Commercial motorcycle drivers' perceptions of risk and road safety in urban Nigeria: an explorative study.

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Title page

Commercial motorcycle drivers' perceptions of risk and road safety in urban Nigeria: an explorative study

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Abstract

Road traffic injury is a great public health challenge with an emerging trend of increasing rates and high mortality involving commercial motorcycles in Nigeria.

A qualitative approach was used with 10 in-depth interviews conducted to explore the risks' perceptions of commercial motorcyclists in Ibadan, Nigeria.

The data analysis using manifest and latent content analysis resulted in an overarching theme: Inadequate structures and internalized norms prevent change. The three themes leading to the overarching theme are: Risk taking as generally acceptable, Risk taking as an intrinsic part of occupation, Risk taking as a way to make ends meet.

The study suggests that there is a great need for adequate regulation as regards training and licensing of riders. Also the need to tighten enforcement of traffic rules is paramount to road safety in Nigeria.

Keywords: **Road safety, Risk perception, Commercial motorcycle drivers, Qualitative study, Nigeria**

1. Introduction

Road traffic injury is a great public health challenge and a leading cause of disabilities and/or death globally. It is estimated to reduce by 30% in high-income countries by 2020, but increase significantly in low and middle income countries (Department of Statistics and Informatics in Information, Evidence and Research Cluster of World Health Organization (WHO), 2008). In 2002, about 1.3 million deaths were recorded worldwide from road traffic injury, accounting for 41.2 million of all healthy life years lost and 2.7% of DALY's globally (WHO, 2008). Globally, road traffic mortality is about 3 times higher for males than females, with over 50% of cases occurring among adults age 15 – 44 years (Peden, McGee, & Sharma, 2002).

Low- and middle-income countries account for 85% of all road traffic deaths and 90% of DALY's lost annually (Peden et al., 2002; World Health Organization (WHO), 2009), with road traffic injuries contributing significantly to the obstruction of the achievement of the Millennium Development Goals (Watkins, n. d.). Sub-Saharan Africa accounts for 10% of the global road crash statistics, with Nigeria and South Africa accounting for 50% of this rate (FRSC strategic roadmap, 2010). In 2002, the World Health Organization ranked road traffic injury as the 6th leading cause of DALYs lost in Nigeria and constituted the leading cause of death and DALYs lost from unintentional injury. The cost of road traffic injuries for Nigeria was estimated to be greater than US$25 million in the '90s and this amount is thought to have increased greatly in the last twenty years (Labinjo, Julliard, Kobusingye, & Hyder, 2010)

In Nigeria, about 80% of road traffic crashes occur on major highways with human error accounting for 82%. Most traffic crashes occur during daytime while greater fatality is recorded at night (Federal Road Safety Commission (FRSC), 2006). The greatest number of road traffic crashes occurs during the last quarter of the year, i.e. that more accidents happen between September and December when people travel back and forth between their cities of residence and hometowns for festivities and family reunions ("Ember months"). : (Federal Road Safety Commission (FRSC), 2006). Poor road conditions and defective road engineering significantly add to the incidence of RTI in Nigeria. There is also an emerging trend of increasing rates of traffic crashes with high mortality within the urban regions involving

commercial motorcycles. (Federal Road Safety Commission (FRSC), 2006, 2010; Olagunju, 2009; Oluwadiya et al., 2009)

A community based survey from 2010 showed that the incidence rate of road traffic injury was 41 per 1000 population with a mortality rate of 1.6 per 1000 population (Labinjo et al, 2010). Motorcycle crashes accounted for 54% of all road traffic injuries in Nigeria (Labinjo et al, 2010; Madubueze, Chukwu, Omoke, Oyakhilome, & Ozo, 2011).

The high incidence of road traffic injuries among commercial motorcycles in Nigeria has been attributed to its dominance within urban transportation systems. This is as a result of inadequacy of the transportation system, the ability of motorcycles to access remote parts of the cities and towns (Morenikeji & Umaru, 2012; Nwadairo, Ekwe, Akpayak, & Shitta, 2011; Solageberu et al., 2006), and the increase in commercial motorcycles due to high unemployment rates among young people. (Iribhogbe & Odai, 2009; Morenikeji & Umaru, 2012).

Records from the Federal Road Safety Commission, the agency responsible for vehicle registrations in Nigeria, show that the number of registered motorcycles doubled over two decades: 1 557 950 registered motorcycles within the period of 1993 – 2000 rose to 3 153 696 at the end of 2009. Examining this number cumulatively, there was a threefold rise in the number of registered motorcycles from 1 557 950 in the year 2000 to 4 711 646 at the end of the year 2009.

Mannering and Grodsky (1995) found that motorcycles are about five times more likely to be involved in road crashes than other vehicles and motorcyclists are about 20 times more likely to have a fatal injury than other automobile occupants in relation to mileage traveled. The Nigeria Highway Code (2008) also states that motorcyclists have a six times higher risk of traffic injury and 80% likelihood to die or be severely injured than people in motor vehicles.

In Nigeria over 90% of commercial motorcyclists are not formally trained and do not have the required license to ride, which contributes significantly to the high incidence of traffic injuries among them (Iribhogbe & Odai, 2009; Nwadairo et al., 2011; Olagunju, 2009, 2011). Many of the road rules are also poorly enforced, as many commercial cyclists and passengers do not

conform to the crash helmet law (Olagunju, 2009, 2011; Nwadairo et al., 2011; Nzegwu et. al 2008; Solagberu et. al., 2006).

