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HIV Status and Post-partum Contraceptive Use in an Antenatal Population in Durban, South Africa

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Abstract

Objective—We examined contraceptive use and dual protection in the post-partum period in a Prevention of Mother to Child Transmission (PMTCT) population and whether it varied by HIV status.

Study Design—Data are from a prospective study, the South Africa HIV Antenatal Post-test Support Study. Pregnant participants were recruited from a government clinic in an urban township and the analytic sample was 821. Following enrollment, participants were tested for HIV and administered a questionnaire at baseline and 14 weeks post-partum. We used generalized linear regression models to examine HIV status and use of modern contraceptives at 14 weeks.

Results—The risk ratio of condom use at 14 weeks post-partum was 1.66 (95% CI: 1.36-2.02) for HIV positive compared to HIV negative women. The risk ratio for dual protection (use of a condom and a hormonal method) was 1.96 (95% CI: 1.39-2.79) at 14 weeks for HIV positive compared to HIV negative women.

Conclusions—HIV positive status may be a motivating factor for women to use condoms and dual protection. In this setting where HIV is highly prevalent it is ever more important that women control the timing and limiting of births so as to preserve the health of the mother and child.

Keywords

Contraception; fertility; HIV/AIDS; South Africa; Post-partum

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Introduction

South Africa is home to the largest population of HIV infected persons worldwide (6.1 million) and the adult (ages 15-49) HIV prevalence in South Africa is 17.9% (1). Sixty percent of HIV infected adults over the age of 15 are women in their childbearing years, and most HIV positive women are infected with HIV before the age of 25 (2). Fertility rates in South Africa are quite low, and most South African women want two children on average (3). Current contraceptive use among sexually active women is dominated by the injectable (32%), followed by the pill (12%), female sterilization (10%), male or female condom (8%), IUD (0.5%), and male sterilization (0.5%) (3). In the last 40 years, contraceptive use increased, resulting in declining fertility rates and lengthened birth intervals (4, 5). However, half of births in the five years before the last Demographic and Health Survey were unintended and many first births are mistimed (3).

The South African government initiated a Prevention of Mother to Child Transmission (PMTCT) program in 2001. The PMTCT program goals are to improve HIV testing, engage HIV positive women in care and treatment, prevent HIV infections in children, and avoid future HIV positive births through modern contraceptive use. Modern contraceptive use as a PMTCT intervention has the potential to avert 120,256 HIV positive births in South Africa yearly (6).

The evidence on whether HIV status affects women's fertility desires in sub-Saharan Africa is mixed. Authors of several studies found that women who know they are HIV positive do not want more children. Upon receiving an HIV diagnosis, HIV positive women in Rwanda and Zimbabwe were more likely to report that they did not want any more children compared to HIV negative women (7, 8). In contrast, authors of a number of other studies in South Africa, Kenya and Uganda found that knowledge of positive HIV status increases women's fertility desire (9-11). Researchers from Zambia, Zimbabwe, Cote d'Ivoire, Kenya, Rwanda, South Africa and Tanzania found HIV status did not affect fertility desire because social, cultural and health factors outweighed HIV status on decisions about childbearing (12-14).

Authors from several sub-Saharan African countries found that when PMTCT clients learn their HIV positive status it increases their contraceptive use; however, in most studies, increases in contraceptive use did not persist long-term. In a prospective cohort study of women in Lilongwe, Malawi the authors assessed the effects of learning one's HIV status on contraceptive use and found that use initially increased among HIV positive women, but decreased over time (15). In South Africa, the authors of a study of a PMTCT population in KwaZulu-Natal found that the odds of condom use were higher for HIV positive compared to HIV negative women (16). The authors of another South African study examining any modern contraceptive use in the post-partum period in a PMTCT population in Eastern Cape found no differences in contraceptive use between HIV negative and positive women, but the authors did not control for demographic variation among women (17).

The key to sustaining contraceptive use among PMTCT attendees may be intervening during the post-partum period when women are in contact with the healthcare system and motivated

to use contraception after learning their HIV status. We examined post-partum contraceptive use in a PMTCT population and whether it varied by HIV status. We hypothesized that HIV positive women would be more likely than HIV negative women to use contraceptives and dual protection in the post-partum period.

