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Fertility Desires of People Living With HIV in Enugu State Nigeria

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Abstract: ***Background:*** *Reproduction poses a problem for People Living with HIV/AIDS (PLWHIV), Public Health and clinical care providers. Studies suggest that discordance is a contributory factor to the high incidence of new HIV infections in Africa among partners in relationships. Unprotected sexual activity has a high risk for transmission and vertical transmission of HIV to the unborn child. Despite the odds, research has shown that fertility desires still exist among these groups with variations in perspectives on future fertility desires.* ***Objectives:*** *The objectives of this study are to assessfertilitydesiresamongwomenandmenlivingwithHIVattending publichealthfacilities as well as the determining factors, with the aim of providing information to support policy makers on the fertility desires of People Living With HIV.* ***Methods:*** *This was a facility-based cross-sectional descriptive study which involved quantitative methods of data collection. Data was collected from 826 PLWHIV selected by systematic random sampling using a structured interviewer administered questionnaire. The data was analysed using SPSS version 18.0 and Epi-Info version 3.5.1 to computepercentagesofPLWHIVwithfertility desiresinbothfacilities. The significance test was atp-valuesof0.05.* ***Results:*** *A total of 826 respondents were interviewed; mean age (standard deviation) 29.6 (8.0) years; 65.7% were females while 58.6% were married. 55.4% of them had at least 2 living children. The respondents who expressed a desire to have more children were 605 (73.2%) out of whom 195 (32.2%)expressed a desire to have one; two 231 (38.2%) or > two 179 (29.6%) children in the future. Only 23.7% of the respondents would consider alternative to biological parenting and adoption was an option acceptable to all in this group. Factors determining fertility desires include age of females, sex, marital status, living with partner, occupation, education, having a child, number and sex of children, income, integration of services, alternative parenting and being on HAART treatment. Other factors associated with fertility desire include availability of VCT service, speaking to a health worker, losing a child to AIDS in the past, taking care of a child that is not one's own, being in an intimate sexual relationship, partner having his/her own children and the year of diagnosis.* ***Conclusion:*** *Reproductive health needs have been expressed by the PLWHIV so as to fulfill their reproductive goals and these needs are determined by several factors. Policies should be adapted within the specific context of the PLWHIV and their intimate main partners' reproductive needs.*

Keywords: People Living With HIV/AIDS, Fertility, Reproductive Health, Nigeria

1. Background

The percentage of PLW HIV aged 15 to 49 years in Nigeria has ranged between 3.2% in 2001 to 3.1% in 2007 and those on ART decreased from 26% in 2007 to 21% in 2009. [1]In Enugu state the current prevalence rate stands at 5.1%. [2]A 'mode of transmission' analysis in Nigeria done by NACA showed that 62% of all new infections occurred among those who practiced 'low risk sex' and this includes married partners who are in an intimate sexual relationship.[3]The young women who are married in a monogamous relationship are most at risk and have become one of the most vulnerable groups to contracting HIV in the region. Hence marriage and other long term relationships do not necessarily protect women from HIV[4]. However, studies in Nigeria have also shown that men are the decision makers on sexual activities, fertility and contraceptive use in Africa.[4,5,6,]This does not however afford the women the opportunity to express their opinion on reproductive health issues.

The fertility desires of the PLWHIV has increased as more of the PLWHIV now gain access to ARV drugs, they are also confident and desirous of all the essentials of life including desires for children as do their negative counterparts. Very few studies in Africa (largely qualitative) suggest that HIV positive status might modify but does not eliminate the desires for procreation.[7]

There is, therefore, a felt need expressed by the PLWHIV to meet up with reproductive goals based on the fact that their life span has reduced and this makes issues of concern about their fertility desires paramount. [8]There is also the concern that apart from the sexual desires of PLWHIV being dampened by poor health, there is also the issue of psychological stress which can further lower their interest in sexual relations.[9] The significance of this is the acceleratedneed to meet the expectations of their families. [10]This also has the implication of transmission of HIV to their partners and newborn.

The increasing advocacy on respecting the reproductive rights of PLWHIV exists and yet there is a slightly different pattern in the health advice given to the PLWHIV on their plans for fertility [11,12]Prevention and treatment programmes which focus on identifying HIV-positive individuals are done by means of HIV counseling and testing (HCT); prevention of HIV transmission; and promoting safe sex with barrier methods between HIV-positive individuals to avoid increasing the viral load and overburdening the immune system from exposure to additional HIV strains.[13]

Previous studies on the reproductive health needs of PLWHIV have highlighted some variations in perspectives on their future fertility desires and how these can change with time. Some of the influencing factors include individual/partners' needs or desires, societal demands and expectations, provider attitudes and medical technologies (PMTCT and HAART). [14]Fertility desires of the PLWHIV

regardless of their HIV status are influenced in African countries like Nigeria by some identified factors. These include socio-cultural and economic factors.[15], the joy of parenthood,[16] family pressure[17]and the sustainability of one's lineage. [18]One of the key considerations for the PLWHIV is to ensure that HIV-positive women can access relevant information regarding decision making in pregnancy, childbirth and infant feeding.

