Community attitudes toward childbearing and abortion among HIV-positive women in Nigeria and Zambia

Megan L. Kavanaugh, DrPH[1]*, Ann M. Moore, PhD[2], Odunayo Akinyemi, MSc[3], Isaac Adewole, MD[4], Kumbutso Dzekedzeke, PhD[5], Olutosin Awolude, MD[6], Oyedunni Arulogun, PhD[7]

* Corresponding author

(1) *Senior Research Associate, Guttmacher Institute, 125 Maiden Lane, 7th Floor, New York, NY 10038

Phone: 212-248-1111 x2225, Fax: 212-248-1951, Email: mkavanaugh@guttmacher.org

(2) Senior Research Associate, Guttmacher Institute, 125 Maiden Lane, 7th Floor, New York, NY 10038

Phone: 212-248-1111 x2283, Fax: 212-248-1951, Email: amoore@guttmacher.org

(3) Epidemiologist, Medical Statistics and Environmental Health, University of Ibadan, Ibadan, Nigeria

Phone: 234-805-567-6325, Email: odunjoshua@yahoo.com

(4) Vice-Chancellor and Professor, Department of Ob/Gyn, College of Medicine, University of Ibadan, Ibadan, Nigeria

Phone: 234-803-329-9153/234-802-518-5802, Fax: 234-2-241-2423, Email: ifadewole@comui.edu.ng

(5) Independent Consultant, 14th Floor FINDECO House, Lusaka, Zambia

Phone: 260979701499, Email: kumbutso@netscape.net

(6) Professor, Department of Ob/Gyn, College of Medicine, University of Ibadan, Ibadan, Nigeria

Phone: 234-8032222986/234-8050849488, Email: tosinawolude@yahoo.com

(7) Professor, Department of Health Promotion and Education, University of Ibadan, Ibadan, Nigeria

Phone: 234-8035794630, 234-8023423931, Email: oyedunniarulogun@gmail.com

Abstract

Although stigma towards HIV-positive women for both continuing and terminating a pregnancy has been documented, to date, few studies have examined relative stigma towards one outcome versus the other. This study seeks to describe community attitudes towards each possible elective outcome of an HIV-positive woman's pregnancy, determine which outcome garners more stigma and document characteristics of community members associated with stigmatizing attitudes towards each outcome. Data come from community-based interviews with reproductive-aged men and women, 2401 in Zambia and 2452 women in Nigeria. Bivariate and multivariate analyses were conducted. Respondents from both countries overwhelmingly favoured HIV-positive women continuing childbearing, but support for abortion was slightly higher in the absence of ARVs. Respondents from Zambia held more stigmatizing attitudes towards abortion for HIV-positive women than did Nigerian respondents. Women held more stigmatizing attitudes towards abortion for HIV-positive women than men, particularly in Zambia. From a sexual and reproductive health and rights perspective, efforts to assist HIV-positive women in preventing unintended pregnancy and to support them in their pregnancy decisions when they do become pregnant should be encouraged in order to combat the social stigma documented in this paper.

Keywords

Abortion, induced; stigma; HIV and pregnancy; motherhood; Zambia; Nigeria

Introduction

Social expectations around reproduction, particularly in developing countries, play a role in individual decision-making around fertility decisions. People living with HIV are no exception. As antiretroviral therapy treatments are increasingly integrated into health care for persons living with HIV, many of whom are within their reproductive years, fertility issues may become prime concerns. Many women with HIV become pregnant and weigh continuing the pregnancy with the hopes of having a healthy child versus terminating the pregnancy; [1] although many continue their pregnancies to term, others elect to terminate their pregnancies. [2;3]

Social stigma against continued childbearing by HIV-positive women exists. In South Africa most women with HIV perceived strong community disapproval associated with HIV and childbearing. [4] HIV-positive mothers' perceptions of disapproval from community members regarding their mothering abilities is substantiated by two studies from sub-Saharan Africa. [5] HIV-positive women in the United States who have children are perceived to be inadequate mothers for several reasons such as neglecting the care of existing children, potentially increasing the number of orphans that are left behind if they pass away and possibly passing along their infection to a future child. [6]

When HIV-positive women choose to abort their pregnancies, their decision is no less stigmatized, although far fewer studies have examined abortion in the context of HIV. Studies in Zimbabwe and Uganda showed that HIV-positive women's consideration of abortions was constrained by the poor availability of safe abortion services. [7] In South Africa, where abortion is legal under broad grounds, HIV-positive women were pressured by healthcare providers to have abortions; [8] the opposite pressure was found in Uganda, where abortion is highly legally restricted. [9]

We hypothesize that demographic characteristics of community members influence their social attitudes towards HIV-positive pregnant women. Social expectations regarding how an HIV-positive pregnant woman should proceed likely shape a pregnant woman's decision pathway regarding her pregnancy. We illustrate these social influences in a conceptual framework adapted from Gruskin et al.'s [10] model of HIV and pregnancy intentions (Figure 1). Specifically, social expectations, along with individual-level factors, health services, law and policy influence whether a woman chooses to carry a pregnancy to term or to terminate it. As Gruskin et al. point out, these influencing factors may be in conflict with one another, suggesting opposing outcomes. Women must determine which factors are preeminent in their decision-making. [11]

[INSERT FIGURE 1 HERE]

