(RESEARCH ARTICLE)

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Knowledge and utilization of HIV/AIDs preventive measures among intra-city commercial drivers in Kano State, Nigeria

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Abstract

Background: Intracity commercial drivers play a vital role in transportation systems in many urban centers. However, their occupation puts them at risk for HIV infection due to various factors. Despite their increased vulnerability, intracity commercial drivers face significant challenges in accessing HIV prevention, testing, and treatment services.

Method: This was an observational community-based cross-sectional descriptive study conducted among intracity commercial drivers in Kano State, Nigeria through multistage sampling technique.

Result: the mean age and standard deviation of respondents was 42.0 ± 11.3. About two-third (67.7%) had good aggregate knowledge score and more than half (57.4%) of the study participant had good uptake and utilization of HIV/AIDs preventive services. After adjusting for the confounding effects using logistic regression analysis; educational status of secondary school (AOR=2.25, 95% CI=1.21–13.25) and post-secondary (AOR=4.10,95%CI=2.22-17.88), monthly income of between N50,0001 – N100,000.00 (AOR=2.02, 95%CI=1.74-19.33) and >N100,000.00 (AOR=4.01, 95%CI=3.11-27.33), working experience of 11 – 20 years (AOR=3.25, 95%CI= 1.16-22.56) and >20 years (AOR=6.05, 95%CI= 3.03-26.77) and good aggregate knowledge scores on HIV/AIDs preventive measures (AOR=4.02 (2.13 – 14.55), 95%CI=2.13-14.55) remained significant predictors of uptake/utilization of HIV/AIDs preventive measures.

Conclusion: All agencies responsible for HIV/AIDs control and their partners should take appropriate measures including various strategies to educate this occupational group on sexuality and reproductive health. Also, the establishment of STI clinics in strategic locations, as well as making condoms available, accessible, affordable, and acceptable for use by this group of people in our society, should all be part of the prevention strategy.

Keywords: HIV/AIDs; Intracity commercial drivers; Knowledge; Utilization/uptake; Kano

1. Introduction

Globally, migration and mobility of people have exacerbated HIV/AIDs epidemic, although its role in spreading HIV varies widely in the degree of documentation.[1,2] Labor migration has recently attracted attention as a contributor to the global HIV/AIDS epidemic.[3] Evidence from several different geographic regions indicates that migrant workers are at elevated risk of acquiring HIV/AIDS.[3,4] At the end of 2015, an estimated 36.7 million people [34.0 million–39.8 million] were living with HIV worldwide; up by about 20% from 2001 level. The number of people dying of AIDS-related causes fell to 1.1 million [940,000–1.3 million] in 2010, down from a peak of 2.2 million [2.1 million–2.5 million] in the mid-

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2000s.[5] Much of that success has come in the past two years when rapid scale-up of access to treatment occurred; in 2015 alone, more than 1 million AIDS related deaths were averted.[5] Almost half of the deaths from AIDS-related illnesses in 2010 occurred in southern Africa. AIDS has claimed at least one million lives annually in sub- Saharan Africa since 1998.[5]

Though the HIV epidemic in Nigeria is generalized, the first Integrated Biological and Behavioural Surveillance Survey (IBBSS) conducted in 2007 provided robust evidences on the burden of HIV infection and how it affects some groups within the society.[8] In comparison to earlier national HIV prevalence estimates of 1.4% from the 2018 NAIIS and UNAIDS estimation and projection package PLHIV estimation of 1.8 million in 2022, the estimated national HIV prevalence was 2.1% (95% CI: 1.5–2.7%) among adults aged 15–49 years in Nigeria, which translates to roughly 2 million people living with HIV.[8]

Transport workers are among those groups within the society that in general, share some common characteristics that are likely to put them at high risk of HIV infection. These include low level of general education and health knowledge, high use of alcohol, reasonably high level of disposable income and common attitude of fatalism.[1, 9-11]

