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Original Article

Fertility Desire and Contraceptive Use: A Survey of People Living with HIV/AIDS in a Northern Nigerian Tertiary Health Centre

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ABSTRACT

Background: HIV infection remains a major public health problem worldwide. Many people living with HIV/AIDS (PLWHA) belong to the reproductive age group and live in areas with high demand for children. There is a challenge to balance the desire for fertility, contraceptive use, and viral transmission. ***Objective:*** To determine fertility desire and contraceptive use among people living with HIV/AIDS in a Northern Nigerian Tertiary Health Centre. **Methods and Material:** This was a hospital-based cross-sectional study involving 350 PLWHA aged 18-49 years attending an antiretroviral clinic who were recruited using a stratified sampling technique. Data on socio-demographic characteristics, reproductive history, fertility desire, fertility intention, contraceptive use, health status and perceived health and HIV transmission knowledge were obtained and subjected to descriptive and inferential statistical analysis. **Results:** The majority of the respondents were females (68.6%), married (58.6%), and aged 15-40 years (81.2%). Overall fertility desire was 67.4% and fertility intention 60.3%, while 40.3% of respondents' partners desired fertility. Predictors of fertility included male sex (AOR= 3.57, p=0.004), single (AOR= 3.28, p=0.014), ART treatment (AOR=4.68. p<0.001), partners' fertility desire (AOR=17.68, p<0.001), and wanting at least a child (AOR=4.96, p<0.001). Short-acting modern contraceptives were used by most (59.5%) of the respondents, notably male condoms (35.1%). **Conclusion:** The males and unmarried were more likely to desire fertility than their female counterparts. The male condom was the most commonly used modern contraceptive. Positive predictors of fertility desire included adherence to antiretroviral therapy, the knowledge that antiretroviral therapy adherence could make viral load undetectable, partners' fertility desire, and wanting at least a child.

Keywords: Fertility desire, Contraceptives, PLWHA, ARTs

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INTRODUCTION

HIV infection remains a major public health problem worldwide. Its prevalence in Nigeria is currently placed at 1.4% among adults aged 15-49 years[1]. Zamfara State has a prevalence of 0.5%. Based on the current test and treatment policy, they are all eligible for antiretroviral therapy (ART). [1, 2]

Advances in HIV treatment, management and support have resulted in significant improvements in the longevity and quality of life of people living with HIV/AIDS (PLWHA). This has restored sexually productive living including the desire for childbirth.[3-10] Importantly, most of those affected with HIV are of reproductive age and live in settings with high premiums for children. [4, 10, 11] In some cases, there is cultural pressure to continue childbearing if the desired number of the preferred gender has not been achieved. [10, 12]

The level at which HIV-positive couples desire children is currently approaching that among the general population.[7] A study in Sagamu, Nigeria showed that 63.3% of PLWHA expressed a desire for childbearing with 71.5% of men and 93.8% of women who desired children intending to have an average of 2 children shortly.[9] In some African countries, the fertility desires were 15% in Malwai, 18% in Uganda, 41% in Ethiopia and 55% in Cameroon while in one of the US studies, the majority of HIV-positive women had no desire for pregnancy[10]

The desire of PLWHA to have children has significant public health implications as the heterosexual route is the most common route of transmission accounting for why over 90 % of HIV infections among children under 15 years result from maternal to-child transmission (MTCT).[11,13,14] An important strategy to minimize the risk of MTCT as endorsed by UNAIDS is the universal uptake of antiretroviral therapy (ART) among PLWHA to suppress HIV viraemia based on the scientific consensus that PLWHA who are taking effective ART and whose level of HIV is suppressed to undetectable levels cannot transmit HIV sexually to their partners.[12, 13, 15-17]

