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Prevalence and Determinants of Occupational Injuries and Illnesses Among Commercial Motorcycle Riders in Ilorin Metropolis

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ABSTRACT

Background: Commercial motorcycle riding (Okada) is a major source of livelihood and urban mobility in Nigeria, yet it exposes riders to significant occupational health risks.

Objective: This study assessed the prevalence and determinants of occupational injuries and illnesses among commercial motorcycle riders in Ilorin metropolis, Kwara State.

Methodology: A descriptive cross-sectional study was conducted among 364 riders selected through multistage sampling across Ilorin East, West, and South Local Government Areas. Data were collected using structured questionnaires Descriptive statistics, one-sample proportion tests, chi-square tests, and binary logistic regression analysis were performed using SPSS version 25, with statistical significance set at $p< 0.05$.

Result: The overall prevalence of occupational injuries and illnesses was 71%. Frequently reported conditions included and physical injuries (60.2%) and musculoskeletal pain (34.0%). Older age and years of riding experience, were significantly associated with injury or illness occurrence ($p < 0.05$). Poor road conditions, lack of protective gear, and long working hours were major contributing factors.

Conclusion: The study concludes that commercial motorcycle riders in Ilorin are at risk due to inadequate safety practices and poor infrastructural conditions. Strengthening safety regulations enforcement, and improved road infrastructure, to enhance occupational health and safety outcomes.

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Introduction

In Africa, informal workers such as commercial motorcyclists are disproportionately affected due to prolonged exposure to traffic hazards, poor infrastructure, and inadequate use of protective equipment (Adebisi, Alaran & Lucero-Prisno, 2020). The economic implications of occupational injuries are severe, often leading to a reduction in productivity, increased health care costs, and long-term economic burden on families, employers, and national economies [International Labour Organization (ILO), 2019].

Occupational injuries continue to contribute substantially to death and disability globally, with low-

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and middle-income countries bearing a disproportionately higher burden and thus facing significant challenges for health systems and public health planning [GBD 2019 Occupational Injuries Collaborators. (2021)]. Despite the significant number of studies on road traffic accidents in Nigeria, there is a noticeable research gap regarding occupational health challenges faced by Okada riders, specifically within Ilorin. Most existing studies are either focused on broader traffic safety or are concentrated in cities like Lagos, Ibadan, and Abuja. The occupational environment of these riders is fraught with challenges such as poor road conditions, exposure to harsh weather, and the risk of road traffic accidents.

The study by Dada *et al.* (2020) in Lagos highlighted that the hazards faced by commercial motorcyclists are often due to human errors and road conditions rather than seasonal variations.

Specific Objectives

To determine the prevalence of occupational injuries and illnesses among commercial motorcycle riders in Ilorin.

To identify socio-demographic and occupational factors associated with these health issues.

To determine the safety practices adopted by riders to mitigate occupational hazards.

To examine the role of environmental and infrastructural factors in contributing to occupational health challenges.

Methodology

Study Design

This study adopts a descriptive survey design, which is appropriate for studies involving a large number of respondents and aimed at collecting quantitative data that describes the incidence, distribution, and determinants of a particular phenomenon.

Study Area and Population

The study was carried out in Ilorin metropolis, the capital of Kwara State, Nigeria. Three local government areas—Ilorin East, Ilorin West, and Ilorin South—make up the city of Ilorin. All registered commercial motorcycle riders (Okada riders) who operate inside the chosen local government areas of Ilorin metropolis make up the study's population.

Sample Size and Sampling Techniques

A sample size of 364 was used for this study, which was determined using the Taro Yamane formula with margin error of 0.05.

A multi-stage sampling technique was employed for this study. In the first stage, Ilorin East, Ilorin West, and Ilorin South Local Government Areas were selected. In the second stage, branches were selected in each Local Government Area using simple random technique (by balloting). The sampling frame consisted of all registered commercial motorcycle riders available at the selected branches at the time of data collection. Eligible riders who consented to participate were recruited until the required sample size was achieved, with proportional allocation across the Local Government Areas.

Method of Data Collection

Data for this study were collected primarily through questionnaires. The instrument was self-administered for literate respondents and was administered by an interviewer administered for riders with limited literacy levels. Field assistants fluent in English, Yoruba, and Hausa were engaged to aid communication and administration. This method ensured comprehensive data collection and reduced non-response.

Validity and Reliability

The questionnaire was subjected to a pre-test to ensure validity and reliability. 10% of the sample which equals to 36 respondents of Okada riders was selected from Eyenkorin, Asa Local Government, Kwara State to test the questionnaire. Reliability was tested using Cronbach's Alpha, which yielded a coefficient of 0.74, indicating a high level of internal consistency of the questionnaire items.

