Fertility Desire and Associated Factors among HIV Positive Women in University of Gondar Comprehensive Specialized hospital, Northwest Ethiopia. Institution based cross-sectional study.

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Abstract

Background: HIV positive individuals may or may not have fertility desire to have children. But the extent of these desires and how it varies by individual, social, health and demographic characteristics is not well understood. Objective: To assess fertility desire and its associated factors among HIV positive women in Gondar referral hospital, Northwest Ethiopia; 2019. Method: Institutional -based cross-sectional study design was conducted from May-June 2019 on 351 HIV positive women at Gondar comprehensive specialized referral hospital. Interview based, pre-tested and structured questionnaires was used to collect the data. Data consistency was checked and entered into Epi-info seven then exported to SPSS versions 20 for further analysis. Bivariable and multivariable logistic regression was used to determine the association between dependent and independent variables. P-values less than 0.05 with 95% CI was taken to declare a statistically significant. Result: Among study participants, 183(52.1%) HIV positive women had fertility desire. Women in the age 15-19 years (AOR: 6.88, CI=1.84-25.79), being married (AOR: 4.42, CI=1.47-13.28), unable to read and write (AOR: 0.39, CI=0.18-0.82), having no partners fertility desire and discussion with health care provider (AOR: 0.04, CI=0.02-0.12) and (AOR=0.31, CI=0.17-0.57), respectively were significantly associated factors. Conclusion: Being young age and married, educational status of women, partner desire and discussion with health care provider were obtained as significant factors of fertility desire. Hence health care providers have to give health information and education about fertility desire and other reproductive issue to clients. Keywords : ART users, women, Fertility desire, Gondar, Ethiopia.

Background

Fertility desire is an intention to have children despite the diagnosis of HIV (1). Globally, HIV/AIDS is the leading cause of death among women of reproductive age (aged 15-49). In 2017, new infections among young women (aged 15-24 years) were 42% higher than they were among men in the same age group, and around 80% of pregnant women living with HIV received antiretroviral medicines to prevent the transmission of the virus to their children(2,3).

Women in Sub-saharan Africa between the ages of 15 and 24 years constitute 76% of those at risk for contracting HIV, and the risk of infection in this group is three times that of the general population(2).
Most of these women are particularly vulnerable to HIV due to the complex burdens they face, physiological and social vulnerability and gender inequalities. Since these vulnerable women are in the child bearing age, the risk of infecting their children and thus facing difficult choices about childbearing is huge (4).

Prior to the implementation of the Prevention to Mother to Child Transmission (PMTCT) programs, health care providers used to discourage women living with HIV from having children in order to avoid new infections in children though many women continued to bear children despite the knowledge about for the consequences. Even after antiretroviral treatment, there is evidence that healthcare providers have advised women living with HIV to avoid pregnancy. However, it is evidenced in a number of studies that many HIV positive women have children and to have wish more, indicating the need for comprehensive care, so such women can have safe and healthy pregnancy(5)

The major mode of HIV transmission in Ethiopia is heterosexual, decisions about child bearing among women living with HIV/AIDS (WLHA) continue to be a subject of debate in resource constrained settings. Many findings show that HIV/AIDS is integrated-in the minds of many developing countries as they confront the very real and present danger posed by heterosexual transmission of the virus. Yet, many women who participate in studies spontaneously mention the influence of HIV/AIDS in reducing their family size as well as their compatriots (6).

Research findings reported that social norms and individual factors often discouraged HIV infected people from having children and childbearing decisions. As the prevention of the mother to child transmission programs provide for both prevention of HIV transmission from mother to child and enrollment of infected pregnant women and their families into antiretroviral treatment, the government of Ethiopia made an effort to mitigate the impacts of the epidemic in the general population and amongst children in particular(7).