Although stigma towards both pregnancy outcomes for an HIV-positive woman has been documented, to date, few studies have examined relative stigma towards HIV-positive women for one outcome versus the other. We define relative stigma as the act of treating one stigmatized behaviour more or less negatively than another stigmatized behaviour. Because stigma can influence women's pregnancy decisions, ostracize them from their communities, and impact their health-care seeking behaviours, including increasing the desire to hide an abortion in an already unsafe abortion-seeking climate, [12] it is important to understand pregnancy-related relative stigma through community attitudes towards continued childbearing and abortion among HIV-positive women. We sought to study these attitudes in two country settings: Zambia, which has relatively high HIV prevalence (14.3% in 2007), high access to ARVs (56% coverage), a moderately liberal abortion law but poor access to safe abortion; and Nigeria,

which has relatively low prevalence of HIV (4.1% in 2010), limited access to ARVs (26% coverage), a law that restricts abortion in almost all cases, yet a high rate of unsafe abortion (25/1000 women aged 15-44). [13-16] Our primary objectives in this analysis were to (1) describe community attitudes towards continued childbearing and abortion among HIV-positive women, (2) determine whether community members expressed more stigmatizing attitudes towards continued childbearing compared to abortion for HIV-positive women, and (3) document characteristics of community members in Zambia and Nigeria that were associated with expressing supportive versus stigmatizing attitudes towards continued childbearing and abortion among HIV-positive women.

Methods

Sample selection and data collection

Data for this study come from a 2009 multi-stage, cluster sample of households in three provinces in Zambia (Lusaka, Northern and Southern) and four states in Nigeria (Kaduna, Benue, Lagos, and Enugu). The provinces/states were selected to gather data from different ethnic groups and from regions with varying HIV-prevalence and fertility levels. In order to achieve 80% statistical power, based on an overall proportion of 30% (the approximate proportion of women who want no more children) and a detectable difference on these outcomes of 5% between those who perceive themselves at high risk of HIV and those who perceive themselves at lower risk, we sought a sample size of 1300 males aged 18-59 years and 1300 females aged 18-49 years for both Zambia and Nigeria. The study was approved by the Guttmacher Institute's Institutional Review Board (IRB), University of Ibadan/University College Hospital IRB, and the University of Zambia Biomedical Research Ethics Committee.

The study sample in Zambia was a sub-sample of the sample for the 2007 Zambia Demographic and Health Survey. The number of households to be selected was determined by the ratio of households to completed interviews of the population 15 years and older observed in the 2007 Zambia Demographic and Health Survey. In order to yield the target sample size, 60 Enumeration Areas were selected by equal probability systematic sampling, including 38 rural ones and 22 urban ones. The total sample was allocated to the provinces proportional to its projected population of 2009 distributed by urban and rural areas, which was obtained from the Central Statistical Office.

In Nigeria, one rural and one urban Local Government Area were randomly selected from each state. The target sample size was proportionately allocated to the Local Government Areas based on the 2006 Nigeria population census figures. The number of Enumeration Areas to be sampled in each Local Government Area was based on the sample allocated to the Local Government Areas. Ten and 20 Enumeration Areas were then systematically selected from the rural and urban Local Government Areas respectively. In the selected Enumeration Areas, 10% of households were selected systematically.

The questionnaire included the core set of topics covered in Demographic and Health Surveys: demographic and socioeconomic characteristics of the respondent, sexual behaviour, union status, contraceptive use, fertility preferences, fecundity, and prior pregnancies and births. We added HIV-related questions including the respondent's perception of risk for contracting HIV and attitudes about continued childbearing and abortion in the context of HIV as well as a vignette that presented three scenarios regarding a pregnant woman determining what to do about her pregnancy (the woman experiencing general health problems, the woman being HIV-positive but not on ARVs and the woman being HIV-positive and on ARVs). Respondents were

asked to give their opinions about how the woman should proceed (continue or terminate) in each of the scenarios. The questionnaires were developed in English and translated into three local languages in Zambia (Tonga, Nyanja and Bemba) and four local languages in Nigeria (Yoruba, Igbo, Hausa and Tiv). Translated questionnaires were pilot tested in local communities in each country. All eligible adults in selected households included in the study (women 18-49 and men 18-59) were interviewed by trained interviewers of the same region as the respondents; each took approximately one hour. Data collection lasted from October 2009 – February 2010 in Zambia and from November 2009 – May 2010 in Nigeria.

Data processing and analysis
Data were double entered into Census and Surveys Processing System (version 4.0), exported to SPSS (version 15.0) for cleaning, and transferred to Stata (version 11.2) for analysis. Data were weighted to reflect the total population of reproductive aged men (18-59) and women (18-49) in the three study provinces in Zambia in 2007 and in the four study regions in Nigeria in 2008, the most recent years for which information on the strata was available.

Responses to each of the three vignette scenarios originally included "continue the pregnancy," "end the pregnancy," and "don't know." For the two HIV-positive scenarios, we created two dichotomous variables to represent support for continuing the pregnancy and support for terminating the pregnancy (0 = no and don't know, 1 = yes). Using factor analysis to identify items in the questionnaire that held together closely to represent the concepts of stigmatization towards continued childbearing and stigmatization towards abortion for HIV-positive women, we developed two indices each made up of three questions. Individual items included in the indices were coded on a scale of 1 (agree) to 3 (disagree); therefore each index ranges from 3, representing low stigma, to 9, representing high stigma. We grouped each index into three categories: low stigma (scores 3-4), moderate stigma (scores 5-6) and high stigma (scores 7-9). Finally, among respondents that expressed differences in stigmatizing attitudes towards the two pregnancy outcomes (low stigma on one and high on the other), we combined the two indices to create a dichotomous measure of relative stigma to represent highly stigmatizing attitudes towards abortion for HIV-positive women as compared to highly stigmatizing attitudes towards continued childbearing for HIV-positive women. Respondents who expressed high stigma towards abortion (scores 6 and above) and low stigma towards continued childbearing (scores 5 and below) were compared to the reference category of respondents who expressed high stigma towards continued childbearing and low stigma towards abortion.

