</b>		
	Negative Perception	182	57.8
	Positive Perception	133	42.2
	Total	315	100

Table 2 shows that 68.4% of respondents who did not have good knowledge about safe riding behaved unsafely. The results showed that there was a significant relationship ( $p = .000$ ) between knowledge of safe riding and safe

riding behavior. 61.5% of respondents had negative perceptions about the dangers of unsafe behavior. There was a significant relationship between perceptions of danger with safe riding behavior ( $p = .000$ ).

**Table 2** Relationship of Safe Riding Knowledge, Perception of Danger, and Safe Riding Behavior

No	Variable	Safe Riding Behavior				Total		p
		Unsafe		Safe		n	%	
		n	%	n	%			
1.	<b>Perceptions of Danger</b>							
	Negative	112	61.5	70	38.5	182	100	.000**
	Positive	48	36.1	85	63.9	133	100	
2.	<b>Safe riding Knowledge</b>							
	Poor	106	68.4	49	31.6	155	100	.000**
	Good	54	33.8	106	66.3	160	100	

\*\* Significant ( $\alpha = .05$ )

## DISCUSSIONS

### The Relationship Between Knowledge About Safe Riding and Safe Riding Behavior

In general, traffic accidents occurred due to several factors, such as human negligence, road conditions, vehicle eligibility, and unoptimal traffic law enforcement. Based on Outlook 2013 Transportasi Indonesia ([Andy, 2013](#)),

there were four factors which caused accidents, namely the condition of facilities and infrastructures of transportation, human and natural factors. Among those four factors, human negligence was the main factor which caused the highest number of traffic accidents. Therefore, good traffic awareness is needed by the society, especially for those who are in

productive age or teenagers ([Badan Intelijen Negara, 2013](#)).

Teenagers usually think that they are mature enough to ride motorcycles, but without sufficient knowledge, it can make fatal accidents. They still have lack of knowledge about vehicles since it is still new for them. Lack of knowledge and experience made teenagers drive more carelessly in dangerous situations, so the potentials of accidents to happen is high ([Rakhmani, 2013](#)).

Factors which caused accidents were: 1) human factors, i.e. non-compliance with traffic regulations, 2) vehicle factors, 3) road factors, and 4) environmental factors ([Zayu, 2012](#)). It is mentioned that the incidence of motorcycle accidents among motorcyclists in adolescents is 11%, and more than 50% of traffic accident victims have hyperarousal, memory disturbances, more emotional, also cognitive and social disorders ([Kazantzis et al., 2012](#)).

The dominant factor caused traffic accidents is unsafe action or unsafe behavior of the bikers. Young groups under 25 were highly susceptible to traffic accidents, with risk of severe injury and even death. [World Health Organization \(2010\)](#) divided the age of adolescence into two groups: early adolescents (10-14 years) and late adolescents (15-20 years), while in Indonesia adolescence is in the age of 11-24 years and unmarried ([Infodatin, 2015](#)).

The result showed that 50.8% of respondents behaved unsafely. Safe riding was an attempt to minimize danger levels and maximize safety in driving in order to create safe condition. 49.2% of respondents had poor knowledge about safe riding in this study. The knowledge about safety riding would affect the behavior of people in driving. The results also showed that knowledge was related to safe riding, as a predisposing factor that someone acts because they have enough knowledge in carrying out these actions ([Glanz, Rimer, & Viswanath, 2008](#)). The better the knowledge they have, the better the behavior they will act, but if the less knowledge they have, the high possibility of respondents would behave badly in riding. The

result of this research was also in line with [Notosiswoyo \(2014\)](#) stated that knowledge was related to motorcycle accidents and preventive behavior ( $p = .018$ ). But, the results of this study was not in line with the research results of [Khakim \(2016\)](#) which stated that knowledge was not related to safe riding behavior ( $p = .810$ ).

### **The Relationship Between Perception of Dangers and Safe Riding Behavior**

Driving involves responding to real objects in the spatial world. It requires domain specific knowledge, motor skills, and high perceptual and cognitive skills. Compared to more experienced drivers, novice drivers have a relatively high accident involvement ([Kuiken & Twisk, 2001](#)). The frequency of finding the danger to the rider will be directly proportional to the amount of distance that has been taken ([Ridho, 2012](#)).

The results had also showed that 57.8% of respondents had negative perceptions related to hazards, 25.1% of respondents stated that before an accident they would not use standard safety equipment such as helmets, 17.8% stated that speeding up does not matter as long as it would not crash anything, and only 13.7% of respondents stated it is important to use standard safety tools. Negative hazard-induced perceptions were indicated through their responses in suggesting that driving on the road may speed up as long you would not have an accident and still using standard safety tools, would affect their behavior while riding on the highway. Unsafe riding behavior would be harmful to the riders and others. The results of [Tangkudung, Sampouw, and Tjahjono \(2010\)](#) on the perception of motorcycle riders showed that positive perceptions need to be nurtured continuously so that the perception becomes stronger, and the behavior towards safety would be getting better.

### **CONCLUSION**

This finding provides the insights to reduce traffic accidents in high school students by increasing knowledge and perception about

safe riding. It is suggested for the involvement of parents, teachers and related institutions to provide interventions, particularly related to safe riding knowledge and perception of danger.

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#### Declaration of Conflicting Interest

The author does not have a conflict of interest that is relevant to this paper to be disclosed.

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