

Evidence-based prevalence of HIV infection and associated risk factors among female sex workers in Port Harcourt, Niger Delta, Nigeria

Abstract

Human Immunodeficiency Virus (HIV) epidemic has remained a key public health issue for the sub-Saharan countries including Nigeria. Thus, sex workers in the region are top on the list of key populations with highest vulnerability. The prevalence of HIV among female sex workers is twice the prevalence found in the general population in Sub-Saharan countries. This study evaluated the prevalence of HIV among female sex workers in Port Harcourt, Rivers State, Nigeria. A respondent-oriented observational sampling technique which involved the use of questionnaire in addition to laboratory-based screening of HIV among female sex workers in Port Harcourt was used. The self-structured questionnaire comprehensively explored socio-demographic characteristics, and risk factors among the subjects. HIV rapid diagnostic test kit from Alere Determine was used to detect HIV infection. This cross sectional study findings recorded that, from a sample of 200 participants drawn, 171 were negative to HIV while 29 subjects were positive to HIV infection with an overall prevalence of 14.5% among female sex workers in Rivers State. Furthermore, the finding demonstrated null association ($p > 0.05$) between HIV and the risk factors measured. The study implies that the risk of HIV among the study population, female sex workers, is not linked to the assumed risk factors measured in this study since the finding failed to establish association at $p > 0.05$. HIV awareness campaigns should be intensified among female sex workers especially on the consistent and correct use of condoms, and possibly bringing HIV testing to the sex partners and clients as secondary prevention strategy to offset the trend in HIV prevalence among this key population. Also implementation of intervention such as HIV pre-exposure prophylaxis following crucial riskful accident; such as condom breakage is suggested among female sex workers.

Keywords: female sex workers, human immunodeficiency virus, HIV infection, Niger Delta, prevalence, Rivers State

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Introduction

The Human Immunodeficiency Virus (HIV) epidemic remains an important public health issue for the sub-Saharan countries and sex workers in the region are top on the list of key populations with highest vulnerability. The prevalence of HIV among female sex workers is twice the prevalence found in the general population in Sub Sahara region.¹

Nonetheless, studies have reported good control of HIV in sub-Saharan Africa with low incidence of HIV and increased access to treatment,¹ although the region had to catch up with the 90–90–90 targets before the COVID-19 pandemic.^{2,3} This rate on the other hand, shows the instability of the situation among females being one of the susceptible groups of HIV particularly in this region. A record in the year 2019 confirms that over 50% of females account for new infection compared to 49% in the rest of the world. Also, young female between the age of 15 to 24 years were two times more likely to be living with HIV compared to the males.^{2,3} This could be probably linked to their physio-anatomical features and structures in females.

Key populations are vulnerable to HIV infection with high prevalence rate. These key populations include; sex workers, men sleeping with men, prisoners to mention but a few. Notwithstanding the small size of these key populations being a small proportion and subset of the general population, studies have revealed high incidence of HIV infection among them and their partners. A recorded incidence rate of over 60% of adult worldwide as at 2019 report.⁴ While in Western and Central Africa, key populations are responsible for 69%

of new infections with HIV, with infection risk of 30 times higher for sex workers compared to others.⁴ In the same vein, female sex workers (FSWs) have higher prevalence rate and 12 times higher than the general population while 19% of HIV new infections are linked to sex workers.⁴

In addition, the World Bank reported that, HIV prevalence among FSWs varied significantly by region, with the highest prevalence found in sub-Saharan Africa (36.9%) and followed by Eastern Europe (10.9%). It has been revealed that HIV prevalence among this group of population was 13.5 times higher than the overall HIV prevalence among the general population of women 15–49 years old.⁵ In Nigeria, the prevalence of HIV among FSWs is high according to reports of various studies; 17.5%, 22.5%, 37.4%, and 27.4%, in 1991, 2003, 2007 and 2010 respectively. Generally, as seen on some of the published articles in different parts of the globe, the prevalence of HIV among FSWs ranges from 0.9% to 73.7%.^{6–8}

Female Sex Workers are faced with double burden of being a key population and being women. The risk of transmission of HIV among FSWs is particularly high for several reasons including the behavioural risks as a result of sexual engagements and demands of sex work with multiple sexual partners and failure as well as inconsistency in the use of condoms and unavailability of condoms as available condoms cover less than half of the need.⁹ Furthermore, the sex work exposes the female sex workers to a hostile and challenging social environment, with lack of access to care because of discrimination, stigmatization and criminalization of sex work.^{10–12}

