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Research Article

Reproductive Healthcare Needs and Desires in a Cohort of HIV-Positive Women

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Background. The aim of this study was to determine current contraceptive use, contraceptive desires and knowledge, future fertility desires, and sterilization regret in a cohort of HIV-positive women. *Study Design.* 127 HIV-positive women receiving care at an urban infectious disease clinic completed a survey addressing their contraceptive and reproductive histories as well as their future contraceptive and fertility desires. *Results.* The most common forms of contraception used were sterilization (44.4%) and condoms (41.3%). Less than 1% used a long-term reversible method of contraception (LARC) despite these being the methods that best fit their desired attributes of a contraceptive method. Overall, 29.4% desired future fertility. Only 50.6% of those sexually active had spoken with a provider within the last year regarding their contraceptive plans. There was a high degree of sterilization regret (36.4%), and 18.2% of sterilized women desired future fertility. Multivariate analysis found women in a monogamous relationship had a statistically increased rate of regret compared to women who were not sexually active (OR 13.8, 95% CI 1.6–119, $P = 0.17$). *Conclusion.* Given the diversity in contraceptive and fertility desires, coupled with a higher rate of sterilization regret than is seen in the general population, integration of comprehensive family planning services into HIV care via increased contraceptive education and access is imperative.

1. Introduction

Since the mean desired fertility rate in the United States is 2 [1], American women spend most of their reproductive lives attempting to space or prevent pregnancies; however, nearly half of all pregnancies in the USA are unintended (unwanted or mistimed) [2]. Women at highest risk for unintended pregnancies are also at highest risk for HIV and sexually transmitted infection acquisition, including women of minority race, lower education level, and lower socioeconomic status [3]. Approximately 100,000 women of reproductive age in the USA are infected with HIV, and women of color disproportionately account for 80% of HIV-infected women [4].

The prognosis for people living with HIV has greatly improved and therefore the healthcare community is able to focus on quality-of-life issues rather than only length of life issues [5]. For example, the availability and use of highly

active antiretroviral therapy (HAART) has dramatically reduced mother-to-child transmission and allowed HIV-positive women to live longer, healthier lives which in turn has affected their fertility desires [6, 7]. Cohort studies of HIV-positive women have noted a high use of sterilization and a low use of hormonal contraception, despite desire for future fertility [8, 9]. Reasons for low use of hormonal or other effective contraception were not explored.

Given their HIV status, often coupled with a lower socioeconomic status, these women represent a vulnerable cohort in need of objective support in regards to their reproductive choices. It remains unclear how advances in HIV therapy have influenced HIV-positive women's reproductive needs and choices. Our study was designed to assess the contraceptive needs and fertility desires of an HIV-positive population of women in order to help direct evidence-based, effective, integrated family planning services into the current HIV care setting.

2. Material and Methods

From December 2008 through January 2010, we recruited a convenience sample of HIV-positive women presenting to outpatient medical care at the Infectious Disease Clinic associated with the Grady Health System in Atlanta, GA, USA. This clinic provides care to a predominately urban and underinsured population of HIV-positive men and women. Inclusion criteria included females 18–50 years old, HIV-positive, nonpregnant, and able to speak, read, understand, and consent in English. Exclusion criteria included women with uncontrolled psychiatric illness, unknown HIV status, pregnancy, history of hysterectomy, or who were unable or unwilling to consent to the study. The Institutional Review Board at the Emory University and the Grady Research Committee approved this study protocol, and all subjects provided verbal informed consent.

Participants completed a self-administered, 35-question written survey. To assure confidentiality, surveys were completed in a private room beside the waiting area. The survey inquired about the subject's demographic characteristics, obstetrical history, HIV medical history, most recent contraception usage, desired contraceptive attributes, knowledge of safety and availability of various contraceptives to HIV-positive women, desire for future fertility, sterilization rates and regret, and whether they have discussed their reproductive choices/desires with their physician. Many of the survey questions had been previously validated in other reproductive healthcare surveys. Prior to study initiation, the survey was piloted with 30 participants in the clinic to assess the understandability and feasibility of administering the survey instrument in this population.

2.1. Statistical Analysis. All statistical analyses were completed using SPSS version 17.0. Tests with P values <0.05 were considered statistically significant. Outcomes of interest included contraceptive use, desired contraceptive attributes, contraceptive knowledge, future fertility desires, and sterilization regret. Descriptive statistics were generated. Continuous variables were compared using Student's t -test while categorical variables were compared using Chi-square test. Logistic regression was used to generate odds ratios and 95% confidence intervals for multivariate analyses to identify factors that were associated with sterilization regret and future fertility desire.

