

**PREVALENCE AND DETERMINANTS OF HIV RISK BEHAVIOURS
AMONG SEAFARERS IN PORT HARCOURT SEAPORT
RIVERS STATE**

BY

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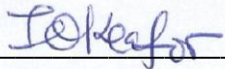
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DECLARATION

I hereby declare that the work in the dissertation titled ‘Prevalence and Determinants of HIV Risk Behaviours among Seafarers in Port Harcourt Seaport, Rivers State’ has been performed by me in the Department of Community Medicine under the supervision of Prof S.H. Idris and Dr. M.S. Ibrahim. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another degree or diploma at any university.



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CERTIFICATION

The dissertation titled ‘**PREVALENCE AND DETERMINANTS OF HIV RISK BEHAVIOURS AMONG SEAFARERS IN PORT HARCOURT SEAPORT, RIVERS STATE**’ by Ibitein Ngowari Okeafor meets the regulation governing the award of the degree of Masters of Public Health in Field Epidemiology of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This book is dedicated to my darling husband, Dr. Chukwuma U. Okefor, whose overwhelming love, support and prayers spurred me to complete this work.

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LIST OF ACRONYMS

AIDS	Acquired Immuno-Deficiency Syndrome
BCC	Behavioural Change Communications
CDC	Centers for Disease Control and Prevention
FGD	Focus Group Discussions
FMOH	Federal Ministry of Health
GDP	Gross Domestic Product
HCT	HIV Counselling and Testing
HIV	Human Immuno-deficiency Virus
IBBSS	Integrated Biological and Behavioural Surveillance Survey
IDU	Illicit Intra-venous Drug Use
IEC	Information Educational and Communication
ILO	International Labour Organization
ITF	International Transport Workers Federation
MARP	Most At Risk Population
MSP	Multiple Sex Partnership
NDHS	National Demographic Health Survey
NFELTP	Nigerian Field Epidemiology and Laboratory Training Programme
NGO	Non-Governmental Organization
PICTs	Pacific Island Countries and Territories
RDT	Rapid Diagnostic Test
STI	Sexually Transmitted Infection
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UPTH	University of Port Harcourt Teaching Hospital

DEFINITION OF TERMS

SEAFARER: This is defined as any person who is employed or engaged or works in any capacity on board a ship/sea going vessel.¹

COMPREHENSIVE KNOWLEDGE OF HIV/AIDS: This means having heard of HIV/AIDS; and identifying that using condoms and limiting sex to one faithful, uninfected partner are two ways to prevent HIV/AIDS transmission; and rejecting two common misconceptions that mosquitoes transmit HIV/AIDS and sharing food with an infected person transmits HIV/AIDS; and knowing that a healthy-looking person can have HIV/AIDS.²

HIV RISK BEHAVIOURS: These refer to behaviours that increase the risk of HIV transmission.³

DETERMINANTS OF HIV RISK BEHAVIOURS: These are the factors that influence the practice of HIV risk behaviours.³

SUMMARY

HIV/AIDS in seafaring is a global health issue with adverse effects on the seafarers and the economy at large. In spite of the role of seafaring in the spread of HIV epidemic, most of the researches in Nigeria hitherto focused on land-based transport workers. The few available data on seafaring in Nigeria, was limited to HIV knowledge, attitude and practice, without exploring the determinants of HIV risk behaviours. This study aimed at determining the prevalence and determinants of HIV risk behaviours among seafarers in Port Harcourt Port, Rivers State.

A cross sectional study design comprising of quantitative and qualitative components was employed in the study. Data on socio-demographic characteristics, seafaring related characteristics, HIV knowledge, attitude and risk behaviours were collected using a validated, pre-tested and self-administered questionnaire. The level of HIV knowledge were categorized as good, fair and poor while HIV attitude was classified as either positive or negative attitude. The qualitative component of the study employed the use of focus group discussion guide. Bivariate and multivariate analysis were done to explore the determinants of HIV risk behaviours.

The study had a total of 103 seafarers. The mean age \pm standard deviation of the seafarers was 38.8 ± 8.51 years. Majority of the seafarers were males (92.2%; n=95) and spent six months or more on sea voyage (53.4%; n=55). The level of HIV knowledge was good in 68.9% (n=71) of the respondents while 49.5% (n=51) had comprehensive HIV/AIDS knowledge. Most of the seafarers had positive HIV attitude (88.3%. n=91). HIV screening among seafarers who consented to the test (n=92) revealed that one out of the 92 seafarers was positive, giving an HIV prevalence rate of 1.1%.

The prevalence of multiple sex partnership was 29.1% (n=30); transactional sex was 6.8% (n=7); homosexuality was 1.0% (n=1) and illicit intra-venous drug use was 2.9% (n=3). Thirty-five of

the seafarers (34.0%) engaged in one or more HIV risk behaviours and non-condom use among them was 85.7% (30 out of the 35 seafarers).

Sex, time period on voyage and comprehensive knowledge were significantly associated with HIV risk behaviours ($p < 0.05$). Multivariate analysis revealed that seafarers who spent six or more months on voyage were three times more likely to engage in HIV risk behaviours than those who spent less than six months (Adjusted odds ratio=3.08; 95% confidence interval=1.26-7.51; $p < 0.05$). Also, seafarers with no comprehensive HIV knowledge were about 2.5 times more likely to engage in HIV risk behaviours than those with comprehensive HIV knowledge (Adjusted odds ratio=2.49; 95% confidence interval=1.03-5.96; $p < 0.05$). The qualitative analysis revealed that long duration on sea, non-allowance of spouse during the voyage trip, presence of brothels around the port areas, lack of discipline of seafarers and lack of HIV sensitization visits to seafarers by the port authority were also determinants of HIV risk behaviours.

The prevalence of HIV risk behaviours among seafarers in Port Harcourt Seaport is high and the determinants of these behaviours include long duration of voyage and lack of comprehensive knowledge on HIV. The study recommends regular HIV sensitization visits to seafarers to increase HIV knowledge and discourage HIV risk behaviours. Health education strategies using behavioural change communication is also advocated.

Keywords: HIV risk behaviours, seafarers, Port Harcourt Port, Nigeria

CHAPTER ONE

INTRODUCTION

1.1 Background Information

HIV/AIDS is one of the destructive diseases of mankind with profound social, economic and public health consequences.⁴ The HIV/AIDS epidemic adversely affects the individuals, households and nations, reducing by more than half the Gross Domestic Product (GDP) of severely infected countries and reducing by 480 million people the UN estimate of global population by year 2050.⁵ In the countries most heavily affected, HIV has reduced life expectancy by more than 20 years, slowed economic growth, and deepened household poverty.⁵ According to the United Nations Development Program (UNDP), HIV has inflicted the “single greatest reversal in human development” in modern history.⁶ Furthermore, HIV causes a greater loss of productivity than any other disease, and is likely to push an additional 6 million households into poverty unless local and national responses are strengthened.⁷

Indeed, HIV/AIDS constitute a global public health concern, about 78 million people have been infected with the HIV virus and about 39 million people have died of HIV since the onset of the HIV epidemic.^{1,8} In recent years, however, some achievements have been made in the prevention and management of HIV/AIDS with evidence of declining prevalence rates in developed and developing countries including Nigeria.^{9,10} In spite of the noteworthy response on various fronts, the burden persists in many settings in sub-Saharan Africa.⁹ Nigeria remains one of such places with a high burden of the infection with 3.5 million people living with the virus and 300,000 new infections annually.¹⁰ At present, Nigeria is the second country with the highest HIV burden in the world after South Africa.⁹

The vulnerability of seafarers to acquiring and transmitting HIV infection has been accrued to their wide geographic mobility and long period of separation from intimate partners.¹¹ In addition, seafarers are almost exclusively men within the sexually active age group who frequent port areas, where there are often large numbers of sex workers, and they often carry large sums of cash, which makes them attractive customers for sex workers.¹² Unfortunately, these elements of a seafarer's occupation undoubtedly encourage high-risk behaviours.

HIV risk behaviours have long been recognized for their key role in the spread of the HIV epidemic.¹³ These risk behaviours include unprotected sexual intercourse, multiple sexual partners, homosexuality, transactional sex, intra-venous drug use, use of alcohol and recreational drugs.²¹⁴ The behavioural surveys in Nigeria has consistently revealed higher HIV prevalence among those engaged in HIV risk behaviours than the general public since the first survey in 2003.¹⁵ It is interesting to note that the National Demographic Health Survey 2013 of Nigeria¹⁶ reported that high level of HIV knowledge and attitude among the general population did not translate to the anticipated healthy sexual behaviours. This invariably highlights the need to explore not only HIV risk behaviours but also the determinants especially among seafarers, a category of workers, who have also been included in the Most-at-Risk population (MARP) for HIV/AIDS.

1.2 Problem Statement

HIV/AIDS has a triple impact on seafaring; adversely affecting the seafarers, their families and communities; the seafaring enterprise, and the economy as a whole.¹⁷ In addition to the human cost of illness for seafarers and their families, high HIV prevalence among seafarers has the potential to incur significant economic and developmental costs for their countries of origin.^{18,19} It has been noted that high proportion of seafarers come from low- and middle-income

countries.¹⁸ Thus, high rates of HIV infection represent a current and future cost to the health systems of these countries, and a loss in remittance income.²⁰ On a global level, HIV has the potential to disrupt the shipping industry by increasing the global shortage of seafarers.^{19,20}

Sadly, the prevalence of HIV infection in international maritime population is yet to be studied.²¹ However, many countries,^{13,18,22-23} have documented positive cases of HIV among its seafaring population, with some reporting prevalence rates as high as 22%. These rates have serious implication on international health. This is because seafarers are responsible for transporting 95% of the world's goods and thus are engaged in several inter-country, inter-region and inter-continental movements.¹⁷ Also, with the ongoing increase in globalization, it is expected that international trade and travel would consequently increase. These invariably would promote not only economic benefits but also the international spread of diseases such as HIV/AIDS across borders if proper interventions are not instituted to reduce the prevalence of this infection among seafarers.

The magnitude of this problem among seafarers do not arise directly from their occupation but the engagement in HIV risk behaviours.²⁴ The International Transport Workers Federation (ITF) web based survey²⁵ comprising of seafarers from several regions reported that 72.6% of seafarers did not use condom in their last high risk sexual exposure while another study in Kiribati, Australia²⁶ reported a lower value of 57.7%. The study in Kiribati also noted that 55.2% and 63.2% of seafarers engaged in multiple sex partnership and transactional sex respectively. Another study in Croatia, Europe²⁷ noted that 78.2% of seafarers engaged in multiple transactional sex and only 42% of those engaged in transactional sex used condom. The study in Lagos, Nigeria²⁸ showed that 20.2% of seafarers engage in multiple sex partnership. Studies^{23,25,28} also show that seafarers engage in other HIV risk behaviours such as

homosexuality, intra-venous drug use, alcohol and recreational drug use. These risky behaviours among seafarers is of particular concern not only because of the movement across several countries but because the seaports serve as a transport hub for access to commercial sex workers and illicit and recreational drug dealers.¹⁷ Also, studies^{17,29} have shown that cities and communities with seaports have higher HIV prevalence than the general population.

The presence of easy access to commercial sex workers and illicit and recreational drug users in the ports represent a negative cascade of events arising from the seafarers risky behaviours, leading to the spread of the HIV epidemic. Hence, seafarers have been referred to as the bridge transporting HIV across the borders.^{18,27} Also, some reports^{30,31} have identified seafaring as a cause of the pandemic nature of HIV/AIDS. These problems and accusations peculiar to seafarers have been linked to their lack of sufficient information on HIV/AIDS as well as poor access to HIV information and services during their voyages.^{18,24} However, some other studies²⁷⁻²⁸ have arguably reported that most seafarers have good knowledge on HIV/AIDS yet engage in HIV risky behaviours. This therefore poses a gap between knowledge and corresponding behaviour. This gap makes it difficult for policy makers and program managers to institute successful interventions targeted at eliminating HIV risk behaviours.

1.3 Justification of the Study

Human behaviour is complex, and thus the more the research about behaviours related to HIV, the better equipped the health system would be in developing effective interventions that can improve the health of people and reduce HIV transmission.^{14,32} This statement forms the crux of this study. The adverse effects of seafaring on the HIV epidemic^{27,33} necessitates a study that will explore HIV risk behaviours and determinants among seafarers. This would evidently serve as a

platform for enabling decision makers execute interventions targeted at reducing risky behaviours for HIV/AIDS, thus curbing the spread of the HIV epidemic.

Also, most of the researches in sub-Saharan Africa, notably Nigeria, focused on land-based transport workers, seemingly overlooking sea-based transport workers. Seafarers are transport workers who represent a large and difficult-to-reach population as a result of their global mobility and this makes them a moving target.¹⁸ Moreover, sub-Saharan Africa bears the brunt of the HIV epidemic,⁹ thus the need for studies such as the current research to expose the possibly contributory role of seafaring in the spread of HIV epidemic in this region.