There are several studies related to commercial motorcyclists and their impact on road traffic injuries in Nigeria with various point of focuses ranging from riders' characteristics and risk factors to the use of psychoactive substances (Gbadamosi, 2006; Iribhogbe & Odai, 2009; Oluwadiya et. al, 2009; Nwadairo et. al, 2011; Nzegwu et. al 2008; Solagberu et al., 2006; Amoran, Eme, Giwa, & Gbolahan, 2006; Alti-Muazu and Aliyu, 2008; Oginni, Ugboko and Adewole, 2007).

However there has been no in-depth study looking at Nigerian commercial motorcycle drivers' risk perceptions and attitudes towards road safety. To explore their concept of risk and road safety through their own accounts will provide a greater understanding of the possibilities and barriers to design effective public health interventions.

2. Aims of the study

The overall aim of this study is to understand commercial motorcycle driver's perceptions of risk and road safety as well as of protective measures in urban Nigeria and to discuss the policy implications. The specific objectives are:

- To describe commercial motorcycle drivers' experiences of risks in their daily work
- To explore factors influence risk-taking and the use of protective measures.

3. Methods

3.1. Study design

A qualitative research method was considered appropriate since the aim of the study was explorative. Data was collected through in-depth individual interviews with semi-structured open-ended questions. In-depth interviews make it possible for the researcher/interviewer to

gain further insight about the lived experiences of the informants in relation to the research topic (Dahlgren, Emmelin, & Winkvist, 2007).

3.2. Study setting

Ibadan is the capital city of Oyo State and it is known to be Africa's 3rd largest after Lagos and Johannesburg metropolis in the Southern part of Sub-Saharan Africa**.** It is situated in the South-Western part of Nigeria, about 90miles North-East of Lagos State. It has about 3.8million population according to 2006 estimate (http://www.swisswebihousing.com/region.htm). Commercial motorcycle is the second largest means of public transportation within the city after commercial buses and cars, with almost every street having a commercial motorcycle park. The city has a mixed flow of traffic; the road design is such that vehicles, bicycles, tricycles, moped and pedestrians do not have separate lane (Alyson & John, 2006).

3.3. Sampling of informants

The eligibility criteria for participation in the study were to be a male, to speak the Yoruba language, Pidgin English and/or English and to be in the age group of 18-50 years. These criteria were chosen since commercial motorcyclists are male and the above age group has the highest incidence of traffic injuries (FRSC, 2006, Labinjo et al, 2010). A purposive sampling technique was used (Dahlgren et al., 2007). In this study the author recruited the first and second informant by going to a motorcycle park in a central area (Mokola round-about) in Ibadan and approach two drivers, one that was using a helmet and one that was not. The author asked for a lift as a passenger on the first informant's motorcycle (the one without the helmet), from where he discussed the research topic and gave him the information material with the informed consent form to go through and exchanged phone numbers. The second informant was simply approached, and asked to participate after being informed about the research topic. Both consented and agreed to help the author to get other riders recruited into the study. The author also visited a motorcycle park in a distal part of the town where the research topic was discussed with a rider who introduced him to the Chairman of the park. This Chairman offered to introduce the study to some specific riders based on the previous interviews (riders with the experience of hire-purchase and daily delivery). The other

informants were selected randomly by the author at different locations in the city. In total 30 drivers were approached, of which 20 agreed to participate while 10 declined. The reason for declining was mainly lack of time, i.e. the drivers feared that participating would affect their sales for the day negatively and this restricted us to only one on one interview without being able to conduct any focus group discussion. However, after 10 interviews we had data that was rich enough to explore the phenomena of risk-taking that was the focus, of the study. The data collection took place between February and March 2012 in different venues deemed convenient and comfortable for the informants, all within Ibadan. Three interviews were conducted in the park office, one at a beer parlour, another one was held at the informant's house and the rest were done in an apartment at the University College Hospital Ibadan. The informants selected these settings and since they were familiar with the environment and people around there, these venues could be taken as the natural settings for the commercial motorcycle riders in this study (Dahlgren et al., 2007). Some of the interview venues were noisy and open but the informants claimed the environments were conducive enough for an interview.

The interviews were conducted by the author following an interview guide (Appendix A). This guide included three themes, including their daily experiences, knowledge of road rules and safety measures and experience of traffic injury and safety issues.

Each interview lasted on average 45 minutes with a range of 35 to 65 minutes. All interviews started with an opening question that allowed the informants to give a brief overview of how they started the commercial motorcycle work. Five of the interviews were conducted in Yoruba and five in English. The total number of interviews conducted was ten, since at this point not much new information emerged and the information was rich enough for an analysis of rider's perceptions of risks in this setting (Dahlgren et al., 2007).

All interviews were recorded and transcribed verbatim with the ones done in Yoruba translated into English by the author (AS). Each transcript was labeled with a code consisting of a letter and a number for the purpose of confidentiality (Dahlgren et al., 2007). The riders whom the author hired as taxis were compensated with N200 (1.25USD). Others were offered the same amount but some declined.

3.3. Data analysis

The interviews were analyzed using qualitative content analysis aiming at an interpretation of both what the text of transcribed interviews inferred in terms of the manifest meaning and the more underlying latent meaning of what was in the text (Graneheim & Lundman, 2004). The principle of content analysis is to obtain a meaning unit from the units of analysis, in this case the interviews, from which condensed meaning units can be formulated with a further step to generate codes. These codes are then grouped together to form categories that describe the manifest meaning sticking close to what the text says. The categories are then further developed to form themes as a way of deducing the underlying meaning of the text (Graneheim & Lundman, 2004; Heish & Shannon, 2005).

