



# HIV/AIDS and the long-distance truck drivers in south-west Nigeria: A cross-sectional survey on the knowledge, attitude, risk behaviour and beliefs of truckers

Glory O. Atilola<sup>a</sup>, Onoja Matthew Akpa<sup>b,\*</sup>, I.O.O. Komolafe<sup>a</sup>

<sup>a</sup> Department of Biological Sciences, Redeemer's University, P.M.B. 3005, Redemption City, Ogun State, Nigeria

<sup>b</sup> Department of Mathematical Sciences, Redeemer's University, P.M.B. 3005, Redemption City, Ogun State, Nigeria

Received 15 April 2010; received in revised form 2 July 2010; accepted 23 August 2010

## KEYWORDS

Truck drivers;  
HIV/AIDS;  
Knowledge of HIV/AIDS;  
HIV risk behaviour;  
Commercial sex workers;  
Condom use;  
South-west Nigeria

## Summary

**Objectives:** According to the last HIV surveillance survey conducted in 2008, the overall National HIV prevalence in Nigeria stands at 4.6%. Recent studies and estimates by UNAIDS/WHO show higher prevalences in some selected states in Nigeria. The focus of this study is to determine the prevalence, risk behaviour, attitude and knowledge of HIV among long-distance heavy-truckers from a cross-sectional survey conducted in the south-west Nigeria.

**Methods:** Four major truck terminals (devoted to long-distance trips) in south western Nigeria were identified. A cross-sectional survey was conducted using a total sample size of 451 truckers who consented to be interviewed. A questionnaire (in English, Hausa and Yoruba languages) for data collection on the socio-demographic, risk behaviour, attitude and knowledge of HIV from the truckers was also designed. The multiple logistic regressions analysis was used to assess the association between some selected variables and factors.

**Results:** Only 164 (36.4%) participants out of the study population of 451 were tested for HIV (due to limited test facilities and consent) and the prevalence of HIV antibodies among the truckers was found to be 2.4% (4/164) with all the infected individuals being within 21–30 years of age. 309 (68.1%) of the respondents admitted that they were at risk of contracting HIV while a total of 249 (55.3%) admitted that they had more than one sexual partners. In addition, while 392 (86.9%) said it was important for them to know their HIV status, 88 (19.5%) said that they would commit suicide should they test positive for HIV.

\* Corresponding author. Tel.: +234 803 215 9579.

E-mail address: [onojamatthew@yahoo.co.uk](mailto:onojamatthew@yahoo.co.uk) (O.M. Akpa).

*Conclusion:* Although the HIV prevalence rate observed among the tested participants (2.4%) was lower than the overall national prevalence (4.6%), the result calls for concern as it showed that the population of truckers is a potential high risk group in Nigeria. Also, the mobile nature of this high-risk group has made getting HIV/AIDS awareness messages across to them a difficult task.

© 2010 King Saud Bin Abdulaziz University for Health Sciences. Published by Elsevier Ltd. All rights reserved.

## Introduction

The estimate of HIV prevalence in Nigeria has declined from 5.8% in 2001 through 5% in 2003 to 4.4% in 2005. However, between 2005 and 2008, the prevalence has increased slightly from 4.4% to 4.6%. A trend analysis of HIV prevalence among youths 15–24 years gave evidence of declining prevalence from 2001 to 2008 (i.e. 6.0% in 2001 to 5.3% in 2003 and 4.3% in 2005 to 4.2% in 2008) [17]. Based on the overall national prevalence of 4.6% obtained in the 2008 (latest) HIV surveillance survey, it was estimated that 2.95 million people in Nigeria are living with HIV/AIDS in 2008 with approximately 833,000 of them requiring Antiretroviral drugs (ARV) drugs [17].

Although the situation of HIV epidemic in Nigeria nullifies the high risk epidemic topology common in most developed countries, the situation among the female sex workers (FSW) and the truckers can be distinctly followed if effort is made. Among the high risk groups, FSW constitute an important reservoir of HIV infection for continuous transmission to the general population [17]. The prevalence of HIV among this group has remained high and on the increase from 17.5% (among the brothel based FSW) in 1991 through 22.5% in 1993 (FMOH high risk survey) to 37.4% in 2007 [17].

Many of the truck drivers engage in a long-distance journey from locations in the far northern part of Nigeria to the south-west zone (particularly Lagos) to carry both commodity goods and fuel. Due to the distance, and the nature of the road network, the journey usually takes the truckers away from their families and immediate environments for days and sometimes weeks, thereby exposing them to the temptation of satisfying their sexual needs with female sex workers in and around the truck terminals.

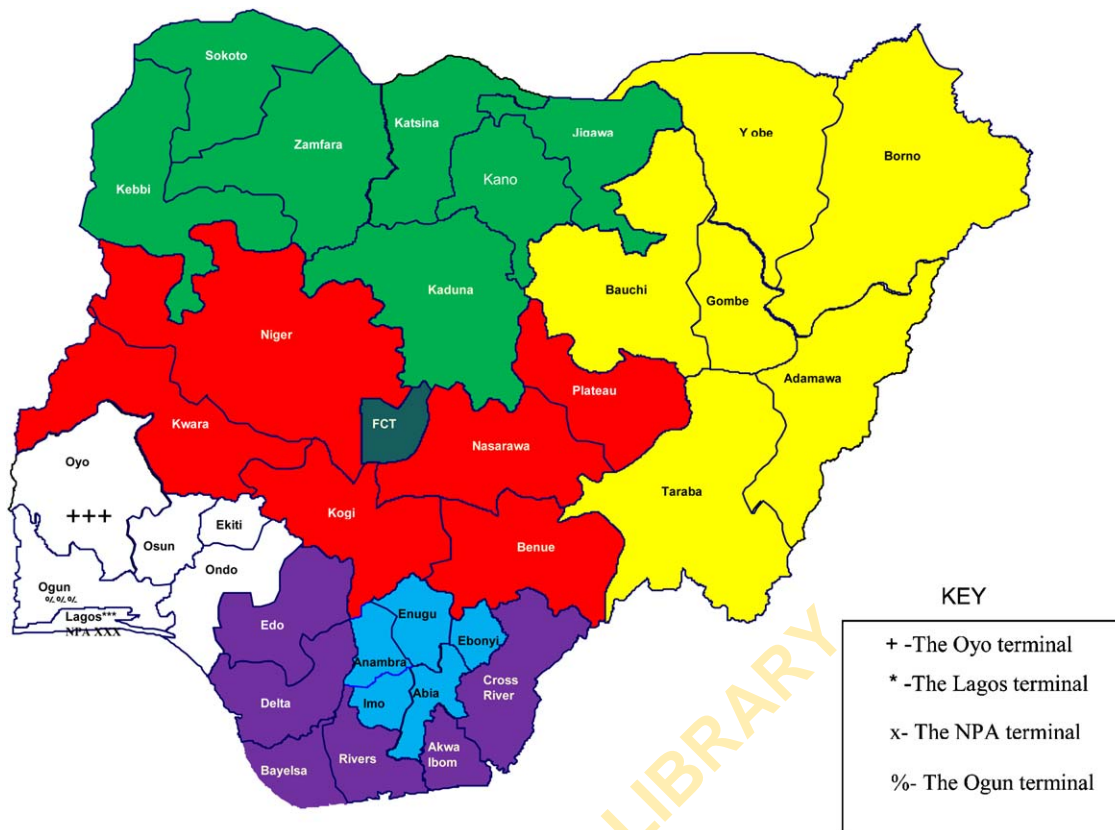
In Nigeria and many other countries of the world, the sexual behaviour of truckers coupled with their low level of education and poor HIV awareness, campaign among them have ranked high as the main cause of the relatively high rate of HIV prevalence among them [3–9]. In many situations, the