We present descriptive statistics of respondents' demographic characteristics and attitudes toward continued childbearing and abortion for HIV-positive women as measured by support for abortion in the vignette scenarios and disagreement with statements about both of these concepts. Mean scores and descriptive statistics of each stigmatization index are also presented. We conducted chi-square analyses to examine differences in attitudes towards both pregnancy outcomes between men and women in each country. Finally, we developed multivariate logistic regression models to examine the associations between respondent characteristics and stigmatizing attitudes towards continued childbearing and abortion in the context of HIV. All analyses accounted for weighting necessary for the clustered sample design in this study.

Results

Our final sample included 2,401 respondents (92.4% response rate) from Zambia and 2,452 respondents (94.3% response rate) from Nigeria. Select demographic and HIV-related characteristics of respondents are presented in Table 1.

[INSERT TABLE 1 HERE]

Choosing between possible pregnancy outcomes in a vignette scenario
When presented with a hypothetical scenario in which a pregnant wife must decide how to proceed with her pregnancy under three different scenarios, respondents from both countries overwhelmingly favoured continuing the pregnancy in each of the three situations (Figure 2). However, support for terminating the pregnancy followed a similar pattern in both countries: increasing when the woman was HIV-positive but not on treatment and decreasing when she was on ARVs.

[INSERT FIGURE 2 HERE]

Differences exist between the two country settings and between men and women in each country. For the three different circumstances presented in the vignette scenario, both Nigerian men and women reported higher levels of support for ending the pregnancy than did men and women in Zambia. Over one-quarter of men and women in Nigeria indicated that the woman should end her pregnancy being HIV-positive but not on ARVs. This was the highest level of support for abortion across all circumstances and between countries. Men in Zambia were more likely to support abortion in each of the three circumstances presented than were Zambian women, and men in Nigeria were more likely to support abortion for HIV-positive women on ARVs than were Nigerian women.

In multivariate models, certain respondent characteristics were associated with favouring a particular pregnancy outcome in the two HIV-positive scenarios (Table 2). In Zambia, controlling for socioeconomic characteristics and perceived risk of HIV, women were more likely than men to be in favour of continuing the pregnancy regardless of whether the woman was on ARVs. Respondents who had one or two children were more likely than those who had no children to be in favour of the HIV-positive woman continuing the pregnancy in the absence of treatment. Compared to individuals who had completed primary school, individuals with more education were less likely to be in favour of the woman continuing the pregnancy in the absence of treatment. In the absence of ARVs, individuals who perceived themselves to be at moderate to great risk of contracting HIV were significantly less likely to choose continuing the pregnancy and, along with individuals who perceived themselves to be at low risk of HIV, more likely to choose termination as the preferred pregnancy outcome. When treatment was introduced, compared to respondents who had completed a primary level of education, respondents with either some primary or above primary level of education were less likely to favour continuing the pregnancy.

[INSERT TABLE 2 HERE]

In Nigeria, as age increased, regardless of the presence of ARVs, Nigerian men and women were less likely to favour continuing the pregnancy. Compared to those without children, individuals with children were more likely to choose continuing the pregnancy in either treatment scenario. Compared to those who had completed primary education, individuals with no education were more likely to favour continuing the pregnancy in the presence of ARVs. In both treatment scenarios, men and women in Nigeria who perceived themselves to be at low risk of contracting HIV were significantly less likely than those who perceived themselves to be at no risk to favour the woman continuing the pregnancy.

Stigmatizing attitudes towards HIV-positive women for continuing versus terminating a pregnancy

Many patterns identified above regarding respondent attitudes toward a preferred pregnancy outcome of an HIV-positive woman were echoed in responses to individual items assessing attitudes towards continued childbearing and abortion in the context of HIV (Figures 3 and 4). In both Zambia and Nigeria, stigmatizing attitudes were greater towards abortion for an HIV-positive pregnant woman than towards continued childbearing for an HIV-positive pregnant woman. Nigerian men and women generally had lower levels of disagreement with statements about both continued childbearing and abortion for HIV-positive pregnant women than did Zambian men and women, indicating higher levels of stigma towards both potential outcomes of a pregnancy of an HIV-positive woman in Zambia than in Nigeria. Differences in stigmatizing attitudes between men and women were more common in Zambia than in Nigeria. Zambian men expressed higher levels of stigma towards continuing a pregnancy and Zambian women expressed higher levels of stigma towards terminating a pregnancy for HIV-positive women. Nigerian men and women were more similar in their attitudes towards HIV-positive women for each pregnancy outcome; men had significantly higher levels of disagreement with an item stating "it is ok for [an HIV-positive nulliparous woman] to have a child" as compared to women.

[INSERT FIGURE 3 HERE]

[INSERT FIGURE 4 HERE]

Two indices to assess the level of stigmatization towards continued childbearing and abortion in the context of HIV merge the attitudes expressed in the individual items presented above in Figures 3 and 4 (Table 3). Mean index scores for stigmatizing attitudes towards continued childbearing for HIV-positive women were lower than those towards abortion in both countries. Mean scores for stigmatizing attitudes towards continued childbearing for HIV-positive women were similar between the two countries, but scores indicated greater stigma towards terminating a pregnancy in Zambia than in Nigeria. Zambian men were more likely than Zambian women to hold stigmatizing attitudes towards continued childbearing for HIV-positive women; no significant differences in stigmatizing attitudes existed between men and women regarding abortion for HIV-positive women in Zambia and regarding either outcome of a pregnancy in Nigeria.

