

# Fertility desire and associated factors among ART user reproductive-age women in public health facility in Gondar city administration Northwest Ethiopia

**Eyob Araya Gebrekidan**

Gondar zuria Health center

**Alehegn Bishaw Geremew** (✉ [alexbishaw@gmail.com](mailto:alexbishaw@gmail.com))

university of Gondar

**Telake Azale Bisetegn**

University of Gondar

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## Research article

**Keywords:** Fertility desire, reproductive age, women on ART

**Posted Date:** February 10th, 2020

**DOI:** <https://doi.org/10.21203/rs.2.23008/v1>

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# Abstract

**Background:** Antiretroviral therapy scales up globally and in Ethiopia, as a result, AIDS-related mortality has reduced, but the number of new HIV infections increasing. Antiretroviral therapy in Ethiopia gives a chance of living longer for reproductive-age women. Prevention of pregnancy among HIV positive women is the second WHO prongs of HIV transmission with respecting women's reproductive rights. Antiretroviral therapy uses improve the health of HIV positive women using and women's fertility desire increasing. Therefore this study aimed to assess the fertility desire and associated factors among ART user reproductive-age women.

**Methods:** A facility-based cross-sectional study design conducted from November 2-30/2018. The calculated sample size was 400 and study participants were selected by using systematic random sampling. A pre-tested structured questionnaire was used to collect data. A binary logistic regression model was employed and adjusted odds ratio with a 95% confidence interval used to consider statistically significant

**Results:** A total of 397 clients were participated in the study, giving a response rate of 99.3%. The proportion of fertility desire in this study was 55.2 % (95% CI, 50.4%- 60.2%). A duration of marriage < 4 year [AOR=6.9(95 CI: 1.65, 28.81)], and 5–9 years duration of marriage [AOR= 13.8 (95% CI: 2.39, 80.39)] higher as compared to 15 years and above, family influence 3.4 times more likely to have fertility desire than have no family influence [AOR= 3.4 (95% CI: 1.06, 11.25)], partner desire 4.3 times more likely have had fertility desires as compared to with counterpart [AOR= 4.3 (95% CI: 1.93,9.41)], and discussion with health care provider 66 % less likely to have fertility desire as compared with counterpart [AOR = 0.34 (95% CI: 0.39, 3.31)].

**Conclusion:** In this study, we have identified a high proportion of fertility desire among ART user reproductive-age women. The duration of marital status, partner influence, family influence, and discussion of health care were associated with fertility desire. Family-oriented counseling, partner involvement on reproductive health services should be encouraged to support the rights of all women to safely achieve their fertility.

**Keywords:** Fertility desire, reproductive age, women on ART.

## Background

Worldwide, after the introduction of free antiretroviral therapy death related to acquired immunodeficiency syndrome (AIDS) has been declined by 48%, major achievements were eastern and southern Africa[1]. Despite this, nearly 36.7 million people living with human immunodeficiency virus (HIV), among those 17.8 million are women age above fifteen years, and 2.1 million are children below fifteen year[2].

World Health Organization (WHO) guidelines on HIV treatment are recommended initiating antiretroviral therapy (ART) in all individuals living with HIV, regardless of CD4 cell count or disease severity[3]. This

recommendation is informed by a growing body of evidence that highlights the benefits of early ART initiation[4]. Because of the efficacy of therapy, newly diagnosed HIV/AIDS patients are now living with a manageable chronic condition[5]. Improvements in life expectancy and quality of life for HIV-positive women coupled with the reduced vertical transmission[6], will likely lead numerous HIV-positive women to consider becoming pregnant, as a result, ART use increases the resumption of fertility desire[7].