To follow this process the interviews were read and listened to several times, cross-matching with the transcripts to ensure appropriate messages was transcribed correctly and to get a sense of the whole (Graneheim & Lundman, 2004). The transcribed interviews were then imported into the OpenCode software (Umeå University, 2009), developed to facilitate the coding procedures. Due to the limitations of the OpenCode programme, condensed meaning units were developed as part of memos column available. Codes were created from sentences (meaning units and condensed meaning units) and focused on risk perception and safety. Consistent consultation of the transcripts was done, cross-examining the meaning units, codes and the categories so as to ensure that the analysis was grounded in the data (Graneheim & Lundman, 2004). AS conducted the interviews and translated all interviews conducted in Yoruba to English before there were coded and analysed by both AS and ME. Coding and preliminary analysis was done by AS and were later discussed and negotiated during peer debriefing meetings between the authors (ME and AS). Figure 1 illustrates the process of moving from meaning units via condensed meaning units, codes and categories to themes. To get the whole concept of risk among commercial motorcycle riders, the grouping of codes into categories and the categories into themes was done to best reflect the informants' description of their daily living and how these fit into each other. The codes vary between informants and

may fit into more than one category or theme, which reflects the intertwined nature of human experience (Graneheim & Lundman, 2004).

3.4. Ethical Consideration

This study was conducted with the approval of the Department of Policy Research and Statistics, Federal Road Safety Commission, Nigeria following their ethical guidelines and research rules. The procedure for data collection follows the recommendation of Council of International Organizations of Medical Sciences (CIOM) which means that participants were provided with written information material about the study. They were all made aware of their right to anonymity and confidentiality. Their permission was sought to record the interview and they were promised that the recorded interview would be used for the purpose of this study only. An informed written consent form was presented to each participant stating their voluntary participation and the right to discontinue if they wished to. All information was read and endorsed before the interview (Council of International Organizations of Medical Sciences, 2002).

4. Findings

The analysis is built on interviews with 10 informants and their socio-economic characteristics are given in Table 1. According to the informants, the occupation is a full time job and it involves both long and short trips except for some, working within a particular locality. The average trip per day is about 25 and the length ranges between 5 – 50 minutes depending on the traffic. The analysis led to the generation of ten categories which were further merged to create three themes and an overarching theme. These themes summarized the different ways in which the informants described their perceptions of risk in their daily lives as commercial motorcycle riders: 1) Risk-taking as generally acceptable, 2) Risk-taking as an intrinsic part of the occupation, 3) Risk-taking as a way to make ends meet. The emerging overarching theme "Inadequate structures and internalized norms prevent change" captures the overall experiences of the informants. This reflects how the interaction of individual and structural

factors influenced risk taking and as such created a norm which prevents riders to care about road safety and injury. The categories with sub-categories and the resulting themes are summarized in Figure 2. Below is a more detailed description under the sub-headings of the themes and the sub-categories. Quotations from the interviews illustrate how the interpretation was grounded in data.

4.1. Risk-taking as generally acceptable

In attempting to describe how informants started doing this work, it became clear that riders could start working without any driving training or prior experience of driving motorcycles or other vehicles. There was gross inadequacy in their knowledge of road rules as two of them had never even heard of a motorcycle riding license. Also the environment was described as full of several risks and uncertainty. They felt that the enforcement of traffic rules was severely impaired by corruption among the law enforcement agents. The informants' experiences of starting 'okada' (commercial motorcycle driving) and the assumption of knowledge of road rules due to improper training and licensing made them perceive risks as something implicitly acceptable to all and sundry.

Inadequate training and licensing

According to the informants, there was no rule mandating anybody with the intention of riding a motorcycle: be it commercial or private, to go to a riding school and/or get a license before riding. Their stories indicated how common it was for drivers to have learnt to drive only by trial and error.

> *'Actually someone asked me that question before, he asked, "okada riders, did they go to driving school?" I now told the person, even in Nigeria if it's 100%, 99% did not go to.. go for anything, okada riding, teaching or whatever, even if we have it, I don't think…… Actually my own side, I learnt it through cycle itself'* (I1)

Without the requirement of getting a license, there was no other incentive to go to the driving school once they can could learn informally and start making money.

'there is no longer seminar and no law, so many riders get the motorcycle and start riding immediately without learning to ride' (I10)

Poor law enforcement

It was obvious from the interviews that whenever there was inconsistency and inadequacy in enforcement of traffic rules, it would be violated over and over again. The failure of the safety system made the understanding of traffic rules difficult for riders as most times when the enforcement agents caught a rider for breaking the traffic rule, they would not explain the details of the crime committed to violators. This makes the riders break this law over and over again, leading to repetitive violation of the same rule.

'it is not everybody that is literate, they will now tick, go and pay a certain amount of money as fine, the person would not know what he did and so he would commit the same offence over and over again, paying the fine several time' (I3)

Road rules were inconsistently enforced as some informants narrated;

'there was a time that it was very compulsory, you could not go anywhere without your helmet but the Nigerian law is occasional, because if they make a law and they enforce it now that you should not do some certain things, before 3 – 5 months, the law will now die down and people will continue to do the same thing, so the rules and regulation is frustrating and fluctuating' (I5)

According to the informants, a factor which contributed to making risk-taking implicitly acceptable was that law enforcement agents were not ensuring that riders followed the traffic rules so as to ensure safety, but were rather out to extort money from the riders.

'from here to there you will see police officers asking you to park, they will offload your passenger and they will take your bike to the station, even if you give them the bike's particulars, they will ask you "na particulars I wan chop", you give them money and when you give them the money, they will say your money is N1000 without doing anything' (I3)

This permissive environment further increased riders' risk-taking because they were sure that when caught or arrested for traffic rule violations, all they needed to do was to give the officers some money and the case would be settled.