[INSERT TABLE 3 HERE]

Among Zambian men, stigmatizing attitudes towards abortion were associated with stigmatizing attitudes towards continued childbearing for HIV-positive women such that higher levels of stigma towards abortion were associated with higher levels of stigma towards continuing the pregnancy ($p < 0.001$, data not shown). A similar association between indices was not observed among Zambian women or Nigerian men or women.

Relative stigma towards an HIV-positive woman terminating her pregnancy, assessed by comparing individuals who expressed highly stigmatizing attitudes towards abortion for HIV-positive women and lower stigmatizing attitudes towards continuing pregnancy to individuals with the opposite stigmatizing attitudes is presented in Table 4. After controlling for respondent's parity, education level and perceived risk of HIV, in Zambia, female gender and older age were both associated with higher odds of expressing relative stigma towards abortion for HIV-positive women, while having five or more children and education were associated with lower odds of this relative stigma. In Nigeria, female gender and no education were both associated with increased odds of expressing relative stigma towards abortion for HIV-positive women.

Perceived risk of contracting HIV was not associated with relative stigma towards abortion for HIV-positive women in either country.

[INSERT TABLE 4 HERE]

Discussion

Women living with HIV must negotiate fertility decisions within communities in which emphasis is placed on motherhood as an expected societal role [17] and individuals have strong opinions about HIV-positive women having children. [18] Community stigma against HIV-positive women having more children may lead to increased pressure on women to avail themselves of abortion and thereby possibly increase the demand for abortion. Yet legal restrictions and poor access to safe abortion may prevent women from having an abortion.

Findings from our study indicate that community members in Zambia and Nigeria believe that HIV-positive women should continue their pregnancies. They expressed limited support for HIV-positive women having abortions, with less support expressed by Zambian respondents than by Nigerian respondents. The stigma associated with HIV-positive women having abortions might not be different from general stigma towards women having abortions, as this pregnancy outcome is highly stigmatized across many Sub-Saharan African settings. [12] Although Zambia law permits abortion on both health and socioeconomic grounds, stigma towards this outcome of an HIV-positive woman's pregnancy was greater than what was expressed in Nigeria, where abortion is permitted only to save the life of the woman. Stigmatizing attitudes among community members in these two countries seem to more closely reflect the level of abortion in each of the countries rather than the legal status of abortion, as Nigerian men and women may hold less stigmatizing attitudes towards abortion because they have a greater chance of knowing someone who has had one.

Attitudes towards a preferred pregnancy outcome for HIV-positive women are likely also influenced by individuals' perceptions of the probability of mother-to-child transmission of HIV. Without ARVs, transmission of HIV from an HIV-positive woman to her child during pregnancy ranges from 15-45%; this rate can be reduced to below 5% when ARVs are introduced during the prenatal period. [19] In Zambia where HIV is more widespread, individuals' own perceived risk of contracting HIV was associated with greater support for an HIV-positive woman having an abortion when she did not have access to ARVs. This finding may reflect these individuals' own perceptions of how they would manage a pregnancy in a similar situation, as those who perceive themselves to be at risk for HIV may have more knowledge of the risk of HIV transmission from mother to child in the absence of ARVs. A similar association between low perceived risk of HIV and decreased support for the HIV-positive woman to continue her pregnancy in the absence of ARVs was found in Nigeria. In addition, the lower rates of support among both Nigerian men and women for the hypothetical HIV-positive woman having an abortion when ARVs were introduced in the vignette as compared to the rates of support for abortion in the baseline scenario suggest that health complications during pregnancy increase individuals' support for abortion in Nigeria.

In both countries, women hold more stigmatizing attitudes towards HIV-positive women having abortions than do men. This is likely due to a strong societal emphasis placed on women's role as mothers in these pro-natalist societal contexts. [17] HIV-positive women living in both Zambia and Nigeria may face difficulty in achieving their fertility desires, given the community-based stigma associated with both pregnancy outcomes. HIV-positive women who become pregnant

are essentially caught between a rock and a hard place; they are stigmatized regardless of the pregnancy outcome they choose likely due to the root of the stigma being based in disapproval of HIV-positive women becoming pregnant in the first place. If pregnancy itself is the main driver of community-based stigma towards HIV-positive women, having an abortion allows one to hide that stigmatized behaviour while continued childbearing makes that stigmatized behaviour more visible. Faced with an unintended pregnancy, HIV-positive women who elect abortions may feel the stigma of having become pregnant more acutely while those who carry to term may perceive stronger stigma against abortion. Stigmatizing attitudes against abortion reflect judgment against women who choose to have abortions and are likely rooted in attitudes about "good" motherhood and women transgressing this motherhood role when they decide to have an abortion. [12;20] The extent to which HIV-positive women who become pregnant internalize these stigmatizing attitudes from the community remains unknown; more research into how HIV-positive women perceive community stigma about HIV-positive pregnancy as well as the consequences of abortion stigma for HIV-positive women is warranted.

We found varying degrees of support for our hypothesis that community members' characteristics shape their attitudes towards continued childbearing and abortion among HIV-positive women. In Nigeria, increasing age was associated with more support for a hypothetical HIV-positive woman choosing abortion and having several children was associated with less support for this outcome; the opposite associations were found in Zambia. The association between age and support for abortion may be linked to the prevalence of unsafe abortion in Nigeria; older individuals have a higher likelihood of knowing someone who has had an abortion. The association between parity and support for abortion for HIV-positive women in Zambia may be connected to the higher prevalence of HIV in that country; individuals with more children may have greater empathy for an HIV-positive woman weighing how to resolve her pregnancy. Having higher levels of education was linked to less stigma towards abortion for HIV-positive women and greater support for abortion in Zambia, and having no education in Nigeria was associated with greater stigma towards abortion. In both countries, education levels may represent proxy measures of knowledge about abortion, especially for HIV-positive women, thus normalizing the pregnancy outcome and reducing the stigma associated with this outcome.