Materials and Methods

The South Africa HIV antenatal post-test support study

Data are from a prospective study, the South Africa HIV Antenatal Post-test Support Study (SAHAPS), a randomized controlled trial examining the efficacy of an integrated model of HIV post-test support for women attending antenatal care in Durban, South Africa. One thousand five hundred pregnant women attending antenatal care at a government clinic in an urban township were enrolled in the study between 2007-2010. Women were randomized at baseline to standard World Health Organization (WHO)/Centers for Disease Control and Prevention (CDC) HIV counseling and testing or an enhanced counseling and testing intervention. The enhanced counseling and testing intervention included counseling about partner HIV testing, counseling on family planning methods and access to a lawyer to help with social issues. Following the baseline questionnaire and randomization, women were counseled and tested for HIV, so women learned their HIV status before making decisions about contraceptive methods. Women were then followed longitudinally at 6 weeks post-partum, 10 weeks, 14 weeks and 9 months. This study relies on data from questionnaires administered at baseline and 14 weeks post-partum because 6 and 10 week contraceptive data had many missing values and 9 month data were not available to include in the analysis because these are preliminary results.

Eligibility

Pregnant women who presented to the clinic for antenatal care were eligible for screening. Inclusion criteria were: (1) at least 18 years old, (2) had never tested for HIV or had tested negative for HIV at least 3 months prior to recruitment, (3) had a primary intimate partner for at least the past 6 months, (4) planned to live in Durban for at least the next year, (5) planned to bring their infant to the clinic for immunization visits, (6) able to communicate in English or Zulu, and (7) did not need critical care for a high risk pregnancy. SAHAPS is a collaborative study between the University of KwaZulu-Natal (UKZN) located in Durban and the University of North Carolina at Chapel Hill (UNCCH), and has been approved by institutional review boards at both institutions.

Interview procedures

Women were recruited from the antenatal clinic at the study site. Women who met eligibility criteria and gave informed consent were interviewed in Zulu or English by a trained interviewer at baseline and 14 weeks. HIV testing was conducted by a study nurse at the first antenatal visit and a separate consent process was used for HIV testing. Interviews lasted one to one and a half hours and participants were remunerated with 70 Rand (~U.S. $8) at each visit for transportation.

Analytic sample

One thousand fifteen hundred women completed the baseline questionnaire, however, 20 women refused to test for HIV during the study and were excluded. Of the 1,480 women who completed a questionnaire at baseline and tested for HIV, 1,154 (78%) also completed a follow-up questionnaire at 14 weeks post-partum. Women who were pregnant (N=1) or not sexually active (N=275) at 14 weeks were excluded from the analyses. Further, 32 women were missing data on modern contraceptive use at 14 weeks or other variables and were excluded. Therefore the final analysis sample of 821 included women who completed a baseline and follow-up questionnaire, tested for HIV, were sexually active at 14 weeks and had data on modern contraceptive use at 14 weeks.

Analysis

We used generalized linear regression with a log link and binomial distribution to examine the relationships of interest. The dependent variables were condom use and dual protection (use of a condom (male or female) and a hormonal method at the same time) at 14 weeks. The independent variable was HIV status. We examined descriptive statistics for all variables and tested differences between HIV positive and negative women using t-tests (for continuous variables) and chi squared tests (for categorical variables). We used control variables identified in the literature associated with HIV status and contraceptive use. The control variables included: age, relationship duration, education level, religion, marital status, employment status, whether the partner had tested for HIV, age at first sex, number of sexual partners, socioeconomic status, ever contraceptive use, parity and intervention arm. We used the same control variables for all models. HIV status (positive or negative) was recorded in a baseline medical file. Analyses were conducted using Stata 11 (18).

Models

We used generalized linear regression with a log link and binomial distribution to estimate relative risk (18). In the first model, the dependent variable is a measure of condom use at 14 weeks. Women currently using condoms were coded as yes and those not using condoms were coded no. In the second model, we created the dependent variable dual protection. Dual protection is when a woman used both a condom and another hormonal method. Women using dual protection were coded yes and those not coded no. The main independent variable of interest in both models is HIV status.

