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Prevalence and Determinants of HIV Infection among Maritime Workers in a Nigerian Seaport

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Background:
In the global maritime industry, seafarers, fishing, seaport and other land-based personnel face a rising risk of infection of sexually transmitted diseases, including Human Immuno Virus (HIV). The close proximity of brothels and large sex-worker populations, as well as the fact that many seafarers are young, mobile and sexually active compounds the problem and increases the danger of HIV infection. In spite of this, no official statistics on prevalence of HIV among this high risk occupational group in Nigeria have been documented.

Objective:
To assess the prevalence and determinants of HIV infection among seaport workers in one of the ports in Nigeria
Methods: The study utilized a descriptive cross-sectional design. Respondents were selected using a stratified random sampling technique and employee status formed the basis of each stratum. A pre-tested structured interviewer-administered questionnaire was used for the study. Voluntary Counseling and Testing using Elisa test kit according to the WHO guidelines was done and Polymerase Chain Reaction was used to confirm positive samples. Data was analyzed using SPSS version 20.0 software and level of significance was set at $p < 0.05$.

Results: A total of 420 respondents with mean age (SD) of 39.0 ± 1.1 years participated in the study. A higher proportion, 259 (62.8%) and 256 (60.1%) were males and married respectively. Of the 381 (90.0%) respondents who were aware of HIV, majority 345 (90.6%) had good knowledge of HIV. Knowledge increased with increasing age ($p=0.005$). Prevalence of HIV in the studied population was 4.8%. Factors associated with HIV status among the port workers included gender ($p=0.005$), marital status ($p=0.005$), educational status ($p=0.05$), number of sexual partners ($p = 0.021$) and lack of condom use ($p = 0.05$).

Conclusion:
Prevalence of HIV in the studied population was high. Determinants of HIV included marital status, educational status, multiple sexual partners and lack of condom use. Port Health Department should ensure special 'behavioural change' programmes are put in place to curb the risk factors for HIV, thereby reducing the high prevalence of this disease among this special group.

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INTRODUCTION

Human Immunodeficiency Virus/Acquired Immuno Deficiency Syndrome (HIV/AIDS) is a major threat to the world of work, affecting the most productive segment of the labour force and reducing earnings.[1] Most of the 33 million people living with HIV worldwide are workers.[2] Shortly after the recognition of HIV as the cause of AIDS, it was pointed out that maritime workers could be particularly vulnerable to HIV infection. In the global maritime industry, about.2 million seafarers, plus fishing, seaport and other land-based personnel, face a rising risk of HIV infection in many regions of the developing world. Seaports where much of the work goes on are historically environments of high infection for sexually transmitted diseases, including HIV.[3]

The maritime sector is characterized by a mobile workforce of predominantly young and sexually active male workers.[4] The close proximity of brothels and large sex-worker populations around the seaport compounds the problem and increases the danger of HIV infection.[4] Evidence from various national and regional level studies shows that seafarers as an occupational group have high rates of HIV infection compared to the population

in their community of origin.[5-7] Also, data from some countries with low HIV incidence rates, where majority of infections due to heterosexual activities happened abroad, also show that the maritime population constitutes significant part of it making them an important "bridge" of importing HIV infection to local population.[8,9]

Research also suggests that seafarers have lower levels of knowledge about HIV transmission and risk factors than the general population.[10,11] At the same time, seafarers appear less likely than other occupational groups to voluntarily receive HIV testing.[12,13] Their working conditions contribute to their vulnerability by making it difficult for them to access information about HIV prevention and related services which in turn can increase their risk of becoming infected. Due to the highly mobile nature of their job, they access shore-based medical and information services infrequently, and are often prevented from receiving HIV messages through lack of time or ability to understand the local language.[14.15] Even when AIDS prevention materials are available in their working environment, their value is in serious doubt as studies have shown that they have minimal influence on their behaviour.[14,16]

