



Fertility Desire and Its Associated Factors Among Adults Living with HIV and Followed at CHUD-Borgou in 2019

Cossi Angelo Attinsounon^{1,*}, Aliou Nouhou¹, Alassani Adebayo², Dovonou Comlan Albert², Obossou Achille³, Salifou Kabibou³

¹Teaching and Research Unit in Infectious and Tropical Diseases, Faculty of Medicine, University of Parakou, Parakou, Benin

²Department of Medicine and Medical Specialties, Departmental Teaching Hospital of Borgou (CHUD-B), Faculty of Medicine, University of Parakou, Parakou, Benin

³Mother-Child Department, Departmental Teaching Hospital of Borgou (CHUD-B), Faculty of Medicine, University of Parakou, Parakou, Benin

Email address:

acosange@yahoo.fr (C. A. Attinsounon)

*Corresponding author

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Abstract: *Objectives:* To study the fertility desire and its associated factors among people living with the human immunodeficiency virus (PLHIV) and followed up at CHUD-B in 2019. *Settings and methods:* Cross-sectional, descriptive, and analytical study based on systematic recruitment of every PLHIV received in consultation at the internal medicine unit of the Departmental Teaching Hospital of Borgou (CHUD-B) of Parakou from March 1st to September 30th, 2019. *Results:* Over 442 PLHIV surveyed, more than half (55.66%) wanted to have a child. The average number of children they desired was 3. The desire was common to couples in 82.91% of cases and exposed couples to regular (61.27%) and unprotected (63.68%) sex. More than half of the respondents did not know their partner's HIV status and 39.60% had not informed their partner of their HIV status. The risks of mother-to-child and intra-partner transmission of HIV were known in 70.14% and 60.42% of cases, respectively. The factors associated with fertility desire were age ($p=0.00$), the number of children the patient had ($p=0.00$), the absence of HIV infection in the partner ($p=0.052$), regular sexual relations ($p=0.00$) and having a duration of antiretroviral treatment of between 1 and 5 years ($p=0.082$). *Conclusion:* It is imperative to take into account fertility desire in the follow-up of PLHIV to reduce the risks of mother-to-child and intra-partner transmission of HIV infection.

Keywords: Associated Factors, Benin, Fertility Desire, HIV, Parakou

1. Introduction

In 2021, the number of people living with the human immunodeficiency virus (PLHIV) was 37.7 million, including 36 million adults and 1.7 million children under 15 years old. West and Central Africa accounted for approximately 4.7 million cases. Actually, new infections in this area were 200,000 cases, of which 55,000 were children aged 0-14 years [1].

In Benin, the prevalence of HIV infection has stabilized at 1.2% for more than ten years. This prevalence, estimated at 1.4% among women, is higher than the one among men of

the same age group [2].

The two main modes of transmission of HIV infection in the context of Benin are unprotected sex and mother-to-child transmission. The latter occurs at the end of pregnancy, at delivery, and during breastfeeding [3].

After transmission, the infection evolves in three successive phases, the last of which, called the acquired immunodeficiency syndrome (AIDS), is characterized by severe immune deficiency, high viral replication, and the appearance of opportunistic diseases [4].

Antiretroviral therapy (ART) has changed the natural history of HIV infection by transforming it into a chronic

disease. The efficacy of this treatment is reflected after six months by the disappearance of opportunistic infections, immune restoration, and a halt in viral replication with an immediate improvement in the quality of life of patients [5].

Since 2014, the World Health Organization (WHO) recommended the use of ART as an effective means of preventing HIV infection [6]. Universal access to ART then breaks the chain of HIV transmission and consequently restores the possibility of good sexual and reproductive health to PLHIV.

The improved life expectancy and quality of life of patients gives them the confidence that they can live a normal life, have a fulfilling marital life, and meet all their basic physiological and social needs, including reproduction.

In the African context, fertility desire is socially and culturally important. It represents a means of perpetuating one's name and lineage [7].

Some studies carried out in Africa have shown that there is a significant frequency of fertility desire among PLHIV with many individual, clinical, and social factors associated with this desire. In Nigeria in 2005 [8], Kenya in 2018 [9] and Ethiopia in 2017 [10] women living with HIV had a desire to have a child in the near future of 63.3%, 39.1%, and 40.3%, respectively.

In Benin, a single study was carried out in Cotonou in 2007 by ZANNOU et al. on fertility desire among 110 people living with HIV. The desire was expressed by 47.3% of the respondents [11].

The present study conducted more than ten years after the Cotonou study and more than five years after the implementation of systematic antiretroviral treatment of HIV infection, focused on PLHIV followed in North Benin. The purpose of the study was to determine the frequency of the desire to have children among these patients and to identify its associated factors.

