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Assessment of Commercial Motorcycle Riders' Perceptions of Road-Safety Risk and Safety Practices in Selected Areas of Abeokuta Metropolis, Ogun State, Nigeria

[1]Yemisi Aramide Tijani and *[2]Abayomi Noa Adedokun

[1]Department of Environmental Management and Toxicology, Redeemer's University, Ede, Osun State, Nigeria.
[2]Department of Environmental Management and Toxicology, Federal University of Agriculture, PMB 2240, Abeokuta, Ogun State, Nigeria.
*Corresponding Author's email: noa.adedokun@gmail.com
ORCID iD: https://orcid.org/0009-0005-6880-0850

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ABSTRACT
Commercial motorbike riders are among the most vulnerable road users, and road safety plays a primary role in eliminating road traffic accidents (RTAs). This study assessed commercial motorcycle riders' perceptions of road-safety risks and their self-reported safety practices in selected areas of Abeokuta metropolis, Ogun State, Nigeria. A cross-sectional descriptive survey was conducted using structured questionnaires administered to 90 commercial motorcycle riders across nine selected locations. A roadside observational checklist was used to document selected motorcycle-use and rider behaviours. Questionnaire responses were analysed using descriptive statistics, including frequencies and percentages in SPSS version 25.0, while the observational records were summarised descriptively. The respondents were predominantly male, with 56.7% aged 21–30 years. 75.6% indicated that they did not use helmets, while 28.9% did not possess a driver's licence. Furthermore, 57.8% reported previous accident involvement, and 71.1% lacked adequate information about applicable speed limits. Poor road conditions (91.1%), impatient motorists (95.6%), and overspeeding (83.3%) were prominent perceived road-safety problems. Roadside observations involving 804 motorcycles revealed that only 15.3% of riders wore helmets, while 18.2% were observed speeding and 34.5% carried more than one passenger. These findings demonstrate substantial gaps between reported road-safety education and observed protective practices. Strengthening traffic law enforcement, improving road infrastructure, promoting helmet use, and providing continuous rider education are essential to improving commercial motorcycle safety in Abeokuta. Traffic police and other stakeholders should implement robust legislation concerning road safety for users to ensure their compliance with road safety measures. These will help reduce accident rates, road traffic crashes, and economic burdens.

INTRODUCTION

Road traffic injury is a great public health and environmental challenge and a leading cause of disabilities and/or death globally. Road traffic injuries impose substantial physical, social, and economic burdens on individuals, communities, and national economies. The impact is particularly severe in middle-income countries experiencing rapid motorization.

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Vulnerable road users, particularly motorcyclists, pedestrians, and cyclists, account for a considerable proportion of global road traffic fatalities, representing approximately half of all deaths (Afelumo et al., 2021).

The use of motorcycles in rural and urban areas in Nigeria has increased over the past two decades because they can maneuver between vehicles in heavy urban traffic. Motorcycles constitute a significant mode of transport in Nigeria. The use of motorcycles in rural and urban areas in Nigeria has increased over the past two decades because they can maneuver between vehicles in heavy urban traffic (Gumel et al., 2019). Virtually, every state capital city in Nigeria today faces the problem of commercial motorcycles (Arosanyin et al., 2013), which is particularly aggravated when schools are in session. Many urban centers in Nigeria are bedeviled by commercial motorcycle problems, which tend to defy various remedial measures adopted by different governments over the years. Movement within towns has remained unreliable, and residents have continued to face disturbing inconveniences in transportation. In Africa, evidence from a scoping review indicates that motorcycle-related crashes are associated with a combination of rider, road and environmental factors, including alcohol and other substance use, fatigue, poor knowledge of traffic regulations, carrying more than one passenger, lack of licensing, non-observance of traffic regulations and non-use of personal protective equipment (Konlan and Hayford, 2022). Helmet use is an especially important preventive measure; WHO guidance emphasises that effective helmet programmes require appropriate legislation, standards, enforcement and education (WHO, 2023a). According to Ogunkeyede and Osungbade (2019), a study in Ibadan reported that approximately half of surveyed commercial motorcyclists were compliant with road-safety measures and identified training and motorcycle ownership as important factors related to compliance. In Owo, Ondo State, Olasinde and Oluwadiya (2022) predicted multiple risky behaviours among commercial motorcyclists, including carrying more than the permitted number of passengers, mobile-phone use, traffic offences, and alcohol-related riding. All over the world, road traffic injuries are the eighth leading cause of death for all ages, with 1.35 million deaths annually recorded (WHO, 2015), while approximately 3700 people die on the world's roads daily (WHO, 2015). Other records showed that head injuries and other extremities lead to morbidity and death as a result of motorcycle crashes in Nigeria (Oluwadiya *et al*., 2016), while the incidence of reported cases of road traffic crashes at Igbobi Orthopaedic Hospital had a 3000% increase in the number of patients with fractured limbs resulting from commercial motorcycle crashes (Oluwadiya *et al*., 2009). According to the World Health Organization (WHO, 2018), road crashes/accidents are frequently portrayed in the news as isolated incidents rather than a significant cause of death and a massive waste of a country's human, health, and financial resources. Globally, road traffic crashes account for a large proportion of total morbidity and mortality, 90% of which occur in developing countries (WHO, 2018; Afelumo et al., 2021). Tukur et al. (2025a) examined traffic congestion, travel time, and road-safety implications along the Katsina–Kano highway, highlighting the importance of traffic enforcement, infrastructure maintenance, and dedicated lanes for motorcycles and tricycles. Community perceptions of the environmental impacts of highway development, including road accidents and other environmental concerns, were assessed. These studies provide a relevant Nigerian context for examining the safety, welfare, and operational challenges associated with commercial motorcycle transportation (Tukur et al., 2025b). By presenting traffic safety as a health and development issue and providing statistics and in-depth information, journalists may impact how these stories are presented, therefore influencing public behavior and attitudes, influencing legislation, and thereby contributing to lifesaving (WHO, 2021). Road traffic accidents or crashes are public health issues because citizens, families, and governments suffer tremendously due to the resulting fatalities. They impose enormous pressure on frequently overcrowded health care systems, occupy limited hospital beds, waste scarce resources, and result in considerable property damage, with profound social and economic consequences (WHO, 2019; Afelumo et al., 2021). Factors that cause motorcycle accidents in Nigeria include over-speeding, improper overtaking, bad roads, abrupt mechanical faults, and alcohol consumption by riders as significant factors. Therefore, poor attitudes and lack of awareness towards safety measures increase the risk of being involved in accidents.

