Achieving fertility aspirations in high HIV settings: Using anomalous case analysis in Zambia

Abstract

Achieving one's fertility desires in high HIV settings requires simultaneously navigating HIV risk while attempting to get pregnant. The HIV prevalence rate in Zambia is 14.3%. We conducted follow-up in-depth interviews with a subset of quantitative survey respondents (half of whom were HIV-positive) who were outliers in their fertility aspirations to improve our understanding of factors that influence fertility desires. Preliminary analyses found that fertility desires decreased after HIV diagnosis only for some even though people who were HIV-positive said that their families stopped encouraging them to have more children. Drug interactions between ARVs and contraceptives limited couples' contraceptive options and exposed women to unintended pregnancy. Abortion was just as stigmatized for the HIV-positive women as for anyone else since there was a great deal of confidence in ARVs allowing women to have a healthy pregnancy. Examining outliers provides insight into different factors which influence childbearing desires in Zambia.

Background

In Sub-Saharan Africa, which has a high overall rate of HIV as well as a high fertility, many individuals are attempting to achieve their fertility goals in the context of HIV. Some individuals may have contracted HIV before they have begun childbearing and may be trying to navigate becoming pregnant while avoiding HIV. In low resource contexts, many individuals must expose themselves to the risk of HIV as a consequence of attempting to conceive. Others have begun childbearing before they contracted the disease but may be trying to complete their family. These individuals may be making decisions based their perception of the probability of having an HIV-positive child, having perhaps already lost a child to HIV, and the toll they perceive a(nother) pregnancy to take on their compromised health condition. Additionally, HIV-positive women may have concerns about physiological interactions between modern contraceptives and their compromised health status or their use of antiretrovirals (ARVs). And layered upon all of this, individuals are making decisions sometimes with uncertainty regarding their HIV status (they may just have suspicions regarding their status), their partner's HIV status, and also, and complexities related to whether or not to disclose his/her actual or perceived status to his/her partner, provider and his/her broader social network.

Zambia has an HIV prevalence rate of 14.3% and a total fertility rate of 6.2, but women of reproductive age (15-49) have a wanted total fertility rate of 4.6 (ZDHS 2009). Excess fertility, that is the difference between wanted total fertility and actual total fertility, is greater among the HIV-positive population than the population overall (Bankole et al. 2011). Fertility preferences differ, not surprisingly, for men and women. The ideal number of children men ages 15-49 want, on average, is 4.9 children (0.3 more than women). Contraceptive prevalence, including traditional and modern methods, is 40% among married women, leaving an unmet demand for contraception of 14% among this population. These national trends mask regional variations yet they serve to describe, in broad strokes, the HIV, fertility, and contraceptive use profile of this Sub-Saharan African country.

From a reproductive rights perspective, HIV-positive individuals have the right to have the number of children that they want to have and that they must be assisted to have the healthiest pregnancies possible. Yet continued childbearing among HIV-positive individuals, particularly those without consistent access to ARVs to prevent mother to child transmission and prolong the mother's life long enough to raise her children to adulthood, raises public health concerns about transmission as well as financial concerns for those who assume responsibility for orphaned children. In Zambia, 4.9 percent of

youth under age 18 live with their mother and their father is dead, 1.1 percent live with father but their mother is dead, and 2.7 percent have lost both parents. Orphaned children are more likely than other children not to be in school, less likely than other children to possess basic material needs (shoes, two sets of clothes or a blanket) and more likely to be undernourished (ZDHS 2009).

Men's desire for more children as compared to women in conjunction with the total fertility rate being higher than the wanted fertility rate demonstrates how fraught the terrain of reproduction is. The effect of HIV as a significant mediator on pregnancy preferences as well as fertility behavior further complicates reproductive decision-making, negotiation and behavior. Understanding the social context of reproduction among the HIV-positive requires considering a number of additional variables that are only relevant to this population: time since diagnosis, whether on ARVs, partner's HIV status, and whether the individual has disclosed his/her HIV status to his/her partner. To increase our knowledge about how social processes work to influence fertility decision-making within the context of HIV, we carried out in-depth interviews with women and men of reproductive age in Zambia.