2. Patients and Methods

2.1. Type and Period of Study

This was a cross-sectional, descriptive study with an analytical focus. Data collection occurred over a 6 month period from March 1st to September 30th, 2019.

2.2. Study Population

The study population consisted of all PLHIV followed in the internal medicine department of CHUD Borgou.

2.3. Inclusion Criteria

All PLHIV aged 18 years or older, who were on antiretroviral treatment and who had given their informed oral consent to participate in the study were included in the present study.

2.4. Non-inclusion Criteria

The criteria for non-inclusion of patients were an

unavoidable language barrier and the presence of a clinical situation requiring hospitalization on the day of the consultation.

2.5. Exclusion Criteria

Patients who were hospitalized, patients with no evidence of HIV-positive status, and/or patients who were not on ART were excluded from this study.

2.6. Sampling Technique

This was a systematic recruitment of all patients seen for routine follow-up in the department during the study period who met the inclusion criteria.

2.7. Study Variables

The dependent variable was «Fertility desire». It was declarative and was expressed by the patient as yes (when it exists) or no (when it does not exist).

The independent variables were sociodemographic (sex, age, marital status, religion, number of children), clinical and biological (WHO stage, TCD4 lymphocyte count, viral load, duration of antiretroviral treatment), and other (reasons for desire, sharing HIV status with sexual partner, knowledge of sexual partner's HIV status, knowledge of risk of HIV transmission to partner, knowledge of risk of mother-to-child transmission of HIV).

2.8. Data Collection

Data were collected using a pre-designed questionnaire. A face-to-face interview was used to obtain information on the desire to have children and socio-demographic data. Data on HIV status and antiretroviral therapy were collected from the patients' medical records.

2.9. Data Processing and Analysis

A quality control of the collected data was carried out to search for possible outliers, missing or inconsistent data. Data entry and analysis were done using Epi Data 3.1 software. The frequency tables of the variables and graphs were produced using Excel version 2010. The qualitative variables were expressed as a percentage. Quantitative variables were expressed as mean with standard deviation when the distribution of the variable is normal and by the median with the minimum and maximum when the distribution is not normal. The associations between the variables were determined using the Chi-Square test with 0.05 as the significance threshold.

2.10. Ethical Considerations

The present study obtained the approval of the local ethics committee for biomedical research of the University of Parakou (CLERB-UP). We also obtained authorization from the administrative authorities of the CHUD-BA. Informed oral consent was obtained from the PLHIV through an explanation of the purpose of the study. The data collected

were treated anonymously and in strict confidentiality.

3. Results

3.1. General Data of the Respondents

Among the 442 PLHIV surveyed, 119 (26.92%) were male and 323 (73.08%) were female, i.e. a sex ratio of 0.37. The average age was 39.32 ± 9.34 years.

The age range 29-50 years was the most represented (342 or 77.38%); 51 patients (11.54%) were aged 18-28 years and 49 patients (8.60%) were over 51 years. According to marital status, 287 (64.93%) patients were living with a partner and 64 (14.48%) were single, 58 (13.12%) widowed, and 33 (7.37%) divorced.

3.2. Frequency of and Reasons for Fertility Desire

Over the 442 PLHIV surveyed, fertility desire was expressed by 246, or 55.7% of the respondents. This desire was absent in 196 respondents (44.3%). The average number of children desired was 3 and fertility desire was common to the couples in 82.9% of cases. After the discovery of their HIV status, 204 patients (46.2%) had already had at least one child. The reasons for desire and non-desire are presented in Tables 1 and 2, respectively.

3.3. Sharing of Fertility Desire, HIV Status, and Sexual Behaviour of Respondents

Fifty PLHIV (20.3%) had informed health care personnel of their desire to have children, compared to 196 respondents (79.7%) who did not.

Of the 442 respondents, 351 (79.4%) reported having a sexual partner; 233 (52.7%) did not know the HIV status of their sexual partner; 212 (60.4%) had informed their sexual partner of their HIV-positive status.

Sexual intercourse was regular for 346 (78.3%) respondents and 96 (49.6%) of them had unprotected sex.

3.4. Knowledge of the Consequences of Fertility Desire

According to 288 respondents (65.2%), the desire to have children exposes the sexual partner to HIV. The risk of HIV transmission from the infected mother to her child was known by 310 (70.1%) respondents. Three hundred and twenty-nine respondents (74.4%) knew that there were ways to prevent mother-to-child transmission (PMTCT) of HIV. According to 111 (25.1%) respondents, there is no means of PMTCT of HIV. The main means of PMTCT cited by the respondents are presented in Table 3.

