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Desire for Pregnancy and Risk Behavior in Young HIV-Positive Women

Julie L. Finger, M.D., M.P.H.,[1] Gretchen A. Clum, Ph.D.,[2] Maria E. Trent, M.D., M.P.H.,[3] Jonathan M. Ellen, M.D.,[3] and the Adolescent Medicine Trials Network for HIV/AIDS Interventions

Abstract

This cross-sectional study utilized data from 130 young women with behaviorally acquired HIV to examine the association between desire for pregnancy (DFP) and both sociodemographic variables and sexual risk behaviors. A single item was utilized to assess DFP. Bivariate and multivariate regression analyses were conducted. At the bivariate level, DFP was associated with increased rates of intercourse, decreased condom use, increased partner concurrency, increased rates of unprotected sex with a nonconcordant partner, and a higher number of previous sexually transmitted infections (STIs). Multivariate analyses suggested that DFP was associated with increased likelihood of recent intercourse, condom-unprotected sex, and oral sex. DFP was related to few sociodemographic variables but was associated with having fewer children currently, a history of victimization, and decreased rates of disclosure of HIV status. The few sociodemographic variables that were associated with DFP suggest that social relationships may play a role in DFP. DFP was associated with sexual behaviors that may place young women at risk for STI acquisition and secondary HIV transmission to partners. Health care providers should assess DFP in routine HIV care, providing education about fertility options, interventions for vertical transmission, family planning, and risk reduction counseling.

Introduction

HIV/AIDS cases among American women have drastically increased over the past 20 years, accounting for only 8% of all cases in 1985, but jumping to 25% by 2009.[1] Today, there are over 300,000 women with HIV/AIDS currently living in the United States.[1] Approximately 80% of women with HIV are of reproductive age.[2] With the availability of medications that can extend the lifespan and improve the quality of life of young women, as well as procedures to reduce the risk of vertical transmission in infants,[3] HIV-positive women have new access to reproductive choices. Desire for pregnancy (DFP) in HIV-positive women has thus become a salient issue for screening and comprehensive medical counseling in a clinic setting. Prior research demonstrates a paucity of communication about pregnancy between HIV-positive women and their care providers. The Women Living Positive Survey reported that about half of women who had a prior pregnancy or who were considering pregnancy had a care provider inquire about their interest in childbearing, and approximately 42% of women with current or prior pregnancies were unaware of treatment options for pregnant women with HIV.[4] Additional research suggests that a minority of HIV-positive women have personalized discussions regarding childbearing plans with providers, and most of these are self-initiated.[36] Understanding sociodemographic factors influencing DFP is important for informing providers who may be counseling young women regarding pregnancy planning. Additionally, because DFP might increase risk for secondary transmission through unprotected sex, understanding the array of sexual risk behaviors that may be linked to DFP in HIV-positive young women is imperative for sexual risk reduction counseling and reproductive care.

DFP appears to vary little with HIV status itself.[5–7] Despite possible risks associated with pregnancy outcomes,[8] the percentage of HIV-positive women in the United States desiring children in the future is only slightly less than that of the general female population, approximately 29% versus 36%.[9] This may be in part because HIV-positive women are often in

[1]Division of Adolescent Medicine, Department of Pediatrics, Tulane School of Medicine, New Orleans, Louisiana.
[2]Department of Community Health Sciences, Tulane School of Public Health & Tropical Medicine, New Orleans, Louisiana.
[3]Division of General Pediatrics and Adolescent Medicine, Department of Pediatrics, Johns Hopkins School of Medicine, Baltimore, Maryland.

their prime reproductive years when diagnosed[2] and may not exhibit symptoms of disease or, alternatively, are on medications which control symptoms. HIV status alone, therefore, is not the only contributing factor to pregnancy decision-making for HIV-positive women.

