Requirements for Driving and Perceived Barriers to Accessing Eye Care Services; a Comparative Study of Government and Commercial Drivers in Southwestern Nigeria

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ABSTRACT

Introduction: Satisfactory driving and eye tests at accredited centers by national traffic regulatory agencies are prerequisites for issuance of driver's license. Objectives: We assessed driving requirements and perceived barriers to accessing eye care services among government and commercial drivers in Osun state, Southwest Nigeria. **Méthodes:** We conducted a comparative cross-sectional study among 120 male commercial and government drivers each. Data were collected using a pre-tested semi-structured questionnaire. A focus group discussion (FGD) was used to obtain information on criteria for issuance of driver's license and perceived barriers to accessing eye care services. Frequency and chi-square test were done. Level of significance was set at p-value <0.05. Responses from the FGD recordings were analyzed using detailed content analysis with similar patterns of responses grouped together. **Résultats:** One hundred and five (89.7%) government and 86 (76.1%) commercial drivers had undertaken driving test (p=0.006), 35 (29.9%) government and 16 (14.2%) had eye test (p=0.004) before issuance of driver's license. One hundred and seventeen (97.5%) government and 113 (94.2%) commercial drivers had driver's license. Commercial drivers mentioned expensive medical services, busy work schedule, nonchalant attitude to health matters and ignorance as some of the barriers to eye care services. **Conclusion:** Driving and eye tests were mostly done by government drivers. Inability to afford treatment services, busy work schedule and ignorance about visual status were perceived barriers to accessing eye care services mostly amongst commercial drivers. Public enlightenment on driving test with visual screening and provision of subsidized serial eye examination for drivers in Osun state was recommended.

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Introduction

Driving of a vehicle is a complicated activity which is affected by the interplay of different human sensory, mental, motor, and compensatory abilities. Among these, the visual system accounts for 95% of all sensory requirements for driving and thus, driving has been considered a visually intensive task [1-3]. As a requirement for driving licensure, different countries have proposed various visual standards for private and commercial vehicle drivers [4]. A valid driver's license recognized as a means of identification should be possessed by all drivers as a proof of their proficiency. In Nigeria, the authorities involved in issuance of driver's license are the Motor Licensing Authority (MLA), the Vehicle Inspection Office (VIO) and Federal Road Safety Commission (FRSC). Application forms are obtained from the MLA, driving tests are conducted by the VIO, and the licenses are issued by the FRSC. National Road Traffic Regulations demand that every applicant for driver's license undergoes training in an approved driving school and passes the driving test [5]. The applicant also provides a certificate of medical fitness and Visual Acuity (VA) testing from any government hospital [6].

The FRSC stipulated the minimum visual requirement for issuance of driving license as visual acuity of 6/12 in the better eye and 6/36 in the poorer eye for private motor vehicle drivers, while visual acuity of 6/9 in the better eye, and 6/24 in the poorer eye was adopted for commercial motor vehicle drivers with or without glasses. The difference in standard between the two groups of drivers was introduced because commercial motor vehicle drivers drive for longer periods and under diverse conditions including varying weather [7]. The state of a driver's visual system is a very important factor that influences traffic safety [8]. Refractive error is the most commonly reported ocular morbidity among drivers [3,9,10]. However, it has been reported that majority of commercial vehicle drivers with refractive error do not wear the spectacle for correction while driving. A study conducted in Ghana [2] identified barriers to the use of spectacle by commercial drivers which include ignorance of visual status, not having time to visit the eye clinic, cost of care and fear. A few respondents reported that they thought their vision was normal while one respondent reported not knowing where to access eye care [2].

Driving-related injuries have been associated with visual problems and therefore, visual assessment of drivers has major public health implications. Due to the pivotal role played by drivers in the transportation system and the importance of visual testing in ensuring safe driving, the assessment of requirements for driving and possible barriers to visual testing is crucial to traffic safety standards and preservation of human lives in Osun state.

The study assessed driving requirements and perceived barriers to accessing eye care services among government and commercial drivers in Osun State, Southwest Nigeria.

Methods

Study area and design

The study area was Osogbo, the state capital of Osun state, southwest Nigeria. This was a comparative cross-sectional study design using a mixed method for data collection.

Study Population

The study populations were commercial intra-city mini-buses drivers and drivers employed by the Osun State Government working at the secretariat in Osogbo metropolis.