Studies on fertility desire among PLWHA are mostly among women. Men play an important decision-making role in the home in many African contexts, and male fertility desires and participation in childbearing decisions can have a crucial impact on women.[18, 19] Studies have highlighted the important role that male partners play in fertility among HIV-infected women[16-20] and in the successful implementation and uptake of PMTCT interventions.[16, 21] Since the study conducted by Kaoje AU and colleagues in 2015 in Sokoto which shares cultural similarities with Zamfara State, there had been major modifications in the national guidelines in the management of HIV/AIDS such as the use of DTG-based ART, viral loads, etc.[2] The Sokoto study like some others did not assess knowledge of fertility-related risk, household wealth status, discussion of fertility issue with health providers and contraceptive use. These factors have been identified to be associated with fertility desire among PLWHA.[13]

Therefore, this study was to strengthen the previous findings by addressing the above gaps. To the best of our knowledge, no such studies have been carried out in Zamfara State. The study aimed to determine the desire for fertility and contraceptive use among PLWHA attending antiretroviral therapy clinics. The findings would help health workers, policymakers, and implementers to design appropriate services that would integrate the provision of Reproductive health services into routine care in HIV clinics and treatment centres.

MATERIALS AND METHODS

This was a facility-based cross-sectional study. The study population involved HIV/AIDS patients aged 18-49 years attending the ARV clinic in the health facility. The facility attends to an average of 10 new ARV clients per week and an overall average total of 150 clients per week. The study period was from February 1, 2021, to July 31, 2021. All HIV/AIDS patients who have been on ART for at least 6 months and are aged 18 years and above were eligible to participate in the study. PLWHA who were pregnant or with a history of infertility, mentally and/or critically ill were excluded from the study.

A sample size of three hundred and fifty recruited into the study was determined using a formula for a single population determination

with the assumption of 95% CI, a 5 % margin of error and using a 67.7% proportion of PLWHA who desired children from a study by Kaoje et al. in Sokoto, Nigeria[13] and an adjustment of 10% attrition rate.

The study respondents were chosen using a two-stage selection process. Using a stratified sampling procedure, respondents were first divided into male and female groups. The overall number of participants in the study was 2,369, including 1,624 females and 745 males.

For each of the strata, 240 females and 110 males were chosen in a proportional allocation. Second, a method of systematic sampling was applied. To establish the sampling frame, a list of clients who visited the clinic was acquired and listed. By dividing the total sample size required by the number of clients at the clinic, the sampling interval was computed. Using the simple random sampling approach, a number was chosen randomly by balloting between 1 and 4, and then subsequently every 4th patient was selected.

The sampling process began with the specified number and related clients. The sampling interval was then added to the selected number, and each resulting number was used to sample another client from the study's sampling frame. Selected responders who were unable to participate were replaced by the next available person. Four nurses were recruited as research assistants. Confidentiality was assured by using a unique identifier and limiting access only to the research team.

A semi-structured interviewer-administered questionnaire (designed for the study) was used to obtain information from participants. The questions were adapted through an extensive literature search and expert consultation. Data collected were reviewed at the close of the day and problems encountered were also reviewed before the commencement of the morning session.

Data on socio-demographic characteristics, reproductive history, fertility desire [expecting to have children in the future], fertility intention [no of children desire in the future], contraceptive use, health status [CD count, ART status] as well as desired health and HIV transmission knowledge were obtained.[17, 25, 26] The questionnaire was translated into Hausa language and equally back-translated into English at the end of the study. The questionnaires were pretested on 5% of the calculated sample size[18] in another hospital [Ahmad Sani Yariman Bakura Specialist Hospital] which offer similar HIV services.

Data Analysis

SPSS version 22 was used for data entry and analysis. Findings were presented using proportions means, tables and charts. Mean and standard deviation was determined for continuous variables while frequencies and percentages were carried out on categorical variables. The Chi-square test was used to compare categorical variables.

The association between fertility desires with each co-variate was first assessed by bivariate analysis. Variables with a p-value of less than 0.5 were subjected to multiple regression analysis. The final independent predictor was declared at $P < 0.5$ with the strength of association determine using AOR and their corresponding 95 % confidence interval was determined.

Ethical approval was obtained from the hospital's Research and Ethics Committee. Permission was obtained from the Department. Informed verbal and written consent were obtained from respondents.