Prior research has revealed associations between sociodemographic and HIV-related variables in HIV-positive women's reproductive decision-making.[6,9–14] Previous pregnancies and abortions are associated with pregnancy[6,14] and a lower number of current children has been found to be positively associated with a woman's desire for future pregnancies.[6,9,12] In addition, concern about the risk of vertical transmission and the health of the future child,[5] as well as the outcomes of previous pregnancies while HIV positive[13] have also been shown to be important factors in pregnancy-related decision-making. While some studies have shown no significant association between DFP and sociodemographic variables,[9–11] others have found significant relationships between DFP and age, ethnicity, education level, gender role, living situation, coping style, perceived threat of HIV, HIV symptomatology, and partner status.[6,9,11–13]

Condom use in HIV-positive women is frequently stressed as a means of preventing acquisition of STIs and decreasing the risk of secondary transmission of HIV. Studies among primarily HIV negative African American adolescent females have shown associations between risk behavior and DFP, including increased rates of casual partners and inconsistent condom use.[15,16] Among HIV-positive women, those who desire pregnancy have lower rates of condom use[10,17] and positive pregnancy outcome expectancies have also been linked to inconsistent condom use.[18] Outside of condom use, however, few additional sexual risk behaviors have been studied in the context of DFP, such as knowledge of partner serostatus or perceived partner concurrency. Identification of sexual risk behaviors that are associated with DFP can be useful for providers to address the spectrum of risk behaviors for counseling regarding reproductive and sexual decision-making. Young women with HIV face a complex decision-making process in dealing with DFP. Comprehensive counseling is essential in clarifying desire for future pregnancy, risks, and options associated with attaining pregnancy.[36] Young women with behaviorally acquired HIV have a particularly high likelihood of pregnancy incidence relative to the general population; approximately 5 times the likelihood among 15–19 year olds and 2.5 times the likelihood among 20–24 year olds.[8] This incidence highlights the necessity of understanding the sociodemographic and risk behaviors that are associated with DFP in young HIV-positive women with behaviorally acquired HIV to inform counseling and medical care.

Methods

The Adolescent Trials Network for HIV/AIDS Interventions (ATN) is a collaborative network of clinical sites providing comprehensive HIV care to adolescents and young adults. This study is a cross-sectional analysis of data from a larger longitudinal, multicenter ATN protocol examining engagement in care among women ages 13–24 with behaviorally acquired HIV. A total of 180 women attending ATN clinics in Chicago, Los Angeles, Miami, New Orleans, and New York City participated in the 18-month protocol. Each institution's human subjects review board granted approval for the study protocol, and written informed consent was obtained from each participant (and from parents if necessary). To increase participant comfort with answering sensitive questions, audio computer-assisted self–interviewing (ACASI) was used to collect all interview data.[19] Interviews were conducted in English or Spanish as preferred by participants. Participants were compensated $25–$50 per study visit, according to local site compensation procedures. Recruitment ran from January 2003 through November 2004, and data collection was completed in May 2006.

Multiple facets of engagement in care were assessed in the protocol, including numerous health indicators and illness-related factors. Because our interest was the association between DFP with sociodemographic and risk behaviors, we selected only those measures that addressed these areas for our data analysis. These included scales measuring psychosocial factors such as illness impact, family functioning, social support, coping skills, depression, spirituality, and history of victimization and assessment of risk behaviors such as substance use and sexual behaviors. Additional questions addressed DFP, previous reproductive outcomes, and past sexually transmitted infections (STIs). The demographics, illness-related factors, and the various psychosocial scales were measured at baseline. Data on DFP, risk behaviors, and gynecological history were assessed at 6-month follow-up. Participants were selected for our study if data were available on DFP and risk behaviors. Of the 180 participants enrolled at baseline, 130 women were included in this data analysis.

Measures

DFP was addressed within the gynecological history portion of the survey (see below). To assess DFP, participants were asked whether they wanted to become pregnant in the next 6 months by either a casual or main partner. Answers were on a 5-point Likert-type scale. Participants answering "maybe," "probably yes," or "definitely yes" were classified as desiring pregnancy ($n = 41$), and those answering "probably no" or "definitely no" were classified as not desiring pregnancy ($n = 89$). Similar approaches have been used in previous studies.[15]

HIV acceptance was measured by the acceptance subscale of the Illness Cognition Questionnaire for Chronic Diseases.[20] This 6-item subscale assesses a person's self-perceived acceptance of a chronic illness ($\alpha = 0.91$).

HIV-stigma was measured using the disclosure ($\alpha = 0.82$) and negative self-image ($\alpha = 0.90$) subscales from the HIV Stigma Scale.[21] Using these two subscales, 21 questions assess participants' perceived and internalized stigma.