Sample Size Determination

We calculated the sample size using the formula for comparing two groups [11]. The calculated minimum sample size was 98 for each group. However, 10% of the minimum sample size was added to make about 109 in order to adjust for non-response and improperly filled questionnaires. One hundred and twenty respondents were eventually selected for each group giving a total sample size of 240 respondents.

Sampling Technique

Eligible respondents for the quantitative component of the study were selected **Figure 1**. Eight respondents from two road transport association of commercial intra-city drivers and government employed drivers who did not participate in the quantitative component of the study were randomly selected for the focus group discussion. The eight

respondents selected from each road transport association was premised on the availability of participants as at the time of the study, which was in line with the recommended minimum number of participants for FGD.

Data Collection Methods

Data were collected using a semi-structured pre-tested questionnaire to obtain information on socio-demographic and economic characteristics, pre-requisites for issuance of driver´s license and ownership and status of driver´s license with driving history.

We also conducted one session each of FGD for the commercial drivers and government-employed drivers. A FGD was used to obtain information on the criteria for issuance of driver´s license and perceived barriers to accessing eye care services among government employed and commercial drivers. The sessions were moderated by the researcher and recorders collected information provided by the drivers on tape and handwritten notes.

Data Management

Statistical Analysis

Frequencies, proportions, and means were calculated. Chi-square tests were used to compare association between categorical variables. Level of significance was set at p-value <0.05. Responses from the FGD recordings were transcribed to notes and analyzed using detailed content analysis and similar patterns of responses were grouped together.

Ethical Considerations

Ethical clearance for the study (Protocol number: LTH/EC/2013/05/0143) was obtained from LAUTECH Teaching Hospital Ethical Review Committee. All information gathered was kept confidential; participants were identified using only serial numbers. Data were securely stored in a password-protected computer.

Results

Table 1 describes the socio-demographics of government and commercial drivers in Osogbo, Osun State, Nigeria. The mean age of government and commercial drivers were 43.64 years±7.88SD and 46.30 years±10.74SD respectively. Fifty-eight (48.3%) government and 63 (52.5%) commercial drivers had secondary level of education.

Table 2 shows pre-requisites for issuance of driver´s license among government and commercial drivers in Osogbo, Osun State, Nigeria. One hundred and five (89.7%) government drivers had driving test of which 35 (29.9%) had eye test before issuance of driver´s license while 86 (76.1%) commercial drivers had driving test of which 16 (14.2%) had eye test before issuance of driver´s license, respectively.

Ownership and status of driver´s license of government and commercial drivers in Osogbo, Osun State, Nigeria as shown in Table 3 revealed that 117 (97.5%) of government and 113 (94.2%) of commercial drivers owns driver´s license with 22 (18.8%) and 26 (23.0%) government and commercial drivers having expired license as at the time of study.

Criteria for obtaining a driver´s license

Certain criteria or requirements must be met before a driver´s license can be obtained. All discussants agreed with this point. Some of the criteria reported as important were:

"Ability to drive well with certification by vehicle inspector officers (VIOs) and Federal Road Safety Corps (FRSC) is essential (Government Driver).

One must meet the age limit for obtaining driver´s license (Government Driver).

Physical and mental fitness as certified by a qualified medical practitioner (Government Driver).

Detailed knowledge of highway codes and driving regulations is required (Government Driver).

Eye examination for prospective drivers is required (Government Driver)."

Another discussant from the government employed drivers also stated some criteria to be met before obtaining driver´s license as:

"Good knowledge of driving by going to driving school or through personal tutor (Government Driver).

Learning how to drive in busy areas and not express roads (Government Driver).

Learning how to drive unaided e.g., reversing the vehicle without error, changing gear on a high hill junction (Government Driver).

Mental alertness with good vision (Government Driver). "

Two requirements were however stressed by a discussant among the intra-city commercial drivers: "Learning how to drive through a personal tutor and approaching the licensing office for a driving test before issuance of the driver´s license (Commercial driver)."

However, they all reported that the procedure for obtaining the license was worrisome as competency in driving is not considered during issuance.

