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RESEARCH ARTICLE

Motorcycle Accident and Associated Factors among Commercial Motorcycle Drivers in Kindo Koyisha Woreda, Southern Ethiopia

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Abstract:

Background:

Motorcycle accidents are a prominent cause of disability and death, particularly in low- and middle-income countries. Therefore, the aim of this study was to describe the magnitude of motorcycle accidents and associated factors among commercial motorcycle drivers.

Methods:

A community-based cross-sectional study design was conducted among 235 motorcycle drivers from April 1 to 22, 2021. The participants were selected using a simple random sampling method. A pretested, structured questionnaire was used to collect the data. The data were entered into Epi Info and exported to SPSS version 20 for analysis. Descriptive and association measures were done. The results were presented within texts and tables.

Results and Discussion:

The magnitude of motorcycle accidents among commercial motorcycle drivers was 65.1% (95% CI: 59%, 71.2%). Driving at speeds greater than 60 km/h (AOR = 8.19, 95% CI: 4.02, 11.42), driving at all hours of the day and night (AOR = 4.05, 95% CI: 1.61, 9.02), using a mobile phone while driving (AOR = 4.42, 95% CI: 2.73, 7.15), having a history of punishment (AOR = 11.05, 95% CI: 8.54, 16.28), drinking alcohol (AOR = 2.3, 95% CI: 1.3, 5.14), being under 20 years old (AOR = 1.78, 95% CI: 1.56, 5.23), and having a license (AOR = 0.24, 95% CI: 0.1, 0.8) were factors associated with commercial motorcycle accidents.

Conclusion:

This finding indicated the need for continuous awareness creation and intense training, along with checking the licenses for their originality. Such a pluralistic overview can also denote the roles of proper operation and technical readiness of the motorcycles running, the proper design of urban mobility and road (cross-roads) construction, as well as the central governmental measures and policies that can act proactively to prevent such accidents from occurring.

Keywords: Commercial motorcycle drivers, Magnitude, Motorcycle accident, Factors, Ethiopian commercial motorcycle drivers, Driving.

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1. INTRODUCTION

Road traffic accidents (RTAs) are a major source of financial hardship for people, families, communities, and governments all around the world. These issues could be brought on by a lack of human resources, the loss of production, wasted time for victims and their families, extended school hours, and unanticipated drug and admissions costs. Road accidents cause 3% of the gross domestic product

(GDP) of most nations to be lost [1]. Around 1.3 million people are killed and 20–50 million are injured in road traffic accidents each year [2].

According to a scoping review conducted in Africa, alcohol use, smoking, illicit drug use, rider fatigue, poor knowledge of traffic regulations, more than one pillow rider, a lack of a rider license, non-observance of traffic regulations, non-use of personal protective equipment, a poor road network, unplanned police stoppages, unlawful vehicular packing, increased urbanization, and slippery floors were all factors associated with RTA [3].

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Motorcycle accidents were the leading cause of RTA, serious and minor injuries, disabilities, and deaths worldwide, and affected all road users, including drivers, passengers, and pedestrians [4, 5]. Motorcycle drivers were responsible for roughly three-fourths of all RTA injuries and more than half of all RTA deaths [6]. According to studies, 62.2% of patients injured in motorcycle accidents suffered head injuries as well as injuries to both lower extremities. Lower limb amputations were performed on approximately 89.5% of the patients [7].

Africa had a higher death rate than the rest of the world, with 24.1 fatalities per 100,000 people, compared to 18.0 deaths per 100,000 elsewhere. Motorcycle accidents account for 21.0%–58.8% of all traffic accidents in East Africa, with head injuries being the most common. The majority of accident victims require surgery, and survivors are frequently disabled for the rest of their lives [2]. Commercial motorcycle drivers were the most involved in traffic collisions [8]. Motorcycle accidents accounted for 26.4% of all admissions, with 4.3% of drivers and any passengers dying and 94.3% of drivers injured not wearing a helmet [9].