Generally, despite good knowledge on HIV/AIDs preventive measures among general population, there is still low self-risk perception for HIV, low consistent condom use with non-paid partners and wives, low reported exposure to any interventions and low levels of ever having taken an HIV test make truckers an important bridge population requiring strengthened interventions.[12-16] Furthermore, the magnitude of the epidemic results not only in the loss of human life but enormous financial burden to health care system and loss of productivity to the country. It also created unparalleled social and medical challenge.[17] The high sero-prevalence of HIV/AIDs poses serious consequences to the health system and affects quality of life of those infected. Over the last two decades, the HIV epidemic in Nigeria has gone from affecting only a few populations with higher-risk behaviours ('concentrated' epidemic), to a 'generalized' epidemic in all states.[7]

Knowledge of HIV/AIDS transmission is essential for a person to make an informed decision about engaging in, or continuing certain behaviours that may increase or disease risk of infection.[6,8] Estimating the level of knowledge of HIV/AIDS transmission among groups at risk is crucial in guiding public health programs, especially those directed towards reducing the transmission of the disease.[1,2] There is varying knowledge about HIV/AIDS among different high-risk groups. In a joint study done by National Action Committee on AIDS (NACA) and the Federal Ministry of Health, prevalence of HIV/AIDS in north western region of Nigeria rose from 3.2% in 1999 to 3.3% in 2001.[6] The level of knowledge on HIV/AIDS among general population was found to be 47% for males and 74% for female respectively.[6] In a study carried out in the metropolitan area of Benin City, Edo state, Nigeria amongst commercial cyclist; 92.2% claimed to be aware of HIV/AIDS, up to 7.1% believed that the disease can be cured while 83.5% know that HIV/AIDS is incurable. Forty percent rightly knew that the use of condom can prevent HIV/AIDS but 5.7% and 5.9% believed that HIV/AIDS can be prevented using drugs and native medications respectively.[18] Sexual intercourse was the predominant means of transmitting the diseases from an infected partners and only 7.6% were aware that the diseases can be contacted through blood transfusion.[18]

HIV Counseling and Testing (HCT) is an intervention, which gives the client an opportunity to confidentially discuss his or her HIV risks and be assisted to learn his/her HIV status for purposes of prevention, treatment, care and support.[19-22] HIV counselling and testing plays a critical role in HIV prevention as it promotes early diagnosis of HIV infection as well as timely therapeutic or prophylactic interventions.[22-23] HIV testing and counselling also promotes risk reduction in various populations, leading to behaviour change and reduced transmission.[24] *Moreover,* HCT has been found to be the most important approach towards control of HIV/AIDS as it is the entry point to the management and prevention of HIV and AIDS-related diseases.[25-26] HIV counselling and testing have greater impact on risk behaviour. A rapid assessment study was conducted by FHI 360 in Uganda using qualitative design in order to assess the uptake of HCT among Truck drivers and their clients; the uptake was found to be very low and mistrust for providers, implication of knowing one's status and little concern about HIV was attributed to low uptake of HCT.[27] In a study in Northern-Uganda among post-conflict youth, only 36.1% of respondents had undertaken HCT while the rest had not undertaken it due to fear of stigmatization.[28] While in Tanzania, findings show that coverage of HCT was high; however long waiting time and lack of confidentiality impeded its accessibility and utilization for many people.[29] However, most HIV preventions put more emphasis on information, education, peer education and behaviour change communication, and condom distribution and less focus on HCT services.[9] HIV Counselling and Testing (HCT) helps to identify individuals infected with HIV at an early stage with the aim of providing them with care and treatment services.[9,19,21] Therefore, this study aims to assess the knowledge and uptake/utilization of HIV/AIDs preventive measures among intracity commercial drivers in Kano State, Nigeria.

2. Material and methods

2.1. Study Area

The study was conducted in the Kano Central Senatorial Local Government Areas (LGAs) of Kano State. Kano State is a state located in North-Western Nigeria. Created on May 27, 1967 from part of the Northern Region, Kano state borders Katsina State to the north-west, Jigawa State to the north-east, Bauchi State to the south-east and Kaduna State to the south-west. The capital of Kano State is Kano. The state has an estimated population of over fourteen million people as at 2014. The Kano Central Senatorial Districts comprises of fifteen LGAs (Dala, Gwale, Tarauni, Kano Municipal, Fagge, Nassarawa, Ungogo, Kumbotso, Gezawa, Madobi, Kura, Garun Mallam, Warawa, Gezawa, Dawakin Kudu). They have an estimated population of over eight million people.