Despite the fact that the UNAIDS considers HIV epidemic to be stable in Nigeria, the national prevalence of 4.1% (3 million people living with HIV/AIDS-IBBSS 2014), places Nigeria second to South Africa in terms of the global burden of HIV. Same study also established that 21% of new HIV infections were presented by key affected population (Female Sex Workers, Men who have Sex with Men and People Who Inject Drug) in Nigeria and chiefly by FSWs. Nevertheless, discrepancies have existed in the recent prevalence of HIV among FSWs in Nigeria as some studies have reported declining rates while others presented a contradictory report. This study measured the prevalence of HIV infection among the key population of Female Sex Workers in Rivers State, Nigeria. Furthermore, the lack of inclusion of Rivers State, Nigeria in previous studies intensified the quest for this study to obtain evidence-based information on the rate of HIV infections among FSWs in the region. The findings from this study can be compared with that of other regions which can aid policy and decision making for HIV interventions. It is thus expected that the overall gains of this study would re-focus management of public health in the region on the menace caused by human immunodeficiency virus infections and its associated opportunistic infections respectively.

Methodology

Study design

This cross-sectional and urban-based study adopted descriptive approach as design and, investigated the prevalence of HIV among key population which comprises female sex workers in Port Harcourt, Rivers State of Nigeria.

Study area

Rivers State was the area for this study. Rivers State is located in South-South Nigeria and Port Harcourt is the capital city of the State. The State is known by the high industrial activities. Particularly, Rivers State posses affluent in oil and gas as well as other petroleum activities. The key occupation of the Rivers State people are farming, fishing especially in decades past however, the explorative activities of the oil and gas have adversely affected the people and the environment and much is not happening as pertains agriculture. This has caused a drift to oil and gas activities including the use of crude methods. Rivers State being a state with high population has two referral and tertiary class healthcare facilities within the state in addition to secondary and model primary healthcare centres. The State has the universal basic education and senior secondary school centres all over the state. Also, private and public tertiary institutions are within the state. Rivers State and particularly the Port Harcourt metropolis which was the area of this study is characterized with lots of economic activities as well as social activities and which have made the State to attract people from all walks of life including sex workers sourcing for clients.

Eligibility criteria

Eligibility criteria were strictly based on approval of an informed written consent by participant generally commercial sex workers who obliged to participate in the study. Although no age limit was set, all female sex workers within Rivers State present at the time of study that consented were recruited while the available age and other demographics became the study framework used in this study. Males and any commercial sex worker that was not present at the time of sample collection or resides outside the selected study area – Rivers state, Nigeria were excluded as well as those present who declined recruitment into the study.

Sampling and data collection

The study used simple random sampling technique to sample subjects after a sample size calculation was performed using Cochran (1977) for descriptive study. Data collection was primarily sourced from study participants including blood sample collection using sterile 5mls needles and syringes.

Laboratory procedures

The laboratory methodology and procedure in this study strictly followed standard clinical laboratory practices from the start stage of pre analytical to post analytical. Ethical mannerism was maintained in all through the research. All laboratory tests used rapid diagnostic test kits. Hepatitis C Virus (HCV) used TWO DOT Rapid One Step Test (USA). Rapid Diagnostic Test Kit using Alere Determine™ HIV-1/2 (Japan), Hepatitis B Virus Surface Antigen (HBsAg) Screening Method used SKYDEC (USA) and rapid HBsAg Diagnostic Test Device (Serum/Plasma) is a qualitative assay.

Use of structured questionnaire

The use of well-structured questionnaire was used to collect the demographic characteristics of the subjects and possible risk factors that presumably promote the infection trend in the region.

Data collation and statistical analysis

Data were well managed, cleaned and collated into spread sheet of Microsoft excel and statistical analysis was conducted for descriptive statistics by the use of Statistical Package for Social Science tool specifically version 25. Frequency, percentage and prevalence rates were calculated respectively.

Ethical issues

Ethical authorizations were obtained from appropriate bodies including departmental heads of laboratories and health facilities in addition to informed and written consent from study subjects based on eligibility criteria. Furthermore, an ethical approval for this study was gotten from the Rivers State Ministry of Health Ethical Committee Department for Research and Development.

Results

This study examined the prevalence of HIV infection among 200 FSWs in Rivers State, Nigeria. Table 1 shows the demographic distribution pattern of HIV among female sex workers in Rivers state Nigeria. Age group demonstrated disproportionate distribution as a total of two hundred (200) participants had 171 negative for HIV infection and 29 positive for HIV infection. Age group 20-29 years had the highest number of participants as well the highest number of negative 85 (49.7%) and positive 15 (51.7%) subjects with HIV infection. While older age group 40-49 years appeared least with 8 (4.7%) and 1 (3.4%) for negative and positive HIV infection respectively.