Fertility desire is the need to have one or more children despite people live with HIV/AIDS[8], and HIV positive individuals continuing with fertility desire to have children[9, 10]. The availability of ART service in the country and effective prevention of mother to child transmission makes fertility desire a great reproductive health issue for persons living with HIV/AIDS[9, 11]. Moreover, reproductive-age women living with HIV/ADS and their health improved due to ART service use have more fertility desire[12]

The direct relationship between fertility and HIV/AIDS makes HIV preventive strategies challenge against the HIV epidemic in Ethiopia [11], Despite the risks and challenges; studies elsewhere revealed that HIV positive women continue to desire children, after knowing their HIV-positive status[13, 14].In some settings, there is no difference in the proportion of pregnancy between HIV positive and HIV negative reproductive age women [15], and ART use increase fertility desire among HIV positive reproductive age women[14]. In Ethiopia irrespective of sero-status, the total fertility rate (TFR) is 4.6 children per woman with fertility peaks at age 25–29 (214 births per 1,000 women) [11]. Contraceptive prevalence for married reproductive-age women is low(36%), access to antiretroviral therapy and prevention of mother to child transmission(PMTCT) coverage remains poor(59%) in Ethiopia[12].

However, as much as childbearing for people living with human immunodeficiency virus (PLHIV) carries potential risks to the parents and child, the issue of reproductive options for HIV positive women is a sensitive rights issue and have the right to reproduction, the right to choose to become pregnant, equally be accompanied by a reciprocal responsibility to seek accurate information that is in the best interests of the individual, the partner and the unborn child[16]. Childbearing decisions of Reproductive age women living with HIV/AIDS does not unilaterally influence fertility desire if the detriments for fertility desire distinguished and access to factual information and services are providing.

Therefore, the purpose of this study was to assess fertility desire and associated factors among ART user reproductive-age women in public health facility in Gondar city administration Northwest Ethiopia 2018.

The significance of this study will contribute to the strengthening of the PMTCT program for preventing further HIV transmission for the future generation, respect rights and assisting PLHIV to get free HIV children and reproductive health service. Methods and materials

## **Methods**

### **Study design and period**

An institution-based cross-sectional study was conducted from November 2–30/2018.

## Study setting

The study was conducted in a public health facility in the Gondar city administration. Gondar city is found in the Amhara regional state Northwest of Ethiopia. Gondar city was divided into six sub-city with 25 urban and 11 rural kebeles, which is the smallest administration unit of the country. The projected population of Gondar city, according to the national census 2007 report is 360,600, and of this, about 51% were females[17]. During our study period the functional public health institutions within Gondar city administration named: Gondar university hospital, Gondar health center, Azezo health center, Maraki health center and Tseda health center in Gondar city administration provides ART service. The total number of ART patients was 9226 from this 4,872 of them are reproductive-age women in June 2018 according to the Gondar city health office monthly report.

## Population

The source populations were all HIV positive reproductive-age women who have follow up in public health facility ART clinic in Gondar city administration. Women reproductive age group (15–49 years) receiving Highly Active Anti-Retroviral Therapy (HAART) at the public health facility attending during the data collection period was the study population and female age group less than 18 years were excluded considering the legal age of marriage in Ethiopia.

## Sample size determination

The sample size for the proportion of fertility desire was determined by using a single population proportion formula ( $n = (Z_{\alpha/2})^2 p(1-p) / d^2$ ). Assuming the prevalence of fertility desire (54.6%) from a study conducted in Addis Ababa Ethiopia[18], considering 95% confidence interval (CI), 5% marginal error and considering 5% none response rate. The calculated sample size was 400

Sample size for factors associated with fertility desire was calculated using double proportion formula by Epi info version 7 with the following assumption: the significant variables associated with fertility desire were number current living child, age of client, fertility discussion with ART provider and duration on ART[19], 95% confidence interval, power 80, ratio 1:1, and 5% none response rate.

However, all the calculated sample size for factors was found less than calculated for the proportion of fertility desire. Therefore the estimated sample size for this study was 400

## Sampling procedure

The calculated sample size was proportionally allocated to the ART providing health centers and the public hospital found in Gondar city administration, namely; Gondar specialized hospital, Gondar health center, Maraki health center, Azezo health center, and Tseda health center. Proportional allocation for each facility was done according to the number of ART reproductive age women come to follow up care every month. Then during data collection, systematic random sampling procedure was used to recruit the study subjects.