Methods

Anomalous Case Analysis

Anomalous Case Analysis (ACA) is an example of how survey data can inform qualitative data analysis and vice versa, thereby allowing us to improve theories and measures (Pearce 2002). Quantitative surveys and qualitative fieldwork each tend to miss findings that the other type of method can more easily bring to light. While high quality survey research provides the power to do a variety of comparisons across large groups, it is limited in its ability to discover new ideas or identify misunderstood concepts. Qualitative methods are better at revealing new information and the rich context of issues under study. Qualitative follow-up interviews with anomalous cases as identified from surveys can allow researchers to add depth and refinement to variables included in the survey as well as uncover additional factors to explain dependent variables from the survey that may not have been previously considered. Using ACA, one can use insights gained from in-depth interviews to modify regression models originally run from survey data, with the goal of improving the goodness of fit as compared to the original model. After conducting community- and facility-based surveys of reproductive aged men and women in Zambia, we employed ACA to enrich our understanding of the relationship between HIV and fertility preferences and behavior in Zambia beyond what the survey data alone could provide. The study received Institutional Review Board approval from the Guttmacher Institute's IRB as well as from the University of Zambia Biomedical Research Ethics Committee and the Zambian Ministry of Health's Permanent Secretary's office.

Selection of respondents

The survey methodology has been described in-depth elsewhere (Kavanaugh et al. n.d). Survey respondents who gave consent for re-contact or who were not asked at the end of their survey if they were willing to be re-contacted were included in the sample for follow-up. Among those who were eligible for re-contact, respondents were selected based on their responses to specific fertility-related questions on the survey. Using a simple logistic regression model, we predicted responses to the question, "[After this pregnancy,] Would you like to have a(nother) child or would you prefer not to have any (more) children?" The questions were identical on the men's and women's community-based and facility-based surveys. Sociodemographic variables used to predict whether the respondent wanted to continue childbearing were age category, education, union status, and number of children alive at the time of the survey. Based on the distribution of the data, respondents were categorized as left-tail respondents (not wanting a(nother) child when their sociodemographic characteristics predicted that they did),

predicted respondents (wanting a(nother) child when their sociodemographic characteristics predicted that they did and not wanting a child when their characteristics predicted they didn't (i.e., responding according to what their characteristics predicted)), and right-tail respondents (wanting another child when their sociodemographic characteristics predicted that they did not). While ideally, outliers fall two or more standard deviations to the left and to the right of the distribution, due to non-variability in the data and small facility-based samples, we had to relax the restriction. We tried to use the strictest criteria we could for each data set that still guaranteed enough respondents. For the women's community dataset, outliers fell 1.75 standard deviations from the mean, for the women's facility dataset, outliers fell 1.3 standard deviations from the mean. For the men's community dataset, outliers fell at 1.4 standard deviations from the mean, and for the men's facility dataset, outliers fell 1 standard deviation from the mean. From the eligible respondents for each dataset, we randomly selected 3 left-tail outliers, 3 right-tail outliers and 6 predicted cases. Qualitative data were collected from a small subsample of the quantitative respondents (women age 15-49 and men age 15-59): a total of 45 respondents were interviewed. Table 1 shows the distribution of respondents.

Table 1 Approximately Here

Selection of interviewers

Four interviewers (two male and two female), all of whom had been survey interviewers on the quantitative portion of the study, conducted the qualitative interviews. They were trained during a week-long training during which time pilot interviews were conducted with male and female respondents in local languages outside the communities selected for the study. Based on feedback from the interviewers, the interview guides were modified before fieldwork began.