The role of vision in driving

Good vision is considered vital for safe driving. Discussants stated that driving will be dif?cult and dangerous if the eyesight of the driver was poor. For example, one government employed driver reported that:

"Poor vision can affect driving, and this is the major cause of road traffic accident on our roads resulting in loss of human lives (Government Driver). "

In addition, one participant, among the intra-city commercial drivers, discussed that:

"Vision is important for drivers. As the head or full light is to a vehicle, so is vision to a driver (Commercial driver). "

Visual acuity testing; a pre-requisite to driving

Regarding visual acuity test being a pre-requisite to short and long-distance driving, discussants opined that this criterion is good and very important:

"The government must enforce eye test as a pre-requisite for short and long-distance driving. "

Almost all the discussants agreed that serial eye test should be made compulsory for all categories of drivers be it private owned or public vehicle drivers. However, one government employed driver reported that:

"It is a good idea, but before serial eye testing, mental examination should be done (Government Driver). "

Access and utilization of eye care services: barriers and potential positive influencers

Discussants mentioned expensive medical services, busy work schedule, nonchalant attitude to health matters, not having enough money and ignorance as some of the barriers to eye treatment **Figure 2**:

"As for me, corruption I mean wanting to make money at all cost at the expense of one´s health is the main barrier to eye treatment (Commercial driver)

As a commercial intra-city driver, the nature of my job does not give me time to seek medical care when needed (Commercial driver).

I see money not being available to seek medical treatment as the main barrier (Government driver). "

The discussants stated that public enlightenment about the good eyesight care and provision of free serial eye examination could improve utilization of eye care and testing services:

"1 think the government can help carry out free serial eye examination and treatment for we drivers. There should be penalty, in form of jail term for those who fail to comply (Government driver).

The public needs to be enlightened about the care of the eyes. "

One of the commercial intra-city drivers responded by saying:

"The state government should make serial eye test compulsory but not burdensome financially. The government should encourage public–private partnership in doing serial eye testing for drivers (Commercial driver). "

The drivers also reported that provision of more job opportunities could increase utilization of eye testing services.

Discussion

Driving is a complex skill which requires certification and re-certification by regulatory authorities after successful conduct of driving test and eye test of an applicant resulting in issuance or re-issuance of driver's license. Ninety-eight percent of the government drivers and ninety-four percent of the commercial drivers had driver's license similar to findings from previous studies of over ninety-eight percent of drivers with driver's license [5,12], which under the driving law of the Federal Republic of Nigeria qualifies them to drive. All discussants from the FGD agreed that certain criteria need to be met before obtaining a driver's license. However, only the government drivers mentioned that vision should be checked for impairments before any person is issued a driver's license.

The finding that commercial drivers did not deem visual testing as a prerequisite might be attributable to low level of awareness among this group. Furthermore, visual testing might be a prerequisite for employment and provided for free to drivers in government establishments. Three out of ten government drivers had eye test done before obtaining current licenses, whereas only about 1 out of 10 commercial drivers had eye test done before obtaining current licenses, and this difference was statistically significant. This was in agreement with the findings obtained from a study on visual function of commercial drivers in Ilorin [9] and also in Osun, Ondo and Ogun states , in which most of the respondents did not have their eyes tested at first licensing and also did not have testing at least once during renewals [3,13-15]. Also, it was reported from a Kenyan study that majority of the drivers were awarded licenses without having undergone visual acuity test which was to be done by traffic police officers, which in turn poses a lot of danger because most Kenyans relied on public service vehicles for transport [16]. The poor compliance to pre-licensing eye test in this study is not peculiar to these groups of vehicle drivers since it has been reported elsewhere [3,9].

There is a pressing need to enforce eye test before issuance and renewal of motor driving license among motorists. Also, an aggressive public awareness campaign on visual screening as part of the requirements for issuance of driver´s license with enforcement by those charged with this responsibility in our country are needed for public health and safety. More than three quarters of government and commercial drivers that had their eye test for visual acuity examination done at the FRSC office and hospital, before issuance of their current license. This was however encouraging because credibility of the test results from both sources were assured. Majority of the drivers from the focus group discussion agreed that serial visual acuity testing should be a pre-requisite for renewal of driver´s license. This finding is similar to studies in southwestern Nigeria, and other parts of Africa have shown that all categories of drivers are aware of the importance of good vision to driving [2,10,14,17]. A study conducted in Ghana reported that commercial drivers had a good general attitude towards road safety and that majority of them believed that actions such as vision examinations would lower the risk of crashes and injuries [2,18].

