

# An Evaluation of Occupational Hazards among Tricycle Drivers in Tarauni Local Government Area, Kano State, Nigeria

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## Abstract

*The increase in the rate of urbanization, population and industrial development has resulted in the proliferation of tricycles in our cities. This study evaluates the occupational hazards among tricycle drivers in Tarauni Local Government Area, Kano State. In order to achieve these, the research employed qualitative research and cross sectional survey, questionnaire interview was used in the collection of data from 211 respondents. Purposive and convenient non-probability sampling technique was used in selecting from the registered tricycle drivers. The data was analyzed using SPSS and Excel statistical packages. The data was presented using descriptive statistics, cross tabulation and charts. The findings of the study indicated that no relationship exist between educational status and driving school attendance where the proportion of driving school attendance was found to be low among different level of education. Also, majority 97.2% indicated that over speeding, over loading of luggage and passengers by both sides of the driver(which is frequent among the tricycle drivers) were the major causes of hazards. Additionally, respondents experiencing back pain 49(67.1%) that worked from 5-8 hours per day earned between 2000-4000 Naira of daily income. The findings also showed that 93.4% of the tricycle drivers in the study area were not experiencing any breathing difficulty. It also discovered that prolonged sitting and long-term exposure to whole-body vibration and driving over bumps on roads and rough road surfaces had resulted to musculoskeletal problem especially back pain among tricycle drivers. Finally, recommendations were made based on the findings of the study.*

**Keywords:** Tricycle, Occupational Hazard, Public Transport, Musculoskeletal disorder, Health & Safety.

## INTRODUCTION

Auto-rickshaw or tricycles are a common means of public transportation especially in developing nations. It is a motorized version of the traditional pulled rickshaw that is referred to with several names such as Three-wheeler, Trishaw, Auto-rick, Bajaj, Tricycle, Baby taxi, Keke NAPEP, KekeMarwa, Adaidaita amongst other names (Shubhankar and Animesh, 2018; Ipingbemi and Adebayo, 2016; Muhammad, 2013). They are vehicles with petrol/diesel engines and fuel capacity of 10.5 liters with passenger capacity of four people and adequate room for passenger luggage. The tricycles have a speed of up to 80Km/h and are suitable for intra-city commercial public transportation (Declan, 2012).

The drivers of tricycles are subjected to prolonged sitting in polluted environments that are noisy with harmful air pollutants. This is in addition to their harmful lifestyle such as erratic eating habits, bad posture while driving and stressful occupational conditions, which over

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extended period of time may lead to occupational disorder (Mahadik et al., 2017). Additionally, constant exposure to significant amount of contaminants and certain processes can damage the respiratory tract leading to illnesses such as asthma, bronchitis, headache, sore eyes and as well ear problems (Tüchsen and Hannerz, 2000). More so, the long working hours may result in lack of sleep, less time spent on socializing, less engagement in physical activities and sourcing of good food (Christian, 2012) which coupled with whole-body vibration and driving over bumps in the road and rough road surfaces can result in musculoskeletal disorder (Bhatt and Seema, 2012).

Musculoskeletal disorders which represent a major public health problem is one of the most important cause of disability and absenteeism in workers among other personal and socioeconomic impacts. Included among musculoskeletal disorders are neck, shoulder, elbow, hand, waist, knee, muscle crapping, lower back pain and poor circulation of blood in the leg and buttock (Umang, 2012). Therefore, occupational health and safety is the concern of human wellbeing in this day, especially given the significant development in the transportation sector that result in workplace health problem.