Data collection

Interviews were conducted took place in the first half of 2011. The time between the survey and the follow-up interview was approximately one year. The follow-up in-depth interviews covered the same topics as the survey: contraceptive use and contraceptive counseling, fertility aspirations, abortion attempts and actual experiences obtaining an abortion, perception of abortions occurring in the community, knowledge and opinions about the abortion law in Zambia, opinions about the options HIV-positive women have when they become pregnant, perceptions and perpetration of stigma and discrimination against HIV-positive individuals who reproduce, and policy and program recommendations. Respondents were also asked about perceptions of whether and how health providers treat HIV-positive women and men differently from HIV-negative women and men; reactions to opt-out testing; and opinions about the options HIV-positive women have when they do become pregnant, including availability of drug treatments (such as Nevirapine) and related PMCTC services. In addition, for the community-based sample, perceived risk of HIV (the nature of relationship with partner(s) and whether the risk of unintended pregnancy was perceived to be separate from the risk of HIV infection or whether they were perceived to be joint risks) were also included. For the HIV-positive (facility-based) sample and for the few community-based respondents who self-identified as HIV-positive, additional topics that were explored included: with whom they chose to share their diagnosis; pregnancy experience(s) since being diagnosed HIV-positive including partners' reactions to the pregnancy/pregnancies; and contraceptive counseling and contraceptive use, including experience of barriers to use, post-HIV diagnosis. HIV-positive respondents were asked about whether they knew their HIV status before becoming pregnant, if they wanted to get pregnant and why. If they did not know their status when they became pregnant, they were asked about options for resolving the pregnancy/pregnancies that they considered and if they carried the pregnancy/pregnancies to term, why they decided to go through with the pregnancy/pregnancies. For this subset, the interview also

probed on directive counseling by providers (e.g., whether the respondent was advised that certain contraceptive methods are not safe or recommended for HIV-positive women, pressure to be sterilized or to terminate pregnancies).

Community-based qualitative interviews were conducted with respondents who were identified from and interviewed at their residence while facility-based respondents were identified from and interviewed at a health facility where they were receiving care. While the surveys had been conducted in three provinces, respondents were drawn only from Lusaka Province to reduce field costs and improve the efficiency of the field team. Interviews were audio-recorded using an electronic digital recorder after the interviewer obtained consent from the respondent. Respondents who did not wish to be audio-recorded were not able to participate in the study since a full transcription of the interview was needed for analysis.

The qualitative interviewers were provided with copies of the original surveys of the anomalous cases with whom they were charged to follow-up. Interviewers were gender-matched with the respondents. Interviewers reviewed each respondent's completed questionnaire prior to beginning the interview so that the interviewer could already have in mind particular places to probe. The survey itself was not shown to the respondent and respondents were not prompted on their results from the survey. Interviews were conducted in English, Nyanja and Bemba. Some interviews took place over two visits when the interviewer was not able to complete the interview in one sitting. Interviews lasted between 38 and 114 minutes.

Data processing and analysis

The interviews were transcribed by the interviewers verbatim in the local language (Bemba or Nyanja) in which the interview was conducted. The interviewer then translated the interviews to English. Transcripts were reviewed by a supervisor who had read through both the local language and translated transcripts. Clarifications were made with interviewers where information was ambiguous or where information was missing; in certain cases interviewers re-contacted respondents to obtain clarification.

After the cleaning process, the interview transcripts were coded with, NVIVO9 qualitative software (QSR International, Melbourne, Australia). Thematic codes were constructed a priori from the primary themes in the interview. Transcripts were double-coded and compared between coders in order to ensure the same understanding of what the codes should encompass as well as consistent coding of all transcripts. Once the data were coded, we developed matrices for the nodes of greatest interest. Matrices allow for a visual representation and organization of the data by identifying prevalent themes and seeing how often these themes emerge. It's also possible to include in the matrices illustrative quotes. Once common themes were identified, then the data were compared to see if the themes varied according to whether the respondent had been chosen from the left, right or predicted part of the distribution. Throughout, special attention was paid to how HIV influences fertility desires and decision-making.

<u>Preliminary results</u>

The demographic characteristics of the respondents come from the surveys. Most of the respondents in the qualitative sample did not want to have any more children at the time of the survey. Most of the respondents were between 35-44 years old. For the vast majority, the highest level of education completed was primary school. Just over half of the respondents were in a union. Seven had no children, 10 had two children, and 14 had 3-4 children (see Table 2).