Table 1. Distribution of respondents according to reasons for fertility desire, CHUD-Borgou in 2019 (N= 246).

Reasons for fertility desire	Frequency	%
Current number of children is considered «insufficient»	114	46.3
Cultural need to have a child	84	34.2
Lack of children	39	15.8
Personal desire	9	3.7
Total	246	100

Table 2. Distribution of respondents according to reasons for lack of fertility desire, CHUD-Borgou in 2019 (N= 196).

Reasons for lack of fertility desire	Frequency	%
Sufficient number of children	135	68.9
Lack of financial means	21	10.7
Advanced age	20	10.2
HIV positive	13	6.6
Lack of a partner	6	3.1
Hysterectomy	1	0.5
Total	196	100

Table 3. Distribution of respondents according to their knowledge of the means of prevention of mother-to-child transmission of HIV, CHUD-Borgou in 2019 (N=329).

	Frequency	%
Treatment of the mother with ARVs	315	95.7
Exclusive breastfeeding and weaning	307	93.3
Treatment of the child from birth/ARV	291	88.5
Medically assisted reproduction	132	40.1
Scheduled caesarean section	28	8.5
Avoid breastfeeding	19	5.8

3.5. Factors Associated with Fertility Desire

Several factors were significantly associated with the desire to have children in the univariate analysis and are presented in Table 4. These included age < 40 years ($p < 10^{-3}$), living with a partner ($p < 10^{-3}$), having children ($p < 10^{-3}$), having a regular sexual partner ($p < 10^{-3}$), HIV-negative status of the sexual partner ($p=0.005$), sharing HIV status with the sexual partner ($p=0.001$), duration of ARV treatment between 1 - 5 years ($p=0.003$). The factors associated with fertility desire in the multivariate analysis are presented in Table 5.

Table 4. Factors associated with fertility desire among respondents in the univariate analysis, CHUD Borgou in 2019.

	fertility desire		P
	Yes	No	
Gender (N=442)			
M	64	55	0.63
F	182	141	
Age class (N=442)			
< 40 years	169	55	0.001
≥ 40 years old	77	141	
Existence of children (N=442)			0.001
Yes	207	196	
No	39	0	
Number of existing children (N=403)			0.001
1	51	9	
(2-3)	105	64	
(4-5)	39	79	
≥ 6	12	44	
Marital status (N=442)			0.001
Married	169	118	
Single	47	11	
Widowed	16	17	
Divorced	14	50	
Existence of a sexual partner (N=442)			0.001
Yes	215	136	
No	31	60	
Unprotected sex (N=442)			0.001
Yes	142	81	
No	104	115	

	fertility desire		P
	Yes	No	
Regular sexual intercourse			
Yes	212	134	< 0.001
No	34	62	
Partner's HIV status (N=442)			0.005
Positive	40	46	0.001
Negative	83	40	
Don't know	123	110	
Sharing HIV status as a couple (N=442)			0.001
Yes	124	88	0.003
No	122	108	
Duration of ART (N=442)			0.003
1 year	45	21	0.095
More than 5 years	97	108	
1 - 5 years	104	67	
Last CD4 count			0.095
<200	54	25	0.095
200 - 349)	37	34	
350 - 499)	44	37	
>=500	111	100	

Table 5. Factors associated with fertility desire among respondents in the multivariate analysis, CHUD Borgou in 2019.

Independent variables	OR	95% CI		P
		Lower	Upper	
Age of the respondent	0.894	0.863	0.926	< 0.001
Number of existing children				
2-3	0.212	0.082	0.548	0.001
4-5	0.071	0.026	0.193	< 0.001
6-10	0.053	0.016	0.172	< 0.001
Regular sexual intercourse	3.317	1.696	6.489	< 0.001
Partner's HIV negative status	2.009	1.080	3.738	0.028
Duration of ARV treatment of 1 - 5 years	1.833	1.077	3.120	0.026

4. Discussion

The purpose of this study was to determine the frequency of fertility desire and to identify the associated factors among people living with HIV. It involved 442 PLHIV undergoing antiretroviral treatment at the CHUD of Borgou.

4.1. Frequency of and Reasons for Fertility Desire Among the Respondents

Fertility desire was expressed by 55.66% of the respondents in this study. This desire was shared by the couples in 82.91% of cases. The majority of respondents (56.91%) wanted 2 to 3 children. These results are close to those of Amaike et al. in Nigeria in 2021 who reported a fertility desire of 64.1% [12]. Lower frequencies were recorded by Zannou et al. in 2007 in Benin (47.3%) [11], Gutin et al. in 2014 in Uganda (35%) [13] and Mmbaga et al. in Tanzania in 2013 (37.1%) [14]. These results show that fertility desire is a reality among PLHIV in Africa as well. The improved well-being generated by therapeutic advances, the increase in the life span of patients, and the reduction of stigma are all factors that could give hope to these patients and arouse in them a fertility desire. In addition, patients are becoming more aware of the infection and have reason to believe in it.