> *'The police officers are responsible for most of the accidents on the road; they will see someone taken more than 2, 3 passengers, instead of them to arrest him for rule violation, they will not stop him once he has always been settling them'* (I6)

Risk-saturated environment

According to the informants, there was a combination of several factors in the working environment that were inseparable from the riders that compromised their ability to work safely such as; running to make enough money, pressure by passengers to speed, space competition with other vehicle drivers, stress and fatigue due to long periods of work and other unpredictable traffic events. The structure of the motorcycle in addition to the highly competitive nature of the work with other taxi vehicle drivers also led to a great compromise of the riders' safety. These conditions made riders think less of safety and more of the results with consequent increasing exposure to risks.

> *'And the taxi drivers too, they lack patience, they don't care about the okada, they know the okada riders are outside without a body.'*(I2)

> Also contributing to the risky working environment is the alcohol intake of riders and drivers while at work;

> *'Drinking while riding is very bad in every aspect, many riders and commercial vehicle drivers do it (about 90%), it is what they do every time.'* (I3)

The riders perceived that often times passengers encouraged them to take risks: either to speed or to take more than the stipulated number of passengers and/or to get in between cars and different vehicles in traffic hold-up so they could get to their destinations as fast as possible.

> *'you know some people as earlier said are the one causing accident, the passengers they will tell you that if you run or increase speed, they will increase your money' (I2)*

Also passengers see commercial motorbikes as a faster means of transportation which they can easily influence;

> *'some people will tell you that they take bike because they want to get to where they are going faster and that's why they decided not to take bus, that they decided to pay a higher price for bike so that the journey will be faster than bus' (I3)*

With the pressure the passengers put on riders, the rider found it hard to find his own voice and often was unable to focus attention on the road which may have increased the risk of a crash.

> *'Some passengers when you take them, they will try to control you as you are driving, they will be sitting at the back, driving at the front and in the process you cannot control within yourself, which will cause accident because that time your focus is not in one place' (I1)*

4.2. Risk-taking as an intrinsic part of the occupation

Most of the informants described how they started riding commercial motorcycle as a result of losing another job and not having any other means of survival. They expressed how they perceived risk as a part of the job that they had to cope with. Risk obviously became a part of the occupation when the riders learnt to accept risk as a norm with constant exposure and positive outcome. The monetary outcome, the need to make enough money to settle owners and/or the installment also led riders to take risks rather than think of safety since they had to be able to pay their rent or installment on the motorcycle. Also this same outcome made riders obey the command of passengers and clients who often encouraged them to take risks.

Profit based on overriding rules

The need to have a means of livelihood due to high rates of unemployment and the loss of previous employment led many riders into commercial motorcycling. Some riders have to struggle to cope with payment of the rent or installment on the motorcycles and their personal financial needs. This conditions pushed many riders to care only about the profit without thinking of traffic rules and safety.

'It has a lot of influence because most riders involved in such are usually given a deadline to meet up with the payment; it's 6months for some while 3 months for others. In a bid to cover all the payment within such time period, the riders are usually speeding up and down, with this installment plan; many riders have been overstressed and seriously injured.' (I7)

The riders on "hire-purchase" or "balance and carry" risked losing their motorcycles irrespective of the amount they had paid if they failed to pay completely within the set time, while the riders who paid rent risked losing the bike because the owner will take the bike if failed to pay the agreed rent.

'some people will buy the bike for N70000 and give it out for N140000, to pay that money is very hard and they will be paying N5000, N6000 weekly installments, so that person would have to work for that money, speeding up and down and taking many passengers, they will cross the road even against the traffic because they want to meet up so that they won't lose the bike, if you pay N130000 and the money remains N10000 and you fail to pay it, they will collect the bike from him,' (I3)

Assumptions of safety

From the experiences shared by the informants, it was imperative to notice that the circumstances and condition surrounding riders' picking up a motorcycle as means of livelihood made it comfortable and convenient for them to make assumptions about road rules. The riders often times assumed there were no rules guiding licensing or that some safety measures are not appropriate, this is to grant them some gratification for not obeying traffic and safety rules.

'If you feel like having the license, you may get it but it is not compulsory to get license' (I8)

An informant explained that using helmet does not offer full body protection and it also hinders their work;

'if it protects the head what about the legs but at times the recommended helmet covers the whole head and ear once we wear it, we won't hear whenever a car honks at our back or when someone calls on us' (I10)

Unavoidable accidents

Injuries were seen as partly unavoidable when involved in risky or rough driving. Some narrated their experiences of traffic injuries personally or ones they had witnessed. It was evident that there was no way to escape injury if the vehicle is poorly maintained so as to cut costs and increase profit. It was also evident that many riders got a sense of security once they were using the recommended helmet which made them engaged in more risky riding.

'I detected that the brake was not working again and we were on a sloppy height which meant that the brake's spring had broken unknowingly to me and my motorcycle had no handbrake which is very good for every motorcycle to have, my mind was never on fixing handbrake…… as I was struggling with the bike and myself after he pushed me, I landed in a ditch by the road side with the machine.' (I9)

Some informants explained that though accidents may be unavoidable but one could be less injured if safety measures were used;

'that is very very good because I have seen a lot people got accident without wearing that who did not succeed it and when I have seen a lot of people too wearing that and along the process they had accident but because of the helmet, they succeed it' (I1)

Constant exposure

Most riders had come to term with risk-taking as part of the norm after a short while doing the job. They were faced with the fact that there was no other means of survival and this was their way of making money. The informants described that despite the risks involved they were able to get through each day unharmed or with minor injuries. They were also able to avert some dangers themselves, which meant they felt in control or saved by God.