The Intra-city drivers utilize different minor and major routes in the Kano Central Senatorial District. There are no established brothels around the motor parks due to activities of Hisbah Board established by Kano State Government. Commercial drivers also utilize health facilities and services available in the district like the way general population do. None of the motor parks have any established health facility inside the park. There are about seventy-four joints for Intra-city drivers distributed in the Kano Central senatorial District and Eighteen motor parks for LDDs. The motor parks for LDDs are: Rijiyar Zaki, Naibawa, Unguwa Uku, Kano Line, Dawanau, Rijiyar Lemo, Kofar Ruwa, Shahuci, Dakata, Yankaba, Kwanar Dawaki, Janbulo, Sabon Titi, New Road Sabon Gari, Ladin Makole, Yan Rake Kofar Kansakali, and Mallam Kato Square.

2.2. Study Design

This was a community-based cross-sectional descriptive study.

2.3. Study Population

This comprised of all the eligible commercial drivers within the study area, who were selected and agreed to participate

2.3.1. Inclusion Criteria

- Involve in commercial driving for at least one year
- Participants who are aged 20 to 69 years

2.3.2. Exclusion Criteria

- Failure to give consent for the study
- Commercial drivers who have change either from long distance to intra-city or vice versa.

2.4. Sample Size Determination

The minimum sample size for the study was estimated using an appropriate formula for calculating sample size for cross-sectional studies studies [16] i.e

$$n = Z^2 pq / d^2$$

Where n = minimum sample size required

Z_α = Reliability coefficient at 95% confidence level i.e the standard normal deviate corresponding to 5% level of significance =1.96;
p_1 = 78% or 0.78 proportion of those drivers with good knowledge from previous studies; [16]
q_1 = the complementary probability to p_1 i.e 1-0.78, which equaled 0.22;
d^2 = precision or margin of error, that is assumed to be 5%=0.05

By substituting the values obtained into the formula,

$$n = 1.96^2 \times 0.78 \times 0.22/0.05^2$$

$$n=259.65123$$

$$n=259.65 \times 1.7 \text{ (Design Effect)}$$

$$n = 441.407$$

$$n = 442$$

The total sample size used was approximately four hundred and forty two to cover for design effect of sampling

2.5. Sampling Techniques

A multistage sampling technique was used as follows:

- Stage I: Simple random sampling was used to select four (Gezawa, Ungogo, Tarauni and Dala) LGAs from the list of fifteen LGAs in Kano Central Senatorial District.
- Stage II: A list of all the intra-city motor parks/joint who had met the inclusion criteria was obtained. There were seventy-four intra-city motor park/joint. Twenty intra-city motor park/joints were selected using simple random sampling by balloting.
- Stage III: Selection of the eligible study participants was done by simple random sampling using balloting from the selected motor parks/joints of intra-city commercial drivers.

2.6. Variables

2.6.1. Dependent Variable

Knowledge and utilization/uptake of HIV/AIDs preventive measures

2.6.2. Independent Variables

Socio-demographics characteristics such as age, marital status and type of family setting (monogamous versus polygamous), monthly income, educational status, religion.

2.7. Data Collection

A semi-structured interviewer administered questionnaire, consisting of 3 sections (A to C) was used for data collection in the study. Section A of the questionnaire sought information on respondents' bio-data, and Section B sought information on risk factors of HIV/AIDs among commercial drivers and Section C was used to record the HIV status results for the participants.

Data was summarized and presented using tables and summary indices. The relationships sociodemographic/economic characteristics and knowledge/uptake/utilization of HIV/AIDs preventive measures were evaluated using bivariate and multivariate analyses. A p-value of <0.05 is considered as significant. A logistic regression analysis performed to determine predictors of knowledge and uptake/utilization of HIV/AIDs preventive measures among study participants.

2.8. Ethical Considerations

- Ethical approval was obtained from Kano state Ministry of Health Ethical committee that the study will be beneficial and will not cause any harmful effect;
- An informed consent from respondents was obtained and assurance given;
- For justice, the participants were given the right to voluntarily accept or reject to participate and also to skip any distressing questions if they wish.