Single people were the highest in number and as well recorded the group with negative HIV 148 (86.5%) and positive 26 (89.7%). Based on educational level, secondary cadre had the highest HIV infection 14(48.3%) and the tertiary levels were the lowest 3 (10.3%). With regards to the occupation of the participants, it was categorized into two “only sex work or additional job”. Study findings revealed that majority of the participants belonged to the category of “only sex work” 149 (87.1%) and 26 (89.7%) for HIV negative and HIV positive accordingly. Table 1 presents the details.

From the observation in this study, the overall prevalence of HIV among female sex workers in Rivers State, Nigeria is 14.5%. From a sample population of 200 participants drawn, 171 were negative to

HIV while 29 persons were positive to HIV infection. See table 2 for details.

Table 1 Frequency distribution of socio-demographic characteristics

Status	Group	Frequency	Percentage
Age Group			
Negative	Less than 20 Years	17	9.9
	20 - 29 Years	85	49.7
	30 - 39 Years	61	35.7
	40 - 49 Years	8	4.7
Positive	Less than 20 Years	1	3.4
	20 - 29 Years	15	51.7
	30 - 39 Years	12	41.4
	40 - 49 Years	1	3.4
Marital Status			
Negative	Divorced	7	4.1
	Married	11	6.4
	Single	148	86.5
	Widowed	5	2.9
Positive	Married	1	3.4
	Single	26	89.7
	Widowed	2	6.9
Number of Children			
Negative	.0	91	53.2
	1.0	33	19.3
	2.0	40	23.4
	3.0	5	2.9
	4.0	2	1.2
Positive	.0	12	41.4
	1.0	5	17.2
	2.0	10	34.5
	3.0	1	3.4
	4.0	1	3.4
Education			
Negative	No formal education	38	22.2
	Primary	27	15.8
	Secondary	84	49.1
	Tertiary	22	12.9
Positive	No formal education	7	24.1
	Primary	5	17.2
	Secondary	14	48.3
	Tertiary	3	10.3
Occupation			
Negative	Additional Job	22	12.9
	Only Sex work	149	87.1
Positive	Additional Job	3	10.3
	Only Sex work	26	89.7

Table 2 Prevalence of HIV among female sex workers in Port Harcourt, Rivers State, Nigeria

Number Tested	Number Negative	Number Positive	Overall Prevalence (%)
200	171	29	14.5

In addition, distribution of HIV infection among study participants by sex work related variables showed varying distribution pattern for each variable considered.

Based on duration of sex work, 3-5years were the highest number recorded and demonstrated the highest number negative 96 (56.1%) and positive 18 (62.1%) to HIV infection. Economic evaluation revealed that income per client had majority of the female sex worker reported to have less than NGN 5,000 or 5 US Dollars and the prevalence of HIV infection was most in this category 23 (79.3%), On the other hand, those who earned higher, greater than NGN 15,000

(But Not More than NGN 20,000) had the lowest HIV infection rate of 2 (6.9%), Probing on age when FSWs started Sex work revealed age group 20-24 years had the most prevalent rate of HIV infection, 11 (37.4%) as well recorded the highest number of participants.

Sources of client identified in this study were three namely; brothel, street, and nightclub in an increasing order. However, the rate of HIV infection was more among those FSWs with client source from brothels 14 (48.3%) while the nightclub had least 6 (20.7%). Table 3 presents the detail.

Table 3 Frequency distribution of HIV by sex work related variables

Variable	Group	Frequency	Percentage
Duration of Sex Work			
Negative	Less than 3 Years	70	40.9
	3 - 5 Years	96	56.1
	6 - 8 Years	4	2.3
	9 Years & Above	1	.6
Positive	Less than 3 Years	10	34.5
	3 - 5 Years	18	62.1
	6 - 8 Years	1	3.4
Income Per Client			
Negative	Less than NGN 5,000	132	77.2
	NGN 10,000 - NGN 15,000	26	15.2
	Greater than NGN 15,000 (But Not More than NGN 20,000)	13	7.6
Positive	Less than NGN 5,000	23	79.3
	NGN 10,000 - NGN 15,000	4	13.8
	Greater than NGN 15,000 (But Not More than NGN 20,000)	2	6.9
Age when started Sex Work			
Negative	Less than 20 Years	38	22.2
	20 - 24 Years	59	34.5
	25 - 29 Years	17	9.9
	30 - 34 Years	34	19.9
	35 Years & Above	23	13.5
Positive	Less than 20 Years	4	13.8
	20 - 24 Years	11	37.9
	25 - 29 Years	3	10.3
	30 - 34 Years	6	20.7
	35 Years & Above	5	17.2
Source of Client			
Negative	Brothel	94	55.0
	Nightclub	37	21.6
	Street	40	23.4
Positive	Brothel	14	48.3
	Nightclub	6	20.7
	Street	9	31.0