Few of the studies in some states in Nigeria have recorded an established need on the fertility desires of PLWHIV to have their own children and even more children.[19,20,21]The historical development of HIV/AIDS and reproductive health clinics as separate entities may have contributed to worsening the situation.[22]The fertility desires of the PLWHIV in Nigeria when compared with that of the United States is still higher showing that the sero-positive status does not remove fertility desires.Reproductive health needs have been expressed by the PLWHIV so as to fulfill their reproductive goals as earlier mentioned therefore the issue of reproductive health choices is underscored. [8]80% of women living with HIV are in their reproductive years [23]and would want to be parents not minding their positive status.

Studies have shown that the unprotected sexual act still occurs among the PLWHIV leading to new infections.[24,25]and this is prerequisite for procreation. In Sub-Saharan Africa and Nigeria many of the PLWHIVs continue to have children. [20,25]Reports from South East Nigeria shows that 50% of women who are HIV positive still have unprotected sexual intercourse [24]and reason for this is for pregnancy.[25]A Nigerian study has shown the low rate of barrier contraceptive use and high level of sexual activity as contributory factors to spread of HIV. [5]This could be due to lack of information on what reproductive health and family planning choice to make.

Information is required for the couples in discordant relationships on the strategies to sustain their relationships, make informed sexual and reproductive choices, keep healthy, and avoid transmission of the virus.[13] Health workers also lack the information to support the PLWHIV in this regard [18]therefore improvements in provider–patient relations should also contribute to a better understanding of/and response to factors that can affect health care needs of the PLWHIV[26]and especially those of them who may wish to have children.[19,27] This paper therefore seeks to ascertain those factors which influence the fertility desires among this group and hence become available as a source of information for policy makers when planning to improve reproductive health services.

2. Methods

2.1 Study Area

This study was carried out in the University of Nigeria Teaching Hospital and Enugu State University Teaching Hospital (ESUTH) both of which are in Enugu State, south-eastern Nigeria. These two hospitals were a good catchment are a for majority of the PLW HIV patients and run both (ANC and ARV) clinics. The services rendered in this center include Voluntary Counseling and Testing (VCT), health education, relevant investigations, antiretroviral treatment of eligible, confirmed cases of HIV, PMTCT, post exposure prophylaxis (PEP) and data collection, collation and management and transmission to all relevant agencies. Provision of free drugs to patients is done through the aid of PEPFAR or APINPLUS (AIDS Prevention Initiative in Nigeria PLUS or The U.S. President's Emergency Plan for AIDS Relief) sponsorship.

2.2 Study Design

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

2.3 Study Population

All the PLW HIV registered in the ART clinics of these facilities were studied. Inclusion criteria were male and female patients who were attending the ARV clinic; who were diagnosed of HIV and ageda bove15years and who were receiving ARV drugs. Exclusion Criteria were patients who did not given their consent and patients who were mentally retarded.

2.4 Sample Size and Sampling Technique

The minimum sample size for each facility to be studied was 313.788(~314). The parameters for sample size calculation was based on a similar Nigerian study with 95% confidence level and proportion of PLWHIV who desired to have children of 71.4%.[39] The estimated sample size was rounded upto 400 for each facility to permit a degree of more robust analysis. To obtain this sample size, one patient was selected as the first patient by simple random sampling among the first 5 patients who registered. From then every 5th patient was selected until the sample size of 400 was completed in each facility and also for those who met the inclusion criteria.

2.5 Data collection

The study instruments included a pre-tested semi structured self and/ or interviewer administered questionnaire and a respondents' informed consent form. The questionnaire was adapted from standard questionnaires.[7,8]

2.6 Data Management and Analysis

For data management, data was entered from the data sheets and questionnaires into the computer and processed using SPSS software packages version 18 and this was used for the analysis. Data analysis was used to compute percentages of PLWHIV with fertility desires in both facilities studied and the distribution obtained for the facilities. Data was also analysed across socio-demographic variables to explain the relationships between them. Chi-square tests were used for tests of significance for proportions and the means for continuous variables were calculated. Tests of significance were done at p-values of 0.05.Cross tabulations was used to identify associations between the socio-demographic characteristics with fertility desires. Significant factors in the

bi-variate analysis were controlled for and the level of significance was set at P <0.05 (95% confidence interval).

2.7 Ethical Considerations

Ethical approval for the study was obtained from the Research and Ethics Committee of both the Universities of Nigeria Teaching Hospital Enugu and the Enugu State University Teaching hospital while permission to carry out the study was obtained from the facility heads.

3. Results

3.1 Baseline Socio-Demographic DataOfPatients

A total of 826 respondents were interviewed [see table 1]. The overall study response rate was 100%.428 (51.8%) respondents were interviewed at ESUTH while 398 (48.2%) were interviewed at UNTH.

Table 1 shows the baseline socio-demographic data of the respondents. They consisted of more females 543 (65.7%) than males 283 (34.3%). Their ages ranged from 15 to >55years with mean age of 29.6 years and (SD = ± 7.97). The highest age range for the respondents is between 25 to 34 years (44.4%). Most of the respondents were of the Ibo tribe 593 (71.8%) followed by Hausa 134 (16.2%), Yoruba 97 (11.7%) and people from other tribes 2 (0.2%). Six hundred and ninety three (83.9%) were Christians, moslems 132 (16.0%) and traditional religion 1 (0.1%).

Majority of the patients were married 484 (58.6%), single 94 (11.4%), widowed 6 (0.7%) and separated/divorced 242 (29.3%). Of all the respondents 533 (64.5%) and 293 (35.5%%) were "living with" and "not living with" their partners respectively. Four hundred and seventy two (88.6%) of the respondents had lived with their partners between 1-10 years (mean=3.18 years, SD = ± 4years), 30 (5.6%) lived with partners for 11-20 years, 6 (1.1%) for 21-30 years while 25 (4.7%) lived with their partners for <1 year.