RESULTS

The majority of respondents were females (68.6%) and most were married (58.6%). More than two-fifths of the respondents were aged 31-40years. The majority were Hausa and Muslims, 78.6% and 82.6% respectively. About one-third of respondents had an Islamiyah education and more than half of the respondents belonged to the poorer group (less than N10,000.00 per month). About two-fifth were petty traders (Table 1).

About half of the respondents had sex in the last 6 months, and only 21.1% used modern contraceptives. Out of the 67.4% (n=235) of the respondents who desired fertility, 50 (21.3%) used at least a modern contraceptive method while 78.7 % did not use any method. In particular, 41 (82%) out of these 50 respondents that used a family planning method used the barrier method. Twenty-four (20.9%)

respondents who used modern contraceptives did not desire fertility (Tables 2 & 3).

The majority of the respondents were diagnosed more than a year ago (82%), 70.9% were on ART, 41.1% had CD4 count greater than 500 cells/mm3, 63.4% had viral load undetectably low, and 42.9% of their partners were infected.

However, 39.7% of the respondents had no fertility intention. Only 24.3% of the clients had ever discussed their fertility with healthcare providers while the majority (65.1%) of them had never done so (Table 4). The mean age and monthly income of the respondents were 30 years and ₦50,000 respectively.

Table 1 Sociodemographic characteristics of the patients

Characteristics		Frequency (N = 350)	%)
Sex	Female Male	240 110	68.6 31.4
Age (years)	21 - 30 31 - 40 41 - 50 51 - 60 61 – 70	135 149 53 9 4	38.6 42.6 15.1 2.6 1.1
Marital Status	Single Married Divorced Widowed	75 205 29 41	21.4 58.6 8.3 11.7
Ethnicity	Hausa/Fulani Yoruba Igbo Others	275 38 27 10	78.6 10.9 7.7 2.9
Religion	Islam Christianity Traditional	289 53 8	82.6 15.1 2.3
Educational Level	None Islamiyah Primary Secondary Tertiary	24 116 20 88 102	6.9 33.1 5.7 25.1 29.1
Monthly Income	<N10,000 N10,000 - N50,000 >50,000	192 152 6	54.9 43.4 1.7
Occupation	None Petty trader/Business Civil Servant Student Others	40 137 31 57 20	11.4 39.1 8.9 16.3 5.7

Males were 4 times more likely to have a desire for children compared to females (OR- 3.96; CI- 1.37, 11.44). Singles were 4 times more likely to have a desire for children compared to married ones (OR- 3.57; CI- 1.27, 10.04). Respondents below 30 years of age and tertiary education level had a stronger desire for children than those above 30 years and above tertiary education level. Religion, Tribe, Occupational status and monthly income as well as reproductive characteristics of the respondents were found not to affect fertility desire (Tables 4 & 5).

Table 2 Types of modern contraceptives in use by the patients

Type of modern contraceptives	Frequency (N)	Percentage (100)
Male Condom	26	35.1
Female Condom	3	4.1
Combine pills	15	20.3
Injectable	16	21.6
IUD	1	1.4
Implant	10	13.5
Female sterilization	1	1.4
Other	2	2.7
Total	74	100

Table 3 Association between sexual activity/ contraceptive use and fertility desire

Characteristics	Fertility Desire N=350 (%)		OR (95% CI)	p-value
	Yes	No		
Had sex in the last six months				
Yes	123 (52.3)	51(44.3)	0.91 (0.38 – 2.18)	0.826
No	112(47.7)	64(55.7)		
Use of condom				
Yes	41 (17.4)	20(17.4)	0.75 (0.23 – 2.47)	0.638
No	194(82.6)	95(82.6)		
Family planning use				
Yes	50 (21.3)	24 (20.9)	2.35(0.70 – 7.94)	0.169
No	185 (78.7)	91 (79.1)		

There were higher odds of fertility desire among respondents who believed in a cure for HIV/AIDS, who agreed that ART reduces disease progression, who said the mother-to-child transmission can be through pregnancy, labour and delivery, who were treated with ART, those with viral load suppression less than one

thousand cells per copies. Other characteristics are not found to affect fertility desire (Table 6 & 7).