Table 4 presents distribution of HIV among female sex workers with respect to some risk factors. Generally, the female sex workers that participated in this study showed no huge exposure to the identified risk. Few participants had history of surgery as identified in this study; 27 (15.8%) and 1 (3.4%) for HIV negative and positive respectively. Similarly, only 8 (4%) had history of transfusion showing 7 (4.1%) and 1 (3.4%) for HIV negative and positive participants.

Also, 20 (10%) participants were reportedly shared sharp materials out of which only 1 (3.4%) was observed to be positive to HIV infection. History of condom breakage was not a common occurrence among study participants as 48 (28.1%) was recorded for

HIV negative and for HIV positive only 11 (37.9%) reported history of condom breakage. Other risk parameters and distribution of HIV can be seen on table 4.

Chi square was estimated to establish the relationship between HIV status and some factors such as; socio-demographics, factors related to sex work and other risk factors. The finding demonstrated null relationship ($p > 0.05$) between HIV and the factors measured. The study implies that HIV risk among the study population of female sex workers is not linked to the assumed factors measured here. See Table 5 for details.

Table 4 Distribution of HIV among female sex workers with respect to some risk factors

Variable	Group	Frequency	Percentage
History of Surgery			
Negative	No	144	84.2
	Yes	27	15.8
Positive	No	28	96.6
	Yes	1	3.4
History of Transfusion			
Negative	No	164	95.9
	Yes	7	4.1
Positive	No	28	96.6
	Yes	1	3.4
Sharing of Sharp Materials			
Negative	No	152	88.9
	Yes	19	11.1
Positive	No	28	96.6
	Yes	1	3.4
Tattoos			
Negative	No	91	53.2
	Yes	80	46.8
Positive	No	16	55.2
	Yes	13	44.8
Genital Mutilation			
Negative	No	153	89.5
	Yes	18	10.5
Positive	No	27	93.1
	Yes	2	6.9
Alcohol	No	16	9.4
	Yes	155	90.6
Positive	No	3	10.3
	Yes	26	89.7
Drug Used			
Negative	No	158	92.4
	Yes	13	7.6
Positive	No	26	89.7
	Yes	3	10.3
History of condom breakage			
Negative	No	123	71.9
	Yes	48	28.1
Positive	No	18	62.1
	Yes	11	37.9
Presence of discharges			
	No	68	39.8
	Yes	103	60.2
	Total	171	100.0
	No	14	48.3
	Yes	15	51.7
Number of clients per week			
Negative	1.0	39	22.8
	2.0	41	24.0
	3.0	33	19.3
	4.0	22	12.9
	5.0	24	14.0
	6.0	6	3.5
	7.0	6	3.5
Positive	1.0	9	31.0
	2.0	7	24.1
	3.0	4	13.8
	4.0	2	6.9
	5.0	5	17.2
	7.0	1	3.4
	8.0	1	3.4

Table 5 Chi square showing association between HIV and some factors

Determinants	Chi Square	df	p-value
Socio-demographics Marital Status	2.701	3	.440
Number of children	2.831	4	.587
Level of education	.203	3	.977
Occupation	.144	1	.704
Tribe	13.048	17	.733
Birth place	1.194	1	.275
Risk Factors			
Duration of sex work	2.928	7	.892
Age when sex work started	14.742	22	.873
Income per client	11.435	7	.121
Source of clients	.807	2	.668
Awareness of STI	.019	1	.891
History of hospital admission	1.659	1	.198
History of surgical procedure	3.137	1	.077
History of blood transfusion	.027	1	.870
Sharing of sharp materials	1.618	1	.203
Presence of tattoos	.038	1	.845
Presence of Piercing	.140	1	.708
Genital mutilation	.363	1	.547
Drinking alcohol	.028	1	.867
Use of drugs	.253	1	.615
History of condom breakage	1.159	1	.282
Number of clients per week	8.932	7	.258
Presence of discharges	.742	1	.389
HBsAg	1.547	1	.214
HCV	.692	1	.405

Note: p<0.05=Significant; p>0.05= Not Significant; df=Degree of freedom.

