



Road safety regulations among commercial motorcyclists in Douala, Cameroon

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Metadata

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Highpoints

- * This is a cross sectional study aimed at assessing knowledge, attitude and practice of commercial motorcyclists in Douala, Cameroon.
- * The essence of the study was to get a baseline of knowledge, attitude and practice among commercial motorcyclists in Douala in order to carry out an intervention so as to evaluate its impact.
- * It was found that 56.0% of the commercial motorcyclists had good knowledge, 69.1% of them had positive attitude and 58.5% had good practice

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Abstract

Background: Road traffic accidents among motorcyclists have persisted as a serious Public Health problem and much of the economic burden is felt in the Low- and Middle-Income Countries.

Objective: To assess knowledge, attitude and practice of road safety regulations among commercial motorcyclists in Douala.

Materials and Methods: A cross sectional study was carried out in Douala in purposively selected neighbourhoods. A total of 700 participants were recruited and given a structured questionnaire to respond to on sociodemographic data, knowledge, attitude and practice. Data was inputted into Epi Info 7.0 and analysed using SPSS statistical software. Ethical clearance was obtained from the Institutional Review Board of the University of Buea.

Results: 672 (96%) commercial motorcyclists responded to the questionnaires. Respondents with driver's license were more likely to present with positive attitudes towards road safety regulations (COR; 2.14, 95% CI: 1.45-3.17, $p=0.000$). Motorcyclist who had received formal training (COR 3.50, 95% CI: 1.49-8.19, $p = 0.004$) were significantly associated with positive attitudes towards road safety regulations. Furthermore, ownership of driver's license significantly predicted positive attitudes towards road safety regulations (AOR; 2.14, 95% CI: 1.45-3.17, $p=0.000$). Moreover, riding the motorcycle for more than 5 years (AOR; 3.77, 95% CI: 1.19-11.96, $p=0.025$), ownership of driving license (AOR; 1.98, 95% CI: 1.39-2.81, $p=0.000$), holder of driver's license for more than one year (3.05, 95% CI: 1.25-7.43, $p=0.014$) significantly predicted good practices. 78.8% of the motorcyclists were observed not wearing helmets, 69.9% carried more than two persons and 71.9% did not put on reflective jackets.

Conclusion: Majority of the participants had good knowledge, positive attitudes and good practices of road safety regulations.

Key words: Knowledge, attitude, practice, commercial motorcyclists

Introduction

Road Traffic Accidents (RTA) are unhappy events that have captivated the interest of man in the recent past, especially with staggering statistics such as a global incidence of 3500 accidents per day [1]. The availability of motorcycles as a means of transport [2] has

coincided with this increase in road traffic accidents. A series of sociopolitical and economic reasons have led to an increased presence of commercial motorcycles over the years in Cameroon as a whole and Douala in particular. The commercial motorcycles remain a quicker option for a time constraint individual in congested traffic situations and

their cheap nature and quick access to hard-to reach areas. [3, 4]. Current data [1] on injuries have permitted the identification of vulnerable road users. It appears that pedestrians and motorized two-wheeled users get injured on the road more frequently and more severely than other road users [5]. This is evidenced by the fact that motorcycle drivers are at an increased risk of sustaining an injury than a vehicle driver, it has been noted that, motorcycle riders have a 34 times risk of death than drivers of other types of vehicles and are 8 times more likely to be injured [6].

In the littoral Region of Cameroon alone, the number of registered motorcycles has risen from 3,454 in 2008 to 9,056 in 2018 observing a drop from 2017 which registered 10,319 motorcycles. It attained a peak in 2012 of 12,843 [7-11]. This increase is as a result of a sharp reduction in the prices of motorcycles from millions in the eighties when only the likes of Yamaha were imported to a few hundreds of thousands when the market was open to the likes of Nangfan, Kimco, etc [12].

The increase rate of unemployment did not make things any bright for the youths who readily turned to this sector for the relatively good earnings they make from there. With this, there has been a resulting increase in the number of accidents from motorcycles and resulting death from the accidents [13].

Objective: The main objective of this study is to assess knowledge, attitude and practice of road safety regulations among commercial motorcycle riders in the city of Douala.

Material and Methods

Study design: A cross-sectional study was carried out in the Bonaberi and Ndokoti neighbourhoods in Douala, Cameroon among the commercial motorcyclists. This took place from the 5TH August 2019 to 6th September in Bonaberi and 15th September to 16th October in

Ndokoti. This was done with the use of a structured questionnaire.

Data collection tools: The collection tools were a structured pre-tested questionnaire and an observation guide. The questionnaire had 4 different parts: Socio- demographic data (age, gender, marital status, educational level), Knowledge on road safety regulation, Attitudes on road safety regulation and Practices of road safety regulation. Sampling size was calculated using the Lorenz formula.

