ABSTRACT

Introduction: The sexual and reproductive health of people living with HIV is fundamental for their well-being. Antiretroviral therapy and reproductive technologies have significantly improved quality of life of people living with HIV in developed countries. In sub-Saharan Africa, the epicenter of HIV, the sexual practices and fertility of women infected with HIV have been understudied.

Aim: To assess the sexual behavior, fertility intentions, and awareness of preventing mother-to-child transmission of HIV in pregnant women with HIV-negative partners in Yaounde Central Hospital (Yaounde, Cameroon).

Methods: A cross-sectional survey using a semistructured, interviewer-administered questionnaire was conducted at the antenatal unit and HIV clinic in 2014.

Main Outcome Measures: Ninety-four pregnant women infected with HIV provided consistent information on (i) sociodemographic characteristics, (ii) sexual and fertility patterns, (iii) awareness of preventing mother-to-child transmission of HIV, and (iv) their unmet needs.

Results: Although sexual desire had significantly changed since their HIV diagnosis, the women were highly sexually active. Approximately 19% of women had more than one sexual partner and 40% had regular unprotected sex during the 12-month period before the interviews (P < .0001). Twenty-nine percent of women preferred intermittent sexual intercourse and inconsistent condom use to delay pregnancy, but the abortion rate remained high. Age, marital status, and education affected women’s awareness of mother-to-child transmission (P < .05); and no association existed between the number of living children and future pregnancies (rs = −0.217; P = .036).

Conclusion: HIV-infected women living with HIV-negative partners in Cameroon expressed high sexual and fertility intentions with several unmet needs, including safer sexual practices and conception. Incorporating and supporting safe sexual educational practices and conception services in maternal care can decrease risky sexual behavior and vertical transmission.

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Key Words: Sexual Practices; Fertility Intentions; Awareness; HIV; Pregnant Women; Prevention of Mother-to-Child Transmission of HIV; Yaounde Central Hospital; Cameroon
INTRODUCTION

Sexual and reproductive health constitutes an important element of well-being for people living with HIV (PLHIV) and for their partners and children. Studies conducted in HIV-infected women in different settings have reported different levels of interest (7%–45%) in having more children.1–5 Elimination of new infections in children in 2015 and keeping mothers alive were major goals of the UNAIDS.6 Several years ago, many countries discouraged HIV-infected individuals from having children to decrease its incidence.

Antiretroviral therapy (ART) has been acknowledged as vital in the control and prevention of the HIV pandemic.7–11 With the availability of treatment options, HIV infection is increasingly becoming a chronic but manageable disease; and for infected women intending to conceive, flexible approaches such as assisted reproductive techniques are available in most developed countries.12,13 Although they dramatically decrease the chances of sexual and perinatal HIV transmission, such techniques are rarely used in sub-Saharan Africa. Moreover, there is a growing body of evidence indicating that the prevalence of HIV infection might decrease but does not eliminate fertility intentions.1,3,14,15 The management of HIV-infected pregnant women poses specific challenges for the prevention of mother-to-child transmission of HIV (PMTCT) and horizontal transmission in lower-income countries.16,17 However, effective approaches, including education of PLHIV on their fertility intentions, safe sexual intercourse, and the effects of sociodemographic factors, are crucial to overcome vertical and horizontal transmissions of HIV in Africa.18

In 2013, the HIV prevalence in Cameroon was 4.3%.19 Of 19,132 pregnant women infected with HIV who gave birth, nearly 15% of children were infected, up from 8% in 2012, and fewer than 26% of PLHIV were receiving ART.20 Receiving ART could be associated with an increase in sexual desire and fertility intentions. Advances in ART to increase the PMTCT improve women’s sexual and reproductive intentions; nonetheless, reports and studies have reported that the effectiveness of the PMTCT program in Cameroon has decreased in recent years.19,21–23 Sexual desire and fertility intentions of PLHIV are progressively increasing despite HIV status in Africa, yet the situation has been under-investigated. Therefore, we hypothesized that HIV-infected pregnant women still face many obstacles concerning their sexual and fertility intentions in Cameroon.

AIM

This study assessed the sexual behavior, fertility intentions, and awareness of PMTCT in pregnant women with a HIV-negative partner at the Yaounde Central Hospital (YCH; Yaounde, Cameroon).