A better understanding of the reproductive choices of HIV positive individuals is important, especially as antiretroviral medication is becoming more accessible. Accurate descriptions of the childbearing intentions and desires of HIV infected individuals is necessary because it may help them achieve their fertility desires without scarifying the health and wellbeing of their new born (8).
Studies report inconsistencies in the prevalence of fertility desires. For instance, among infected people in Canada (10), Switzerland (12), Congo (13), Spain (14), Malawi (15) and Uganda (16) the magnitude varied as 58, 48, 35.5, 49, 34 and 35%, respectively. Likewise, Studies conducted in Ethiopia desires ranged from 28.8 to 70.59% (5, 17-20).

In case women living with HIV desire to have children, counselling by their health care providers has a critical role in assuring the planned pregnancies, and improving the prevention of mother to child transmission and reducing new infant infections (9).

Although Ethiopia has made efforts to mitigate the impacts of the epidemic in the general population (9), many women are living with HIV/AIDS. In spite of advances in ART and prevention of mother-to-child transmission services, women in developing settings still struggle with decisions to have children. More importantly, little is known about the prevalence and determinants of fertility intentions among HIV infected women who are receiving ART. Therefore, this study was conducted to assess fertility desires and associated factors among HIV positive women at the University of Gondar comprehensive specialized hospital.

Method

Study setting and design

Institution based cross sectional study from May to June 2019 was conducted at the University of Gondar comprehensive specialized hospital, which is in North Gondar zone, Amhara regional state of Ethiopia, 174 km from Bahir Dar, the capital of the regional state and 720 km from Addis Ababa, the capital of Ethiopia and established in 1962. The hospital is one of the major teaching and referral hospitals with a strong HIV/AIDS care and treatment center. The hospital started delivering ART services in 2003 and free ART in 2005. Currently, the hospital has 2000 reproductive age group (15-49) women enrolled for ART as per to the national guide lines.

Study population

Study population were those sampled reproductive age HIV positive women at University of Gondar comprehensive specialized hospital enrolled on ART treatment during the study period.

Sample size determination and sampling technique
A total of 351 HIV positive women were recruited by the single population proportion formula using Z-score at 95% confidence level (1.96) and 70.59% proportion from study conducted in TesfaGoh association of Bahirdar, Ethiopia on HIV positive women in ART units (21), \( d = 0.05 \) (5% margin of error) and 10% non-response rate. The participants were selected using the systematic random sampling technique.

**Operational definitions**

Desire for child or children: Women on follow up care who would like to have a children in the future (yes/no).

**Data collection tools and procedures**

A structured interviewer administrated questionnaire was used to collect data from participants. The questionnaire was adopted by reviewing variety of literature (5, 20, 21) and modified and conceptualized into the local setting. The preparation followed the logical order from simple to complex with sensitive questions at the end. The questioner had such four sections as Socio-demographic characteristics, information on HIV/AIDS and related characteristics, perceived social pressure and information on knowledge of HIV transmission.

**Data management/processing and analysis procedures**

Data were coded, cleaned and entered into Epi-info seven and exported to the Statistical Package for Social Sciences (SPSS) version 23 for analysis. Frequencies and percentages were generated. Tables and graphs were used for data presentation. The bi-variable logistic regression method was used to select candidate variables. Independent variables resulting in a \( p \)-value of less than 0.2 in the bi-variable analysis were considered in the multivariable logistic regression analysis for further analysis. Adjusted Odds Ratio (AOR) with a 95% confidence interval (CI) at 5% level of significance was used to measure the strength and significance of associations.

**Results**

**Socio-demographic characteristics of the respondents**

In this study, 351 respondents were participated with a response rate of 100%. Of the participants, 137(39.0%) were in the age group of 30-39 years with a median age of 33.03(40-27 IQR) years. Out of
the respondent, 144(41%) were married; 87.7% were Orthodox Christian, 27.9% were elementary (1-8) school completed. The majority 293(83.5%) of the women were lived in urban areas, 313(89.2%) were Amhara by ethnicity (Table1).