The paucity of data on seafaring in Nigeria limits health planning and creates a wrong notion that HIV/AIDS in seafaring is not a problem in this part of the world. It is however, interesting to note that following online searches using PubMed, Google Scholar and Science direct, only one Nigerian study on HIV/AIDS among seafarers was found at the time of current research. It is therefore, hoped that this study would add to the body of knowledge on HIV risk behaviours among seafarers and awaken the need for more research among this category of transport workers. Additionally, Nigeria, unlike other countries fall short in extending the biennial STI/HIV Integrated Behavioural and Biological Surveillance Surveys (IBBSS)¹⁵ to seafarers, probably because of the perceived notion that they pose no risk to the spread of HIV in the country. Thus, a study such as this would reveal the situation of HIV risk behaviours among seafarers and serve as a basis for further research and possibly also uncover the need for HIV surveillance among seafarers.

The study carried out in Lagos Port, Nigeria²⁸ along with similar studies in Philippines,²⁵ Croatia²⁷ and Kiribati²⁶ all noted that in spite of the high level of HIV/AIDS knowledge among

seafarers, the prevalence of HIV risk behaviours among them remained high. Although these studies contradict the belief that increase in HIV knowledge translates to the adoption of HIV prevention behaviours,¹⁸ they however highlight the need for research on identifying other determinants of HIV risk behaviour among seafarers. Consequently, the current research would help in filling this gap by pinpointing the determinants of HIV risk behaviour among seafarers.

Noteworthy, Rivers State, a State with the highest number of ports in Nigeria, West Africa also doubles as the State with the highest HIV prevalence (15.2%)³⁴ in Nigeria. The prevalence of HIV in Rivers State is almost five times the national HIV prevalence.³⁴ This research being carried out in Rivers State would hopefully give rise to the needed information for adopting appropriate course of actions and programs for the ultimate reduction of the burden of HIV on seafarers, their families and the nation at large. Furthermore, this would be the first known research to be carried out in Rivers State. It is however hoped that the findings of this research would not only provide useful information for policy makers at the State and National levels but also prompt similar researches in other Port harboring States.

1.4 Research Questions

1. What is the level of HIV/AIDS knowledge and attitude of seafarers in Port Harcourt Port, Nigeria?
2. What is the prevalence of HIV among seafarers in Port Harcourt Port, Nigeria?
3. What is the prevalence of HIV risk behaviours among seafarers in Port Harcourt Port, Nigeria?
4. What are the factors that determine HIV risk behaviours among seafarers in Port Harcourt Port, Nigeria?

1.5 General and Specific Objectives

1.5.1 General Objectives

To explore HIV risk behaviours and determinants among seafarers in Port Harcourt Port, Rivers State, Nigeria.

1.5.2 Specific Objectives

1. To assess the level of knowledge and attitude of seafarers in Port Harcourt Port, Nigeria on HIV/AIDS.
2. To determine the prevalence of HIV among seafarers in Port Harcourt Port, Nigeria.
3. To determine the prevalence of HIV risk behaviours among seafarers in Port Harcourt Port, Nigeria.
4. To identify factors that determine HIV risk behaviours among seafarers in Port Harcourt Port, Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of HIV/AIDS: Epidemiology of HIV/AIDS

Human Immuno-deficiency Virus (HIV) is the causative agent for Acquired Immuno-Deficiency Syndrome (AIDS). The virus destroys the body's immune system thereby increasing the vulnerability of the individual to opportunistic infections, neurological disorders and unusual malignancies.³⁵ AIDS is a collection of symptoms and infections occurring as a result of specific damage to the immune system of the body. Also, HIV/AIDS is one of the emerging diseases that has progressed from a mysterious illness affecting a group of people to a global pandemic which has infected tens of millions in less than two decades.³⁵

This global pandemic was first recognized in 1981 in the United States of America among a group of homosexual men.³⁶ In Nigeria, the first two cases of AIDS were diagnosed in 1985 in Lagos and consequently reported to the International AIDS conference of the following year.³⁷ This spreading disease would cause more deaths than any other disease by the year 2020 in the absence of a cure or vaccine.³⁸

The HIV virus belongs to lentivirus group and has two strains; HIV-1 and HIV-2.³⁹ The HIV-1, which was discovered in 1983, is more widely distributed, accounting for approximately 95% of all HIV infections globally.³⁹ In 1987, HIV-2 was discovered and reported to be more common in West Africa. Although, both strains have the same mode of transmission, HIV-2 transmission rates are significantly lower, with perinatal and heterosexual being the common modes of transmission.⁴⁰ Also, HIV-2 has been shown to be less pathogenic, with progression to AIDS significantly longer than HIV-1.⁴⁰

HIV infects cells that have the CD4 antigen molecule on their surface.⁴¹ These cells are principally helper T-lymphocytes which are central to cell-mediated immunity. Recently, it has been discovered that HIV needs chemokines on the cell surface to gain entry into the cell.⁴¹ Thus, individuals who do not have these specific chemokines (e.g. CCR5) are more resistant to HIV infection. HIV destroys the immune system by causing a progressive decline in the number of CD4+ T-lymphocytes. These cells are most important in the cell-mediated immune response. This process will eventually result in a progressive decline in immunity leaving the individual vulnerable to infections leading to AIDS.⁴¹

HIV is present in semen, vagina and cervical secretions and blood. These are the main routes of the transmission of the virus. However, the virus could also be present in saliva, tears, urine, breast milk, cerebrospinal fluid and infected discharges.^{42,43} When the virus gains entry into the human body, it reproduces itself and infects other cells within three to eight weeks.⁴⁴ The infected person begins to develop influenza like illness, which may last for one to two weeks. After which, the infected person may remain asymptomatic for weeks, months, and even years, depending on the competency of the immune system and the route of transmission. During the initial period of viral replication, the infected persons develop antibodies to HIV proteins within three months which is referred to as sero-conversion. The window period is the interval between infection and sero-conversion.⁴⁵ This forms the basis for HIV screening as one of the public health interventions for reducing this deadly disease.

According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), 36.9 million people are living with HIV/AIDS globally and there are 5,600 new infections of HIV occurring daily.⁴⁶ Most of these new infections are transmitted heterosexually, however in some countries, people who are engaged in risk behaviours of intravenous drug use, homosexuality and

transactional sex were disproportionately burdened by HIV.⁴⁶ The deaths from AIDS has been attributed to inadequate access to HIV prevention, care and treatment services.⁴⁷

The global HIV prevalence is 0.8%,⁴⁶ however, some countries report high HIV prevalence of above 20%.⁴⁸ These countries are in sub-Saharan Africa, the region worse hit by HIV/AIDS.⁹ Botswana, Lesotho and Swaziland have adult HIV prevalence exceeding 20%.⁴⁸ However, in terms of the number of persons living with HIV/AIDS globally, South Africa has the highest (6.3 million), followed by Nigeria (3.3 million) and India (2.1 million).⁴⁶ On the other hand, some countries like Syria, Maldives, Bangladesh and Macedonia have reported low HIV prevalence of 0.01%.⁴⁸

In Nigeria, marked differences exist in HIV prevalence across the zones and states. The highest prevalence of 15.2% was reported in Rivers State, the south-south zone while the lowest prevalence of 0.2% was in Ekiti State, south-west zone of the country.⁴⁹ In the north-east zone, Taraba State, had the highest prevalence of 10.5% while in the north-west zone, Kaduna State had the highest prevalence of 9.2%.⁴⁹ For north-central zone, Nasarawa State had the highest prevalence of 8.1%.⁴⁹ While for the south-east and south-west zones, Abia and Oyo States respectively had the highest prevalence rates, reporting 3.3% and 5.6% respectively.⁴⁹ Notably, these marked differences within the zones of the country could be attributed to the presence of varying cultural beliefs, lifestyle behaviours, industrialization and avenues for international travel.⁵⁰ For instance, in Rivers State, multiple concurrent partners and transactional sex has been identified as drivers of the HIV epidemic.⁵¹ These drivers could stem from the presence of the several oil-rich industries, which invariably translate to diverse activities within the seaport of the State.

2.2 HIV/AIDS in Seafaring

HIV/AIDS among seafarers is of global health concern.¹⁷ The HIV-infected seafarer serves as a risk group for the transmission of HIV infection to heterosexual population across borders.¹⁸ The global prevalence of HIV/AIDS among seafarers is yet to be investigated.²¹ However, the review of available studies^{27,26,52-53} reveal prevalence rates ranging from less than 1% to as high as 22%. A study carried out among seafarers in Kiribati,²⁶ a country located in the Australian continent reported zero HIV prevalence among seafarers. This was based on the data collected via the country's passive type of surveillance system. Thus, it is envisaged that the adoption of active or sentinel surveillance could be more revealing in this country. Another zero HIV prevalence rate was reported in Tuvalu, South Pacific, involving 209 seafarers.⁵³ This zero prevalence has been attributed to the implementation of the multi-sectoral strategies on AIDS/STI education and prevention for the Pacific Island Countries and Territories (PICTs).⁵³

HIV prevalence among seafarers in Croatia²⁷ and Southern region of Iran⁵² both reported prevalence rates of 0.25%, these countries are also among the population with low HIV prevalence in the world.⁴⁸ Another low HIV prevalence rate of 0.33% was reported among seafarers in the United Kingdom.⁵⁴ This study involved 304 seafarers visiting the United Kingdom. This low prevalence could be attributed to this country's stringent health policies on seafaring, necessitating certain pre-requisite medical tests such as HIV screening for all seafarers before entry into the country.⁵⁵ Another study, carried out among 336 Belgian seafarers, reported a prevalence rate of 4.5%.⁵⁶ This was reported to be much higher than the Belgian general HIV prevalence rate of 0.062% within that time period, thus revealing that the HIV prevalence among the seafaring population was seven times greater than that of the general population.⁵⁶ A similar study in Spain, involving 57 seafarers reported a prevalence rate of 3.5%.⁵⁷ Although, the latter

prevalence rate is lower, it is comparable to the study in Belgium and these studies highlight the need for the adoption of measures to prevent HIV among seafarers in these European countries.

Another study has noted that South East Asia had a high HIV prevalence rate of 22% among seafarers.⁵⁸ This high prevalence rate may not be unconnected to the fact that majority of the seafarers worldwide are from this region, therefore, they could be at an increased risk of HIV infection due to their profession.⁵⁸ Although, the study among male Filipinos reported HIV prevalence rate of 1%, it however noted that this seemingly low prevalence among the seafarers was much higher than the general HIV prevalence rate of the country.⁵⁹ Also, another Asian study, carried out among Thai seafarers reported HIV rates as high as 12%, noting that this was twelve times greater than the general population in Thailand.⁶⁰

The available studies in Africa carried out among the seafarers reported HIV prevalence rates of 5.3% and 9.6% in Nigeria²⁸ and Ethiopia⁶¹ respectively. Other studies among seafarers in South Africa,⁶² Tanzania⁶³ and Senegal⁶⁴ reported that HIV/AIDS is a rising problem in the seafaring industries in their respective countries but however, failed to report the HIV prevalence rates among these workers. These studies in South Africa,⁵⁹ Tanzania⁶⁰ and Senegal⁶¹ opined that the HIV prevalence among the seafarers is expected to be much higher than the general population due to the mobility of the seafaring profession and presence of sex workers in the port areas. On the other hand, the stigma and shame associated with HIV in some African countries⁶⁵ may hinder the reporting of prevalence rates among seafarers in a bid to prevent any disadvantage that may be accrued to such seafarers from these countries.

In Nigeria, it is important to note that the available study on HIV prevalence among seafarers was reported in Lagos.²⁸ This study involved 94 seafarers, of whom, five were identified as being

positive for HIV, giving a prevalence rate of 5.3%. Unlike the majority of studies, which involved seafarers from other nationalities visiting their country's port, this study in Nigeria was limited to Nigerian seafarers. This study in Lagos²⁵ noted that the prevalence rate among the seafarers was relatively higher than that of the nation and highlighted the need for policies on HIV prevention among seafarers in Nigeria.