The table shows that the main occupation of the respondents was trading 358 (43.3%). Others include civil servant 167 (20.2%), farming 91 (11.0%), students 77 (9.3%) while the self-employed were 39 (4.7%) and the unemployed were 93 (11.3%). The highest level of education attained by majority of the respondents was secondary 441 (53.4%), tertiary 203 (24.6%), primary 130 (15.7%) and the rest 52 (6.3%) had no formal education.

Most of the respondents either had children 469 (56.8%) or not 357 (43.2%). Fifty seven (12.2%), 260 (55.4%), 150 (32.0%) and 2 (0.4%) of the respondents had at least one, two, three and 4 living children respectively. These living children were males 194 (41.4%), females 154 (32.8%) or both sexes 121 (25.8%).
The average household monthly income for most of the respondents was < N20,000 (39.5%), 326 (39.5%) earned >N20,000 to N40,000, 128 (15.5%) earned >N40,000 to N60,000, 105 (12.7%) earned >N60,000 to N80,000, 31 (3.8%) earned > N80,000 while none of the patients (57.0%) had no monthly income.

3.2 Fertility characteristics (desires of couples/partners)

It was notedthat 196 (23.7%) of the respondents would consider other alternatives to biological parenting while 630 (76.3%) would not. Adoption was the option most preferred by these group among others like wet nursing, foster parenting, co-parenting, known donor conception and anonymous donor conception.

The respondents who expressed a desire to have more children were 605 (73.2%) and those not desiring more were 221 (26.8). Majority of these patients however expressed a desire to have one 195 (32.2%), two 231 (38.2%) or >two 179 (29.6%) children in the future. Efforts made by these respondents towards having a baby include approaching their partners to discuss it 57 (9.4%), having their partners approach them to discuss same 173 (28.6%), speaking to a health worker 219 (36.2%) or stopping the use of a birth control method in the past 12 months 329 (54.4%).

Fertility desires based on the current practice of these respondents in regard to a possible pregnancy werealso sub-divided into those who used a birth control each time they had sex to avoid getting pregnant 204 (33.7%), those who did not use a birth control and would be happy if they got pregnant 209 (34.5%), those who do not use a birth control and were not trying to get pregnant 71 (11.7%) and those who did not use a birth control solely because they are trying to get pregnant 121 (20.0%).

Last time engaged in sex by the respondents was as follows: this week 5 (0.8%), last week 21 (3.5%), 2 weeks ago 192 (31.7%), 3 weeks ago 102 (16.9%), >3 weeks ago 43 (7.1%) and >4 weeks ago 242 (40.0%). In a week on the average, the respondents engaged in sex once 127 (21.0%), twice 377 (62.3%) and > three times 101 (16.7%).

3.3 Factors Associated With Fertility Desires

Out of the 605 respondents who expressed a desire for more children, the disclosure of HIV status to their fellow partners had been done by 430 (71.1%%) of the respondents while 175 (28.9%) had not yet disclosed their status to their partners. One hundred and three (17.0%) of the respondents had lost one of their children to AIDS in the past and also 217 (35.9%) of the respondents were currently taking care of children that were not their own as an alternative to biological parenting. Five hundred and sixty eight (93.9%) of the respondents were currently in an intimate sexual relationship for a mean of about 3.5 years (SD ± 3.1 years). Respondents in intimate relationship are as follows: 0-4 years 241 (42.4%), 5-9 years 180 (31.7%), 10-14 years 17 (3.0%), 15-20 years 3 (0.5%) and those that have been engaged in a relationship for less than a year were 127 (22.4%).

Some respondents' current partners already had a child of their own 227 (40.0%). These respondents desiring to have children also had their own child(ren) with their partners as follows: 166 (98.2%) had one child, 3 (1.8%) had two children while none of them had > two children 0 (0.0%) with their current partners. The median time since diagnosis for these respondents was 2009 and the most recent CD4

count ≥ 200 (cells/mm^3) of the patients had a mean of 492.8 (SD = ± 139.2). Majority of the respondents were on HAART 660 (79.9%) while the rest were not yet receiving treatment 166 (20.1%).

3.4 Association of desire to have more children with selected characteristics for respondents

The association between thedesire to have more children with some selected characteristics among the respondents. The variables that show significance are also indicated. This shows that the following variables have an association with the desire to have more children among the PLWHIV: Age (females), marital status, living with partner, living with partner for a mean of 3 years, occupation, education, number of living children, sex of child, household income, integration of service, consideration of alternatives to biological parenting and being on HAART treatment.

3.5 Association of desire to have more children with specific characteristics among a subset of respondents

The association between the desire to have more children with some specific characteristics among the respondents that are in this group (N= 605). The variables that show significance among the PLWHIV include: number of children desired in the future, last time engaged in sexual activity, average number of times one engages in sexual activity in a week, disclosure of HIV status to partner, loss of a child to AIDS in the past, taking care of a child that is not your own, being in an intimate sexual relationship and for a mean of about 4 years, partner having own child and having a child with partner in a current relationship.

3.6 Logistic Regression For Socio-demographic Variables

Here age, gender, living with partner, educational level and sex of children are significant for fertility desire.The age group most significant is the 35-44 years which is also the reproductive age group.