Table 2 Approximately Here

Pregnancy planning

Right-tail respondents tended to have gotten (their wife) pregnant usually within a few months after marriage, and often sooner than they had intended. Predicted and left-tail respondents, on the other hand, often did not get pregnant as soon after getting married, even though some would have liked to. Unintended pregnancies also appeared to be more widespread among right-tail cases, with three female respondents reporting unintended teenage pregnancies when they were still in school, as described by this HIV-positive respondent:

> *I: What would you have done differently regarding the time you started childbearing?*
> *R: Oh, what I would have done? I messed a lot, I messed a lot. I missed and I missed a lot of opportunities in life, since the time I had my first child. […] Sometimes I regret.*
> *I: So what would you have done to prevent that?*
> *R: What I was going to do to prevent that, I because I, when I, um, I had fallen pregnant when I was very young, and peer pressure, you know teenage age, because my first child, I was ah, when I was going to turn seventeen years that's when I had fallen pregnant. […] If it wasn't for those two children I would have done this and that.*
> *I: Ok, uh, you told me your children are only spaced eight months, um, what would you have wanted to do, if you had the capacity to do something different regarding child spacing, what would have done differently?*
> *R: If I, if I had the knowledge about family planning those days when I, now. I never had the knowledge. I would only have had one child and done other things. I wanted to be a lawyer that time. But to my surprise, just a few months later, I was pregnant again and some friends advised me to go for an abortion which I can't do [laughs] so I just had to have that child again who is seven and the elder brother will be ten this October. [Female, facility-based, right-tail]*

In contrast, unintended pregnancies were rarely reported among the predicted and left-tail cases, and no pre-marital or teenage pregnancies were mentioned by these groups. Although it is possible that unintended pregnancies may be underreported in these two groups, the data suggest that right-tail respondents may have weaker control over their childbearing, which may impact on their childbearing expectations and ultimately intentions, and contribute to explaining their anomalous desires.

Desired number of children

In the community sample, both desired and achieved number of children were higher among respondents who fell into the right-tail of the distribution relative to the left-tail and predicted cases. Right-tail respondents did not revise their desired number of children and most ended up having more children than intended, ranging from 1 to 5 children above the original figure. Right-tail and predicted respondents both mentioned economic reasons as reasons why it is difficult to have many children, but they were not motivated to reduce their fertility desires based on that economic hardship.

In contrast, left-tail respondents reported a smaller desired number of children than the other two groups, and often reduced their desired number relative to their original (pre-marital) intentions in light of economic conditions, settling on around 2-3 children. Reasons given for reducing the desired number of children were mainly economic related to feeding and schooling children which were perceived as more expensive than in the past:

When I look at life nowadays, things have change. It is different from the years back, nowadays livelihood has become very tough and also feeding, so if I add more children I might just bring more problems to myself. [Female, community-based, left-tail]

Some women also mentioned health reasons, such as compromised health during pregnancy, or the increased risk of contracting diseases in the labor ward with repeated visits, as reasons for decreasing their desired family size.

Respondents in the left-tail of the distribution reported agreeing with their partner on a small number of children prior to or upon achieving that number. In contrast, in the right-tail some respondents reported not talking about family size with their partner, or not knowing their partner's desired number of children at all, as illustrated here by this male respondent who had three children at the time of the interview hoped to have another two or three more:

I: Does your current wife know the number of children you want to have?
R: No she doesn't know anything. […]
I: Have you ever discussed on that matter with her?
R: No she doesn't know anything.
I: But do you know the total number of children your wife wants?
R: No, I don't know it. [Male, facility-based, right-tail]

Respondents from across the distribution acknowledged that extended families were pressuring them to have a large number of children but they most stated that that pressure did not ultimately affect their childbearing decisions. However, the situation appeared slightly different for HIV-positive respondents from the facility sample: several facility respondents reported that family members aware of their HIV status had recommended that they stop childbearing. A few respondents suggested that seeing couples with many children struggling to provide adequately for their families had discouraged them from having too many children. However, these downward influences on family size operated only through observation, and any explicit advice from family or the community was always to have *more* children.