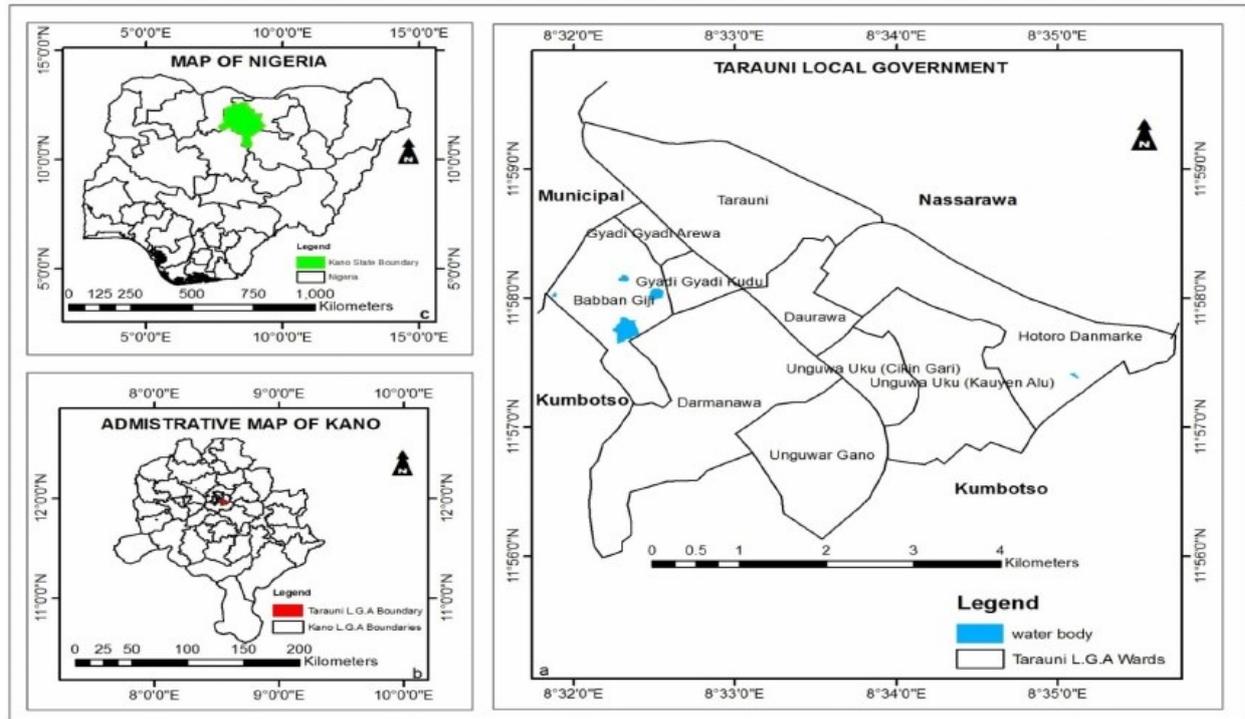
In recent times, the quality, health, knowledge and safety requirements in many countries have been more stringent than what was obtainable in the past (Jilchand and Kitaw, 2016). This could be due to the realization of the changes posed by this profession. Notwithstanding, the statistics of occupational injuries are poorly documented in both developed and developing nations; particularly in Sub-Saharan African countries having the greatest rate of occupational injuries (Shuvai, 2017).

Although a number of studies have been conducted on tricycles and or tricycle drivers (Agarwal et al., 2017; Debbarma and Mitra, 2017; Jibrilla and Fashola, 2017; Ipingbemi and Adebayo, 2016; Singh et al., 2015), not much has been covered in Kano State (Muhammad et al., 2016, Muhammad, 2013) especially in the study location, Tarauni Local Government Area. Therefore, the primary significance of the study aims at evaluating occupational hazards among tricycle drivers in this location. This will contribute towards an understanding of the profession, hence providing insights in developing sustainable urban mobility systems and programs.

## **Methodology**

### **The Study Area**

The study was conducted in Tarauni Local Gogernment Area of Kano State, Nigeria. It is one of the Eight (8) local government areas within the Kano metropolis situated between latitude 11°58'N to 11.967°, and longitude 8°34'E to 8.567°E. Tarauni covers a total land area of 28km<sup>2</sup>. It is bordered by Nasarawa in the North, Fagge in the North East, Kumbotso in the South, Kano Municipal in the South West and Gwale LGA in the West as shown in Figure 1.



Source: BUK Cartography lab

Figure 1: Map showing Tarauni local government area, Kano

The estimated population in the study area according to N.P.C (2006) is about 221,844 people. The population was estimated to have increased to over 308,600 as at 2016 (National Bureau of Statistic, 2016).

### Data Collection

The primary data for the study was collected through interview questionnaire. The questions asked were both closed and open ended to achieve optimum information. The research instrument was designed based on the objectives of the research. Their demographic characteristics were asked and the body parts affected by the nature of their occupation were characterized based on the various symptoms. Hence, the most common and prominent ones were highlighted and the respondents were asked to indicate on a likert scale. This included neck, back pain, wrist, eyesore, stomach, HIV, cardiovascular, respiratory system.