Respondents who had their partner desire for a child had strong fertility desire twenty-four (24) times compared to those their partners had no desire for a child. Respondents who want at least one child had strong fertility desire six (6) times compared to those who want sex preference (OR- 23.88; CI- 8.28, 68.81). Among the 235 respondents who desired fertility; only 63 (26.8%) have discussed their desire/ intention with a healthcare provider. Those who discussed their desire with a health care provider were less likely to intend fertility compared to those who

Table 4 Association between socio-demographic characteristics and fertility desire

Characteristics	Fertility Desire N=350 (%) Yes	No	OR (95% CI)	p-value
Sex				
Male	84 (35.7)	26(22.6)	3.96(1.37 -11.44)	0.011*
Female	151 (64.3)	89 (77.4)	1	
Age (years)				
<30	104(44.3)	32(27.8)	0.49(0.30 -0.79)	0.030*
□□	131(55.7)	83(72.2)	1	
Marital Status				
Single	56(23.8)	19 (16.5)	3.57 (1.27 -10.04)	0.016*
Married	179(76.2)	96(83.5)	1	
Educational status				
Below tertiary	157(66.8)	90 (78.3)	0.31 (0.13 -0.76)	0.011*
Tertiary and above	78 (33.2)	25 (21.7)	1	
Occupational status				
Unemployed	38(16.2)	15(13)	1.57 (0.55 -4.51)	0.404
Employed	78(33.2)	100 (87)	1	
Monthly income (□)				
□□□□□	133(56.6)	65 (56.5)	1.10(0.50 -2.41)	0.808
>50,000	102 (43.4)	50 (43.5)	1	
Tribe				
Hausa/Fulani	188(80)	87 (75.7)	0.92 (0.28 -3.07)	0.893
Others	47 (20)	28 (24.3)	1	
Religion				
Muslim	201 (85.5)	96 (83.5)	1.0 (0.27 -3.66)	0.998
Christian	34 (14.5)	19 (16.5)	2.0 1	

*Statistically significant p-value

Table 5 Analysis of questions on patient's desire and intention for fertility

Question		Frequency n=350 (%)
Will you want to have children of your own in the future?		
	Yes	236 (67.4)
	No	114 (32.6)
How many children do you intend to have in the future?		139 (39.7)
		38 (10.9)
	None	44 (12.6)
	1	129 (36.9)
	2	
	>2	
Does your partner want children of their own in the future?		
	Yes	141 (40.3)
	No	65 (18.6)
	I don't know	53 (15.1)
	I don't have a partner	91(26.0)
Your reason for wanting more Children		34 (9.7)
	Want at least one child	86 (24.6)
	Sex preference	124 (35.4)
	Children are very important	106 (30.3)
	ART has improve life	
Your reason for not wanting more children	Original desire unchanged	111 (31.7)
	Sex preference	53 (15.1)
	Desire for HIV negative child	68 (19.4)
	Completed family, fear of transmissionn	118 (33.7)

did not discuss their desire with a health care provider, with odds of 0.23; p= <0.001 (Table 8). When subjected to multiple logistic regression analysis, the main factors affecting fertility desire included respondents' male gender, single, and