'So I saw many people are getting accidents but I have courage that let me continue with the okada, I try my best to drive the okada but I thank God apart from the two accidents that I had up till now I have no other experience.' (I2)

An informant narrated own experience of averting danger while working;

'So when I was almost there, the motor moved and I then saw the trailer, I have to apply brake. So luckily I was able to dodge it because I was not speeding much. If I was speeding, I could never dodge it,' (I1)

Some informants gave an account of being protected by God despite exposure;

'I am always being protected by God but there is no way one can be so perfect without some incidence of injury.' (I7)

4.3. Risk-taking as a way to make ends meet

Riders were faced with a daily struggle and took risks to make enough money to meet several financial obligations. In order to keep the motorcycle and still pay the bills, drivers saw risk-taking as a way to survive and make enough money.

A fight to feed and survive

The strong need to fend for themselves with high unemployment rates and no one to cater for their responsibilities pushed many of the riders to get motorcycles from others: to whom they either pay rent every day or have an agreement of a set time and amount to be paid for the motorcycle. These motivate the riders to engage in all sorts of risky riding so at to be able to keep the terms of the agreement.

'If there is diverse employment opportunities and education, there are several children who should never be riding okada but if one has no other alternative; one won't have a choice than to ride in order to make money to feed and to survive.' (I4)

From the interviews, it was quite clear why some older riders had to take risks while doing their daily job. They had many financial obligations, so taking risks becomes a necessity.

'we have people that are delivering, delivery is N1500 daily, so somebody that collects the bike in the morning will stop working by 6pm and pay the delivery to the owner and he would still have to get his own, somebody that have family, that have children who are going to school will need to pay school fees, feed the family and he will still pay house rent, so you see that for him to get that money to buy helmet, not that he is not happy to buy it, he wants to use that helmet but the money is not there for him to buy it' (I3)

The informants also described how some riders set a fixed target daily in order to pay a certain amount of money to the motorcycle's owner, feed and pay rent etc. All these combined made risk-taking a necessity.

'Most of these young boys riding motorcycles are not the owners, so maybe they have been giving a target of a certain amount of money to be remitted by 7pm every day, so these boys will always want to work as fast as possible to make the remittance and then they also want to make more than that amount for themselves. So they are always in haste to go back and forth several times so they could make the owner's money, and then work for theirs, and if they take more people on the bike, they will make more money on a single trip but this may make the bike difficult to control in times of unexpected and accident may be inevitable then' (I4)

Family responsibilities

Informants pointed out that the marital status of a rider conferred on him some certain responsibilities, which made him more or less likely to take risks. Married riders with children who did not have a personal motorbike were seen to take more risks compared to their married colleagues who owned their motorbikes.

'Those riders will want to quickly make the money to settle the owner and also make money to cover their expenses, especially those that are married. Assuming that he will give the owner N500, he will also try to give the wife N500 for food, the children in school too maybe N500 and also for himself as well. So he will want to make four-fold of the money,' (I6)

Married riders however, especially those with children, were believed to ride more safely when compared to single and young riders.

> *'If you look at all of us in this park, we are all married as we may not allow single man to join us, you cannot see our riders riding carelessly as those young boys do.'* (I10)

Unaffordable safety measures

Informants shared their knowledge of the effect of using protective measures such as the crash helmet.

> *'There is advantage in wearing crash helmet but there is no any disadvantage. If you see anybody rider that says there is disadvantage in using crash helmet, the person really has a defect. The advantage is to protect the head in case of traffic crash'* (I9)

Despite this knowledge, most of them were not using it due to the cost of procuring the appropriate recommended helmet.

> *'But the helmet we are asked to use is covering some certain things, the helmet is very good but the type that will be easier for us to get is what government should approve for us, the ones we can get with little amount of money. There are some helmets that cost about 15000naira, where are we going to get that kind of money'* (I10)

Some of the informants also narrated their experience of traffic crashes which occurred as a result of cost management due to financial stress.

> *'Yeah, that tire, I would say that, that was my own fault because the tire was already weak, it was already expired. I was supposed to change the tire but I was trying to manage it. At that same week I was planning to change the tire, that's when the tire blew……..that time I had a serious problem, my wife was at the UCH (Hospital), very damn sick. So I spent a lot of money, I spent close to N500000, so I was koboless, even to feed at that moment was very difficult. So I was trying to manage myself so I can be able to change it but unfortunately I could not change it before that happened'* (I1)

5. Discussion

This study explored the commercial motorcyclists' risk perception and factors influencing risk-taking behaviour. The main finding is that there are multiple intertwined factors responsible for risk-taking behaviours among this group. These factors contribute to risk-taking being perceived as an acceptable process that is required for daily living, and include individual factors that pertain to the rider: inadequate training and licensing of riders, lack of adequate knowledge of traffic rules, and having many financial expenses to cover with an unstable income. Other factors are structural and this makes the traffic rule enforcement almost non-existent with resultant general acceptability of risk-taking: poor and inconsistent traffic rule enforcement, corrupt practices of the law enforcement agents. The combination of these factors encourages risk-taking behaviour among commercial motorcycle riders in Nigeria.

Risk-taking as generally acceptable

The implicit acceptance of risk through a permissive environment and inadequacy of traffic rule enforcement was clearly evident from this study. None of the informants had attended any driving school and none of them were licensed to ride a motorcycle. The study also indicated that there was lack of knowledge of road rules amongst this group of people and gross inadequacy of traffic rule enforcement. This corroborates existing literatures on commercial motorcycle injuries; in a quantitative study done on knowledge, attitude and practice of safety measures in 2007 in Nigeria, about 10% of the participants (commercial motorcycle riders) were not formally trained and poor enforcement accounted for the low use of safety measures. A study done on commercial motorcycle injuries in Tanzania, Chalya et al. (2010) also found that uncertified driver training and license, with poor regulation and law enforcement were predisposing factors for the high incidence of traffic injuries.