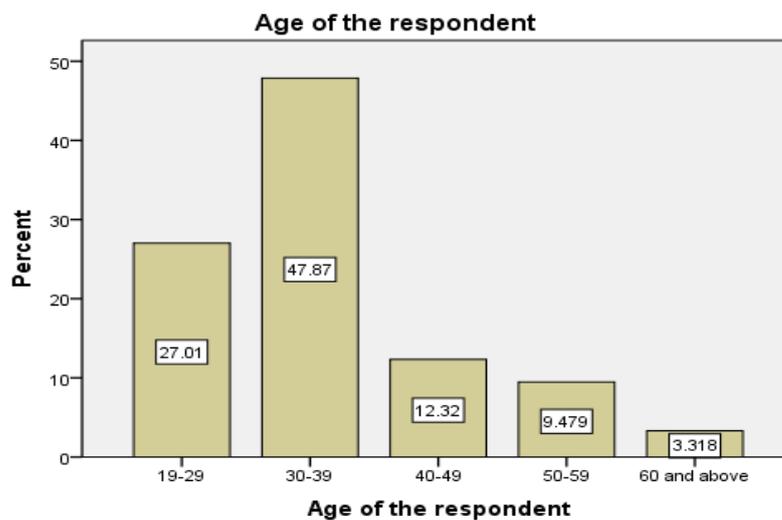
Within the study area, there are Two Thousand Eight Hundred and Ninety Four (2894) Tricycle drivers (registered with the Tricycle Drivers Association). The sample size was determined using the Sample Size Calculator for Prevalence Studies (SSCPS) version 1.0.01 (Naing et al., 2006), resulting a total of 211. The responses were analyzed using descriptive statistical methods and results presented in form of charts and tables.

## Results and Discussions

### Demographic Characteristics

The majority of the respondents (100%) were male which is typical of the occupation as its being dominated by male as evident in the study of Muhammad et al., (2016), that also revealed the entirety of tricycle drivers in their study were males (100%). Additionally, most of the respondents were within the age range of 30-39 years (47.8%) as indicated in Figure 2 below.

Figure 2: Age of the respondents.



Source: Field Work 2019

### Educational Status and Driving School Attendance

Table 1 reveals both the educational status and receipt of driving lessons amongst respondents. More so, the relationship between the two variables is also indicated by way of cross tabulation. The respondents having tertiary education 26(55.3%) attended driving school attendance, while those who have no any form of education 1(2.1%) had attended driving school. Also the participant with secondary education 60(36.6%) did not attend driving school, and another 13(7.9%) never attended any form of education nor attended a driving school. This shows that there is no relationship between educational status and driving school attendance because the proportion of driving school attendance varies among different levels of education. This finding corroborates with the findings of Muhammad et al., 2016.

Table 1: Cross tabulation of Educational status and driving school attendance

Educational status		Have you attended driving school		Total
	% within have you attended driving school	Yes	No	
Never attended		1(2.1%)	13(7.9%)	14(6.6%)
Primary		4(8.5%)	36(22.0%)	40(19.0%)
Secondary		14(29.8%)	60(36.6%)	74(35.1%)
Tertiary		26(55.3%)	15(9.1%)	41(19.4%)
Qur'anic school		2(4.3%)	40(24.4%)	42(19.9%)
Total		100%	100%	100%

Source: Field Work 2019

### Relationship between working hours, daily income and symptoms experienced.

Figure 2 shows the relationship between income earned, working hours/ days and symptoms experience. Respondents with back pain had 6(54.5%) and working from 1-4 hours per day with daily income of less than 2000, while 49(67.1%) of the respondents with back pain working from 5-8 hours per day with daily income between 2000-4000, Also 46(50.1%) of respondents with back pain working for more than 8 hours/ days with daily income between 2000-4000. More also, respondents with neck pain had 8(66.7%) working from 1-4 hour/day

