The Urgency of the Improved Intensity of Traffic Usage Safety Education by Students

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Abstract

Motorcycle is the most commonly owned transportation mode by most Indonesian citizens due to its affordable price and size, which makes them suitable for road shapes in Indonesian residential area. In recent times, student motorcyclists have increased in number, although using motorcycles by people younger than 17 years old violates the Law of Traffic Usage and Road Transportation and might be penalized. Motorcycles are the type of vehicle that has accident-prone characteristics. Many student motorcyclists have been in traffic accidents resulting in injuries, physical disabilities even deaths. Traffic usage safety has been conducted in various types of media, written or electronic. It has been done in school counseling as well. Most students have yet to take the session regularly. The material and methods of education delivery of traffic have been rated well. The primary data is obtained by sharing questionnaires using Google Forms by junior and senior high school students in Bekasi Regency. The data analysis uses Crosstab and Chi-Square tests. Based on the analysis result, there is a connection between gender, age, school level, traveling time, and traffic usage education intensity with traffic accidents that have been experienced. The more intense the education/socialization on traffic safety, the less the percentage of an accident will be. Theoretically, student motorcyclists' understanding of traffic safety is rated well, although the application consistency has yet to be seen. Therefore, there has to be an improvement in the education/ socialization intensity of traffic that enables every student to receive the educational material.

Keywords: *Student Motorcyclist, Traffic Usage Safety, Traffic Usage Education Intensity*

INTRODUCTION

Motorcycle is the most commonly owned by most Indonesian citizens due to its affordable price and size, which is relatively small that makes them suitable for road shapes in Indonesian residential area. The size of motorcycles also correlates with traffic accidents or incidents (Rogé et al., 2019). The vulnerability of motorcyclists is mainly caused by the difference in mass and speed between motorcycles and types of other motor vehicles (Law et al., 2016).

Motorcycles are the most proportion type of vehicle (75,06%) that experiences traffic accidents compared to freight transport (12,01%), bus (8,23%), passenger cars (3,01%), non-motorized vehicles (1,62%), special vehicles (0,02%), and train (0,04%). Based on the occupancy, students and college students occupy the third proportion as traffic accident perpetrators (20,25%) after private employees (31,00%) and entrepreneurs and entrepreneurship (26,82%). As the victims of traffic accidents, students and college students also occupy the third proportion (22,30%) after entrepreneur and entrepreneurship (24,89%) and private employees (24,42%) (Decree of the Head of the Police Traffic Corps Number Kep/7/I/2022, concerning Traffic Accident Data in 2021).

To reduce the potential for motorcycle students to experience traffic accidents, the provision of school buses, an increase in the number of public transportations, the prohibition of carrying motorcycles for students who do not have a driver's license, through school rules and the implementation of traffic safety education/socialization programs have been conducted.

This article is aimed to determine the relationship between gender, age, school level, travel time, and intensity of traffic safety education or socialization with traffic accidents that have been experienced in using (self-drive) as transportation to go to school. In addition, using several questionnaires, this article will discover the portrayal or perception of respondents' traffic safety. In this study, accidents are not described or classified with Serious Injury, Minor Injury, or similar descriptions. Respondents were not asked in detail about the sections of the road they passed through. Students who bring motorcycles in this study are referred to as Student Motorcyclists.

LITERATURE REVIEW

Traffic safety education programs are designed to reduce risky driving behavior, including realistic experiences that increase risk perceptions and opportunities to improve decision-making skills regarding driving risks (Lanning et al., 2018). It is difficult for children and adolescents to be expected to perform in the same capacity as adults in dealing with various traffic situations; therefore, they are vulnerable to traffic accidents (Jaehoon et al., 2014). Based on survival analysis, the risk that a first accident will occur during the first month after obtaining a driver's license is substantially higher than during the next 11 months. Related to distance, the risk of a first accident will occur in the first 500 miles after obtaining a license (SIM) (Mccartt et al., 2003).

Student motorcyclists understand traffic rules and how to obey them properly, but in certain situations, they engage in risky behavior and violate these rules (Barboza-Palomino et al., 2020). The knowledge of student motorcyclists about driving safety is good; however, they often ignore it. Therefore, there is still a need for continuous socialization as reinforcement so that teenagers' knowledge and attitudes toward driving safety can manifest in their daily behavior (Sukmandari & Subekti, 2020).