HIV-disclosure was assessed by asking participants the size of their friend and family networks and then asking how many friends and family members were aware of their diagnosis. Percent disclosed to was then calculated.

HIV-related quality of life was measured using items adapted from the Diabetes Quality of Life Scale for use with HIV-positive patients.[22] Initial testing of the scale has demonstrated adequate internal reliability and construct validity.[23] The 31-item questionnaire assesses current life satisfaction ($\alpha = 0.88$), illness-related anxiety ($\alpha = 0.84$), and illness burden ($\alpha = 0.81$).

Family functioning was assessed using the Family Functioning Scale.[24] Seven 5-item subscales were included:

authoritarian ($\alpha = 0.60$), cohesion ($\alpha = 0.78$), conflict ($\alpha = 0.73$), democratic ($\alpha = 0.70$), disengagement ($\alpha = 0.45$), expressiveness ($\alpha = 0.71$), laissez-faire style ($\alpha = 0.91$). Alpha for these subscales were lower in this study than previously reported in the literature.

Social support was measured using the 24-question Social Provisions Scale.[25] This scale measures 6 different aspects of social support. A sum of all items gives a global social support score ($\alpha = 0.90$).

Coping skills were measured using the Adolescent Coping Orientation for Problem Experiences Scale (A-COPE).[26] The A-COPE is a 54-item scale that identifies twelve different types of coping strategies utilized by adolescents. A total score can be utilized to assess overall coping skills ($\alpha = 0.81$).

Depressive symptoms were measured by the Center for Epidemiologic Studies Depression Scale (CES-D).[27] The CES-D is a 20 question scale that assesses the severity of depression by asking the frequency of depressive symptoms over the previous week ($\alpha = 0.91$). Spirituality was assessed using a subscale of the Spiritual Wellbeing Scale.[28] Fourteen items measure religious and existential well-being. A sum of the items gives a total spiritual wellbeing score ($\alpha = 0.73$).

Victimization was assessed with the Juvenile Victimization Scale.[29] This scale asks participants behaviorally specific questions about past abusive incidents (e.g., "Did anyone ever hit or attack you with something that would hurt?" or "Did anyone ever touch your private parts when you didn't want it?"). Victimization was categorized as physical or sexual and as occurring before or after the age of 18.

Substance use was addressed with questions regarding use of alcohol or marijuana. The frequency of their use over the past 90 days was anchored on a scale from 0 to 4, where 0 is no use and 4 is daily use.

Gynecological history was assessed with a series of questions that were developed for this study. Questions addressed the number of prior pregnancies, abortions, miscarriages, and living children.

Sexual risk behavior was assessed with questions based on a measure used in the NIMH Multi-site Trial Cooperative Agreement which addresses sexual behavior in the last 90 days.[30] All sexual risk variables were dichotomous, where the "not risky" behavior was coded as "0," and "1" as "risky." The occurrence of sexual intercourse in the last 90 days was coded as 1, no sexual intercourse was coded as 0. Abstinence or consistent condom use with any sexual partner in the last 90 days was scored 0, while inconsistent condom use was scored 1. Unprotected vaginal sex with an unknown status or sero-discordant partner was scored as 1, while protected or unprotected vaginal sex with a seroconcordant partner was scored 0.

Participants were also asked to rate whether or not they thought their partner had other sex partners, and perceived partner concurrency was coded as 1 and perceived nonconcurrent partners were coded as 0. History of STIs was assessed via a self-report of lifetime history of STIs. STIs were summed to create a total of self-reported STI history.

Data analysis

Data were analyzed using SPSS Version 14 (SPSS Inc., Chicago, IL). The associations between DFP and demographic variables, psychosocial factors, risk behaviors, and gynecological history were tested using one-way analysis of variance (ANOVA) for continuous variables and Pearson's χ^2 for dichotomous variables. Logistic or linear regressions as appropriate were then performed. The first regression assessed the relationship of sociodemographic variables with DFP. Only those variables that were significant at the $p < 0.05$ level in the bivariate analyses were included. The second set of regressions then examined the relationship between DFP and sexual risk behaviors. Again, only those variables that were significant at the $p < 0.05$ level in the bivariate analyses were included. In addition, we controlled for those sociodemographic variables that were found to be significant at the $p < 0.05$ level in the first regression.