3. Results

A total of 127 women were surveyed. The subjects had a mean age of 37.8 years (standard deviation 8.4) with a range 18–50 years. The vast majority of subjects self-reported as black (95%). Subjects' educational background was diverse. The majority of subjects (67.7%) were unemployed. Most had been pregnant in the past (91.3%) and had borne children (81.6%), and 37.3% of subjects had 4 or more prior pregnancies. Nearly half (47.2%) were in a monogamous relationship, and 27.6% were not currently in a sexual relationship. The majority (60.6%) reported always using condoms when they had sex. Nearly half (49.6%) of the

TABLE 1: Demographics.

	Number	Valid %
Age		
18–25	13	10.2%
26–35	32	25.2%
36–45	58	45.7%
46–50	24	18.9%
Ethnicity		
Black	120	94.5%
Hispanic	1	0.8%
White	4	3.1%
Other	1	3.1%
Missing	1	
Education		
Did not complete high school	48	37.8%
Completed high school/GED	39	30.7%
At least some college of technical school	32	25.2%
Completed college or above	8	6.3%
Missing	1	
Reproductive history		
Gravida 1 or more	115	91.3%
Para 1 or more	102	81.6%
Missing	2	
Sexual relationship		
Monogamous	60	47.2%
Non-monogamous	10	7.9%
Not currently sexually active	35	27.6%
Not sure	17	13.4%
Missing	5	
HIV history		
Diagnosed <5 years ago	34	28.8%
Diagnosed 5–10 years ago	27	21.3%
Diagnosed >10 years ago	63	49.6%
AIDS diagnosis	52	40.9%
Currently taking HAART	96	75.6%

women surveyed had been diagnosed with HIV for greater than 10 years, and 28.8% reported being diagnosed less than 5 years. Overall, 40.9% had been diagnosed with AIDS and 75.6% were currently taking antiretroviral medications as prescribed (Table 1).

3.1. Contraceptive Use and Desires. When asked to state the last contraceptive method used, most women reported using female sterilization (44.4%) or condoms (41.3%), with only 24.4% using any type of hormonal method, and less than 1% using long-term reversible contraception (LARC) defined as an IUD or implant (Table 2). While less than 60% of women knew about each of the LARC methods, the most common methods subjects stated they wished to learn more about were the LARC methods and the Nuvaring. Most (91.3%) thought condoms were safe for HIV-positive women; however, less than half of the participants thought

TABLE 2: Last contraceptive method used.

Method	Number*	Percentage
Sterilization	56	44.4%
Condoms	52	41.3%
Depo-Provera	20	15.9%
Abstinence	8	6.3%
None	8	6.3%
Pill	7	5.6%
Patch	3	2.4%
Withdrawal	2	1.6%

**n* = 126, 1 missing.

Overall, 0.8% each used IUD, diaphragm, or cervical cap, NuvaRing, and natural family planning.

TABLE 3: Contraceptive methods HIV-positive subjects have heard of/think are safe to use.

Method	Have heard of number (%)	Think are safe number (%)
Condoms	115 (92.7%)	115 (91.3%)
Pill	114 (91.6%)	55 (43.7%)
Sterilization	112 (90.3%)	41 (32.5%)
Depo-Provera	112 (90.3%)	46 (36.5%)
Patch	93 (75.0%)	30 (23.8%)
Abstinence	77 (62.1%)	78 (61.9%)
Implant	72 (58.1%)	23 (18.3%)
IUD	68 (54.8%)	26 (20.6%)
Diaphragm	65 (52.4%)	28 (22.2%)
Withdrawal	61 (49.2%)	28 (22.2%)
Plan B	54 (43.5%)	22 (17.5%)
Nuvaring	51 (41.4%)	23 (18.3%)
Missing	3	1

the pill, Depo-Provera, the patch, the IUD, the Nuvaring, or implant were safe (Table 3).

Subjects were asked how satisfied they were with their current contraceptive method: 58.1% were very satisfied, 17.9% were somewhat satisfied, and 23.9% were somewhat or not at all satisfied. When asked to choose the three most important factors to them when choosing a birth control method, the most frequently cited attribute was ease of use, followed by efficacy at preventing pregnancy, and low risk of side effects (Table 4). Subgroup analyses of contraceptive use and desires in women ≤ 45 years of age were not significantly different with the exception that knowledge of sterilization was lower (76.0% versus 90.3%, $P = 0.005$).