In Indonesia, a study that explores the factors that determine the safety behavior of motorcyclists in Jakarta through research with 230 respondents who ride motorcycles on the streets of Jakarta, using the Structural Equation Modeling or SEM analysis technique with the AMOS 22.00 program. The results showed that the intention of safe behavior was the most influencing predictor of safety behavior directly. Meanwhile, the driver's attitude indirectly becomes the most dominant determinant of safety behavior. Another finding explains that the age of the rider has a significant effect on safety behavior. Therefore, it is essential to equip motorcyclists with the necessary skills and resources to demonstrate safe driving behavior. There needs to be a collaboration between transportation practitioners, planners, and regulators with schools and/or other institutions to discuss the topic of driving safety and educational programs to support safe behavior (Jalaludin & Widyaningsih, 2022). One of the four main policies in Presidential Regulation Number 1 of 2022 concerning the General National Road Safety Plan is to reduce risk exposure to reduce the number of accidents, focus on reducing the number and length of trips, and the use of private vehicles, especially motorcycles.

Furthermore, the phenomena of teen driving in some countries have been researched. In Israel, teen pre-license driving behavior research was conducted with a total of participants were

1,563 teens. The study concludes that teen driving behavior is highly influenced by social norms and parental authority (Gesser-Edelsburg et al., 2018). Moreover, in Taiwan, the usage of the motorcycle is high, research conducted by Yeh and the team shows that 63.4% of students had experience driving a motorcycle without a legal driver's license for the motorcycle. This condition has implications for the rising severity of the accidents and the accident itself due to the immaturity and inexperience of the students (Yeh & Chang, 2009). The Philippines implemented the Children's Safety on Motorcycles Act of 2015, which prohibits children (under 17 years old) from being either riders or passengers. The penalty for people who did three times violation is not only paying some money but also withdrawing their driving license (The Lawphil Project, 2014). In India, parents who let their children drive motorcycles to school -if their children do violation- the parents have to pay a penalty of Rs 25 thousand or equivalent to Rp 4.9 million, underage children who drive motorcycles will be prosecuted under the Teenage Justice Act (Rialdi et al., 2021). Furthermore, in New Jersey, US, those over the age of 16 are allowed to have a driver's license, but under strict requirements such as not driving at night, 23.00-05.00 local time, not being allowed to carry other people without accompanied by an adult, not using gadget while driving using special license vehicle number law enforcement and giving strict punishment according to applicable regulations (New Jersey Motor Vehicle Commission, 2022). The United States provides a Difficulty License for Teenage, a driver's license that is restricted to ages between 14 and 15 (sometimes up to 18) who need to drive to and from home and school because of serious difficulties, such as a family having a financial problem, medical problems, or have to go to work or school and have no other practical way to get to work or school.

In this study, Bekasi Regency is the location that analyzes since traffic violations by minors are still a problem that is often found in East Bekasi Regency, violations, with the highest percentage of not wearing a helmet at 66% and not having a driver's license by 82%. The results of the Crosstab analysis show that age, gender, reasons for use, parental permission, school restrictions, distance, and type of motorbike used affect the number of traffic violations. This is due to several factors, such as family, school education, distance, knowledge, and environmental factors. Many students do not have a driver's license but still use motorcycles because they have not experienced a penalty ticket or an accident. For this reason, preventive means are required in the form of Road Safety Seminar by the Police; Cooperation in the Implementation of Driving Practice Workshops by the Police and Schools; Counseling and safety education in schools; Cycling Culture Campaign; and regulations making agreed by the Transportation Service together with Bekasi Education Service as well as repressive efforts through the provision of sanctions or penalties to violators in the form of fines and vehicle detention (Suryandari et al., 2022).

RESEARCH METHOD
The study was conducted from the 5th to the 12th of May 2021, with Bekasi Regency, West Java Province, as the research location. Primary data collection was carried out online with an instrument in the form of a google form questionnaire with 7th, 8th, and 9th middle school students and 10th, 11th, and 12th-grade high school/vocational high school students as respondents in Bekasi Regency, West Java. The Bekasi Regency Education Service, West Java, and the Regional III Education Office Branch Office of West Java Province assisted in distributing the questionnaire

links. In addition, direct interviews were conducted with several related parties, such as the Bekasi Regency Education Office, the Regional III Education Office Branch Office of West Java Province, one school in Bekasi Regency, Bekasi Regency Metro Police, and the Bekasi Regency Transportation Service. All the participants have consented to all the answers stated in this paper. Secondary data were obtained from related parties and several other sources, including social media.