The present study was designed to assess commercial motorcycle riders' perceptions of road-safety risks and selected safety practices in Abeokuta metropolis. The specific objectives were to describe the socio-demographic characteristics of commercial motorcycle riders and assess respondents' perceptions and self-reported practices relating to road safety, helmet usage, road-safety education, alcohol use, licensing, and speed-limit awareness.

Research questions

1. What were the socio-demographic characteristics of the commercial motorcycle riders surveyed?
2. What are the riders' perceptions and self-reported road-safety practices?
3. What safety-related motorcycle behaviours were observed at the selected locations?
4. What road-safety problems and possible interventions were identified by the respondents?

MATERIALS AND METHODS

Study Area

Abeokuta is a metropolitan city that serves as the capital of Ogun State, and it shares a border with Lagos, Ondo, Osun, and Edo States. Abeokuta metropolis is divided into four Local Government Areas, namely: Abeokuta South, Abeokuta North, Odeda, and Obafemi/Owode Local Government Areas. Abeokuta covers an approximate area of 40.63 km^2 and lies within longitudes 30^{0}17 and 30^{0}26$^{'}$ E and latitudes 70^{0}10$^{'}$N and 70^{0}15$^{'}$N (Ojo et al., 2020; Tijani et al., 2026). Abeokuta is on the basement complex of igneous rocks overlaid by several sedimentary rocks located within the rainforest region of Nigeria. Increasing human population in Abeokuta has also translated to an increase in waste generation. Climatically, Abeokuta is situated within the humid tropical region, characterized by distinct wet and dry seasons. The area receives a mean annual rainfall of approximately 1090.5 mm, supporting lush vegetation and agricultural activities. The metropolis occupies a land area of about 1,256 km^2 and had an estimated population of 888,924 inhabitants as of 2012, reflecting rapid urban expansion and demographic growth (Ologunorisa et al 2023; Tijani et al., 2026). The increased industrialization, urbanization, and the establishment of tertiary institutions have diversified land use patterns toward commercial, residential, transportation, and industrial development (Ologunorisa et al., 2023; Tijani et al., 2026). The study was conducted in nine locations (three (3) Federal, State, and Local Government roads each), all within Abeokuta metropolis, and the data for the study were generated from questionnaire administration. The selected areas include: Lanfenwa, NNPC, Ita-Oshin, Kuto, Adatan, Sapon/Isale-Igbein, Asero Estate, Obantoko/Somorin, and Camp. Figure 1 shows the map of the study area. The locations were selected because commercial motorcycle activities were present and because they provided coverage of different traffic and land-use environments

Research design

A cross-sectional descriptive survey was used with structured roadside observation components whereby motorcyclists (commercial and non-commercial) and passengers were observed on helmet-wearing practices at the main road car junctions, which were randomly selected. Data were collected on weekends and weekdays at peak hours of road use. The questionnaire component involved 90 commercial motorcycle riders, whereas the observational component involved counts of motorcycles and visible practices at the nine selected locations. A standardized observation checklist was used to record the drivers' and passengers' gender, use of helmets, and number of passengers per motorcycle.