3.2. Desire for Fertility and Discussion with Providers. Overall, 29.4% of those surveyed desired future fertility. Of these almost half (46.0%) were unsure of when they desired to become pregnant in the future, and only 8.1% desired to become pregnant within the next year. The factor most strongly correlated with future fertility desire was age. Univariate analysis found that women with greater than 4 prior live births were significantly less likely to desire

TABLE 4: Most important attributes of contraceptive method (women were asked to pick their top 3 attributes).

Attribute	Number*	Percentage
Easy to use	80	64.5%
Works well at preventing pregnancy	50	40.3%
Low in side effects	44	35.5%
Low in cost	41	33.1%
Decreases menstrual cycles	31	24.8%
Works on the long term	25	20.2%
Maintains regular menstrual cycles	24	19.4%
Decreases period symptoms	22	17.7%
Quickly reversible	10	8.1%
Hormone-free	8	6.5%
No action required during sex	4	3.2%

**n* = 124, 3 missing.

future pregnancy; however, when controlling for age, this association was no longer significant. In a multivariate model looking at predictors of future fertility desire, age was found to be significantly associated (OR 1.17, 95% CI 1.08–1.26, $P < 0.001$) with younger age associated with increased fertility desire. In addition, women not currently in a relationship were significantly less likely to desire future fertility compared to women in a monogamous relationship (OR 0.26, 95% CI 0.09–0.77, $P = 0.015$). In multivariate analyses, education, reproductive history, HIV history, having a diagnosis of AIDS, or using HAART was not associated with future fertility desire. Only 50.6% of those sexually active had spoken with a provider in the past year regarding their contraceptive plans. Approximately one-third (32.1%) reported that they had either never spoken to a provider or it was greater than 5 years ago.

3.3. Female Sterilization. The mean age of sterilization was 28 years of age with a range 21–39 years. More than half (56.4%) reported that HIV/AIDS was one of the reasons they chose to be sterilized. Sterilization regret was reported in 36.4%, and 18.2% of these women desired to become pregnant in the future. Multivariate analysis looking at age, education, reproductive history, sexual relationship, HIV history, AIDS diagnosis, and use of HAART medication found that women in a monogamous relationship had a statistically increased rate of regret compared to women who were not sexually active (OR 13.8, 95% CI 1.6–119, $P = 0.017$). Age at sterilization and reporting that HIV/AIDS was a factor in deciding to become sterilized were not significantly associated with regret.

4. Discussion

Our sample represented an older reproductive-aged, predominantly black and parous, urban, underinsured cohort, with a high percentage functioning with a long-term diagnosis of HIV. Female sterilization was the most commonly used form of contraception in our subjects (44.4%). Massad et al. reported 23% use of sterilization, 30% use of barrier

methods, and less than 10% use of hormonal methods among US HIV-positive women in a 2007 study [8]. The increased rate of sterilization we found may be related to the characteristics of our cohort as it is similar to the 46.4 rate reported in age-comparable samples of the general US population [10]. Although a substantial number of these HIV-positive women had undergone sterilization, their contraceptive and fertility desires suggest that effective, reversible contraceptive methods are more suitable.

Only 22.9% of subjects were using any type of hormonal method, and less than 1% used long-term reversible contraception (LARC). Again, this is similar to age-comparable rates of method use reported in the general population [10]. This may be in part due to the fact that less than half of the subjects thought the pill or Depo-Provera was safe for HIV-positive women to use and less than a quarter thought the LARC methods were safe. Concern in the literature exists regarding hormonal contraceptive use in women with HIV. Several studies of hormonal contraceptive use in HIV-positive women have indicated an association with increased shedding of HIV-1 DNA in the genital tract, HIV acquisition and transmission, or clinical disease progression [11–14]. However, multiple other studies have failed to demonstrate a link between contraceptive use and HIV-1 acquisition, transmission, and progression [15–18]. The World Health Organization (WHO) in February 2012 concluded, upon the strength of the epidemiological evidence and analysis of risks and benefits to country programmes, that no restrictions (MEC category 1) be placed on the use of any hormonal contraceptive method for women living with HIV [19]. In addition, based on systematic reviews of all available literature, the Centers for Disease Control USA Medical Eligibility Criteria (MEC) for Contraceptive Use classifies all hormonal and LARC methods as acceptable for use (category 1 or 2) in HIV-positive women. Information regarding medical eligibility for all contraceptive methods in women with HIV/AIDS is available at <http://www.cdc.gov/reproductivehealth/usmec>.