truckers, looking for alternative outlets for satisfying their sexual needs and to reduce the loneliness caused by the absence from their families, have been known to visit female sex workers (FSW) quite frequently [7].

In a study conducted in Pakistan [7] the results showed that unsafe sex with the FSW and fellow crew members was common. Also, long distance truck drivers in Pakistan had serious gaps in their knowledge about HIV/AIDS, especially its mode of transmission and they had a negative attitude towards persons with AIDS [7]. In a more recent work by Pandey et al. [3], there was low self-risk perception for HIV, low consistent condom use for casual sex, low reported exposure to any interventions and low levels of ever having taken an HIV test among long-distance truckers. Using time-trend modeling, Jackson et al. [6] found significant declines in self-reported high-risk sexual behaviour during a one-year follow-up study among truckers. Apart from that, Mupemba [4] conducted a survey among truckers in Zimbabwe to encourage the use of condom, especially among female sex workers and to emphasize the dangers of unprotected sex and large numbers of sexual partners. It was found that many truckers believed that it was not manly to restrict one's sexual activities to a single woman while others claimed that they succumbed to the advances of FSW when drunk, lonely, infatuated or otherwise vulnerable.

In Bangladesh, analysis of survey data among truckers revealed that having more than one sexual partner in the last month, never using a condom with sex workers and ever injected narcotics were significant predictors of sexually transmitted infections (STI) among truckers [8].

Several cross sectional studies relating to the attitude toward people living with HIV (PLWHA) have been published in Africa and other parts of the world [4–6,20,22–24]. Unlike studies conducted in some African countries [4–6], Asia [3,7,8,18,21] and Brazil [19] all the truckers contacted in Europe



**Figure 1** Map of Nigeria showing the six geopolitical zones and the south-west zone (the uncoloured portion).

who reported engaging in sexual contact with sex-workers admitted that they always used condom [9].

Although many studies have been conducted in Nigeria on HIV/AIDS and certain populations groups [1,2,10–14] and truckers [20,22–24], there has been no evidence of any past or recent study on the knowledge, attitude, sexual practice and the beliefs about HIV/AIDS infections among long-distance truck drivers in the south-west Nigeria. This has been in part due to the fact that the population of truckers is highly mobile and conducting a study among them requires a lot of determination, strategies as well as resources.

This paper therefore, assessed the current level of awareness and the prevalence of HIV/AIDS among truckers in the south-west zone of Nigeria (Fig. 1). Specifically, it assessed the risk behaviour of the truckers, their health-seeking behaviour, sexual practices, beliefs as well as their attitude towards HIV/AIDS infections.

In the present study, findings from a comprehensive cross-sectional survey conducted among the long-distance truckers in the south-west Nigeria (Fig. 1), are reported.

## Materials and methods

### Study design, site and population

Four truck terminals in the south-west geopolitical zone of Nigeria were identified (Fig. 1): the Eleekara, Oyo State (Oyo) terminal; the Dangote Central Workshop, Lagos State (Lagos) terminal; Nigerian Port Authority, Lagos State (NPA) terminal; and the Ibafo, Ogun State (Ogun) terminal. Prior to the actual survey, an awareness campaign was conducted at the various terminals to sensitize the communities with the elementary knowledge of HIV/AIDS and to warn them against risky behaviours. The campaign also announced our intention to carry out a study among them which received a high positive response in each of the truck terminals visited. On the day of the interview, the various fleet (truck) management offices in the terminal were informed of our presence and the destination for the interview. A brief awareness was equally carried out among truckers to invite them for the interview/screening test. Thereafter, truckers came to the interview stand on their own volition and truckers who gave consent were given the general questionnaire to fill while

further consent was requested for the HIV screening test.

### The inclusion criteria

The study population included long-distance truck drivers and their assistants that were present at any of the truck terminals and who gave consent to participate in the study. Every trucker was enrolled to participate in the study provided he met the inclusion criteria: all truckers and their assistants present in any of the terminals at the time of study, truckers who gave informed consent and understood English, Hausa, Yoruba or Pidgin English (a local version of the English language).

All truckers and their assistants who did not give consent and non-truckers found in any of the study locations were excluded from the study. Truckers were identified by their names and identities provided in the records of their respective fleet management offices in the various study locations to enable us eliminate the possibility of duplications.

### Sample size and data collection

A total of 451 participants were interviewed in the study. Copies of the questionnaires administered contained comprehensive questions relating to the participants' demography, knowledge of, attitude towards and belief about HIV/AIDS. Other information included risk behaviour and practices of preventive measures. Due to the low level of educational background of some of the truckers, questionnaire was prepared in English language, Hausa, Yoruba as well as Pidgin English and participants were free to choose the language with which they wished to be interviewed. In addition, the questionnaire was tested for comprehensiveness prior to the study and in most cases the questionnaire was completed within or about 10 min.

Interviews were conducted with participants in a semi-secluded place in order to ensure confidentiality of responses.