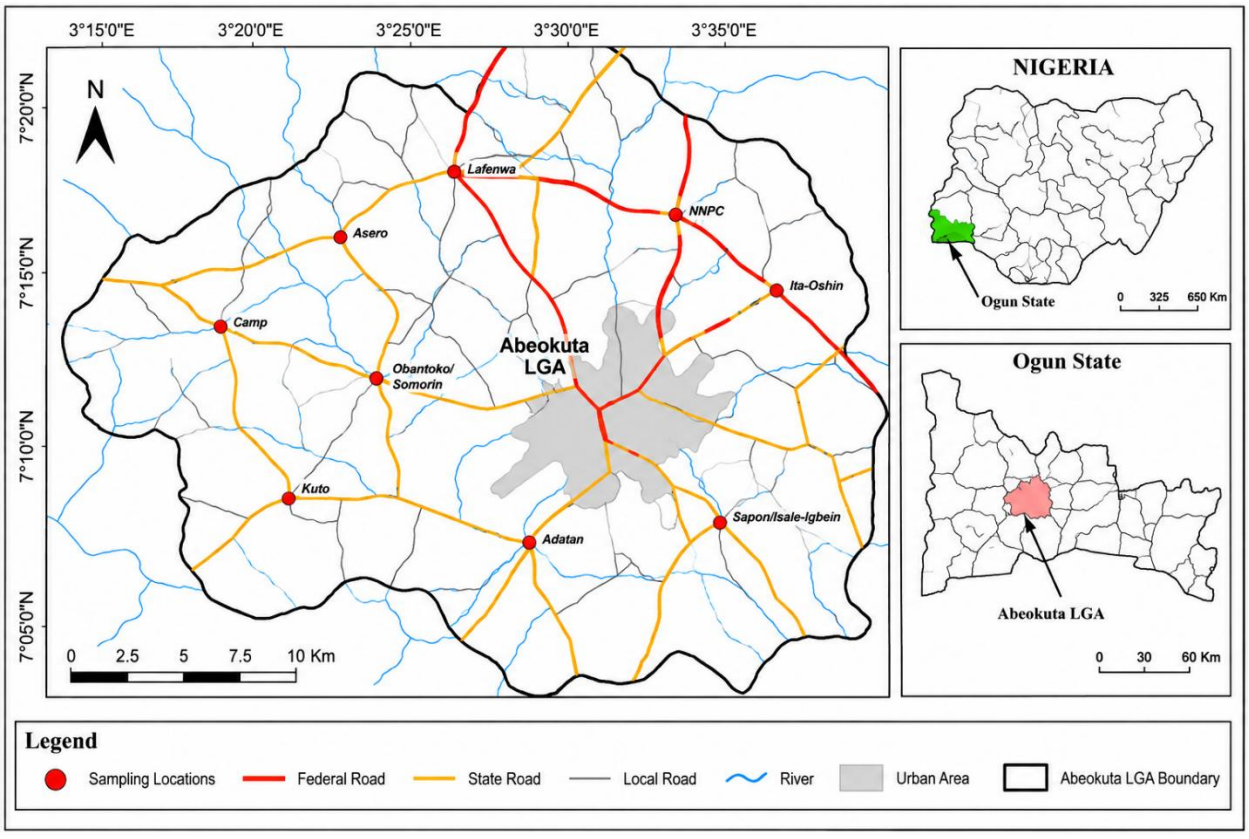


Figure 1: Map of Abeokuta Showing the Study Area

Data collection
Field assistants worked in pairs, observing different routes to collect data at the assigned study sites at the junctions with high traffic flow. Data were collected in three sessions during the weekdays and two sessions during the weekend. The sessions on the weekdays were during the rush hour in the morning, and weekend sessions were from 5.00 – 6.00 pm. and 8.00 to 9:00 pm.

Sources of data and methods
Pre-sampling analysis tests for questionnaire data were conducted using 10% of the sample size. The closer the value is to one (1), the more reliable the data (the value is between 0.5 and 1.0). Also, 10% of people in proximity to the selected study sites were used for pretesting of the questionnaire. A validity test was carried out on the responses of the respondents; a result of 75.0% indicated that the respondents really understood the questions in the questionnaire used for assessment.

Questionnaire survey
Ninety (90) copies of the questionnaire were administered to the selected commercial motorcycle riders (10 questionnaires per location). The riders were asked to answer the questions at the same time; once a question was completed by the respondents, they proceeded to the next question, and they were allowed to ask questions at any time they required. The self-reported questionnaire was used to elicit information from the following themes: sociodemographic characteristics; riding experience and economic characteristics, including years of riding, motorcycle ownership or payment arrangements, daily earnings, alternative livelihood, and possession of a driving licence; road-safety knowledge, attitudes and risk perceptions, including awareness of traffic regulations and speed limits and perceptions of protective equipment; risk-related behaviours, including alcohol consumption, smoking, previous accident involvement and reported riding practices and self-reported health complaints, healthcare-seeking behaviour, perceived traffic problems and suggested road-safety interventions.

Direct observational survey
A structured checklist was used at each of the nine locations to record the total number of motorcycles observed and the occurrence of selected behaviours or passenger characteristics. Eight hundred and four (804) motorcycles were observed and counted. The observations was carried out for a period of three weeks. The checklist covered helmet use, carrying more than one passenger, observed speeding, fast or unsafe riding behaviour, wrong sitting position, twisted handlebars, female passengers, elderly passengers, and babies on board. The same checklist categories were applied at all locations. A handheld GPS (Global Positioning System) receiver (Garmin-72H) was used to record the coordinates (Longitude and Latitude) of each location to obtain spatial attributes of the sampling locations where the survey was conducted.