Limitations

- Participation was entirely voluntarily; this means that, those who were highly susceptible for HIV/AIDs were less likely to participate making the findings (outcomes) prone to selection bias.
- Translation of the questionnaire in to local language could lead to interviewer bias

3. Results and discussion

A total of four hundred and forty-two (442) questionnaires were administered out of which four hundred and eighteen (418) were fully analyzed; giving a response rate of 94.5%. The mean age and standard deviation of respondents was 42.0 ± 11.3. the age group of 30 -39 years constitute about one third (32.8%) of the study participants, with Hausa tribes predominates others. With nearly have (47.6%) having secondary level of education and above. About half (50.2%) of

the study participants were married with about three quarter (73.2%) of them in a polygamous setting. About two third (65.1%) of the study participants had monthly income of more than thirty thousand Naira with more than three quarter of them having experience of less than ten years as indicated in Table 1.

About three-quarter of the study participants had good aggregate knowledge score on HIV/AIDS score among the study participants (Table 2). Only more than half (57.4%) of the study participant had good uptake and utilization of HIV/AIDs preventive services, although about two-third of the study participants had good knowledge on HIV/AIDs preventive measures as indicated in Table 2 and 3.

There was a statistically significant association between aggregate knowledge score HIV/AIDs preventive measures and educational status (P<0.05), marital status (P<0.05), family setting (monogamy versus polygamy P<0.05), monthly income (P<0.05), and working experience (P<0.05) among intracity commercial drivers as outlined in table 4 below. The more you are educated, the more likely you have good aggregate score on HIV/AIDs preventive measures. As income increases and the working experiences the likelihood of having good aggregate knowledge scores increases as outlined in Table 4.

There was a statistically significant association between aggregate knowledge score HIV/AIDs preventive measures and age (P<0.05), marital status (P<0.05), and monthly income (P<0.05) among intracity commercial drivers as outlined in table 4 below. The older you are, the more likely you have good aggregate score on uptake/utilization of HIV/AIDs preventive measures. As income increases, the likelihood of having good aggregate score on uptake/utilization of HIV/AIDs preventive measures as outlined in Table 5. Also, there was a statistically significant relationship between aggregate knowledge score on HIV/AIDs preventive measures and aggregate scores on uptake/utilization of HIV/AIDs preventive measures among the study participants as indicated in Table 6.

After adjusting for the confounding effects using logistic regression analysis; educational status of secondary school (AOR=2.25, 95% CI=1.21–13.25) and post-secondary (AOR=4.10,95%CI=2.22-17.88), monthly income of between N50,0001 – N100,000.00 (AOR=2.02, 95%CI=1.74-19.33) and >N100,000.00 (AOR=4.01, 95%CI=3.11-27.33), working experience of 11 – 20 years (AOR=3.25, 95%CI= 1.16-22.56) and >20 years (AOR=6.05, 95%CI= 3.03-26.77) and good aggregate knowledge scores on HIV/AIDs preventive measures (AOR=4.02 (2.13 – 14.55), 95%CI=2.13-14.55) remained significant predictors of uptake/utilization of HIV/AIDs preventive measures as shown in Table 7.

More than 90% of the study participants had knowledge of HIV/AIDs and its existence in Nigeria. These were similar to findings by Idriss et al in Kaduna and Awosan et al in Sokoto.[16,30] About three quarter knew the correct method of HIV transmission. More than fifty percent of the study participants knew that HIV is preventable as reported in many other studies.[9,11-13] Consequently, only about half of the study participants had knowledge of HCT. In terms of aggregate knowledge score of HIV/AIDs preventive measures about two third of the study participants have good aggregate knowledge score. This good aggregate knowledge score might be due to the fact that intracity commercial drivers were more available or conduct their activities within destinations that can easily be reached for HIV/AIDS preventive measures campaign.