The questionnaire was structured was made in English then translated to French and then translated back to English, to ensure that both English versions were the same. Four bilingual data collectors were recruited to administer the questionnaire. Considering the possibility that most of the riders will not be capable of reading nor writing. They were to administer the questionnaire in the language the rider was most comfortable in.

A total of 672 (96%) participants were sampled through multistage sampling technique, 330 from Bonaberi (Douala IV) and 342 from Ndokoti (Douala III). All the pickup points within these neighborhoods were included.

Study sites: Over the years, commercial motorcycle operators have organized themselves into various unions at their different localities. It is compulsory for anyone willing to operate as a commercial motorcyclist to register with any of the affiliated syndicates of the transport unions. In Bonaberi, found in the Douala IV council, there are 15 pickup junctions and 20 pickup junctions in Ndokoti which is found in the Douala III council.

Pretesting of questionnaire: The questionnaires were pretested in Bekoko among 30 motorcyclists. The following corrections were made in the following questions, question AQ4 there was no option for cohabitation, so it was included. AQ5 the option for nil and others was added as 0 and 5

respectively and DQ10 and DQ11 were inserted after the pretesting

Data collection procedure: There was a one-day training for data collectors who were to administer the questionnaires in the language the rider was most comfortable in. Motorcyclists who met the inclusion criteria were approached and given the questionnaire.

The participants who responded to the questionnaire were commercial motorcyclists with a functional motorcycle; who can speak either French or English and who gave their consent. While those who were excluded were those who were absent during the period of data collection and who have been riding for less than a week.

Ethical consideration: An ethical clearance was collected from the Faculty (Ref: 2019/1003-07/UB/SG/IRB/FHS). Then an authorisation was gotten from the Douala III (Ref: 79/CAD3/2019) and IV (Ref: 002/AR/CAD4/SG/SAC/2019) councils. A signed consent was gotten from all the participants who responded to the questionnaires. Confidentiality was ascertained by the fact that participants did not write their names on the forms.

Data analysis: Data from the questionnaire were coded and entered into a data base of Epi Info 7.0 and also analysed using SPSS version 25. Categorical variables were presented as frequencies and percentages. To minimize the type II error, the probability value was considered at $P \leq 0.05$ at a confidence interval of 95%. A Chi square test was employed in measuring the relationship between binary variables. Logistic regression was done to ascertain the effect of demographic variables on knowledge, attitude and practice.

Results

A total of 672 commercial motorcyclists completed the study and were analyzed. All the participants were males with a mean age of 29.85 years (standard deviation of ± 7.86)

ranging from 15 to 60 years. The majority, 343(51.0%) [95% CI: 47.2%-54.9%] of the participants were aged between 21 and 30 years. Most, 362(53.9%) [95% CI: 50.0%-57.7%] of the respondents were single. About two-thirds 235(35.0%) [95% CI: 31.4%-38.7%] of the participants were holders of the first school leaving certificate. Table 1

Only a handful 70(10.4%) [95% CI: 8.2%-13.0%] of the respondents had been riding the motorcycle for more than 10 years. A good number, 359(53.4%) [95% CI: 49.6%-57.3%] of the participants were the owners of the motorcycles.

Only a small fraction, 201(29.9%) [95% CI: 26.5%-33.5%] of the motorcyclists were in possession of a driving license, with most 112(55.7%) [95% CI: 48.7%-62.7%] haven acquired the license less than 1 year ago. Only a few 49(7.3%) [95% CI: 5.4%-9.5%] respondents had undergone a formal training to ride the motorcycle and majority, 479(71.3%) [95% CI: 67.7%-74.7%] of the motorcyclists had been involved in an accident while riding. The socio-demographic characteristics of study participants are summarized in Table 2.

Knowledge of road safety regulations among Commercial Motorcyclists in Douala

The mean score concerning the knowledge of road safety regulation was 42.97 (SD = 4.32). The majority of the participants 376(56.0%) [95% CI: 52.1%-59.8%] had a good knowledge of road safety regulations. Married respondents were about 2 times more likely to report with good knowledge of road safety regulations (COR; 1.57, 95% CI: 1.13-2.17, $p=0.007$). Participants who had been riding between 4 to 6 years had a 31% lower probability of having good knowledge on road safety regulations compared to those who had been riding for less than 4 years (COR; 0.69, 95% CI: 0.48-0.99, $p=0.043$). Motorcyclists in possession of driver's license were 2 times more likely to report with a good knowledge of road safety regulation compared to those who

had no license (COR; 2.29, 95% CI: 1.61-3.25, $p=0.000$). Participants with a formal training on the riding of motorcycle were 3 times more likely to report with a mastery of road safety regulations (COR; 3.46, 95% CI: 1.60-7.47, $p=0.002$). Participants who had been involved in accidents had a 30% likelihood of reporting with poor mastery of road safety regulations (COR; 0.70, 95% CI: 0.50-0.98, $p=0.040$). Multivariate logistic regression analysis showed that ownership of driving license was significantly associated with having good knowledge of road safety regulations (AOR; 1.93, 95% CI: 1.28-2.91, $p=0.002$) (Table 3).