4. Discussion

Majority of the respondents were femalesin their reproductive age group 25-34. This supports the findings of other studies that women of the reproductive age are increasingly affected by HIV/AIDS. [17]It also shows the importance of the vertical route of HIV transmission from mothers to their unborn child as they will be exposed to this risk during childbirth. [29]

Over half of the respondents were married and this indicates that unprotected sexual activity among married couples as well as sero-discordance are contributory factors to the high risk of HIV transmission. [13,30] This study found that an appreciable level of desire for more children was expressed by many of the PLWHIV (73.2%). This finding is similar to a study done in Maiduguri [19] while it is lower than the findings of another study in Lagos. [20]This finding is also higher when compared with findings of similar studies in the United States showing that the PLWHIV, not minding their sero-positive status would still want to be parents. [19,20,21]

More than half of the respondents wwere females of the reproductive age group out of which the 25-34 and 35-45year age groups showed a significant association with this desire (p value < 0.000) Table 6 . In contrast, the males were less likely to desire children as much as the female respondents (p value < 0.726).

All the respondents had done a Voluntary Counselling and Testing (VCT) in their last clinic session. They were all in different phases of counseling which varied from a pre-counselling to post counseling for follow up and to ensure adherence to treatment. This shows that the patients are receiving adequate counselling and are exposed to the information they require for positive living.Most of the patients did not receive PMTCT but this may be because only 44.9% of the females were pregnant at the time of the study. Interestingly majority of these female respondents indicated they would have preferred to receive it indicating a service gap.

Majority of the patients (76.3%) would not consider alternatives to biological parenting but the most preferred option among the respondents who would consider such alternatives was adoption. However many of the respondents would rather consider taking care of a relatives' child as an alternative. This maybe because of cultural reasons to have one's own biological child and someone from one's own lineage.

These findings of preferring a biological child are also similar to the findings of a study in South Africa where the alternative to even adoption is taking care of a relative and this also has the support of anecdotal reports from adoption agencies that formal adoption of children was less likely favoured among PLWHIV desiringchildren. [17]The desire to have a child was expressed by many of the patients out of which most of them wanted to have at least 2 children. This finding is similar to the findings of a Nigerian study where PLWHIV studied expressed the desire for more childrendespite 50.4% of them already had about two children.This also shows that the desire to be parents is not removed by the fact that they were positive for HIV as is supported by other studies. [8, 19,20] Other reasons supporting this from other studies were that it would give them joy to have someone of their own [16], to sustain their lineage [18] and tradition as culture demands. [17]

Efforts made by most of the respondents about having a baby included stopping the use of any birth control method and discussing this with a health worker and this is supported by findings from other studies. [17]Most of these respondents have also expressed that they do not use birth control and would be happy if they got pregnant. Surprisingly some of them expressing the desire for more children used birth control each time they had sex to avoid getting pregnant. These findings speak to the need for safe methods of conception for the PLWHIV. A Nigerian study has demonstrated low contraceptive use in combination with high sexual activity which also contributes to HIV spread. [5]Most of the respondents in this study wanting more children engaged last in sex more than 4 weeks ago and twice on the average in a week. This means that unprotected sexual intercourse still occurs among the PLWHIV and adequate

information and accessibility of safe contraceptive methods can shape the reproductive health choices and patterns of use among the PLWHIV. The minority who did not intend to get pregnant and were also not using any birth control is an issue of concern which indicates a negative attitude to contraception. This shows a great dearth in information about family planning methods for the women. [31]

Most of these respondents desiring to have children have also disclosed their HIV status to their partners as shown in table 8. The finding of a high level of disclosure in this study is also similar to that of another study which showed its importance in smooth relationships among the PLWHIV. [32] This shows disclosure as one of the predictors of fertility desire. It also shows that disclosure has importance in ensuring that the PLWHIVs take the necessary care to protect themselves and their partners from re-infection and prevent vertical transmission to new babies.[28]The minority who however have not yet disclosed their status to their partners calls for concern as they would keep infecting or re-infecting their partners. Efforts should therefore focus on mutual disclosure of test results to both partners. [32]
Most of the group had lost a child to AIDS in the past and are taking care of children that are not their own. They have also been in an intimate sexual relationship for about 0-4 years (Table 5) showing that unprotected sex act still occurs leading to new infections. This has also been shown by other studies. [24,25]

The respondents who expressed the desire for children have not had children with their partners and indicated they would want at least 1 child of their own (p value < 0.000) Table 7. This is similar to the findings of other Nigerian studies showing that 50% of the women living with HIV have unprotected sexual intercourse [24] with the reason to achieve pregnancy. [25]
The analysis found a significant interaction between HAART use and fertility desire (p value < 0.05 Table 6)showing the role of treatment in determining fertility intentions among the PLWHIVs. This finding also corroborates the findings of other studies in both the developed [12] and developing countries [33] that HAART use improves fertility desires among the PLWHIV. This study showed a significant relationship between being on HAART among the group expressing the desire to have children.

Factors which showed close association with desire to have children include number of children desired in the future, last time engaged in sex, loosing a child to AIDS, taking care of partners child, intimate sexual relationship, length of time in relationship, partner having a child and having child with partner.