Discussion

Female Sex Workers in particular is a vulnerable key population with high prevalence of HIV infection. The rate of HIV infection in this population is estimated to be approximately over four times higher than that of female in the general population. This estimate portrays the burden of HIV epidemic in this key population.⁴ This study investigated the prevalence of HIV prevalence and associated risk factors among FSWs in Rivers State, Nigeria.

The prevalence of HIV among Female Sex Workers identified in this study was 14.5%, this is equivalent to the HIV prevalence in Togo estimated among key population groups (10-15%) according to Ekouevi *et al.*,^{13,14} and USAID.¹⁵ Similarly, Teclessou *et al.*,¹⁶ estimated 13% rate of HIV prevalence in 2011 among FSWs, and 12% in 2013 as recorded by Pitché.¹⁷

In early 2000, studies have reported decline in the prevalence of HIV among FSWs in Nigeria.¹⁸ The prevalence of HIV infection among FSWs in Rivers State (South-South) Nigeria (14.5%) reported in this study is slightly comparable with the earlier reported rate in Lagos State, South-West, Nigeria (12%) and the national prevalence of 15.5%. Although the national prevalence is slightly higher.¹⁹ On the other hand, the rate obtained in this study is markedly lower than the rate (46%) reported for Benue and Nasarawa State, North-Central Nigeria.¹⁸ This heterogeneity might be somewhat attributed to regional variations in socioeconomic and cultural factors that might affect empowerment, opportunities, and stigma of FSWs. These factors in turn may influence vulnerability to HIV infection.²⁰

Diversity has a role in the result variance observed between this study and others from geographic location to other factors. Also, inter and intra country variation is bound to be observed like FSWs populations in Nigeria are big and diverse, with significant variations between and within States.²¹ Ikpeazu *et al.*,²¹ recommended “improved understanding of the location, population size, density, organizational typologies and clients of sex workers has informed and is central to Nigeria’s planning process for scaling up focused HIV prevention programmes”.

Generally, the prevalence rate of HIV reported in this study confirms the burden faced by this key population and shows that in spite of the relevant innovative approaches to programs and interventions adopted by government and non-governmental organizations specializing in care and treatment for key populations. Challenge of appropriate use of condom has continued to be a potential gap between FSWs and the general population.¹⁸

Lack of use or incorrect use of condom is a challenge of preventive intervention. In this study, 59 (29.5%) had record of condom breakage and among the female sex workers positive to HIV, 11 (37.9%) admitted to history of condom breakage. This is high compared to account of previous study which reported over 10%¹ and others showed that FSWs reported lack of consistent and incorrect use of condoms which is a key constraint in behavioural intervention.²²

Preventive behavioural intervention has been one strong advocate for key population due to the high level of sexual risky behaviour among this population. Notwithstanding the behavioural interventions and HIV prevention programs especially the regular and correct use

of condom to prevent HIV sexual risky behaviour of commercial sex workers with clients remains raised,^{23,24} Lépine et al.,²⁵ in a study in Senegal showed evidence from the list of experiment for HIV infection risk and condom use among sex workers. Gharehghani et al.,²⁴ in an Iran based qualitative study among female sex workers identified some barriers to condom. Furthermore, Okafor et al.,²² and George et al.,²⁶ confirmed this and different reasons have been attributed to it like economic factor than just awareness and risk perception.^{22–24,26} Physical coercion apart from economic factor has relationship with condom use.²⁷ This was backed up by previous researches which showed a direct link between violence from clients and inconsistent condom use, hence a higher probability of HIV incidence.^{27,28}

In view of the impact of structural indicators, an inverse contributing factor to the HIV epidemic into HIV prevention intervention programs and policy, among key population particularly the FSWs which bear major burden of vulnerabilities, may possibly have an impact of persistent rising rate of HIV infection among this population.

The overall history of condom breakage in the study population showed high rate (29.5%) and higher rate (37.9%) among the HIV positive female sex workers. This high rate of accident with condom use among FSW corroborates with previous study.¹ Appropriate use of condom and consistency in usage is key in HIV prevention¹ hence, the rate of condom breakage identified in this study calls for urgent attention for public health sensitization to this regards, especially among the FSWs being the major key population at risk.