Attitudes towards road safety regulations among Commercial Motorcyclists in Douala

The mean score concerning the attitudes towards road safety regulation was 5.93 (SD ± 1.18). 464(69.1%, 95% CI: 65.4%-72.5%) of the participants had a positive attitude towards road safety regulations. Married respondents were about 2 times more likely to report with positive attitudes towards road safety regulations (COR; 1.6, 95% CI: 1.12-2.27, $p=0.009$). Respondents with driver's license were more likely to present with positive attitudes towards (COR; 2.14, 95% CI: 1.45-3.17, $p=0.000$). Motorcyclists who had received formal training (COR 3.50, 95% CI: 1.49-8.19, $p = 0.004$) were significantly associated with positive attitudes towards. Multivariate logistic regression analysis showed that ownership of driver's license remained a significant predictor of positive attitudes towards road safety regulations (AOR; 2.14, 95% CI: 1.45-3.17, $p=0.000$) (Table 4).

Practices on road safety regulations among Commercial Motorcyclists in Douala

The mean score concerning the practices towards road safety regulation was 15.08 (SD ± 3.18). The majority, 393(58.5%) [95%CI:

54.7%-62.2%] of the participants had a good practice towards road safety regulations. Respondents aged between 21 and 30 years were about 3 times more likely to report with good practices of road safety regulations compared to those below 21 years (COR; 2.74, 95% CI:1.61-4.67, $p=0.000$).

Respondents who were divorced had a 60% increased chance of reporting with poor practices of road safety regulations (COR; 0.40, 95% CI: 0.19-0.84, $p=0.015$). Participants first school leaving certificates (COR 0.21, 95% CI: 0.07-0.64, $p = 0.006$) and ordinary certificates (COR 0.31, 95% CI: 0.10-0.95, $p = 0.039$) were significantly associated with poor practices of road safety regulations as compared with those who had no formal education. Participants who had been riding the motorcycle between 4 and 6 years (COR 1.72, 95% CI: 1.19-2.48, $p = 0.004$) and those between 56 and 10 years (COR 1.71, 95% CI: 1.10-2.67, $p = 0.018$) were significantly associated with good practices of road safety regulations as compared with those who had been riding for less than 4 years.

Self-ownership (COR 1.87, 95% CI: 1.13-3.07, $p = 0.014$) and family ownership of motorcycle (COR 1.88, 95% CI: 1.12-3.17, $p = 0.018$) were significantly associated with good practices of road safety regulations as compared with motorcycles that were owned by others. Respondents who owned driver's license were about 2 times more likely to present with good practices of road safety regulations (COR; 1.98, 95% CI: 1.39-2.81, $p=0.000$). Ownership of driving license for more than one year was associated with good practices of road safety regulation (COR; 2.74, 95% CI: 1.43-5.25, $p=0.002$). Multivariate logistic regression analysis showed that riding the motorcycle for more than 5 years (AOR; 3.77, 95% CI: 1.19-11.96, $p=0.025$), ownership of driver's license (AOR; 1.98, 95% CI: 1.39-2.81, $p=0.000$) and holder of driver's license

for more than one year (3.05, 95% CI: 1.25-7.43, $p=0.014$) remained significant predictors

of good practices of road safety regulations (Table 5).

Table 1: Socio-demographic characteristics of Commercial Motorcyclists in the City of Douala, 2019

Characteristic	Bonaberi N (%)	Ndokoti N (%)	Total N (%)	Chi squam	P- value
Age group (years)					
<21	30(9.1)	37(10.8)	67(10.0)	1.318	0.858
21-30	167(50.6)	176(51.5)	343(51.0)		
31-40	96(29.1)	96(28.1)	192(28.6)		
41-50	32(9.7)	30(8.8)	62(9.2)		
>50	5(1.5)	3(0.9)	8(1.2)		
Total	330(49.1)	342(50.9)	672(100.0)		
Marital Status					
Married	136(41.2)	125(36.5)	261(38.8)	4.076	0.253
Divorced	13(3.9)	21(6.1)	34(5.1)		
Widower	5(1.5)	10(2.9)	15(2.2)		
Single	176(53.3)	186(54.4)	362(53.9)		
Total	330(49.1)	342(50.9)	672(100.0)		
Highest Level of Education					
No Education	14(4.2)	9(2.6)	23(3.4)	6.195	0.185
Primary Education	110(33.3)	125(36.5)	235(35.0)		
Ordinary level	101(30.6)	122(35.7)	223(33.2)		
Advanced level	72(21.8)	63(18.4)	135(20.1)		
Degree	33(10.0)	23(6.7)	56(8.3)		
Total	330(49.1)	342(50.9)	672(100.0)		