In various studies on age, sex, high speed, and type of road, the lack of full-body safety procedures or protection structures for drivers and passengers is the reason behind this [10]. Human errors, speedy driving, substance abuse such as alcohol, carelessness, young age (18 to 25 years), use of cell phones while driving, driving without a license, driving experience, and passenger competition were found to be the most common factors associated with motorcycle accidents [3, 6, 11 - 13]. Motorcycles are becoming increasingly popular in developing countries such as Ethiopia, where they are primarily utilized for transportation due to their low cost, ease of use, and quick access to regions not accessible by other modes of transportation. However, when compared to other vehicles in terms of miles traveled, they are the most dangerous type of vehicle to drive, with higher rates of collisions and fatalities [1, 14].

Motorcycle accidents are the leading cause of injuries, disabilities, and deaths in Ethiopia, particularly in Southern Ethiopia. In the study area, motorcycles are the main means of transport that provide services. Even though these are common transportation services, accidents are common and had been a major problem in this area. The studies are limited in their magnitude and the factors associated with them. Therefore, this study aimed to determine the magnitude of motorcycle accidents and associated factors among commercial motorcycle drivers.

2. METHODS

2.1. Study Area and Period

This study employed a community-based cross-sectional

study at Kindo Koyisha Woreda, Southern Ethiopia, from April 1 to April 22, 2021. Kindo Koysha is one of the 77 woredas in the Southern Nations, Nationalities, and Peoples' Region of Ethiopia. Part of the Semien Omo Zone, Kindo Koysha is bordered on the south by Offa, on the west by Loma Bosa, on the north by Boloso Sore, and on the east by Sodo Zuria. The major town in Kindo Koysha is Bele. This woreda is one of 16 woredas in the Wolaita zone (Fig. 1). The woreda is 374 kilometers away from Addis Ababa. According to the 2005 Central Statistical Agency estimates, this woreda has a total population of 199,634, with 100,340 males and 99,294 females. Six thousand five hundred thirty-two (3.27%) of its population lives in cities. This woreda had a population density of 257.1 people per square kilometer and an estimated area of 776.41 square kilometers. There were 560 motorcycle drivers in this district [15].

2.2. Population and Sample Size Determination

The source populations were all commercial motorcycle drivers, while the study populations were all randomly selected commercial motorcycle drivers in the Kindo Koyisha district. The sample size was determined using a single population formula with the following assumptions: margin of error = 0.5%, the standard score corresponding to a 95% confidence interval, and the percentage of RTA among commercial motorcycle drivers = 50%. Since the source population was less than 10,000, we used a correction formula to control the overestimation of the findings. Finally, 235 commercial motorcycle drivers were included in the study. The study participants were selected by a simple random sampling method.

2.3. Inclusion and Exclusion Criteria

This study includes motorcycle drivers who lived in the Kindokoyisha woreda for the last six months. Commercial drivers who had left the woreda and had not driven in the previous 12 months were excluded from the study.

2.4. Data Collection Procedures

An interviewer administrative questionnaire was prepared and adopted from the previous literature [2, 16]. The questionnaire was prepared in English and then translated into the local language. It was translated back to English to check its consistency. Data was collected from each commercial motorcycle driver by 10 experienced and trained nurse professionals and supervised by two health officers. The starting point of data collection was the informal parking of motorcycles at Bele town, which is the capital city of the woreda, and data collectors went to the resident kebeles of selected participants to get those who reside outside of Bele town.