Although small studies have noted decreased hormonal levels in the plasma of women using certain classes of antiretrovirals, there is no evidence that this leads to an increase in contraceptive failure in this population. The USA Department of Health and Human Services recommends additional or alternative (nonoral hormonal) contraception for HIV-infected women taking most nonnucleoside reverse-transcriptase inhibitors or protease inhibitors and recommends avoiding coadministering combined OCs with fosamprenavir [20]. Alternatively, Depo-Provera was found to have no interactions with several antiretroviral agents [21, 22]. Consistent use of condoms in addition to hormonal contraceptives is strongly recommended to prevent HIV transmission and in addition may compensate for any potential reduction in efficacy or increased viral shedding with hormonal contraceptives. Our results suggest that additional patient counseling is required to educate HIV-infected women regarding their risks as they appeared to underestimate the safety profile of most effective, reversible contraceptive methods.

When asked which attributes the subjects most desired from their contraceptive method, they chose ease of use, effectiveness, and low risk of side effects. Given these factors, it is not surprising that so many subjects chose female sterilization; however, given the substantial rate of sterilization regret, the most suitable methods appeared to be LARC methods. Like sterilization, the LARC methods (progestin-only IUD, copper IUD, and the progestin-only implant) are all rated as having “top tier efficacy” per the World Health Organization because they have a typical-use failure rate of less than 1% [23]. Also like sterilization, typical-use failure rates of LARC methods are comparable to their perfect-use failure rates because little action is required by the user. Because LARC provides either the lowest hormonal levels (progestin-only IUD, progestin-only implant) or no hormones, they have low side effect profiles and few contraindications to use. Per The US Medical Eligibility Criteria for Contraceptive Use, even women with AIDS can have implants placed (category 1) and may have IUDs placed with close followup or if no other method is available or acceptable (category 2 or 3). Perhaps most important to this population, the reversibility of LARC enables the use of highly effective contraception without the risk of sterilization regret. The World Health Organization and the American Congress of Obstetricians and Gynecologist (ACOG) state that intrauterine devices (IUDs) are a safe contraceptive method for HIV-infected women [4].

Of the women in the study who had been sterilized, one-third (36.4%) regretted their sterilization, and 18.2% reported they desired children in the future. Stanwood et al. found similar rates of HIV-positive women sterilized (47%) and wanting children after sterilization (12%) [9]. However, the United States Collaborative Review of Sterilization found an overall rate of sterilization regret of 7.5% at 7 years in the general population [24]. It is also interesting that in our sample, an additional 18.2% stated they regret their tubal sterilization although they do not currently desire future fertility. A prior systematic review evaluating age and risk of sterilization regret found that women under 30 were about twice as likely as those over 30 to express regret [25]. Our findings were not consistent with this; however, we did find that women currently in a monogamous relationship had statistically higher rates of regrets than those not in a relationship. Future relationship status may be a much more difficult factor to foresee preoperatively than one's age as a predictor of future regret. Nevertheless, our results indicate the need for more in-depth preprocedure counseling in an attempt to decrease the rate of regret in this population.

The relatively high rates of tubal ligation and of tubal regret in our population highlight the importance of our need to counsel HIV-positive women on highly effective reversible contraceptive methods, especially as they are greatly underused and yet appear to suit their contraceptive desires. It also highlights the importance of screening them regarding their future fertility desires. ACOG currently recommends that reproductive plans, including preconception counseling and counseling regarding reversible methods of contraception, should be discussed with HIV-infected women of childbearing age [4].

Our study has the following limitations. As this survey included sensitive topics, social desirability and stigma may have biased respondents' answers. Our study population received care in an academic, urban setting and therefore may not be generalizable to all HIV-positive women in care. As this was a cross-sectional study, we can only make findings of associations, not definitive conclusions on cause and effect.

5. Conclusions and Implications

Women acquiring HIV through heterosexual relationships are currently the largest growing group of HIV-positive patients. Given current therapies, this population is living longer, healthier lives with access to HIV care. Therefore it is important that providers ask HIV-positive women about their reproductive needs and discuss contraception and STI prevention as part of their routine care. Based on our results this population is most commonly using sterilization for contraception despite an unfortunately high level of regret. In addition, this population is under-using LARCs despite these being the type of method they most desire. It is important that providers ask HIV-positive women about their reproductive needs and desires, discuss contraception, and provide preconception counseling if appropriate. There has been little progress integrating family planning services and HIV/AIDS care. Often clinic staff views family planning and HIV prevention as independent services and are not trained to administer them together [26]. Governments and funding agencies have a growing awareness of the need to address the reproductive choices of HIV-positive women and agree that HIV/STI and family planning services should be integrated [27, 28]. Partnerships between HIV/AIDS services and family planning services may be more responsive to the needs of reproductive-age HIV-positive women and may be more likely to provide complete, high-quality care.

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