No official statistics on HIV knowledge and prevalence among maritime workers in Nigeria has been reported. The study was thus carried out to assess the knowledge, prevalence and determinants of HIV infection among maritime workers in a sea port, in Nigeria. It is hoped that data from this study will contribute to raising awareness among health policy-makers, employers' and workers' organizations and other social partners for formulating and implementing appropriate workplace policy, HIV knowledge, prevention and care programmes in line with ILO code of practice on HIV/AIDS and the world of work.[1]

METHODOLOGY

The study was carried out in one of the Nigerian ports in Nigeria. The Nigerian Ports Authority (NPA) is a federal government agency that governs and operates the ports of Nigeria. The major ports controlled by the NPA include the Lagos Port Complex and Tin Can Island Port in Lagos; Calabar Port, Delta Port, Rivers Port at Port Harcourt, and Onne Port. Operations of the NPA are carried out in affiliation with the Ministry of Transport and the Nigerian Shippers' Council. The port is run entirely by the Nigerian Ports Authority (NPA) under the leadership of the Port manager. The port services include pilotage operations, towage services, dock labour, ship repair and provision of security in the ports.[17]

The study utilized a cross-sectional descriptive design. The study population comprised all maritime workers which comprised NPA employees, security agents in the ports, staff of subsidiary companies located within the port premises, and maritime agents (including dock workers, shipping agents and seafarers). A sample size of 420 was calculated using the appropriate formulae for a descriptive study. The respondents were selected using stratified random sampling technique. Different categories of employees formed the basis of each stratum.

Five members of Society for Women on HIV/AIDS in Africa and Nigeria (SWAN) and four members from State Action Committee on HIV/AIDS (SACA), were invited to participate in the study as research assistants. Being previously trained on HIV counseling and testing, they served as research assistants' for HIV testing among the maritime workers. A pre-tested structured interviewer-administered questionnaire was used for data collection. HIV Testing- HIV voluntary counseling and testing was carried out using Elisa test, according to guidelines specified by National algorithm which is one of the standard approved guidelines by WHO. The polymerase chain reaction was used to confirm the positive samples.

Data analysis was by IBM SPSS version 20.0 and a p value of < 0.05 was considered significant.

Knowledge on HIV and its risk factor was assessed by assigning each correct response one (1) point, and each wrong response was scored zero (0), giving a minimum score of 0 and a maximum score of 26. Scores were converted to percentages and graded as poor knowledge (scores 49.9% and below), fair knowledge (scores between 50.0 to 69.9%) and good knowledge (scores 70.0% and above). Cronbach's Alpha was used to assess the reliability of the knowledge questions. A score of 0.837 was gotten, indicating good reliability.

Ethical clearance was obtained from the University of Benin Teaching Hospital Ethical committee. Institutional assent was sought from the Port Manager. Informed consent was obtained from respondents. All participants who tested positive were referred appropriately for further management.

RESULTS

A higher proportion of the respondents were within the age group of 30 – 39 years, with a lower proportion of the respondents being within the age group > 50 years (Table I). The mean age (SD) of the respondents was 39.2 ± 1.1 years. Males constituted a higher proportion 256 (60.1%) of the respondents, while females constituted a lower proportion 161 (37.2%).

Over half 256 (60.1%) of the respondents were married, while the remaining proportion was constituted by those who were single 91 (22.0%), widowed 41 (9.5%), separated 20 (5.6%) and divorced 12 (2.8%). Respondents who practiced Christianity were higher in proportion than those who practiced other religions 17 (3.9%). Respondents who practiced Islam and African traditional religion constituted 97 (23.4%) and 61 (15.1%) respectively. Majority of the respondents 293 (68.7%) had attained secondary level of education, while a lower proportion 2 (0.5%) of the respondents had no formal education.