**Fertility desire of respondents**
The fertility desire of the participants was 183(52.1%) CI: (47.3, 57.8), and the most common reason (46.4%) were to strengthen marriage. Out of 351 respondents, 234(66.7%) tested before two years, 295(84%) were disclosed their HIV status and 90(25.6%) discussed their desire with health professional/counselors. Out of the total interviewed WLHIV, 100(54.6%) want to have one or two live biological children, whereas, 78(42.6%) wanted to have three to four children. One hundred thirty eight (39.3%) of the respondents knew their partners HIV status, 105(29.9%) were using contraceptive during the study period (table 2).

**Perceived pressure from external others and related characteristics**
Of the participants, 74.1% and 74.6% were pressured to have children by their families and the community, respectively.

Most of the respondents were living with their families, 61(17.4%) of the women were members of associations with PLWHA and 16(4.6%) had support from external bodies (table 3)

**Factors associated with fertility desire**
The bivariable and multivariable logistic regression analysis were conducted to see the presence of associations and to measure the relative effect of each independent variable on fertility desire. Marital status, age, educational status, current pregnancy, previous pregnancy, income, external support, discussion with health professionals, partner desire to have children were variables taken into consideration for the multivariate analysis with p-value <0.2.

In the multivariable analysis marital status, educational status, age, discussion with health professionals and partner desire to have children were statistically significant predictors of fertility desire. Women in the 15-19 age group were 6.88 times more likely to desire than those aged 40-49 years (AOR= 6.88,CI=1.84-25.79). Women who were married were 4.42 times more likely to desire than women who were widowed, (AOR=4.42, CI=1.47-13.28), women who could write and only read
were 83% less likely to desire than those who attended college and above (AOR=0.17, CI=0.17-0.52). Respondents who did not discussed with health professionals were 69% less likely to desire fertility than their counterparts (AOR=0.31 CI=0.17-0.57). This study also revealed that women whose partner did not have desire had 96% decreased fertility desire than their counterpart (AOR= 0.04, CI=0.02-0.12) (table 4).

Discussion
This study assessed fertility desire and its associated factors among WLHA at Gondar comprehensive specialized hospital, where 52.1% of the HIV positive women had fertility desire. The proportion of the present study was higher than 45, 28.8, 46.88, 46.6, 35 and 34% reported from Tigri region (19), Finoteselam town (20), Jimma town (19), Oromoiya region, Uganda and Malawi respectively (15,17). This difference could be due to poor communication with health care providers, sample size differences. However, our finding is lower than 70.59% reported by the Tesfgoh association of Bahir Dar, (northwest Ethiopia (21), 55.6% of Wolyita, (south Ethiopia (17) and 58% of Ontario Canada (12). The difference could be due to difference, in the socio- demographic characteristics of the study participants and the difference in sample sizes. But it is almost comparable to the result of studies conducted in Spain and Switzerland, and noted 49 and 48% respectively (15, 16).

Women in the younger age group (20-29) and 30-39 were 6 and 4 times more likely to have fertility desire than the 40-49, respectively. This finding is higher than that of a study done in Finoteselam and found a magnitude of 42.1% (22). The possible explanation may be due to that relatively older women have already achieved, or closer to achieving their desired family size than younger women.

Married women’s were 4.4 times more likely to have fertility desire than widowed. The reason might be due to support from spouses or family stability. This finding is lower than those of studies conducted in Uganda and Congo which noted 78 and 71.1%, respectively (22, 23). The reason behind might be the availability of facilities at the health service institutions.

In our study, educational status had positive association with fertility desire. Women who were not able to read and write were 61% decreased have fertility desire than those who attended college and above. Again, those who were able to read and write were also 83% reduced fertility desire than
those who attended college and above. This difference might be due to the fact that less educated participants had less expectations of health services, less information on PMTCT compared to women who had college and above education.