Table 6 Association between knowledge of HIV/ART and fertility desire

Knowledge of HIV/ART	Fertility Desire N=350 (%)		OR (95% CI)	p-value
	Yes	No		
Ever heard about HIV/AIDS				
Yes	206 (87.7)	107 (93)	0.52(0.14 – 1.98)	0.336
No	29 (12.3)	8 (7)	1	
Ways can HIV be Transmitted				
Unprotected sexual intercourse				
Other	140 (59.6)	67 (58.3)	0.64(0.31 – 1.34)	0.238
	95 (40.4)	48 (41.7)	1	
From the mother to the unborn child				
Pregnancy Labour and delivery	144 (61.3)	78 (67.8)	0.33(0.15 – 0.72)	0.006*
Breast feeding ,	91(38.7)	37 (32.2)	1	
Baby feeding options for an HIV				
No breast Milk				
Milk and breastfeeding	22(9.4)	4 (3.5)	2.51(0.48 – 13.21)	0.276
	231(90.6)	111(96.5)	1	
Any cure for HIV/AIDS				
Yes	85(36.2)	18(15.7)	6.03 (2.35 – 15.45)	<0.001*
No	150(63.8)	97(84.3)	1	
Can HIV/AIDS be prevented				
Yes	175 (74.5)	88 (76.5)	0.48 (0.20 – 1.12)	0.090
No	60 (25.5)	27 (23.5)	1	
What are Antiretroviral drugs used for	3(1.3)	5(4.3)	0.12(0.02 – 0.87)	0.036*
Reducing progression of HIV	232 (98.7)	110(95.7)	1	
Others				

*statistically significant p-value

Table 7 Association between clinical data and fertility desire

Clinical data	Fertility Desire N=350 (%)		OR (95% CI)	p-value
	Yes	No		
Duration of diagnosis				
<1 year	48 (20.4)	15(13)	1.14(0.40 – 3.26)	0.811
>1 year	187(79.6)	100 (87)	1	
Number of children				
None	87(35.3)	29 (25.2)	1.41(0.61 – 3.27)	0.422
1 or more	152 (64.7)	86 (74.8)	1	
Treated with ART				
Yes	176(74.9)	72(62.6)	8.31(3.29 – 21.01)	<0.001*
No	59(25.1)	43(37.4)	1	
CD4 Count				
>500	98(41.7)	47(40.9)	1.07(0.48 – 2.41)	0.864
<500	137(58.3)	68(59.1)	1	
Viral load cells per copies	223(94.9)	107(93)	0.14(0.03 – 0.71)	0.017*
<1000	12(5.1)	8(7)	1	
>1000				
Partner Status				
Infected	99(42.1)	51(44.3)	1.24(0.59 – 2.59)	0.571
Uninfected	136(57.9)	64(55.7)	1	

*Statistically significant p-value

unmarried, below tertiary educational level, those who said HIV can be transmitted from mother to unborn baby through pregnancy, labour and delivery, those who said there is a cure for HIV/AIDS, those treated with ART, those with viral load cell per copies less than one thousand,

Table 8 Association between fertility desire and fertility intention

Characteristics	Fertility Desire N=350 (%)		OR (95% CI)	p-value
	Yes	No		
Fertility intention				
Zero	112 (47.7)	88(76.5)	0.15(0.06 – 0.33)	<0.001*
1 or More	123(52.3)	27(23.5)	1	
Partner Desire				
Yes	131(55.7)	10(8.7)	23.88(8.28 – 68.81)	<0.001*
No	104(44.3)	105(91.3)	1	
Reason for wanting more children				
Want at least one child and other	207(88.1)	57 (49.6)	6.18(2.75 – 13.91)	<0.001*
Sex preference	28(11.9)	58 (50.4)	1	
Have you ever discussed your fertility desire with health care provider?	63(26.8)	24(20.90	0.23(0.10 – 0.53)	<0.001*
Yes	172 (73.2)	91(79.1)	1	
No				

*Statistically significant p-value

Table 9 Predictors of fertility desire among respondents

Characteristic	AOR(95% CI)	P-value
Sex (Male)	3.57(1.50 – 8.46)	0.004*
Marital Status (Single)	3.28(1.27 – 8.43)	0.014*
Education Level (Below tertiary education)	0.39(0.18 – 0.84)	0.017*
From the mother to unborn child (Pregnancy, Labour and delivery)	0.47 (0.24 – 0.93)	0.030*
Any cure for HIV/AIDS (Yes)	5.08(2.18 – 9.98)	<0.001*
Treated with ART (Yes)	4.68(2.10-10.41)	<0.001*
Viral load cell per copies (<1,000)	0.14 (0.04 – 0.54)	0.004*
Fertility Intention (Zero)	0.16(0.08 – 0.34)	<0.001*
Partner Desire (Yes)	17.68 (7.22 – 43.32)	<0.001*
Reason for wanting more child (at least one child)	4.96 (2.41 – 10.23)	<0.001*

*Adjusted for monthly income and CD4 count

those with zero fertility intention, those with strong partner desire and those that want at least one child. The males were nearly 4 times more likely to desire fertility than the female gender.