Results

Demographics

Our sample consisted of 130 HIV-positive young women with behaviorally acquired HIV, and 31.5% reported DFP in the next 6 months. The mean age of this sample was 20.6 years (standard deviation [SD] = 2.11). Seventy-two percent of participants were black and 21% percent were Hispanic. Approximately 40% of the young women had at least a high school diploma, and over half (57%) were currently in school or working. Sixty-three percent of participants were in a long-term relationship of at least a year, and nearly a third (29%) were living with their partner. Seventy-four percent of participants had previously been pregnant, 4% were currently pregnant, and 58% had at least one child. Two thirds reported a history of either physical or sexual abuse in childhood, and one third reported sexual or physical victimization after the age of 18. Two thirds (65%) had tried alcohol previously, but only 6% drank alcohol regularly (i.e., at least once a week). Sixty percent had tried marijuana and 16% used it regularly. One third (32%) had been homeless previously (Table 1).

DFP and sociodemographic measures

In our analyses DFP was unrelated to age, ethnicity, education level, employment status, or income. Neither a participant's current living situation nor relationship status was significantly related either. Sociodemographic variables including coping skills, family functioning, depressive symptoms, illness-related factors, perceived social support, were also not found to be significantly associated with a woman's DFP.

DFP and disclosure of HIV status

We found that those women who wanted to become pregnant had disclosed their disease status to fewer friends and family. On average, women desiring pregnancy had told one third of their family and 40% of their peers that they were HIV-positive. Comparatively, those who did not desire pregnancy had disclosed their status to nearly half of their relatives ($F = 6.07$, $p < 0.05$) and over half of their peers ($F = 3.96$, $p < 0.05$; Table 2).

DFP and victimization

History of childhood victimization was related to DFP. Women with a history of childhood sexual abuse were more than twice as likely to desire pregnancy (odds ratio [OR] = 2.73, $p < 0.05$) as were women with a history of

Table 1. Characteristics of Participants

	%	n *(Total)*		%	n *(Total)*
Demographic factors			Reproductive history		
Age			Currently pregnant	3.8	5 (130)
<21 years old	40.8	53 (130)	Ever pregnant	73.8	96 (130)
≥21 years old	59.2	77 (130)	Ever have miscarriage	29.5	28 (95)
Race			Ever have abortion	30.2	29 (96)
Black	72.3	94 (130)	Have at least one child	57.7	75 (130)
Hispanic	20.8	27 (130)			
Other	6.9	9 (130)	Desire for pregnancy		
Education			Desires pregnancy	31.5	41 (130)
Eighth grade or less	7.7	10 (130)	No desire for pregnancy	68.5	89 (130)
Some high school	50.8	66 (130)			
High school diploma or GED	26.9	35 (130)	Substance use		
Beyond high school	14.6	19 (130)	Any previous use of alcohol	65.4	85 (130)
Living situation			Alcohol at least once a week	6.1	8 (130)
In school	36.9	48 (130)	Any previous use of marijuana	60.0	78 (130)
Working	26.9	35 (130)	Marijuana at least once a week	16.2	21 (130)
Living in own house	43.1	56 (130)			
Living in parents' house	27.7	36 (130)	Victimization		
Ever homeless	31.5	41 (130)	Physical abuse before age 18	59.2	77 (130)
			Sexual abuse before age 18	50.8	65 (128)
Relationship status					
In a relationship	63.0	75 (119)	Any abuse before age 18	67.4	87 (129)
Living with partner	28.5	37 (130)	Physical abuse after age 18	25.6	30 (117)
Married	8.5	11 (129)	Sexual abuse after age 18	19.7	23 (117)
			Any abuse after age 18	34.2	40 (117)

childhood physical abuse (OR = 2.44, $p < 0.05$) relative to their non-abused counterparts (Table 2).

DFP and substance use

History of any previous alcohol or marijuana use was not related to DFP, nor was frequency of alcohol use. Frequency of marijuana use approached significance ($F = 3.910$, $p = 0.05$).