Furthermore, free HIV test and counselling were conducted for as many as agreed to be tested and a total of 164 truckers were tested. Thereafter, the participants were given two HIV/AIDS stickers and fliers to paste on their trucks, and a chance to ask any question regarding HIV/AIDS.

### HIV spot test

Blood samples were collected from all participants who agreed to be tested on a one-on-one basis. Determine<sup>®</sup> and Starpac<sup>®</sup> test kits were used

as recommended by the National Agency for the Control of AIDS (NACA). Determine<sup>®</sup> was used for the screening and Starpac<sup>®</sup> for confirmation of positive results. Testing was conducted by two certified medical personnel from the Redeemed Action Packed AIDS Committee (RAPAC).

In addition, participants were requested to fill an additional (but very brief) questionnaire containing questions on the age of the participants and selected risk behaviours (Table 7).

### Data management and statistical analysis

The response given by the respondents was coded for easy input into the computers. The Statistical Package for Social Sciences (SPSS), version 13.0 was used to obtain the frequencies and the percentages of the responses given by the truckers. The analysis for each terminal was done separately and then for all the terminals together.

Multiple logistic regression analysis was carried out to examine the association of some selected variables with factors considered to be critical to the objectives of the survey.

### Ethical consideration

Permission to conduct the study among the truckers was obtained from the appropriate authorities and the participants. All the participants who gave informed consent were at liberty to withdraw from the study at anytime. Also, the free HIV test and counselling was conducted by medically certified experts from RAPAC in a very confidential and secluded atmosphere.

In addition, participants' confidentiality was further guaranteed by ensuring that the administration of the questionnaire and the interviews that backed up the filling of the questionnaires took place in privacy.

### Results

A total of 451 truckers were interviewed in this study with 177 (39.2%), 107 (23.7%), 88 (19.5%) and 79 (17.5%) truckers from Oyo, Lagos, NPA and Ogun terminals respectively (Fig. 1).

### Socio-demographic

Of the 451 truckers interviewed, 71 (15.7%) were under 20 years of age, compared to 202 (44.8%) and 143 (31.7%) that fell within the modal 21–30 and 31–40 years age group respectively while only 35

**Table 1** The socio-demographic distribution of truckers within terminals.

Variables	Oyo (N = 177)	Lagos (N = 107)	NPA (N = 88)	Ogun (N = 79)	Combine (N = 451)
<b>Age (years)</b>					
≤20	38 (21.5)	12 (11.2)	9 (10.2)	12 (15.2)	71 (15.7)
21–30	89 (50.3)	40 (37.4)	37 (42.0)	36 (45.6)	202 (44.8)
31–40	44 (24.9)	45 (42.1)	33 (37.5)	21 (26.6)	143 (31.7)
>40	6 (3.4)	10 (9.3)	9 (10.2)	10 (12.7)	35 (7.8)
<b>Education</b>					
None	49 (27.7)	33 (30.8)	20 (22.7)	25 (31.6)	127 (28.2)
Primary	90 (50.8)	66 (61.7)	64 (72.7)	51 (64.6)	271 (60.1)
Secondary	30 (16.9)	8 (7.5)	4 (4.5)	3 (3.8)	45 (10.0)
Tertiary	8 (4.5)	—	—	—	8 (1.8)
<b>Marital status</b>					
Single	108 (61.0)	45 (42.1)	35 (39.8)	35 (44.3)	223 (49.4)
Married	69 (9.0)	62 (57.9)	53 (60.2)	44 (55.7)	228 (50.0)
Separated	—	—	—	—	—
Divorced	—	—	—	—	—
Others	—	—	—	—	—
<b>Residence</b>					
Lagos	34 (19.2)	92 (86.0)	32 (36.4)	70 (88.6)	228 (50.6)
Oyo	143 (80.8)	5 (4.7)	—	9 (11.4)	148 (32.8)
Ogun	—	10 (9.3)	42 (47.7)	—	52 (11.5)
Others	—	—	14 (15.9)	—	23 (5.1)
<b>Religion</b>					
Muslim	110 (62.1)	71 (66.4)	61 (69.3)	52 (65.8)	294 (65.2)
Christian	41 (23.2)	23 (21.5)	17 (19.3)	19 (24.1)	100 (22.2)
Others	26 (14.7)	13 (12.1)	10 (11.4)	8 (10.1)	57 (12.6)

(7.8%) truckers were 40 years and above (Table 1).

Except for the Lagos terminal whose modal age group was 31–40 years, the modal age group of the truckers from all the other terminals was 21–30 years group, indicating that most of the truckers were youths in their active/productive age.

Also, the highest proportion of truckers 271 (60.1%) had only primary education with only 45

(10.0%) of the 451 truckers having a secondary school education. None of the truckers had a tertiary education, except 8 (4.5%) of them in the Oyo terminal who had obtained some level of education above the normal secondary school education available in Nigeria. A large population 127 (28.2%) had no formal education at all. Majority of the truckers 294 (65.2%) were Muslims while 100 (22.2%) and

**Table 2** Truckers knowledge of HIV/AIDS within terminals.

Variables	Oyo (N = 177)	Lagos (N = 107)	NPA (N = 88)	Ogun (N = 79)	Combine (N = 451)
<b>Have you heard about HIV/AIDS before?</b>					
Yes	153 (86.4)	88 (82.2)	80 (90.9)	73 (92.4)	394 (87.4)
No	24 (13.6)	19 (17.8)	8 (9.1)	6 (7.6)	57 (12.6)
<b>Does a negative result on a first test mean you do not have HIV?</b>					
Yes	128 (72.3)	57 (53.3)	71 (80.7)	66 (83.5)	322 (71.4)
No	49 (27.7)	50 (46.7)	17 (19.3)	13 (16.5)	129 (28.6)
<b>How often does one need to go for HIV test in a year?</b>					
Once	23 (13.0)	59 (55.1)	18 (20.5)	18 (22.8)	23 (5.1)
Twice	63 (35.6)	28 (26.2)	46 (52.3)	33 (41.8)	158 (35.0)
Three times	63 (35.6)	16 (15.0)	18 (20.5)	15 (15.19)	170 (37.7)
Four times	28 (15.8)	—	6 (6.8)	13 (16.4)	77 (17.1)
Not at all	—	—	—	—	21 (4.7)
No response	—	2 (1.9)	—	—	2 (0.4)
<b>Is there any drug that can be taken to by HIV positive person to help their condition?</b>					
Yes	141 (79.7)	86 (80.4)	75 (85.2)	65 (82.3)	367 (81.4)
No	36 (20.3)	21 (19.6)	13 (14.8)	14 (17.7)	84 (18.6)