with daily income earned of less than 2000, while 41(67.2%) of the respondents with neck pain working from 5-8 hour/day with daily income earned between 2000-4000, 39(47.6%) of the respondents with neck pain working from 8 hour and above with daily income earned between 2000-4000. In addition, respondents with shoulder pain had 7(58.3%) working from 1-4 hour/day with daily income earned of less than 2000, Out of 52(100%) drivers, 34(65.4%) of the respondents with shoulder pain working from 5-8 hours/day with daily income earned between 2000-4000, While respondents with shoulder pain had 40(52.6%) working for more than 8 hours with daily income earned between 2000-4000. Respondents with hand/wrist pain had 11(78.6%) working from 1-4 hours/day with daily income earned of less than 2000, while respondents with hand/wrist pain had 43(68.3%) working from 5-8 hours/day with daily income earned between 2000-4000. However, respondents with hand/wrist pain had 42(51.2%) working from 8 hour and above with daily income earned between 2000-4000. In the same vein, respondents with knee pain had 4(80%) working from 1-4 hours/day with daily income earned of less than 2000. Also respondents with knee pain had 26(72.2%) working from 5-8 hours/day with daily income earned between 2000-4000. The respondents with knee pain had 20(43.5%) working from 8 hour and above with daily income earned of less than 2000. Similarly, the respondents with elbow pain had 6(85.7%) working from 1-4 hours/day with daily income earned of less than 2000. Also respondents with elbow pain had 25(61%) working from 5-8 hours/day with daily income earned between 2000-4000. The respondents with elbow pain had 24(40.7%) working from 8 hour and above with daily income earned between 2000-4000. From the result above it shows the significant relationship between musculoskeletal pain with working hours per day and daily income earned, because the long working hours may increase the income earned and their by influence the rate of musculoskeletal disorder, where by the short working hours will yield to low income and may reduce the incidence of musculoskeletal disorder. This indicates that the drivers were exposed to high level of risk, which could result in musculoskeletal problem, poor performance, injury and or accidents. Respondents with back pain working from 5-8 hours per day earned 2000-4000 incomes daily recorded highest among the symptoms 49 (67.1%). This is in line with the work of Virendra et al., (2017) whose findings revealed that 80 (50.3%) low back pain among auto rickshaw drivers works for more than 10 hours. Also, the work of Borle et al (2012) conducted study among M.S.R.T.C. bus drivers reported about similar prevalence of Musculoskeletal Disorder MSD. The findings also relate to the work of Agarwal et al., (2017), which shows the 12 months prevalence of LBP is 63.66%. One of the reasons for auto-rickshaw drivers to exhibit a high prevalence could be that they tend to sit in awkward postures resulting in musculoskeletal disorders while driving. This study is in line with the work of Debbarma and Mitra (2017) whose findings shows that most of the auto rickshaw drivers suffer from musculoskeletal problem that includes lower back pain (96.42%), knee pain (88.09%), wrist pain (71.43%), shoulder pain (100%) and body ache (88.10%), Were the most common frequency among all age group of auto rickshaw service provider.

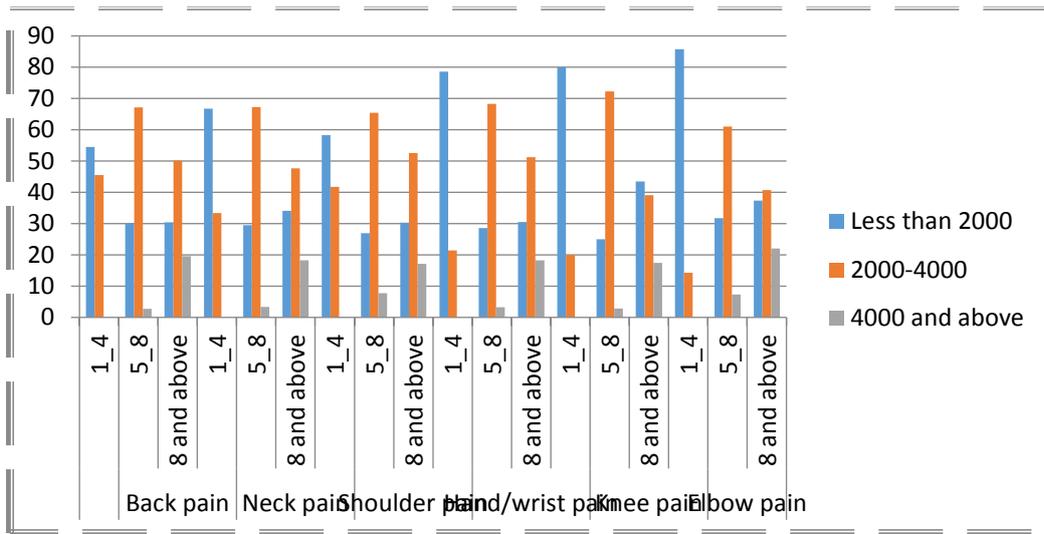


Figure 3: Cross tabulation of symptoms experience with working hours per day and daily income.