Table 2: Characteristics of commercial motorcyclists in the city of Douala, 2019

Characteristic	Bonaberi No(%)	Ndokoti No(%)	Total	Chi Square	P-Value
Duration of riding					
1-3 years	133(40.3)	119(34.8)	252(37.5)	5.089	0.165
4-6 years	100(30.3)	127(37.1)	227(33.8)		
6-10 years	58(17.6)	65(19.0)	123(18.3)		
>10years	39(11.8)	31(9.1)	70(10.4)		
Total	330(49.1)	342(50.9)	672(100.0)		
Ownership of the motorcycle					
Myself	206(62.4)	153(44.7)	359(53.4)	21.787	0.000
Family Member	97(29.4)	140(40.9)	237(35.3)		
Others	27(8.2)	49(14.3)	76(11.3)		
Total	330(49.1)	342(50.9)	672(100.0)		
Ownership of the driving license					
Yes	112(33.9)	89(26.0)	201(29.9)	5.020	0.025
No	218(66.1)	253(74.0)	471(70.1)		
Total	330(49.1)	342(50.9)	672(100.0)		
Duration of ownership of license					
< 1 year	56(50.0)	56(62.9)	112(55.7)	3.356	0.067
≥1 year	56(50.0)	33(37.1)	89(44.3)		
Total	112(55.7)	89(44.3)	201(100.0)		
Type of training undergone					
Formal	34(10.3)	15(4.4)	49(7.3)	14.859	0.001
Informal	234(70.9)	283(82.7)	517(76.9)		
None	62(18.8)	44(12.9)	106(15.8)		
Total	330(49.1)	342(50.9)	672(100.0)		
Ever involved in accident while riding					
Yes	210(63.6)	269(78.7)	479(71.3)	18.504	0.000
No	120(36.4)	73(21.3)	193(28.7)		
Total	330(49.1)	342(50.9)	672(100.0)		

Table 3: Factors associated with good knowledge of road safety regulations among Commercial Motorcyclists

Characteristic	Poor Knowledge No (%)	Good knowledge No (%)	Total No (%)	COR	95% CI	P-value	AOR	95% CI	P-value
Marital Status									
Married	97(37.2)	164(62.8)	261(100.0)	1.57	1.13-2.17	0.007	1.40	0.98-2.00	0.066
Divorced	19(55.9)	15(44.1)	34(100.0)	0.73	0.36-1.48	0.385	0.64	0.30-1.35	0.241
Widower	6(40.0)	9(60.0)	15(100.0)	1.39	0.48-3.98	0.542	0.97	0.32-2.98	0.960
Single	174(48.1)	188(51.9)	362(100.0)	1.00	-	-	1.00	-	-
Total	296(44.0)	376(56.0)	672(100.0)						
Highest Level of Education									
No Education	12(52.2)	11(47.8)	23(100.0)	1.00	-	-	1.00	-	-
Primary Education	101(43.0)	134(57.0)	235(100.0)	1.45	0.61-3.41	0.398	1.26	0.52-3.03	0.614
Ordinary level	117(52.5)	106(47.5)	223(100.0)	0.99	0.42-2.33	0.979	0.88	0.36-2.15	0.786
Advanced level	45(33.3)	90(66.7)	135(100.0)	2.18	0.89-5.33	0.087	1.89	0.75-4.72	0.176
Degree	21(37.5)	35(62.5)	56(100.0)	1.82	0.68-4.85	0.232	1.36	0.49-3.79	0.555
Total	296(44.0)	376(56.0)	672(100.0)						
Duration of riding									
1-3 years	100(39.7)	152(60.3)	252(100.0)	1.00	-	-	1.00	-	-
4-6 years	111(48.9)	116(51.1)	227(100.0)	0.69	0.48-0.99	0.043	0.71	0.48-1.04	0.079
6-10 years	57(46.3)	66(53.7)	123(100.0)	0.76	0.49-1.18	0.220	0.67	0.41-1.08	0.098
>10 years	28(40.0)	42(60.0)	70(100.0)	0.99	0.58-1.70	0.962	0.80	0.44-1.45	0.455
Total	296(44.0)	376(56.0)	672(100.0)						
Ownership of the driver's license									
Yes	61(30.3)	140(69.7)	201(100.0)	2.29	1.61-3.25	0.000	1.93	1.28-2.91	0.002
No	235(49.9)	236(50.1)	471(100.0)	1.00	-	-	1.00	-	-
Total	296(44.0)	376(56.0)	672(100.0)						
Type of training undergone									
Formal	11(22.4)	38(77.6)	49(100.0)	3.46	1.60-7.47	0.002	1.72	0.73-4.07	0.215
Informal	232(44.9)	285(55.1)	517(100.0)	1.23	0.81-1.87	0.335	1.04	0.68-1.62	0.846
None	53(50.0)	53(50.0)	106(100.0)	1.00	-	-	1.00	-	-
Total	296(44.0)	376(56.0)	672(100.0)						
Ever involved in an accident while riding									
Yes	223(46.6)	256(53.4)	479(100.0)	0.70	0.50-0.98	0.040	0.84	0.58-1.21	0.336
No	73(37.8)	120(62.2)	193(100.0)	1.00	-	-	1.00	-	-
Total	296(44.0)	376(56.0)	672(100.0)						

COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval

Table 4: Factors associated with positive attitudes towards road safety regulations among Commercial Motorcyclists

Characteristic	Poor Attitude No (%)	Good Attitude No (%)	Total No (%)	COR	95% CI	P-value	AOR	95% CI	P-value
Marital Status									
Married	66(25.3)	195(74.7)	261(100.0)	1.60	1.12-2.27	0.009	1.65	0.76-3.55	0.20
Divorced	12(35.3)	22(64.7)	34(100.0)	0.99	0.48-2.07	0.980	0.42	0.11-1.53	0.18
Widower	3(20.0)	12(80.0)	15(100.0)	2.16	0.60-7.80	0.239	2.53	0.27-23.88	0.41
Single	127(35.1)	235(64.9)	362(100.0)	1.00	-	-	1.00	-	-
Total	208(31.0)	464(69.0)	672(100.0)						
Ownership of the driving license									
Yes	41(20.4)	160(79.6)	201(100.0)	2.14	1.45-3.17	0.000	2.14	1.45-3.17	0.00
No	167(35.5)	304(64.5)	471(100.0)	1.00	-	-	1.00	-	-
Total	208(31.0)	464(69.0)	672(100.0)						
Type of training undergone									
Formal	8(16.3)	41(83.7)	49(100.0)	3.50	1.49-8.19	0.004	1.49	0.21-10.39	0.68
Informal	157(30.4)	360(69.6)	517(100.0)	1.57	1.02-2.41	0.041	1.07	0.17-6.78	0.94
None	43(40.6)	63(59.4)	106(100.0)	1.00	-	-	1.00	-	-
Total	208(31.0)	464(69.0)	672(100.0)						

COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval

Table 5: Factors associated with good practices of road safety regulations among Commercial Motorcyclists