Insufficient number of children (46.34%) and the cultural need to have a child (34.15%) were the main reasons for

fertility desire. These reasons were reported by Zannou et al. in Benin, but with different frequencies, i.e. 25.5% and 17.3%, respectively, for cultural necessity and insufficient number of children [11]. The absence of children or an insufficient number of children was also reported in Ethiopia as a reason for fertility desire [10]. In view of these results, fertility desire seems to respond to psychological, cultural, and social requirements. In the Beninese context, and certainly in the sub-region, reproduction is one of the fundamental needs of man. The social and cultural weight of procreation is not negligible in the manifestation of this desire. Other societal realities influence fertility desires from one continent to another and even from one culture to another.

4.2. Frequency and Reasons for Lack of Fertility Desire Among the Respondents

Over the 442 PLHIV surveyed, 44.34% expressed no desire to have a child. The reasons mentioned were the sufficient number of children (68.88%), financial difficulties (10.71%), advanced age (10.20%), and HIV positive status (6.63%). The same reasons were noted in Cotonou in 2007 in relatively low proportions. Indeed, the absence of fertility desire was supported by the existence of a sufficient number of children in 21.8% of cases and HIV positive status in 10.9% of cases [11]. In Spain in 2018, the reasons for the lack of fertility desire among women living with HIV are mainly financial difficulties, sacrifices related to the management of a child, and lack of sexual partners [15]. The differences in the reasons for not wanting to have children in these studies may be explained by the culture and lifestyle of each study setting. However, it should be noted that the fear of having an infected child or of infecting one's sexual partner appears very weakly in the reasons for not wanting to have children. Could this be an effect of the information provided to patients during therapeutic education sessions, reassuring them that they can have a fulfilling sex life as long as they are well adherent to ART and maintain an undetectable plasma viral load? This hypothesis seems to be confirmed by their level of knowledge of the consequences of their fertility desires.

4.3. Sharing of Fertility Desire, HIV Status, and Sexual Behaviour of Respondents

In this study, only 50 of 246 (20.3%) PLHIV had informed their health care providers of their desire to have children. Indeed, there is very little communication about sex life and marital difficulties or concerns between patients and their caregivers. The lack of this dialogue between the two parties often leads to unfortunate situations. This is the case, for example, of patients who become pregnant just a few months after initiation of ART with a still very high viral load. Discussions about fertility desire and the conditions under which this desire can be fulfilled, without harming either the spouse or the child to be born, would have made it possible to avoid this situation.

Of the 442 respondents, 79.4% reported having a sexual

partner whose HIV status they did not know in 52.7% of cases. Only 60.4% of PLHIV had informed their sexual partner of their positive HIV status. Sexual relations were regular in 78.3% of cases and unprotected in 49.6%. Ayekoe *et al.* had noted in Abidjan in 2018 that 72% of PLHIV had regular sex and 61.8% had informed their sexual partner of their HIV positive status. The condom use rate was 53.5% [16]. In another study focusing on women living with HIV, condom use was noted in only 17.4% of cases [17].

4.4. Fertility Desire and Associated Factors

In Parakou, several factors (age, living with a partner, sharing HIV status, having children, having a sexual partner, and duration of antiretroviral treatment) were associated with fertility desire among PLHIV in univariate analysis.

Indeed, the desire to have children decreased with age. Birungi in Rwanda and Wekesa in Kenya found the same result [18, 19]. The number of living children also influenced fertility desire in these studies. Getu Mosisa found that age below 30 years, childlessness, partner desire, and female gender were associated with fertility desire among PLHIV in Ethiopia [20]. Male gender, level of education, and number of years on ART were additionally identified as factors associated with fertility desire in a systematic review of the literature on metanalysis by Xiang Yan *et al.* in 2021 [21]. Indeed, a duration of ART exposure between 1 and 5 years doubled fertility desire in our study.

5. Conclusion

This study reveals the importance of fertility desire among people living with HIV. Several factors influence their decision to have a child. Taking these factors into account is essential for improving their quality of life. This will require the integration of reproductive health as an important link in the quality of care of these patients. This will contribute to a significant reduction in the number of new HIV infections.

Author Involvement

ACA and AN developed the study protocol. AN conducted the data collection. SK corrected the protocol and supervised the study. ACA drafted the manuscript. OA and DCA reviewed the manuscript.

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