DFP and reproductive history

Past reproductive history, including number of pregnancies, miscarriages, and abortions, was largely unrelated to DFP in this analysis. The only reproductive factor that was related was a participant's number of living children. Those who already had at least one child were less likely to desire pregnancy (OR = 0.44, $p < 0.05$), and the average number of

Table 2. Variables Related to Desire for Pregnancy

	No desire for pregnancy (n = *89*)	*Desire for pregnancy* (n = *41*)	χ^2	*OR*	F	p
Sociodemographic factors						
No children	32	23				
≥One child	57	18	4.67	0.44		0.031
Average number of children	1.00	0.59			5.83	0.017
No childhood sexual abuse	50	13				
Childhood sexual abuse	38	27	6.51	2.73		0.011
No childhood physical abuse	42	11				
Childhood physical abuse	47	30	4.82	2.44		0.028
Percent of family disclosed to	48%	30%			6.07	0.015
Percent of friends disclosed to	57%	40%			3.96	0.049
Sexual behaviors In last 90 days						
No intercourse	37	6				
Had intercourse	52	35	9.20	4.15		0.002
Abstinent/always used a condom	61	17				
Inconsistent condom use	27	23	8.31	3.06		0.004
Abstinent, always uses a condom, or has a concordant partner	54	15				
Inconsistent condom use with a non-concordant partner	32	21	4.61	2.36		0.032
Monogamous partner	70	23				
Partner has other partners	15	13	4.85	2.64		0.028
Lifetime						
Self-reported number of STIs	0.88	1.25			4.23	0.042

OR, odds ratio; STIs, sexually transmitted diseases.

Table 3. Logistic Regression of Desire for Pregnancy and Sociodemographic Factors

	Desire for pregnancy				
Sociodemographic factors	*B*	*Exp(B)*	*CI*	*SE*	p
Number of children	−0.878	0.415	0.178–0.972	0.434	0.043
Childhood physical abuse	0.073	1.075	0.393–2.945	0.514	0.887
Childhood sexual abuse	1.002	2.724	1.033–7.179	0.494	0.043
Percent of family disclosed to	−1.353	0.258	0.078–0.854	0.610	0.026
Percent of friends disclosed to	−0.503	0.605	0.237–1.541	0.477	0.292

CI, confidence interval; SE, standard error.

children among women desiring pregnancy was 0.59 versus an average of 1.0 among those not desiring pregnancy ($F = 5.83$, $p < 0.05$; Table 2).

DFP and sexual risk behaviors

DFP was associated with multiple sexual behaviors. Young women who desire pregnancy were more likely to have engaged in sexual intercourse in the last 90 days (OR = 4.15, $p < 0.01$) and less likely to have used a condom (OR = 3.06, $p < 0.01$). Women desiring pregnancy were more likely to report a partner with concurrent partners (OR = 2.64, $p < 0.05$) and were more likely to have engaged in unprotected sex with partners whose serostatus was unknown or discordant (OR = 2.36, $p < 0.05$). Women desiring pregnancy also reported greater number of previous STIs than those who do not desire pregnancy (1.25 versus 0.88, $F = 4.23$, $p < 0.05$; Table 2).

Multivariate analysis

Multivariate regressions were conducted examining the association between sociodemographic variables and desire for pregnancy, and, controlling for those significant sociodemographic variables, regressions were conducted examining associations between desire for pregnancy and several sexual risk behavior outcomes. Results for the model testing the association between sociodemographic factors and DFP are shown in Table 3. The overall model was significant (χ^2 17.351, $p < 0.01$, with $df = 5$). Current number of children, past reported childhood sexual abuse, and percent of family members disclosed to were significantly related to DFP. Those desiring pregnancy have fewer children, are more likely to have been sexually abused as children, and have disclosed to fewer family members. The second set of regressions (Table 4) examined the relationship between DFP and an array of sexual risk behaviors while controlling for the number of children, childhood sexual abuse, and percent of family members disclosed to. Results suggest that the overall model assessing the relationship between DFP and vaginal intercourse in the last 90 days was significant ($\chi^2 = 12.631$, $p < 0.05$, $df = 4$), and for DFP and oral sex was significant at χ^2 15.73 ($p < 0.01$, $df = 4$). The overall model for condom unprotected sex was significant (χ^2 13.73, $p < 0.01$, $df = 4$). Models testing the association between desire for pregnancy and other sexual risk outcomes of perceived partner concurrency, unprotected sex with an unknown or serodiscordant partner, and self-reported STI history were not significant. In sum, results demonstrate that desire for pregnancy was associated with an increased likelihood of intercourse, decreased condom use during intercourse, and increased oral sex, controlling for significant sociodemographic variables.