2.3 HIV Knowledge and Attitude among Seafarers

HIV knowledge refers to the knowledge pertaining to the transmission and prevention of HIV/AIDS while HIV attitude assesses the personal thinking and opinion of individuals towards HIV persons.⁶⁶ HIV knowledge is acquired through the various methods of health communication and is dependent on the principles of health education.³⁵ HIV attitudes, on the other hand, are formed over a period of time and is largely influenced by personal, religious, cultural, legal and environmental factors.⁶⁷ Research on HIV knowledge and attitude has long been introduced among various population categories as it serves as a strong basis for tailoring appropriate messages on HIV/AIDS.⁶⁸

Concerning HIV knowledge and attitude of seafarers, the vast majority of seafarers have inadequate knowledge and poor attitude.²⁴ This has been attributed to the working conditions of seafarers, which makes it harder for them to access information on HIV transmission and prevention.³⁰ Also, the mobile nature of the seafaring profession prevents them from receiving messages on HIV due to their inability to understand the local language as well as their limited time while in transit.^{15,24} On the contrary, other studies have reported high level of HIV knowledge among seafarers.^{23,69,70} One of such studies was carried out in Italy, which had Italian, Filipino and Indian seafarers.²³ This study reported that 85% of this study population had high level of HIV knowledge. Another of such study, which was carried out among the member

countries of the Indian Ocean, similarly reported high level of knowledge among 72% of the seafarers.⁶⁹ This adequate HIV knowledge among seafarers in this latter study has been accrued to the numerous interventions executed by the member countries of the Indian Ocean.⁶⁹ While, another study involving 1050 Polish seafarers noted that 90% of the seafarers had high level of HIV knowledge.⁷⁰ This finding of high HIV knowledge is comparable to studies among seafarers in Kiribati²⁶, Filipino⁷¹ and Nigeria.²⁸ The study in Nigeria noted that 85.1% of the 94 Nigerian seafarers had high HIV knowledge.²⁸ These studies^{23,26,28,71} also collected data on the seafarers HIV attitude and the data revealed that majority of seafarers expressed negative HIV attitude, disagreeing to sail with a fellow seafarer with HIV infection. Thus, this exposes an undertone that the presence of high HIV knowledge does not translate to the anticipated positive HIV attitude. However, the study in Turkey showed a different result, noting that almost 80% of the seafarers in the study were willing to work with an HIV positive seafarer.⁷² It has been shown that misconceptions on HIV/AIDS greatly contribute to negative attitude towards HIV/AIDS.²⁴ Thus, adequate knowledge on the transmission and prevention of HIV/AIDS could be sub-optimal if the individual fails to reject the common misconceptions of this disease. This necessitates the concept of comprehensive knowledge on HIV/AIDS. Comprehensive correct knowledge of HIV/AIDS is having heard of HIV/AIDS; and identifying that using condoms and limiting sex to one faithful, uninfected partner are two ways to prevent HIV/AIDS transmission; and rejecting two common misconceptions that mosquitoes transmit HIV/AIDS and sharing food with an infected person transmits HIV/AIDS; and knowing that a healthy-looking person can have HIV/AIDS.² Thus, individuals demonstrating comprehensive correct knowledge on HIV/AIDS are presumed to exhibit a desirable attitude towards HIV/AIDS.

The question of HIV attitude has been identified as one of the greatest and probably, the most worrisome problem related to HIV/AIDS.^{68,72} The absence of positive HIV attitude breeds stigma, discrimination and prevents HIV testing and disclosure.⁶⁷ The long latency associated with this virus necessitates early screening to identify apparently healthy individuals who are already infected for early intervention and longevity of life. However, this benefit is forestalled by the dominance of negative attitudes towards persons with HIV. Hence, it is important to study the attitude of individuals toward HIV infected persons in order to develop messages that could increase tolerance to the infected persons.⁶⁸ Furthermore, educational messages that debunk the myths and stigma associated with HIV/AIDS has been noted to promote positive attitude towards persons with HIV/AIDS.

2.4 HIV Risk Behaviours among Seafarers

In the spread of the HIV epidemic, the role of HIV risk behaviours have been identified to play a major role.¹³ This apparently stems from the fact that majority of HIV transmissions occur through sexual transmission. However, other modes of HIV transmission such as sharing of sharp objects could be a habit of individuals, thus increasing the risk of HIV transmission. Exploring the occurrence of HIV risk behaviours especially among mobile populations such as seafarers is needed to assess the burden of this problem.

2.4.1 Multiple Sex Partnership

Multiple sex partnership has been identified as one of the key drivers of HIV epidemic.^{13,61} This is unarguable, as the sexual route of transmission has been shown to be responsible for more than 75% of all HIV infections.⁴¹ Multiple sex partnership has been defined as having more than one sexual partner.⁷³ Some studies, rephrase the term to include ‘concurrent’, thus referring to it as multiple concurrent sexual partnership. Multiple concurrent sexual partnership has been defined

as an overlapping sexual partnership, in which sexual intercourse with one partner occurs between acts of intercourse with another partner.⁷³ However, the term ‘multiple sex partnership’ has been more commonly used and involves asking respondents the number of sexual partners they have had over a certain period of time. Hence, it is expected to be more encompassing as it also subtly exposes the presence of concurrent sex partnership among the respondents.

Multiple sex partnership has been reported amongst seafarers. One of these studies among Filipino seafarers revealed a multiple sex partnership prevalence rate of 20%.⁷¹ This finding is similar to the study in Lagos, Nigeria,²⁸ which showed that 19 of the 94 Nigerian seafarers engaged in multiple sex partnership, thus, giving a prevalence rate of 20.2%. These two latter studies reporting almost similar prevalence rates expose the reality that certain elements in the seafaring profession could promote such HIV risk behaviours among seafarers irrespective of their locality. However, the study in Tuvalu, Pacific Islands reported a slightly lower prevalence rate of 14.4%.⁵³ This is distinct with the study carried out in European and Florida Ports, which reported a multiple sex partnership prevalence rate of 39% among the seafarers in these ports.⁷⁴ This study in the European and Florida Ports had a study population of seafarers from several nationalities, with the majority of Filipino origin.⁷⁴ A higher prevalence rate of 78.2% was reported in similar study among seafarers in Kiribati.²⁶ These obviously high prevalence rates has been attributed to the long separation of seafarers from regular partners and the presence of sex workers within port areas.^{18,62} Also, another study noted that these peculiar factors in seafaring profession, cause them to be twice more likely to engage in multiple sex partnership than the general population.⁷⁵

It has been postulated that seafarers frequently suffer from sexual neurosis resultant from sex deprivation during long voyages and this consequently leads to high risk sexual behaviours when

in the port areas.⁷⁶ Also, the living and working conditions of seafarers while on the ship, has been reported to affect their psychic function and may cause emotional disturbances.⁷⁷ These emotional disturbances increase their risk of engaging in multiple sex partnership and thus increase their vulnerability to HIV/AIDS.⁷⁸ Other researchers have upheld this view, stressing that the conditions of seafaring profession makes them vulnerable to such HIV risk behaviours.^{24,62}

2.4.2 Transactional Sex

Transactional sex is defined as the exchange of favours, gifts, or money for sexual activity.⁷⁹ Transactional sex is often differentiated from commercial sex work since the recipients do not identify themselves as ‘prostitutes’.⁸⁰ However the relatively newer term of transactional sex is broader and also captures the engagement of sexual activities with commercial sex workers. It is important to note that in most African settings, individuals who patronize commercial sex workers do not easily own up to the engagement of such activity as they do not want to be stigmatized for sexual activity with a prostitute. However, they would easily own up to the engagement in transactional sex.⁸⁰ This scenario could be different in other nations who, unlike Africans, are more open to reporting sexual activities.

There has been increased focus on transactional sex from the past decade because of the associated risk of HIV infection.⁸¹ This increased risk of HIV infection from transactional sex arises from the finding that those engaged in transactional sex especially the recipients of the money or materials, commonly have other transactional sex partners so as to benefit from more money or materials.⁸² This usually occurs where the recipients, majority of whom are women, are motivated by economic vulnerability, hence, more likely to have more sexual partners.⁸² Another dimension to transactional sex reveals that the exchange of gifts, favour or money for

sex may signify a committed relationship in sub-Saharan Africa.⁸³ The presence of such committed relationship from transactional sex may seem to be protective against HIV, however, on the contrary, it increases the risk of HIV infection as condom use is not insisted upon and thus hardly used in such conditions.⁸³

Studies^{26,53,71,74} have shown that the practice of transactional sex among seafarers is not uncommon, hence a serious implication on the seafaring profession. One of such studies among seafarers from several nationalities reported that 13% of them engaged in transactional sex⁷⁴ while a slightly higher percentage of 15% was reported among Filipino seafarers.⁷¹ Studies involving seafarers in Tuvalu⁵³ and Kiribati²⁶ reported that 20.7% and 47.2% respectively were engaged in transactional sex. Another study by Pujol et al,⁸⁴ reported that more than half (53%) of all seafarers engaged in transactional sex. However, the study in Lagos, among Nigerian seafarers reported a prevalence rate of 12.3%.²⁸ Although, there are some dissimilarities in the reported prevalence rates of transactional sex in these studies, these findings on transactional sex possibly expose the need for interventions to curb this behaviour among seafarers.

Also, the public view of seafarers being mostly men with large financial income encourage the patrolling of young girls around the port areas especially the ports within the Africa region.¹⁸ The individual and household poverty possibly endorse such behaviours among young girls.⁸² Also, the introduction of sex tourism within ships, whereby the shipping company organizes and pays sex tourist organization for the supply of females for the seafarers on board their ship²⁴ contributes to the problem. Lastly, the presence of brothels within the port vicinities, all increase the seafarers vulnerability to the engagement in transactional sex.^{18,62}

2.4.3 Non-Condom use

Sexual transmission of HIV/AIDS remains the most frequent route of the transmission of the disease.⁴¹ Condom use has been identified as one of the major HIV/AIDS preventive measures, thus, non-condom use constitutes an HIV risk behaviour. In spite of the seemingly wide advocacy on condom use amongst other HIV preventive measures, low condom use is still prevalent in risky populations such as seafarers. It has been noted that acquiring the knowledge of condom use as a measure of HIV prevention, did not necessarily translate to the practice of condom use.⁵¹ For instance, a study involving 1050 Polish seafarers reported that 90% of the respondents affirmed that condom use during sexual intercourse protects against however, a much lower percent of 54% used condom during last high risk sexual activity.⁷⁰

The study in Tuvalu noted that none of the seafarers engaged in multiple sex partnership used condom, giving a non-condom use rate of 100%.⁵³ Another study also reported that 73% of all seafarers never used condoms.⁸⁴ Even though other studies^{26,28,71,74} reported much lower non-condom use rates than the studies in Tuvalu⁵¹ and Poland,⁶⁷ the need to intensify interventions on HIV risk behaviours among these seafarers is heralded. The study in Kiribati noted that non-condom use in last high risk sexual activity occurred in 46% of the seafarers,²⁶ while the Filipino study noted that a lower percentage of 25% of the seafarers did not use condom in their last high risk sexual activity.⁷¹ Another study assessing HIV risk behaviours among seafarers in European and Florida ports reported that 28% of seafarers never used condom during last high risk sex.⁷⁴ A lower rate of non-condom use among seafarers was reported in Lagos, Nigeria, where 15.9% of the seafarers never used condom.²⁸ This relatively lower rate of the non-condom use among the Nigerian seafarers compared to the seafarers from other countries could be the result of the increasing awareness and social marketing strategy employed to increase condom use among the Nigerian population.

2.4.4 Homosexuality

Homosexuality is a well-recognized HIV risk behaviour, as the first report of the occurrence of AIDS worldwide was first discovered among a group of homosexual men.³⁶ Also, individuals engaged in homosexuality have been found to have a disproportionate burden of HIV infection.⁶¹ The possibility of the seafaring population being predominantly males¹⁸ could be an increased risk for the engagement in this particular HIV risk behaviour.

The available studies on prevalence of homosexuality among seafarers showed a prevalence ranging from zero percent, reported among Tuvalu⁵³ to 3.2% reported among Nigerian seafarers.²⁸ While another study assessing HIV risk behaviours among Filipino seafarers reported that three out of the 500 seafarers were engaged in homosexual acts, giving a rate of 0.6%.⁷¹ Another study⁸⁵ among seafarers noted that of 16 seafarers with HIV infection, nine had engaged in homosexual acts, hence highlighting the increased risk of HIV infection following the practice of homosexuality.

With the legalization of this HIV risk behaviour in the United States and some European countries, it is expected that such behaviour would increase in most population thus increasing the likelihood of the seafarers from such populations engaging in homosexual acts. This has several implications on the seafarers' health and family, stemming from the sequelae of HIV infection from such behaviours.¹⁷ HIV infection in seafarers could be devastating as they do not only bear the consequences of the disease, but also contribute to the spread of the HIV epidemic.^{18,25} This is because seafarers have long been recognized as the bridges for transporting new HIV infections to non-endemic areas.^{18,24} Hence, a clarion call for policies and interventions to address such risk behaviours among seafarers.

2.4.5 Illicit Intra-venous Drug Use (IDU)

It is well known that HIV is transmitted through the sharing of sharp instruments such as needles and injections. Although, this route is not as common as the sexual route of transmission, it poses a threat to the control of the HIV epidemic, as it is a practice common among the young population, who are also likely to engage in other HIV risk behaviours.⁶⁸ Also, some countries has noted higher HIV prevalence among those engaged in illicit intra-venous drug use than the general population.^{27,85} In Vietnam, the illicit intra-venous drug users were among the first set of AIDS cases detected and constitute a large percentage of HIV positive persons in the country.⁸⁶

The practice of illicit intra-venous drug use among seafarers is believed to occur because of the availability of such drug sellers within port areas.^{18,62} Nonetheless, some studies have reported a zero percent prevalence of IDU among seafarers.^{53,86} One of such studies involved 209 seafarers, and noted that none of the seafarers engaged in IDU.⁵³ The other study, which reported zero percent IDU prevalence in one of the ports in Vietnam accrued it to the fear of seafarers to admit engagement in illicit intra-venous use as it may have negative implications on their seafaring profession such as the termination of appointment.⁸⁶ Hence, such practice is associated with high secrecy. Another study involving Filipino seafarers noted an IDU prevalence rate of 1%.⁷¹

Illicit intra-venous drug use among seafarers was investigated among four ports in Vietnam and found that few seafarers admitted to the engagement of this risk behaviour.⁸⁶ The study also noted that most of the seafarers engaged in this practice could not afford having a personal injection equipment and thus sharing of injection equipment was a common practice among them.⁸⁶ The repercussion of this behaviour is an increased risk of HIV infection among this group of seafarers. This obviously necessitates the need for stringent laws within port areas to

ban sales of such illicit drugs as well as enlighten the seafarers on the increased HIV risk transmission from such practice.