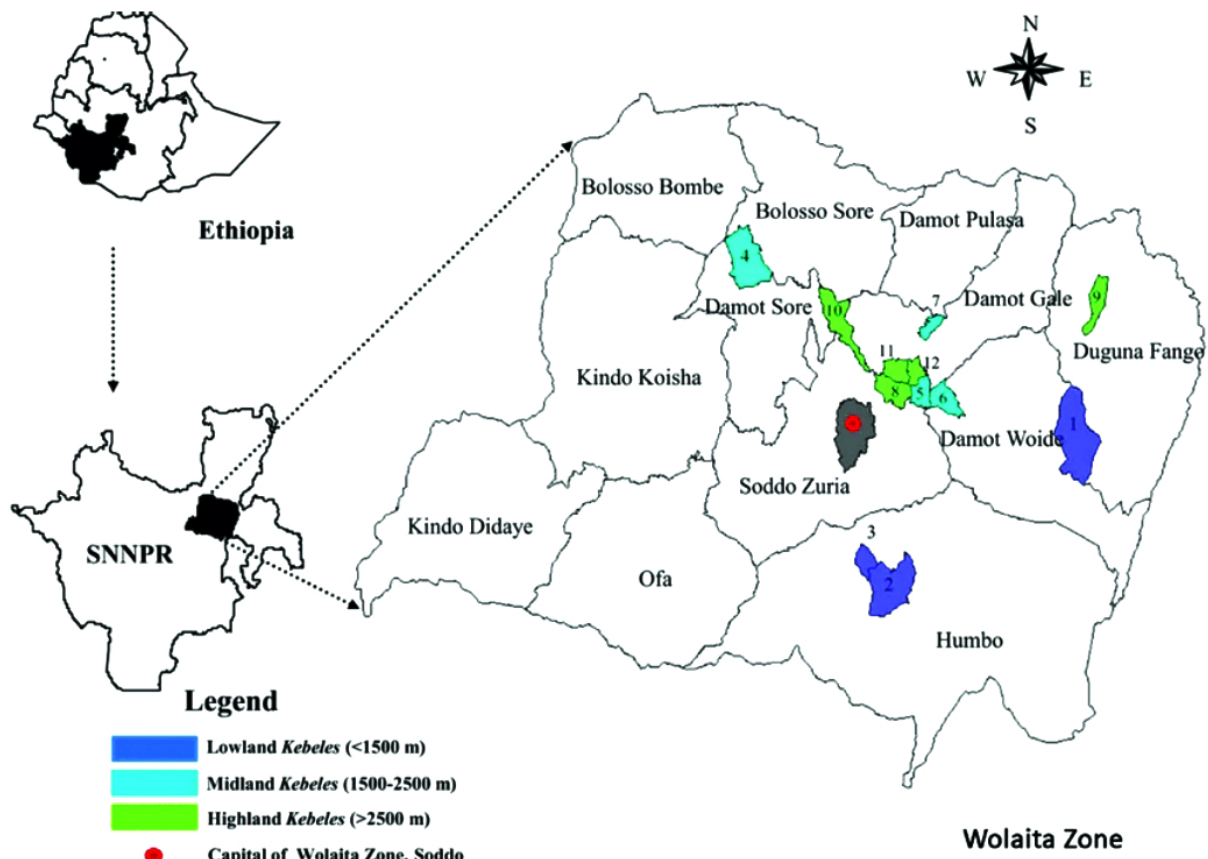


Fig. (1). Administrative map of wolaita zone.

2.5. Data Processing and Analysis

The data was cleaned, edited, and entered using Epi-info version 3.5.1 and exported to SPSS version 20 for analysis. Summary statistics like frequency, mean, and standard deviation were done. Multi-collinearity of the independent variables was checked by calculating a variance inflation factor (VIF). A bivariable logistic regression was conducted for each independent variable, and then a multivariable logistic regression was used for those variables with a p-value < 0.20 to check the association of independent variables with the dependent variable. The adjusted odds ratio (AOR) with a 95%

confidence interval was presented using text and tables.

3. RESULTS

3.1. Socio-demographic Characteristics

A total of 235 commercial motorcycle drivers participated in this study, with a response rate of 94%. All of them were males. The majority of the participants, 125 (53.2%), were under the age of 25, with a mean age of 24.4 years, and 127 (54%) were single. About 70% had no additional job other than motorcycle driving (Table 1).

Table 1. Socio-demographic characteristics of commercial motorcycle drivers of Kindokoyisha woreda.

Variables	Category	Frequency	Percent (%)
Age	Less Than 20	67	28.5
	20 to 24 Years	58	24.7
	25 to 29 Years	92	39.1
	30 to 33 Years	18	7.7
	Total	235	100.0
Marital status	Single	127	54.0
	Married	94	40.0
	Divorced	12	5.1
	Widowed	2	0.9

(Table 1) contd.....