Discussion

This study explored sociodemographic and sexual risk behaviors associated with DFP in young women with

Table 4. Logistic Regressions of Desire for Pregnancy and Sexual Behaviors

	Sexual behaviors in the last 90 days				
Sociodemographic variables	*Intercourse* B Exp(B) SE	*Oral sex* B Exp(B) SE	*Inconsistent condom use* B Exp(B) SE	*Inconsistent condom use with nonconcordant partner* B Exp(B) SE	*Partner has other partners* B Exp(B) SE
Total current children	0.168, 1.183, 0.409	−0.328, 0.720, 0.407	0.474, 1.607, 0.413	0.309. 1.362, 0.400	0.195, 1.215 0.485
History of sexual abuse	0.620, 1.859, 0.405	0.000, 1.000, 0.413	0.699, 2.013, 0.397	0.636, 1.890, 0.386	0.251, 1.285, 0.476
Percent family disclosed to	−0.578, 0.561, 0.521	−0.132, 0.876, 0.544	0.126, 1.135, 0.524	−0.053, 0.948, 0.507	−2.093, 0.123, 0.771[a]
Desire for pregnancy	1.190, 3.288, 0.521[a]	1.490, 4.435, 0.444[a]	1.235, 3.440, 0.448[a]	0.803, 2.232, 0.442	0.814, 2.256, 0.501

[a] $p < 0.05$.
SE, standard error.

behaviorally acquired HIV. A majority of young women currently had children, and 31.5% reported some level of desire to become pregnant in the next 6 months. Sociodemographic factors found to be related to increased DFP were history of victimization as a child, decreased disclosure of HIV status, and fewer living children. Previous studies have linked victimization to sexual risk behaviors in the general population[31] and one such study found that a history of sexual assault was associated with becoming pregnant specifically after being diagnosed with HIV.[12] Previous research has also demonstrated associations between childhood sexual abuse and earlier onset of puberty, first intercourse, DFP, and childbirth.[32] It is also possible that abuse-related reactions, such as difficulty with intimacy, trust, and satisfaction in adult relationships[33] may lead to an increased desire for childbearing, perhaps as a strategy for creating one's own family.[34,35]

Our results showed an association between decreased disclosure of HIV status to family and friends, fewer living children, and DFP. A recent study of motivations for pregnancy in HIV-positive women determined that the desire to experience motherhood was the primary motivation for childbearing, followed by perceived partner desire to have a child.[36] Prior research has shown associations between family of origin conflict and DFP in young women.[32] Although family conflict was not directly related to DFP in our study, less disclosure of HIV status to family may reflect weaker relationships with family. Several other studies have also found that DFP is associated with the number of children a women has, with higher DFP found among HIV-positive women with fewer children.[6,9,12] Our data suggest that the actual presence of children seems to be the salient issue, since only the number of offspring was related to DFP and not the number of previous pregnancies, abortions, or miscarriages. Consistent with the association between victimization and DFP, these variables may reflect motivations to create a family of one's own, perhaps to enhance relationships with partners or create new relationships through childbearing.

Notably, numerous sociodemographic and HIV related factors were largely unrelated to DFP in this study. As mentioned earlier, previous studies have yielded conflicting results in these areas. Given these inconsistencies in the research literature, DFP appears to be a complex phenomenon that will be best understood when social and contextual variables are examined in tandem with individual characteristics.