# Operational definitions

Fertility desire: A women who have an interest to have children in the future [9].

Knowledge of prevention of mother to child transmission(PMTCT): Measured using three questions related with mother to child HIV transmission namely; using antiretroviral therapy (ART) drugs, safe delivery, and Exclusive breastfeeding until six month (only breastfeeding up to 6 months); then, women correctly answered the three questions have considered knowledgeable

## Data collection tool and procedure

The data collection questionnaire was adopted from the previous study and necessary modification was done [20] and the chart review checklist was prepared. The data were collected using a structured and pretested interview administered and through reviewed the client card using a chart review checklist. The questionnaire was contained socio-demographic characteristics, reproductive factors, health service factors, and chart reviews contain clinical factors. The data were collected by five BSc nurses who are working other than ART clinics and the data collection process supervision was done by two BSc health officers. The interview was done after the client obtained the intended ART service and chart review were done after each interview has completed for study participants

## Data quality assurance

The data collection tool was prepared in the English language[20]. Then, it was translated into local Amharic language and back to English by langue experts to check the consistency. The questionnaire was pretested on 20 individual (5%) total sample size reproductive age women attending ART clinic in Maksegnit health center to check the completeness, clarity, and consistency of the questionnaire before the actual data collection was done. Two days of training were given for the data collectors and supervisors by principal investigators about data collection tools and procedures. The completeness of the questionnaires was checked on a daily base by supervisors and correction was done accordingly. The overall data collection process was controlled by investigators

## Data processing and analysis

The data were checked for completeness and consistency, cleaned manually and coded; then, it was entered into Epi-info version 7 and exported to statistical package for social science (SPSS) version 20 Software for cleaning and analysis. Mean and standard deviation summary measure was used. Bivariable and multivariable logistic regression analyses were done to identify factors associated with fertility desire. Variables with  $p$ -value  $\leq 0.2$  during bivariable analysis were fitted to multivariate analysis then; multivariate logistic regression was carried out to identify factors statistically associated with fertility desire. Model fitness was checked using the Hosmer-Lemeshow test at  $p$ -value = 0.751. Odds ratio (OR) with 95% confidence intervals were used to determine the presence and direction of the association between independent variable and fertility desire. Results were summarized and presented using text, tables, and graphs.

## Results

### Socio-demographic characteristics of study participants

Among the total 400 estimated eligible reproductive age women on ART for this study, 397 women were participated giving the response rate of 99.3%. The mean age of participants was  $33 \pm 6.55$  SD years. More than half of the study participants 227(57.2%) were in the age group 30–39 years. Regarding participant's residency, a majority (91.4%) were from urban dwellers and concerning to marital status, nearly sixty percent 234(58.9), were married and among the married women, 97(41.7%) duration of marriage was less than or equals four years. Of the study participants' educational status, 132 (33.2%) had attended secondary school, and 93 (23.4) were housewives by occupation. Regarding reproductive age women monthly income only 119(30%) had greater than 1000 ETB (Table 1).

Table 1 Socio-demographic characteristics of reproductive age women attending ART in public health facilities in Gondar city administration, Northwest Ethiopia

variable	Categories	Frequency (N = 397)	percent
Age	18–29	108	27.2
	30–39	227	57.2
	40–49	62	15.6
Residence	Urban	363	91.4
	Rural	34	8.6
Religion	Orthodox	309	77.8
	Muslim	75	18.9
	Protestant	13	3.3
Marital status	Married	234	58.9
	Single	38	9.8
	Divorced	85	21.4
	Widowed	39	9.8
Duration of marriage with current partner (n = 234)	≤ 4 years	97	41.7
	5–9 years	41	17.3
	10–14 years	70	29.9
	≥ 15 years	26	11.1
Education	No education	102	25.7
	Primary	123	31
	Secondary	132	33.2
	College and above	40	10.1
Occupation	Unemployment	25	6.3
	Housewife	93	23.4
	Merchant	60	15.1
	Daily laborer	82	20.7