2.5 Determinants of HIV Risk Behaviour among Seafarers

HIV risk behaviours are influenced by a variety of factors.⁸⁷ These factors are referred to as determinants, as they determine individual HIV risk behaviours.⁸⁷ The understanding of the determinants of risky behaviours has been emphasized as a prerequisite for evidence based interventions aimed at curtailing these behaviours.^{14,32}

Review of the literature showed that the determinants include socio-demographic factors.^{68,87,86} These are factors of the individual's age, marital status and educational level. The importance of understudying these socio-demographic determinants among seafarers helps to identify groups who may require targeted intervention. For instance, a study in Senegal Port to identify the determinants of HIV risk behaviours reported that demographic characteristics of younger age, being uneducated and married were associated on bivariate analysis.⁸⁸ However, following logistic regression analysis, being uneducated and married were still significantly associated with HIV risk behaviours.⁸⁸ This study in Senegal also noted that seafarers who were uneducated were 2.3 times more likely to engage in HIV risk behaviours than those educated (95% Confidence Interval: 1.23-5.79).⁸⁶ It further reported that being married had higher odds of HIV risk behaviours than being single (Odds ratio: 2.5; 95% Confidence Interval: 1.25-5.11).⁸⁸ This finding in the Senegal study⁸⁶ contrasts with studies carried out in ports in Philippine⁷¹ and Kiribati,²⁶ which both reported that seafarers who were singles were twice more likely to engage in HIV risk behaviours than their married counterparts. It is a common perception that individuals who are singles are more likely to engage in HIV risk behaviours than those married. This perception is borne from the fact that singles are not bound to marital commitment and may

possibly have lower sense of family responsibility than those married. While the study in Kiribati noted that seafarers aged 15 to 34 years were significantly more likely to engage in HIV risk behaviours than their counterparts of older age groups,²⁶ the study in Philippine also affirmed this but further commented that there was a marginal association between younger aged seafarers and HIV risk behaviours.⁷¹

Another determinant closely related to the socio-demographic determinant, is the work determinant. This include factors of length of trip, duration of seafaring and nature of seafaring appointment.^{18,26} The nature of seafaring appointment refers to either contract/temporary or permanent. A study noted that seafarers with more than 12 months length of trip were at an increased risk of HIV risk behaviours than those on shorter trip lengths.²⁶ This could be explained by the longer time of separation from family and probably regular partners. Seafarers with longer duration, of probably more than 10 years on the job, are expected to be conversant with factors that increase HIV risk behaviours and consequently deter from engaging in such practice.²⁴ Additionally, these seafarers with longer duration of seafaring practice are in most instances older in age and married with stable families, hence unlikely to engage in HIV risk behaviours. Thus, seafarers who are newly employed or those with short duration of practice could be at risk of engaging in such behaviours. Another possible work determinant is the type of seafaring employment. It has been postulated that seafarers on contract/temporary form of employment are more likely to disengage in HIV risk behaviours than the permanently employed seafarers for the main reason of being under probation and the fear that their involvement in such risk behaviour may threaten their opportunity of being transformed to permanent staff.⁸⁶ On the other hand, seafarers working as permanent staff tend to have the assurance of a stable income. This could possibly influence them to engage in HIV risk behaviours such as transactional sex. A

different line of reasoning is that permanently employed seafarers are more commonly likely to have acquired greater experience in the practice of seafaring and also greater knowledge on the impact of HIV on seafaring, thus less likely to engage in risky behaviours than the temporary seafarers. Nonetheless, work determinants of HIV risk behaviours among seafarers highlight the peculiarities of the seafarer's working conditions and the need for the institution of HIV risk behaviour prevention strategies across the different work situations experienced by the seafarers.

HIV knowledge and attitude have been shown to be determinants of HIV risk behaviours.^{26,86} While, the expectation that individuals with high HIV knowledge as well as commendable attitude towards HIV would be less likely to engage in HIV risk behaviours, most studies have observed the contrary, even among seafarers. A study carried out in Vietnam noted that most of the study population had high HIV knowledge, however this high HIV knowledge was referred to as superficial as it neither showed effect on attitude towards HIV nor HIV risk behaviour change.⁸⁶ Also, the study among Kiribati seafarers reported an association between HIV risk behaviours and knowledge on HIV/AIDS.²⁶ This study in Kiribati noted that 43% of the seafarers who were engaged in HIV risk behaviours also had good knowledge on HIV transmission and prevention.²⁶ Another study involving Filipino seafarers also noted a borderline significant association between HIV knowledge and practice of HIV risk behaviours, but revealed that seafarers with high HIV knowledge were twice more likely to engage in HIV risk behaviours than those with low HIV knowledge.⁷¹ This could be possibly explained by the co-existing presence of other determinants of HIV risk behaviours in these seafarers. The study in Senegal⁸⁸ and Philippines,⁷¹ controlled for several determinants of HIV risk behaviours and noted that alcohol use among seafarers was a strong determining factor for the engagement in such behaviours.

CHAPTER THREE

METHODOLOGY

3.1 Background Information of Study Area

This study was conducted in Port Harcourt Port in Rivers State. Rivers State is one of the thirty six states in Nigeria and lies within the south-south geopolitical zone. It is among the states that constitute the Oil Producing Niger-Delta. Rivers State has a total of 23 Local Government Areas (LGAs) with a population density of 470km² and total population of 5,198,716.⁸⁹ It is bounded in the south by the Atlantic Ocean, the north by Imo, Abia and Anambra States, the east by Akwa-Ibom State and the west by Bayelsa and Delta States. Port Harcourt being the capital of Rivers State is cosmopolitan in nature and harbours people of different ethnic backgrounds.

The Port Harcourt Port is among the six designated seaports in Nigeria and the major port in the Rivers Port Complex in coastal Rivers State. The Port is situated in the Gulf of Guinea. It has enlarged from one berth for coal export to four berths to handle a cargo mix of import/export merchandise. The Port has a quay length of 1,259 meters and is capable of accommodating eight modern sea-going vessels loading and discharging at the same time.⁸⁸ It provides pilotage and towage services relating to dry, liquid and general cargo trades. The Port operational area consists of berthing areas, cargo handling areas, stacking areas and storage facilities.⁹⁰ The major operation in the port is the transport of general cargo.

The Port Health Service under the Federal Ministry of Health (FMOH) operates a Seafarers Medical Centre, located within the Port to provide preventive and curative medical services to the seafarers. The location of the Port in the centre of the city may encourage HIV risk behaviours among seafarers, as this provides easy access to illicit drug use and brothels.

3.2 Study Design

This study was a cross sectional study with both quantitative and qualitative components.

3.3 Study Population

The study population comprised of seafarers in the Port Harcourt seaport.

3.3.1 Inclusion Criteria

1. Individuals who were aged between 18 years and 60 years, in keeping with the age limit of the seafaring profession.¹
2. Individuals who had been working in the seafaring profession for at least three months.

3.3.2 Exclusion Criteria

1. Individuals who were severely ill to respond to the questionnaire.
2. Individuals with mental illness which precluded them from participating in the study

3.4 Sample Size Determination

The sample size was calculated using the formula for cross sectional studies.⁹¹

$$n = \frac{(Z)^2 p q}{d^2}$$

n is the minimum sample size

Z is the standard normal deviate of 1.96, corresponding to 95% confidence level

p is the estimate prevalence of HIV infection among seafarers from a study in Lagos (5.3%)²⁸

while q is $1-p$

d is the desired precision of 0.05

$$n = \frac{(1.96)^2 0.053 \times 0.947}{0.05^2} = 77.09$$

Allowance for non-response was done using the formula; $N_s = n/ARR$; where N_s is the calculated sample size; ARR is the anticipated response rate (80%)⁹²; n is the minimum sample size (77.09)

$$N_s = 77.09/0.8 = 96.3 \sim 97 \text{ participants}$$

Adjustment for population <10,000 using finite population correction was then applied using the formula below;

$$\text{Adjusted sample size} = \frac{n_0 N}{n_0 + (N-1)}$$

Where n_0 is the minimum sample size calculated = 97; N is the total population of seafarers in Port Harcourt Seaport = 2000

$$\text{Adjusted sample size} = \frac{(97)(2000)}{97 + (2000-1)} = 92.5 \sim 93$$

However, this study had a total of 103 seafarers.

3.5 Sampling Technique

Seafarers were selected from the Seafarers Medical Centre using the systematic sampling technique. This involved the calculation of the sampling interval, k

- i. Sampling interval, k was calculated by dividing the daily number of seafarers in the clinic, N by the desired daily sample size, n
- ii. The daily average number of clients at the Seafarers Medical Centre, $N = 9$
- iii. The daily desired sample size to cover two month period, $n = 3$
- iv. Sampling interval, $k = 9/3 = 3$.
- v. The first sample was selected by the simple random sampling using the table of random numbers. After which, every 3rd patient was selected.

3.6 Study Instruments

3.6.1 Description of study instruments

Two study instruments were used to collect data.

1. Structured Questionnaire (Appendix 2)
2. Focus Group Discussion (FGD) Guide (Appendix 3)

The structured questionnaire of the quantitative aspect of the study (Appendix 2) was content-validated by two consultants of public health and an expert in mental health. It was also pretested before commencement of the study. It comprised of four sections. Section I contained the socio-demographic and seafaring related characteristics of the respondents; which were age, sex, marital status, educational level, country of origin, duration of seafaring practice and time spent on voyage. Section II assessed the respondents' level of HIV knowledge. It consisted of sixteen questions derived from the 2013 Nigerian Demographic and Health Survey (NDHS)¹⁶ covering knowledge on HIV transmission, prevention, diagnosis, treatment, cure and source of information. Section III assessed the respondents' attitude towards persons with HIV/AIDS and consisted of eight questions derived from the HIV attitude section of the NDHS 2013.¹⁶ However, one of the questions on the attitude towards HIV/AIDS person was modified to the seafaring profession, which was, 'would you sail with a seafarer who has HIV/AIDS?' Answers provided from the HIV knowledge and attitude were scored by assigning one mark to a correct/appropriate response and zero to a wrong/inappropriate response. For HIV knowledge, the maximum score was 16 and minimum score was zero. Scores of 0-7 represented poor level of HIV knowledge; scores of 8-11 represented fair level of HIV knowledge while scores of 12-16 represented good level of HIV knowledge. Comprehensive knowledge on HIV/AIDS was assessed and categorized as either yes or no. HIV attitude was graded as positive attitude (scores

of 4 and above) or negative attitude (scores below 4) with the minimum and maximum scores being zero and eight respectively. Section IV assessed the HIV risk behaviours among the respondents. It was adapted from the HIV Risk Assessment Questionnaire developed by the Oregon Health and Science University Partnership Project.⁹³ It consisted of questions for assessing HIV risk behaviours of multiple sexual partnership, transactional sex, homosexuality, illicit intra-venous drug use and non-condom use.

The FGD guide (Appendix 3) was the study instrument for the qualitative component of the research. This guide was based on the review of literature.^{94,95,96} It consisted of main questions and the corresponding probing questions. These questions explored the participant's understanding of HIV risk behaviours and the determinants/factors associated with such behaviours.

3.6.2 Pre-testing and finalization of study instruments

The study questionnaire was pre-tested and final adjustments made prior to the commencement of the study. The pre-testing was carried out among ten seafarers in the Abonema Wharf of Rivers State to assess the clarity, comprehensiveness and the ease of completion of the questionnaire. The outcome of this exercise showed that the questionnaires were well understood by the subjects and required 10 minutes for completion.

3.7 Data Collection Methods

3.7.1 Quantitative

The study questionnaire was structured and self-administered. In the event of participants with low literacy in English Language, questionnaire was interviewer-assisted. Data were collected

over a three month period from March to May 2016 from the seafarers based on the sampling technique, eligibility criteria and receipt of informed consent (Appendix 1).

3.7.2 Qualitative

The qualitative research employed the use of focus group discussions to collect data on the determinants of HIV risk behaviours among seafarers using the FGD guide (Appendix 3). Three FGDs comprising of two male groups and one female group were performed since an overwhelming majority of almost 90% of seafarers were males.¹⁸ This was also done to ensure good representativeness and harness their different perspectives. Snow-ball method of sampling was used to recruit participants for the FGDs. Each of the male FGD had eight participants while the female FGD had four participants. Each of the FGD session lasted for about an hour and consisted of an observer/recorder (who recorded the session) and a moderator (researcher).

