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Factors associated with desire for children among HIV-infected women and men: A quantitative and qualitative analysis from Malawi and implications for the delivery of safer conception counseling

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Factors associated with desire for children among HIV-infected women and men: A quantitative and qualitative analysis from Malawi and implications for the delivery of safer conception counseling

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Improved health outcomes have resulted in people with HIV facing decisions about childbearing. We sought to understand the factors associated with desire for a child among men and women in Malawi. HIV-infected men and women ages 18–40 were invited to participate in a brief interview about fertility desires. Single variable logistic regression was used to evaluate the factors associated with the outcome of fertility desire. Additionally, multiple logistic regression was used to assess the relationship of all the factors together on the outcome of fertility desire. In-depth interviews with women were performed to understand experiences with reproductive health care. A total of 202 brief interviews were completed with 75 men (37.1%) and 127 women (62.9%), with 103 (51.0%) of respondents desiring a child. Being in a relationship (OR: 3.48, 95% CI: 1.58–7.65, $p = 0.002$) and duration of HIV more than two years (OR: 2.00, 95% CI: 1.08–3.67, $p = 0.03$) were associated with increased odds of desire for a child. Age 36–40 years (OR: 0.64, 95% CI: 0.46–0.90, $p = 0.009$) and having a living child (OR: 0.24, 95% CI: 0.07–0.84, $p = 0.03$) were associated with decreased odds of desire for a child. Seventy percent of women ($n = 19$ of 27 respondents) completing semistructured interviews who responded to the question about decision-making reported that their male partners made decisions about children, while the remainder reported the decision was collaborative ($n = 8$, 30%). Eighty-six percent of women ($n = 36$ of 42 respondents) reported no discussion or a discouraging discussion with a provider about having children. HIV-infected women and men in Malawi maintain a desire to have children. Interventions are needed to integrate safer conception into HIV care, to improve male participation in safer conception counseling, and to empower providers to help patients make decisions about reproduction free of discrimination and coercion.

Keywords: HIV; fertility desires; safer conception; prevention of mother-to-child transmission; reproductive health

Background

Improved health outcomes and near-normal life expectancies have resulted in people with HIV facing and making decisions about childbearing (Cooper et al., 2007; Maier et al., 2009). Research from sub-Saharan Africa suggests that the desire for children in the era of antiretroviral therapy (ART) ranges from 45 to 75% (Caroline et al., 2011; Cooper et al., 2009; Schwartz et al., 2012). Despite data suggesting people with HIV desire children, most programs have focused on integrating contraception and ART delivery but have not developed programs to specifically address fertility desires and safer conception. Data suggest that the intent to conceive is associated with HIV transmission among serodiscordant couples (Brubaker et al., 2011), and negative provider attitudes about HIV-infected patients having children result in attempts at conception without provider's awareness and support, with increased risk for both horizontal and vertical transmission (Cooper et al., 2007; Hayford & Agadjanian, 2010; Nduna & Farlane, 2009; Schaan et al., 2012; Schwartz et al., 2012). In Malawi, the average female has 5.7 births, and having and raising children is culturally important for both women and men (National Statistical Office/ICF, 2011). We sought to understand the factors associated with desire for a child among men and women in Malawi and hypothesized that younger age, longer duration of HIV infection, and use of ART would be associated with fertility desire.

Methods

This study was performed at Partners in Hope Medical Center, a free-standing clinic in Lilongwe, and Nkhoma Hospital, approximately 50 km outside of Lilongwe. Both sites are part of the Christian Health Association of

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Malawi and provide free HIV care. Participants were enrolled between August and October 2011 and were a convenience sample based on the following eligibility criteria: HIV-infected male or female, age 18–40, and at least one prior visit to the clinic in either the ART or pre-ART program. These individuals were invited to participate in a brief questionnaire with questions about demographics, relationship status, partner disclosure, fertility desires and intentions, reproductive decision-making, and knowledge of safer conception. For the purposes of the study, fertility desire was described as a positive response to the question "Do you wish to have a/another child, either now or in the future?" and fertility intent as a positive response to the questions "Are you currently trying to have a child?" The first 42 women who completed the brief questionnaire and expressed the intent to have a child or who became pregnant after their HIV diagnosis were eligible to participate in a one-hour semistructured interview, answering questions related to fertility desires and intentions, partner's role in decisions about future children, social support, stigma, and knowledge about safer conception and prevention of mother-to-child transmission (MTCT; Table 1). Ethical approval for the study was granted by the Malawi National Health Sciences Research Committee and by the UCLA Institutional Review Board.