5. Conclusion

Reproductive health needs have been expressed by the PLWHIV so as to fulfill their reproductive goals. Factors related to fertility desires include age of females, sex, marital status, living with partner, occupation, education, having a child, number and sex of children, income, integration of services, alternative parenting and being on HAART treatment.Health providers need to be frequently updated on all the special needs faced by the PLWHIVs and focus on a client-centred approach towards reproductive health choices.Existing guidelines if any should be revised and adapted within the specific context of the PLWHIV and their intimate main partners' reproductive needs within developing country circumstances.

References

[1] World Health Organization Regional Office for Africa Health Situation Analysis in the African Region: Atlas of Health Statistics. 2011.
[2] Federal Ministry of Health. Technical Report on the 2010 National HIV/Syphilis Seroprevalence Sentinel Survey among Pregnant Women Attending Antenatal Clinics in Nigeria. NASCP Abuja: Nigeria. 2010.
[3] Federal Ministry of Health. National Policy on HIV/AIDS. 2009.
[4] UNAIDS. Report on the Global AIDS Epidemic, Geneva, 2004.
[5] Iyoke C A, Onyedum C C, Ifeadike C O, Chukwuka C J:Gender Perspectives of Sexual and Reproductive Practices of People Living With HIV/AIDS in Enugu, South East Nigeria. Niger JMed 2010: 391-394.
[6] Oladipo D. Gender roles and norms influencing reproductive behaviour among couples in Ibadan, Nigeria. Anthropologist 2008; 10(2): 133-138.
[7] Cooper D HJ., Myer L., Orner P., Bracken H., et al. ''Life is still going on'': reproductive intentions among HIV-positive women and men in South Africa SocSci Med 2007;65:274-283.
[8] Setel P. The effects of HIV and AIDS on fertility in east and central Africa. Health Transition Review 1995; 7(Suppl. 1):S105S124.
[9] DelvauxT., and Nostlinger C. Reproductive choice for women and men living with HIV: Contraception, abortion and fertility. Reproductive Health Matters 2007;15(29):46-66.
[10] Nattabi B., Li J., Thompson SC., OrachCG., Earnest J. A systematic review of factors influencing fertility desires and intentions among people living with HIV/AIDS: implications for policy and service delivery. AIDS Behav 2009;13(5):949-68.
[11] Gruskin S., Ferguson, L., & O'Malley J. Ensuring sexual and reproductive health for people living with HIV: An Overview Of Key Human Rights, Policy And Health Systems Issues. Reproductive Health Matters 2007;15(29):4-26.
[12] Williams CD., Finnerty J., Newberry RN., West RW., Thomas TS., & Pinkerton JV: Reproduction in couples who are affected by human immunodeficiency virus: Medical, ethical and legal considerations. American Journal of Obstetrics and Gynecology 2003;189 (2):333-341.
[13] Rispel LCM., Moody K and Cloete A. Exploring Coping Strategies and Life Choices made by HIV Discordant Couples in Long-Term Relationships: Insights from South Africa, Tanzania and the Ukraine, 2009.
[14] McCoy D., Chopra M., Loewenson R., et al. Expanding access to antiretroviral therapy in Sub-Saharan Africa: avoiding the pitfalls and dangers, capitalizing on the opportunities. Am J Public Health 2005; 95:18-22.

[15] Preston-Whyte E. Reproductive health and the condom dilemma in South Africa. In: (eds.) JCCea, editor. Resistances to Behavioural Change to Reduce HIV/AIDS in Predominantly Heterosexual Epidemics in Third World Countries, Canberra: Health Transition Centre, National Centre for Epidemiology and Population Health, Australian National University, 1999.
[16] Boonstra H. Meeting the Sexual and Reproductive Health Needs of People Living With HIV. Guttmachr Policy Review 2006;9(4):17-24.
[17] Cooper D., Moodley J., Zweigenthal V., Bekker LG, Shah I., Myer L. Fertility intentions and reproductive health care needs of people living with HIV in Cape Town, South Africa: Implications for integrating reproductive health and HIV care services. AIDS Behav 2009; 13 Suppl 1:38-46.
[18] Kanniappan S., Jeyapaul MJ. andKalyanwala S. Desire for motherhood: exploring HIVpositive women's desires, intentions and decision-making in attaining motherhoood.AIDS Care 2008;20 (6):625-630.
[19] Chama C, Morrupa J, Gashau W. Sex and reproduction among HIV-infected people in Maiduguri, Nigeria. J ObstetGynaecol 2007; 27:812-815.
[20] Oladapo OT., Olusoji JD, Odusoga OL., Ayoola-Sotubo O. Fertility desires and intentions of HIV-positive patients at a suburban specialist center. J Natl Med Assoc 2005; 97(12):1672-81.
[21] National Population Commission (NPC) [Nigeria] and ORC Macro. 2004. Nigeria Demographic and Health Survey 2003. Calverton, Maryland: National Population Commission and ORC Macro. 2004:169-172. 2004.
[22] Mangani FD. Addressing the sexual and reproductive health needs of People Living With HIV in Zambia: Challenges and Opportunities KIT (Royal Tropical Institute)/VrijeUniversiteit Amsterdam, The Netherlands, 2009.
[23] Siegel K, Schrimshaw EW: Reasons and justifications for considering pregnancy among women living with HIV/AIDS. Psychology of Women Quarterly 2001;25(2):112–23.
[24] Enwereji EE. Sexual behaviour and Inheritance rights among HIV-positive women in Abia State, Nigeria. Tanzania J Health Research, 2008; 10(2):11.
[25] Ikechebelu JI, Ikegwuonu SC, Joe-Ikechebelu NN. HIV infection and sexual behaviour among infertile women in South-Eastern Nigeria. J ObstetGynaecol 2002; 22(3): 306-307.
[26] Corbett MR, Turner KL. Essential elements of post-abortion care: origins, evolution and future directions. International Family Planning Perspectives 2003; 29(3):106–11.
[27] Nobrega AA, Oliveira FA, Galvao MT, et al. Desire for a child among women living with HIV/AIDS in northeast Brazil. AIDS Patient Care STDS 2007; 21:261-267.
[28] Iliyasu Z., Abubaka IS., Kabir M., Babashani M., Shuaib F., Aliyu MH. Correlates of Fertility Intentions Among HIV/AIDS Patients in Northern Nigeria. Afr J Reprod Health
[29] 2009:13[3]:71-83.
[30] McIntyre JB. Preventing mother-to-child transmission of HIV: Successes and challenges An International Journal of Obstetrics and Gynaecology 2005;112:1196-1206.
[31] Guthrie BL., de Bruyn G., Farquhar C. HIV-1-discordant couples in sub-Saharan Africa: explanations and implications for high rates of discordancy. Curr HIV Res 2007; 5(4):416-429.
[32] Women and Infant Health Project. Household Survey. Report of Main Findings. byP.H.David et al. JSI. 2002.
[33] Mohammed S, Belaynew W and Mengesha A. Disclosure of HIV Positive Result to a Sexual Partner among Adult Clinical Service Users in Kemissie District, Northeast Ethiopia. Afr J Reprod Health 2012; 16[1]:97-104.
[34] Kaida, A., Andia, I., Maier, M., Bangsberg, D. R., Spiegel, J., Bastos, F. I., et al. (2006). The potential impact of antiretroviral therapy on fertility in sub-Saharan Africa. Current HIV/AIDS Report, 3, 187–194.