3.7.3 HIV sample collection

Blood sample collection for HIV test was performed in accordance to the recommended HIV serial testing by the National Guidelines on HIV Counselling and Testing⁹⁷ (Appendix 4). The material used were the following; latex gloves, alcohol swab, disposable single use lancets, marker for labelling, precision pipette, injection safety box, timer, Rapid Diagnostic Test (RDT) kits of determine, unigold and stat pak and buffer solution.

The RDT kit was first checked for expiry date, brought to room temperature and labelled for identification prior to use. Using aseptic technique, 0.5ml (one drop) of blood was collected into a precision pipette and transferred to the RDT kit. One drop of buffer solution was then added into the kit and timer placed on 15 minutes. The results were read after 15 minutes. Pre-test and post-test counseling were done for all subjects irrespective of the results in a manner to ensure the privacy of the subjects. HIV testing was done for the consenting seafarers irrespective of any

declared knowledge of their HIV status. One research assistant with background training in Laboratory Science was trained on HIV Counselling and Testing (HCT) in accordance with the recommendations of the National Guidelines on HIV Counselling and Testing.⁹⁷ A certified HIV counsellor with laboratory training served as the resource person for the training (the researcher).

3.8 Data Management

3.8.1 Measurement of Variables

Socio-demographic variables (age, sex, marital status, educational level), seafaring related variables (duration of seafaring practice, duration spent on voyage) and variable on HIV knowledge comprised the independent variables. HIV risk behaviours of multiple sexual partnership, transactional sex, homosexuality, and illicit intra-venous drug use were used to form a composite HIV risk behaviour. This was defined as the engagement in any of the HIV risk behaviours. The composite variable on HIV risk behaviours constituted the dependable variable of the research.

3.8.2 Statistical Analyses

The quantitative data analysis was performed using the statistical package EPI info version 7, designed by Centres for Disease Control and Prevention (CDC).⁹⁸ Data were presented in tabular forms and charts. The qualitative variables were expressed as counts and proportions while the quantitative variables were expressed as means and standard deviation. The independent t test was used to compare the differences in means across two groups while ANOVA (F test) was used to compare differences in means across more than two groups. Bivariate analysis was employed using either Chi square test or Fisher's exact test. A p value of less than 0.05 was considered statistically significant. Statistically significant variables were entered into the multivariate model to identify determinants of HIV risk behaviours. Multivariate analysis using

unconditional logistic regression was employed. Odds ratio and 95% confidence intervals were calculated to measure the strength of association.

The qualitative research analysis was done by thematic analysis using the Nvivo version 10 software.⁹⁹ The recorded data from all the various FGDs were transcribed verbatim into Microsoft word document. This was then imported into Nvivo version 10 software. The content was read severally to identify themes, which were subsequently coded into different nodes. A coding summary by node report was then generated by the software to analyze emerging themes and sub-themes.

3.9 Ethical Considerations

The approval of the Research Ethical Committee of Port Harcourt was sought and ethical clearance obtained (Appendix 5) prior to the commencement of the study. Details of the research were made known to the participants. Subsequently their approval and written informed consent (Appendix 1) were obtained before inclusion into the study. Anonymity was maintained by using serial numbers (research numbers) instead of names in consideration of confidentiality during the entire study period. The respondents were also kindly instructed to drop their completed questionnaires in the slotted box provided to further buttress confidentiality. Confidentiality was also maintained during the pre- and post-test counselling. The new case identified through the study was referred to the University of Port Harcourt Teaching Hospital (UPTH) antiretroviral clinic for proper care. Data storage and protection were ensured.

3.10 Limitations

This study could be prone to response bias due to the secrecy associated with sexual behaviours and the fear of HIV testing. This was minimized by reassuring the respondents of the

confidentiality of information and effective counselling. Research on HIV related behaviours is known to have social desirability bias. However, the use of self-administered questionnaire, anonymity and confidentiality employed in this study were measures of reducing social desirability bias. Furthermore, the employment of the qualitative component of this research helped to contextualize the existing findings.

The analysis of the determinants of HIV risk behaviours in this study does not reveal causality but associations due to the cross sectional design of the study. The finding of non-consent to HIV testing by few of the seafarers in this study could possibly indicate an under estimation of the HIV prevalence reported in this work.

CHAPTER FOUR

RESULTS

Part A: Quantitative aspect of study

4.1 Characteristics of the respondents

Table 1. Demographic characteristics of respondents (n=103)

Socio-demographic variables	Frequency	%
Age categories (years)		
21-30	15	14.6
31-40	44	42.7
41-50	35	34.0
51-60	9	8.7
Sex		
Male	95	92.2
Female	8	7.8
Marital Status		
Single	23	22.3
Married	79	76.7
Separated/Divorced	1	1.0
Educational level		
Primary	10	9.7
Secondary	31	30.1
Tertiary	62	60.2
Nationality		
Nigeria	90	87.4
India	4	3.9
Poland	2	1.9
Croatia	2	1.9
Ukraine	2	1.9
Bangladesh	1	1.0
Trinidad & Tobago	1	1.0
Mexico	1	1.0

The age range of the respondents was 23 – 58 years with a mean of 38.8 ± 8.51 years. The age category of 31 – 40 years had the highest frequency of 42.7%. Most of the respondents were males (92.2%) and about three-quarter (76.7%) of the seafarers were married. The study also noted that all the respondents had formal education with primary level of education having the least frequency (9.7%) while tertiary level of education had the highest frequency (60.2%). Majority of them were Nigerians (87.4%) and this was followed by Indians (3.9%).

Table 2. Seafaring related characteristics of respondents (n=103)

Seafaring related characteristics	Frequency	%
Duration of profession		
< 1 year	6	5.8
1 – 5 years	35	34.0
6 – 10 years	26	25.2
>10 years	36	35.0
Time period spent on voyage		
< 6 months	48	46.6
≥ 6 months	55	53.4

The study noted that 35.0% of the respondents in the study had been working as seafarers for more than 10 years while few of them (5.8%) had less than one year duration in seafaring profession. More than half of the seafarers (53.4%) spent six months or more on sea voyage.

4.2 HIV Knowledge and Attitude of the Seafarers

HIV Knowledge

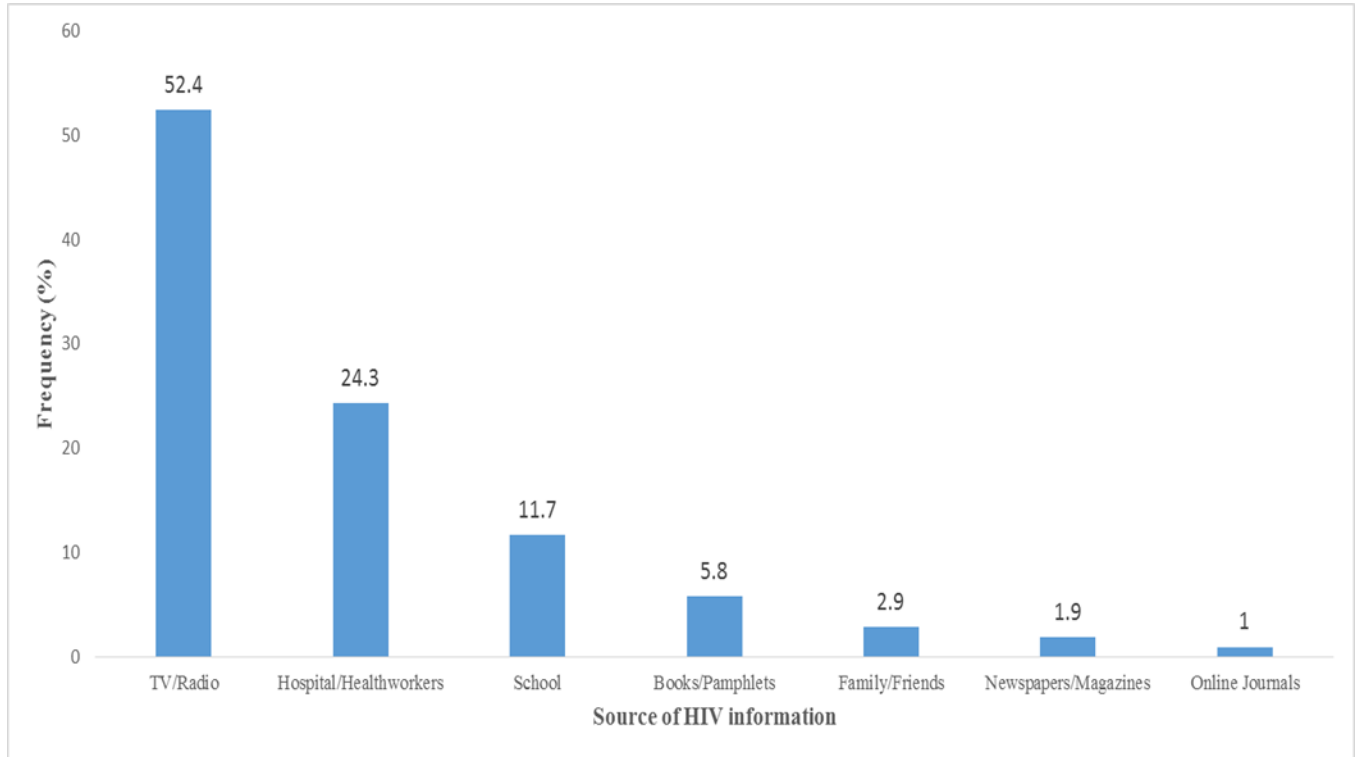


Figure 1. Sources of HIV knowledge among the respondents

Television/radio was the highest source of HIV knowledge among the seafarers (52.4%), followed by hospital/health workers (24.3%) while online journals had the least frequency (1%).

Table 3.HIV knowledge scores according to age categories of respondents

Age category (years)	HIV knowledge scores Mean \pm SD
21 – 30	12.8 \pm 2.73
31 – 40	12.5 \pm 2.64
41 – 50	13.5 \pm 1.72
51 – 60	13.0 \pm 2.12
SD - Standard deviation	F test = 1.313; p value = 0.275

The mean HIV knowledge score among the seafarers was 12.9 ± 2.35 .

The differences in the mean HIV knowledge score across the age categories were not statistically significant (p value = 0.275) (Table 3).

The HIV knowledge mean scores among the male and female seafarers were 12.9 ± 2.30 and 12.9 ± 3.35 respectively. This difference in the mean HIV knowledge score was not statistically significant (t test = 0.083; p value = 0.934).

Table 4. Level of HIV knowledge among respondents

Level of HIV Knowledge	Frequency	%
Poor (HIV knowledge scores 0-7)	4	3.9
Fair (HIV knowledge scores 8-11)	28	27.2
Good (HIV knowledge scores 12-16)	71	68.9
Total	103	100.0

About two-thirds of the seafarers (68.9%) had good level of HIV knowledge while 3.9% had poor level of HIV knowledge.

Comprehensive knowledge on HIV/AIDS

The study noted that 51 of the 103 seafarers (49.5%) had comprehensive knowledge on HIV/AIDS while the remaining 52 (50.5%) lacked comprehensive HIV/AIDS knowledge.

HIV Attitude

Table 5. Mean HIV attitude scores of respondents according to age categories

Age category (years)	HIV attitude scores
	Mean \pm SD
21 – 30	6.0 \pm 2.17
31 – 40	6.1 \pm 2.0
41 – 50	6.5 \pm 1.65
51 – 60	6.0 \pm 2.18

SD - Standard deviation F test = 0.387; p value = 0.763

The mean HIV attitude score of all the respondents was 6.2 ± 1.92 .

The mean HIV attitude score was highest among the age category of 41-50 years (6.5 ± 1.65).

The differences in the mean HIV attitude scores across the age categories were not statistically significant (F test = 0.387; p value = 0.763).

The mean HIV attitude scores for male and female seafarers were 6.3 ± 1.82 and 4.8 ± 2.49 respectively. This difference in the mean scores was statistically significant (t test=2.279; p value =0.025). Thus, females had significantly lower HIV attitude scores than males.

Table 6. HIV attitude of respondents

HIV Attitude	Frequency	%
Negative	12	11.7
Positive	91	88.3
Total	103	100.0

Most of the seafarers (88.3%) had positive HIV attitude.