Variables	Category	Frequency	Percent (%)
Educational status	No formal education	8	3.4
	Primary education	69	29.4
	Secondary education	121	51.5
	Diploma and above	37	15.7
Average monthly income	Less than 1500	21	8.9
	1500 to 2400	105	44.7
	2500 to 3400	101	43.0
	Greater than 3500	8	3.4
Current residence	Urban	154	65.5
	Rural	81	34.5
Additional job	No	165	70.2
	NGO	8	3.4
	Student	31	13.2
	Merchant	26	11.1
	Daily Laborer	5	2.1
	Total	235	100.0

About 153 drivers (65.1%; 95% CI: 59.0%–71.2%) had been in an accident in the previous year. They did not use helmets at all. More than 85.0% did not use the media to stay up-to-date on road traffic rules, regulations, and accidents. According to the study, 214 (91.0%) drivers had experience driving at all hours of the day and night, and 76 (32.3%) drivers rode their own motorcycles. Only 54 (39.0%) individuals who indicated they possessed a driver's license throughout the survey period had shown their license. Chewing khat, drinking alcohol, and smoking cigarettes were found to be factors in 44 (18.7%), 20 (8.5%), and 11 (4.7%) motorcycle

accidents, respectively. Almost two-thirds (68.5%) of those who took part in the study drove faster than 60 km/h.

One hundred seventy-nine (76.2%) of motorcycle drivers had been cited by traffic cops in the previous year. In terms of passenger capacity, 109 (46.4%) and 8 (3.4%) serve two passengers and more than two passengers simultaneously, respectively. Only 36 (15.3%) of the study's participants never used their phones while driving, while 107 (45.5%) used them most frequently. In our study, approximately half of the people were serving two or more passengers at the same time (Table 2).

Table 2. Behavioral and occupational factors of RTA among commercial motorcycle drivers.

Variables	Category	Frequency	Percent (%)
History of alcohol drinking	Always	5	2.1
	Sometimes	15	6.4
	No never	215	91.5
History of khat chewing	Always	16	6.8
	Sometimes	28	11.9
	No never	191	81.3
History of cigarette smoking	Yes	11	4.7
	No never	224	95.3
Speed of driving	>60 km/hour	161	68.5
	≤ 60 km/hour	74	31.5
Mobile phone use while driving	Most of the time	77	32.8
	Sometimes	115	48.9
	No never	43	18.3
Having a license	Yes	138	58.7
	No	97	41.3
Driving experience	Less than 2 years	113	48.1
	≥ 2 years	122	51.9
Following media	Yes	35	24.9
	No	200	85.1
Having punishment history	Yes	179	76.2
	No	56	23.8
Passenger number served once	≥ 2 people	126	53.6
	One person	109	46.4

The study showed that 214 (91.0%) of the drivers had a history of driving during the day and night. The study also indicated that motorcycle drivers with driving experience greater than or equal to two years were 89.4% better protected than those with less than two years experience. Also, the study found that driving one’s own vehicle had an 82.3% preventive effect, and drivers who had a license were 76% more protected than those who were not licensed from being involved in road traffic accidents in Kindo Koyisha woreda in the last year. Among those who were involved in an accident, 130 (87.2%) of them were traveling at a speed greater than 60 km/hour, and 76 (50.0%) used their mobile phones while driving. All motorcycle drivers and passengers had no helmets. One hundred twelve hundred (47.7%) of them served two passengers; 83 (69.0%) were driving carelessly with one hand and looking back at the accident time. More than 70.0% of them reported that the accident occurred on Thursday, which is the market day at the woreda level.

3.2. Associated Factors of Motorcycle Accidents

In multivariable logistic regression analysis, age, alcohol consumption, punishment history, speed of driving, time of driving, number of passengers, ownership of a motorcycle, driving experience, and having a driving license were significantly associated with motorcycle accidents at a p-value of < 0.05. The age of participants was found to have a

statistically significant association with motorcycle accidents, in which those participants belonging to the age group 18–20 years were 1.78 times more likely to be in an accident as compared with those belonging to the age group above 30 years (AOR = 1.78, 95% CI: 1.56, 5.23).