Brief questionnaires were performed in Chichewa. Data were coded and transferred to STATA (version 11.0, College Station, TX, USA) for analysis. Summary statistics were generated for demographic data and fertility desires. Single variable logistic regression was used to evaluate the factors associated with the outcome of fertility desire. Multiple logistic regression was used to assess the relationship of all the factors together on the outcome of fertility desire. Finally, regression analyses were performed to evaluate these factors separately for the male and the female participants.

Semistructured interviews with women were performed in Chichewa and recorded. Recordings were reviewed by a second Chichewa native speaker, translated, and transcribed into English. Qualitative data were coded with Atlas.ti (version 6.2, Berlin, Germany), using a grounded theory approach to identify core themes and subthemes (Miles & Huberman, 1994). The coding scheme was reviewed by two additional authors to refine and categorize the data. Atlas.ti was used to run the analyses using these codes to identify major trends and associations.

Findings

Brief interviews: quantitative results

A total of 202 brief interviews (101 from each site) were completed with 75 men (37.1%) and 127 women (62.9%). The majority of individuals were between 30–35 years (n = 75, 37.1%), followed by 36–40 years (n = 69, 34.2%), 26–29 years (n = 35, 17.3%), and 18–25 years (n = 23, 11.4%). Eighty-seven percent (n = 177) were diagnosed with HIV more than one year prior to completing the survey. Education level was low with 109 individuals (54.0%) having completed primary school as their highest level of education, and only six (3.0%) reporting education beyond secondary school. A total of 169 (83.7%) participants were on ART at the time of the brief interview. The majority of participants (n = 107, 63.4%) had been on ART for more than one year, with 42 (24.8%) on ART for more than three years. The majority of participants were in a stable sexual relationship (n = 159, 78.7%). Partner status was known by 147 individuals (72.8%) in relationships, with 24 (17.5%) being serodiscordant partnerships. HIV status was disclosed to the primary partner by 160 individuals (79.2%). A second partner was reported by 4.5% of participants and more than two partners were reported by 4.0% of participants. The characteristics of the study population stratified by sex are included in Table 2.

A total of 103 respondents (51.0%) desired a child or an additional child, with 64 (62.1%) of these females and the remainder males (n = 39, 37.9%). Of those desiring a child, 89 (86.4%) reported already having at least one living child. Among those with a living child, seven (7.9%) had conceived at least one child after learning their HIV status. Over half of those desiring a child (n = 59, 57.3%) were actively trying to conceive at the time of the brief questionnaire.

In the single variable regression analysis, those in the oldest age strata of 36–40 had reduced odds of desire for a child compared to younger groups (OR: 0.33, $p < 0.001$) and those who already reported having one or more children also had reduced odds of desire for a child (OR: 0.27, $p = 0.02$) compared to those without children. Primary or higher education was associated with desire to have a child compared to those with less than primary school education (OR: 2.56, $p = 0.01$). Being in a relationship and duration of HIV infection of greater than two years were associated with increased odds of desire for a child (OR: 3.46, $p = 0.001$ and 1.97, $p = 0.02$). Sex, ART, and whether the partner's HIV status was known were not significant in this analysis (Table 3).

In multiple logistic regression, age 36–40 years (OR: 0.64, 95% CI: 0.46–0.90, $p = 0.009$), primary or higher level education (OR: 2.67, 95% CI: 1.17–6.12, $p = 0.02$), having one or more living children (OR: 0.24, 95% CI: 0.07–0.84, $p = 0.03$), being in a relationship (OR: 3.48, 95% CI: 1.58–7.65, $p = 0.002$), and duration of HIV more than two years (OR: 2.00, 95% CI: 1.08–3.67, $p = 0.03$) all remained significant (Table 3). We repeated the analysis and looked at the factors separately for men versus women in a multiple regression model.