Characteristic	Poor practices No (%)	Good Practices No (%)	Total No (%)	COR	95% CI	P-value	AOR	95% CI	P-value
Age group (years)									
<21	38(56.7)	29(43.3)	67(100.0)	1.00	-	-	1.00	-	-
21-30	111(32.4)	232(67.6)	343(100.0)	2.74	1.61-4.67	0.000	5.76	0.16-209.78	0.34
31-40	95(49.5)	97(50.5)	192(100.0)	1.34	0.76-2.34	0.308	1.47	0.03-62.41	0.84
41-50	30(48.4)	32(51.6)	62(100.0)	1.40	0.70-2.80	0.344	1.34	0.03-62.43	0.88
>50	5(62.5)	3(37.5)	8(100.0)	0.79	0.17-3.56	0.755	1.44	0.02-114.23	0.87
Total	279(41.5)	393(58.5)	672(100.0)						
Marital Status									
Married	94(36.0)	167(64.0)	261(100.0)	1.32	0.95-1.83	0.101	1.17	0.50-2.76	0.72
Divorced	22(64.7)	12(35.3)	34(100.0)	0.40	0.19-0.84	0.015	2.74	0.15-5.61	0.25
Widower	9(60.0)	6(40.0)	15(100.0)	0.50	0.17-1.42	0.189	1.06	0.15-7.49	0.95
Single	154(42.5)	208(57.5)	362(100.0)	1.00	-	-	1.00	-	-
Total	279(41.5)	393(58.5)	672(100.0)						
Duration of riding									
1-3 years	123(48.8)	129(51.2)	252(100.0)	1.00	-	-	1.00	-	-
4-6 years	81(35.7)	146(64.3)	227(100.0)	1.72	1.19-2.48	0.004	2.42	0.93-6.34	0.07
6-10 years	44(35.8)	79(64.2)	123(100.0)	1.71	1.10-2.67	0.018	3.77	1.19-11.96	0.02
>10years	31(44.3)	39(55.7)	70(100.0)	1.20	0.70-2.04	0.503	1.52	0.46-5.03	0.48
Total	279(41.5)	393(58.5)	672(100.0)						
Ownership of the driving license									
Yes	61(30.3)	140(69.7)	201(100.0)	1.98	1.39-2.81	0.000	1.98	1.39-2.81	0.00
No	218(46.3)	253(53.7)	471(100.0)	1.00	-	-	1.00	-	-
Total	279(41.5)	393(58.5)	672(100.0)						
Duration of ownership of license									
< 1 year	44(39.3)	68(60.7)	112(100.0)	1.00	-	-	1.00	-	-
≥1 year	17(19.1)	72(80.9)	89(100.0)	2.74	1.43-5.25	0.002	3.05	1.25-7.43	0.01
Total	61(30.3)	140(69.7)	201(100.0)						
Type of training									
Formal	16(32.7)	33(67.3)	49(100.0)	1.77	0.87-3.60	0.113	7.00	0.97-50.62	0.05
Informal	214(41.4)	303(53.8)	517(100.0)	1.22	0.80-1.85	0.359	6.98	1.06-45.93	0.04
None	49(46.2)	57(53.8)	106(100.0)	1.00	-	-	1.00	-	-
Total	279(41.5)	393(58.5)	672(100.0)						

COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval

Figure 1 shows that there is a correlation between participants' knowledge, attitude and practice. The results showed that there was a significant association among the participants' knowledge, attitudes, and practices ($p < 0.01$)