Three fifth of government drivers were taught how to drive by personal tutors, whereas four fifth of commercial drivers knew how to drive through the aid of personal tutors, and this difference was statistically significant. The plausible reason for this is that many of the commercial drivers started as motor apprentices and they were usually taught driving by their bosses whereas the government drivers usually require certification from a registered driving school before being employed, so they go to driving schools more while the commercial drivers stick more to personal tutors. One out of 10 government drivers and less than one out of ten commercial drivers went to registered driving schools. This low turn could be as a result of high charges that clients have to pay for barely some days of training and with the payment being made even before the commencement of training.

Three-quarters of respondents in each study group commenced driving at 20 years of age and above with a higher finding of four-fifths of respondents obtained from another study at Ife [13]. Considering the age at which respondents obtained driver´s license, almost all of the government drivers and commercial drivers obtained theirs at the age of 20

years and above both of which was in agreement with the earlier mentioned study carried out at Ile Ife [13]. The findings between the government and commercial drivers were however a very commendable outcome which could be traced to legislation and enforcement of driving regulations by law enforcement agencies in the country.

Driving experience of the respondents ranges from a year to more than ten years with almost all of government and commercial drivers having more than ten years driving experience. This was in agreement with another study conducted at Ibadan among drivers of public institutions [17].

Good vision is a key component of safe driving as it allows the driver to respond to road signs and other road users more quickly and accurately [19]. Any eye condition that affects vision will greatly impact on one´s ability to drive safely. Some of the barriers faced by discussants most especially the commercial drivers, to accessing eye care services included expensive medical services, busy work schedule, not having enough money and ignorance. In Ghana, a study on barriers to treatment of poor vision among commercial drivers found that not having time to visit the eye clinic, cost of care and fear were barriers to accessing eye care [2]. Likewise, commercial drivers in a Plateau study also listed lack of time to go for treatment as a barrier to accessing care [20]. In addition, lack of awareness of eye problems, spending several hours on the queue before testing and inability to afford the cost of payment for the eye test are some of the "quoted" barriers to utilizing eye care services in previous studies [2,20]. Potential positive influencers of utilizing eye care services included public enlightenment about the good eyesight care and reducing cost of care. All drivers felt that eye examination and treatment should be free or affordable. One discussant also stated that provision of more job opportunities for drivers could improve access to eye care.

These reported barriers point to the need for an aggressive eye health education targeting both government and commercial drivers. Also, there is a need for continuous sensitization of drivers through the media about the importance of eye examination at first licensing and also during the renewal processes. Cost-sharing plan should also be put in place by the government so that more drivers will have easier access to eye care services in Osun state.

Owing to the fact that drivers (commercial intra-city and government employed) are mobile, the research team explored the meeting days of the drivers and other days based on the directive by unions heads (commercial intra-city drivers) and drivers unit head state secretariat (government employed) for the conduct of the study.

Conclusion

Our study revealed that driving and eye tests were necessary pre-requisites for issuance and renewal of driver's license. Despite ownership of driver's license by both group of drivers, pre-license driving tests and eye tests were mostly done by government drivers. Also, inability to afford treatment services, busy work schedule and drivers being ignorant about their visual status were perceived barriers observed to accessing eye care services mostly among commercial drivers. We recommended public awareness campaign on the need for visual screening and driving test as part of requirements for issuance and re-issuance of driver's license in Osun state. Also, public enlightenment about good eyesight care and provision of free serial eye examination for drivers in Osun state could improve utilization of eye care and testing services.

What is known about this topic

- Requirements for driving among commercial and government divers as it relates to driving and eye tests for issuance of driver's license

What this study adds

- Perceived barriers to eye care services among commercial and government drivers

Competing interests

The authors declare no competing interest.

Authors' contributions

AOA conceived and designed the study, analyzed, and interpreted the data, and wrote draft manuscript, AE, SA, AA, and OA contributed to interpretation

of data and revised manuscript for intellectual content, MK contributed to revised manuscript for intellectual content. All authors read and approved the final version of the manuscript.