**Table 3** Attitude of truckers towards HIV/AIDS within terminals.

Variables	Oyo (N = 177)	Lagos (N = 107)	NPA (N = 88)	Ogun (N = 79)	Combine (N = 451)
Is it important for you to know your HIV status?					
Yes	159 (89.8)	91 (15.0)	76 (86.4)	70 (88.6)	396 (87.8)
No	18 (10.2)	16 (78.5)	12 (13.6)	9 (11.4)	55 (12.2)
Do you know your HIV status?					
Yes	102 (57.6)	84 (78.5)	68 (77.3)	64 (81.0)	318 (70.5)
No	75 (42.4)	23 (21.5)	20 (20.7)	15 (19.0)	133 (29.5)
Would you like to know your HIV status?					
Yes	172 (97.2)	95 (88.8)	72 (81.8)	62 (78.5)	401 (88.9)
No	5 (2.8)	12 (11.2)	16 (18.2)	17 (21.5)	50 (11.1)
Do you know where you can be tested for HIV?					
Yes	132 (74.6)	86 (80.4)	79 (89.8)	71 (89.9)	368 (81.6)
No	45 (25.4)	21 (19.6)	9 (10.2)	8 (10.1)	83 (18.4)
If you were HIV positive, would want people to know?					
Yes	71 (40.1)	31 (29.0)	48 (54.5)	56 (70.9)	206 (45.7)
No	106 (59.9)	76 (71.0)	40 (45.5)	23 (29.1)	245 (54.3)
Where would you go for help if you tested positive?					
Hospital	138 (78.0)	96 (89.7)	73 (83.0)	59 (74.7)	366 (81.2)
Church	34 (19.2)	4 (3.7)	6 (6.8)	5 (6.3)	49 (10.9)
Mosque	—	—	—	—	—
No where	—	—	2 (2.3)	1 (1.3)	3 (0.7)
Self medication	—	—	—	14 (17.7)	—
Native doctors	5 (2.8)	7 (6.5)	5 (5.7)	—	31 (6.9)
No response	—	—	2 (2.3)	—	2 (0.4)
How would you feel if you tested positive for HIV?					
Very sad	126 (71.2)	92 (86.0)	72 (81.8)	65 (82.3)	355 (78.7)
Would commit suicide	51 (28.8)	7 (6.5)	16 (18.2)	14 (17.7)	88 (19.5)
Indifferent	—	7 (6.5)	—	—	7 (1.6)
No response	—	1 (0.9)	—	—	1 (0.2)
Would you stay together with an individual who is HIV positive?					
Yes	116 (65.5)	32 (29.9)	53 (60.2)	61 (77.2)	262 (58.1)
No	61 (34.5)	75 (70.1)	35 (39.8)	18 (22.8)	189 (41.9)

Note: To 'stay together with an individual who is HIV positive' is to dwell in the same house/compound with an HIV patient.

57 (12.6%) practiced Christianity and other religions respectively.

Classification of the truckers based on the geopolitical zone of origin (Fig. 1) revealed that most of the truckers (158/35%) interviewed in the various terminals along the south-west axis were from the north-eastern (NE) part of Nigeria compared to 11 (2.4%) from the south-west (SW). Also, 124 (27.5%), 1 (0.2%), 23 (5.1%) and 11 (2.4%) of the truckers were from the north-west (NW), north-central (NC), south-east (SE) and the south-south (SS) geopolitical zones respectively (Table 1).

### Knowledge of HIV

In Table 2, majority of the truckers, 331 (73.4%) said that it was possible to know an HIV positive person from appearance while 120 (26.6%) disagreed with the notion. It was also observed that higher percentage of the people interviewed in each of the terminals said that an HIV positive person could

be identified from his/her appearance — Oyo 137 (77.4%), Lagos 67 (62.6%), NPA 68 (77.3%) and Ogun 59 (74.7%).

In addition, 367 (81.4%) of the trucker had the understanding that there were drugs that could help HIV patients in their condition and this knowledge ran through all the terminals; Oyo 79.7%, Lagos 80.4%, NPA 85.2% and Ogun 82.3.

The question on the route of HIV transmission required multiple answers as there were more than one correct response. 395 (87.8%) responded that blood was required for HIV test while 25 (5.5%), 19 (4.2%), and 10 (2.2%) responded that saliva, sputum and urine respectively were needed for HIV test with only 3 (0.4%) not responding to the question. Majority of the truckers 327 (72.5%) chose sex to be the major route of HIV transmission while 93 (20.6%), 22 (4.9%) and 9 (2.0) chose blood transfusion, sharing injection needle and mosquito bite as the major route for HIV transmission respectively.