In this study of young HIV-positive women, DFP was associated with increased likelihood of sexual intercourse, decreased condom use, and increased likelihood of oral sex in both bivariate and multivariate analyses. This may be a consequence of strategies to actually attain pregnancy, overall greater sexual activity, or it may reflect engagement in behaviors that are riskier in general. Previous studies have shown that HIV-positive women who intend to become pregnant report higher pregnancy rates,[6] and those who become pregnant are more sexually active and report less contraception use.[14] The bivariate analyses of our study lend support to the concept that those young women who desire pregnancy may be engaging in riskier behaviors in general, outside of behaviors intended for pregnancy. For example, engaging in sex with partners perceived to have concurrent partners, as well as, unprotected sex with partners of unknown or discordant status, both constitute additional risk for self and partners above and beyond unprotected intercourse. This is further supported by the higher self-reported rate of sexually transmitted infections in young women who report DFP. However, it is important to note that in the multivariate analyses, after controlling for potentially confounding sociodemographic factors, only increased frequency of sex, unprotected sex, and oral sex were significantly associated with DFP. Providers should be aware of how DFP may influence sexual behaviors, and provide additional education regarding how to maximize safety if contemplating pregnancy.

The findings from our study must be considered in light of several limitations. First, DFP was measured by a single question. A single item assessment limits our ability to ensure accurate assessment of the phenomenon. Multiple questions and validated measures would improve assessment of DFP, as well as inclusion of items exploring pregnancy intentions, ambivalence, and partner DFP. Additionally, only 3 of the 75 mothers had a child with HIV so we could not assess the impact of having a child with HIV on DFP, which may be relevant to future childbearing desires. We also did not have partner data and thus were unable to assess the relationship between partner desires and DFP or participant's perception of partners DFP. In previous studies, women who thought their partner wanted pregnancy had higher desires for pregnancy[14] and more positive outcome expectancies related to pregnancy.[18] In addition, this study is cross-sectional and does not allow for exploration of causative relationships. Longitudinal studies exploring DFP and subsequent outcomes in this population are needed. Finally, the majority of participants in this study as well as the comparison studies cited are women of color, therefore the results may not generalize to all women. However, this study population does reflect the racial and ethnic make-up of women living with HIV.[1]

Our study suggests that DFP is relevant issue for young HIV-positive women, with 31.5% reporting some level of DFP. Notably, DFP within this population may not be adequately addressed by health care providers, as recent research suggests, a minority of HIV-positive women report personalized discussions regarding childbearing plans with providers.[36] Further, in most of these personalized discussions, women reported that discussions were self-initiated rather than provider initiated.[36] With the advent of increased safety for attaining pregnancy and delivering infants, DFP should be addressed frequently and comprehensibly by healthcare providers. Awareness of sociodemographic factors influencing a young woman's desire for future pregnancy is also important to assist providers in helping to identify young women who may have greater likelihood of desire for pregnancy and to assist with pregnancy planning. Our study suggests that explorations of a young woman's motivations for social relationships, or creation of a family, may be an important focus when counseling for pregnancy planning. Further, DFP is associated with engagement in more frequent, unprotected sex, and oral sex, reflecting increased sexual activity that, while in some cases increasing the odds of pregnancy, may also place young women and their partners at greater risk for secondary HIV transmission or STI acquistion. Assessment of these additional risk behaviors for young women interested in pregnancy will help providers provide comprehensive sexual risk reduction counseling, and provide

harm reduction strategies for young women who wish to attain pregnancy. Various methods for achieving pregnancy, such as *in vitro* fertilization or assisted insemination can help young women achieve pregnancy more safely.[37] For young women without access to these services, providers can they can discuss low cost strategies for attaining pregnancy while minimizing risk to women and their partners.

There is some evidence that pregnancy and childrearing may be beneficial to HIV-positive women. For example, studies have demonstrated positive relationships between pregnancy and self-efficacy,[7,38] psychological adjustment,[5,39] and increased self-esteem.[7,12,17,38,40] Health care provider recognition of the salience of DFP in the lives of young HIV-positive women is necessary for adequate counseling to occur. More research examining sociodemographic factors and risk behaviors in HIV-positive women desiring pregnancy is needed, with longitudinal designs and assessment of partner influences incorporated in these studies. In the interim, it is important that health care providers routinely address DFP when counseling patients on sexual risk behavior, provide appropriate counseling regarding the risks and benefits of pregnancy, and discuss available conception strategies.

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Address Correspondence to:
Gretchen A. Clum, Ph.D.
Tulane School of Public Health and Tropical Medicine
1440 Canal Street TW 19
Suite 2301
New Orleans, LA 70112

E-mail: gclum@tulane.edu