That risk taking is implicitly accepted could be interpreted within the theoretical framework of Theory of reasoned action as proposed by Ajzen and Fishbein (Nutbeam & Harris, 2004). This theory assumes that people are rational and will make predictable decisions in a well defined circumstance. It predicts that behavioural change can only occur if a person believes that the behaviour change will benefit their health and feels social pressure to behave in that way (Nutbeam & Harris, 2004). In this study, it is clear that risk taking is strongly supported by both structural and individual factors, hence creating a strong subjective norm for riders to

take risks (Nutbeam & Harris, 2004). Thus the rationale for changing behaviour and taking less risk is limited.

The findings of this study also suggest that the inconsistency of the enforcement of traffic regulation, lack of proper legislation and corrupt practices amongst the police officers contribute significantly to the implicit acceptance of risk-taking among commercial motorcyclists. The findings in this study are similar to the study done in Iran where findings were categorized according to the PRECEDE model (predisposing, reinforcing and enabling constructs in educational diagnosis): the predisposing factors such as being young and unmarried, low socioeconomic status, ill-health and stress; enabling factors such as ineffective enforcement of traffic rules, lack of adequate policies for motorcycle ownership and environmental barriers such as poor road conditions; and reinforcing factors such as seeking fun were identified as responsible for risk taking among motorcycle riders (Zamani-Alavijeh, F. et al., 2010).

Enforcement is important and can be very effective as Bishai and Hyder (2007) have pointed out, giving an example from Brazil where a three prong programme introduced in 1997 (legislation to impose stiffer penalties, media coverage of the new regime and better enforcement) reduced the fatalities by 25%. They calculated that improvement in the enforcement of policy alone in a population of 1 million in a Sub-Saharan African country could prevent 71 deaths, and amount to about $11 per DALY averted (Bishai & Hyder, 2007).

The findings of this study clearly indicate that riders' attitude and risk perception towards road safety would influence their perception of safety information and messages. This is particularly important when designing an intervention or policy to ensure all riders get adequate driving training and licensing before riding a motorcycle either commercially or for private purposes. This will create a platform for riders to get acquainted to traffic rules and regulation and facilitate learning of basic driving skills and the Highway Code.

It became evident that riders knew the danger in taking certain risks but they still did so once there was inadequate or inconsistent traffic enforcement. Some of the informants testified that the road safety officers always ensured traffic rules were being followed and not violated but that they were inconsistent in checking and ensuring safety. The police officers and the

vehicle inspection officers were often times out to extort the riders rather than ensuring traffic rule enforcement and safety. These inadequacies were pointed out by informants as factors enabling them to take risks. The appropriate information and health promotion about road safety is required to inform the public of the danger in making risky demands from the commercial riders.

When modeling cost effectiveness of injury intervention in low and middle income countries, Bishai and Hyder (2006) also found that the amount needed to double the police force at the level of Sub-Saharan African salaries; fuel and vehicle costs to the point where it could catch 1 in 3 traffic violators would cost about $22, 118. This would generate a cost- effectiveness of about $313 per death averted and $11 per DALY averted and prevention of 71 death per million population per year if implemented successfully..

Risk-taking as an intrinsic part of the occupation

Despite the risk involved in riding commercial motorcycle, the informants saw it as an employment opportunity which could put food on their table. This theme was generated from the informants' experiences of the many risks involved in this occupation but being undeterred by what happened daily as long as they came to work and got home safely. Risk-taking became a necessary evil that commercial motorcycle riders needed to cope with in order to survive. Their experience of persistent outcomes with little or no injury made it possible for them to suppress their worry or fear over injury. In a study on perceptions of risk and risk-taking behaviour, the author described how risk-taking may become enjoyable as risk acculturation occurs with persistent positive results over time (Powell C, 2010). Such acculturation seems to occur for riders after riding for some time without any injury or with a minor injury. Also Henderson, (1999) described, in the review on the normalization of risks in airport safety, that the normalization of risk is inevitable when the rational objective process is abandoned to ensure operational integrity and achieving goals in an unfavourable setting. This was clearly the case also in this study as commercial riders abandoned safety because there were several defects in the system which allowed them to do whatever it took to keep their job and make money.

Risk-taking as a way to make ends meet

This study illustrated that the battle between time and monetary outcome was a significant factor driving the risk-taking habit of a commercial motorcycle riders. Young and single riders were seen to be more prone to take risks, for example working later in the nights since they had nobody waiting for them at home. A case-control study done in Iran in 2012, observed that being single (marital status) predisposed motorcycle riders to injuries as 66.6% of cases were single (Safiri, et. al., 2012). On the other hand, married riders may overload their motorcycle and not use safety helmets in order to save the cost and maximize profit to provide for the family. They may also have debts to pay for the motorbike or for the hire but they tend to be more carefully when compare to young and single riders. In a similar qualitative study done in Iran in 2010, married riders were observed to focus attention to the needs of the family and thus pay a greater attention to safety (Zamani-Alavijeh, et al., 2010). Informants described that riding motorcycles commercially was an easy way out of poverty and unemployment. This was also observed in a quantitative study done in 2007 in Nigeria as commercial motorcycling generates fast and tax-free income which attracts both young and old unemployed people (Oginni et al., 2007). Also Safiri et. al., 2012 described in the case-control study of motorcycle injuries that low socioeconomic level was predominant among cases than controls, indicating that financial constraints has an influence on motorcycle traffic injuries.