METHODS

Study Design and Data Collection

The study was a descriptive cross-sectional survey. Participants were recruited through convenience sampling from the antenatal unit and HIV clinic of the YCH from July to October 2014. The YCH is the oldest and best-regarded clinic dedicated to the follow-up of PLHIV in Cameroon. Data were collected using a semi-structured questionnaire derived from the World Health Organization’s UNAIDS measures, models, and previously validated studies.24,25 The questionnaire, originally developed in English, was translated into French according to the local dialect. The reliability of this instrument was established after a pilot test in a comparable population at the Yaounde Teaching Hospital Center.

For inclusion in the study, participants had to (i) be pregnant HIV-positive women at least 18 years old, (ii) provide a medical record confirming the pregnancy, (iii) provide accurate personal and partner information on their HIV status, (iv) complete the questionnaire independently or with the assistance of investigator, and (v) provide written informed consent.

Procedure

All participants were recruited during three main periods: after the normal antenatal visit, after the attendance of a family planning education session, and during the collection of medication for the PMTCT. Interviews were conducted by trained investigators, with each session lasting 45 to 60 minutes.

MAIN OUTCOME MEASURES

We explored (i) sociodemographic characteristics, (ii) sexual practices and fertility patterns (sexual behavior during the past 12 months, number of sexual partners during the past 12 months, frequency of condom use, sexual desire since HIV diagnosis, pregnancies, and outcomes), and (iii) pregnant women’s awareness of the PMTCT.

Ethical Considerations and Participants

Institutional review board approval (653L/MINSANTE/SG/ DHCY) was obtained from the YCH. No incentives were provided to the respondents to motivate their participation in this study. The study team obtained written consent from all participants and ensured anonymity for all participant-related information.

Data Analysis

Data were checked for completeness and accuracy using EpiData 3.1 (EpiData Association, Odense, Denmark) and then exported to SPSS 18.0 (SPSS Inc, Chicago, IL, USA) for analysis. First, all frequencies were calculated to describe participants’ characteristics and the primary outcome variables. Second, χ² test and Fisher exact test were used to examine the associations among sociodemographic characteristics, fertility patterns (number of living children, intended pregnancy, and spacing of pregnancies), and mother-to-child transmission of HIV (MTCT). The Spearman correlation coefficient (r) was calculated to explore the correlation between number of further pregnancies and living children. All tests were two-tailed with a P value less than .05 indicating significance.
RESULTS

Participant and Partner Characteristics

Ninety-four HIV-infected pregnant women with HIV-negative partners were investigated in this study. The mean age of the women was 30.70 ± 5.50 years (range = 18–40 years). Most participants were married (69%) and 65 were Christian (69%); 45 (47%) had completed secondary education. Half the respondents had a stable job and more than 81% were urban residents.

Sexual Behavior and Fertility Intentions

The high prevalence of HIV infection in women in sub-Saharan Africa, sexual desire, and fertility intentions remain a major concern. Sexual practices and fertility intentions are presented in Table 1. Concerning participants’ sexual behavior, 75% of women were in a stable sexual relationship, more than 40% had regular unprotected sexual intercourse, and nearly 7% had casual sexual intercourse with more than three partners during the 12-month period preceding the pregnancy. Overall, condom use was inconsistent, and even after pregnancy 7% continued having unprotected sex. However, the sexual behavior of participants had significantly changed since their HIV diagnosis ($P < .0001$).

Concerning fertility intentions, approximately 49% of pregnancies were unwanted and 29% of women preferred intermittent unprotected sexual intercourse and condom use to avoid