Majority of the study participants think that it was a good practice to prevent HIV/AIDs and also they believed that it will be a good practice to screen all those with higher risk of acquiring the infection; screening of all those at high or increase risk of HIV/AIDs will help in decreasing transmission of the infection and subsequently both the incidence and prevalence of the infection.[31-32] Furthermore, less than half of the study participant have undergone HIV counselling prior to this study; with regards to partners participation on HIV counselling, only about one third have participated prior to this study. This means that partner participation in HIV counselling was poor. Transport workers in general, among those with high risky sexual behaviours are least likely to be screened for HIV. While, participation in HCT among the study participants was found to be much higher than the values of IBBSS 2010.[7] This difference may be due to the fact that, about half (50%) of the study participants have good level of formal education i.e either secondary school certificate or higher. Low uptake of HCT among commercial drivers in this study could be attributed to low-risk perception as found out in other studies.[21,30]

Table 1 Socio-demographic/economic characteristics of the study participants

Variables	Frequency (n)	Percentage (%)
Age (years)		
20 – 29	62	14.8
30 – 39	137	32.8
40 – 49	109	26.1
50 – 59	62	14.8
60 – 69	48	11.5
Mean ± SD	42.0 ± 11.3	
Ethnic Group		
Hausa	383	91.6
Others	35	8.4
Educational Status		
Non-formal	76	18.2
Primary	143	34.2
Secondary	154	36.8
Post-secondary	45	10.8
Marital Status		
Single	164	39.2
Married	210	50.2
Separated	30	7.2
Divorced	14	3.3
No of wives		
1	112	26.8
>1	306	73.2
Monthly Income		
<N30,000.00	146	34.9
N30,001.00 – 50,000.00	193	46.2
N50,001.00 – 100,000.00	51	12.2
>100,000.00	18	4.3
Working Experience		
<5 years	163	40.0
5 – 10 years	162	38.8
11 – 20 years	61	14.6
>20 years	32	7.6

Table 2 Aggregate knowledge score of HIV/AIDs among study participants

Knowledge of HIV/AIDS	Frequency	Percentage (%)
Good	283	67.7
poor	135	32.3
Total	418	100.0

Table 3 Aggregate scores on uptake and utilization of HIV/AIDs preventive measures among study participants

Uptake and utilization	Frequency (n)	Percentage (%)
Good	178	42.6
poor	240	57.4
Total	418	100.0

Table 4 Relationship between Socio-demographic/Economic variables and aggregate knowledge score of HIV/AIDs among the study participants

Variables	Aggregate knowledge score		X^2	p-Value
	Good	**Poor**		
Age (years)				
20 – 29	49	13	5.1782	0.2695
30 – 39	94	43		
40 – 49	70	39		
50 – 59	40	22		
60 - 69	30	18		
Ethnic Group				
Hausa	258	125	0.2424	0.6225
Others	25	10		
Educational Status				
Non-formal	38	38	20.5614	0.00013*
Primary	100	43		
Secondary	121	33		
Post-secondary	34	11		
Marital Status				
Single	120	52	33.2321	<0.00001*
Married	150	60		
Divorced	8	22		
Separated	5	9		
No of wives				

1	43	69	60.1107	<0.00001*
>1	240	66		
Monthly Income				
<N30,000.00	110	36	29.9456	<0.00001*
N30,001.00 – 50,000.00	144	49		
N50,001.00 – 100,000.00	20	31		
>100,000.00	9	9		
Working Experience				
<5 years	109	54	33.14	<0.00001*
5 – 10 years	101	61		
11 – 20 years	45	16		
>20 years	28	4		

*Statistically significant difference

Table 5 Relationship between Socio-demographic/Economic variables and aggregate scores on uptake/utilization of HIV/AIDs preventive measures among the study participants

Variables	Aggregate uptake score		X^2	p-Value
	Good	Poor		
Age (years)				
20 – 29	31	31	18.0007	<0.005*
30 – 39	67	60		
40 – 49	64	45		
50 – 59	42	20		
60 - 69	14	34		
Ethnic Group				
Hausa	258	125	1.2222	0.2689
Others	25	10		
Educational Status				
Non-formal	21	55	46.7136	<0.00001*
Primary	39	104		
Secondary	86	68		
Post-secondary	32	13		
Marital Status				
Single	60	104	10.3994	<0.015*
Married	90	120		
Divorced	19	11		
Separated	9	5		
No of wives				
1	41	71	2.2351	0.1349