ETB- Ethiopian birr, \*- commercial sex worker and students

variable	Categories	Frequency (N = 397)	percent
	Government employ	46	11.6
	Private employ	40	10.1
	Other *	51	12.8
Family income	≤ 300 ETB	38	9.6
	301-600ETB	71	17.9
	601–1000 ETB	99	24.2
	> 1000ETB	119	30
ETB- Ethiopian birr, *- commercial sex worker and students			

## Reproductive characteristics of study participants

Out of the total participants, 339(85.4%) of the reproductive age women have a history of childbirth. Among 397 participants, 325 (81.5%) of them have children, and 69(17.4%) had a history of child loss, and 45 (11.3%) respondents have HIV positive children. Nearly half of women 45.8% have a history of childbirth after diagnosed with HIV/AIDS. Regarding the HIV status of a child born after women diagnosed with HIV, 4.4% of them diagnosed with HIV positive.

From reproductive-age women who live within marriage/partnership, 231(98.7%) responded that their partners were tested for HIV. Of those who reported partners' had tested, 204 (87.2%) responded that their partners' HIV status was positive, and the remaining 27(11.5%) responded that their partners' HIV status was negative whereas 3(1.3%) did not know their partner's serostatus yet. Among the study participants, 266(67%) have had sexual intercourse within the last three months period. Of the reproductive age women, 112(28.2%) plan to give birth in the next two years. Concerning joint discussion 181 (77.3%) study participants were discussed with their partner about future fertility and 102(50.7%), individuals had been influenced by their partner to have a child. From all study participants 100(25.2%) very strongly and 91(22.9) strongly influence the decision either to have or not (more) children by their family members. Out of the total participants, 313(78.8%) disclosed their HIV status to their respective parents, siblings, their child, friend and neighbors, and the remaining 84 (21.2%) of the respondents did not disclose their HIV status to anyone yet (Table 2).

Table 2, Reproductive characteristics of reproductive age women attending on ART at the public health facility in Gondar city administration, Northwest Ethiopia 2018



Variables		Frequency	Percent's
History of childbirth	yes	339	85.4
	No	58	14.6
Currently, have an alive child	Yes	325	81.9
	No	72	18.1
History of child lose	Yes	69	17.4
	No	328	86.6
Having HIV positive child	Yes	45	11.3
	No	352	88.7
Childbirth after diagnosed with HIV	Yes	182	45.8
	No	215	54.2
HIV status of a child born after women diagnosed with HIV(n = 182)	HIV positive	8	4.4
	HIV negative	145	79.7
	Not tested	29	15.9
Partner HIV test (N = 234)	Yes	231	98.7
	No	3	1.3
Partner Sero-status(N = 234)	Positive	204	87.2
	Negative	27	11.5
	Not known	3	1.3
Sexual intercourse within three months	Yes	266	67
	No	131	33
Plan to give birth the next two years	Yes	112	28.2
	No	203	51.1
	Not decided	82	20.7
Discussion with partner(n = 234)	Yes	181	77.3
	No	53	22.7
Partner influence to have a/another child	very strong	102	50.7
	Strong	58	28.9

Variables		Frequency	Percent's
	Some influence	16	8
	No influence	25	12.4
Family influence	Very strong	100	25.2
	Strong	91	22.9
	Some influence	75	18.9
	No influence	131	33
HIV disclosure	Yes	313	78.8
	No	84	21.2

## Clinical And Health Service Characteristics

Among reproductive age ART user women 344(86.6%) of study participants take ART more than 24 months duration. The majority 379(95.5%) of participants were WHO clinical/ T stage one, 348(89.2%) CD<sub>4</sub> greater than 200/mm<sup>3</sup> cell, and majority 369(83.2%) viral load not had detected yet

After taking of ART 370(93.2%) study participants respond had got improvement in their health status and 27(6.8%) responded had not got improvement. Out of the total study participants, 282(71.0%) had knowledgeable about prevention of mother-to-child transmission of HIV. Among the participants, 135(34%) were discussed with health care providers about fertility desire (Table 3).