A high rate of condom breakage increases the probability of unprotected sexual intercourse with consequence of sexually transmitted infections including HIV. Although, different myths and crude practices have been used by some FSWs such as: douching, urination or squatting as HIV prevention means,²⁹ though there is no scientifically substantiation to these practices. These inappropriate behaviours following condom breakage have replaced appropriate approaches such as halting sexual intercourse, seeking medical care including post-exposure prophylaxis for HIV, and STI treatment. This is evidence in the report from a qualitative study in Malawi among FSWs in which case only few FSWs (3 out of 18) reported to have taken appropriate measures following condom accident during usage.²⁹

Similarly, Mukumbang,³⁰ in a separate study in Cape Town, South Africa which investigated “Actions of female sex workers who experience male condom failure during penetrative sexual encounters with clients in Cape Town: Implications for HIV prevention strategies” shared equal experiences.

The incidence of condom breakage among FSWs as evident in this study and earlier studies has consequences on the HIV pandemic. Study has suggested intervention to be introduced to handle the situation such as pre-exposure prophylaxis (PrEP) HIV intervention as a possible solution.¹ In addition, HIV prevention intervention programs should intensify educating this key population on the correct use of condom and appropriate measures to take following a break of condom during intercourse in order to achieve the goal of ending the HIV/AIDS epidemic by 2030. The implication of condom accident cannot be overemphasised because most status of the sexual partners (clients) of the FSWs is not known. Nevertheless, some FSWs are fond of regular testing to check their HIV status; Bitty-Anderson et al.¹ posit that the effect of regular HIV testing would be meaningless if FSWs are consistently exposed to risky behaviours like the condom break.

Based on measure of association obtained in this study, marital status, number of children, level of education, occupation, tribe, birthplace, duration of sex worker, age, when sex started, income per client, sources of client, awareness of STI, history of hospital admission, history of surgical procedure, history of blood transfusion, sharing of sharp materials, presence of tattoos, presence of piecing, genital mutilation, drinking alcohol, use of drugs, history of condom breakage, number of clients per week, presence of discharges, HBsAg and HCV as observed in this study showed no statistical significant association with HIV infection as reported by previous studies. Therefore, the study findings add to the body of existing evidence differently contrary to the findings of Bitty-Anderson et al.,¹ which reported association of factors such as age (older), sexual partners (higher number) and educational level precisely lower level of education. Also, other study findings are in opposition with this study in terms of establishing association with some of the presumed risk factors.^{17,31–35}

Although, this study failed to established association between high number of sexual partner and HIV infection, the high rate of HIV infection among FSWs with history of condom break should reiterate the call to explore different prevention methods including options such as PrEP.¹

Conclusion

The rate of HIV infection observed in this study is in conformation with the dynamic of the HIV epidemic found high among FSWs. This quantitative study has established an evidence-based prevalence rate (less than fifteen percent) of HIV infection among FSW in Rivers State, Nigeria operating on the street, brothels and nightclubs with no statistical indication of significant association between HIV infection and presumed risk factors identified in this study. However, the findings obtained in this study should further be followed with other studies including quantitative research in order to explore transmission dynamics and more on the associated risk factors of HIV infection among this key population (female sex workers).

Recommendation

HIV awareness campaigns should be intensified among female sex workers especially on the consistent and correct use of condoms, and possibly bring HIV testing to the sex partners and clients as secondary prevention strategy, to minimize the trend in HIV prevalence among this key population. Also, the implementation of Pre-exposure Prophylaxis (PrEP) HIV intervention following crucial accidents such as; condom breakage is further suggested. More robust study comprising of large geographical border communities should be conducted in future to actually track the trend of HIV prevalence among these special risk population. However, longitudinal study design and digital tool approach should be explored for long time gathering of data moving forward, Also, more sophisticated statistical tool should be used to analyse the data for more dependable results outcome in a study involving more communities and large amount of sample size, for more holistic result that will be good enough for generalisation

Study limitation

The study has some limitations such as; the sampling and administration of study instrument (questionnaire) therefore, not completely free from bias. Since the administration of questionnaire was not online rather one-on-one basis and self-reported, respondents might possibly introduce bias by over/under estimating, out rightly not reporting of valuable information especially as pertains risk factors and sexual risky behaviours.

The study only took a snapshot due to the nature of the adopted design with no approach to established causality. Generalization of study findings should be made with caution as the study centred only within Port Harcourt metropolis, thus, did not cover the entire Rivers State including some hard-to-reach areas, in addition to the FSWs who did not consent to participate.

Conflicts of interest

None were reported among authors.

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