Appendix

Table 1: Baseline Socio-Demographic Data of Patients

Socio-demographic characteristics	N= 826, Number (%)
Age (years) • 15-24 • 25-34 • 35-44 • 45-54 • 55 and above **Mean (standard deviation) 29.6 (8.0)**	 245 (29.7) 366 (44.4) 181 (21.9) 26 (3.1) 8 (1.0)
Sex • Male • Female	 283 (34.3) 543 (65.7)
Ethnicity • Ibo • Hausa • Yoruba • Others	 593 (71.8) 134 (16.2) 97 (11.7) 2 (0.2)
Religion • Christian	 693 (83.9)

• Moslem • Traditional	132 (16.0) 1 (0.1)
Marital status • Married • Single • Widowed • Separated/divorced	 484 (58.6) 94 (11.4) 6 (0.7) 242 (29.3)
Living with partner • Yes • No	 533 (64.5) 293 (35.5)
How long in years (Mean = 3.18 years, SD =4 years) • 1-10 years • 11-20 years • 21-30 years • < 1 year	 472 (88.6) 30 (5.6) 6 (1.1) 25 (4.7)
Main occupation • Unemployed • Farmer • Trader • Civil servant • Self-employed • Student • Artisan	 93 (11.3) 91 (11.0) 358 (43.3) 167 (20.2) 39 (4.7) 77 (9.3) 1 (0.1)
Highest educational level • None • Primary • Secondary • Tertiary	 52 (6.3) 130 (15.7) 441 (53.4) 203 (24.6)
Have children • Yes • No	 469 (56.8) 357 (43.2)
No of children alive N = 469 • 1 • 2 • 3 • 4	 57 (12.2) 260 (55.4) 150 (32.0) 2 (0.4)
Sex of children? • Male • Female • Both	 194 (41.4) 154 (32.8) 121 (25.8
Average household monthly income N = 826 • < N20,000 • N20,000 to N40,000 • >N40,000 to N60,000 • >N60,000 to N80,000 • >N80,000 Mean = N20,000 to N40, 000)	 383 (46.4) 179 (21.7) 128 (15.5) 105 (12.7) 31 (3.8)

Table 2: Fertility characteristics (desires of couples/partners)

Variables	Number (%)
Wouldyouconsideralternativestobiologicalparenting N = 826 • Yes • No	 196 (23.7) 630 (76.3)
If yes, which options would you consider? N = 196 • Adoption • Wet nursing • Foster parenting • Co-parenting • Known donor conception • Anonymous donor conception	 196 (100.0) 0 (0.0) 0 (0.0) 0 (0.0) 0 (0.0) 0 (0.0)
Do you desire to have more children? N = 826 • Yes • No	 605 (73.2) 221 (26.8)

If yes, how many children do you desire to haveinfuture? N = 605	
• One	195 (32.2)
• Two	231 (38.2)
• >Two	179 (29.6)
Effortsmadeabouthavingababy	
• I haveapproached mypartner	57 (9.4)
• Mypartnerhasapproached me	173 (28.6)
• Have spokentoahealthworker	219 (36.2)
• Havestoppedusingabirthcontrolmethodinthe past12months	329 (54.4)
Currentpracticetopossiblepregnancy N = 605	
• Iusebirthcontrol every timeI havesextoavoidgettingpregnant	204 (33.7)
• I donotusea birthcontroland willbehappyifIgetpregnant	209 (34.5)
• IdonotusebirthcontrolandIamnottryingto getpregnant	71 (11.7)
• IdonotusebirthcontrolbecauseIamtryingtogetpregnant	121 (20.0)
When was the last time you engaged in sex?N = 605	
• This week	5 (0.8)
• Last week	21 (3.5)
• 2 weeks ago	192 (31.7)
• 3 weeks ago	102 (16.9)
• >3 weeks to 4 weeks ago	43 (7.1)
• >4 weeks ago	242 (40.0)
How often on the average do you have sex in a week?N = 605	
• Once	127 (21.0)
• Twice	377 (62.3)
• Three and above	101 (16.7)