Table 3 Clinical and health service characteristics of reproductive age women attending ART at a public health facility, Gondar city administration, Northwest Ethiopia 2018

Variables		Number	Percent's
Duration of ART(in month)	≤ 24 month	53	13.4
	> 24 month	344	86.6
WHO clinical/T stages	Stage 1	379	95.5
	Stage2,3,4	18	4.5
CD4 Count	≤ 200	41	10.5
	≥ 201	348	89.2
Viral load	Not detected	369	93.9
	Detected	24	6.1
Knowledge of PMTCT	Knowledgeable	282	71
	not knowledgeable	115	29
Health condition after taking ART	Improved	370	93.2
	Had No change	27	6.8
Discussion with a health care provider	Yes	135	34
	No	262	66

## Fertility Desire To Study Participants

The proportion of fertility desire in the future in this study was 55.2% (95% CI, 50.4%, and 60.2%). Of the participants had fertility desire women who had married or live-in relationship have a higher desire 150(68%), followed by women who were single 34(15.5%), other contributed by divorce and widowed 35(15.9%). High desire fertility was seen in the age group 30–39 which was 122(55.7%) followed by the age group of 18–29 which was 88(40%). Among women married/ live in a relationship, 153(65.45) of their partner have a desire for children.

Study participants, showed the desire of children because of many reasons, 77(35.3%) mentioned important of parenting, 59(27.1%) mentioned have no child before, and 37(17%) partner desire (Fig. 1).

## Factors Associated With Fertility Desire

From bivariable logistic regression analysis were, age, marital status, place of residence, duration of marriage, currently having child/children, Family influence, partner desire of children, duration since ART started, history of child loss and discussion with health care provider were found to be significantly associated with fertility desire at P-value of 0.2% (Table 4)

Table 4

Show Binary logistic regression results factors associated with fertility desire among reproductive-age women on ART at the public health facility, Gondar city administration, Northwest Ethiopia 2018.

Variables	Fertility desire		COR (95% CI)	AOR (95% CI)
	Yes	No		
Age	88(22.2%)	20(5.0%)	25.91(10.99,61.07)	1.45(0.29, 7.03)
18–29	122(30.7%)	105(26%)	6.84(3.22,14.531)	0.8(0.216, 2.950)
30–39	9(2.3%)	53(26.4)	1	
40–49				
Marital status	150(37.8%)	84(21.2%)	9.82(3.99,24.39)	2(0.138,28.93)
Married	34(8.6%)	5(1.3%)	37.4(10.401,134.48)	0.39(0.16,9.07)
Single	29(7.3%)	56(14.1%)	2.8(1.07,7.57)	1.15(0.147,8.83)
Divorced	6(1.5%)	33(8.3%)	1	
Widowed				
Place of residence	213(53.7%)	150(37.8%)	6.62(2.67,16.39)	2.7(0.57,12.63)
Yes	6(1.5%)	28(7.1%)	1	
No				
Duration of marriage	80(34.2%)	17(7.3%)	15.68(5.47,44.90)	6.9(1.65,28.81)**
≤ 4 years	36(15.4%)	5(2.1%)	24.0(6.49,88.65)	13.9(2.39,80.39)**
5–9 years	30(12.8%)	40(17.1%)	2.5(0.894,6.98)	1.38(0.35, 5.41)
10–14 years	6(2.6%)	20(8.5%)	1	
≥ 15 years				
Do you have child/children	63(15.9%)	9(2.3%)	7.583(3.64, 15.76.)	0.78(0.17,3.55)
No	156(39.3%)	169(42.6%)	1	
Yes				
Family influence	88(22.2%)	12(3.0%)	19.35(9.46, 39.55)	3.46[1.06,11.25]*
Very strong	60(15.1%)	31(7.8%)	5.1(1.27, 4.18)	2.15(0.793,
Strong	35(8.8%)	40(10.1%)	2.3(1.27, 4.18)	5.821)
Some	30(9.1%)	95(23.9%)	1	1.141(0.39,3.31)
No influence				
Partner desire children	120(51.3%)	33(14.1%)	6.520(3.59, 11.82)	4.27(1.939,9.41)**
Yes	29(12.4%)	52(22.2%)	1	
No				
Duration since ART started	37(9.3%)	16(4%)	2.05(1.10, 3.84)	1.29(0.37,4.49)
≤ 24 Months	182(45.8%)	162(40.8%)	1	
>24 Months				
History of child loss	80(20.2%)	47(11.8%)	2.05(1.04, 2.47)	0.931(0.39,2.19)
Yes	139(35.0%)	131(33.0%)	1	
No				
Discussion with health care provider	100(25.2%)	35(8.8%)	3.43(2.19,5.41)	0.34(0.15,0.75)*
Yes	119(30.8%)	143(36.0%)	1	
No				