**Table 4** Risk behaviours and preventive measures of truckers within terminals.

Variables	Oyo (N = 177)	Lagos (N = 107)	NPA (N = 88)	Ogun (N = 79)	Combine (N = 451)
Do you think you are at risk of contracting HIV/AIDS?					
Yes	126 (71.2)	50 (46.7)	69 (78.4)	64 (81.0)	309 (68.5)
No	51 (28.8)	57 (53.3)	19 (21.6)	15 (19.0)	142 (31.5)
How can HIV be prevented?					
By using condoms	63 (35.6)	84 (78.5)	56 (63.6)	55 (69.5)	258 (57.2)
Total abstinence from sex	114 (64.4)	23 (21.5)	32 (36.4)	24 (30.4)	193 (42.8)
How many sexual partners do you have now?					
None	25 (14.1)	—	—	—	25 (5.5)
One	75 (42.4)	61 (57.0)	25 (28.4)	16 (20.3)	177 (39.2)
Two	60 (33.9)	27 (25.2)	41 (46.6)	45 (57.0)	173 (38.2)
More than two	17 (9.6)	19 (17.8)	22 (25.0)	18 (22.8)	76 (16.9)
When you travel, where do you take your night rest?					
Inside vehicle	140 (79.1)	73 (68.2)	59 (67.0)	58 (73.4)	330 (73.2)
Rest houses	37 (20.9)	34 (31.8)	29 (33.0)	21 (26.6)	121 (26.8)
Have you had sex with anyone on any of your trips?					
Yes	145 (81.9)	58 (54.2)	76 (86.4)	67 (84.8)	346 (76.7)
No	32 (18.1)	49 (45.8)	12 (13.6)	12 (26.6)	105 (23.3)
Do you ever have sex with anyone else besides your spouse?					
Yes	141 (79.7)	66 (61.7)	55 (62.5)	57 (72.2)	319 (70.7)
No	36 (20.3)	41 (38.3)	33 (37.5)	22 (27.8)	132 (29.3)
If yes to the above question, what protective measures do you use if at all?					
Condom	177 (100)	89 (83.2)	64 (72.7)	61 (77.2)	60 (13.3)
Others	—	18 (16.8)	24 (27.3)	18 (22.8)	391 (86.7)
Have you ever used a condom?					
Yes	148 (83.6)	85 (79.4)	66 (75.0)	63 (79.7)	362 (80.3)
No	29 (16.4)	22 (20.6)	22 (25.0)	16 (20.3)	89 (19.7)
If yes to the question above, how often?					
Rarely	—	9 (8.4)	19 (21.6)	14 (17.7)	42 (9.3)
Occasionally	40 (22.6)	7 (6.5)	—	2 (2.5)	49 (10.9)
Most of the time	99 (55.9)	54 (50.5)	42 (47.7)	40 (50.6)	235 (52.1)
All the time	38 (21.5)	17 (15.9)	7 (8.0)	6 (7.6)	68 (15.1)
No response	—	20 (18.7)	20 (22.7)	17 (21.5)	57 (12.6)
For what reasons have you used a condom?					
Avoiding HIV&STI	68 (38.4)	41 (38.3)	57 (64.8)	39 (49.4)	205 (45.5)
Avoiding pregnancy	109 (61.6)	66 (61.7)	31 (35.2)	40 (50.6)	246 (54.5)
Do you support polygamy?					
Yes	38 (21.5)	51 (47.7)	27 (30.7)	21 (26.6)	137 (30.4)
No	139 (78.5)	54 (52.3)	61 (69.3)	58 (73.4)	314 (69.6)
Do you support cultural practice of wife inheritance?					
Yes	57 (32.2)	43 (40.2)	10 (11.4)	9 (11.4)	119 (26.6)
No	120 (67.8)	64 (59.8)	78 (88.6)	70 (88.6)	332 (73.6)
If your brother died of AIDS, would you still inherit his wife?					
Yes	8 (4.5)	19 (17.8)	2 (2.3)	79 (100.0)	29 (6.4)
No	169 (95.5)	88 (82.2)	86 (97.7)	—	422 (93.6)

Note: How many sexual partners do you have now? The 'now' means within last month.

## Attitudes

Of the 451 truckers interviewed (Table 3), 133 (29.5%) did not know their HIV status while 50 (11.1%) said they would not want to know. However, 396 (87.5%) of the truckers said it was important for them to know their HIV status and 83 (18.4%) of the truckers confessed that they did not know where to go for an HIV test.

Another important attitude of the truckers was the fact that more than half of those interviewed (245/54.3%) admitted that they would not want people to know should they test positive for HIV. While 88 (19.5%) said they would commit suicide should they test positive for HIV. However, 355 (78.7%) said they would only feel very sad if they tested positive.

**Table 5** Truckers beliefs about HIV/AIDS within terminals.

Variables	Oyo (N = 177)	Lagos (N = 107)	NPA (N = 88)	Ogun (N = 79)	Combine (N = 451)
Can AIDS kill?					
Yes	162 (91.5)	98 (91.6)	88 (100)	60 (75.9)	408 (90.5)
No	15 (8.5)	9 (8.4)	0 (0)	19 (24.1)	43 (9.5)
Do you belief HIV is in town?					
Yes	149 (84.2)	92 (86)	78 (88.6)	66 (83.5)	385 (85.4)
No	28 (15.8)	15 (14)	10 (11.4)	13 (16.5)	66 (14.6)
Does having sex with a virgin cure HIV/AIDS?					
Yes	21 (11.9)	14 (13.1)	1 (1.1)	2 (2.5)	38 (8.4)
No	156 (88.1)	93 (86.9)	87 (98.9)	77 (97.5)	413 (91.6)
Can AIDS be cured?					
Yes	43 (24.3)	66 (61.7)	34 (38.6)	28 (35.4)	171 (37.9)
No	134 (75.7)	41 (38.3)	54 (61.4)	51 (64.6)	280 (62.1)
If yes to the question above, what do you think can cure AIDS?					
Local herbs	38 (21.5)	22 (20.6)	70 (79.5)	25 (31.6)	103 (22.8)
Hospital drugs	139 (78.5)	85 (79.4)	18 (20.5)	54 (68.4)	348 (77.2)

Note: 'HIV is in town' means HIV infections is in the general population of the participant's place of domicile.

In addition, 262 (58.1%) of the respondents said they could stay together (dwell) with an individual who is HIV positive while 189 (41.9%) of the truckers said they could not stay together with anyone living with HIV/AIDS.

From the results across the terminals, it was only in Lagos terminal that we recorded the lowest percentage (30%) of people willing to live (dwell) with PLWHA. Results from the other terminals, showed a higher proportion of truckers agreeing that they could dwell with HIV positive persons (Table 3).

### Risk behaviour and preventive measure

Of the 177 truckers interviewed at the Oyo terminals, 114 (64.4%) said to prevent HIV infection, one has to completely abstain from sex while 63 (35.6%) said that the use of condom prevents one from being infected with HIV. Majority of the truckers in each of the terminals believed that the use of condom was a sure way to prevent HIV, except for the Oyo terminal (Table 4). Overall, 258 (57.2%) truckers said that condom usage is a good preventive measure for HIV infection.

Majority of the truckers had one 177 (39.2%) or two 173 (38.2%) sexual partners while 76 (16.9%) and 25 (5.5%) have more than two and no sexual partners, respectively. More than half of the 451 truckers (319 (70.7%)) admitted that they had had sex with person(s) other than their wives and 346 (76.7%) also admitted they had had sex with someone while on trips away from home.

Furthermore, 89 (19.7%) of the truckers agreed that they have never used condom during sex, 42 (9.3%) agreed that they rarely used condom during sex while 235 (52.1%) of them said they do use con-

dom when having extra-marital sex. At the Ogun terminal, 70 (8.6%) of the 79 truckers interviewed said that they did not support the cultural practice of wife inheritance (i.e. getting married to the wife of a departed close relative) while all of them (100%) said they would never inherit their brother's wife should he die of AIDS (Table 4).