5.2 Trustworthiness

The strength of qualitative research studies depend solely on the ability to capture what they set out to do, i.e. truth value or credibility (Dahlgren et. .al, 2007). The study informants were purposively sampled with appropriate selection criteria to obtain a diversified view based on age and experience. This was done to enhance the study's credibility (Graneheim & Lundman, 2005, Dahlgren et. al, 2007). The mixture of snowball and maximum variation sampling generated informants of various experiences and beliefs; hence providing rich data and also enhancing the study's credibility. Trustworthiness is further enhanced by joint analysis through peer debriefing meetings between the authors (AS, ME). The constant communication and agreement between the researchers (AS, ME) throughout the study process also enhanced the credibility as this depicted triangulation in investigators (Dahlgren et. al, 2007).

The interviewer's (AS) background in Medicine and Surgery and his ability to speak and understand both Yoruba and English languages are believed to have enhanced trust with the informants. The thematically constructed interview guide with probing technique (which was used to make the informants clarify or expand on information newly offered) enabled the authors to focus the discussion on the aim of the study and account for changes during the study, thus ensuring the study's dependability (Dahlgren et al., 2007).

The confirmability of the study was increased as the researchers made efforts to disregard their preconceptions and to stay neutral during the process of data collection and analysis. Field-notes were taken and kept as these formed the basis upon which decisions were made throughout the research process, further enhancing the study's trustworthiness (Dahlgren et. al, 2007).

Even though the data obtained from this study allowed for the achievement of its aim, the findings are context bound and care should be taken in the transferability of these findings to another context. The detailed explanation (thick description) of the study context as well as the study process provided in this manuscript is aimed to guide the judgement of its applicability to other settings and contexts (Dahlgren et. al, 2007).

6. Conclusions

This study clearly shows that the training and licensing of motorcycle riders has been grossly inadequate, . riders' lack of training and improper licensing has been shown to contribute significantly to their lack of knowledge of road rules and dangerous driving with consequent risk-taking. Training should be made mandatory and riding test should be conducted before issuing of motorcycle riding license . . There is also a need to update or re-develop a new traffic regulations' policy document so this can be incorporated into the training and licensing curriculum for motorcyles.

The findings also emphasize the need for stricter traffic rules and regulations with consistent and maximal enforcement. The enforcement agents need to be well trained and properly renumerated so they candischarge their duties appropriately.

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10. References

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Figures

Figure 1: Example of the analysis process, moving from meaning unit to theme.

Figure 2: Categories and Themes summarizing commercial motorcycle riders' risk perceptions/experiences.