Table 1. Semistructured patient interview guide for HIV-infected women.

Primary question	Probe
Can you share with us the things that you think about having a child?	Are there any concerns you have about having a child?
Has the availability of HIV medications (ARVs) affected your decision to have children? If so, how?	Does having treatment available make you feel more or less that you would like to have children?
What can HIV-positive women do to try to make sure that they do not transmit HIV to their unborn child?	
If you are in a relationship, do you and your partner know one another's HIV status?	
Does knowing each other's HIV status change your decision to have children?	Why or why not?
Is there is anything you can do to try and lower the risk of infecting or reinfecting your partner while you try to get pregnant?	
Where would you go to get information about how to safely become pregnant?	Would you go to a family member, friend, health care provider/ clinic or hospital, other?
Have you talked with your partner about having a child?	Who raised the issue of having children (you or your partner, or another family member)?
What would you expect your partner to say and do when you talk about having children with him?	
Have you or would you consider discussing your desire to have children with a health care provider (a doctor/nurse/clinical officer/counselor)?	Why or why not?
Has, or would, your partner go with you to see a health care provider to discuss having a child?	Why or why not?
What, if anything, has your health care provider told you about being HIV-positive and having children?	
How did or how would you expect a health care provider to react when you ask him or her about your desire to have children?	
What kind of help would you want your health care provider to give you or your partner when you are trying to get pregnant and have a child?	
Have you ever heard people say that your health care provider can advise you on ways to get pregnant with reduced risk of HIV transmission to your partner?	Do you know of any ways to do this?
For example, do you know how to check the time when a woman is most likely to get pregnant ("ovulation") and then to have sex without a condom only during the 2 or 3 days around this time? This would still involve some risk of transmitting HIV infection but is less risky than having sex without a condom all the time.	If you have heard about this before, where did you hear about this and what do you think about this? If you have never heard about this, do you think you and your partner would do this? If no, what are the reasons why not?
Would your partner come with you to the clinic to talk to a health care provider about this safer way of becoming pregnant?	If no, what might help make your partner(s) more interested to learn and hear about these safer ways to have a child and decrease the transmission of HIV?
Are there any other comments, concerns, or ideas that you can think of that we did not talk about today that we should think about in trying to help women who are living with HIV?	Would your partner come with you to the clinic to talk to a health care provider about this safer way of becoming pregnant?
Would you like to hear more about ways to become pregnant with less risk of transmitting HIV to your partner(s)?	

Table 2. Study population characteristics stratified by sex.

	Men ($n = 75$)	Women ($n = 127$)	Total ($n = 202$)	*P-value
Age category (years) N (%)				
18–25	2 (2.7%)	21 (16.5%)	23 (11.4%)	0.008
26–29	9 (12.0%)	26 (20.5%)	35 (17.3%)	
30–35	31 (41.3%)	44 (34.6%)	75 (37.1%)	
36–40	33 (44.0%)	36 (28.4%)	69 (34.2%)	
Schooling N (%)				
Primary school or higher	66 (88.0%)	99 (78.0%)	165 (81.7%)	0.07
Less than primary school	9 (12.0%)	28 (22.0%)	37 (18.3%)	
In a relationship, N (%)				
Yes	64 (85.3%)	95 (74.8%)	159 (78.7%)	0.08
No	11 (14.7%)	32 (25.2%)	43 (21.3%)	
One or more living children, N (%)				
Yes	64 (85.3%)	120 (94.5%)	184 (91.1%)	0.03
No	11 (14.7%)	7 (5.5%)	18 (8.9%)	
Duration of HIV infection N (%)				
> 2 years	41 (54.7%)	68 (53.5%)	109 (54.0%)	0.88
≤ 2 years	34 (45.3%)	59 (46.5%)	93 (46.0%)	
On ART N (%)				
Yes	66 (88.0%)	103 (81.1%)	169 (83.7%)	0.62
No	9 (12.0%)	24 (18.9%)	33 (16.3%)	
Partner status known N (%)				
Yes	65 (86.7%)	82 (64.6%)	147 (72.8%)	0.001
No	10 (13.3%)	45 (35.4%)	55 (27.2%)	

Note: *Chi-square for men versus women.