Policy recommendations have the potential to mitigate HIV transmission and unintended pregnancy. Unmet need for contraception is relatively high in both countries. [21] Efforts in Zambia to improve contraceptive use among individuals who perceive themselves to be at risk of contracting HIV should be endorsed. Policies that focus on improving access to, and use of, contraceptive methods would allow women who are HIV-positive and do not want to become pregnant to avoid the stigma associated with pregnancy that we have documented among community members in Zambia.

Strengths of this study include relying on data from a community-based sample rather than a facility-based one as well as including male perspectives on abortion; however, limitations still exist. We relied on self-reported perceived risk of HIV for this analysis, which may either be underreported or may not accurately reflect actual status. In the questionnaire we did not clarify whether the pregnancies of HIV-positive women described were intended or unintended; this omission likely influenced respondents' attitudes towards the preferred pregnancy outcome of an HIV-positive woman. Finally, stigma can be perpetuated at several levels. [20] Our analysis does not examine felt or perceived stigma by women, provider perpetuated stigma or stigma towards male partners of women who have abortions.

Conclusion

From a sexual and reproductive health and rights perspective, HIV-positive women should be able to decide the best pregnancy outcome for their personal circumstances, free of stigma and judgment from others regarding the decision. The World Health Organization affirms the reproductive rights of HIV-positive individuals to choose between continuing and terminating a pregnancy, calling for access to safe abortion services in countries where it is legal for individuals who choose the latter option. [22] We need to help HIV-positive women prevent unintended pregnancies as well as support them when they do become pregnant with an intended pregnancy, addressing the social attitudes and perceptions which underlie stigma. Efforts to increase access to ARVs should be encouraged for HIV-positive women who decide to continue their pregnancies, while access to contraceptive services and safe abortion care should be emphasized to assist HIV-positive women who do not want to become, or be, pregnant.

Acknowledgements

The authors would like to thank Akin Bankole and Ann Biddlecom for their contributions to project conceptualization and survey design; Suzette Audam, Liz Carlin, Allison Grossman and Jesse Philbin for research support; and Heather Boonstra for reviewing the manuscript. The research on which this paper was based was funded by the National Institutes of Health under grant 1R01HD058359-01. The conclusions presented are those of the authors.

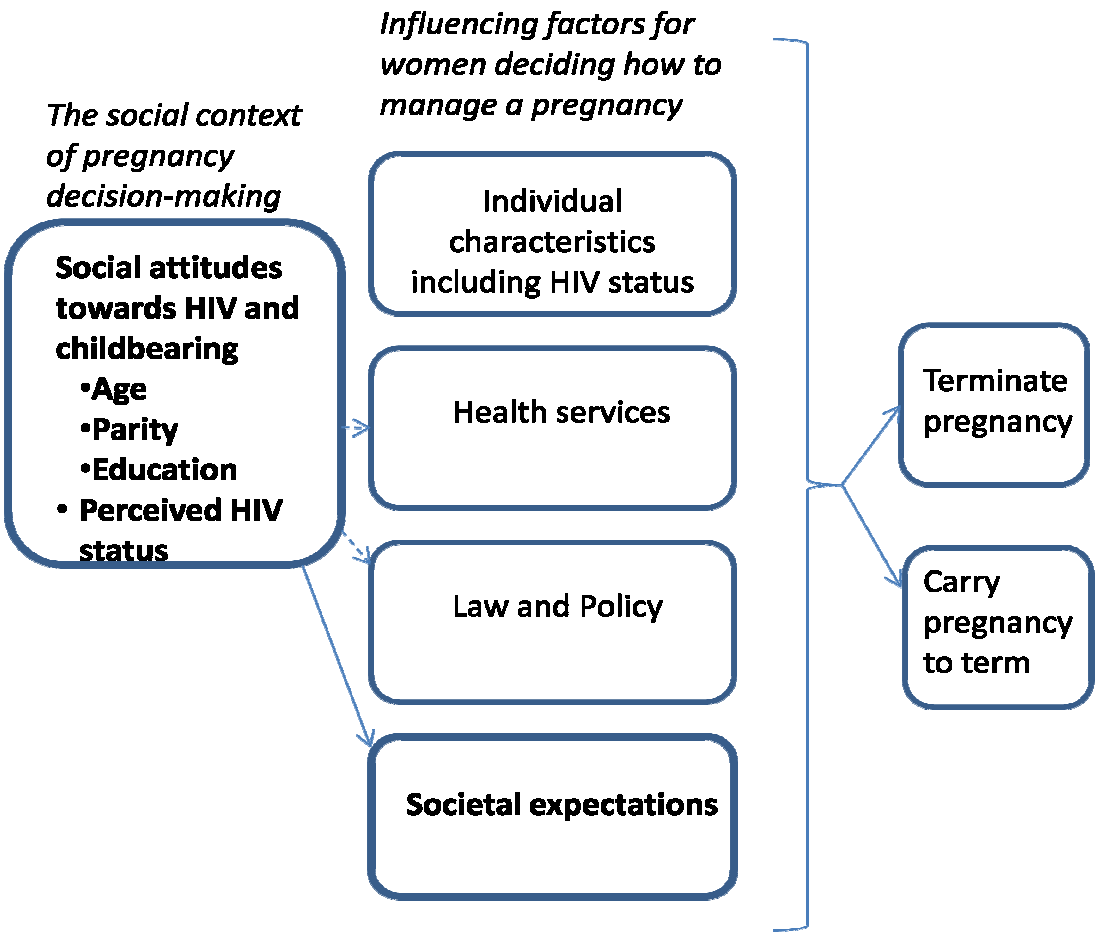

Figure 1: Conceptual framework of external influences on pregnancy outcomes in the context of HIV (adapted from Gruskin et al [10])