Results

Of the 821 women included in the analytic sample, 64.7% were HIV negative (N=531) and 35.3% (N=290) were HIV positive (see Table 1). The average age for HIV positive women was 26 and 25 for HIV negative women. Most women had either a middle school (grades 8 to 11) or high school (matric) education. Very few women were married and most were partnered but not living together. A majority of women did not know if their partner had tested for HIV. The average age at first sex reported by women was 18 years old (range: 9-34) and this did not differ by HIV status. Women reported an average of 2.5 lifetime sexual partners (range: 1-28) and the average was higher for HIV positive women (2.9 partners) compared to HIV negative women (2.4 partners). Sixty three percent of HIV

positive and 65% of HIV negative women had ever used a contraceptive method. The two groups were balanced on covariates except for ever contraceptive use. See Table 1 for more details.

The risk ratio of condom use at 14 weeks post-partum for HIV positive women was 1.66 times (95% CI: 1.35-2.01) that of HIV negative women (see Table 2). The risk ratio of dual protection for HIV positive women was 1.97 times (95% CI: 1.39-2.79) that of HIV negative women (see Table 2).

Discussion

Our findings suggest that there is an association between knowledge of positive HIV status and post-partum contraceptive use and dual protection. A strength of our study is the prospective cohort design. Ever use of contraceptives was similar at baseline and we controlled for this in our model, thus strengthening our findings. However, other research in sub-Saharan Africa suggests that this effect is short-term, usually lasting a few months. A prospective cohort study of women in Lilongwe, Malawi assessed the effects of learning one's HIV status on contraceptive use up to one year after diagnosis. Contraceptive use initially increased among HIV positive women, but decreased over time (15). Similar results were found in Kigali, Rwanda, where HIV positive women had initial higher contraceptive use compared to HIV negative women, but use in both groups declined after one and two years, primarily due to contraceptive discontinuation (7). Another study of HIV sero-discordant couples in Lusaka, Zambia showed initial increases in contraceptive use, but no impact on pregnancy incidence, and high levels of user failure and discontinuation (19). After a few months, user failure and contraceptive discontinuation, or other changing factors such as fertility desire and socioeconomic circumstances, appear to become more important than HIV status alone, in the decision to use modern contraceptives.

In our study, many women learned their HIV status for the first time and this provided them the behavioral motivation in the post-partum period to use contraceptives. This motivation is important because a majority of women in South Africa, and in our study, do not know their partner's HIV status. Women using dual protection are able to protect partners from infection or from becoming infected, as well as protecting future offspring if they were to become pregnant again. Prior research indicates that women are amenable to contraceptive adoption in the post-partum period and that it may be an ideal time to counsel women about modern contraceptive use (20). PMTCT programs should capitalize on their motivation during this period to educate women about how to overcome issues of user failure and discontinuation.

Although we only examined post-partum contraceptive use in our study, previous research suggests the importance of addressing health facility and social factors to promote continued contraceptive use after the post-partum period. In sub-Saharan Africa, recent studies suggest several health systems factors that may influence women's contraceptive adoption and merit additional investigation. These factors include: the contraceptive method mix offered at government health facilities, contraceptive counselor's level of knowledge about contraceptive methods, waiting times at public health facilities and service integration

(Voluntary Counseling and Testing-VCT, Family Planning-FP, Maternal and Child Health-MCH) (21, 22).

Limitations

Three hundred twenty six participants (22%) did not return at 14 weeks and 20 participants (1%) refused to test for HIV during the study. Participants lost to follow-up were similar to participants who completed a 14-week visit, except for HIV status. Women lost to follow-up were more likely to be HIV positive. HIV status appears to affect post-partum contraceptive use in this study and therefore may potentially overestimate our results. Fourteen weeks is a short time period for follow-up. We wanted to include measures of ART use and exclusive breastfeeding in our analysis but did not have good data on these variables.