| Table 1. Components of sexual behavior and fertility intentions of participants | Yes, n (%) | No, n (%) | $P$ value ($\chi^2$) |
|---|---|---|---|
| Sexual behavior during past 12 mo | | | |
| Stable sexual partner | 71 (75.5) | 23 (24.5) | <.0001 |
| Unprotected sexual intercourse with stable partner | 38 (40.4) | 56 (59.6) | |
| Sexual partners during past 12 mo | | | |
| 1 | 76 (84.0) | 18 (16.0) | <.0001 |
| 2 | 11 (11.7) | 83 (88.3) | |
| ≥3 | 7 (7.4) | 87 (92.6) | |
| Frequency of condom use since pregnancy occurred | | | |
| Every time | 58 (61.7) | 36 (38.3) | <.0001 |
| Sometimes | 29 (30.9) | 65 (69.1) | |
| Never | 7 (7.4) | 87 (92.6) | |
| Sexual desire since HIV diagnosis | | | |
| Decreased | 59 (62.8) | 35 (37.2) | <.0001 |
| Same as before | 16 (17.0) | 78 (83.0) | |
| Don’t know | 19 (20.2) | 75 (79.8) | |
| Fertility patterns | | | |
| Current pregnancy intended vs unwanted | 48 (51.1) | 46 (48.9) | |
| Recent miscarriages, abortion, or stillbirth (<1 y) | 63 (67.0) | 31 (33.0) | |
| Decision making for pregnancies in couple | | | |
| Personal (woman) decision | 26 (27.7) | 68 (72.3) | .0011 |
| Partner (husband or sexual partner) decision | 23 (24.5) | 71 (75.5) | |
| Join decision | 45 (47.9) | 49 (52.1) | |
| Main reasons leading to future pregnancies | | | |
| Like children and need different sex | 88 (93.6) | 6 (6.4) | <.0001 |
| Married and should have many children | 62 (66.0) | 32 (34.0) | |
| Health improved and under ART | 66 (70.2) | 28 (29.8) | |
| To be like a normal person and have the ideal number of children | 64 (68.1) | 30 (31.9) | |
| Current unmet fertility needs for PMTCT | | | |
| ART initiated or naive | 82 (87.2) | 12 (12.8) | <.0001 |
| ART for pre-exposure prophylaxis and PMTCT | 87 (92.6) | 7 (7.4) | |
| FP services | 64 (68.1) | 30 (31.9) | |
| Education about MTCT | 76 (80.9) | 18 (19.1) | |
| Access to efficient plan for having safe sex practices and uninfected children | 55 (58.5) | 39 (41.5) | |
| Support for ART adherence | 75 (79.8) | 19 (20.2) | |
| Participant self-tasks and inputs for PMTCT | | | |
| Discuss with partner cooperation for use of FP services | 77 (81.0) | 17 (19.0) | <.0001 |
| Pray and remain in prayer to have a child free from HIV | 11 (11.7) | 83 (88.3) | |
| Stay in good health conditions and promote hygiene | 6 (6.4) | 88 (93.6) | |

ART = antiretroviral therapy; FP = family planning; MTCT = mother-to-child transmission of HIV; PMTCT = prevention of mother-to-child transmission of HIV.
unintended pregnancies. In addition, 67% of women had a history of at least one miscarriage, abortion, or stillbirth during the previous 12 months. Nevertheless, approximately 28% of pregnancies were the women’s personal initiative, 24% were their sexual partner’s decision, and 48% had formed a consensus. Furthermore, most women intended to have more children in the future (as soon as possible), the main reason being their quest for a child of a different sex (93%). Other reasons to justify their desire to have more children were they were married and should have many children (66%), they were taking ART medications (70%), and they wanted to be considered regular persons with the ideal number of children (68%).

When asked about their current unmet needs, most women mentioned PMTCT services. Approximately 13% of women were naive to ART at the time of this survey, whereas 93% needed ART for pre-exposure prophylaxis and vertical transmission. Additional current unmet needs were related to family planning services (64%), education (76%), access to efficient means for having healthy children (55%), and the absence of support by a sexual partner adherence to ART (75%).

Predictive Factors Influencing Future Fertility

Despite the fear of bearing an infected baby and the inadequate attitude of preventing new infections, the desire to have more children was persistent among participants. The results presented in Table 2 show that age, partner education, and the ideal number of children were associated with the participant’s fertility. Overall, the results indicated that women older than 35 years involved with a partner with relatively lower academic attainment were more likely to have more children. The decision to have more children seemed to emanate more from the men than from the women ($P < .0001$). However, a negative correlation existed between the number of living children and future pregnancies ($r_s = -0.217$, $P = .036$).

Fertility Intentions and Spacing Pregnancies

Several factors, including age, marital status, education, and occupation, play a key role in intended pregnancy. This study showed that women with stable employment were more likely to plan their pregnancies ($P = .039$); moreover, age and partner’s occupation were associated with spacing pregnancies ($P < .05$). Most women younger than 25 years (66%) did not plan to allow an adequate interval between future pregnancies, whereas those 26 to 34 years old expected to wait up to 2 years before conceiving again (Table 3). Overall, employed women were less likely to declare convenient spacing of pregnancies ($P = .046$).