Majority 381 (90.7%) of the respondents were aware of HIV/AIDS., while 39 (9.3%) of the respondents were not aware of HIV/AIDS. Health workers were the major source of information for a high proportion 185 (48.6%) of the respondents, followed by radio 91 (23.9%), television 41 (10.8%), friends 25 (6.6%) and newspaper 10 (2.6%). Others 6 (1.6%) included internet, billboards and fliers (Table II)

Table I: Socio-Demographic Characteristics of Respondents

Characteristics	Frequency (n=420)	Percent
Age group (years)		
<20	80	19.0
20-29	106	25.2
30-39	142	33.8
40-49	54	12.9
>50	38	9.1
Sex		
Male	259	62.8
Female	161	37.2
Marital status		
Married	256	60.1
Single	91	22.0
Widowed	41	9.5
Separated	20	5.6
Divorced	12	2.8
Religion		
Christianity	245	57.6
Islam	97	23.4
African traditional Religion	61	15.1
Others*	17	3.9
Level of completed education		
None	2	0.5
Primary	49	12.3
Secondary	293	68.7
Tertiary	76	18.5

Mean age= 39.2 ± 1.10 years
**Other Religions include Eckankar and Grail message.

Table II: Awareness and Source of Information of HIV/AIDS

	Frequency	Percent
Awareness of HIV/AIDS (n =400)		
Yes	381	90.7
No	39	9.3
Main source of information (n = 381)		
Health worker	185	48.6
Radio	91	23.9
Television	41	10.8
Friends	25	6.6
Family	23	6.0
Newspaper	10	2.6
*Others	6	1.6

*others include internet, billboards and fliers

The meaning of HIV/AIDs, aetiology, mode of transmission, symptoms, HIV testing specimen and modes of transmission was known by high proportions {361 (94.1)%, 354 (92.9%), 342 (89.8%), 351 (92.1%), 341 (89.5%), and 369 (96.9%)}of the respondents respectively. The overall knowledge score amongst majority 345 (90.6%) of the respondents was good. While few 9 (2.3%) of the respondents had poor knowledge score (Table III).

Table III: Knowledge of HIV/AIDS

Knowledge of HIV/AIDS	Frequency (n = 381)	Percent
Knowledge domains		
Meaning of HIV/AIDS	361	94.8
Aetiology	354	92.9
Mode of transmission	342	89.8
Symptoms	351	92.1
HIV testing specimen	341	89.5
Modes of prevention	369	96.9
Total knowledge score		
Good	345	90.6
Fair	27	7.1
Poor	9	2.3

Two hundred and ninety-five (70.3%) of the respondents had multiple sexual partners while the remaining respondents 125 (29.7%) do not have multiple sexual partners. Higher proportions 205 (69.5%) of the respondents had 2 sexual partners, while a lower proportion 15 (5.1%) of the respondents had greater than 4 sexual partners. The mean (standard deviation) number of sexual partners was 1.95 (0.62).

Table IV: High Risk Behaviour for HIV and Prevalence of HIV

	Frequency (n = 420)	Percent
High Risk Behaviours		
Multiple sexual partners		
Yes	295	70.3
No	125	29.7
No of sexual partners		
2	205	69.5
3	75	25.4
4 and above	15	5.1
Mean (SD) = 1.95 (0.62)		
Condom use		
Yes	180	42.6
No	240	56.4
HIV status		
Negative	400	95.2
Positive	20	4.8

Over half 240 (56.4%) of the respondents, did not use condoms in the last 6 months, while 180 (42.6%) of the respondents used condoms in the last 6 months. Majority 400 (95.2%) of the respondents had negative HIV status and 20 (4.8%) of the respondents had positive HIV status

In Table V. the association between HIV status and gender and marital status was statistically significant (p = 0.005 each), while that between HIV status and age educational status and religion was not statistically significant (p =0.975, 0.051 and 0.054 respectively)

Table V : Associatio n between HIV Status and Socio-Demographic Characteristics

VARIABLE	CHISQUARED VALUE	DF	P-VALUE
Age	0.484	4	0.975
Gender	7.879	1	0.005*
Marital status	14.862	4	0.005*
Educational Status	6.890	3	0.051
Religion	2.202	3	0.054