Single unmarried respondents were at least 3 times more likely to desire fertility when compared to married ones. Similarly, those who said there is a cure for HIV/AIDS had a strong fertility desire five (5) times compared to those who said there is no cure, and those treated with ART had a strong fertility desire five times compared with those not treated with ART. Those whose partners desire fertility were 18 times more likely to desire fertility compared to those whose partners did not desire fertility. Those who wanted at least one child had a stronger (5 times) desire for fertility compared to those with sex preferences (Table 9).

DISCUSSION

This pioneering research to assess the fertility desire/intention of PLWHA in Zamfara state depicted socio-demographic characteristics of the respondents similar to that reported in Sokoto State, Nigeria, and African countries like Ethiopia, Tanzania, and Uganda.[4, 5, 11, 13] This is not surprising due to similar socio-cultural and religious values.

The respondents had good knowledge of HIV/AIDS transmission, treatment, and prevention. This was likely a result of the fact that most of them were diagnosed more than one year ago, were on ART, and had been regular in their follow-up. Viral suppression is seen in more than 63% of them and nearly 40% of seronegative spouses also alluded to the fact that they had been regular with their clinic appointments.

The majority of the PLWHA were in the reproductive age group and wanted to either begin childbearing or have more children. There was a high fertility desire rate among the respondents (67.4%) which is comparable to that found in Sagamu[9] and Sokoto.[13] In contrast, our value is higher than 28-29% found in the USA [17], 39.7% reported in the Tanzanian study[4], and 40.3% found in Northwest Ethiopia.[11] Our result partly reflects the high fertility rate reported in the study area.

A report from Northwest Ethiopia, which found lower fertility desire compared to our study used a different study population in which only women were recruited. Their literature had shown that fertility desire was higher among men than female clients probably accounting for the lower rate recorded in their study.[11] A systematic review and meta-analysis on fertility desire and associated factors among PLWHA in Ethiopia showed that men desired fertility more than women[20] similar to our experience. This might be due to pride and fulfilment of fatherhood and bearing offspring that would inherit their wealth and also preserve their ancestral lineage when they pass on, while women might consider the pain and the danger of childbirth as well as the daunting task of taking care of children.

The singles had higher fertility desires than the married similar to an Ethiopian study[20]. Married couples were likely to have had children thereby decreasing future fertility desire, unlike singles who have not had any children. Our finding was however different from that of another Ethiopian study in which married women had higher fertility desire with the explanation that marriage conferred a sense of stability, financial security, and reliable support to raise children.[11]

Clients whose partners desired fertility had 17.68 odds of desiring fertility in the future. This could be a result of a better opportunity to discuss fertility-related decisions among couples. Also, having a partner has a synergistic effect in terms of income generation to raise children, mutual consent and support, sexual satisfaction, and an enabling environment for the spouse to live which might influence the desire to increase family size as reported by Mekonnen et al. in Ethiopia.[11, 19]

Partners who understood maternal-to-child transmission (MTCT) of HIV/AIDS were not likely to desire future fertility. This observation could be a result of fear of the unborn child contracting the disease with its associated burdens. However, those who knew that there was potent and efficacious ART and that one could achieve near cure had odds of 4.68 and 5.08 respectively for future fertility desire. Our report aligned with the findings from Tanzania.[4] Adherence to ART reduces the likelihood of MTCT of HIV, and the chances of developing the disease are low, enabling more couples to live a near-normal life and procreate.