Most respondents were encouraged to have many children by their family. One respondent in the right-tail of the distribution explained how the pressure from her in-laws to have a large family had pushed her to continue childbearing to reach the 10 children she has today:

R: Ok, when I just got married I was not able to have children for a long time, so my husband's family started stigmatizing me, and later I got pregnant and had a baby girl. That made me very happy such that I decided to have as many as I can, and I so did not mind them exceeding the number that I wanted.
I: From the time you got married, how soon did you want to get pregnant?
R: I wanted two years to pass before I get pregnant, but it was not possible because of my husband's family. They started talking about having a child when I was as early as five months in marriage. That's why when I started having children. I said, "God give me as many as you can until the time you will tell me to stop." Had it not been family planning, I would have had fifteen children by now. [Female, community-based, right-tail]

Pressure also came from husbands:

R: Sometime back, yes, I used to [interviewer laughs] take [contraceptives] without him knowing.

I: Ok, why didn't you want him to know?
R: At that time, he wanted a baby [laughed together] so much, [laughs] so when he would find the pills he used to throw them away. [Female, facility-based, right-tail]

Only one left-tail male respondent described significant pressures from his family and community to have fewer children: these included having witnessed his wife's parents' struggle bringing up 15 children, and having to support his extended family, who implored him to not have too many children of his own lest he should fail to support the rest of the family. In addition, he was strongly influenced by advice he had received from a colleague on the benefits of having a small family:

These ideas, I got them from this white man I was working with at the airport, an accountant who told me that, "Don't have a lot of children, you will fail to support them, with us whites we only have one or two children. When we die, we leave each one with money in the bank. Why do you have a lot of children when you fail to support them and educate them?" I worked with that accountant for about 15 years, he is the one who told me not to have a lot of children before I got married, he actually told me the truth because we were working with some old fellows who had a lot of children, about 10 children each, and were failing to support them, but "With us whites, we have only two children and they are in America working, one as a pilot and the other one as a locomotive driver and am only with my wife here." So I said to myself this is good and I copied this idea. [Male, facility-based, left-tail]

This respondent was HIV-positive but his reasons for wanting a smaller family seemed to be unrelated to his HIV status.

Influence of HIV
As the effect of HIV is a central theme in this study, it is interesting to take a separate look at the facility-based sample of HIV-positive respondents. As similarly noted in the overall sample, the desired number of children for right-tail respondents was much higher (ranging from 3-6) than the desired number of children for left tail respondents (ranging from 2-3). In contrast, predicted cases tend to have a wider range of desired number of children (0-8), with a lot of very high parities. It seems that amongst the predicted cases, many respondents were diagnosed with HIV comparatively late in their childbearing careers, at a time when they already had a large number of children, and HIV diagnosis therefore may have had a comparatively minor influence on their desired number of children. The high desires of these predicted cases may simply reflect their achieved family sizes perhaps due in part to post-childbearing rationalization, as suggested by the fact that most respondents were satisfied with their number of children and wished to stop there. On the other hand, the few respondents among the predicted cases who still had a small family size tended to want fewer children altogether.

HIV diagnosis often led respondents in all groups (left-tail, right-tail, predicted) to reduce their desired number of children, or to want to stop childbearing altogether. However, diagnosis appeared to have slightly less influence on the right-tail respondents. In the left-tail, three of five respondents explicitly stated that their diagnosis had led them to want to stop childbearing (although two had accidentally become pregnant after diagnosis). Factors discouraging childbearing after diagnosis among the left-tail respondents included worries about their health and transmitting the virus to the baby.