Table 3: Factors Associated With Fertility Desires

Variables	Number (%)
DisclosedyourHIVstatustopartner N = 605	
• Yes	430 (71.1)
• No	175 (28.9)
HaveyoulostanyofyourchildrentoAIDSinthepast? N = 605	
• Yes	103 (17.0)
• No	502 (83.0)
AreyoucurrentlytakingcareofchildrenthatarenotyourownN = 605	
• Yes	217 (35.9)
• No	388 (64.1)
Areyoucurrentlyinan intimatesexualrelationship? N = 605	
• Yes	568 (93.9)
• No	37 (6.1)
How**longhaveyoubeeninthisrelationship (years)? N = 605** **Mean (Standard deviation), 3.5 (± 3.1)**	
• 0-4	241 (42.4)
• 5-9	180 (31.7)
• 10-14	17 (3.0)
• 15-20	3 (0.5)
• 0	127 (22.4)
Does your current partner have children of his or her own? N = 605	
• Yes	227 (40.0)
• No	341 (60.0)
Do you and your partner have children of your own from this relationship? N = 605	
• Yes	169 (27.9)
• No	436 (72.1)
If yes, how many children do you have with your partner? N = 169	
• One	166 (98.2)
• Two	3 (1.8)
• > Two	0 (0.0)
WhichyearwereyoudiagnosedHIVpositive?	Median year of diagnosis = 2009
WhatisyourmostrecentCD4count≥200(cells/mm^3)	Mean (Standard deviation)492.8(139.2)
Are you on HIV treatment (HAART)? N = 826	
• Yes	660 (79.9)
• No	166 (20.1)

Table 4: Association of desire to have more children with selected characteristics for respondents

Variable	*Desires more children*	*Do not desire more children*	*Chi-square (P value)*
Age group of all respondents (years)			
• 15-24	126 (20.8%)	119 (53.8%)	88.07 (0.000)*
• 25-34	308 (50.9%)	58 (26.2%)	
• 35-44	147 (24.4%)	34 (15.4%)	
• 45-54	19 (3.1%)	7 (3.2%)	
• 55 and above	5 (0.8%)	3 (1.4%)	
Age group of females (years)			
• 15-24	93 (22.2%)	54 (43.5%)	
• 25-34	212 (50.6%)	41 (33.1%)	23.572 (0.000)*
• 35-44	97 (23.2%)	24 (19.4%)	
• 45-54	13 (3.1%)	3 (2.4%)	
• 55 and above	4 (1.0%)	2 (1.6%)	
Age group of males (years)			
• 15-24	82 (36.0%)	16 (29.1%)	
• 25-34	90 (39.5%)	23 (41.8%)	2.052(0.726)
• 35-44	47 (20.6%)	13 (23.6%)	
• 45-54	7 (3.1%)	3 (5.5%)	
• 55 and above	2 (0.9%)	0 (0.0%)	
Sex			
• Male	186 (30.7%)	97 (43.9%)	0.001(0.000)f
• Female	419 (69.3%)	124 (56.1%)	
Religion			
• Christian	515 (85.1%)	178 (80.5%)	4.869(0.088)
• Moslem	90 (14.9%)	42 (19.0%)	
• Traditional	0 (0.0%)	1 (0.5%)	
Marital status*			
• Married	414 (68.4%)	70 (31.7%)	90.509(0.000)*
• Single	52 (8.6%)	42 (19.0%)	
• Widowed	4 (0.7%)	2 (0.9%)	
• Separated/divorced	135 (22.3%)	107 (48.4%)	
Living with partner			
• Yes	450 (74.4%)	83 (37.6%)	0.000(0.000)f*
• No	155 (25.6%)	138 (62.4%)	
How long in years (Mean = 3.18 years, SD =4 years)			
• 1-10 years	403 (89.6%)	69 (83.1%)	
• 11-20 years	25 (5.6%)	5 (6.0%)	4.730(0.193)*
• 21-30 years	4 (0.9%)	2 (2.4%)	
• < 1 year	18 (4.0%)	7 (8.4%)	
Main occupation			
• Unemployed	55 (9.0%)	38 (17.2%)	21.192(0.002)*
• Farmer	66 (10.9%)	25 (11.3%)	
• Trader	271 (44.8%)	87 (39.4%)	
• Civil servant	133 (22.0%)	34 (15.4%)	
• Self-employed	31 (5.1%)	8 (3.6%)	
• Student	49 (8.1%)	28 (12.7%)	
• Artisan	0 (0.0%)	1 (0.5%)	
Highest educational level			
• None	31 (5.1%)	21 (9.5%)	13.127(0.004)*
• Primary	85 (14.0%)	45 (20.4%)	
• Secondary	328 (54.2%)	113 (51.1%)	
• Tertiary	161 (26.6%)	42 (19.0%)	
Have a child			
• Yes	377 (62.3%)	92 (41.6%)	0.000(0.000)f*
• No	228 (37.7%)	129 (58.4%)	
Number of Children Alive			
• 0	228 (37.7%)	129 (58.4%)	29.709(0.000)*
• 1	49 (8.1%)	8 (3.6%)	
• 2	206 (34.0%)	54 (24.4%)	
• 3	120 (19.8%)	30 (13.6%)	
• 4	2 (0.3%)	0 (0.0%)	
Sex of children?			
• Male			
• Female	166 (27.4%)	28 (12.7%)	34.523(0.000)*