Discussion of fertility desire with healthcare providers was significantly associated with the desire for children in our study but was not a predictive factor. Less than one-third of

PLWHA had done so. HIV disclosure provides an opportunity for support and access to counselling as well as reproductive health information. This enables PLWHA to have a variety of options to facilitate their ability to make an informed decision on future fertility. Understandably, less than one-quarter of PLWHA desiring fertility used modern contraceptives. This number was lower compared to the reports by Ejeta E et al.[8] We found that majority of these people desiring fertility were not using any method of contraception. Eighty-two per cent of the few PLWHA who used contraceptives used barrier. This number was high and comparable with a study by Ejeta E. et al.[8,] but was not surprising because the barrier method is usually advocated among PLWHA due to its additional advantage of preventing STIs that otherwise could have worsened their health; this further improves their wellness.

The factors that positively predicted fertility desire in our study included sex, marital status, cure for the disease, and antiretroviral medications used by the respondents. Fertility desire was also positively predicted by being treated with ART, the partner's desire, and a discussion of the partner's fertility desire with a health care provider. However, negative predictors of fertility desire included educational status, knowledge of transmission of the virus from mother to child, viral load of fewer than 1000 cells per copy, and zero fertility intention.

Our study indicated that, regardless of the knowledge of breastfeeding options, HIV/AIDS preventive measures, ways in which the virus can be transmitted, use of family planning methods, frequency of sexual intercourse, or pregnancy status, more important factors are predictive of fertility desire among PLWHA in the study area similar to the report by Mujumdar et al.[9], unlike other studies.[19] These factors should drive policies and guidelines that will enable PLWHA to achieve their fertility goal without increasing the burden of the disease while ensuring they live in a conducive socio-cultural and religious environment that caters for their needs.

CONCLUSION

Fertility desire among PLWHA in Zamfara State is high. Males and unmarried were more likely to desire fertility than their counterparts. Being on antiretroviral therapy; knowledge that adherence to ART could make viral load undetectable, those whose partners desire fertility, and those who wanted at least one more child are other positive predictors of fertility desire. Discussion of fertility intention with health providers is poor among PLWHA desirous of children with the majority of them [desire/intended fertility] not using any method of modern contraception including barrier methods. We recommend improved health promotion and awareness of measures available to avoid pregnancy risk behaviours among PLWHA who do not desire or want to delay fertility, particularly the men and the singles who have more desire for fertility. This can be obtained by integrating HIV/AIDS clinics with family planning services.

Limitations of the study: This is a single-facility study which cannot be generalized. There might also have been recall bias due to retrospective information obtained as past behaviour could be under or over-reported.