R: I just don't want to get pregnant again and have a child. It's not my intention right now. […] Before [my husband] knew his status, he was for the idea that we should have the number of

children that we wanted. But after he tested, he accepted that we should have the number of children we have right now.
I: From the time you were diagnosed HIV positive, have you been pregnant?
R: Yes, I got pregnant.
I: At that time, you told me that you never wanted to get pregnant
R: Yes, I did not.
I: What were the most important reasons you feel you did not want the pregnancy at that time?
R: Mostly because of CD4. The CD4 was supposed to be above 400 or 450, but mine was very low, and it took time to go up.
I: Have you ever talked to the health providers about that pregnancy?
R: Yes I did, just when I got tested, so the providers talked to me about the dangers of getting pregnant with such kind of CD4 below 400. They were great chances of transmitting the virus to the baby. […] The fears I had were that maybe the child was going to be born with HIV. I could hear people talk in the compounds, that when you're HIV positive, and you are pregnant you can't give birth to a healthy baby, besides you die too. So all those comments used to make me feel bad, such that I could even refuse to take my meals because I already knew that I was going to die one day.
I: What thoughts or option did you consider when you learnt that you were pregnant?
R: I wanted to abort; I consulted so many doctors, in private hospitals so that I can have an abortion. But fortunately I can say, they all gave me the same response that they could not do an abortion on me. After that, I started considering caesarian section as a way of delivery. So, everything failed and I had a normal and safe delivery. [Female, facility-based, left-tail]

In contrast, among respondents in the right-tail, only one of seven respondents stated that HIV diagnosis had discouraged them from continuing childbearing, while three made it clear that HIV had had very little influence on their desires, and that they wanted to continue childbearing. HIV also appeared to have little influence on the fertility desires for predicted cases. (Only two of nine respondents reported downwardly adjusting their desires in light of their diagnosis). But this seemed to be more related to the fact that most had already reached a large family size and decided to stop childbearing before diagnosis, as exemplified here:

I: What have been your concerns about getting your wife pregnant since your diagnosis?
R: The only concerns that we had were that of wanting to have a long life. I can't say much on the pregnancy concerns because the time we discovered that we were positive, she already had stopped bearing children. [Male, facility-based, predicted]

This weaker influence of HIV among respondents who fell in the right-tail of the distribution may be a manifestation of right-tail respondents' stronger desires to have children (hence their higher-than-expected desires) by overcoming any obstacles in their way including HIV diagnosis and health providers' recommendations to reduce childbearing. As one respondent put it:

That's the more reason why HIV has never reduced [childbearing desires], because even when people are not well and they have no child, they would still want to have children because to them it's a taboo not to have a child. [Male, facility-based, predicted]

In addition, right-tail HIV-positive respondents (and one "predicted case" HIV-positive respondent who wanted to continue childbearing) often voiced their confidence in PMTCT, whereas left-tail respondents and those who wanted to stop childbearing after diagnosis did not talk about PMTCT, and tended to

focus more on health providers' advice to limit their childbearing, and on health concerns. One left-tail female respondent suggested that HIV affected childbearing more strongly in women than in men:

> *I: Do you think being HIV-positive in men and women affects their fertility desires in the same way?*
> *R: Some men don't worry. Ok, according to the situations that I handle, you will find that a woman does not want to have other children but the husband insists. So you will find that the woman ends up becoming pregnant. And that affects her health so much more than a man. [Female, facility-based, left-tail]*

Contraceptive counseling and use

Respondents indicated that discussions about family planning, including birth spacing and choice of contraceptive method, occur within couples. This idea was expressed by individuals in both the right-tail and predicted cases, but by no one in the left tail. One community-based male respondent indicated that it was important for him, as the man, to initiate family planning discussions. Some individuals only started to use family planning when they were diagnosed with HIV.

Interactions (actual or perceived) between ARVs and certain contraceptive methods drive the choice of contraceptive methods for HIV-positive individuals. This idea was expressed by individuals in the right and left tails but by none falling in the predicted cases. HIV-positive respondents were encouraged to use condoms.

> *Um.... ok, according to how I was told, it depends with the type of medication you are on because the time I was on a pill, I was on AZT3T and Niverapin type of ARVs I did not know they work, so then I was told I could not take such kind of contraceptive method. So they introduced me to the injectables for three months. Then I started bleeding in spots (gives a facial expression) I could bleed almost every week, then I went back to the Clinic and I was told that it was the reaction of the method. Then I was told that there were no other methods I could use apart from condoms, so we started using condoms. But then.., we had problems using the condom with my husband, so it happened that I got pregnant! But after giving birth, I asked the Doctor if I can try another method, and right now, am on Jadero which is inserted under my arm. [Female, facility-based, left-tail]*