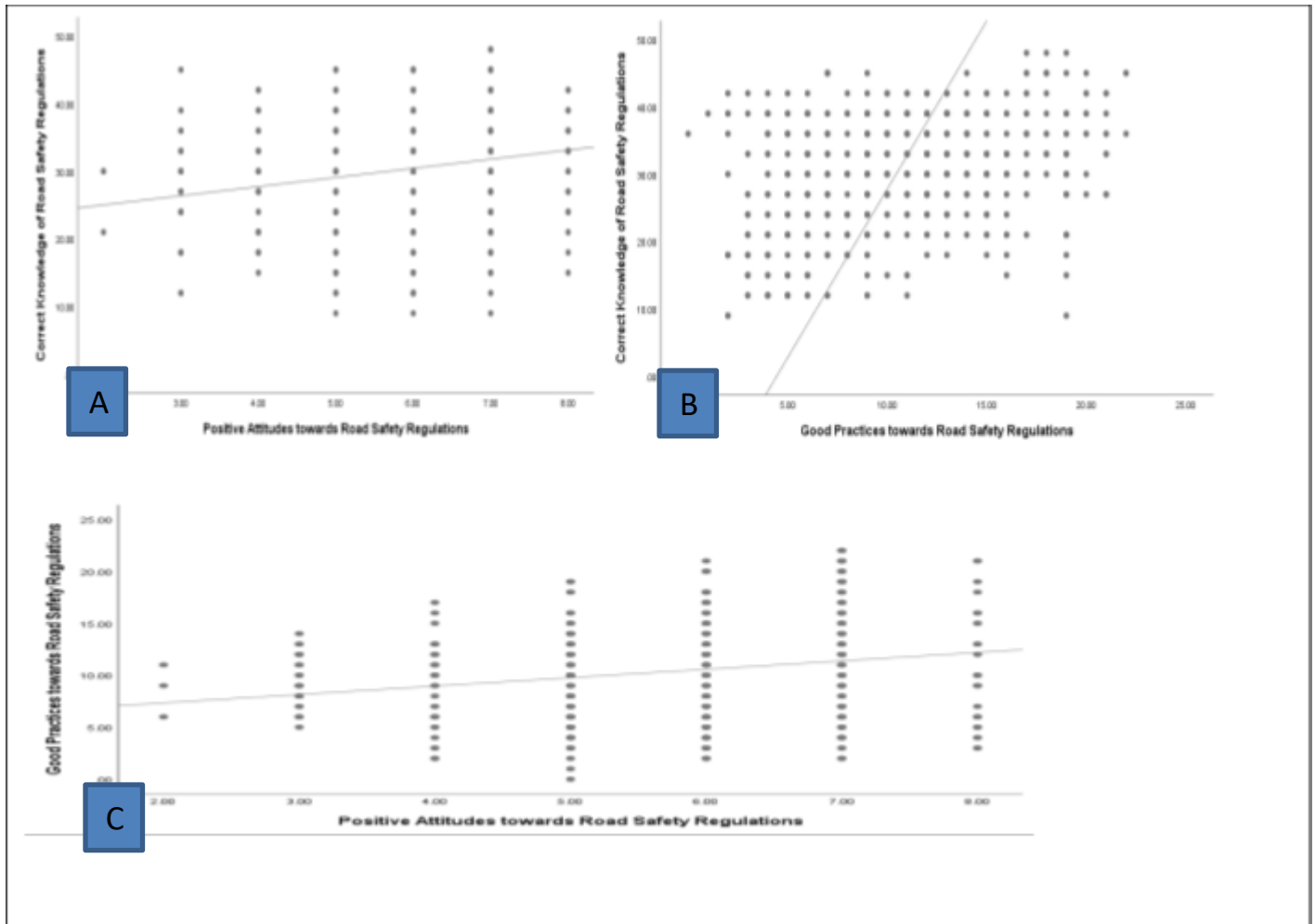


Figure 1: Relationship between commercial motorcyclists' knowledge, attitudes and practices.

A: Knowledge vs. Attitudes, B: Knowledge vs Practices, C: Attitudes vs Practices

Discussion

In general, road traffic accidents cannot completely be mitigated but can be minimized or prevented by following rules and regulation enforced in the country. The objective of this study was to identify knowledge, attitude and practice towards road safety regulation among commercial motorcyclists in Douala. A cross sectional descriptive study with a convenient sampling was used for the study. It is a quantitative study, to find out the knowledge, attitude and current practice of commercial motorcyclists regarding the road safety regulations.

Socio Demographic characteristics of commercial motorcyclists in Douala

All commercial motorcyclists in both neighborhoods were males. This male dominance found in this study is similar to findings in other countries including Ghana, Nigeria and Kenya [14]. This may be because it is a common observed phenomenon and customary to see more male than female gender in commercial motorcycling in the African cultural context. Furthermore, since motorcycling is a high risk venture, males tend to engage more in risky ventures than their females counterparts do.

The majority of the commercial motorcyclists were between the ages 21 to 30 years 343(51.0%) and had a mean age of 29.8years. This is in line with the findings of Lawal et al [15] who found out that (49.0%) of their respondents were within the age range of 20-29 years, and had a mean age of 28.6 years. It is also in line with other findings obtained by, [16, 17, 18] in Ibadan, who found out that approximately half of their respondents had the age range of 20-29years. This shows that many commercial motorcyclists are young, in productive age groups. However a relatively small number of them are lowly educated with primary education or less 258(38.4%) as

opposed to 414(61.6%) who had at least an Ordinary level certificate. This is contrary to the study that done by Iribhogbe & Odai (2009) in Nigeria where most of commercial motorcyclists (52.8%) had primary education or no formal education. This good number of commercial motorcyclists in our study with a high level of education could be partly attributed to the fact that those who even attempted school up to the Ordinary and Advanced level had few chances of getting other jobs and thus engage into commercial motorcycling business as a last resort following unemployment regardless of being a risky job [15]. It is interesting to note that up to 8.3% of the commercial motorcyclists were graduates. According to the President's end of year speech, 2019 [19] unemployment rate stood at 3.30 %, this could partly explain why up to 8.3% were graduates since they could not be employed.

Knowledge of Road Safety Regulation among commercial motorcyclists in Douala

Globally road traffic injuries are the leading cause of death among young people. The UN General Assembly has declared 2011 to 2020 as the ``Decade of Action for Road Safety" which seeks to halt the increasing trends in road traffic deaths and injuries worldwide. The starting point for any interventions aimed at achieving the UN declaration especially about commercial motorcyclists would be to first know their understanding and behavior patterns concerning road safety. In this study, it was shown that a majority of the participants (56.0%) had a good knowledge of road safety regulations. This is contrary to a study in Lagos city of Nigeria about the drivers' knowledge on road traffic regulation which showed that merely 1% of the drivers had the correct knowledge of Nigeria road traffic regulation [20]. However, another study identified that 32.6 percent of participants had good knowledge about road traffic regulations in the

Anambra State of Nigeria [21]. This was still relatively lower than our present study. The higher rate of our study could maybe be attributed to the fact that a higher rate of commercial motorcyclists in our context had at least attained secondary education. Also, 62.5% of them have been riding for more than 4 years which implies they must have learned from experience or by interacting with their colleagues or because they belonged to syndicates that usually informs them during their meetings. It is worth noting that they held weekly meetings. The other significant finding of this study is the fact that formal training and license ownership significantly affected the level of knowledge the participants had. Furthermore, since knowledge shapes practice more persons who had a poor mastery of road safety regulation had been involved in an accident at least.