*Statistically significant

DISCUSSION

This study reported high awareness (90.7%) of HIV/AIDS among sea port workers in Warri. This is similar to findings of the 2013 Nigeria Demographic and Health Survey (NDHS) and 2007 National HIV/AIDS and Reproductive Health Survey (NAHRHS) where awareness was high in the country.[18,19] High level of knowledge on HIV/AIDS was also reported in this study and is similar to other studies[20,21] but is in contrast with the level of knowledge reported by the NAHRHS in 2007[19] where knowledge on key basic information on HIV/AIDs was generally low. Their high awareness and knowledge may be due to the aggressive campaigns on HIV/AIDS that have occurred over the years. Accurate knowledge on HIV/AIDS is a prerequisite for taking preventive and care action. Findings from this study therefore indicate that people would do better in taking preventive measures thereby bringing the prevalence of HIV

infection to the barest minimum, as there is a possibility that the possession of adequate and correct knowledge is highly correlated to preventive efforts. It is also assumed that the knowledge will help overcome fear, mental and also contribute to behavioral modification.

Health workers were identified as a major source of information on HIV/AIDS. This is at variance with a study carried out amongst youths in Lagos state which identified mass media as the major source of information.[22] This may be due to the fact that sea port workers usually have poor access to media when onshore and hence will likely get information directly from a health worker closest to them. This indicates that more health workers should be trained on the ability to give more accurate information on every part of the disease and general campaigns can be organized regularly to educate this population at risk. There should also be information made accessible to sea farers via media

Condom use and reduction in sexual partners are key strategies aimed at preventing HIV.[19] Despite the high awareness and knowledge of HIV among sea port workers, this did not translate to their behavioral patterns at preventing HIV as seen in this study which showed that all the respondents had multiple sexual partners (> 2) and less than half of the respondents use condoms during sexual intercourse. This is similar to the findings of NDHS and NAHRHS which showed that higher proportions of respondents had multiple sexual partners and lower proportion of men and female use condoms.[18,19] These findings may be attributed to the nature of their work. Seafarers are a group of highly mobile workers composed almost exclusively of men of sexually active age, who are away from their spouses or partners for extended periods of time. They frequent port areas where there are often large numbers of sex workers. The reduced use of condoms as seen in this study may be associated with decrease in pleasure. Multiple sexual partners and unprotected sex is a high risk for transmission of HIV/AIDS.[19]

This study also corroborates other research findings that prevalence of HIV among port workers is significantly higher (4.8%) than the general population as seen in the NAHRHS where the national HIV prevalence rate was lower (3.6%).[19] This can be explained by their nomadic occupation and their risky sexual behavior as seen in this study, predisposes them to HIV infection. High prevalence and burden of HIV/AIDS will lead to dominant causes of health loss and the diversion of human and material resources to the provision of antiretroviral therapy (ART) and other measures put in place to reduce its prevalence.

Findings from this study showed a significant relationship between prevalence of HIV among port workers and their sexual behavior. This is consistent with NAHRHS study[19] which showed that there was increased prevalence of HIV amongst those who did not use condoms. With increased prevalence due to increased risky behaviours, more persons are likely to get infected. Age, sex, religion and educational status were not significantly associated with HIV/AIDS among port workers. This is in contrast with NDHS 2013 findings where age group 15-24 years and females were the most affected. The NDHS 2013 findings also identified higher prevalence amongst Christians and those with primary level of education.[18]

CONCLUSION

The prevalence of HIV among the studied port workers was 4.8%. Determinants of HIV in this study included poor condom use, STI and multiple sexual partners. Port health Department and other stakeholders should ensure that special 'behavioural change' programmes are put in place to curb the high prevalence of this disease among this special group, thereby closing the observed gap between awareness and practice.

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