\* Statistically Significant at 0.05 < p-value > 0.001, \*\* p value < 0.001

In the multivariable logistic analysis, duration of marriage  $\leq 4$  year, 6.9 times more likely to have fertility desire than  $\geq 15$  years [AOR = 6.9(95% CI: 1.65, 28.81)], and 5–9 years duration of marriage had 13.8 times more likely to have fertility desire compared to women duration of marriage/ relationship  $\geq 15$  years [AOR = 13.8 (95% CI: 2.39, 80.39)]. Women who have strongly influenced by their family to have children had 3.4 times more likely to have fertility desires compared to women who had not family influence [AOR = 3.4(95% CI: 1.06, 11.25)]. Women who had their partner desire children 4.3 times more likely to have fertility desire as compared to women who had no partner desire of children [AOR = 4.3(95% CI: 1.93, 9.41)]. Women who discussed with health care providers had 67% less likely to have fertility desire compared to women who had not discussed with health care providers [AOR = 0.33(95% CI: 0.15, 0.75)] (Table 4).

## Discussions

Childbearing is considered to have great importance in most parts of Africa and being motherhood elevated social status [21–23]. In this study of 397 women of reproductive age, ART users in Gondar city administration have participated, we found that the proportion of fertility desire was 55.2% (95% CI, 50.4, 60.2). Our finding is in line with the fertility desire reported in Addis Ababa (54.6%) and Harrier (56.2%) [12, 24]. However, findings in the present study is lower than the study conducted in Canada 69%, Jamaica 66% [25]. The possible difference might be due to that study done in Canada includes the involvement of different ethnicity that immigrates to Canada with the different socio-cultural group. The result lower than study in Jamaica might be a very low vertical transmission rate that exists in the country [4]. This result is higher than study conducted Fitch hospital (45.5%), Tigray region (39.1%), Addis Ababa Ethiopia (44%), South Africa (44%), and Southern India (33.5%) [14, 26–29]. This might be an improvement in the quality of health (care) that brings a resumption of fertility and HIV negative children born from HIV positive mothers to become increased may encourage them for fertility desire.

In our study women who mentioned their main reasons for current fertility desire were important of parenting 77 (35.3%), have no children before 59 (21.1%), partner desire 37 (17%), believed that by using ART to get HIV free baby 20 (9.2%) and others reasons like fear of childless stigma 6 (2.8%). This is similar to study done, Province Papua New Guanine [30], Ethiopia [31, 32] in which their main reasons were: wanting at least one child/more children, to reach ideal family size, no live child, family/partners influence to have children, their desire for protection and support in old age and replacing previous died child. These indicate that the need for reproductive health services of PLHIVs in HIV care settings was need more comprehensive care to meet the PLHIV's diverse reproductive desires for those who are intended to have children.

Findings from multivariable logistic regression indicate that the duration of marriage was significantly associated with fertility desire women with  $\leq 4$  years and 5–9 years duration of marriage/relationship were 6.9 and 13.8 times more likely to have fertility desire as compared to 15 years and above respectively. This finding is supported by another study in Ethiopia have shown that shortest the duration of a relationship is more likely to desire (more) children than a long duration of relationship [26]. The

possible reason might be due that relatively women with the longer the duration of marriage or relationship, the more chance to achieve, or are closer to achieving their desired family size than those short duration of the relationship.