4.3 Prevalence of HIV among Seafarers

Prior HIV testing

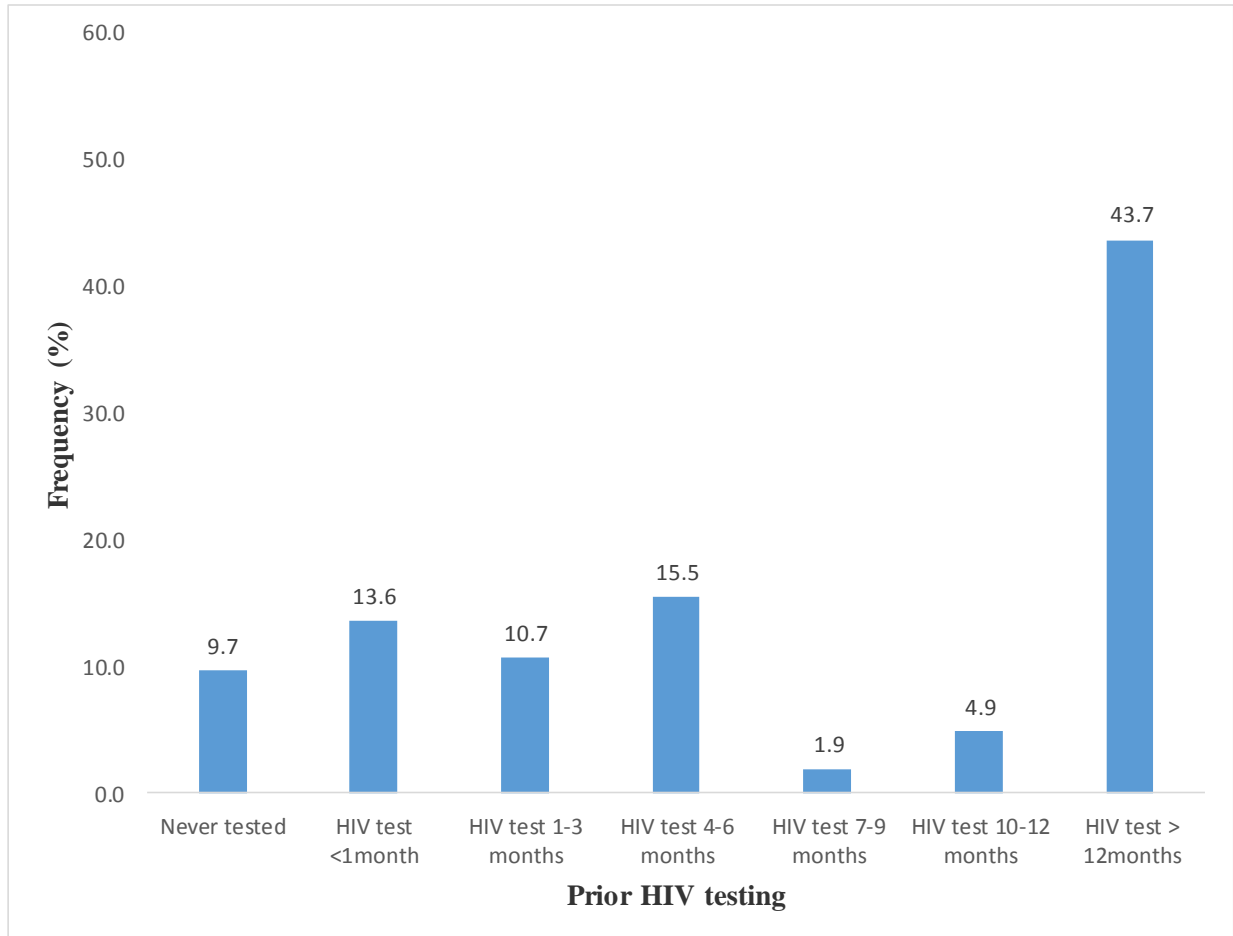


Figure 2. Frequency of prior HIV testing among respondents

The study noted that of the 103 respondents, 93 (90.3%) had ever tested for HIV while 10 (9.7%) had never tested for HIV.

Less than half of the seafarers (43.7%) in the study had HIV testing done more than 12 months ago while a much lower frequency of 13.6% of the seafarers did HIV test less than a month ago.

Table 7. HIV prevalence of the respondents

HIV screening test	Frequency	%
Positive	1	1.1
Negative	91	98.9
Total	92	100.0

This study noted that 11 of the 103 respondents (10.7%) failed to give consent for the HIV screening. The HIV screening was performed on the 92 respondents who gave consent. One out of these 92 respondents tested positive for HIV, giving a prevalence of 1.1%.

4.4 HIV Risk Behaviours among Seafarers

Table 8. Prevalence of HIV risk behaviours among respondents (n=103)

HIV risk behaviours*	Frequency	(%)
Multiple sex partnership (MSP)	30	29.1
Transactional sex	7	6.8
Homosexuality	1	1.0
Illicit intravenous drug use (IDU)	3	2.9

*multiple responses apply

Multiple sex partnership was the highest HIV risk behaviour among the respondents (n=29.1%) while the least was homosexuality (1.0%).

Table 9. Proportion of respondents engaging in multiple HIV risk behaviours (n=103)

HIV risk behaviours	Frequency	(%)
One HIV risk behaviours	30	29.1
Two HIV risk behaviours	4	3.9
Three HIV risk behaviours	1	1.0
Total	35	34.0

A total of 35 of the 103 respondents in the study engaged in HIV risk behaviours, giving a HIV risk behaviour prevalence of 34.0%.

Table 10. Frequency of condom use among respondents engaged in HIV risk behaviours

	Condom use		
	Yes	No	Total
HIV risk behaviours	n (%)	n (%)	n (%)
Seafarers engaged in MSP	5 (16.7)	25 (83.3)	30 (100.0)
Seafarers engaged in Transactional sex	2 (28.6)	5 (71.4)	7 (100.0)
Seafarers engaged in HIV risk behaviours	5 (14.3)	30 (85.7)	35 (100.0)

MSP – Multiple sex partnership

Majority of the seafarers who engaged in MSP did not use condom (83.3%). Non-condom use had the highest frequency across the different categories of HIV risk behaviours. Only five (14.3%) of the 35 seafarers who engaged in HIV risk behaviours used condom.

4.5 Determinants of HIV Risk Behaviours among Seafarers

Table 11. Bivariate analysis of factors associated with HIV risk behaviours

Factors	HIV Risk Behaviours		Total n (%)
	Yes n (%)	No n (%)	
Age category			
≤ 40 years	21 (35.6)	38 (64.4)	59 (100.0)
≥ 41 years	14 (31.8)	30 (68.2)	44 (100.0)
<i>Chi square=0.160; p value=0.689; OR=1.18, 95% CI (0.52-2.71)</i>			
Sex**			
Male	35 (36.8)	60 (63.2)	95 (100.0)
Female	0 (0.0)	8 (100.0)	8 (100.0)
<i>Fishers Exact p value=0.049*</i>			
Marital status			
Currently single	6 (25.0)	18 (75.0)	24 (100.0)
Currently married	29 (36.7)	50 (63.3)	79 (100.0)
<i>Chi square=1.125; p value=0.289; OR=0.58, 95% CI (0.21-1.61)</i>			
Educational level			
Secondary level and below	12 (29.3)	29 (70.7)	41 (100.0)
Tertiary level	23 (37.1)	39 (62.9)	62 (100.0)
<i>Chi square=0.674; p value=0.412; OR=0.70, 95% CI (0.30-1.64)</i>			
Nationality			
Nigerian	33 (36.7)	57 (63.3)	90 (100.0)
Non-Nigerian	2 (15.4)	11 (84.6)	13 (100.0)
<i>Fishers Exact p value=0.210; OR=3.18, 95% CI (0.67-15.25)</i>			
Duration of seafaring			
≤10 years	25 (37.3)	42 (62.7)	67 (100.0)
> 10 years	10 (27.8)	26 (72.2)	36 (100.0)
<i>Chi square=0.949; p value=0.330; OR=1.54, 95% CI (0.64-3.74)</i>			
Time period on voyage			
≥6 months	25 (45.5)	30 (54.5)	55 (100.0)
<6 months	10 (20.8)	38 (79.2)	48 (100.0)
<i>Chi square=6.926; p value=0.008*; OR=3.17, 95% CI (1.32-7.60)</i>			
Comprehensive HIV knowledge			
No	23 (44.2)	29 (55.8)	52 (100.0)
Yes	12 (23.5)	39 (76.5)	51 (100.0)
<i>Chi square=4.918; p value=0.027*; OR=2.58, 95% CI (1.11-6.02)</i>			

OR-Odds ratio CI-Confidence interval *Statistically significant **OR not computed due to empty cell

The age, marital status, educational level, nationality and duration of seafaring profession were not significantly associated with HIV risk behaviours ($p>0.05$) while sex, time period on voyage and comprehensive knowledge were significantly associated with HIV risk behaviours ($p<0.05$).

Respondents who spent six months or more on voyage were about three times more likely to engage in HIV risk behaviours than those who spent less than six months (Odds ratio-3.17; 95% confidence interval=1.32-7.60). Also, respondents with no comprehensive HIV knowledge were about 2.6 times more likely to engage in HIV risk behaviours than those with comprehensive HIV Knowledge (Odds ratio-2.58; 95% CI =1.11-6.02). (Table 4.11)

Multivariate analysis of HIV risk behaviours

Table 12. Logistic regression model of factors associated with HIV risk behaviours

Independent Variables	Coefficient (B)	Adjusted Odds ratio (AOR)	95% Confidence interval	p value
Time period on voyage				
≥6 months/<6 months	1.123	3.08	1.26 – 7.51	0.014*
Comprehensive HIV Knowledge				
No/Yes	0.911	2.49	1.03 – 5.96	0.041*
Constant	-0.221			0.513

*Statistically significant Hosmer and Lemeshow Test: chi square=0.105; p value=0.949

Respondents who spent six or more months on voyage were three times more likely to engage in HIV risk behaviours than those who spent less than six months (Adjusted odds ratio=3.08; 95% confidence interval=1.26-7.51; p value=0.014). Also, seafarers with no comprehensive HIV knowledge were about 2.5 times more likely to engage in HIV risk behaviours than those with comprehensive HIV knowledge (Adjusted odds ratio=2.49; 95% confidence interval=1.03-5.96; p value=0.041). Time spent on voyage and comprehensive HIV knowledge were determinants of HIV risk behaviours among respondents.

Part B: Qualitative aspect of study

4.6 Emerging themes on HIV risk behaviours among seafarers

Response to “What do you know about HIV/AIDS?”

The participants of all the three focus group discussions were very responsive to the question on what they knew about HIV/AIDS. All the participants were aware of HIV/AIDS and affirmed it as a disease transmitted mainly via sex. Only one of the participants accurately defined HIV and AIDS. Several of the participants were able to mention the methods of transmission of HIV/AIDS. Some of the responses included the following; *“it can be contacted through sexual intercourse, kissing, sharing sharp objects and blood transfusion”*. Majority of the participants mentioned that the disease has no cure while few of them reported that they have only heard of a traditional medicine that cures the disease but have not yet seen anyone cured through traditional medicine.

Response to “What are the behaviours that increase one’s chance of getting HIV/AIDS?”

The responses included; *“not using condom during sex, patronizing prostitutes, having too many sex partners, sharing sharp objects, excessive alcohol intake and going to night club”*. Concerning the response on going to night club, some of the participants’ had divided opinions. Some said that *“going to night club cannot be a risk behaviour that increases one’s chance of getting HIV/AIDS as some people go to night club and are disciplined and do not get drunk”*. Other participants said *“night club is an avenue to meet new women and take excessive alcohol which could make one forget to use condom and get HIV”*. Almost all participants upheld the view that sexual transmission is the main way HIV is transmitted and unprotected sex greatly increases one’s chance of getting HIV/AIDS.

Hence, the emerging themes on HIV risk behaviours among seafarers were multiple sex partners, patronizing prostitutes, not using condom, sharing sharp objects, excessive alcohol intake and going to places that could increase HIV risk behaviours such as night clubs.

4.7 Emerging themes on determinants of HIV Risk Behaviours among seafarers

Response to “What are the factors that could cause HIV risk behaviours?”

A myriad of responses were given, which included: *lack of discipline; carelessness; no fear of God; too many women around the sea port; too long a time spent on sea; not travelling on sea with spouse; presence of prostitutes around them; no HIV sensitization visits from the Port Health Services and no adequate concern for health of seafarers by the health bodies.* These responses from the seafarers were grouped into themes comprising of individual factors, seafaring related factors, factors related to the environment of the port and government factors.

In all the three focus group discussions, the majority of the participants identified individual factors as a determinant of HIV risk behaviours. Some of the prominent responses include: *“lack of discipline among seafarers leads to HIV risk behaviours”*; *“when there is no fear of God, seafarers engage in such risky behaviours”*; *“the number one factor that determines these HIV risk behaviours is the individual mindset and lack of carefulness”*.

Another theme that emerged from the focus group discussions was the seafaring related factor. In all the three FGDs, long time on sea was mentioned as a factor that could encourage seafarers to engage in HIV risk behaviour. One of the prominent response was: *“as seafarers when we are on the sea for so long, it as if we are sex starved and feel sick so any opportunity to misbehave we succumb”*. Among the female group, one of the participants mentioned that *“not travelling along with spouse as seafarers could cause seafarers to engage in risky behaviours”*. The other participants affirmed this comment. Hence the seafaring related factors that could lead to HIV

risk behaviours were long duration on sea and non-allowance of spouse of seafarers to go along the voyage.

The themes on the environment of the port and government factors were of concern to the seafarers, as some of them expressed discontentment in their responses. Some of the responses were; *“As soon as the ship berths at the port, there are several women, prostitutes waiting for you, so how will we not engage in HIV risk behaviours?”*; *“The port authority and government are also responsible, they do not care about the health of seafarers, no free condoms, no health talk, no encouragement, our work is not easy”*.

The determinants of HIV risk behaviours among seafarers identified from the FGDs were lack of self-discipline of seafarers, presence of brothels/sex workers around the ports, non-allowance of spouse on sea voyage, long duration of sea voyage and lack of HIV sensitization visits by government.