Factors Influencing Awareness of MTCT in Pregnant Women

When women were asked about the period of MTCT, married women older than 35 years and those who were more educated were more likely to respond correctly ($P < .05$). However, this study found that age, marriage, education, and religion affected women’s awareness of MTCT (Table 4).

**DISCUSSION**

Participants’ Baseline Characteristics

Sociodemographic characteristics, including age, marital status, educational attainment, employment, and culture, were associated with the sexual behavior and fertility intentions of

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**Table 2. Predictive factors influencing number of living children and future fertility**

| Variables | 0 | 1–2 | 3–4 | >4 | $P$ value |
|-----------|---|-----|-----|----|-----------|
| Age (y) | | | | | |
| ≤25 | 7 (33.33) | 6 (28.57) | 8 (38.10) | 0 (0.00) | .0058† |
| 26–34 | 9 (19.15) | 22 (46.81) | 12 (25.53) | 4 (8.51) | |
| ≥35 | 2 (7.69) | 6 (23.08) | 10 (38.46) | 8 (30.77) | |
| Partner education | | | | | |
| Primary or below | 6 (20.00) | 8 (26.67) | 7 (23.33) | 9 (30.00) | .011† |
| Secondary | 6 (15.00) | 20 (50.00) | 13 (32.50) | 1 (2.50) | |
| Higher education | 6 (25.00) | 6 (25.00) | 10 (41.67) | 2 (8.33) | |
| Ideal number of children | | | | | |
| Participant | 15 (16.0) | 46 (48.9) | 21 (22.3) | 12 (12.8) | <.0001† |
| Partner | 44 (46.8) | 18 (19.1) | 2 (2.1) | 30 (31.9) | |
| Future fertility (correlation between number of future and living children) | | | | | |
| 0 child | 1 (5.56) | 6 (33.33) | 8 (44.44) | 3 (16.67) | .036‡ |
| 1–2 children | 5 (14.71) | 18 (52.94) | 7 (20.59) | 4 (11.76) | |
| 3–4 children | 6 (20.00) | 17 (56.67) | 3 (10.00) | 4 (13.33) | |
| >4 children | 3 (25.00) | 5 (41.67) | 3 (25.00) | 1 (8.33) | |

*Future fertility corresponds to the number of future pregnancies.
†By chi-square test.
‡By Spearman correlation coefficient ($r_s = -0.217$; $P < .05$; $r_s$ significant at .05 level, two-tailed).
HIV-infected pregnant women in Cameroon. In contrast to other studies conducted in countries with high HIV prevalence reporting lower fertility intentions,26,27 we found that participants were eager to have more children. Our findings are similar to some other studies from sub-Saharan Africa that reported high sexual desire and fertility intentions in discordant couples.10,17 Although an early diagnosis of HIV infection can inhibit the sexual activities of patients,28 pregnant women in this study were highly sexually active during the 12-month period preceding the pregnancy. Although the fertility intentions were associated with multiple individual demographic characteristics, biological and psychological health-related factors such as receiving ART and cultural conceptions, including ideal family size or the sex of children, also should be considered. Of these factors, childbearing for HIV-infected women was associated with the partners’ infection status and the risk of MTCT, especially in the absence of appropriate care, treatment, and counseling.27,30,32,33 This study showed that sociodemographic factors are fundamental in the expansion of HIV in Cameroon. This is thoroughly in accord with previous studies in African populations demonstrating the strong association between reproductive fertility desires and cultural beliefs.2,34,35 Although most women were married, one third of women were divorced or widowed and had contracted a new relationship with a seronegative partner. This raises the idea that the new relationship could be an indicator of sexual desire or fertility intentions in this population.

### Sexual Behavior

In Cameroon, as in many other countries in Africa,36,37 childbearing is a crucial function in the context of matrimony, families, and communities. Despite the high risk of MTCT and the uninfected sexual partner, there is ample evidence that a substantial proportion of infected women continue to have greater sexual desire and fertility intentions. More than one third of women had regular unprotected sexual intercourse, and approximately 20% reported dating or having casual intercourse with more than one sexual partner during the 12-month period.