This finding also revealed that discussions with health care providers were significantly associated with fertility desire. Women who did not discussed with health professionals had 69% lower fertility desire than women who discussed. This finding was similar with the result seen in a study conducted in Nekemte (Western Ethiopia) and Northwest Ethiopia (19, 24). This could be due to health care provider give advice to clients that promote fertility or might be that those women who had fertility desire seek advice from service provider.

In this study a significant association was also observed between fertility desire and partners need for children. Women whose partner did not have desire had 96% decreased fertility desire than their counterpart. This finding is in line with finding in Ethiopia (22, 25). This suggests that family planning and fertility related issues information should focus on partner as well.

**Limitation**

Since the study was conducted in a public health institution, it may lack generalization about HIV positive women in the reproductive age group of the town. Besides, as the study is cross-sectional the association observed may not be casual enough. Finally the study might also subjected to recall bias.

**Conclusion**

This finding revealed that more than half of the HIV positive women under antiretroviral treatment at Gondar comprehensive specialized hospital had fertility desire for children. Being young age, marital status, educational status of women, partner pressure, discussion with health care providers were significant factors of fertility desire. Therefore, provision of health information and education about fertility desire and other reproductive issue to the client will be pivotal.

**Abbreviations**

AIDS: Acquired Immune Deficiency Syndrome; ARV: Anti-Retroviral; CI: Confidence Interval; DNA: Deoxyribonucleic Acid; HAART: Highly Active Anti-Retroviral Therapy; HIV: Human Immune Deficiency Virus; IRB: Institutional Review Board; PLWHA: People Living With HIV/ AIDS; PMTCT: Prevention
Mother to Child HIV Transmission; RNA: Ribonucleic Acid; SD: Standard Deviation; SPSS: Statistical Package for Service Solution; UOGCSH: University Of Gondar Comprehensive Specialized Hospital; WLHA: Women Living with HIV/AIDS

Declarations

Authors’ contributions

AA and YA: Conceived, designed and organized the whole procedure of this article production, and performed data analysis and interpreting of findings. AW: participated in data analysis and revised subsequent drafts of the paper, and equally prepare the manuscript. All authors read and approved the final manuscript.

Authors’ detail

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Competing interests

The authors declare that they have no competing interests.

Availability of data and materials

The datasets used and/or analyzed and in which conclusion are drawn during the current study are included in the manuscript.

Consent for publication

Not applicable

Ethics approval and consent to participate

Ethical clearance was obtained from the institutional review board (IRB) of University of Gondar on
behalf of the Ethical Review Committee of school of Nursing. Again letter of permission was secured from University of Gondar comprehensive specialized hospital top managements and presented to Gondar hospital ART. All reproductive age group mothers to participate in the study were asked for their willingness to participate in the study. All the reasons why reproductive age group mothers are chosen and why the research is done were explained in the questionnaire. Oral consent was obtained from each reproductive age group mothers before the data collection and the data was collected anonymously to maintain confidentiality of the client. On the other hand simple explanation about aim of the study was provided to those under 16 years of age to obtain their initial approval. Then, an informed consent including simple explanation about the aim of the study was given to be signed by the parent/guardian.

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Tables
Table 1: Socio demographic characteristics of women attending ART clinic in Gondar comprehensive specialized hospital, Amhara regional state, northwest Ethiopia, 2019, (n=351).