Punished participants were 11.05 times more likely to be involved in an accident than those who had no punishment history (AOR = 11.05, 95% CI: 8.54, 16.28). This study also revealed that those who drove at a speed of more than 60 km/h were 8.19 times more likely to be victims of accidents than those <= 60 km/h. Drivers who serve more than one passenger at a time have four times the odds of an accident occurring than drivers who serve only one passenger at a time (AOR = 4.01, 95%CI: 2.97, 10.45). The time when they drove was statistically significant with motorcycle accidents, in which those driving day and night were 4.05 times more likely to be involved in an accident than those who drove only in day time (AOR = 4.05, 95% CI: 1.61, 9.02). Mobile participants were 4.42 times more likely to commit accidents as compared with those who were not mobile (AOR = 4.42, 95%CI: 2.73, 7.15).

Alcohol drinking also has a statistically significant association with accidents, in that those who had a history of drinking alcohol had 2.3 times greater involvement in accidents than those who did not have a history of drinking alcohol (AOR = 2.304, 95% CI: 1.3, 5.14) (Table 3).

Table 3. Bivariable and Multivariable logistic regression results on the associated factors of motorcycle road traffic accidents in Kindokoyisha.

Variables	Category	Motorcycle Accident		COR (P-value)	AOR (95% CI)
		Yes N(%)	No N (%)		
Marital status	Single	99 (78.0%)	28 (22.0)	1.481	2.07(0.7, 10.3)
	Married	43 (45.7)	51 (54.3)	1.032	0.981 (0.4, 4.3)
	Divorced	11 (78.6)	3 (21.4)	1	1
Age of the driver	18-20 years	56(83.6)	11(6.4)	3.24	1.78(1.6, 5.2)
	21-24 years	41(70.7)	17(29.3)	1.89	3.72(0.7, 8.6)
	25- 29 years	43(46.7)	49(53.3)	1.33	0.89(0.3, 8.10)
	≥ 30 years	13 (72.2)	5 (27.8)	1	1
Mobile used	Yes	144 (75.0)	48 (25.0)	11.33	4.42 (2.7, 7.1)
	No	9 (20.9)	34 (79.1)	1	1
Alcohol drank	Yes	17 (85.0)	3 (15.0)	3.29	2.304 (1.3, 5.14)
	No	136 (63.3)	79 (36.7)	1	1
Khat chewed	Yes	36 (81.8)	8 (18.2)	1.81	1.56 (0.9, 3.7)
	No	117 (61.3)	74 (38.7)	1	1
Experience	≥ 2 years	49 (40.2)	73 (59.8)	0.06	0.11 (0.05, 0.24)
	< 2 years	104 (92.0)	9 (8.0)	1	1
Day & night	Yes	146 (68.2)	68 (31.8)	4.29	4.05 (1.61, 9.02)
	No	7 (33.3)	14 (66.7)	1	1
Passenger number	≥ 2 people	56 (44.4)	70 (55.6)	10.11	4.01 (2.9, 10.4)
	One person	97 (89.0)	12 (11.0)	1	1
Service year	< 3 years	71 (48.0)	77 (52.0)	1	1
	≥ 3 years	82 (94.3)	5 (5.7)	0.06	0.1(0.01, 1.56)
Having a license	Yes	61 (44.2)	77 (55.8)	0.04	0.24 (0.1, 0.8)
	No	92 (94.8)	5 (5.2)	1	1

(Table 3) contd....

Variables	Category	Motorcycle Accident		COR (P-value)	AOR (95% CI)
		Yes N(%)	No N (%)		
Punishment history	Yes	141(78.8)	38(21.2)	13.6	11.1 (8.5, 16.3)
	No	12(21.4)	44(78.6)	1	1
Ownership of motor	Yes	29(38.2)	49(61.8)	0.17	0.19(0.1, 0.5)
	No	124(78.0)	35(22.0)	1	1
Driving speed	> 60 km/hr	134(83.2)	27(16.8)	14.36	8.19 (4.0, 11.4)
	≤ 60 km/hr	19(25.7)	55 (74.3)	1	1
Following Media	Yes	7(20.0)	28(80.0)	0.09	0.07 (0.03, 1.19)
	No	146(73.0)	56(27.0)	1	1
Average monthly income	< 2500 birr	75(59.5)	51(40.5)	1.17	1.99 (0.8, 10.9)
	≥ 2500	78(71.6)	31(28.4)	1	1