### Belief about HIV/AIDS

On the question of whether or not AIDS could kill, 408 (90.5%) of the 451 truckers said AIDS can kill while 43 (9.5%) of them said that AIDS cannot kill. Across the terminals, 162 (91.5%) out of the 177 truckers interviewed at the Oyo terminals agreed that AIDS could kill while all the truckers 88 (100%) interviewed at the NPA also agreed that AIDS could kill (Table 5).

Also, 385 (85.4%) of the study population believed that HIV was in town (i.e. there is HIV infection in the general population of the participant's place of domicile), while 28 (15.8%) of the 177 truckers interviewed at the Oyo terminal believed that HIV was not in their town.

Furthermore, a total of 280 (62.1%) of the 451 truckers agreed that AIDS cannot be cured while 103 (22.8%) believed that AIDS can be cured.

Apart from that, we also found (Table 5) that 38 (8.4%) of the study population claimed that having sex with a virgin could provide an effective cure for HIV/AIDS while an over whelming 413 (91.6%) disagreed with that notion. However, in all the terminals at least a trucker believed that having sex with a virgin could provide cure for HIV/AIDS.

**Table 6** Logistic regression (OR, 95% CI and the *P* value) for the association of selected variables.

Variables	Odds of willing to be known if HIV positive (95% CI)	Odds of agree to dwell with HIV positive person (95% CI)	Odds of having sex when on trip (95% CI)	Odds of using condom (95% CI)	Odds of having sex with a virgin cure AIDS (95% CI)
Age (in years)					
≤20	1.081 (0.419–2.788)	0.853 (0.311–2.337)	1.867 (0.574–6.069)	1.019 (0.248–4.188)	2.435 (0.236–25.138)
21–30	.784 (0.344–1.789)	0.698 (0.287–1.699)	2.143 (0.760–6.041)	1.489 (0.442–5.016)	3.050 (0.342–27.224)
31–40	.623 (0.289–1.345)	0.467 (0.205–1.064)	1.033 (0.417–2.559)	0.959 (0.330–2.790)	2.339 (0.282–19.376)
>40	–	–	–	–	–
Marital status					
Single	0.990 (0.588–1.666)	0.730 (0.429–1.241)	0.569 (0.280–1.156)	0.916 (0.389–2.158)	0.878 (0.341–2.264)
Married	–	–	–	–	–
Separated	–	–	–	–	–
Divorced	–	–	–	–	–
Others	–	–	–	–	–
Education					
None	2.505 (0.450–13.955)	0.518 (0.096–2.784)	1.346 (0.248–7.299)	0.000 (0.00–0.000)	0.595 (0.054–6.70)
Primary	2.976 (0.545–16.268)	0.459 (0.087–2.416)	1.860 (0.354–9.772)	0.000 (0.000–0.000)	0.728 (0.071–7.443)
Secondary	2.530 (0.425–15.044)	0.472 (0.082–2.719)	0.877 (0.150–5.129)	0.000 (0.000–0.000)	1.606 (0.139–18.565)
Tertiary	–	–	–	–	–
Have you seen anyone die of AIDS?					
Yes	0.873 (0.583–1.308)	0.922 (0.614–1.385)	0.916 (0.549–1.529)	1.299 (0.700–2.408)	1.088 (0.510–2.321)
No	–	–	–	–	–
Do you know your HIV status?					
Yes	0.896 (0.578–1.390)	0.997 (0.644–1.543)	1.640 (0.916–2.938)	1.865 (0.859–4.048)	3.073** (1.467–6.439)
No	–	–	–	–	–
How many sexual partners do you have now?					
One	0.642 (0.242–1.703)	1.596 (0.597–4.271)	0.747 (0.186–3.006)	0.000 (0.000–0.000)	1.364 (0.274–6.797)
Two	0.820 (0.462–1.455)	1.125 (0.639–1.980)	0.405* (0.189–.868)	1.568 (0.726–3.387)	0.859 (0.295–2.501)
Three	0.908 (0.515–1.601)	1.650 (0.938–2.902)	0.529 (0.246–1.135)	2.270 (1.039–4.958)	0.904 (0.314–2.606)
More than three	–	–	–	–	–
Do you ever have sex with anyone else besides your spouse?					
Yes	0.747 (0.485–1.151)	0.919 (0.598–1.411)	0.184*** (0.112–0.304)	0.231*** (0.126–0.422)	1.209 (0.547–2.675)
No	–	–	–	–	–
Do you support cultural practice of wife inheritance?					
Yes	2.123** (1.315–3.427)	1.214 (0.764–1.927)	1.665 (0.951–2.915)	0.763 (0.353–1.651)	0.462 (0.215–0.990)
No	–	–	–	–	–
If your brother died of AIDS, would you still inherit his wife?					
Yes	0.888 (0.377–2.093)	1.859 (0.812–4.258)	1.406 (0.542–3.648)	0.902 (0.223–3.647)	0.695 (0.219–2.208)
No	–	–	–	–	–
Can AIDS be cured?					
Yes	1.115 (0.725–1.715)	1.051 (0.683–1.615)	1.477 (0.870–2.507)	1.070 (0.556–2.061)	0.602 (0.284–1.277)
No	–	–	–	–	–
If yes to the question above, what do you think can cure AIDS?					
Local herbs	1.299 (0.799–2.111)	0.764 (0.470–1.241)	1.218 (0.648–2.289)	0.511 (0.248–1.053)	0.636 (0.240–1.681)
Hospital drugs	–	–	–	–	–

\* *P* < 0.05.\*\* *P* < 0.01.\*\*\* *P* < 0.001.

**Table 7** Summary of the HIV screening results.

Variables	Number screened	% infected
Location		
Oyo	27	0.0
Lagos	19	0.0
NPA	62 (4)	6.5
Ogun	56	0.0
Age (in years)		
≤20	8	0.0
21–30	68 (4)	5.9
31–40	71	0.0
>40	17	0.0
Ever had sexual intercourse		
Yes	146 (4)	2.7
No	18	0.0
Blood transfusion in the last three months		
Yes	11	0.0
No	153 (4)	2.6
Unprotected sex with casual partner(s) in the last three months		
Yes	44 (1)	2.3
No	120	0.0
Unprotected sex with regular partner(s) in the last three months		
Yes	70 (3)	4.3
No	94	0.0
More than one sex partner in the last three months		
Yes	36 (1)	2.8
No	128	0.0

Note: Numbers in the parenthesis are the number of positive participants.