| Socio-demographic Characteristics | Categories | Frequency(n) | Percent (%) |
|-----------------------------------|------------|--------------|-------------|
| Residence                         | Urban      | 293          | 83.5        |
|                                   | Rural      | 58           | 16.5        |
| Marital status                    | Single     | 97           | 27.6        |
|                                   | Married    | 144          | 41.0        |
|                                   | Divorced   | 77           | 21.9        |
|                                   | Widowed    | 33           | 9.4         |
| Age category                      | 15-19      | 18           | 5.1         |
|                                   | 20-29      | 111          | 31.0        |
|                                   | 30-39      | 137          | 39.0        |
|                                   | 40-49      | 85           | 24.2        |
| Ethnicity                         | Amhara     | 313          | 89.2        |
|                                   | Oromo      | 10           | 2.8         |
|                                   | Tigray     | 26           | 7.4         |
|                                   | Other      | 2            | 0.6         |
| Religion                          | Orthodox   | 308          | 87.7        |
|                                   | Muslim     | 32           | 9.1         |
|                                   | Protestant | 9            | 2.6         |
|                                   | Catholic   | 2            | 0.6         |
| Occupation                        | Student    | 43           | 12.3        |
|                                   | House wife | 104          | 29.6        |
|                                   | Daily laborer | 36   | 10.3        |
| Variable                        | Frequency | Present |
|--------------------------------|-----------|---------|
| HIV test                       |           |         |
| < 2 years                      | 117       | 33.3    |

Table 2: Fertility desire among women living with HIV attending ART clinic in Gondar comprehensive specialized hospital, Amhara regional state, northwest Ethiopia, 2019, (n=351).
| Reason for HIV testing | Count | Percentage |
|------------------------|-------|------------|
| To know my status      | 154   | 43.9       |
| Referral due to suspected HIV related symptom | 104   | 29.6       |
| Spouse/family member HIV positive | 44    | 12.5       |
| Death or illness of spouse/family Member | 19    | 5.4        |
| Preparation for marriage | 10    | 2.8        |
| Pregnancy related      | 17    | 4.8        |
| Other reason           | 3     | 0.9        |

| Disclosed HIV status   |        |            |
|------------------------|-------|------------|
| To whom you were disclosed* |      |            |
| For relative/family    | 237   | 80.3       |
| For sexual partner     | 56    | 19         |
| For peer               | 12    | 4.06       |

| Reason for non-disclosure(n=56) |   |       |
|---------------------------------|---|-------|
| Fear of divorce                 | 1 | 1.8   |
| Fear of abuse                   | 10| 17.8  |
| Fear of stigma                  | 45| 80.4  |

| Did Use ART drug currently      | 331| 94.3  |
| Have you ever been pregnant     | 237| 67.5  |
| Give birth after HIV Positive   | 15 | 4.3   |
| Any abortion or miscarriage     | 22 | 6.35  |
| Did you have died child at any age | 15 | 4.3   |

| Discussion with health care provider | 90 | 25.6 |
| Did the partner want child         | 95 | 27.1 |

| Partner’s HIV Status              |   |       |
|-----------------------------------|---|-------|
| Negative                          | 5 | 1.4   |
| Positive                          | 138| 39.3  |
| Unknown                           | 1 | 0.3   |

| Did you use contraceptive |   |       |
|---------------------------|---|-------|
| 105                       | 29.9|

| Reason for not using contraceptive (n=246) |   |       |
|-------------------------------------------|---|-------|
| Fear of drug interaction                  | 5 | 2.03  |
| Trying pregnancy                          | 62| 25.2  |
| Partner doesn’t want contraceptive        | 73 | 29.7  |
| Other unknown reason                      | 106| 43.1  |

| Numbers of children do you want |   |       |
|---------------------------------|---|-------|
| ≥ 1                             | 100| 54.6  |
| 3-4                             | 78 | 42.6  |
| ≥ 5                             | 5  | 2.7   |

| Discussion with health care provider | 90 | 25.6 |
| Did the partner want child         | 95 | 27.1 |

| Partner’s HIV Status              |   |       |
|-----------------------------------|---|-------|
| Negative                          | 5 | 1.4   |
| Positive                          | 138| 39.3  |
| Unknown                           | 1 | 0.3   |

| Did you use contraceptive |   |       |
|---------------------------|---|-------|
| 105                       | 29.9|

| Reason for not using contraceptive (n=246) |   |       |
|-------------------------------------------|---|-------|
| Fear of drug interaction                  | 5 | 2.03  |
| Trying pregnancy                          | 62| 25.2  |
| Partner doesn’t want contraceptive        | 73 | 29.7  |
| Other unknown reason                      | 106| 43.1  |

| know your CD4 count |   |       |
|---------------------|---|-------|
| 147                 | 58.1|
Table 3: Perceived social pressure of women attending art clinic in Gondar comprehensive specialized hospital, Amhara regional state, northwest Ethiopia, 2019, (n=351).