Family influence for having children was 3.5 times more likely to have fertility desire as compared to those not faced with family influence for having children. This finding is supported by studies conducted in Ethiopia and Sub-Saharan Africa countries [9, 20, 33]. This could be due to people in most Africa settings have considered having children enhance the social status of both women and men[23]. This also might be due to having children establish the PLHIV with higher self-esteem, society give recognition for the marriage and this may help them restore a sense of normalcy in family life.

In this study partner, fertility desire was 4.27 times more likely to have fertility desire as compared to those who have no partner fertility desire. This supported by Evidence from other previous studies [14, 24, 26, 34]. This might be due to the presence of discussion about fertility issues among the couple because of fertility is a concern of both women and men. Partner desire might be due to children secure conjugal ties, offer social security, maintaining the family lineage, and satisfy emotional needs[24]. Women's economic dependence and lack of power at a household level including decision making, 25% of study participants not educated all, and 25% family income below 1000 ETB.

Participants' discussed with health care provider about fertility, Fertility desire was less likely by 66% as compared to those who have no discussed. Our finding is similar to the study done in the Afar region [35]. The possible reason might be women enrolled in ART service and discussed with health care providers gone through health education including the risk of HIV vertical transmission and women's reproductive rights that might have influenced their fertility desire unlike those that have not discussed with a health care provider. This might be promoted women's informed reproductive decisions after taking into account the risk and benefit of having children despite having HIV/AIDS.

## **Limitation Of This Study**

The first limitation might be studied participant was only reproductive age women while fertility can be the concern of both man and women and the joint decision is mandatory. The second limitation of the study might be facility-related factors did not address well, despite, the researchers tried to asses some of the health service provided for the ART women

## **Conclusion**

In this study, we have identified a high proportion of women on ART who have fertility desire. Factors such as duration of marital status (< 4 years and 5–9 years), partner influence, family influence statistically and positively associated with fertility desire, and women discussion of health care provider negatively associated with Fertility desire.

Considering the methods used in this study the results of the study findings can be applicable to other similar settings

It's important to consider male partner's involvement and family-oriented counseling service for ART user reproductive-age women, thus women can decide freely and responsibly about future fertility. ART provider needs to give attention to discussion with ART user reproductive age women regarding on the advantage and consequence of fertility while reproductive age women having HIV/AIDS. We have recommended the future researchers to consider facility-related factors and also a triangulated study since fertility desires more approach to behavior, more factors may explore by the qualitative study.

## **Abbreviations**

AIDS- Acquired Immuno Deficiency Syndrome, AOR -Adjusted Odds Ratio, ART -Anti-Retroviral Therapy, ARV- Anti Retro Viral ,CI- Confidence Interval, EPHI -Ethiopian Public Health Institute, HAART- Highly Active Anti-Retroviral Therapy, OR-Odd Ratio, PLHIV -People living with Human Immunodeficiency Virus, PMTCT- Prevention of Mother to Child Transmission, SPSS -Statistical Package for Social Science, TFR- Total Fertility Rate, WHO-World Health Organization

## **Declarations**

## **Ethical approval and consent to participate**

Ethical clearance was obtained from on behalf of the Institutional Review Board (IRB) of the University of Gondar, College of Medicine and Health Sciences, Institute of Public Health. The support letter was secured from the Gondar city Health office and Gondar University specialized hospital. Permission was obtained from each public health facility in the study area before data collection. The purpose and benefits of the study were explained to the respondents and verbal informed consent was obtained from each study subject before the data collection and guardian/parental consent was not taken because of all the eligible participants are age 18 years and above . Confidentiality of the information was maintained throughout the study by excluding personal identifiers in the questionnaire and data extraction checklist and limiting access to the collected individual data within data collectors and researchers.

## **Consent for publication**

Not applicable

## **Availability of data and materials**

The dataset supporting the conclusion of this article is included within the manuscript.

# Competing interest

Authors declared that there is no conflict of interest

# Funding

There was no external source of fund for this research activities, the cost of the research activities was covered by investigators

# Author's contribution

EA brought the idea, EA, ABG, and TA equally contributed in the proposal development process, data collection, analysis and write up. ABG has prepared the manuscript and all the authors have read and approved the manuscript.