Inclusion/Exclusion criteria
The study included only selected ninety (90) motorcyclists/riders, primarily those aged 18 years or older, who were in good physical and mental health. Only riders who gave verbal consent were recruited for this study. Individuals who declined participation were excluded. Meanwhile for the observation survey, 804 motorcycles were counted during the study period.

Ethical considerations
Permission was obtained from all the respondents. The objectives of the study were clearly explained to all participants, and verbal consent was obtained before enrolment. Participation was entirely voluntary, confidentiality, and participants were informed of their right to withdraw from the study at any stage without penalty.

Data analysis
A standard questionnaire and observational checklist were used across all nine locations to promote consistency. Completed questionnaires and checklists were reviewed for missing entries, inconsistent responses, and recording errors before data entry. Data obtained from the completed copies of the questionnaire from motorcyclists were entered into Microsoft Excel spreadsheets for coding and exported into the Statistical Package for Social Science (SPSS 20.0) statistical software for analysis. Frequency, percentage, and other descriptive statistical tools were employed to summarize the data collected through questionnaire administration.

RESULTS AND DISCUSSION

Socio-economic characteristic of respondents
The respondents' information with respect to their age group, gender, religion, marital status, and educational background is presented in Table 1. The age distribution shows that the highest numbers of respondents (56.7%) were aged 21-30 years, followed by age group 31-40 years (22.2%) while age group below 20 years and above 50 had less than 7.0% across the study area. This implies that those involved in the business are from the economically active age group, mainly youths and middle-aged men. Most of the motorcyclists in this study were young and energetic and in their most productive years of life. This seems logical, as the job of riding motorcycles for commercial purposes seems to be very demanding. About 64.0% of the respondents were married, while 36.0% were single. All the respondents interviewed were male. This implies that Okada riding is a male-dominated profession, with 48.9% of them reporting Islam as their religion.

Table 1: Socio-economic characteristics of sampled respondents

Socio-economic variables	No. of Respondents	Percent
Gender		
Male	90	100.0
Female	0	0.0
Age		
Below 20	6	6.7
21-30	51	56.7
31-40	20	22.2
41-50	10	11.1
50 and Above	3	3.3
Total	90	100.0
Marital status		
Single	33	36.7
Married	57	63.3
Total	90	100.0
Educational background		
No formal education	22	24.4
Primary education	27	30.0
Secondary education	30	33.3
Tertiary education	11	12.2
Total	90	100.0
Religion		
Christian	38	42.2
Islam	44	48.9
Traditionalist	8	8.9
Total	90	100.0
Number of dependents		
1-3	42	46.7
4-5	13	14.4
5-7	23	25.6
Above 7	12	13.3
Total	90	100.0
Primary occupation		
Civil-servant/Retiree	9	10.0
Company driver /security	19	21.1
Business owner (carpenter, fashion designer and vulcanizer, farmers	62	68.9
Total	90	100.0

Source: Field Survey

In terms of educational background, 33.3% had secondary education, 30.0% attended primary school, 24.4% had no formal education, and 12.2% had tertiary education. The educational composition of the respondents indicated that about 70.0% had received formal education up to secondary level. This implies that the respondents are knowledgeable enough to provide reasonable answers.

Moreover, 46.7% of the respondents have between 1-3 dependents, while 25.6% have between 5 and 7, and 14.4% have between 4-5 dependents. In terms of primary occupation, the majority (68.9%) of the Okada riders were business owners such as fashion designers, carpenters, and farmers; 21.1% were company drivers and security workers, and about 10.0% were civil servant/retiree (Table 1).

Respondents' perception of their welfare

About 36.7% had been riding motorcycle between 1-3 years, 24.4% claimed to have been riding between 7-9 years, while 22.2% had years of experience in the Okada business for above 10 years.

Table 2shows that most riders have little experience (1 to 3 years), or are new to the motorcycle riding business, which is not enough for road riding experience. This may be as a result of economic hardship and the increase in the rate of unemployment that led to the recent influx into the business. Based on questions on how respondents got their motorcycles, 37.0% purchased their motorcycle through a loan, 33.3% of them are on hire purchase; 21.1% actually purchased theirs themselves, while below 10.0% work on shift and got their motorcycles from the government.

Table 2: Respondents' perception of their welfare

Socio-economic variables	No. of Respondents	Percent
Duration of riding a motorcycle (years)		
1-3	33	36.7
4-6	15	16.7
7-9	22	24.4
10 and Above	20	22.2
Total	90	100.0
How do you purchase your motorcycle?		
Government owned	2	2.2
Loan	33	36.7
Hire purchase	30	33.3
Shift	6	6.7
Self-owned	19	21.1
Total	90	100.0
Okada business is lucrative		
Agree	71	78.9
Disagree	19	21.1
Total	90	100.0
Money earned per day(naira)		
Below 2000	29	32.2
2000-2500	42	46.7
2500-3500	11	12.2
3500 and Above	8	8.9
Total	90	100.0
Income is sufficient to sustain the family		
Yes	63	70.0
Alternative means of livelihood		
Yes	63	70.0
Possession of a driver's license		
Yes	64	71.1