| Variables                                | Category            |
|------------------------------------------|---------------------|
|                                          | Yes                 | NO                  |
| Pressured by family or parents to have children | 260 (74.1%)        | 91 (25.9%)          |
| Pressured by community                    | 262 (74.6%)         | 89 (25.4%)          |
| With whom you are living for the last 6 months |                     |                     |
| Living with sexual partner                | 55 (15.7%)          | 296 (84.3%)         |
| Living with family                        | 237 (67.5%)         | 114 (32.5%)         |
| Living with peers                         | 20 (5.7%)           | 331 (94.3%)         |
| Living alone                              | 34 (9.7%)           | 317 (90.3%)         |
| Living with other people                  | 3 (0.9%)            | 348 (99.1%)         |
| Are you a member of any PLWHA’S association | 61 (17.4%)        | 290 (82.6%)         |
| Have you any external support             | 16 (4.6%)           | 335 (95.4%)         |

Table 4: Bivariable and multivariable logistic regression analysis for fertility desire among HIV positive women attending ART clinic in Gondar comprehensive specialized hospital, Amhara regional state, northwest Ethiopia, 2019, (n=351).
| Variables                  | Fertility desire | COR(95%CI)  |
|----------------------------|------------------|-------------|
|                            | Yes              | No          |               |
| Age                        |                  |             |               |
| 15-19                      | 12(70.6%)        | 5(29.4%)    | 10.6(3.29-34.52) |
| 20-29                      | 77(69.4%)        | 34(30.6%)   | 10.05(5.11-19.76) |
| 30-39                      | 78(57.4%)        | 58(42.6%)   | 5.97(3.42-11.32) |
| 40-49                      | 16(18.4%)        | 71(81.6%)   | 1             |
| Marital Status             |                  |             |               |
| Single                     | 63(64.9%)        | 34(35.1%)   | 10.3(3.67-29.33) |
| Married                    | 92(63.9%)        | 52(36.1%)   | 9.9(3.6-27.22) |
| Divorced                   | 23(29.9%)        | 54(70.1%)   | 2.38(0.81-6.95) |
| Widowed                    | 5(15.2%)         | 28(89.8%)   | 1             |
| Educational Status         |                  |             |               |
| Unable to read and write   | 26(31%)          | 58(69%)     | 0.25(0.13-0.5) |
| Read and write only        | 6(23.1%)         | 20(76.9%)   | 0.17(0.06-0.48) |
| Elementary                 | 59(60.2%)        | 39(39.8%)   | 0.85(0.44-1.63) |
| Secondary                  | 35(66%)          | 18(34%)     | 1.09(0.51-2.34) |
| Preparatory                | 16(61.5%)        | 10(38.5%)   | 0.9(0.35-2.3)  |
| College and Above          | 41(64.1%)        | 23(35.9%)   | 1             |
| Partner wants to have children |               |             |               |
| No                         | 11(22.9%)        | 37(77.1%)   | 0.48(0.20-0.12) |
| Yes                        | 82(86.3%)        | 13(13.7%)   | 1             |
| Discussion with health professional |           |             |               |
| No                         | 117(44.8%)       | 144(55.2%)  | 0.3(0.17-0.50) |
| Yes                        | 66(73.3%)        | 24(26.7%)   | 1             |

*p value<0.05 at multivariate logistic regression, 1: reference*