CHAPTER FIVE

DISCUSSION

The high level of HIV Knowledge among majority of the respondents in present study is comparable with similar studies in Italy²¹ and Poland,⁶⁷ which reported that 85% and 90% of seafarers respectively had good level of HIV knowledge. These proportions were higher than the present study probably due to the presence of interventions targeted at increasing HIV knowledge among seafarers in Europe.⁶⁶ Another similar Nigerian study, carried out in Lagos among trainee seafarers noted that 85.1% of them had high level of HIV Knowledge. This higher frequency (85.1%) in the Lagos study than present study (68.9%) could be due to the differences in the seafaring characteristics of the study population. The study in Lagos was carried out among trainee seafarers in schools, thus they benefit from a variety of lectures including health education while the present study comprised of seafarers who were already in the seafaring profession for at least three months. Nonetheless, these differences possibly highlight the need for regular enlightenment on HIV to seafarers.

Notably, the proportion of seafarers with comprehensive knowledge on HIV, an indicator on HIV knowledge that incorporates knowledge, perceptions and misconceptions of HIV, could be described as low in present study (49.5%), but this was much higher than the 37% reported among the national representative sample of the 2013 NDHS.¹³ This divulges that in planning HIV enlightenment programmes for the seafarers and the general populace, attention needs to be given to issues about misconceptions and perceptions about the disease to ensure these concerns are adequately addressed. However, the mobility nature of seafaring profession and also the primary focus of present study on seafarers stipulate that seafarers receive priority for such health education programmes. This could be achieved through mass media as this study noted

that the main source of HIV knowledge among majority of the seafarers was via television and radio. The next main source of HIV knowledge after mass media was via hospitals and health care workers, thus possibly implying the need for health care workers to seize the opportunity to give health talk to seafarers on HIV during general consultation visits.

The positive HIV attitude reported among majority of seafarers (88.9%) in present study is comparable to a similar study in Turkey,⁶⁹ that reported positive HIV attitude among 80% of the seafarers. It is possible that the increasing awareness that HIV is no longer a death sentence and can be managed for life could contribute to this positive attitude towards HIV by most of the respondents. However, in contrast to the finding of present study with regards to HIV attitude of seafarers, other studies in Italy²¹ and Kiribati²⁴ revealed that majority of the seafarers had negative attitude towards HIV. Although, these studies in Italy²¹ and Kiribati²⁴ reported that majority of the seafarers were knowledgeable about HIV, which was similarly reported in this present study, but their being knowledgeable about HIV did not translate to positive HIV attitude. The finding of majority of the respondents having good level of HIV knowledge and also having good HIV attitude in the present study agrees with the postulate that increasing knowledge about HIV leads to better attitude towards the disease.⁶⁵ Hence, this implies the need to promote information on HIV knowledge especially among this mobile population.

Additionally, the finding that most of the seafarers in this study had their last HIV testing prior to the study more than 12 months ago, highlights the need for HIV counseling and testing (HCT) services for seafarers through collaboration of government and non-government organizations to promote regular HIV screening as recommended by the country's guidelines.⁹³ The study noted that there were seafarers who have never done an HIV test prior to present study. Hence, there is

the need to include HIV testing in the pre-employment and periodic screening of the seafaring profession.

HIV prevalence reported in present study (1.1%) was lower than the study in Lagos, which reported a prevalence of 5.3%.²⁵ However, a similar study in Kiribati, noted a zero HIV prevalence among seafarers.²⁴ Also, other studies in Croatia²⁰ and United Kingdom⁵² reported lower HIV prevalence rates of 0.25% and 0.33% respectively. The prevalence of HIV among seafarers in this study is considerably lower than the general HIV prevalence in Rivers State (15.2%) and Nigeria (3.4%).⁴⁶ However, it is worth mentioning that 10.7% of the seafarers in the present study failed to give consent to HIV screening. This may have contributed to the low HIV prevalence reported in this study.

Concerning HIV risk behaviours, the findings of present study support the opinion that seafarers are a set of mobile population with several risky behaviours which could promote the spread of HIV.^{15,20} The prevalence of multiple sex partnership of 29.1% reported in this study is quite similar to another study in Lagos, which reported a prevalence of 20.2%.²⁵ The prevalence reported in present study is also comparable to the study carried out in Tuvalu, which reported a lower prevalence of 14.4%.⁵¹ Other similar studies carried out Italy²¹ and Kiribati⁵¹ reported prevalence rates of 39% and 78.2%, which are higher rates than the present study. In spite of the dissimilarities in some of the prevalence rates with present study, these findings along with the index study reiterate the need for innovative strategies using behavioural change communications (BCC) for the prevention of multiple sex partnership, which is a key driver of the HIV epidemic.

In spite of the increasing focus on transactional sex because of the associated risk of HIV infection⁷⁹, the index study noted that 6.8% of the seafarers engaged in transaction sex. This

finding is not too different from other studies in Lagos, Nigeria²⁵ and Philippine⁶⁸, which reported higher frequencies of 12.3% and 15% respectively among seafarers. However, another similar study by Pujo et al⁸², carried out among seafarers who travelled to West Africa reported that more than half of the study population (53%) engaged in transactional sex. The study by Pujo et al⁸² did not explore HIV knowledge among the respondents, which is unlike the present study. It is presumed that the greater the proportion of seafarers with HIV knowledge, the lesser the proportion that would engage in transactional sex.⁸⁴ Hence, the good level of HIV knowledge among majority of the respondents in the present study may explain the lower frequency of transactional sex reported in present study as compared to the study by Pujo et al.⁸²

Concerning condom use among seafarers, the finding of low prevalence of condom use among seafarers engaged in one or more HIV risk behaviours is a source for concern. The prevalence reported in this study (14.3%) is much lower than that of the national sample in Nigeria (NDHS, 2013),¹³ which reported a prevalence of condom use of 20%. The non-condom use among seafarers engaged in HIV risk behaviours is a cause for alarm as this pose a threat to the nations' ongoing plans to impede the HIV epidemic. Hence, the need for innovative strategies to address such concerns cannot be overemphasized.

Other HIV risk behaviours of homosexuality and illicit intra-venous drug use reported in this study have also been documented in other similar studies.^{25,51,68,83} Hitherto, HIV prevention strategies have seemingly focused on risk behaviours of multiple sex partnership, transactional sex and non-condom use, probably due to the fact that these behaviours constitute the key drivers of the HIV epidemic.^{10,58} However, the finding of other less common HIV risk behaviours of homosexuality and illicit intra-venous drug use among seafarers should not be disregarded.

Hence, HIV risk behaviour reduction programmes targeted at the seafaring population also need to put into cognizance these less common risk behaviours.

In spite of the high prevalence of HIV risk behaviours among the seafarers in present study, the HIV prevalence was low. This is surprising since the prevalence of HIV risk behaviours among the seafarers was higher than the national representative sample of the NDHS (2013).¹³ However, a similar study in Kiribati, which reported a zero HIV prevalence among seafarers also noted a high prevalence of HIV risk behaviours amongst them.²⁴ The finding in present study that HIV risk behaviours among seafarers is not uncommon highlights the necessity of exploring determinants of such behaviours.

Identifying determinants of HIV risk behaviours serve as a platform for the institution of programmes and policies to curb such behaviours especially when these determinants are modifiable.^{11,29} The finding of significantly higher prevalence of HIV risk behaviours among male seafarers than their female counterparts is similar to the finding found among the general population.¹³ This possibly reflects the cultural mores in most Nigerian setting that disdains the practice of risky behaviours among females.¹⁰⁰

The quantitative and qualitative components of this present study identified long duration of sea voyage as one of the determinants of HIV risk behaviours among seafarers. This finding in the present study concurs with the study in Kiribati,²⁴ which reported that long duration spent on sea is a determinant of HIV risk behaviours. Long duration on voyage promotes risky sexual behaviours by altering the psychic function causing emotional disturbances,⁷⁵ which may precipitate the indulgence of HIV risk behaviours.⁷⁶ Unlike other studies,^{24,68,86} which noted that age, marital status, educational level and duration of seafaring were determinants of HIV risk behaviours, this present study did not affirm such findings. This could be attributed to the socio-

cultural differences in the setting of present study and these other studies. Although, the study population of present study consisted mostly of Nigerian seafarers, there was no significant difference in the HIV risk behaviours between the Nigerian and the other non-Nigerian seafarers.

The individual level factors of indiscipline and lack of the fear of God identified as the main determinants of HIV risk behaviors by almost all of the seafarers in the qualitative aspect of study possibly uncover the need for peer education amongst seafarers. Peer education targeted at promoting self-discipline and healthy behaviors is hereby advocated. This finding contrasts sharply with a similar qualitative study among Thai seafarers,¹¹ in which the participants did not identify these factors as determinants. This difference could be explained by the socio-cultural and religious dissimilarities. For instance, in Nigerian and most African settings, a sense of belief in God is the norm of the society and religion is strongly inculcated among the population unlike in non-African settings.¹⁰¹

The presence of brothels around the ports serves as bait to the seafarers as this was identified as one of the determinants of HIV risk behaviors in this study. This is not peculiar to Nigeria, as the study in Thailand also noted similar finding in Thai ports.¹¹ Also, the study in Thai noted that the government implemented 100% condom use policy in brothels.¹¹ The findings of the present study expose the need to ban brothels around the ports in order to discourage HIV risk behaviors among this highly mobile population.

The expression of displeasure and dissatisfaction with the port health authority by the seafarers in present study stems from the opinion that the authority fails to organize HIV sensitization visits and hence they believe they are not concerned about their health. Most of the seafarers identified lack of HIV sensitization by the port authority as a determinant of HIV risk behaviors.

Therefore, this study reveals the need for regular HIV sensitization visits and campaigns to seafarers in Nigeria.

Additionally, the index study found that comprehensive HIV knowledge was a determinant of HIV risk behaviours, which was similarly noted in other studies.^{24,84} The finding that seafarers with no comprehensive HIV knowledge were significantly more likely to engage in HIV risk behaviours than their counterparts with comprehensive HIV knowledge in the index study brings to attention the need to design information, education and communication (IEC) materials that would debunk the myths and misconceptions about HIV.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

1. This study reveals that the majority of the seafarers in Port Harcourt Port, Rivers State have good level of HIV knowledge and positive attitude towards HIV/AIDS. Also, about half of the seafarers have comprehensive HIV/AIDS knowledge.
2. The HIV prevalence among the seafarers in this study is lower than the national prevalence.
3. The prevalence of HIV risk behaviours among the seafarers is high, as more than a quarter of them engaged in one or more HIV risk behaviours. The HIV risk behaviours among seafarers in this study are multiple sex partners, transactional sex, non-condom use, homosexuality and illicit intravenous drug use. The prevalence of non-condom use among seafarers engaged in HIV risk behaviours is high.
4. The study notes that long duration of voyage and having no comprehensive knowledge of HIV/AIDS are determinants of HIV risk behaviours. Focus group discussions among seafarers identified lack of discipline of seafarers, presence of sex workers around the port, absence of HIV sensitization visits by the port authority and not traveling along with spouse of the seafarers during sea voyage, as determinants of HIV risk behaviours.

6.2 Recommendations

The following recommendations are hereby made in view of the findings of this study;

To the Government

1. IEC materials that address the myths and misconceptions of HIV/AIDS should be developed and distributed by the Ministry of Health to seafarers.
2. Regular sensitization visits on the prevention of HIV risk behaviours among seafarers should be carried out by the port health authorities.
3. Institution of health policies to ensure pre-employment and periodic screening of HIV among seafarers should be implemented by the Ministry of Health.
4. The location of brothels around the ports should be discouraged by the port health authorities.

To the Health Care Providers

5. Appropriate health education on HIV should be given by health care providers to seafarers during general medical consultations.
6. HIV counselling and testing (HCT) services should be offered to the seafarers during hospital visits as part of routine clinical care.

To Non-Governmental Organizations

7. Non-governmental organizations (NGOs) should collaborate with the Rivers State and Federal government to develop health education strategies based on BCC to reduce HIV risk behaviours among seafarers.
8. NGOs should also collaborate with health care providers to support HCT services for seafarers.

To the Seafarers Association

9. Seafarers should organize regular peer education meetings to promote knowledge and positive attitude on HIV/AIDS.

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APPENDICES

APPENDIX 1

CONSENT FORM

Dear Sir/Ma,

I am carrying out a study to assess HIV risk behaviours and the determinants among seafarers for the award of Masters in Public Health, Field Epidemiology Practice. This study has several benefits which includes promoting the optimal health of seafarers. Please kindly note that all information you give would be kept confidential and your name would not be used. To further protect your confidentiality, you would drop your completed questionnaire in the slotted box provided.

However you are not in any way bound to give your consent and your non-participation would not affect your service at the Port Health. This study involves a 10-minutes self-administered questionnaire, free rapid diagnostic retroviral screening test requiring 0.5mls of blood sample (equivalent to one drop of blood) and free HIV counselling before and after the test.

Please I would like to know whether you are willing to participate in the study by your ticking the appropriate box below.

Yes

No

.....

(Signature/Initials)

Thank you.