### Multiple logistics regression

A multiple regression analysis was conducted to assess the association of selected factors with some target variables (Table 6). For the test of associations, the odd ratio (OR), 95% confidence interval (CI) for the OR and the *P*-value for rejecting the hypothesis of no association was obtained.

The results of the logistic regression show that those who supported the culture of wife inheritance were more likely to accept being identified in the society if they were HIV positive (OR 2.123; CI 1.315–3.422; *P* = 0.022). Other results show that truckers who had two sexual partners were less likely to have sex with female sex workers while on trip (OR 0.405; CI 0.189–0.868; *P* = 0.020). Also, those who used to have sex with person(s) other than their wives were less likely to have sex while away on trip (OR 0.184; CI 0.112–0.304; *P* = 0.000).

In addition, it was also observed that truckers with three sexual partners were more likely to use condom during sex (OR 2.270; CI 1.039–4.958; *P* = 0.040) while those who had ever had sex with person(s) other than their wives were less likely to use condom during sexual act (OR 0.231; CI 0.126–0.422; *P* = 0.000). The test of association of factors with the belief that having sex with a vir-

gin could cure HIV/AIDS revealed that those who knew their HIV status were more likely to believe the notion (OR 3.073; CI 1.467–6.430; *P* = 0.003). None of the selected variables was found to be significantly associated with staying together with an individual who was HIV positive.

### HIV screening result

Due to lack of facilities and consent of the truckers, only 164 (36.4%) out of the 451 participants participated in the screening test which took place alongside the questionnaire administration. Table 7 shows the distribution of truckers who participated in the screening test with respect to the truck terminals, age and selected risk behaviours. Out of the 164 participants screened, 4 (2.4%) tested positive for HIV virus. All the participants who tested positive were from the Dangote Central Workshop, Lagos State (Lagos) Terminal and were within the age group 21–30 years.

All the participants who tested positive for HIV virus had never had blood transfusion in the last three months, which suggest that they contacted HIV via other means (Table 7). One of them had had unprotected sexual intercourse with casual partner(s) in the last three months while three of them

had had unprotected sex with regular partner(s) in the last three months (Table 7).

## Discussion

This cross sectional study is the first comprehensive HIV-related study to be conducted among the long-distance truckers in Nigeria along the south-west truck terminals. As common with many pioneering studies of this kind [3,6,7], this study is faced with many limitations: First of all, being a study conducted in only one geopolitical zone of Nigeria, we may not be able to generalize our results or make conclusion that the results presented here represent the situations in the remaining five geopolitical zones. Nevertheless, a rigorous effort was made by the authors to ensure that as far as the south-west geopolitical zone is concerned, this work is an authentic report in this area.

Our effort notwithstanding, the population of truckers is a mobile population [7] and so we cannot boast that we have interviewed a sample that is 100% representative of the truckers in the various terminals. The fact that some of the truckers refused to give their consent for interview is equally a notable limitation to this study.

However, our observations in this study show that truckers who have no formal education and those with only primary education formed the highest percentage of the participants. This high degree of illiteracy is the attribute of truckers in some other parts of the world [3,6,15]. In addition, compared to the results of Pandey et al. [3], Baishilai et al. [15] and Kirunga and Ntozi [16] where 73.8%, 61.1% and 63.7% of the study populations were found to be married, we found that half of the truckers interviewed were found to be married.

Our results revealed that the truckers did not have a good knowledge of HIV/AIDS. For instance, many of the participants said that a negative result on a first test for HIV indicates that one do not have HIV. Our result is in agreement with the observation of Chaudhry et al. [7] who found that truckers did not generally have good knowledge of HIV/AIDS. According to their report, 50% of respondents had the misconception that HIV/AIDS could be contracted through mere body contact and being in the same room with a person with AIDS.

Social stigma of PLWHA is one of the critical problems facing HIV/AIDS care globally. We found that majority of the participants in our study would not

stigmatize people living with HIV/AIDS; they would be willing to stay together (or dwell) with an individual who is HIV positive. Though many of the truckers in each of the terminals responded positively to their willingness to dwell with PLWHA, the response among the truckers at the Ogun terminal was higher than the responses from the other terminals. Our commendation on the attitude of truckers towards PLWHA is consistent with the findings of some authors who had commended the attitude of truckers towards people living with HIV/AIDS. In a study by Chaudhry et al. [7], it was reported that a larger proportion of truckers showed positive attitude toward PLWHA by accepting to live together in the same vicinity with them.

In our study, we also observed that many of the truckers did not take being infected with HIV as the end of everything in life; they would only feel very sad if they discovered that they were HIV positive. Some said they would commit suicide while others were indifferent about what they would do and only one trucker did not give a response to the question.

We also found that majority of the truckers had more than one sexual partner. Those who ever had sex with person(s) other than their wives often did so while on trips from home and they did so most of the time using condom. Pandey et al. [3] reported a study conducted among 2064 truckers that 70% used condom consistently, whereas 4.7% never used condom with paid partners. Also, Baishilai et al. [15] reported that 67.4% of transport workers patronized sex workers and 71% of them used condom during such patronage.

Furthermore, there was an indication of poor HIV knowledge in the Lagos terminal; a very high percentage of the participants interviewed at the Lagos terminal believed that HIV/AIDS could be cured. This agrees with the poor knowledge of HIV/AIDS among truckers reported by Pandey et al. [3], Rakwar et al. [5], Chaudhry et al. [7] and Baishilai et al. [15].

The results for the test of association of variables with some selected factors defining belief, risk behaviours and attitude towards HIV/AIDS of truckers is presented. None of the variables was found to be significantly associated with the factor (willingness to live with HIV positive people) defining attitude of truckers towards PLWHA. This implies that, whatever is the attitude of the truckers towards HIV positive people was not due to the selected variables.

However, we found that supporters of wife inheritance were more likely to accept their HIV status

being disclosed ( $P=0.002$ ), truckers who had had sex with female sex workers were less likely to be those who had two sexual partners ( $P=0.020$ ) and those who confirmed that they have had extramarital sex were less likely to have sex while on trip ( $P=0.000$ ). Also, truckers with three sexual partners were more likely to use condom during sexual act ( $P=0.040$ ) and those who use to have extramarital affairs were less likely to use condom during sexual act ( $P=0.000$ ).