Source: Field Work 2019

### Causes of occupational hazards

Figure 4 shows the views of participants on the causes of occupational hazards among tricycle drivers. The highest response was 97.2% that agreed that over speeding can cause hazard, while the lowest response was 43.5% agreed that weather factor could also cause hazard. However, based on the findings, others view that over loading of luggage and passengers by both side of the driver (which is frequently among tricycle drivers), wrong overtaking, drunkenness, reckless driving and bad/old road, driver's attitude, neglecting traffic rules and regulation and inexperience among the drivers may result to accidents or occupational hazard when driving. This survey is analogous to the work of Yunusa et al., (2014), from his findings shows that (69.9%) of the respondents were of the view that over speeding, bad road condition, reckless driving, use of psychoactive substance and lack of patience are the major causes of accidents among motorcyclists. Also the study is in line with the study of Jibrilla and Fashola (2017), from his study revealed that over speeding (42%), bad road (30%) and recklessness (28%) were the opinion made by the drivers. More also Chador et al., (2017), from his findings revealed that reckless driving 781(42%), drunkenness 30(16.1%), over speeding 156(8.4%) and not giving the right way 240(13%).

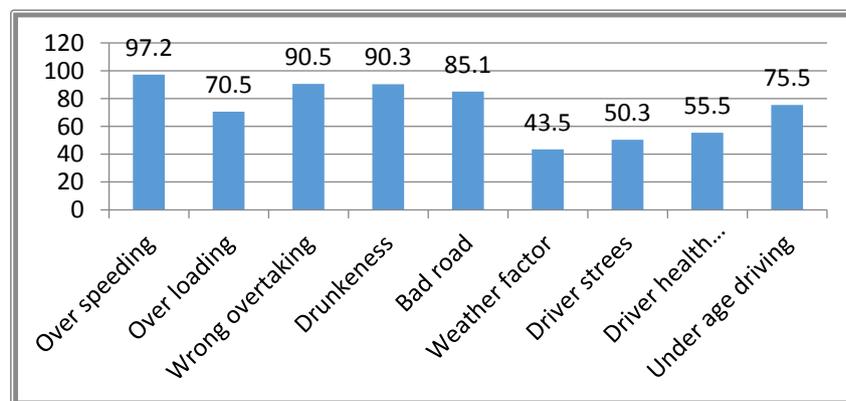


Figure 4: Causes of occupational hazard among tricycle drivers.

Source: Field Work 2019

Effects of tricycle driving on health

Table 2: Breathlessness

Are you troubled by breathlessness				
	Frequency	Percent	Valid Percent	Cumulative Percent
Affected	14	6.6	6.6	6.6
Non affected	197	93.4	93.4	100.0
Total	211	100.0	100.0	

Source: Field Work 2019

Table 2 shows that 14(6.6%) of the respondents were troubled by breathing. While 197(93.4%) of the respondent, were not having problem with breathing. The finding of the study shows that majority of the tricycle drivers in the study area were not affected by respiratory problems. This study contradicts with the findings of Debbarma and Mitra (2017), which found that (7.14 %) in 40-50 age group of auto drivers were suffering from breathlessness. Also, the findings contradict with the work of Shubhankar and Animesh (2018), which also shows that (28.7%) were suffering from breathlessness. Likewise, Singh et al., (2015), reported that prevalence of breathlessness (13.18%) among auto rickshaw drivers of Agra which corroborate with this findings, shows that large portion of drivers were not suffering from breathlessness.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the research, the tricycle driving business is dominated by males of productive age. Most of who have not received any form of driving lesson. Also, the prolonged working hours though increases income yet poses great risks of experiencing some form of musculoskeletal disorder such as Lower or Upper Back Pains.

Prominent cause’s of occupational hazard were wrong overtaking, over speeding, overloading, drunkenness, bad road, drivers stress, driver’s health challenge and under age driving which have made tricycle drivers susceptible to injuries and accidents. More so, most of the drivers had no any difficulty with breathing which could be associated to their use of 4 stroke tricycle engines known to emit less smoke and less noise.

Finally, the following recommendations were made:

- Public enlightenment, awareness and educational campaign among tricycle drivers in the study area should be carried out regularly.
- Penalty should be put for overloading of both luggage and passengers and as well under age driving.
- Women participation in tricycle driving should be looked into and encouraged.

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