Data Analysis

The data collected from the surveys was analyzed using quantitative techniques. The analysis was conducted using statistical software SPSS (Statistical Package for the Social Sciences). The following techniques was employed: Descriptive Statistics (demographic characteristics), Sample Proportions Test on Prevalence Estimate, Chi-Square Tests and Binary Logistic Regression. Statistical significance was set at 0.05

Ethical Considerations

This study adhered to ethical standards in the collection and handling of data. Ethical approval was obtained from the ethics committee at the Kwara State Ministry of Health with approval reference: ERC/MOH/2025/11/533 before data collection began.

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Data Analysis and Results

Prevalence of occupational injuries and illnesses

Table 1: 1-Sample Proportions Test on Prevalence Estimate

Data	Injuries/Illness (Prop.)	No Injuries/Illness (Prop.)	X-squared	df	p-value	Decision
Prevalence	259 (0.71)	105 (0.29)	0.36818	363	0.002	Enough data evidence to reject H_0

DF: Degree of freedom; Prop.: Proportion

Table 1 presents the one-sample proportions test that showed that the observed prevalence of occupational injuries and illnesses among commercial motorcycle riders in Ilorin metropolis (71.0%) was significantly different from the hypothesized proportion.

Table 2: Types of Injury/Illness Experienced

Local Government Area	Physical Injury	Musculoskeletal Pain	Respiratory Issues	Eye/Hearing Problems	Total
Ilorin West	46 (50.5%)	38 (41.8%)	2 (2.2%)	5 (5.5%)	91 (100.0%)
Ilorin East	49 (59.0%)	33 (39.8%)	0 (0.0%)	1 (1.2%)	83 (100.0%)
Ilorin South	61 (71.8%)	17 (20.0%)	3 (3.5%)	4 (4.7%)	85 (100.0%)
Total	156(60.2%)	88 (34.0%)	5 (1.9%)	10 (3.9%)	259 (100.0%)

Table 2 presented above shows that physical injuries (60.2%) were the most common occupational problem reported by the riders, followed by musculoskeletal pain (34.0%), with Ilorin South recording the highest injury rate.

To identify socio-demographic and occupational factors associated with these health issues.

Table 3: Binary Logistic Regression of Socio-Demographic and Occupational Factors Associated with Occupational Injuries/Illnesses

Variable	B	S.E.	Wald	df	Sig. (p)	Exp(B)	95% CI for Exp(B)
Age (ref: 18–23 years)							
24–30 years	0.35	0.42	0.69	1	0.407	1.42	0.64 – 3.17
31–40 years	0.85	0.39	4.75	1	0.029*	2.34	1.09 – 5.03
>40 years	1.12	0.44	6.42	1	0.011*	3.06	1.29 – 7.29
Years of experience (ref: <3 months)							
3–11 months	0.51	0.55	0.86	1	0.354	1.67	0.57 – 4.86
1–3 years	0.99	0.49	4.12	1	0.042*	2.69	1.04 – 6.94
>3 years	1.34	0.50	7.17	1	0.007*	3.82	1.44 – 10.17
Daily riding hours (ref: <4 hrs)							
4–6 hours	0.47	0.42	1.25	1	0.264	1.60	0.70 – 3.67
7–9 hours	0.98	0.44	5.02	1	0.025*	2.67	1.13 – 6.29
>9 hours	1.39	0.45	9.56	1	0.002*	4.02	1.68 – 9.61

AOR: Adjusted Odd Ratio

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Table 3 shows that socio-demographic and occupational factors such as age, years of experience, and daily riding hours increase the risk of occupational injuries and illnesses. Determine the safety practices adopted by riders to mitigate occupational hazards.

Table 4: Cross-tabulation of LGA by Safety Practices (Helmet Use)

Helmet Use	Ilorin West (n=136)	Ilorin South (n=105)	Ilorin East (n=123)	Total
Always	40 (29.4%)	28 (26.7%)	25 (20.3%)	93 (25.5%)
Most times	32 (23.5%)	30 (28.6%)	34 (27.6%)	96 (26.4%)
Sometimes	42 (30.9%)	26 (24.8%)	47 (38.2%)	115 (31.6%)
Never	22 (16.2%)	21 (20.0%)	17 (13.8%)	60 (16.5%)
Total	136 (100%)	105 (100%)	123 (100%)	364 (100%)

Table 4 reveal that helmet use among commercial motorcycle riders in Ilorin Metropolis is generally low, with only 25.5% of riders reporting "always" wearing helmets. The highest proportion of consistent helmet use was observed in Ilorin West (29.4%), followed by Ilorin South (26.7%), while the lowest was in Ilorin East (20.3%). To examine the role of environmental and infrastructural factors in contributing to occupational health challenges.