While we are aware that this study is not exhaustive, we do hope that this comprehensive report will set the stage for further study in this area, particularly, a study that would take advantage of the positive attitude that the truckers have towards HIV status test and towards people living with HIV and AIDS. This report will also help the National AIDS Control Agency (NACA) in Nigeria to bridge the gap in truckers' knowledge of HIV/AIDS.

### Conflict of interest statement

The authors have no conflict of interest to disclose.

### Acknowledgements

The authors are grateful to the management of the Redeemer's University, the Nigerian Port Authority (NPA), the Dangote group of Companies, RAPAC and the interpreters used for the Hausa and Yoruba languages during the field works. We also acknowledge the helpful comments provided by the reviewers of the initial manuscript.

### References

- [1] Isiugo-Abanihe UC. Extramarital relations and perception of HIV/AIDS in Nigeria. *Health Transmission Review* 1994;4:111–25.
- [2] Moses AE, Chama C. Knowledge, attitude and practice of Ante-Natal attendees towards prevention of mother to child transmission (PMTCT) of HIV infection in a Tertiary Health Facility, North-East Nigeria. *The Internet Journal of Third World Medicine* 2009;8:1.
- [3] Pandey A, Benara SK, Roy N, et al. Risk behavior, sexually transmitted infections and HIV among long-distance truck drivers: a cross sectional survey along national highways in India. *AIDS* 2008;22(Suppl. 5):S81–90.
- [4] Mupemba K. The Zimbabwe HIV prevention program for truck drivers and commercial sex workers: a behavioral change intervention. *Resistance to Behavioral Change to Reduce HIV/AIDS Infection* 1999:133–7.
- [5] Rakwar J, Lavreys L, Thompson ML, et al. Cofactors for the acquisition of HIV-1 among heterosexual men: prospective cohort study of trucking company in Kenya. *AIDS* 1999;13:607–14.
- [6] Jackson DJ, Rakwar JP, Richardson F B.A., et al. Decreased incidence of sexually transmitted disease among trucking company workers in Kenya: results of behavioural risk-reduction programme. *AIDS* 1997;11:903–9.
- [7] Chaudhry MA, Naem M, Iqbal R, Shabbir I. Level of awareness about HIV/AIDS among truck drivers and their attitude towards persons with AIDS. *Gomal Journal of Medical Sciences* 2005;3(1):19–23.
- [8] Alam N, Rahman M, Gausia K, et al. Sexually transmitted infections and risk factors among truck stand workers in Dhaka, Bangladesh. *Sexually Transmitted Diseases* 2007;34(2):99–103.
- [9] Bacak V, Soh D. On the road: Croatian truck drivers, commercial sex and HIV/AIDS. *Collegium Antropologicum* 2006;30(Suppl. 2):99–103.
- [10] Reis C, Heisler M, Amowitz LL, Moreland RS, Mafeni JO, et al. Discriminatory attitudes and practices by health workers toward patients with HIV/AIDS in Nigeria. *PLoS Medicine* 2005;2(8):e246.
- [11] Ibe SN. HIV/AIDS awareness study of fresh students in tertiary institutions in rivers state of Nigeria. *Journal of Applied Science and Environmental Management* 2005;9(1):11–3.
- [12] Oshiname F. The impact of a school-based educational programme on high school adolescents' knowledge about HIV/AIDS in Ibadan, Nigeria. *Journalist against AIDS (JAAIDS) Nigeria, Reports and studies*; 2005.
- [13] Farouk AM. Living with HIV/AIDS in the Nigeria Army. *Journalist against AIDS (JAAIDS) Nigeria, Reports and studies*; 2005.
- [14] Iwuagwu S. Attitude of Nigerians towards the human rights of people living with HIV/AIDS (PLWA). *Journalist against AIDS (JAAIDS) Nigeria, Reports and studies*; 2005.
- [15] Baishilai B, Iftika AS, Mulherjee R, et al. HIV infections among transport workers operating through Siliguri-Guwahati national highways, India. *Journal of International Association of Physicians AIDS Care* 2007;6:56–60.
- [16] Kirunga CT, Ntozi J. Socio-economic determinants of HIV serostatus: a study of Rakai district, Uganda. *Health Transition Review* 1997;7(Suppl.):175–88.
- [17] FMOH. Technical reports of the national HIV/AIDS seroprevalence sentinel survey among women attending AC in Nigeria for the years 1991 to 2008. Nigeria: Department of Public Health, National AIDS/STI Control Programme, Federal Ministry of Health; 2008.
- [18] Sanjeev K, G SK, B SK. A study of knowledge, sexual behaviour and practices regarding HIV/AIDS among long distance truck drivers. *Indian Journal of Public Health* 2009;53(October–December (4)):243–5.
- [19] Malta M, Bastos FI, Pereira-Koller EM, Cunha MD, Marques C, Strathdee SA. A qualitative assessment of long distance truck drivers' vulnerability to HIV/AIDS in Itajaí, southern Brazil. *AIDS Care* 2006;18(July (5)):489–96.
- [20] Sunmola AM. Sexual practices, barriers to condom use and its consistent use among long distance truck drivers in Nigeria. *AIDS Care* 2005;17(February (2)):208–21.
- [21] Podhisita C, Wawer MJ, Pramualratana A, Kanungskasem U, McNamara R. Multiple sexual partners and condom use among long-distance truck drivers in Thailand. *AIDS Education and Prevention* 1996;8(December (6)):490–8.

- [22] Oduwale M, Jeminusi OA, Aderogba OI, Okuboyejo OB. Influence of long distance truck drivers (LDTD's) HIV/AIDS knowledge and attitude on the use of condoms. In: International Conferences on AIDS, vol. 14. 2002.p. ThPeD7686.
- [23] Nnoli C. Motor-park people shift gear. World AIDS 1992;(19):10.
- [24] Orubuloye IO, Caldwell P, Caldwell JC. The role of high-risk occupations in the spread of AIDS: truck drivers and itinerant market women in Nigeria. International Family Planning Perspectives 1993;19(43–48):71.

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)



ScienceDirect

UNIVERSITY OF IBADAN LIBRARY