No factors that were not significant in the combined model became significant in this analysis. For men, only duration of HIV infection >2 years remained significant with an adjusted OR of 3.13 and 95% CI: 1.07–9.14 ($p = 0.04$). For women being in a relationship (adjusted OR: 5.03, 95% CI: 1.67–15.14 and $p = 0.004$) and primary school or higher (adjusted OR: 3.48, 95% CI: 1.24–9.75, and $p = 0.02$) remained significant; however, there was a trend for older age ($p = 0.07$) and having one or more living children ($p = 0.08$) being associated with reduced odds of desire for a child.

When asked whom the participants would approach for advice about having a child, the majority said a friend ($n = 67$, 65.0%) followed by a family member ($n = 33$, 32.0%), while only one person (1%) reported a preference for speaking with a provider. When asked whether the providers would support their decision to have a child, 50 out of 101 respondents (49.5%) responded "no," 38 (37.6%) responded "yes," and 13 (12.9%) reported they did not know whether their provider would be supportive.

All the participants were asked whether there were methods available that could limit transmission from an HIV-infected to an HIV-uninfected partner who desired natural conception: 75 (37.1%) responded "no," 95 (47.0%) responded "yes," and 32 (15.8%) did not know whether methods were available.

In-depth interviews with women with fertility intentions: qualitative results

Decision-making about childbearing

Nineteen of 27 respondents (70.4%) completing semi-structured interviews who answered the question about decision-making around children reported that their male partners made decisions about children, while the remainder reported that the decision was collaborative ($n = 8$, 29.6%). In many instances, women reported being told by their partner they needed to have a child. When asked how she felt about her husband's decision to have more children, a 38-year-old Lilongwe woman with four children said, "I received the news because I am the woman and he is the husband." Similarly, a 26-year-old Lilongwe mother of one reported, "I agreed with him [about having another child] because I am under his control." In Nkhoma, a 33-year-old mother of six shared this same sentiment, "[The decision] is not mine, but my husband's. I don't want [a child]. My husband is the one who wants [one]."

Thirty-two women (76.2%) reported discussing childbearing desires with their providers. Of these,

Table 3. Single and multiple variable regression analyses for the outcome of desire to have a child ($N = 202$).

Variable category	Desire to have a child, *N* (%)	Do not desire to have a child, *N* (%)	Odds ratio, (95% CI)	*P*-value	Adjusted odds ratio, (95% CI)	*P*-value
Partner status known						
Yes ($n = 147$)	80 (54.4)	67 (45.6)	1.66 (0.89–3.11)	0.11	0.42 (0.14–1.29)	0.13
No ($n = 55$)	23 (41.8)	32 (58.2)				
Sex						
Male ($n = 75$)	39 (52.0)	36 (48.0)	0.94 (0.53–1.67)	0.83	1.04 (0.54–2.03)	0.90
Female ($n = 127$)	64 (50.4)	63 (49.6)				
Age						
> 35 ($n = 69$)	23 (33.3)	46 (66.7)	0.33 (0.18–0.61)	<0.001	0.64 (0.46–0.90)	0.009
≤ 35 ($n = 133$)	80 (60.2)	53 (39.9)				
School						
Primary school or higher ($n = 165$)	91 (55.2)	74 (44.9)	2.56 (1.21–5.44)	0.01	2.67 (1.17–6.12)	0.02
Less than primary school ($n = 37$)	12 (32.4)	25 (67.6)				
Already have one or more living children						
Yes ($n = 184$)	89 (48.4)	95 (51.6)	0.27 (0.08–0.84)	0.02	0.24 (0.07–0.84)	0.03
No ($n = 18$)	14 (77.8)	4 (22.2)				
In a relationship						
Yes ($n = 159$)	91 (57.2)	68 (42.3)	3.46 (1.65–7.22)	0.001	3.48 (1.58–7.65)	0.002
No ($n = 43$)	12 (27.9)	31 (72.1)				
Duration of HIV infection						
> 2 years ($n = 109$)	64 (58.7)	45 (41.3)	1.97 (1.12–3.45)	0.02	2.00 (1.08–3.67)	0.03
≤ 2 years ($n = 93$)	39 (41.9)	54 (58.1)				
On ART						
Yes ($n = 169$)	84 (49.7)	85 (50.3)	0.73 (0.34–1.55)	0.41	0.84 (0.36–1.95)	0.68
No ($n = 33$)	19 (57.6)	14 (42.4)				