>1	137	169		
Monthly Income				
<N30,000.00	110	36	10.6595	<0.0137
N30,001.00 – 50,000.00	144	49		
N50,001.00 – 100,000.00	20	31		
>100,000.00	9	9		
Working Experience				
<5 years	70	93	4.9067	0.1788
5 – 10 years	77	85		
11 – 20 years	20	41		
>20 years	11	22		

*Statistically significant difference

Table 6 Bivariate analysis between aggregate knowledge scores and uptake/utilization of HIV/AIDs preventive measures among the study participant

Uptake and utilization	Good	Poor	Total
Good	136	147	283
poor	42	93	135
Total	178	240	418

McNemar's χ^2 = 58.33, df=1 P = 2.2093 x 10^{-14}

Table 7 Multivariate (Logistic Regression) Analysis on predictors of good uptake/utilization of HIV/AIDSs preventive measures among study participants

Predictor(s)	Crude OR (95% CI)	Adjusted OR (95% CI)	p-value
Age			
20 – 29	Referent		
30 – 39	1.25 (0.88 – 6.23)	0.87 (0.75 – 11.45)	0.1137
40 – 49	1.88 (0.72 – 23.22)	1.95 (0.78 – 19.22)	0.6438
50 – 59	4.13 (0.95 – 16.22)	4.51 (0.97 – 31.33)	0.4573
60 - 69	2.75 (1.33 – 18.65)	3.03 (0.78 – 45.34)	0.9114
Educational status			
Non-formal	Referent		
Primary	1.75 (0.84 – 3.64)	1.61 (0.90 – 2.87)	0.2359
Secondary	0.79 (0.83 – 8.22)	2.25 (1.21 – 13.25)	0.0001*
Post-Secondary	2.12 (1.15 - 13.56)	4.10 (2.22 – 17.88)	0.0001*
Marital status			
Single	Referent		
Married	2.77 (0.88 – 11.13)	2.50 (0.83 – 14.66)	0.0933
Divorced	3.00 (0.67 – 10.11)	3.44 (0.75 – 16.88)	0.3466

Separated	5.53 (3.57 – 13.47)	3.0 (1.26 – 16.33)	0.9344
Monthly income			
<N30,000.00	Referent		
N30,001.00 – 50,000.00	0.85 (0.77 – 11.44)	1.25 (0.95 – 11.41)	0.3455
N50,001.00 – 100,000.00	2.25 (0.54 – 21.50)	2.02 (1.74 – 19.33)	<0.005
>100,000.00	4.77 (1.97 – 22.79)	4.01 (3.11 – 27.33)	<0.005
Working - experience			
<5 years	Referent		
5 – 10 years	2.55 (0.77 – 13.33)	1.99 (0.85 – 14.45)	0.9921
11 – 20 years	3.75 (1.83 – 21.99)	3.25 (1.16 – 22.56)	<0.005
>20 years	6.76 (3.25 – 24.133	6.05 (3.03 – 26.77)	<0.005
Aggregate knowledge score on HIV/AIDs preventive measures			
Poor	Referent	4.02 (2.13 – 14.55)	0.00003*
Good	2.75 (2.11 – 17.22)		

*Statistically significant difference

4. Conclusion

From this study we can concluded that, the level of knowledge of HIV/AIDs infection among the study participants was found to be good, while the uptake and utilization of HIV/AIDs preventive measures was poor. Predictors of knowledge and utilization of HIV/AIDS preventive measures were educational status of secondary school and above, monthly income, working experience of more than ten years and good aggregate knowledge score of HIV/AIDS preventive measures. It was recommended that, all agencies responsible for HIV/AIDs control and their partners should take appropriate measures including various strategies to educate this occupational group on sexuality and reproductive health. Also, the establishment of STI clinics in strategic locations, as well as making condoms available, accessible, affordable, and acceptable for use by this group of people in our society, should all be part of the prevention strategy.

Compliance with ethical standards

Disclosure of conflict of interest

The authors have declared no conflict of interest

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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