Table 5: Cross-tabulation of LGA by Environmental and Infrastructure Factors (Road Condition Rating)

Road Condition	Ilorin West (n=136)	Ilorin South (n=105)	Ilorin East (n=123)	Total
Very good	22 (16.2%)	15 (14.3%)	18 (14.6%)	55 (15.1%)
Good	30 (22.1%)	27 (25.7%)	31 (25.2%)	88 (24.2%)
Poor	54 (39.7%)	38 (36.2%)	47 (38.2%)	139(38.2%)
Very poor	30 (22.1%)	25 (23.8%)	27 (22.0%)	82 (22.5%)
Total	136 (100%)	105 (100%)	123 (100%)	364 (100%)

Table 5 reveals that road conditions were generally rated poorly by riders across all LGAs.

Table 6: Cross-tabulation of LGA by Environmental and Infrastructure Factors (Weather Conditions Affecting Safety)

Weather Effect	Ilorin West	Ilorin South	Ilorin East	Total
Strongly affect	40 (29.4%)	28 (26.7%)	36 (29.3%)	104 (28.6%)
Somewhat affect	43 (31.6%)	33 (31.4%)	39 (31.7%)	115 (31.6%)
Slightly affect	32 (23.5%)	25 (23.8%)	28 (22.8%)	85 (23.4%)
Do not affect	21 (15.4%)	19 (18.1%)	20 (16.3%)	60 (16.5%)
Total	136 (100%)	105 (100%)	123 (100%)	364 (100%)

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Table 6 indicates that weather conditions were also found to significantly impact safety, with the majority of riders reporting that weather strongly (28.6%) or somewhat (31.6%) affected their safety.

Discussion

This study established that 71% of commercial motorcycle riders in Ilorin Metropolis reported occupational injuries or illnesses, which shows that riding a commercial motorcycle in Ilorin is a high-risk occupation with frequent health and safety consequences. Likewise, in Zaria, Yunusa *et al.* (2014) found that 55.6% of commercial motorcyclists had been involved in occupational hazards, mostly traffic accidents. This highlights the need for targeted occupational health interventions within the informal transport sector.

The regression analysis in this study revealed that age, riding experience, daily working hours, all significantly predicted injury or illness. Jaiyesinmi *et al.* (2022) in Ibadan also reported that age, and hours worked daily were strongly associated with musculoskeletal disorders among riders. Regulation of excessive riding hours by the government through the union, may help reduce risk of occupational injury and illness.

In Ilorin, the adoption of safety practices was poor. Only 25.5% consistently wore helmets. These findings echo those of Afelumo *et al.* (2021) in Ogun State, who found that while helmet use was relatively higher among owners (76.4%), compliance with reflective clothing and other safety measures was low, and accident prevalence still remained high at 45.2%. Strengthening enforcement of helmet use, and other safety practices such as implementing routine safety training programs through rider's union may significantly reduce injury risk.

More than 60% of riders in Ilorin rated road conditions as poor or very poor, and many identified inadequate signage, potholes, and adverse weather as contributors to accidents. These perceptions reinforce the role of the environment in shaping occupational risk. Dada *et al.* (2020) stressed that road hazards in Lagos were not primarily seasonal but stemmed from structural deficits in road infrastructure and human error. Similarly, Jonah and Amadi (2023) recommended improved road construction and maintenance in Port Harcourt as a key intervention to reduce accident prevalence.

Study Limitations

This study relied on self-reported data, which may be subject to recall bias.

Conclusion

The findings revealed that injuries and illnesses are common, with seven in ten riders reporting such experiences. The risk was higher among older riders, those with limited education, riders who worked long hours without breaks, and those who carried multiple passengers. Poor compliance with safety regulations was evident, with less than one-third of riders consistently using helmets, reflective gear, or following traffic rules. These unsafe practices were strongly linked to the occurrence of accidents and ill-health.

Recommendations

In line with the study findings, road safety agencies should strengthen enforcement of helmet use, and provide regular safety education for riders through the rider's union. Government should improve road infrastructure within Ilorin metropolis.

Public Health Impact

This study is significant to public health authorities and health-care providers who are frequently faced with managing the outcomes of injuries and illnesses sustained by motorcycle riders. A better understanding of the associated risk factors can guide the design of targeted health promotion campaigns, injury prevention strategies, and occupational health services tailored to the unique needs of this group.

Conflict of Interest

The authors declare no conflict of interest regarding the publication of this manuscript.

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