4. DISCUSSION

The current study examined the magnitude of motorcycle accidents and associated factors among commercial motorcycle drivers. According to this study, commercial motorcycle drivers were responsible for 65.1% of all road traffic accidents. This result is lower than the results of a study conducted in Ghana and Guinea, which were 74.0% and 77.7%, respectively [4, 14]. This might be due to differences in the rules and regulations or the licensing and accreditation systems. Nevertheless, it is greater than the results of studies conducted in Kenya (39.4%) and Tanzania (53.4%) [8, 14, 17]. Similarly, these differences may be due to variations in sample size, study design, data sources, and rules and regulations. In this study, more than 85.0% of the respondents said that they did not watch the news to stay up-to-date on traffic. This is in contrast to many previous studies that have shown media exposure is a factor that protects against RTA.

Drivers of various ages face varying levels of risk of being involved in an accident. About 63.4% of those who died in motorcycle accidents were between the ages of 18 and 24. This could be attributed to a lack of experience and their proclivity for taking risks. This is consistent with research undertaken in Cameroon and Uganda [12, 18]. This result is higher than those of studies conducted in Guinea and Kenya [4, 14]. The explanation for this could be that in our study location, riding a motorcycle is regarded as the best work opportunity, and anyone who tries to drive can participate, even at a young age, providing a strong source of revenue to meet daily necessities and help people get out of poverty. In contrast to this, research conducted in Lagos, Nigeria, revealed that the majority of drivers involved in accidents were between the ages of 31 and 40 [19]. On the other hand, drivers between the ages of 26 and 30 are the most vulnerable [20]. The age distribution of the study participants could explain the variation. In contrast to the preceding study, a Rwandan study found no significant association between age and accidents, which could be attributed to the strong cultural acceptability of motor vehicle safety habits [10].

Driving at speeds greater than 60 km/h had a statistically significant relationship with the odds of being involved in an accident. Based on this, driving at a speed of 60 km/h was 8.19 times higher than driving at speeds less than or equal to 60 km/h. The finding was inconsistent with other studies conducted in Ghana and Hawassa, Ethiopia [3, 21]. The

disparity could be due to different cutoff points and different approaches to following them in order to maintain the suggested pace [22]. The reason might be due to competition for passengers, the difficulty of controlling a motorcycle while driving at high speeds, or an indication of poor traffic control.

Motorcycle drivers who used their phones while driving were more likely to have an accident than those who did not use their phones while driving. This is in line with research conducted in Brazil [11]. This might be due to the drivers' losing their attention and being disturbed due to other external factors like social problems, personal problems, or being overconfident. Another factor could be the government's limited and strict management of motorcycle drivers. Furthermore, using a cell phone while driving and driving with only one hand may make it difficult to control the balance and speed of the motorcycle.

Alcohol usage was found to have a statistically significant relationship with the occurrence of motorcycle accidents. Those motorcycle drivers who used alcohol were more likely to be in an accident than those who did not consume alcohol at all. This is consistent with a study done in Uganda [12]. Many other research findings show that driving after alcohol consumption is a harmful practice [23 - 25]. However, a study conducted in Brazil found that there was no association between alcohol intake and traffic accidents [11]. This could be related to a fear of exposing such behavior openly, as well as a difference in the amount of alcohol consumed by motorcycle drivers.

Driving day and night was another important factor in road traffic accidents among commercial motorcycle drivers. Those who drive at all hours of the day and night have a 4.05 times higher risk of being involved in an accident than those who only drive during the day. This could be due to restlessness, a lack of adequate lighting at night, or mechanical problems with the motorcycle. It is also because, at night, one motorcycle might carry more passengers than the recommended number. This is comparable to research conducted in Uganda and Brazil [11, 12].

The number of passengers served at the same time was another important factor in road traffic accidents among commercial motorcycle drivers. According to this study, drivers who serve more than one passenger were four times more likely to have an accident than drivers who serve only

one passenger at a time. This finding was in line with a study done in Ghana [25]. This could be due to the weight being loaded beyond the capabilities of the motorcycle, which leads to a loss of balance and control. Similarly, it might be due to the function of crossroads or urban design, urban driving style, and the switch-on or switch-off programming of traffic lighting. This was most common during market days, which in the study area started in the evening. Most other vehicles, like buses and Bajajs, stop providing services at this time. So motorcycles are the main method of transportation at the end of the market day. Hence, motorcycles serve more than one passenger at a time. Furthermore, the reason might be due to the fact that the number of motorcycles are dramatically increasing from time to time in the study area.