Source: Field Survey

About 79.0% perceived Okada business as very lucrative; 70.0% of the respondents identified that they make enough money to sustain their families. Based on their daily income rate earned by respondents per working day before the deduction of any personal expenses, about 47.0% earn between ₦2000-2500, 32.2% earn below ₦2000 as income, while just a few (8.9%) earn above ₦4000 per day as income. While 70.0% of them perceived the business was flexible and afforded them another alternative means of livelihood. The implication of this finding is that Okada riding is an organized business venture and that the majority of the respondents were in the business for socio-economic survival. The study also showed that about 71.0% of the respondents obtained a driver's license, while 28.9% operate without a driver's license (Table 2). The respondents were interviewed on the role that awareness and possession of a license play in accident or casualty risk. The low levels of awareness about driving license may be since most of motorcyclists' poses low level education. This might be one of the critical factors why commercial motorcycle accidents are on the increase, because those who ride motorcycles for commercial purposes are not permitted by the government to do so.

Respondents' social attitude and substance use

The majority of the respondents (76.0%) do not use helmets; about 75.0% of the respondents perceived to have been educated on road safety, highway codes, and signs, while 24.4% reported that they lack knowledge about road safety (Table 3).

Table 3: Respondents' social attitude and substance use

Socio-economic variables	No. of Respondents	Percent
Do you wear helmets?		
Yes	22	24.4
No	68	75.6
Total	90	100.0

Socio-economic variables	No. of Respondents	Percent
Educated on road safety		
Yes	68	75.6
No	22	24.4
Total	90	100.0
Form of accident		
Yes	52	57.8
No	38	42.2
Total	90	100.0
Customer complains about my attitude		
Yes	26	28.9
No	64	71.1
Total	90	100.0
Do you drink alcohol?		
Always	44	48.9
Sometimes	16	17.8
Occasionally	20	22.2
Not at all	10	11.1
Reason for taking alcohol		
It makes me active	19	21.1
It gives me strength	23	25.6
It relaxes my mind	48	53.3
Do you smoke		
Always	19	21.1
Sometimes	32	35.6
Occasionally	25	27.7
Not at all	14	15.6
Any drinking spot		
Yes	75	83.3
No	15	16.7
Total	90	100.0

Source: Field Survey

Half of the respondents (57.8%) perceived to have been involved in one form of accident or the other, while 42.2% agreed otherwise. The implication of this is that, though they are aware of safety precautions, a sizeable number of them do not adhere to them. Among those who were ever involved in accidents, they reported that the accidents could be attributed to overspeeding and a few to collisions with another motorcycle. Furthermore, 72.0% of Okada riders identified/reported that their customers do not complain about their attitude, while some identified that their motorcycle rider association emphasized that they should have respect and good human relations with their passengers and other road users as qualities entrenched in their code of conduct. The study also identified that 49.0% of the respondents take alcohol always; followed by 21.2% who take it on occasion and 17.8% who take it sometimes, while 11.1% do not take it at all. The reason for taking alcohol among the majority of the respondents (53.3%) was indicated as relaxation of the mind. Others (25.6%) perceived that it gives them strength, and others said it makes them active so they can reason properly, forget their worries, and get rid of colds whenever they take alcohol (Table 3). 35.6% of respondents affirmed smoking sometimes, followed by 27.7% who smoke occasionally and 21.1% always. The majority (75.0%) of the riders know a drinking spot around their garage, which triggers their drinking ability.

Riders' perception of traffic safety and self-reported occupational health problems

Based on the responses on speed limits, the majority (71.1%) of the respondents identified that they do not have adequate information about the speed limit, while 28.9% were able to gather enough information (Table 4). However, 54.4% of the respondents always keep the necessary distance between them and the vehicle/motorcycle ahead; 36.7% keep it sometimes, while 8.9% do not keep the necessary distance. Furthermore, 66.7% of the respondents always experience pain after the day's work, and 33.3% experience pain sometimes. About 58.0% of the respondents self-reported that almost all parts of the body such as the back, leg, head, eyes pain, chest pain, cough among others was affected, and they had pain from riding a motorcycle.

Table 4: Riders' perception on traffic safety and self-reported occupational and health care

Socio-economic variables	No. of Respondents	Percent
Adequate information on speed limit		
Yes	26	28.9
No	64	71.1
Total	90	100.0
I keep a necessary distance between myself and the vehicle ahead of me		
Always	49	54.4
Sometimes	33	36.7
Never	8	8.9
Total	90	100.0
Do you have pain after work?		
Always	60	66.7
Sometimes	30	33.3
Never	-	-
Total	90	100.0
Self-reported part of body affected/experience pain		
Back, leg, waist, hand, and shoulder	8	8.9
Chest pain and cough	11	12.2
Eyes pain and body pain	19	21.1
All of the above	52	57.8
Total	90	100.0

Source: Field Survey

Self-reported major problems of okada/motorcycle as a means of transport

About 83.3% of the respondents self-reported overspeeding as the major cause of commercial motorcycle accidents, while 16.7% were not sure. About 96.0% perceived that impatient vehicle drivers are the major cause that triggers the rate of motorcycle crashes, followed by 91.1% of them who identified that the poor condition of public roads is the major problem of Okada crashes. 75.6% are not sure if the reconfiguration of motorcycles is the major problem in motorcycle crashes. 83.3% of respondents support the influence of substances on riders as the major factor responsible for the high rate of accidents among commercial motorcycle riders, while 16.7% were not in support. About 80.0% of the respondents perceived a lack of safety gadgets as the major cause of motorcycle crashes.