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Figure 2: Perceived barriers to accessing eye care services by government and commercial drivers in Osun State, Nigeria - 2015

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Table 1: Socio-demographics of government and commercial drivers in Osogbo, Osun State, Nigeria-2015

Characteristics	**Driver type**		**p-value**
	Government N=120 n (%)	**Commercial N=120 n (%)**	
Age (in years)			
20-29	2 (1.7)	14 (11.7)	<0.001*
30-39	34 (28.3)	55 (45.8)	
40-49	36 (30.0)	30 (25.0)	
≥ 50	48 (40.0)	21 (17.5)	
Mean age	43.64±7.88	46.30±10.74	
Educational level			
Primary	41 (34.2)	53 (44.2)	<0.001*
Secondary	58 (48.3)	63 (52.5)	
Tertiary	21 (17.5)	4 (3.3)	
Religion			
Christianity	61 (50.8)	31 (25.8)	<0.001*
Islam	59 (49.2)	89 (74.2)	
Monthly income (in naira)			
< 18,000	3 (2.5)	32 (26.7)	<0.001*
≥ 18,000	117 (97.5)	88 (73.3)	
*Statistically significant			

Table 2: Pre-requisites for issuance of driver's license among government and commercial drivers in Osogbo, Osun State, Nigeria- 2015

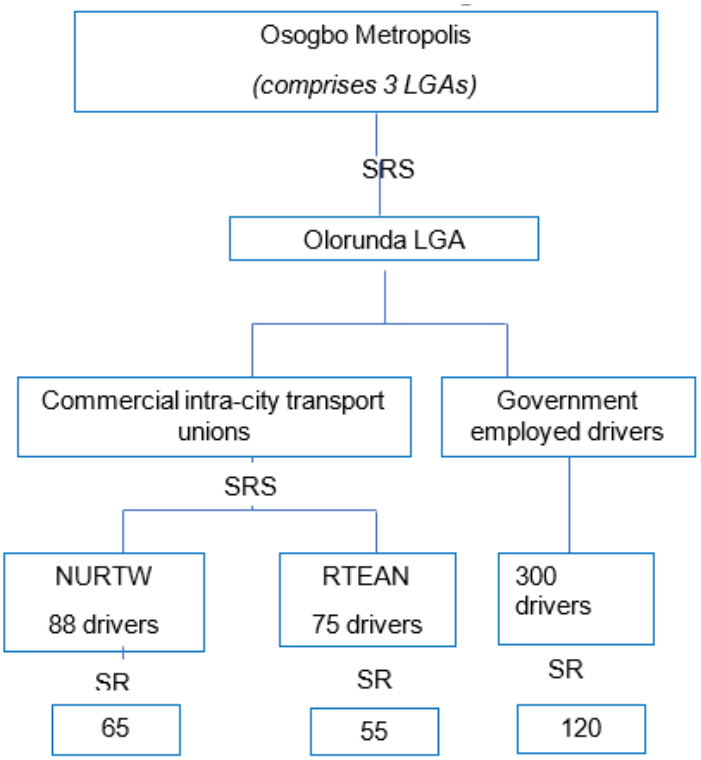
Characteristics	**Driver type**		**p-value**
	Government **n (%)**	**Commercial** **n (%)**	
Driving test before issuance of driver's license (n=240)			
Yes	105 (89.7)	86 (76.1)	0.006*
No	12 (10.3)	27 (23.9)	
Driving tutors (n=240)			
Registered	21 (21.0)	18 (16.7)	0.424
Unregistered	79 (79.0)	90 (83.3)	
Eye test before issuance of driver's license (n=230)			
Yes	35 (29.9)	16 (14.2)	0.004*
No	82 (70.1)	97 (85.8)	
Location for eye test (n=51)			
Hospital	13 (37.1)	6 (37.5)	0.252
FRSC office	14 (40.0)	8 (50.0)	
Licensing office	4 (11.4)	0 (0.0)	
Vehicle inspection office	2 (5.7)	2 (12.5)	
Others	2 (5.7)	0 (0.0)	

*Statistically significant

Others: Government employed drivers' unit; State secretariat conducted by medical doctors during free eye test program.

Table 3: Ownership and status of driver's license of government and commercial drivers in Osogbo, Osun State, Nigeria- 2015

Characteristics	**Driver type**		**p-value**
	Government n (%)	**Commercial n (%)**	
Ownership of driver's license (n=240)			
Yes	117 (97.5)	113 (94.2)	0.196
No	3 (2.5)	7 (5.8)	
Status of driver's license (n=230)			
Expired	22 (18.8)	26 (23.0)	0.433
Not expired	95 (81.2)	87 (77.0)	
Age driver's license was obtained (in years) (n=230)			
< 20	11 (9.4)	13 (11.5)	0.602
≥ 20	106 (90.6)	100 (88.5)	
Driving history (in years) (n=240)			
0-4	3 (2.5)	0 (0.0)	0.113
5-9	9 (7.5)	11 (9.2)	
≥ 10	108 (90.0)	109 (90.8)	