Dr. Ibitein. N. OKEAFOR,
Community Medicine Department,
Ahmadu Bello University Zaria, Nigeria

APPENDIX 2

STUDY QUESTIONNAIRE

Section I: Socio-demographics

Research No.....

1. Age at last birthday: years
2. Sex: Male Female
3. Marital status: Single Separated
 Married Divorced
 Widowed
4. Highest educational level: None Quaranic
 Primary Secondary
 Tertiary
5. Duration of seafaring practice:years
6. Time spent on sea voyage
 Less than six (6) months Six (6) months or more
7. Country of residence:.....

Section II: HIV Knowledge

- | | Yes | No | Don't know |
|--|--------------------------|--------------------------|--------------------------|
| 1. HIV can be transmitted by mosquito bites | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. HIV can be transmitted by sharing food with HIV persons | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. HIV can be transmitted through sexual intercourse | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. HIV can be transmitted through blood transfusion | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|
| | Yes | No | Don't know |
| 5. HIV can be transmitted through sharing sharp objects | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. HIV can be transmitted via mother to child | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. A healthy person can have HIV/AIDS | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Using condom during sex can prevent HIV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Limiting sex to a faithful uninfected partner prevents HIV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. HIV can be prevented by not sharing sharp objects/needles | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. HIV can be prevented by screening blood prior to transfusion | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. HIV can be diagnosed by a blood test | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Treatment of HIV with Anti-retroviral drugs cures the disease | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Treatment of HIV with Anti-retroviral drugs can prolong the life of a patient | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Treatment of HIV with Anti-retroviral drugs reduce transmission of HIV infection | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Treatment of HIV with Anti-retroviral drugs to HIV positive mother can reduce transmission to the child | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

17. What is your **MAIN** source of information about HIV/AIDS?

- | | |
|---|---|
| <input type="checkbox"/> School | <input type="checkbox"/> Friends/colleagues |
| <input type="checkbox"/> Family member | <input type="checkbox"/> Television/Radio |
| <input type="checkbox"/> Church/Mosque | <input type="checkbox"/> Books/Pamphlet |
| <input type="checkbox"/> Town Announcer | <input type="checkbox"/> Newspapers/Magazines |
| <input type="checkbox"/> Hospitals/Clinic/Health centre | Others (please specify):..... |

Section III: Attitude towards HIV/AIDS persons

- | | Yes | No |
|--|--------------------------|--------------------------|
| 1. Would you sail with a seafarer who has HIV/AIDS? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Would you care for a family member with HIV/AIDS in their own home? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Would you want to disclose the secret of an HIV-positive status of family member? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Would you avoid (run away from) individuals with HIV/AIDS? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Would you sleep in the same room with individuals with HIV/AIDS? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Would you hug a person with HIV/AIDS? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Would you share toilet with persons with HIV/AIDS? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Would you allow an HIV/AIDS teacher to continue to teach your wards/children? | <input type="checkbox"/> | <input type="checkbox"/> |

Section IV: HIV risk behaviours

1. Which best describes the total number of partners you have had sex (oral, anal or vaginal) within the last 3 months?

- | | | |
|-------------------------------------|-------------------------------------|---------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 4 partners | <input type="checkbox"/> 8 partners |
| <input type="checkbox"/> 1 partner | <input type="checkbox"/> 5 partners | <input type="checkbox"/> 9 partners |
| <input type="checkbox"/> 2 partners | <input type="checkbox"/> 6 partners | <input type="checkbox"/> 10 partners |
| <input type="checkbox"/> 3 partners | <input type="checkbox"/> 7 partners | <input type="checkbox"/> >10 partners |

In the past 3 months, have you had sex with a?

- | | | | |
|---|------------------------------|-----------------------------|--|
| 2. Person who is an injection-drug user | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure/don't know |
| 3. Person who has HIV | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure/don't know |
| 4. Person who exchanges sex for | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure/don't know |

money or valuable items

In the past 3 months have you ever?

5. Engaged in homosexuality (men sleeping with men) Yes No
6. Had sex while under the influence of illicit drugs or alcohol Yes No
7. Been diagnosed with sexually transmitted infections (STIs) Yes No
8. Have you ever exchanged sex for money, drugs or a need Yes No

9. **Thinking back over the last month**, which **best** describes you/your partner's use of condoms during sexual intercourse?

Did not have sexual intercourse

Never used condom

Used 25% of the time

Used 50% of the time

Used 75% of the time

Used 100% of the time

10. The last time you had sexual intercourse, did you or your partner use condom

Yes No Never had sex

11. Have you used drug injection equipment/injected yourself with illicit drugs in the last 3 months?

Yes No

If No, please go to question 14.

12. If yes to question 11, how many times did you use it?

- | | | |
|----------------------------------|----------------------------------|------------------------------------|
| <input type="checkbox"/> Once | <input type="checkbox"/> 5 times | <input type="checkbox"/> 9 times |
| <input type="checkbox"/> 2 times | <input type="checkbox"/> 6 times | <input type="checkbox"/> 10 times |
| <input type="checkbox"/> 3 times | <input type="checkbox"/> 7 times | <input type="checkbox"/> >10 times |
| <input type="checkbox"/> 4 times | <input type="checkbox"/> 8 times | |

13. If yes to question 11, please which of the following **best** describes the last time you used it?

- shared or reused unclean syringe and injection equipment
- used new, sterile drug injection equipment
- shared disinfected syringe (cleaned with bleach or other disinfectants)

14. Have you ever done an HIV test? Yes No

If Yes, when?

- | | | |
|---|---|---|
| <input type="checkbox"/> < 1 month ago | <input type="checkbox"/> 4-6 months | <input type="checkbox"/> 10-12 months ago |
| <input type="checkbox"/> 1-3 months ago | <input type="checkbox"/> 7-9 months ago | <input type="checkbox"/> > 1 year ago |

Thank you for your participation.

APPENDIX 3

Focus Group Discussion Guide

Assessment and Determinants of HIV Risk Behaviours among Seafarers in Port Harcourt Sea Port, Rivers State

Date of interview:

Time of interview: Start time..... End time.....

FGD Code:

A. Respondents socio-demographic data

Ages 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____	Highest educational level 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____
Marital status 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____	Duration of seafaring practice 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____

B. Questions and Probe

1. What do you think are the general health problems among seafarers?

Probe:

List them

Is HIV/AIDS included?

2. What do you know about HIV/AIDS?

Probe:

Causative organism-is it a germ, witchcraft,etc

Transmission methods-

Symptoms/signs

Treatment/management-any cure, traditional, vaccine,

Any sequelae/long term effect-family, seafaring career

3. What do you understand by 'behaviours that increase one's chances of having a disease'?

Probe:

What examples do you know?

Are these behaviours natural or learnt over time, etc

4. What are the behaviours that increase one's chance of getting HIV infection?

Probe:

List all such behaviours you know

Do some of these behaviours have higher/lower risk than others or is risk the same for all types of behaviours?

5. What are the factors that promote HIV risk behaviours

Probe:

What factors contribute to these behaviours?

6. What are the factors that discourage HIV risk behaviours

Probe:

Are there factors that can discourage HIV risk behaviours?

If yes, can we group them as individual and government factors, e.t.c.

7. What can be instituted as ways for reducing/preventing HIV risk behaviours?

Probe:

List suggestions-are these feasible?

8. Any recommendations/concluding statements?

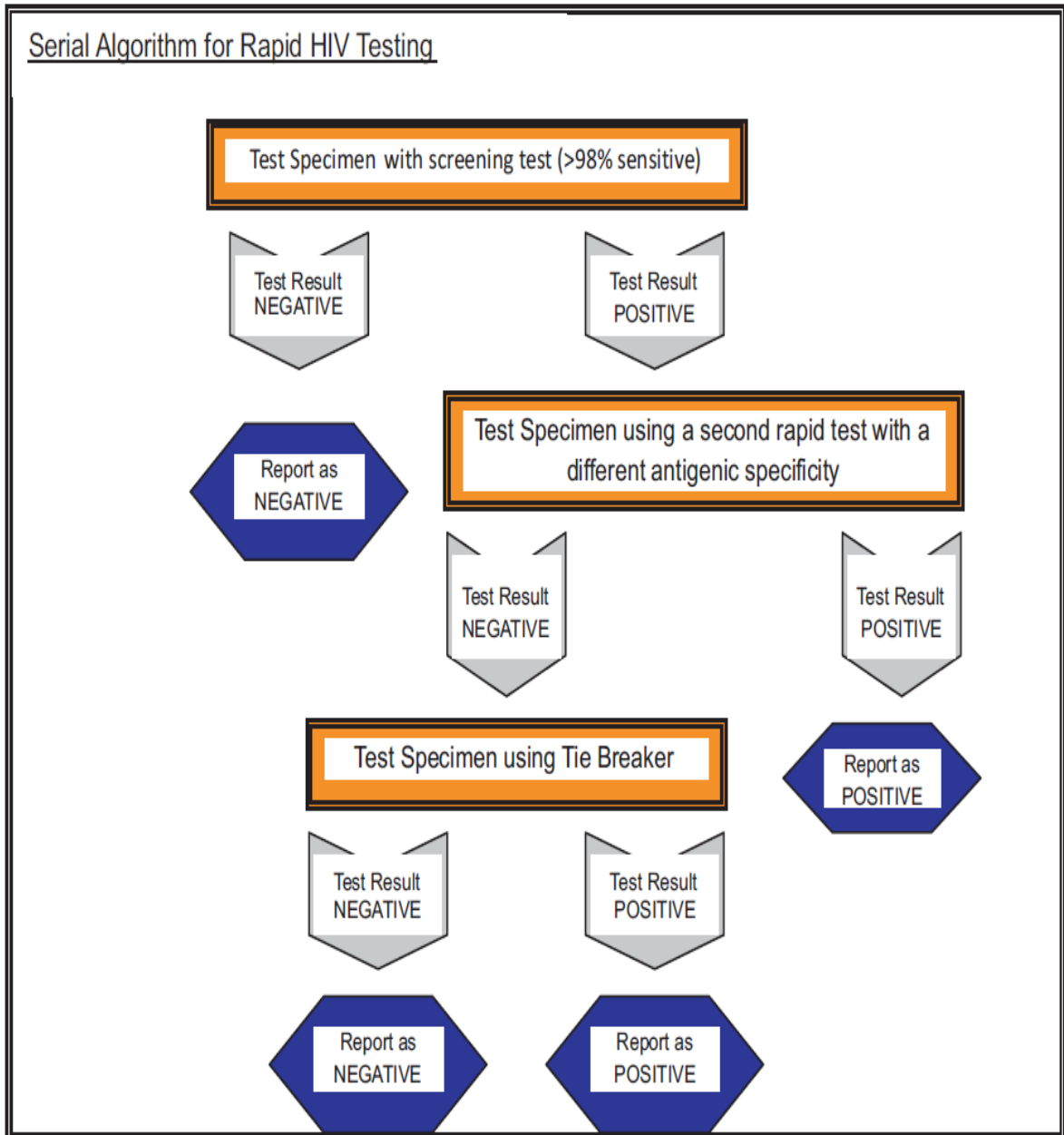
Probe:

Recommendations to be implemented by fellow seafarers, seafaring association, Port Health Office, Ports Authority, etc.

C. APPRECIATION TO ALL SEAFARER

APPENDIX 4

SERIAL ALGORITHM FOR RAPID HIV TESTING RECOMMENDED BY
THE NATIONAL GUIDELINES ON HIV COUNSELLING AND TESTING, FEDERAL
MINISTRY OF HEALTH, NIGERIA



APPENDIX 5

OFFICE OF RESEARCH MANAGEMENT AND DEVELOPMENT



EAST- WEST ROAD
CHObA
P.M.B. 5323
PORT HARCOURT

RESEARCH ETHICS COMMITTEE

Our Ref: UPH/R&D/REC/04

Date: November 23, 2015.

Dr. Okeafor, Ngowari Ibitein
Department of Preventive & Social Medicine
Faculty of Clinical Sciences
College of Health Sciences
University of Port Harcourt

Dear Dr. Okeafor

Re: Request for Ethical Approval for Research Proposal


Your application for ethical approval of research proposal titled: **Assessment and Determinants of HIV Risk Behaviours Among Seafarers in Port Harcourt, Rivers State, Nigeria** refers.

The Research Ethics Committee at its statutory meeting held on Thursday, November 19, 2015 considered your application for ethical approval, and after due deliberations **approved** your proposal.

You are however requested to make the suggested corrections in the attached Reviewer Evaluation Form and in the text, and thereafter, continue with your research. Please ensure that you follow strictly other aspects of the document which the committee approved. Also, do well to inform the committee of your findings at the end of the research.

Let me on behalf of the committee congratulate and wish you a fruitful research experience.

Thank you


Akubom, S. T. Otami
Secretary

APPENDIX 6 –WORK PLAN

Name of Activity	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016
Development of Thesis Proposal										
Thesis Proposal Defense										
Approval of Ethical Committee										
Training of research assistants										
Pre-test of questionnaires										
Data Collection										
Data Entry and Analysis										
Report Writing and Review by Supervisors										