The analytical method used in this research is descriptive research method and cross-tabulation analysis method (Crosstabs) with Chi-Square Test. Descriptive research seeks to describe and interpret something, such as existing conditions or relationships, developing opinions, ongoing processes, consequences or effects, or trends that have taken place. Crosstab's analysis is a statistical method used to see the relationship between two variables using chi-square and contingency coefficients. On this basis, crosstabs analysis could describe the relationship in research regarding the relationship between influencing and affected factors.

In this study, there are two parts to the questionnaire. The first questionnaire relates to the identity/characteristics of Respondents, including gender, age, grade level at school, transportation used to go to school if not in a Covid-19 Pandemic situation, travel time, reasons for using (driving/self-drive) motorcycles /cars, whether or not they always check/inspect the vehicle before using it, whether or not they have had an accident, the cause of the accident, the intensity of traffic safety education at school, opinions and expectations regarding the material and delivery method of traffic safety education. The second questionnaire is related to opinions/perceptions about safety in traffic, with respondents being asked to give their opinion on a Likert scale in the scale range from strongly disagree (score 1) to strongly agree (score 5).

FINDINGS AND DISCUSSION

A. Survey Result

Bekasi Regency has 321 units of Junior High Schools with 116,633 people and 330 units of Senior High Schools or its equivalent, with 119,370 people. This study distributed the survey to a total of 19,619 respondents, consisting of 8,689 (44.29%) men and 10,930 (55.71%) women were obtained. The type of transportation used to school if the condition is not a Covid-19 pandemic (offline learning), the largest proportion is riding (driving) a motorcycle, 33.90% (6,651 people), being escorted by motorcycle occupies almost the same proportion, which is 33, 33% (6,539 people), the following proportion is walking 14.14% (2,774 people) and taking public transportation (bus/public transportation) 7.92% (1,553 people). Respondents who Drive (self-drive) Cars 0.23% (45 people), as shown in Figure 1.
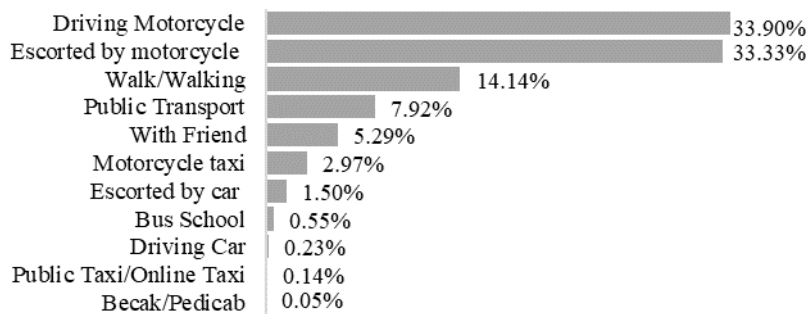

Figure 1. Type of transportation use to school

From a total of 19,619 respondents, there are 6,651 Student Motorcyclists, with a slightly larger composition of the female motorcyclist, 50.28% (3,344 people) compared to 49.72% (3,307 people) male motorcyclists, as shown in Figure 2.
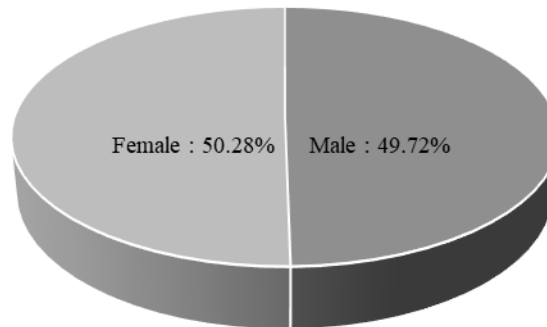

Figure 2. Students gender percentage among respondents

Based on the age category, the largest proportion of Student motorcyclists is 16 years old students 27.32% (1,817 people). According to age, the grade level of the students is 13 years old in 7th grade, 14 years old in 8th grade, 15 years old in 9th grade, 16 years old in 10th grade, 17 years old in 11th grade, and >17 years old in 12th grade. Based on grade level, the largest proportion was in 10th grade (formerly 1st grade of Senior High School / Vocational School), as shown in Figure 3.
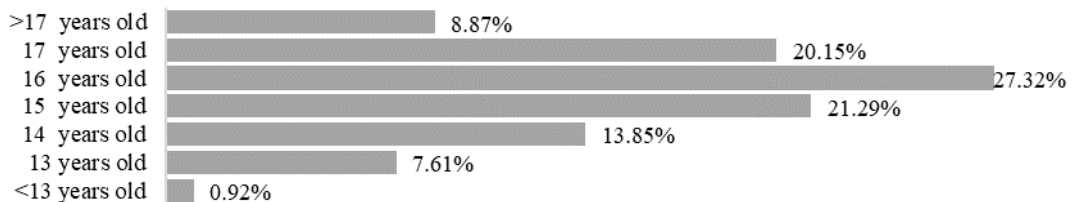