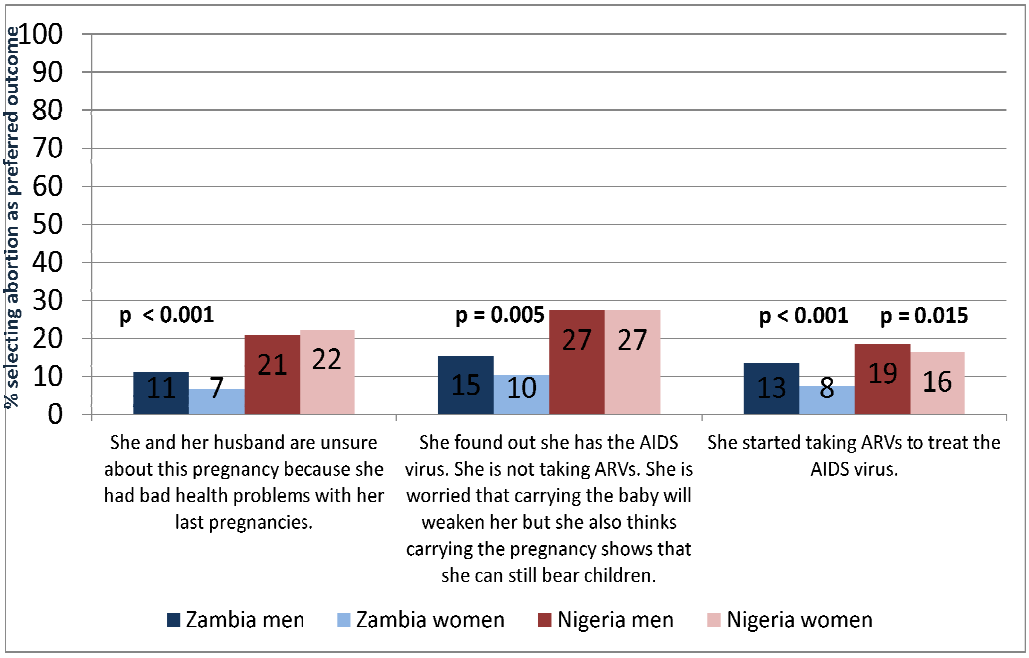

Figure 2: Percentage choosing abortion as preferred pregnancy outcome in vignette scenarios

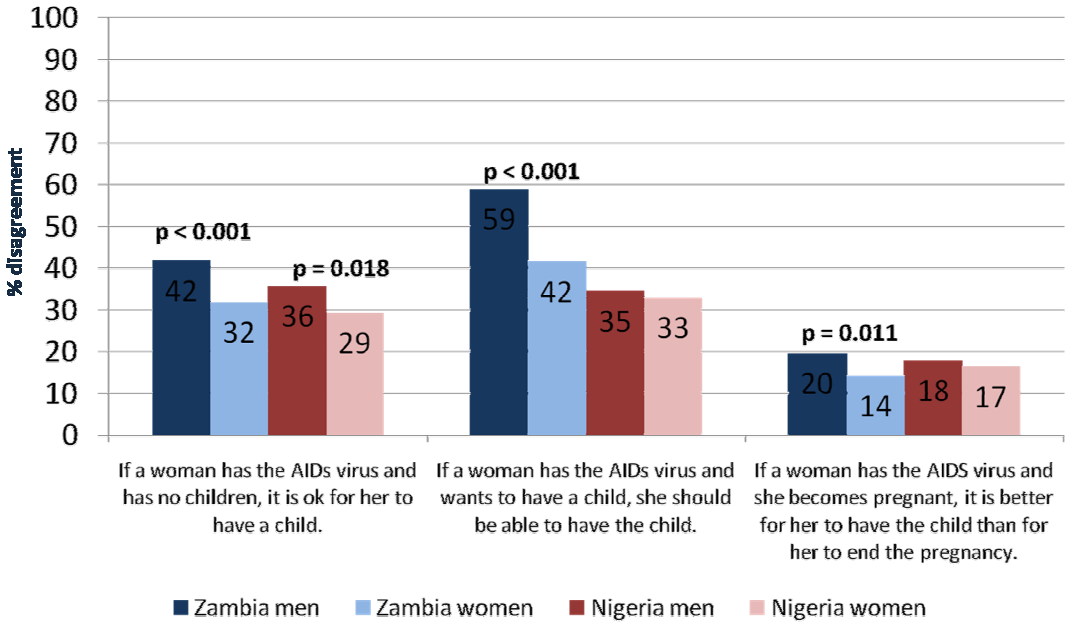

Figure 3: Percentage disagreement with statements about continued childbearing among HIV-positive women