Table 5: Self-reported major problems of motorcycles as a means of transport

Socio-economic variables	Agree	Not sure	Disagree	Inference
Over speeding	75(83.3)	15(16.7)	0	Agree
Poor condition of public road	82(91.1)	8(8.9)	0	Agree
Reconfiguration of motorcycle	19(21.1)	68(75.6)	3(3.3)	Not sure
Impatient vehicle drivers	86(95.6)	4(4.4)	0	Agree
Influence of substances on riders	75(83.3)	15(16.7)	0	Agree
Overload (luggage and persons)	53(58.9)	26(28.9)	11(12.2)	Agree
Lack of safety gadgets	72(80.0)	18(20.0)	0	Agree

Source: Field Survey

Respondents perceived that safety gadgets are just protective devices that cannot prevent an accident from occurring, but they can only reduce the high rate of injuries from motorcycle accidents (Table 5).

Self-reported possible solutions to solve traffic problems in the city

The possible solutions to solve the traffic problem in the city identified by the respondents are indicated in Table 6. Most of the respondents (95.6 %) perceived that environmental education and awareness programmes and maintenance of roads can solve the traffic problem in the city, followed by re-routing of heavy-duty vehicles (91.1%) and fines to law offender (78.9%) and proper parking (74.4 %) can solve the major traffic problem. Other possible factors included traffic management planning and good road network improvement, which were less than 40.0% each.

Health care facilities used among the motorcycle riders
Table 7 shows the health care measures among the respondents. About 79% of the respondents never make use of government hospitals, while a few (16.7%) utilize them always and 4.4% occasionally for any related ailments due to riding motorcycles. Some respondents (51.1%) used local herbs/concoctions, and 48.0% did not. Furthermore, the majority (74.5%) do not make use of spiritual/faith clinics or private clinics (67.8%), while about 37.0% consulted pharmacy/medicine stores for treatment.

Table 6: Possible solutions to solve traffic problem in the city

Socio-economic variables	No. of Respondents	Percent
Proper parking	67	74.4
Traffic management planning	31	34.4
Maintenance of road	86	95.6
Good road network improvement	34	37.8
Re-routing of heavy-duty vehicles	82	91.1
Environmental education and awareness programme	86	95.6
Fines to law offenders	71	78.9

Source: Field Survey

Table 7: Health care facility used when need arises

Socio-economic variables	No of Respondents	Percent
Government hospitals		
Always	15	16.7
Occasionally	4	4.4
Never	71	78.9
Private clinic		
Always	11	12.2
Occasionally	18	20.0
Never	61	67.8
Pharmacy/medicine store		
Always	33	36.7
Occasionally	27	30
Never	30	33.3
Local herbs/concoction		
Always	46	51.1
Occasionally	-	-
Never	44	48.8
Spiritual/faith clinic		
Always	4	4.4
Occasionally	19	21.1
Never	67	74.5

Source: Field Survey

Traffic and safety assessment among motorcycle riders
Table 8 presents the findings of the traffic and safety assessment conducted at the sampled sites. A total of 804 motorcycles were observed during the survey. The highest number of motorcycles was recorded at Adatan (145; 18.0%), followed by Sapon/Isaleigbein (110; 13.7%) and Obantoko/Somorin (105; 13.1%). Conversely, Asero recorded the lowest number of motorcycles (51; 6.3%). The relatively high motorcycle volume at Adatan may be associated with its commercial activities, including market operations and shopping facilities, whereas the lower volume at Asero may reflect its predominantly residential character. Helmet usage was generally low across the study locations. Of the 804 motorcycles observed, only 123 riders (15.3%) were recorded wearing protective helmets. NNPC recorded the highest number of helmet users (26), representing 38.8% of the motorcycles observed at that location, followed by Sapon/Isaleigbein (21; 19.1%) and Adatan (16; 11.0%). The lowest helmet usage was recorded at Isabo/Kuto (3; 3.5%), followed by Camp/Kotopo (4; 4.3%). During interactions with motorcycle riders, some respondents identified financial constraints as a reason for not using protective helmets. The low level of helmet compliance is a road-safety concern because helmets provide important protection against head injuries during motorcycle crashes.