> *R: So after I discovered that I was positive, then I was taking drugs; the ARVs they advised me that I shouldn't take pills because of the Nevirapine.*
> *I: Ok, so what does Nevirapine do?*
> *R: They don't work well together...the Nevarapine and the pill, because, the Nevarapine is very powerful that it neutralizes the pill, the family planning pill. I used to take a pill that's when I changed to injectables after they explained to me about the Nevirapine and the pill that they don't go well together. [Female, facility-based, right-tail]*

Pills, shots and condoms were the most commonly mentioned methods across all three groups. Several individuals indicated that injectables were preferred to pills for HIV-positive women because of the drug interactions mentioned above.

Linkages between HIV and family planning services were seen in a positive light. Most individuals, when asked, would prefer to receive the two services in the same location. Reasons given were that otherwise you have to come to the clinic on separate days because the HIV clinic may not be functioning on the same day as the family planning clinic, and it reduces travel costs. This idea was expressed by

individuals in all three groups (left-tail, right-tail and predicted), but more commonly among those in the right-tail and predicted cases.

What should HIV-positive women do if they become pregnant?
Even among community-based respondents, there was widespread knowledge about using ARVs to have a healthy pregnancy and that an HIV-positive woman can have an HIV-negative child. HIV-positive individuals related that they rely heavily on doctors and clinics for guidance on how to avoid becoming pregnancy when HIV-positive, to identify the best time to become pregnant when HIV-positive and, once pregnant, how to have a healthy (HIV-negative) baby (at the clinic, not at home, and preferably by cesarean section). This idea was supported by statements about the importance of following clinic instructions, avoiding breastfeeding, accessing treatment, and listening to doctors about family planning. These ideas were more commonly was expressed among individuals in the left-tail and in the predicted cases.

> *How it can be possible, [laughs] look at my child, he doesn't have, like I told you that they encourage at the clinic, if you go there and you are pregnant, you have to continue taking your medication and don't stop for anything, and then when giving birth, they also give some medication, so like that you will have a healthy baby, and also when the child reaches…. Six weeks, you have to take that child for tests, at nine months you also have to take him, and also at one year also, at one year two months you have to take the child again. [Female, facility-based, left-tail]*

> *I: Can HIV positive women have healthy children?*
> *R: Very much!*
> *I: How does that happen?*
> *R: It is by going for antenatal early and I understand that when they are giving birth there is a drug that is given to them so that the child can come out negative. [Female, facility-based, predicted]*

Only one community-based respondent expressed fatalism about the possibility of having an HIV-negative child if the mother is HIV-positive.

Individuals (primarily women) blame HIV-positive women if they become pregnant or, if they are pregnant, if they do not receive PMTCT services, calling them lazy, negligent, and deliberately infecting their child with HIV. This idea was not as commonly expressed as the one above, but it was more common among the predicted cases than among individuals in either the left- or right-tails.

> *Uh, those it's just out of their own wish to die [laughs] or not to have a healthy baby, because she does not know how she is, or when they tell you at the clinic that you have HIV, then you decide not to be taking you medicine, it means you just want to have a sick child. [Female, facility-based, left-tail]*

> *I: So when you look at the health services in Zambia, specifically in Lusaka since you live in Lusaka, do you think those women with the HIV virus are given health care which is good enough to reduce the chances of babies contracting the virus from their mothers?*
> *R: Eeehh. They are given. Help is given but, what I have seen mostly is that its peoples negligence. Sometimes if you see, even on the queue, they give them sometimes like that time it was heard that there is soya and the likes being given, but you will be surprised that, "No I feel shy to go and stand on the line; the neighbor will see me." That's negligence. [Male, community-based, right-tail]*

HIV-positive women who may elect to have an abortion were equally condemned by community members as any other woman having an abortion; HIV was not seen as an acceptable reason to elect to have an abortion.