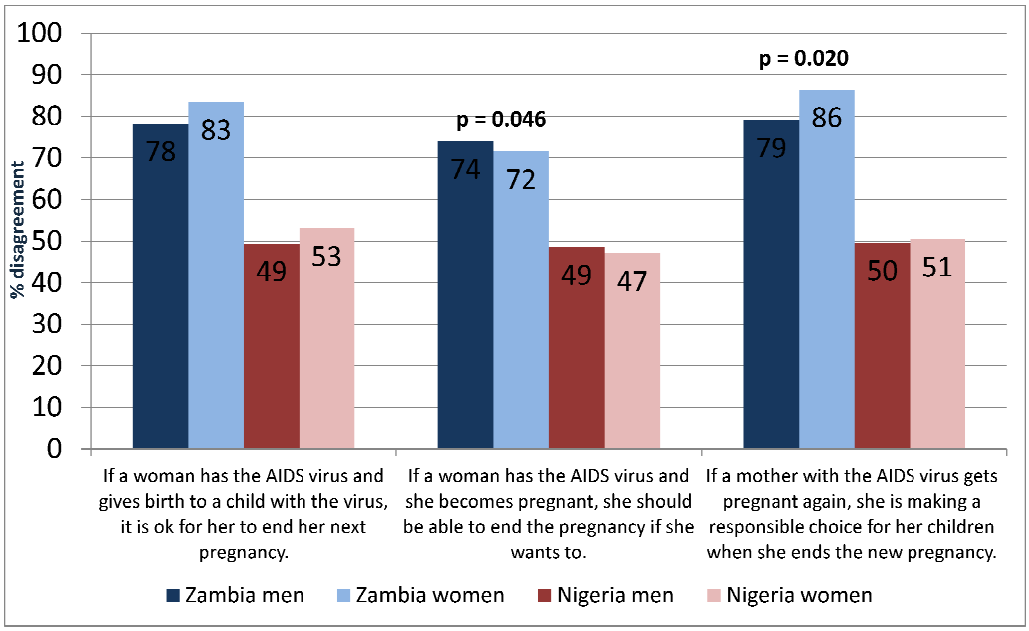

Figure 4: Percentage disagreement with statements about abortion among HIV-positive women

Table 1: Demographic and reproductive health characteristics of study sample, Zambia and Nigeria, 2009-2010

Demographic characteristics	Zambia (N = 2401) %	Nigeria (N = 2452) %
Sex		
Male	46.56	49.62
Female	53.44	50.38
Age		
15-19	11.16	20.43
20-29	37.72	40.75
30-39	30.63	20.9
40 and older	20.49	17.92
Number of children		
0	24.12	52.56
1-2	22.92	15.52
3-4	21.55	13.33
5+	31.40	18.59
Education		
None	7.55	20.17
Some primary	23.28	20.94
Completed primary	53.25	42.61
Above primary	15.92	16.27
Residence		
Rural	56.35	59.32
Urban	43.65	40.68
Relationship status		
Not in union	34.09	53.3
In union	65.91	46.7
Religion		
Catholic	24.13	36.27
Protestant	48.65	22.81
Pentecostal/Charismatic	15.08	11.43
Other Christian	8.79	3.00
Other	8.79	26.48
Perceived risk of getting AIDS virus		
None	50.62	70.37
Low	38.10	17.2
Moderate to great	11.28	12.43

Table 2: Odds ratios from logistic regression models examining respondent characteristics associated with pregnancy outcomes in a hypothetical vignette scenario for HIV-positive women without treatment and when treatment is introduced, Zambia and Nigeria, 2009-2010

	Zambia				Nigeria			
	Continue pregnancy		Terminate pregnancy		Continue pregnancy		Terminate pregnancy	
	Without treatment	With treatment	Without treatment	With treatment	Without treatment	With treatment	Without treatment	With treatment
Demographic characteristics	N = 2042	N = 2043	N = 1862	N = 1863	N = 1575	N = 1583	N = 1089	N = 1104
Sex								
Male	1	1	1	1	1	1	1	1
Female	1.73**	2.22***	0.90	0.58	0.75	0.88	1.57	1.29
Age								
15-19	1	1	1	1	1	1	1	1
20-29	0.90	0.79	0.77	0.69	0.78	0.73*	1.73*	2.24
30-39	0.86	0.77	0.90	0.84	0.64*	0.51*	2.07*	3.33*
40 and older	1.00	1.03	1.04	0.68	0.52**	0.46**	2.45*	3.91**
Number of children								
0	1	1	1	1	1	1	1	1
1-2	1.78*	1.60	0.67	0.95	1.43*	1.69	0.62	0.49*
3-4	1.23	1.15	0.71	0.68	1.17	1.31	0.74	0.60
5+	0.96	0.68	0.84	1.81	2.11**	2.87*	0.45***	0.26**
Education								
None	0.80	1.04	1.83	1.18	2.27	2.13**	0.27	0.42
Some primary	0.62	0.52*	1.58	2.38*	1.37	1.35	0.70	0.72
Completed primary	1	1	1	1	1	1	1	1
Above primary	0.49**	0.51*	2.55*	2.80	0.96	1.29	1.11	0.69
Perceived risk of getting AIDS virus								
None	1	1	1	1	1	1	1	1
Low	0.80	1.18	1.96*	1.02	0.64*	0.64*	1.48	1.73
Moderate to great	0.49*	0.62	2.84**	1.76	0.96	1.21	1.07	0.97

*p <0.05 , **p <0.01, ***p<0.001

Table 3. Mean scores of the two stigmatizing indices, continued childbearing among HIV-positive women and abortion among HIV-positive women, based on a scale of 3-9, with standard deviations (SDs), and percentage of respondents characterized as falling into each of three categories within each index (low, moderate or highly stigmatizing attitudes towards each pregnancy outcome), women and men, Zambia and Nigeria, 2009-2010

	Zambia			Nigeria		
Stigmatizing index	Women	Men	p value	Women	Men	p value
Continued childbearing among HIV-Positive Women	4.60 (1.78)	5.35 (1.82)		4.39 (1.83)	4.62 (1.99)	
Low stigma (3-4)	47.57	25.81	<0.001	52.54	50.32	0.1504
Moderate stigma (5-6)	27.87	35.58		22.32	20.72	
High stigma (7-9)	24.56	38.62		25.15	28.95	
Abortion among HIV-Positive Women	7.83 (1.82)	7.73 (1.91)		6.02 (2.46)	6.01 (2.52)	
Low stigma (3-4)	6.083	8.324	0.2958	33.37	34.77	0.7624
Moderate stigma (5-6)	10.05	11.28		15.75	16.36	
High stigma (7-9)	83.87	80.4		50.88	48.87	