Regarding riders carrying passengers on board, 277 motorcycles (34.5%) were observed carrying more than one passenger. Ita-Oshin/Aro recorded the highest number (49), followed by Obantoko/Somorin (45) and Adatan (35). The lowest numbers were recorded at Lanfenwa and Isabo/Kuto, with 19 motorcycles each. Carrying multiple passengers is a relatively common practice among motorcycle riders in the study area. Such practices may be attributed to the increased risk of instability and injury in the event of a road traffic accident. Furthermore, 146 motorcycle riders (18.2%) were observed speeding during the survey. Adatan recorded the highest number of speeding riders (40), followed by Obantoko/Somorin (30) and Camp/Kotopo (18). Ita-Oshin/Aro recorded the lowest number (2). The relatively high speeding at Adatan and Obantoko/Somorin indicates the perceived need for improved traffic monitoring and enforcement of speed regulations, particularly in locations with substantial motorcycle traffic and commercial activities. The assessment identified 54 motorcycles (6.7%) with incorrect riding positions. Obantoko/Somorin recorded the highest (15), followed by Adatan (14), while no occurrence was recorded at NNPC. Similarly, 50 riders (6.2%) were observed exhibiting the behaviour classified as twisted hands, with Adatan recording the highest frequency (15). No occurrence was recorded at Lanfenwa, Ita-Oshin/Aro and Asero. Based on passenger characteristics, 176 motorcycles (21.9%) were observed conveying female passengers. NNPC recorded the highest number (40), followed by Adatan (33) and Camp/Kotopo (27), while Lanfenwa recorded the lowest (5). In addition, 90 motorcycles (11.2%) were observed conveying elderly passengers, with Obantoko/Somorin recording the highest number (18), followed by Asero (14) and Adatan (10). Ita-Oshin/Aro recorded the lowest number (4). 53 motorcycles (6.6%) were observed conveying babies. Adatan recorded the highest number (18), Asero (13), while Lanfenwa had the lowest number (3). No babies were observed on board at NNPC, Ita-Oshin/Aro, and Isabo/Kuto. Transporting infants on motorcycles raises particular safety concerns because babies are especially vulnerable to injuries during road traffic crashes and may not have adequate physical support or protection. The relatively high occurrence at Adatan and Asero may be attributed to or reflect the transportation needs of passengers travelling with children, although the reasons were not directly established by the observational survey.

Table 8: Traffic and safety assessment among the motorcycle riders

S/N	Location	Road type	NOM	Helmets	>1passenger	Overspeed	WSP	Twisted hands	FOB	EOB	BOB
1	Lafenwa	Federal	64	12	19	10	2	0	5	6	3
2	NNPC	Federal	67	26	23	15	0	5	40	5	0
3	Itaoshin	Federal	83	18	49	2	1	0	18	4	0
4	Asero	Local	51	14	27	13	5	0	17	14	13
5	Camp	Local	94	4	31	18	10	8	27	15	4
6	Obantoko/Somorin	Local	105	9	45	30	15	9	15	18	9
7	Kuto	State	85	3	19	5	1	3	10	9	0
8	Adatan	State	145	16	35	40	14	15	33	10	18
9	Sapon/Isale-Igbein	State	110	21	29	13	6	10	11	9	6
	Total		804	123 (15.3%)	277 (34.5%)	146 (18.2)	54 (6.7%)	50 (6.2%)	176 (21.9%)	90 (11.2%)	53 (6.6%)

Source: Field Survey

KEY

NOM- Number of motorcycles

WSP-Wrong sitting position

FOB- Female on board

EOB- Elders on board

BOB- Babies on board

Discussion

Socio-economic characteristic of respondents

The predominance of young male respondents (56.7%) suggests that commercial motorcycle operation is largely undertaken by economically active men, potentially reflecting the physical demands and employment opportunities associated with the occupation. The study found that most motorcycle riders were primarily young adults (18–40 years), constituting more than 80.0% of the study respondents. This finding aligns with previous reports that motorcycle riders are primarily at their prime (Znajmiecka-Sikora and Sałagacka, 2019; Hawa, 2019). The high number of youths in commercial motorcycling jobs might be due to the high unemployment rate in Nigeria, as previously reported in the literature (Afelumo et al., 2021). The high proportion of married respondents (63.3%) and those with dependants indicates household responsibilities, which may influence their participation in commercial motorcycle transportation. These findings highlight the socio-economic importance of motorcycle transportation as a livelihood strategy in Nigeria. The findings are consistent with Olasinde and Oluwadiya (2022), who reported that commercial motorcyclists in Owo, Nigeria, were predominantly young, male, married, and had secondary education. The involvement of young men in the riding business emphasizes the need to improve their knowledge and attitudes towards road safety measures; this will significantly help reduce the deaths of young people who are primarily the breadwinners of their families.

Respondents' perception of their welfare

Commercial motorcycle operation serves as an important livelihood strategy, although dependence on loans and hire-purchase arrangements may expose operators to financial obligations. Despite 78.9% considering the business lucrative, this suggests that perceived profitability does not necessarily translate into economic security. Furthermore, the proportion without driving licences (28.9%) highlights a road-safety and regulatory compliance concern. These findings underscore the need for improved operator training, accessible financing, and stronger enforcement of motorcycle licensing requirements. This agrees with Olasinde and Oluwadiya (2022), who identified low daily earnings among commercial motorcyclists in Owo, Nigeria. Similarly, Adejumo et al. (2023) reported inadequate compliance with road-use regulations among motorcycle operators in Ibadan, reinforcing the importance of licensing and safety enforcement.