This study also indicated that commercial motorcycle drivers who had a history of punishment were 11.1 times more likely to be in accidents than those who had not been punished. This was supported by research conducted in Nigeria. This could be because they are upset and are driving in a foul mood because they are thinking about the payment or the time they wasted in the police station after being stopped by traffic cops. In other words, the penalty could be imposed after the incident. In contrast, having a license was found to have a 76.0% greater protective effect than those drivers who had no license. This might be because motorcycle drivers might acquire enough knowledge and skills to be able to drive and avoid traffic accidents. The finding was comparable with a study conducted in urban Nigeria [22].

This study also showed that ownership of a motorcycle was statistically significantly associated with traffic accidents among commercial motorcycle drivers. Driving one's own motorcycle had an 82.7% greater protective effect than those drivers whose motorcycles were not theirs. The finding is much more than a study conducted in Ghana [26]. This might be due to their careful driving, willingness to provide service, and prioritizing the safety of their motorcycle over getting money. In contrast with this, getting more money is the only thing that drives a motorcycle that one does not own, which might be due to struggling with the payment of rent without considering the rules and regulations of road traffic. However, this finding was inconsistent with other studies [12, 18].

This study revealed that commercial motorcycle drivers who had licenses were 0.24 (0.1–0.8) times less likely to be exposed to road traffic accidents compared with those who had no license. This finding is consistent with a study conducted in Sawula and Bulky towns [27]. Here, those drivers who had licenses wore helmets as compared with those who did not have licenses. This may lead to the conclusion that helmet users are less likely to be exposed to accidents.

5. LIMITATIONS OF THE STUDY

Self-reporting of certain variables and some participants' responses might be biased due to fear of legal punishment, which might underestimate or overestimate the association. The study period was short, and it was done in only one woreda, which may not reflect the whole figures that will be obtained at the zonal level. Failure to triangulate with secondary data due to a lack of specific, full, and updated data

from hospitals and traffic police was also one limitation of this study. This study only looked at accidents, no injuries, and only looked at drivers who were still alive rather than the entire community; this could lead to survival bias and an underestimation of the magnitude. Furthermore, due to the cross-sectional nature of this study, it was difficult to demonstrate a cause-and-effect association between the dependent and independent variables.

CONCLUSION AND RECOMMENDATION

The magnitude of the motorcycle accident was very high. Driving at speeds greater than 60 km/h, driving at night and during the day, using a cell phone while driving, having a history of punishment, drinking alcohol, and having a license were all risk factors for road traffic accidents among commercial motorcycle drivers. On the other hand, ownership of a motorcycle, having a driver's license, driving experience, and awareness of rules and regulations were all negatively associated.

Continuous awareness creation and intense training should be given, and the licenses of the drivers should be checked for their originality. Controlling the speed limit, the number of passengers served at once, mobile phone use while driving, and enforcing all traffic rules and regulations require special attention. In order to provide the precautionary measures that could proactively prevent accidents from happening: Environmental concerns drive licensing upgrades, urban land redesigning, proactive government policies, practices, measures, and regulations, no post-treatment, and accident reduction. Further research should be conducted using a mixed research design to investigate a more accurate cause-and-effect relationship.

LIST OF ABBREVIATIONS

AOR	= Adjusted Odds Ratio
COR	= Crude Odds Ratio
Km/h	= Kilometer per Hour
RTA	= Road Traffic Accident
SNNPR	= Southern Nations Nationalities and Peoples Region
WHO	= World Health Organization

AUTHORS' CONTRIBUTIONS

, AWA, and SA: Participated in material preparation, data collection, and analysis. AR, AWA, SA, SS, and TA: Participated in the first draft of the manuscript writing. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

An ethical approval letter was obtained from Wolaita Sodo University, College of Health Sciences and Medicine Institutional Review Board, with an ethical approval number of CRCS/23/09/21.

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures

performed in studies involving human participants were in accordance with the ethical standards of institutional and research committees and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author [A.W.A] on reasonable request.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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