six women (18.8%) reported positive/encouraging interactions with their providers and 26 (81.2%) had negative/discouraging conversations with their providers. Among the women who reported discouraging conversations with their providers, eight (30.8%) were told not to have children because it would be harmful to their health. A 32-year-old mother of one child explained:

> They told us that when someone is positive, the immunity of their body goes down. So, someone positive with already low immunity, and then if they get pregnant, it becomes so low to a point of being dangerous.

A 36-year-old Lilongwe woman with four children was told: "It is not good for the [HIV-infected] person to give birth." She was not informed of the specific reasons why she should not have children nor provided with instructions on how to improve her health status to be able to have children more safely.

Participant's responses also revealed the importance of the provider's authority and opinion in patient's decisions about childbearing. A 37-year-old Lilongwe mother of two was scared to approach her provider about having another child. She explained:

> Maybe they would say no. Maybe they would stop me from having another child … because of the virus and the fear [that I would] pass it on to the unborn child.

Many other women made similar comments about the role of provider's opinions on childbearing in their decision-making process: "They said the ones I have are enough." When asked if she questioned why the provider didn't want her to have another child, she responded, "No, but I wanted to ask."

Knowledge of safer conception and prevention of MTCT among women

Nineteen women (45.2%) reported no knowledge and 29 (59.5%) reported some knowledge of prevention of MTCT. Women who reported some knowledge about prevention of MTCT ($n = 15$, 60%) described ARTs given during pregnancy and when delivering. Concern

about HIV transmission to the male partner was reported by only two women (33.3%) of the six in serodiscordant partnerships or where the partner status was unknown. When asked about strategies to prevent transmission of HIV to seronegative partners while trying to have a child, the majority of women (n = 37, 88.1%) had not heard about any methods. Eighteen women (42.9%) reported hearing about timed intercourse but could not provide details about this method. No women knew about self-insemination techniques. All women expressed an interest in receiving more information about safer conception strategies. Almost half of women (n = 20, 47.6%) surveyed were willing to come to a health facility to receive safer conception counseling.

Interpretation

Factors associated with fertility desires in Malawi in the era of ART

Data analysis revealed a number of factors associated with fertility desire in our cohort. Age less than or equal to 35 years was associated with increased odds of desire for a child, and this age-related finding has been consistently documented (Caroline et al., 2011; Taulo et al., 2009; Wagner, Linnemayr, Kityo, & Mugyenyi, 2012). Not yet having children was associated with increased odds of fertility desire, a finding well-supported by similar studies in the region (Kipp, Heys, Jhangri, Alibhai, & Rubaale, 2011; Schwartz et al., 2012; Taulo et al., 2009).

We found no association between ART and desire for a child despite our prior hypothesis that access to treatment and improved health on ART would increase optimism for future children. This analysis was limited due to the high proportion of participants on ART (n = 169, 83.7%). Prior longitudinal data from Malawi showed that relative to HIV-uninfected women, HIV-infected women were more likely to change from wanting children at baseline to not desiring children at one year; however, this study was done in the pre-ART era and the influence of ART could not be explored (Taulo et al., 2009). A recent retrospective study from Malawi showed that longer time on ART was associated with an increased probability of pregnancy, but desire and/or intent for children was not specifically measured (Tweya et al., 2013). There is evidence that ART increases fertility (Gibb et al., 2012; Myer et al., 2010; Zaba & Gregson, 1998), and better studies are needed to disentangle the role of ART on fertility desire and intent and pregnancy rates that may result from return to health and increase in fertility.