| Table 3. Effect of sociodemographic characteristics on intended pregnancies and spacing |

| Variables                  | Intended pregnancy | Pregnancy spacing |
|----------------------------|--------------------|--------------------|
|                            | Yes, n (%)         | No, n (%)          | P value ($\chi^2$) | ASAP, n (%) | AM, n (%) | 1–2 y, n (%) | >2 y, n (%) | DK, n (%) | P value ($\chi^2$) |
| Age group (y)              |                    |                    |                    |             |           |             |             |           |             |
| ≤25                        | 8 (38.10)          | 13 (61.90)         | .400              | 1 (4.76)    | 1 (4.76)  | 0 (0.00)     | 5 (23.81)   | 14 (66.67) | .023*       |
| 26–34                      | 26 (55.32)         | 21 (44.68)         |                    | 4 (8.51)    | 4 (8.51)  | 13 (27.66)   | 14 (29.79)   | 12 (25.53) |             |
| ≥35                        | 14 (53.85)         | 12 (46.15)         |                    | 5 (19.23)   | 3 (11.54) | 5 (19.23)    | 6 (23.08)    | 7 (26.92)  |             |
| Marital status             |                    |                    |                    |             |           |             |             |           |             |
| Married or partnered       | 32 (49.23)         | 33 (50.77)         | .863              | 7 (10.77)   | 6 (9.23)  | 10 (15.38)   | 20 (30.77)   | 22 (33.85) | .261        |
| Widowed or divorced        | 14 (56.00)         | 11 (44.00)         |                    | 3 (12.00)   | 1 (4.00)  | 8 (32.00)    | 3 (12.00)    | 10 (40.00) |             |
| Single                     | 2 (50.00)          | 2 (50.00)          |                    | 0 (0.00)    | 1 (25.00) | 0 (0.00)     | 2 (50.00)    | 1 (25.00)  |             |
| Participant education      |                    |                    |                    |             |           |             |             |           |             |
| Primary or below           | 18 (47.37)         | 20 (52.63)         | .701              | 5 (13.16)   | 4 (10.53) | 6 (15.79)    | 8 (21.05)    | 15 (39.47) | .874        |
| Secondary                  | 25 (55.56)         | 20 (44.44)         |                    | 4 (8.89)    | 3 (6.66)  | 10 (22.22)   | 15 (33.33)   | 13 (28.89) |             |
| Higher education           | 5 (45.45)          | 6 (54.55)          |                    | 1 (9.09)    | 1 (9.09)  | 2 (18.18)    | 2 (18.18)    | 5 (45.45)  |             |
| Participant employment status |                  |                    |                    |             |           |             |             |           |             |
| Unemployed                 | 19 (40.43)         | 28 (59.57)         | .039*             | 7 (14.89)   | 4 (8.51)  | 5 (10.64)    | 13 (27.66)   | 18 (38.30) | .251        |
| Employed                   | 29 (61.70)         | 18 (38.30)         |                    | 3 (6.38)    | 4 (8.51)  | 13 (27.66)   | 12 (25.53)   | 15 (31.91) |             |
| Partner education          |                    |                    |                    |             |           |             |             |           |             |
| Primary or below           | 11 (36.67)         | 19 (63.33)         | .145              | 5 (16.67)   | 3 (10.00) | 5 (16.67)    | 7 (23.33)    | 10 (33.33) | .708        |
| Secondary                  | 24 (60.00)         | 16 (40.00)         |                    | 4 (10.00)   | 4 (10.00) | 9 (22.50)    | 8 (20.00)    | 15 (37.50) |             |
| Higher education           | 13 (54.17)         | 11 (45.83)         |                    | 1 (4.16)    | 1 (4.17)  | 4 (16.67)    | 10 (41.66)   | 8 (33.33)  |             |
| Partner employment status  |                    |                    |                    |             |           |             |             |           |             |
| Unemployed                 | 16 (45.71)         | 19 (54.29)         | .424              | 7 (20.00)   | 4 (11.43) | 9 (25.71)    | 6 (17.14)    | 9 (25.71)  | .046*       |
| Employed                   | 32 (54.23)         | 27 (45.76)         |                    | 3 (5.08)    | 4 (6.78)  | 9 (15.25)    | 19 (32.20)   | 24 (40.68) |             |

AM = after marriage; ASAP = as soon as possible; DK = don’t know.

*P < .05.
leading up to the pregnancy. Contrary to findings from other studies that concluded that HIV-infected women were less likely to have a desire for more children, this study showed a significant variation of sexual behavior in our study population. Although all women were pregnant at the time of this survey, recent abortion and miscarriage rates were high enough to elucidate the sexual activities of the participants. Thus, the high rate of abortion can indicate two scenarios: the high rate of sexual desire and activity and the inadequacy of family planning services. Many women did not use effective contraception, indicating a greater need for oriented and individualized family planning services to help this population.