• Both • None	123 (20.3%) 88 (14.5%) 228 (37.7%)	31 (14.0%) 33 (14.9%) 129 (58.4%)	
Average household monthly income • < N20,000 • >N20,000 to N40,000 • >N40,000 to N60,000 • >N60,000 to N80,000 • N80,000	 241 (39.8%) 145 (24.0%) 98 (16.2%) 96 (15.9%) 25 (4.1%)	 142 (64.3%) 34 (15.4%) 30 (13.6%) 9 (4.1%) 6 (2.7%)	50.579(0.000)*
Better to have VCT, PMTCT and FP combined (integrated) • Strongly agree • Agree • Strongly disagree • Disagree	 310 (51.2%) 154 (25.5%) 100 (16.5%) 41 (6.8%)	 136 (61.5%) 48 (21.7%) 15 (6.8%) 22 (10.0%)	17.280(0.001)f *
Would you consider alternatives to biological parenting? • Yes • No	 180 (29.8%) 425 (70.2%)	 16 (7.2%) 205 (92.8%)	0.000(0.000)f*
Are you on HIV treatment (HAART)? • Yes • No	 459 (75.9%) 146 (24.1%)	 201 (91.0%) 20 (9.0%)	0.000(0.000)f*

F = fishers exact, * = Significance

Table 5: Association of desire to have more children with specific characteristics among a subset of respondents

Variable	Desires more children	Do not desire more children	Chi-square (P value)
How many children do you desire to haveinfuture? • None • One • Two • >Two	 0 (0.0%) 195 (32.2%) 231 (38.2%) 179 (29.6%)	 221 (100.0%) 0 (0.0%) 0 (0.0%) 0 (0.0%)	826.0(0.000)*
When was the last time you engaged in sex? • This week • Last week • 2 weeks ago • 3 weeks ago • >3 weeks ago • >4 weeks ago	 5 (0.8%) 21 (3.5%) 192 (31.7%) 102 (16.9%) 43 (7.1%) 242 (40.0%)	 8 (3.6%) 12 (5.4%) 46 (20.8%) 35 (15.8%) 8 (3.6%) 112 (50.7%)	23.879(0.000)*
How often on the average do you have sex in a week? • Once • Twice • Three and above	 127 (21.0%) 377 (62.0%) 101 (16.7%)	 31 (15.7%) 130 (65.7%) 37 (18.7%)	2.767(0.251)*
DisclosedyourHIVstatustopartner • Yes • No	 430 (71.1%) 175 (28.9%)	 141 (63.8%) 80 (36.2%)	0.50(0.028)f*
HaveyoulostanyofyourchildrentoAIDSinthepast? • Yes • No	 103 (17.0%) 502 (83.0%)	 11 (5.0%) 210 (95.0%)	0.000(0.0000)*
Areyoucurrentlytakingcareofchildrenthatarenotyourown? • Yes • No	 217 (35.9%) 388 (64.1%)	 40 (18.1%) 181 (81.9%)	0.000(0.000)f*
Are you currently in an intimate sexual relationship • Yes • No	 568 (93.9%) 37 (6.1%)	 197 (89.1%) 24 (10.9%)	0.024(0.018)f*
Howlonghaveyoubeeninthisrelationship (years)? **Mean (Standard deviation) 3.5 (± 3.1)** • 0-4 • 5-9 • 10-14 • 15-20 • 0	 241 (39.8%) 180 (29.8%) 17 (2.8%) 3 (0.5%) 164 (27.1%)	 46 (20.8%) 33 (14.9%) 3 (1.4%) 1 (0.5%) 138 (62.4%)	87.34(0.000)*
Does your current partner have children of his or her own? • Yes • No	 229 (37.9%) 376 (62.1%)	 42 (19.0%) 179 (81.0%)	0.000(0.000)f*

Do you and your partner have children of your own from this relationship?			
• Yes	169 (27.9%)	47 (21.3%)	0.060(0.032)f*
• No	436 (72.1%)	174 (78.7%)	

F = fishers exact, * = Significance

Table 6: Logistic Regression For Socio-demographic Variables

Fertility Desire	Coefficient	PV	Adjusted ODDS Ratio
Age (years)			
•15-24	.0029496	0.306	0.1080
•25-34	-.0023042	0.068	
•35-44	.0079163	0.000*	
•45-54	.0061857	0.004*	
•55 and above	-.0065973	0.321	
Sex	0.114	0.000*	0.013
Ethnicity	-0.008	0.691	0.132
Religion	-0.026	0.562	
Marital status	-0.012	0.642	
Living with partner	-0.378	0.000*	
How long in years	0.0009	0.827	
Main occupation	-0.020	0.148	
Highest educational level	-0.061	0.006*	
Have children	0.106	0.269	
No of children alive N = 469	0.018	0.544	
Sex of children	0.058	0.015*	
Average household monthly income N = 826	-0.002	0.824	

***= Significance**