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REFERENCES

1. Federal Ministry of Health of Nigeria. Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) 2018 technical report. 2019
2. Federal Ministry of Health. National Guidelines for HIV Prevention, treatment and Care. Abuja, Nigeria: FMOH; 2016.
3. Adeyinka DA, Olakunde BO, Oladimeji O, Ezeanolue EE. HIV indicator and impact survey: considerations for Nigeria. The Lancet HIV. 2019 Jun 1;6(6): e348-50.
4. Mmbaga E, Leyna GH, E ziekiel MJ, Kakoko D. Fertility desire and intention of people living with HIV/AIDS in Tanzania: a call for restructuring care and treatment services. BMC Public Health 2013; 13: 86-93.
5. Alem S Mleka, Mukuembe A Wordofa and Bitiya A wossen: Determinant of fertility desire among women living with HIV in western Ethiopia: implication for service delivery: Africa Journal of Reproductive Health December 2014;18/4:54
6. Wekesa E, Coast E. Fertility desire among men and women with HIV /AIDs in Nairobi slum: A mixed method study. PLoS ONE 9(8), 2014; e106292. doi: 10.1371/journal.pone.0106292
7. Joseph D et al [2019]: Understanding the fertility desire among men living in Ontario: Survey instrument development and validation: Journal of international association of AIDs care vol 18:1-8
8. Ejeta E, Abebe M. Fertility desire and intention and Family planning use among of people living with HIV/AIDs in follow up Shoa Zone (ART Treatment Unit). American Journal of Nursing science 2015 4(1): 9-15.
9. Mujumdar V, Berman D, Schafer KR. Reproduction and fertility beliefs, perceptions, and attitudes in people living with HIV. AIDS research and treatment. 2018 Apr 1;2018.
10. Yifru Berhan and Asres Berhan. Meta-analyses of fertility desires of people living with HIV: BMC Public Health 2013, 13:409.
11. Mekonnen B, Minyihun A. Fertility desire and associated factors among HIV positive women attending ART clinic in Amhara region referral hospitals in Northwest Ethiopia, 2017. Research and Palliative Care 2019; 11:2297-2529.
12. Withers M, Dworkin S, Harrington E, Kwena Z, Onono M, Bukusi E, Cohen CR, Grossman D, Newmann SJ. Fertility intentions among HIV-infected, sero-concordant couples in Nyanza province, Kenya. Culture, health & sexuality. 2013 Nov 1;15(10):1175-90.
13. Kaoje AU, Ibrahim MT, Njoku CH, Gusau GA, Saad A, Raji MO. Predictors of fertility desire among people living with HIV attending anti-retroviral clinic in a tertiary health facility in Sokoto, Northern Nigeria. Sahel Medical Journal. 2015 Jan 1;18(1):14.
14. Jose H, Madi D, Chowta N, Ramapuram J, Bhskaram U, Achappa B, et al. Fertility desire and intention of people living with HIV /AIDs in Southern India: Journal of clinical diagnostic research 2016;10(6): OCI9-OC22.
15. Mumah JN, Ziraba AK, Sidze EM. Effect of HIV status on fertility intention and contraceptive use among women in nine sub-Saharan African countries: evidence from Demographic and Health Survey, Global health Action 2014;7:1 25579DOI 10.3402/gha. v25579.
16. Gutin SA, Namusoke F, Shade SB, Mirembi F. Fertility desire and intention of people living with HIV women during the postnatal period in Uganda. Africa Journal of Reproductive Health 2014; 18(3):67-77.
17. Chen JL, Phillips KA, Kanouse DE, Collins R, Miu A. Fertility desire HIV positive men and women: Family planning perspectives 2001; 33(4): 144-161.
18. Martins A, Alves S, Chaves C, Canavarro MC, Pereira M. Prevalence and factors associated with fertility desire/intention among individuals in HIV discordant relationships: A systemic review of empirical studies. Journal of international AIDs Society 22e, 25241. Available at https://onlinelibrary.wiley.com/doi/full/10.1002/jia2.25241
19. Haile F, Isahak N, Dessie A. Fertility desire and associated factors among people living with HIV on ART in Harari regional state eastern Ethiopia. Journal of tropical disease 2014; 2:3-8
20. Mosisa G, Tsegaye R, Wakuma B, Mulisa D, Etefa W, Abadiga M, et al. Fertility desire and associated factors among people living with HIV in Ethiopia: A systematic review and meta-analysis. Archives of Public Health 2020; 78:123-138.
21. Amin F. *Fertility Desires of Women Living with HIV/aids in Northern British Columbia* (Doctoral dissertation, University of Northern British Columbia).
22. Singha P. An introductory text on demography. Dabco Investments Limited Kaduna Nigeria 2002 (2nd edition); page 53 – 65
23. Pritchett LH. Desired Fertility and the impact of population policy. World Bank Publication 1994, 20 (1): 1 -55
24. Aylie NS, Dadi LS, Alemayehu E, Mekonn MA. Determinants of Fertility Desire among Women Living with HIV in the Childbearing Age Attending Antiretroviral Therapy Clinic at Jimma University Medical Center, Southwest Ethiopia: A Facility-Based Case-Control Study. International Journal of Reproductive Medicine. 2020 Aug 12;2020.
25. Singh SJ. Ethnic variation in fertility patterns among four communities of Manipur. Journal of Human Ecology. 2006 Sep 1;20(1):1-9.
26. Loutfy MR, Hart TA, Mohammed SS, Su D, Ralph ED, Walmsley SL, et. al. Fertility desires and intentions of HIV-positive women of reproductive age in Ontario, Canada: a cross-sectional study. PloS ONE 4(12): e7925. doi: 10.1371/journal.pone.0007925