**Fertility Intentions**

Cameroon has one of the highest maternal mortality rates in the world (782 per 100,000 live births in 2013), with many of these deaths related to pregnancy. In this study, the current pregnancy and motivations for further conception regardless of HIV status were similar to indicators of high fertility intentions. Importantly, approximately 13% of women with four living children expressed their desire to have more children at the time of this survey. Participants reported personal decision, willingness of the sexual partner, or a joint decision as basis for sexual activities and fertility intentions. However, other studies found that HIV-positive women who were aware of their status as a limitation to childbearing were less likely to have many children after their HIV diagnosis. Therefore, the main reasons given to justify participants’ behavior were inadequate family planning services. Thirty-one percent of married women retrospectively reported pressure from their partners to satisfy the partners' sexual desire and reproductive needs, and others who had received ART had improved health with a positive impact on their sexual desire and fertility intentions. In addition, many believed that children are God’s gift, and the desire to have children of a different sex or attaining the ideal family size was mentioned. Therefore, we concluded that sexual desire and fertility intentions are reversibly inhibited soon after the HIV diagnosis and reappear according to sociodemographic factors and initiation of ART in infected women. The positive impact of ART on fertility intentions in PLHIV has been reported in different studies.

Three fourths of women were receiving combined ART, whereas approximately 13% were not on any form of therapy. Despite the well-known positive effects of ART on MTCT and horizontal infections, all priority beneficiaries do not have access. Taking combined ART certainly improves the health of PLHIV, but to decrease horizontal and vertical transmissions efficiently in Africa, discordant couples must be fully informed about their reproductive possibilities and receive appropriate guidance for safer conception when the desire to conceive arises. In many resource-limited settings of Africa, services aimed at promoting safer conception have been incorporated into HIV care and reproductive health units only to a limited extent. By preventing high-risk and unwanted pregnancies, especially in infected women with high parity and those who are at high risk for unsafe sexual practices and abortions, contraceptive use would increase and this might decrease the maternal mortality ratio to approximately 26%, and subsequently decrease new cases of HIV infection among children. Overall, our findings highlight the crucial need for improving maternal and child

### Table 4. Factors influencing the awareness of women on Mother-to-child transmission of HIV

| Variables                      | During pregnancy and delivery | During delivery and breastfeeding | Pregnancy, delivery, and breastfeeding |
|--------------------------------|-------------------------------|-----------------------------------|----------------------------------------|
|                                | Yes, n (%)                    | No, n (%)                         | Yes, n (%)                             | No, n (%)                             | P value |
| **Age group (y)**              |                               |                                   |                                        |                                        |         |
| ≤25                            | 13 (61.90)                    | 8 (38.09)                         | 6 (28.57)                              | 15 (71.43)                            | .776    |
| 26–34                          | 28 (59.57)                    | 19 (40.43)                        | 27 (42.55)                             | 20 (57.45)                            | .302*   |
| ≥35                            | 16 (61.54)                    | 10 (38.46)                        | 22 (84.62)                             | 4 (15.38)                             | .002*   |
| **Marital status**             |                               |                                   |                                        |                                        |         |
| Married or partnered           | 35 (53.85)                    | 30 (46.15)                        | 48 (73.85)                             | 17 (26.15)                            | .007*   |
| Widowed or divorced            | 19 (75.00)                    | 1 (25.00)                         | 10 (40.00)                             | 15 (60.00)                            |         |
| Never married                  | 3 (75.00)                     | 1 (25.00)                         | 2 (50.00)                              | 2 (50.00)                             | .007*   |
| **Religion**                   |                               |                                   |                                        |                                        |         |
| Christian                      | 28 (43.08)                    | 37 (56.92)                        | 48 (73.85)                             | 17 (26.15)                            | .002*   |
| Muslim                         | 4 (40.00)                     | 6 (60.00)                         | 2 (20.00)                              | 8 (80.00)                             | .002*   |
| Other                          | 5 (26.32)                     | 14 (73.68)                        | 10 (52.63)                             | 9 (47.37)                             | .002*   |
| **Educational level**          |                               |                                   |                                        |                                        |         |
| Primary or below               | 10 (26.32)                    | 28 (73.68)                        | 21 (55.26)                             | 17 (44.74)                            | .326    |
| Secondary                      | 19 (42.22)                    | 26 (57.78)                        | 32 (71.11)                             | 13 (28.89)                            | .776    |
| Higher education               | 8 (72.73)                     | 3 (27.27)                         | 7 (63.64)                              | 4 (36.36)                             | .776    |

*P < .05.
health programs to help clients with HIV plan and control their reproductive health.