Figure 3. Student motorcyclists age

Based on the level of education, 61.14% (4,060 people) of student motorcyclists are high school/vocational school students and 38.96% (2,591 people) are junior high school students, as shown in Figure 4.

Figure 4. Level of Education

Assuming 17 years old student motorcyclists have a driver's license, then only 29.02% (1,930 people) have a driving license, while 70.98% (4,721 people) do not have a student motorcycle license. The largest proportion of travel time from home to school is between 15-30 minutes

47.21% (3,140 people); the second proportion is less than 15 minutes 44.46% (2,957 people), and only 8.33% (454 people) have longer travel time more than 30 minutes, as shown in Figure 5.

Figure 5. Travel Time to School

The biggest proportion of reasons for using motorbikes to go to school is the distance from their house to school far away 31.84% (2,118 people) the next proportion is consecutively faster to the destination 31.75% (2,112 people), Parents allow 13.44% (894 people) and none/difficult to get public transportation 10.81% (719 people), as shown in Figure 6.
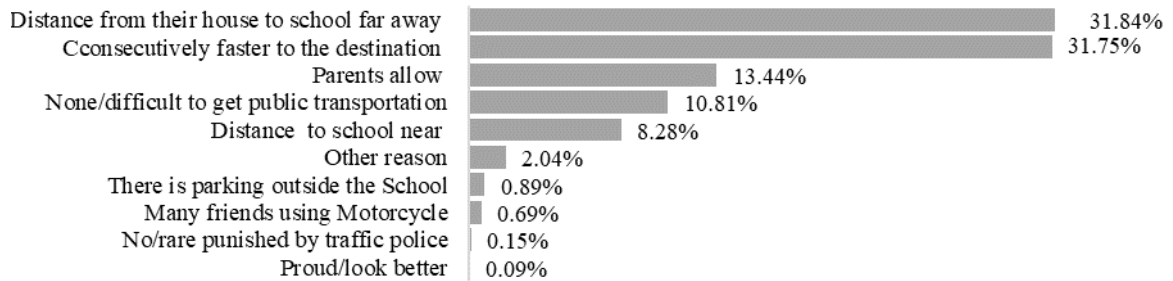

Figure 6. Reason for Using Motorcycle

A total of 33.21% (2,209 students) of student motorcyclists have experienced a traffic accident. The biggest proportion that causes student motorcyclist accidents is slipping 42.15% (931 people), the next proportion is driving fast/out of control 13.63% (301 people), not proficient at riding a motorcycle 11.50 % (254 people), and narrow/hollow/damaged/wavy roads/bends/uphill/ downhill 11.45% (253 people), as shown in Figure 7.
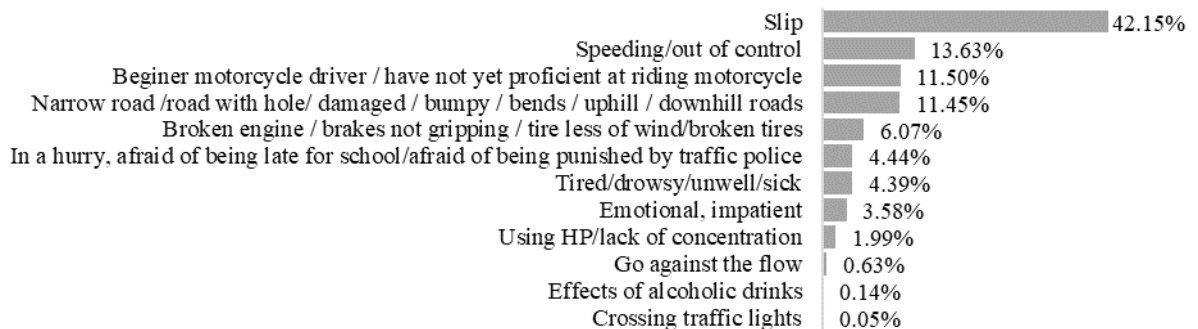