# Acknowledgments

Authors acknowledge the University of Gondar, College of Medicine and Health Science Institute of Public Health, for providing Ethical clearance. Our gratitude forwarded for the Gondar city Health office and Gondar University specialized hospital and each health center administrators for their cooperation and giving support letter. We thanks also data collectors and study participants for their ultimate contribution to the success of this study.

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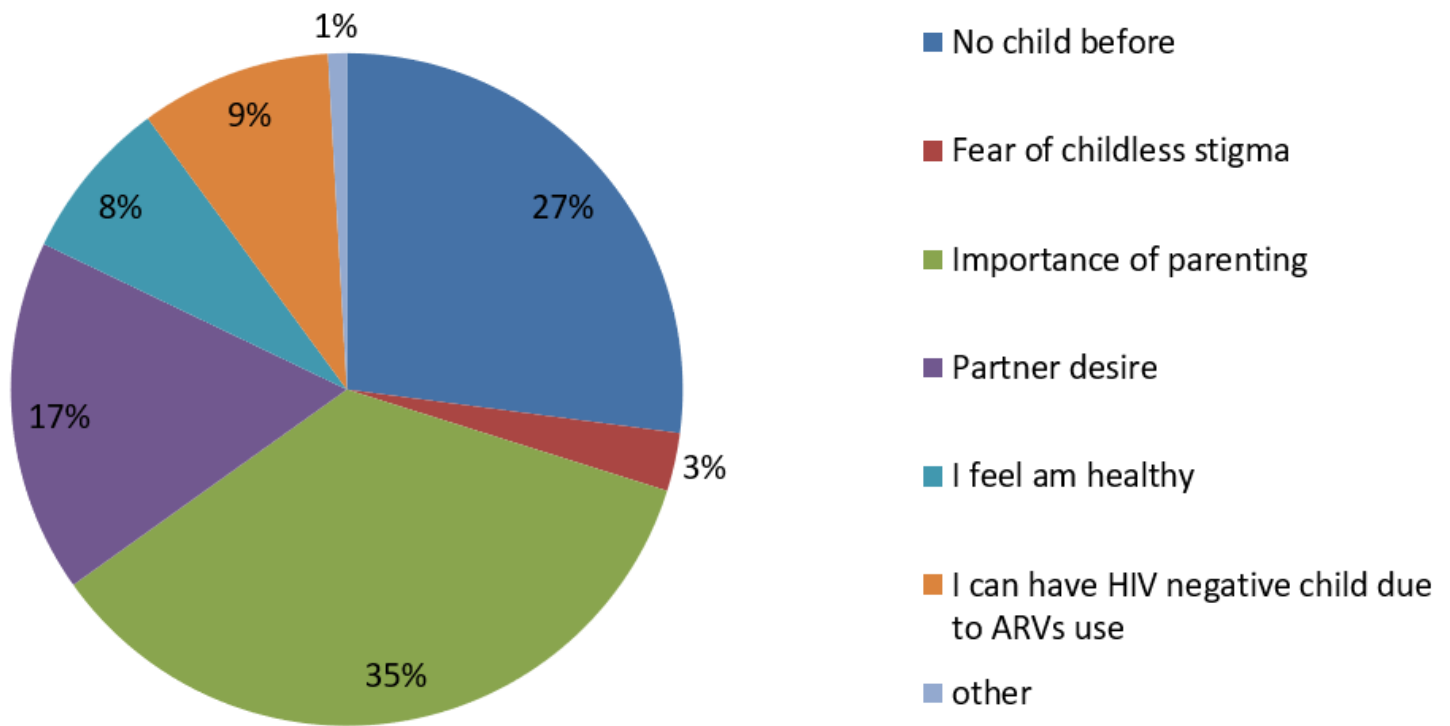


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## Figures

# Reasons of fertility desire



**Figure 1**

Pie chart: Shows Reasons of fertility desire reproductive age women on ART in public health facility, Gondar city administration 2018.

## Supplementary Files

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