SRS: Simple random sampling; NURTW: National Union of Road Transport Workers; RTEAN: Road Transport Employers Association

Figure 1: Flow diagram of the sampling procedure for selection of eligible drivers in Osun State, Nigeria - 2015

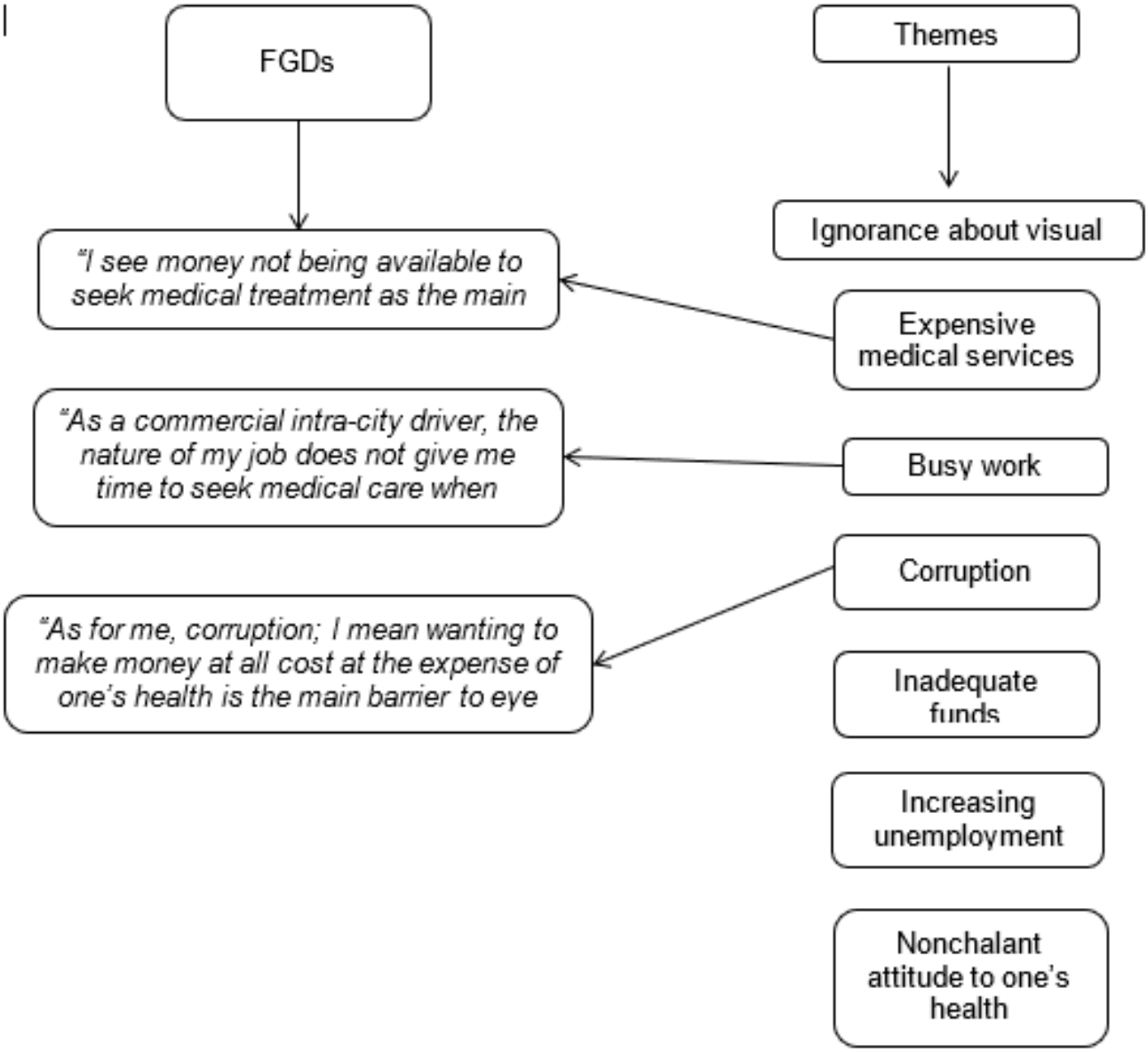


Figure 2: Perceived barriers to accessing eye care services by government and commercial drivers in Osun State, Nigeria - 2015