Figure 7. Cause of Accident

Most of student motorcyclists (90.63%) have received education on traffic safety, 23.36% (1,514) received education on a regular basis, but 67.27% (4,474 people) received

education/socialization indefinitely, and 9.37% (623 people) did not/have never received traffic safety education/socialization, as shown in Figure 8.
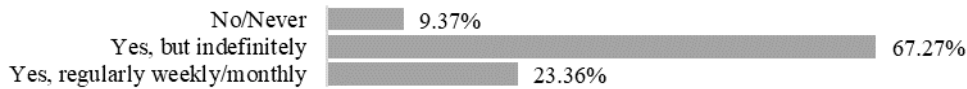

Figure 8. Intensity of Traffic Safety Education

Most of student motorcyclists (78.05%) think that both the material and the existing method of delivering traffic safety materials are considered interesting, as shown in Figure 9.
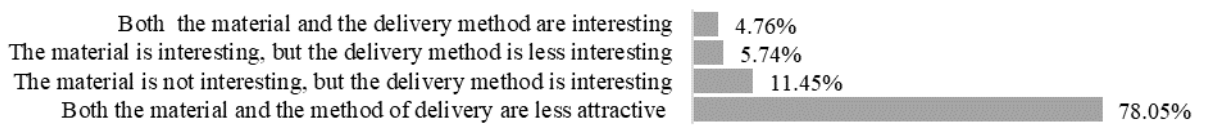

Figure 9. Intensity of Traffic Safety Education

Regarding the possibility of materials and methods or media for delivering educational/socialization materials to increase understanding of safety in traffic, 42.60% (2,833 people) wished to have safe traffic practices in Traffic Parks/Educational Parks LLAJ (Traffic and Road Transport) and 34.57% (2,299 people) wished to gain practical knowledge of safe traffic through Youtube, as shown in Figure 10.
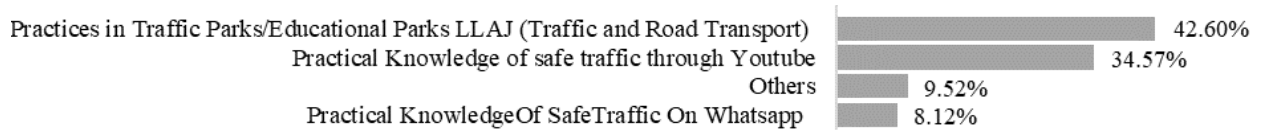

Figure 10. Material/Method/Media Education of Traffic Safety Desired

B. Cross Tabulation/Chi-Square Analysis Result

In this study, Cross Tabulation/Chi-Square analysis is carried out only on the data of student motorcyclists of 6,651 respondents. Some of the variables in this study include gender, age, grade level at school, checking motorized vehicles before use, travel time to school, the intensity of getting education/socialization of traffic safety, and understanding of traffic safety and traffic accidents have occurred. The traffic accident that has been experienced was chosen as the dependent variable (variable influenced by other variables) while the other variables (gender, age, school level, travel time) and as independent variables (independent variables that affect). In the case processing summary, there is no missing data. The results of the statistical test (Chi-Square) between gender and traffic accidents obtained a P-Value of 0.000, meaning this value < alpha (0.05), thus it can be concluded that Ho is rejected, meaning that there is a relationship between gender and traffic accidents experienced. The test results obtained an OR value of 1.297 with a Confidence Interval (CI) of 1.170-1,436, meaning that male student cyclists have a chance of 1,297 times having an accident compared to female student cyclists, as shown in Table 1.

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Table 1. Relationship between Gender and Traffic Accidents Ever Experienced

Gender	Ever experienced traffic accidents			P Value	Odd Ratio (95% Confidence Interval)
	Yes %	No %	Total %		
Male	1.194	2.113	3.307		
	(36.1%)	(63.9%)	(100.0%)		
Female	1.015	2.329	3.344	0.000	1.297
	(30.4%)	69.6%	100.0%		(1.170-1.436)
Total	2.209	4.442	6651		
	(33.2%)	(66.8%)	(100.0%)		

There is a relationship between age and traffic accidents experienced. As the age of the riders from <13 years to >17 years increases, the accidents experienced are increasing as shown in Table 2.