Decision-making about childbearing and implications for service delivery

Men perform a critical role in childbearing decisions in Malawi, as demonstrated by women's reports that decisions about children were largely made by the male partner. This suggests that successful safer conception programs must work to involve male partners in reproductive health counseling. Protocols for safer conception counseling have been lacking, although recently South Africa published a comprehensive guideline with suggestions for strategies relevant to resource-limited settings (Bekker et al., 2011). The real-world implementation of this guideline has yet to be evaluated on a large scale, and specific strategies that will result in successful inclusion of male partners are needed.

An important finding from our study was the lack of patient's knowledge about reproductive health including strategies to prevent HIV transmission to a seronegative partner while trying to conceive, interventions to prevent MTCT, and the impact of pregnancy on maternal health. Lack of patient's knowledge may be due to inadequate provider training in these areas and/or a lack of patient's access to counseling and education. Research is needed on models for offering reproductive health care within the HIV care infrastructure, inclusive of contraception and counseling on safer conception.

Discouraging provider attitudes also influenced decision-making about children by women interviewed in our study. The providers may be unfamiliar with data on HIV in pregnancy in regard to studies showing no significant impact of pregnancy on disease progression (Burns et al., 1998; Ekouevi et al., 2007; Tuomala et al., 1997), and may be similarly unfamiliar with the efficacy of prevention of MTCT regimens, and, therefore, reluctant to support pregnancy if they believe that it will result in adverse outcomes for the woman and the future child. The provider's attitudes may also be the result of lack of experience with harm-reduction strategies for safer conception, leading them to discourage behaviors they know to be associated with any risk of harm.

The rollout of Option B+ in Malawi, a policy recommending ART for life for all pregnant and breastfeeding women regardless of WHO stage and/or CD4 count, has provided a new opportunity to reinforce training in ART and reproductive health. The new Malawi National HIV Guidelines recommend provider initiated family planning with Depo-Provera (Malawi Ministry of Health, 2011); however, there has been little attention to addressing fertility desires and harm reduction for conception. Data suggest excellent outcomes with a combination of behavioral and biomedical interventions such as screening and treating for sexually transmitted infections, timed intercourse, or self-insemination, starting the HIV-infected partner on ART, pre-exposure prophylaxis (PrEP) for a

negative partner, and/or sperm washing in relevant scenarios (Matthews, Smit, Cu-Uvin, & Cohan, 2012; Vernazza, Graf, Sonnenberg-Schwan, Geit, & Meurer, 2011). Implementing basic behavioral safer conception counseling is particularly salient in Malawi, given that the biomedical strategies such as universal ART, PrEP for negative partners, and sperm washing will remain unavailable long term, due to serious resource constraints.

Study weaknesses

Our study was conducted in one region of Malawi, limiting the ability to generalize results across Malawi and other sub-Saharan countries. Additionally, our study was not powered to detect the differences between the two clinics (urban versus rural, free-standing clinic versus hospital-based clinic). The majority of participants in our study were on ART, limiting our power to detect a difference in fertility desires between those in pre-ART programs and those on ART. Our study lacked complete data on partner's HIV status such that we could not reliably determine the role of serodiscordance on decision-making about children. Additionally, we do not know if our findings reflect the views of people with HIV not engaged in care, since these individuals were not captured in the study. Semistructured interviews were only performed with women and our study therefore lacks insight into men's decision-making about children as well as men's knowledge about safer conception and prevention of MTCT.

Conclusions

Our findings demonstrate that HIV-infected women and men in Malawi maintain a desire to have children after an HIV diagnosis. Despite being engaged in HIV care, individuals were not receiving counseling regarding their fertility options and safer conception techniques. In addition, women who raised the topic of childbearing with their providers commonly reported discouraging provider attitudes, and male partners were not included in reproductive and safer conception discussions, despite their role in driving decisions. Comprehensive reproductive health programs are needed that integrate safer conception into HIV care, encourage and facilitate male participation in safer conception counseling, and empower providers to help patients make decisions about reproduction free of discrimination and coercion.

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