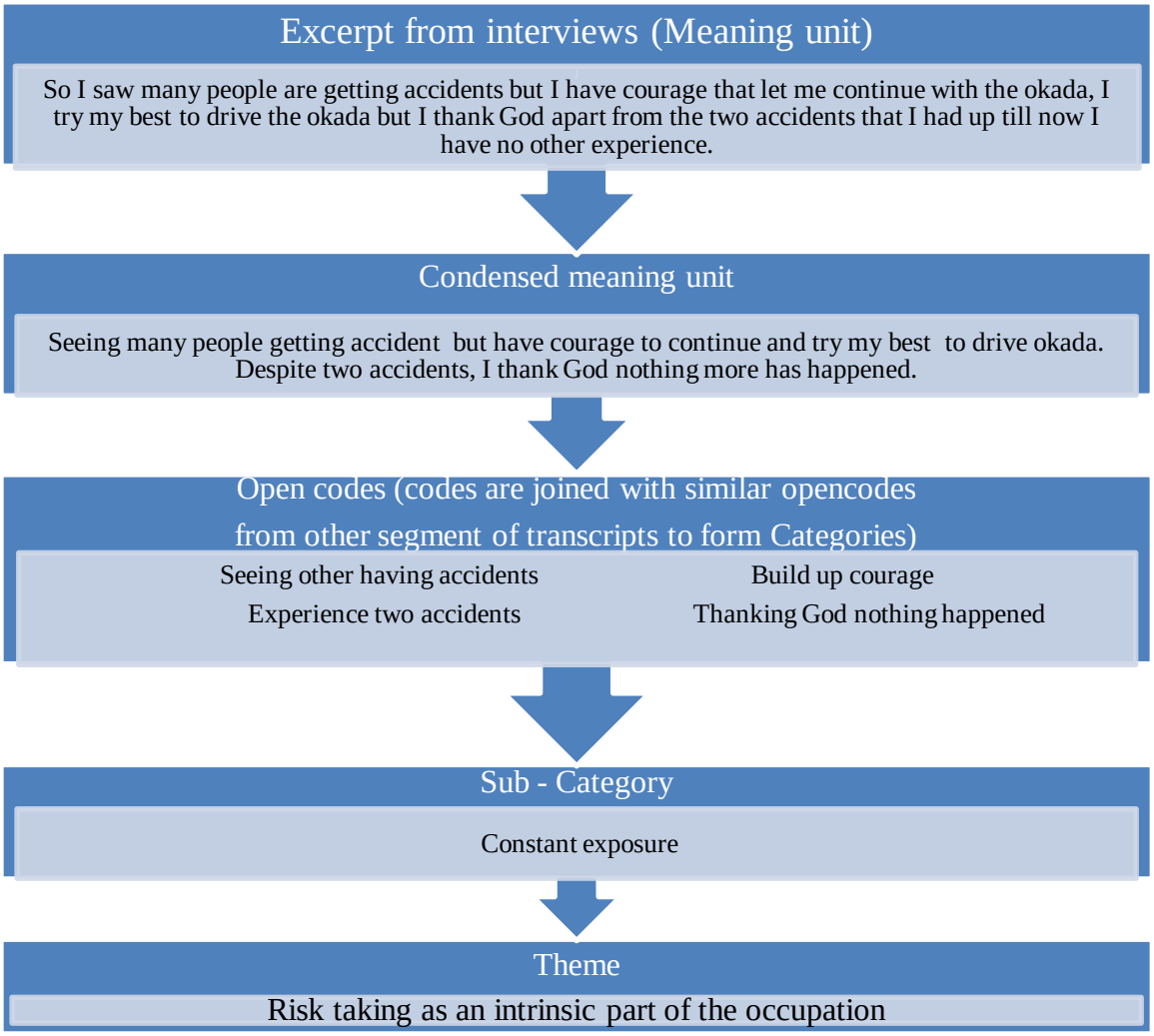

Figure 1

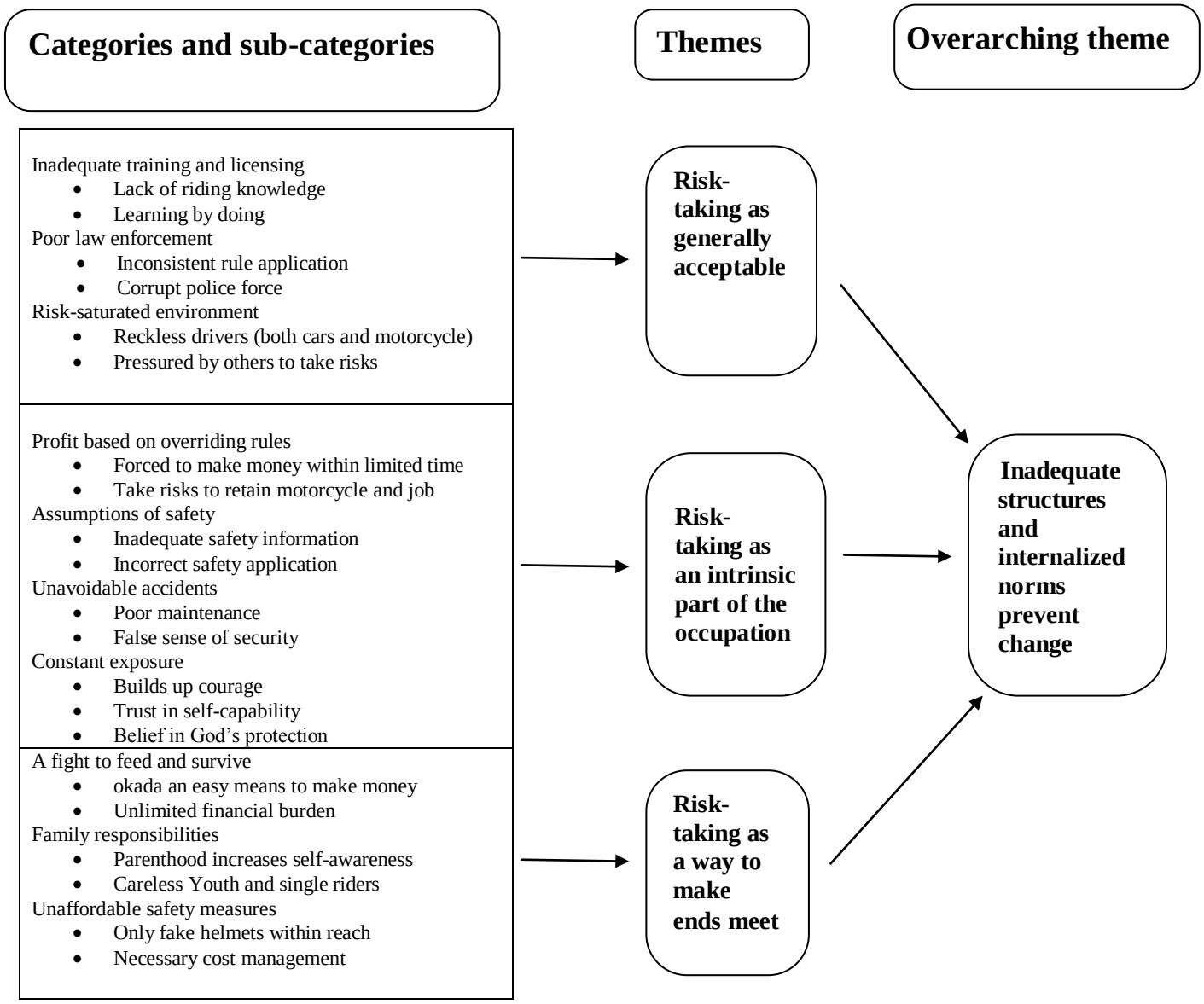
Categories and sub-categories
Themes
Overarching theme
Inadequate training and licensing
Lack of riding knowledge
Learning by doing
Poor law enforcement
Inconsistent rule application
Corrupt police force
Risk-saturated environment
Reckless drivers (both cars and motorcycle)
Pressured by others to take risks
Profit based on overriding rules
Forced to make money within limited time
Take risks to retain motorcycle and job
Assumptions of safety
Inadequate safety information
Incorrect safety application
Unavoidable accidents
Poor maintenance
False sense of security
Constant exposure
Builds up courage
Trust in self-capability
Belief in God's protection
A fight to feed and survive
okada an easy means to make money
Unlimited financial burden
Family responsibilities
Parenthood increases self-awareness
Careless Youth and single riders
Unaffordable safety measures
Only fake helmets within reach
Necessary cost management
Risk-taking as generally acceptable
Risk-taking as an intrinsic part of the occupation
Risk-taking as a way to make ends meet
Inadequate structures and internalized norms prevent change

Figure 2

Table 1. Demographic characteristics of commercial motorcycle riders in Ibadan

Characteristic	Category	n
Sex	Man	10
Age	Range	25-47
Education	Secondary School	7
	Technical College	1
	National College of Education	1
	National Diploma	1
Civil status	Single	6
	Married	4
Type of license	None	6
	Motorcycle	0
	Car/Bus	4