Table 2. Relationship Between Age and Traffic Accidents Ever Experienced

Age	Ever experienced traffic accidents			P Value	Odd Ratio (95% Confidence Interval)
	Yes %	No %	Total %		
<13 years old	14	47	61		
	(23.0%)	(77.0%)	(100.0%)		
13 years old	124	382	506		
	(24.5%)	(75.5%)	(100.0%)		
14 years old	259	662	921	0.000	-
	(28.1%)	(71.9%)	(100.0%)		
15 years old	438	978	1.416		
	(30.9%)	(69.1%)	(100.0%)		
16 years old	614	1.203	1.817		
	(33.8%)	(66.2%)	(100.0%)		
17 years old	518	822	1.340		

RSF Conference Series: Engineering and Technology
Volume 2 Number 2 (2022): 12-24
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Age	Ever experienced traffic accidents			P Value	Odd Ratio (95% Confidence Interval)
	Yes %	No %	Total %		
	(38.7%)	(61.3%)	(100.0%)		
>17 years old	242	348	590		
	(41.0%)	(59.0%)	(100.0%)		
Total	2.209	4.442	6.651		
	(33.2%)	(66.8%)	(100.0%)		

The results of the statistical test (Chi-Square) obtained a P Value of 0.000, meaning this value < alpha (0.05), thus it can be concluded that Ho is rejected, meaning that there is a relationship between gender and traffic accidents experienced. The test results obtained an OR value of 0.718 with a CI (0.645-0.798), meaning that student motorcyclists at the junior high school level have a smaller chance, which is 0.718 times having an accident compared to high school/vocational high school student motorcyclists, as shown in Table 3.

Table 3. Relationship between School Level and Traffic Accidents Ever Experienced

School Level	Ever experienced traffic accidents			P Value	Odd Ratio (95% Confidence Interval)
	Yes %	No %	Total %		
Junior High School	746	1.845	2.591		
	(28.8%)	(71.2%)	100.0%		
Senior High/ Vocational School	1.463	2.597	4.060	0.000	0.718 (0.645-0.798)
	(36.0%)	(64.0%)	100.0%		
Total	2.209	4.442	6.651		
	(33.2%)	(66.8%)	100.0%		

The results of the statistical test (Chi-Square) obtained a P Value of 0.003, meaning this value < alpha (0.05), thus it can be concluded that Ho is rejected, meaning that there is a relationship between travel time and traffic accidents experienced. The longer the travel time > 1 hour, the higher the percentage/proportion of accidents experienced, as shown in Table 4.

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Table 4. Relationship between Travel Time and Traffic Accidents Ever Experienced

Travel Time	Ever experienced traffic accidents			P Value	Odd Ratio (95% Confidence Interval)
	Yes %	No %	Total %		
< 15 minutes	919 (31.1%)	2.038 (68.9%)	2.957 (100.0%)		
15-30 minutes	1.086 (34.6%)	2.054 (65.4%)	3.140 (100.0%)		
31-45 minutes	153 (35.4%)	279 (64.6%)	432 (100.0%)	0,003	-
46 minutes -1 hour	39 (39.0%)	61 (61.0%)	100 (100.0%)		
> 1 hour	12 (54.5%)	10 (45.5%)	22 (100.0%)		
Total	2.209 (33.2%)	4.442 (66.8%)	6.651 (100.0%)		

The results of the statistical test (Chi-Square) obtained a P Value of 0.005, meaning this value < alpha (0.05), thus it can be concluded that Ho is rejected, meaning that there is a relationship between the intensity of traffic safety education with traffic accidents that have been experienced. The more intensity of receiving education on traffic safety, the percentage/proportion of accidents experienced decreases. as shown in Table 5.

Table 5. Relationship Between Traffic Safety Education/ Socialization Intensity with Traffic Accidents Ever Experienced

Traffic Safety Education Intensity	Ever experienced traffic accidents			P Value	Odd Ratio (95% Confidence Interval)
	Yes %	No %	Total %		
Yes, regularly every week/ month	468 (30.1%)	1.086 (69.9%)	1.554 (100.0%)	0,000	-
Yes, but indefinitely	1.514	2.960	4.474		

	(33.8%)	(66.2%)	(100.0%)
Never	227	396	623
	(36.4%)	(63.6%)	(100.0%)
Total	2.209	4.442	6.651
	(33.2%)	(66.8%)	(100.0%)

C. Discussion

The relationship between school level and traffic accidents that have been experienced shows that the number of Junior High School Student Cyclists is 2,591 people, and 28.8% of them have experienced traffic accidents. In comparison, the number of High School Student Motorcyclists is 4,060 people, 36.0% of them being in a traffic accident. Based on the test results, it was found that student motorcyclists at the junior high school level had a smaller chance, such as 0.718 times having an accident than high school student motorcyclists.