Table 4: Odds ratios for logistic regression models examining respondent characteristics associated with relative stigma towards abortion for HIV-positive women as compared to stigma towards continued childbearing for HIV-positive women, Zambia and Nigeria, 2009-2010

	Relative stigma towards HIV-positive women having abortions	
	Zambia	**Nigeria**
Demographic characteristics	N = 868	N = 408
Sex		
Male	1	1
Female	4.02**	1.63*
Age		
15-19	1	1
20-29	1.91	1.56
30-39	6.96*	2.16
40 and older	6.40**	1.29
Number of children		
0	1	1
1-2	2.45	1.35
3-4	0.44	0.83
5+	0.29*	1.35
Education		
None	1.40	4.67**
Some primary	0.36*	1.42
Completed primary	1	1
Above primary	0.26**	1.63
Perceived risk of getting AIDS virus		
None	1	1
Low	0.82	0.89
Moderate to great	0.74	1.51

*p <0.05 , **p <0.01, ***p<0.001

Note: Populations restricted to respondents that indicated differences in stigmatizing attitudes towards HIV-positive women continuing versus terminating their pregnancies (not high/high or low/low stigma towards both outcomes)

Reference List

[1] Stephenson JM, Griffioen A. The effect of HIV diagnosis on reproductive experience. Study Group for the Medical Research Council Collaborative Study of Women with HIV. AIDS 1996;10(14):1683-7.

[2] Desgrées de Loû A, Msellati P, Viho I, Yao A, Yapi D, Kassi P, et al. Contraceptive use, protected sexual intercourse and incidence of pregnancies among African HIV-infected women. DITRAME ANRS 049 Project, Abidjan 1995-2000. International journal of STD & AIDS 2002;13(7):462.

[3] Nöstlinger C, Bartoli G, Gordillo V, Roberfroid D, Colebunders R. Children and adolescents living with HIV positive parents: Emotional and behavioural problems. Vulnerable Children and Youth Studies 2006.

[4] Cooper D, Harries J, Myer L, Orner P, Bracken H. "Life is still going on": Reproductive intentions among HIV-positive women and men in South Africa. Social Science & Medicine 2007;65(2):274-83.

[5] Myer L, Morroni C, Cooper D. Community attitudes towards sexual activity and childbearing by HIV-positive people in South Africa. AIDS care 2006;18(7):772-6.

[6] Sandelowski M, Barroso J. Motherhood in the context of maternal HIV infection. Research in Nursing & Health 2003;26(6):470-82.

[7] Feldman R, Maposhere C. Safer sex and reproductive choice: Findings from "Positive Women: Voices and Choices" in Zimbabwe. Reproductive Health Matters 2003;11(22):162-73.

[8] Cooper D, Bracken H, Myer L, Zweigenthal V, Harries J, Orner P, et al. Reproductive intentions and choices among HIV-infected individuals in Cape Town, South Africa: Lessons for reproductive policy and service provision from a qualitative study. Population Council, New York City 2005.

[9] Moore A, Mirembe F, Singh S, Bankole A, Dauphinee L, Nakabiito C, et al. Child-bearing decisions among HIV-positive women: results from a qualitative study in Kampala, Uganda. International AIDS Converence. 2006. Toronto, Canada.

[10] Gruskin S, Firestone R, MacCarthy S, Ferguson L. HIV and pregnancy intentions: Do services adequately respond to women's needs? IAC 2008 poster. Available at <http://www.hsph.harvard.edu/pihhr/files/news/2008_XVIIIAC/IAC2008/final_posters/pregnancy_intentions.pdf>.

[11] Gruskin S, Firestone R, MacCarthy S, Ferguson L. HIV and pregnancy intentions: Do services adequately respond to women's needs? American journal of public health 2008;AJPH-2008.

[12] Kumar A, Hessinia LH, Mitchell EMH. Conceptualising abortion stigma. Culture, Health, & Sexuality 2009;11:625-39.

[13] Central Statistical Office, Ministry of Health, Tropical Diseases Research Centre, University of Zambia, Macro International Inc. Zambia Demographic and Health Survey 2007. 2009. Calverton, MD, USA, CSO and Macro International Inc.

[14] Henshaw SK, Singh S, Oye-Adeniran BA, Adewole IF, Iwere N, Cuca YP. The incidence of induced abortion in Nigeria. International Family Planning Perspectives 1998;156-64.

[15] National Population Commission (NPC), ICF Macro. Nigeria Demographic and Health Survey 2008. 2009. Abuja, Nigeria, National Population Commission and ICF Macro.

[16] Likwa R, Biddlecom A, Ball H. Unsafe abortion in Zambia. In Brief . 2009. New York, Guttmacher Institute.

[17] Airhihenbuwa CO. Healing our differences: The crisis of global health and the politics of identity. Rowman & Littlefield Pub Inc; 2006.

[18] Sandelowski M, Lambe C, Barroso J. Stigma in HIV Positive Women. Journal of Nursing Scholarship 2004;36(2):122-8.

[19] World Health Organization. Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: Recommendations for a public health approach - 2010 version. 2010.

[20] Norris A, Bessett D, Steinberg JR, Kavanaugh ML, De Zordo S, Becker D. Abortion stigma: A reconceptualization of constituents, causes, and consequences. Women's Health Issues 2011;21(3):S49-S54.

[21] Westoff CF. New estimates of unmet need and the demand for family planning. Macro International; 2006.

[22] World Health Organization. Safe abortion: technical and policy guidance for health systems. World Health Organization; 2003.