Social attitudes and substance use

The findings reveal important road-safety concerns among commercial motorcycle operators, particularly low helmet use (75.6%) and self-reported alcohol consumption and smoking. The accident experience reported by 57.8% of respondents further highlights potential occupational safety challenges. Although 75.6% reported receiving road safety education, the low helmet-use rate suggests that awareness alone may not translate into safe practices.

This pattern is consistent with Awosusi et al. (2021), who found that alcohol consumption was significantly associated with reduced compliance with road-safety regulations among commercial motorcyclists in southwestern Nigeria. Similarly, Olasinde and Oluwadiya (2022) identified alcohol consumption and other risky riding behaviours as factors associated with motorcycle crashes in Owo. The WHO (2025) also emphasizes that helmet usage curbs motorcycle-related deaths and brain injuries. Poor knowledge of road safety measures has been reported to be significantly associated with a high rate of accidents (Lawal et al., 2018).

Riders' perception of traffic safety and self-reported occupational health problems

The findings reveal gaps in traffic-safety knowledge, particularly regarding speed limits, as 71.1% of respondents lacked adequate information. Although 54.4% consistently maintained a safe following distance, inconsistent compliance remains a concern. Furthermore, the universal reporting of post-work pain suggests considerable occupational health challenges. Similar findings were reported by Musa-Olokuta et al. (2022) among commercial motorcyclists in Abeokuta, where 76.1% experienced daily pain and 81.6% reported musculoskeletal symptoms. These findings support improved road safety education and access to occupational healthcare.

Perceived major problems associated with commercial motorcycle transportation

The findings identify speeding, impatient motorists, and poor road conditions as major perceived contributors to motorcycle crashes. The high agreement regarding substance influence (83.3%) and overloading (58.9%) further highlights behavioural and operational safety concerns. These perceptions suggest that motorcycle crash prevention requires a comprehensive approach involving speed regulation, improved road infrastructure, enforcement of traffic laws, and interventions against riding under the influence of alcohol or other psychoactive substances.

The results are consistent with Konlan and Hayford (2022), whose African scoping review identified speeding, poor road conditions, alcohol and drug use, and risky riding practices as factors associated with motorcycle crashes. Similarly, Olasinde and Oluwadiya (2022) identified alcohol consumption, traffic violations, and overloading as significant crash-related factors among commercial motorcyclists in Owo, Nigeria.

Proposed traffic solutions and healthcare utilisation

The support for road maintenance, environmental education, and heavy-duty vehicle rerouting highlights the need for integrated urban traffic management. Cheng et al. (2024) similarly emphasised the importance of combining infrastructure and behavioural interventions to address congestion. Regarding healthcare, the low utilisation of government hospitals and reliance on herbal remedies and medicine vendors suggest possible barriers to formal healthcare access. The study is similar to the reports of Oluwadiya et al. (2016). Adepoju and Oladimeji (2023) also documented substantial utilisation of patent medicine vendors in Nigeria. There are a variety of ways that motorcycle accidents impact families. The loss of a breadwinner, the costs of extended medical treatment, or the additional strain of caring for a family member injured by a road traffic accident drives many families deeper into poverty (Osinowo and Amaefula, 2017; Nathaniel et al., 2019).

Observed motorcycle traffic and road-safety practices

The observational findings from the checklist reveal differences in motorcycle traffic volume and safety practices across the sampled locations. The low overall helmet-use rate (15.3%) is particularly concerning, indicating poor compliance with an important protective measure. Similarly, speeding (18.2%), multiple-passenger carriage (34.5%), and transportation of babies (6.6%) highlight potentially hazardous riding practices. Injuries and body pains to the extremities, being the commonest form of injury recorded during motorcycle crashes in this study, were similar to findings reported in some other studies. These observations suggest that motorcycle-related road-safety risks extend beyond individual rider behaviour to include passenger protection, traffic regulation and enforcement. These results are consistent with Kiwango et al. (2024), whose systematic review identified speeding, non-use of helmets and risky riding behaviours as important factors associated with motorcycle crashes and injuries. Similarly, Adejumo et al. (2023) reported inadequate compliance with road-safety regulations among commercial motorcyclists in Ibadan, Nigeria. Results from the African region further demonstrate that properly worn motorcycle helmets can reduce the risk of death by approximately 42.0% and severe head injuries by 70.0% (SSATP et al., 2025).

CONCLUSION

The study reveals that, in addition to speeding and low helmet use, the influence of alcohol, rider fatigue, lack of training, non-observance of traffic laws, wrong overtaking, damaged road infrastructure, and reckless driving accounts for a higher percentage of factors that cause motorcyclist accidents in Abeokuta. The study also shows that the commercial motorcycle riders do not comply with the road traffic regulations. They violate the regulations for the purpose of generating more income at a time. Multiple passengers, substance consumption, non-use of safety equipment like helmets, protective clothing when driving, and riding motorcycles without a license. The government should strengthen traffic law enforcement, promote compulsory helmet use, provide regular road-safety education, improve road infrastructure, and discourage overloading and substance-impaired riding. Accessible rider training, affordable protective equipment, and improved occupational healthcare services should also be prioritized. Strict penalties against anyone caught riding a motorcycle under the influence of alcohol.

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