### Awareness Regarding MTCT

Living with HIV and conceiving remain a great challenge for women with the desire to have uninfected children in Africa. Apart from the traditional PMTCT programs to decrease horizontal and vertical transmissions, almost all pregnant women recognized they could play a key role to decrease MTCT. Participant self-tasks and inputs to promote dialogue with partners for family planning services and praying to have children safe from HIV or promote good health are certainly useful but inadequate to stop MTCT. Despite the reputation of the YCH as the first and most popular center in Cameroon that provides health care to HIV-infected clients, our findings showed many women had no access to ART and approximately two thirds reported recurrent shortages of ART provision and poorly integrated services. Additional recurrent unmet needs reported by the participants included the women’s rights against abuse by the sexual partner, lack of education on safe sexual practices and PMTCT, lack of reproductive health information related to HIV and infertility, absence of periodic testing of biologic parameters, and stigmatization concerns. This observation is contrary to the current Cameroon policy on PMTCT to provide Option B+ ART to all pregnant women living with HIV regardless of their HIV viral load and CD4 cell counts. Recently, the World Health Organization provided new guidelines recommending early lifelong ART for all HIV-infected individuals; thereafter, more than 28 million people became eligible for ART. Obtaining ART in Cameroon remains insufficient. For example, only 26% of PLHIV received ART in 2013; of these, fewer than 5% of children younger than 5 years and two thirds of all pregnant women received treatment. Therefore, highly active antiretroviral treatment to prevent MTCT is limited, and the UNAIDS reported that progress in PMTCT is slow and that programs are often inadequate. One possible solution could be the combination of interventions (family planning services and ART) to optimize reproductive health care services for PLHIV in resource-limited settings.

Analyses found that variables, such as age, marital status, religion, and education, were independently associated with participants’ awareness of the period of MTCT. Overall, the three main periods of vertical transmission, namely in utero, during delivery, and during breastfeeding, remain unknown by many infected women to decrease MTCT. Our findings indicated that marriage and high educational level could increase the knowledge of infected women. Previous studies have identified marriage, stable relationships, and education as factors protecting against new infections. In accordance with these studies, we suggest that education and the promotion of stable relationships in discordant couples play obvious key roles in PMTCT. However, the total fertility rate remains higher in Cameroon at a range of 5.1 to 6.9 children per woman in 2013; therefore, with sufficient and adequate knowledge, counseling, and low-cost techniques such as the integration of routine education, information, and communication in family planning services and HIV clinics or just messaging women with HIV by mobile phone (98% of participants were using a mobile phone at the time of survey) could improve reproductive health in discordant couples. Recent studies in Africa have shown that text messaging can increase medical care for PLHIV; as such, the use of text-message—delivered reminders could be an effective tool for educating women on healthy sexual practices and reproductive care. This would optimize the ability of infected women to decrease the risk of new infections. Globally, we suggest the intensification of the simplest and most cost-effective approaches for the integration and promotion of family planning services based on continual sexual education and constant sensitization of serodiscordant couples in HIV clinics as a sustainable strategy to control the infection.

This study had several limitations. First, it was cross-sectional in nature, with self-reports of participants’ attitudes. Therefore, results might not reflect the sexual behavior and fertility of all PLHIV. Second, we did not include the participants’ male partners to establish the women’s sexual practices and hindering of their fertility intentions. Third, the small population does not allow for the generalization of the results and conclusions of this study.

### CONCLUSIONS

The sexual behavior and fertility intentions of HIV-infected women constitute components of natural human reproductive rights and therefore should not be underestimated. HIV-infected pregnant women living with HIV-negative partners in Cameroon expressed high sexual and fertility intentions. Risky sexual practices and unwanted pregnancies were prevalent among participants and only some were aware of MTCT timing. We suggest the integration of counseling, safer conception, and education of women living with HIV regarding their sexual desire and childbearing. This study calls for more interventions to promote the uptake of PMTCT services irrespective of health care decision makers, professionals, and PLHIV to stop new infections.

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