In terms of travel time to school and traffic accidents that have been experienced show that the number of student motorcyclists with travel time < 15 minutes is 2,957 people, 31.1% of them have accidents, 15-30 minutes travel time is 3,140 people, 34.6% of them have accidents, 31-45 minutes travel time is 432 people, 35.4% of them have accidents, 46 minutes-1 hour travel time is 22 people, 54.5% of them have traffic accidents. Based on the test results, it was found that the longer the travel time to school > 1 hour, the greater the percentage/proportion of accidents experienced.

The dominant reasons for students using motorcycles are living far from school, there being no/difficulty in public transportation, parents allowing, rarely being punished by the traffic police, and there is parking outside the school. This condition is supported by the fact that motorcycles are considered an economical and flexible mode of transportation. The presence of motorcycles with automatic transmissions increases the public interest – including student – in using the motorcycle.

Furthermore, the relationship between the Intensity of Traffic Safety Education with traffic accidents that have been experienced indicates that the number of Student Motorcyclists who regularly weekly or monthly receive traffic safety education, as many as 1,554 people, 30.1% of them have accidents received safety education but indefinitely as many as 4,474 people, 33.8% of them have accidents and Student Motorcyclists who never receive safety education and as many as 623 people, 36.4% of them have traffic accidents. The test results found that the more intensity of receiving traffic safety education, the lower the percentage/proportion of accidents experienced.

Most traffic accidents are caused by slipping and speeding/being out of control. The cause of slipping is certainly not only caused by slippery or sandy roads but can be caused by sudden braking, high speed, or driving at a speed that is unsafe for turning. Another reason for traffic accidents is due to rushing for fear of being late for school or fear of being punished by traffic police. Student motorcyclists who do not have a driver's license are still afraid (nervous, avoiding the police, increasing speed, or other efforts that can be caused a traffic accident) when they see the

Traffic Police. Therefore, it is suggested to provide driver's licenses for high school students (age over 15 years) with some requirements that must be obeyed, connected to the guidance and counseling teacher, and punished with strict sanctions such as detention of a driver's license and paying an amount of money) (Syaiful, 2022). This shows that most student motorcyclists go fast while driving. In addition, accidents caused by new or unskilled driving are also quite dominant factors experienced. Therefore, it is necessary to emphasize education related to speeding and how to drive well, correctly, and safely.

The existing traffic safety education materials are considered good. Most Student Motorcyclists (90.63%) have received traffic safety education, but only 23.36% received regular education, 67.27% received education indefinitely, and 9.37% had never received an education. The chi-square analysis results show a relationship between the intensity of traffic safety education and the involvement in a traffic accident. The more intensity of receiving education, the percentage/proportion of those involved in a traffic accident decreases. Therefore, it is necessary to increase the intensity of the implementation of education with materials that are simpler but complete, easy to understand, applicable, interesting, easy to access and prioritize crucial points such as the potential and risk of unsafe driving, impacts, and risks due to traffic accidents. Education should be delivered by competent personnel in their field. It is necessary to emphasize that students are the next generation, the hope of the nation, and the hope of parents; it is regrettable if the hope is not realized because of an accident that should have been avoided.

CONCLUSION

There is a relationship between gender, age, school level, travel time, the intensity of traffic safety education, and traffic accidents experienced. The more intensity of receiving education on traffic safety, the decreased percentage of accidents experienced, but most students have yet to receive educational materials regularly. So far, the material and method of delivering education on traffic safety are considered quite good. Theoretically, motorcyclists' understanding of traffic safety is considered good, but it has not been seen consistently in its application. There is not enough synergy between various related parties in implementing traffic safety education. It is necessary to increase the intensity of traffic safety education that allows every student to receive traffic safety education materials. It is necessary to have materials, methods, and media for safety education that is packaged to be simpler, easier to understand, interesting, accessible, aware, and motivating for students to be disciplined in complying with regulations and implementing safe driving behavior. There needs to be a synergy of various related parties in implementing student traffic safety education.

ACKNOWLEDGEMENTS

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