Preliminary conclusions

This preliminary examination of the data suggests that right-tail respondents' higher than expected fertility desires may be partly explained by the fact that they did not seem as concerned about the economic difficulties of raising children as the rest of the sample. In contrast, the left-tail respondents, who have lower than expected fertility desires, tended to have more economic concerns about having a large family, and reported more discussion and agreement on number of children within the couple. This suggests that discussion and agreement between partners may be a prerequisite for not only achieving, but also intending and expecting, to have a smaller number of children. The slightly different influence of HIV on the left and right tails may be explained by these different attitudes to childbearing: While left-tail respondents, perhaps more firmly in control of their childbearing and concerned about providing support, perceived HIV as an additional barrier discouraging them from having more children, right-tail respondents discussed HIV as another challenge to be overcome in the highly unpredictable minefield of childbearing.

Condoms were reportedly encouraged by providers and were one of the few methods that were not seen to interact with ARVs, but as related by the respondents, they sometimes failed, leading to unintended pregnancies. Some HIV-positive respondents had negative personal experiences with hormonal contraception and others spoke in vague terms about ARVs cancelling out hormonal contraception. Injections were perceived to be more compatible with ARVs. In the population at large, there was a great deal of knowledge about and confidence in ARVs and PMTCT's ability to allow HIV-positive women to have HIV-negative babies which may, in part, explain why abortion is not seen as any more acceptable for HIV-positive women than for women in general even though HIV-positive women themselves talked about how when they became pregnant with an unwanted pregnancy, they considered having an abortion.

Next steps

The next steps will be to examine the qualitative data in such as way as to allow us to draw distinctions between the HIV-positive respondents and the community-based, HIV-negative respondents to see how HIV-positive status influences individuals' fertility desires and behavior. Then, we will match the quantitative and qualitative responses from the respondents so as to be able to construct a more complete narrative about the respondents' perceptions/experiences of HIV risk/infection, fertility behavior, and contraceptive use. The matching of these two data sources will serve two purposes: 1) to identify factors that predict why someone is likely to make non-traditional fertility decisions for either larger or smaller families; and 2) to test the application of the Anomalous Case Analysis methodology in Zambia under the conditions we fielded our survey. After this matching, we will assess whether to re-run our predictive models of fertility desires from the surveys based on new insights achieved from the in-depth interviews.

Table 1. Respondents' category and total number

	ANOMALOUS CASES*	PREDICTED	TOTAL
Women Community	6	6	12
Men Community	6	4	10
Women Facility	7	6	13
Men Facility	6	4	10
TOTAL	25	20	45

*Anomalous cases were split evenly between left- and right-tail respondents.

Table 2. Demographic characteristics of the respondents

	Community		Facility		
Would you like to have a(nother) child?	Men	Women	Men	Women	**Total**
Want in <2 yrs					
Want after 2 yrs		2		4	**6**
Wants unsure timing	4	2	2	1	**9**
Undecided			2	2	**4**
Want no more				1	**1**
Infertile	6	7	5	5	**23**
Total		1	1		**2**
Age of respondent	**10**	**12**	**10**	**13**	**45**
15-19					
20-24	1	2			**3**
25-29	1	2		1	**4**
30-34	1			3	**4**
35-39	1	1		4	**6**
40-44	1	3	4	3	**11**
45-49	4	2	4	1	**11**
Total	1	2	2	1	**6**
Highest level of education completed	**10**	**12**	**10**	**13**	**45**
No education					
Incomplete primary		3	1		**4**
Completed primary				2	**2**
Completed lower secondary	7	9	8	10	**34**
Some higher education	1				**1**
Total	2		1	1	**4**
Is the respondent in a union?	**10**	**12**	**10**	**13**	**45**
No					
Yes	3	8	4	6	**21**
Total	7	4	6	7	**24**
Total number of children alive	**10**	**12**	**10**	**13**	**45**
0 children					
1 child	2	3		2	**7**
2 children		1	1	2	**4**
3 children	2	2	2	4	**10**
4 children	1	1	2	3	**7**
5 children	1	1	4	1	**7**
6 children	1	2			**3**
7 children	1		1		**2**
8 children	1				**1**

9 children	1				**1**
11 children		2			**2**
Total				1	**1**
		12	**10**	**13**	**45**

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