This figure was similar to the study carried out in Sokoto Metropolis in Nigeria which revealed that about 59% of the respondents are knowledgeable of road safety regulations, but is lower than the figures obtained in [16, 18] who observed that (88.0%) and (77.0%) of their respondents are aware of road safety measures respectively.

Attitudes towards road safety regulation among commercial motorcyclists in Douala

It is commonly considered that one's attitude towards an idea can be positive or negative or both. According to Audrey [22] attitude can be seen to be an evaluative reaction to a concept such as road safety regulations. They also noted that, attitudes towards a concept may be mixed and not necessarily be consistent within the individual. Riding safely is held in high regards among dedicated motorcyclists. However, the enjoyment of taking risks and the enjoyment of speed, in particular, are higher for adventurous motorcyclists (called "le borobo" in our study site). That notwithstanding, although speed

violation is a significant predictor of road accidents, the biggest predictor of crashes among motorcyclists cannot be blamed on non-deliberate errors but on violations of the road safety regulations, as found by Emmanuel et al in his study [23].

The majority, 69.9% of the motorcyclists had a positive attitude towards road safety regulations. This is slightly lower than what Lawal and Nasiru found in their study whereby 79.2% of the respondents had a positive attitude towards the adherence to road safety measures [15]. It was also found that license ownership remained a predictor for positive attitudes towards road safety regulations.

Practices of Road Safety Regulations among commercial motorcyclists in Douala

The majority, 393(58.5%) of the participants had a good practice towards road safety regulations. This is in contrast to a study carried out among a large population sample of 11,965 French employees of Électricité de France–Graz where it was found that participants had a high negative practice and highly negative attitude towards the road traffic regulation [24]. The difference in this might be because the population under study was not commercial motorcyclists. Hence, they might not understand the consequence of not respecting the road traffic regulations since they do not face the risk of having an accident daily. It is also contrary to a study carried out amongst youths in Hulhumale which showed that a majority of them had a low practice of road traffic regulations [25]. Road safety regulations will always largely include the use of all protective devices. A study done among commercial motorcyclists in Sokoto Metropolis showed that almost all (99.7%) of the respondents had inappropriate compliance to protective devices. But it was largely similar to the findings carried out in North-Western Nigeria by Sulfiyan which showed that about

56.8% complied with the use of protective devices [16].

Relationship between knowledge, attitudes, and practices of road safety regulations among commercial motorcyclists in the city of Douala:

The correlation between participants' knowledge, attitudes and practices showed that there were significant associations among the participants' knowledge, attitudes, and practices ($p < 0.01$). This implies that those who were more knowledgeable about road safety regulation had a positive attitude and could hence adhere better. The study also showed that majority of those who had positive attitudes towards road safety regulation also had good practices.

Limitation

One of the major limitations was getting participants in a commercial motorbike sector found in an urban setting to respond to questionnaires. This because most commercial motorbike riders are always on the move in search of passengers and also because most of them work for long hours to meet up with the high cost of living. This required a lot of persuasion with a concomitant increase in the cost of the study. There was also the issue that some participants understood only the French Language. This was taken care of by translating the questionnaire into French. Furthermore, data collection relied on informant reports of normative behavior in response to questions posed. Hence, there could be an overstating of perceived norms or underrepresentation of the extent to which people deviate from stated norms. There is also the possibility that the participants viewed the researcher as a potential spokesman to policy makers and hence could tend to skew responses towards the expression of certain concerns they thought the researcher could channel to the hierarchy for action.

Although providing a broad snapshot of the population, cross-sectional surveys capture relevant data at a single moment in time on specific topics. In a rapidly changing landscape, it is expected that self-report perceptions and behaviors would change with new information. Data collection using self-report is a major limitation in this study as we could not measure objectively the response given by participants in practice.

Conclusion

The study found out that 56% of participants had good knowledge about road safety regulations. It was also found out that 69% of the participants had positive attitudes towards road safety regulations. 58.5% of the participants had good practices of road safety regulations. Finally, the correlation between participants' knowledge, attitudes and practices showed that there was a significant association among participants' knowledge, attitudes and practices. The result obtained in this study indicates how useful it will be to establish safety program either through testing or regular training programs to increase commercial motorbike riders' awareness and knowledge about road safety regulations.

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Contributions made by authors

All authors: made substantial contributions to the conception and design of the work;

1: the acquisition, analysis, or interpretation of data;

1: drafted the work

2,3,4: revised the work critically for important intellectual content; All authors: approved the version to be published; and

All authors: agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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