Conclusion

We sought to understand whether knowledge of HIV status is associated with women's post-partum contraceptive use in an urban clinic in Durban, South Africa. Our study contributes additional evidence that HIV status may be a motivating factor for women to use condoms and dual protection. In this setting where HIV is highly prevalent it is ever more important that women control the timing and limiting of births so as to preserve the health of the mother and child.

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Implication

- HIV status may be an important motivating behavioral factor for women to 71 use contraceptives and dual protection in the post-partum period.

Table 1

Sample Characteristics (N=821)

Variable	HIV Positive-N=290	HIV Negative-N=531	P-value*
Condom Use			0.000
Yes	128 (44%)	145 (27%)	
Dual Protection			0.000
Yes	61 (21%)	62 (12%)	
Intended to Use Contraception			0.942
Yes	213 (73%)	373 (70%)	
Age			0.001
Years (range)	26 (18-44)	25 (18-45)	
Education Level			0.000
Primary or less	21 (7%)	29 (5%)	
Grades 8 to 11- Matric	142 (49%)	197 (37%)	
	114 (39%)	278 (52%)	
Beyond matric	13 (4%)**	27 (5%)**	
Religion			0.096
Christian	221 (76%)	434 (82%)	
Traditional/African	54 (19%)	69 (13%)	
Other	15 (5%)	28 (5%)	
Marital status			0.003
Married	12 (4%)	48 (9%)	
Partner-living together	81 (28%)	105 (20%)	
Partner-not living together	197 (68%)	378 (71%)	
Relationship duration			0.000
Years (range)	4 (0.5-23)	5 (0.5-26)	
Employment status			0.006
Housewife	128 (44%)	234 (44%)	
Employed	133 (46%)	202 (38%)	
Student	22 (8%)	83 (16%)	
Unemployed	7 (2%)	12 (3%)**	
Partner has tested for HIV			0.001
Yes	78 (27%)	205 (39%)	
Age at first sex			0.003
Years (range)	18 (12-26)	18 (11-34)	

Variable	HIV Positive-N=290	HIV Negative-N=531	P-value*
Number of sex partners			0.000
Number (range)	2.9 (1-10)	2.4 (1-28)	
Socio-economic status-Number of household assets			0.019
Number (range)	5.0 (0-9)	5.3 (0-9)	
Ever contraceptive use			0.903
Yes	185 (64%)	341 (64%)	
Parity			0.042
One birth	98 (34%)	215 (40%)	
Two births	127 (44%)	186 (35%)	
Three or more births	65 (22%)	130 (24%)**	
Intervention Arm			0.643
Intervention	154 (53%)	273 (51%)	
Control	136 (47%)	258 (49%)	

* T-tests were used for continuous variables and chi-squared tests for categorical variables

** Does not equal 100% due to rounding

Table 2

Results from Generalized Linear Regression

	Model 1-Condom Use Relative Risk (Confidence Interval)	Model 2-Dual Protection Relative Risk (Confidence Interval)
HIV Positive Status	1.69* (1.38-2.07)	1.99* (1.40-2.82)
Intended to Use Contraception	0.87 (0.70-1.09)	0.86 (0.60-1.25)
Age	1.01 (0.98-1.04)	1.00 (0.95-1.05)
Education Level		
Primary or less	0.56** (0.31-1.01)	0.75 (0.31-1.82)
Grades 8 to 11	0.83** (0.67-1.03)	0.89 (0.62-1.27)
Matric	Referent	Referent
Beyond matric	1.22 (0.85-1.75)	1.19 (0.60-2.37)
Religion		
Christian	Referent	Referent
Traditional/African	0.93 (0.71-1.24)	1.07 (0.68-1.70)
Other	0.84 (0.53-1.33)	0.96 (0.45-2.04)
Marital status		
Married	0.84 (0.52-1.37)	0.68 (0.29-1.58)
Partner-living together	1.26* (0.99-1.60)	1.24 (0.84-1.83)
Partner-not living together	Referent	Referent
Relationship duration	1.01 (0.98-1.04)	1.03 (0.99-1.09)
Employment status		
Housewife	Referent	Referent
Employed	1.05 (0.85-1.30)	1.03 (0.73-1.47)
Student	1.04 (0.76-1.41)	0.87 (0.50-1.54)
Unemployed	0.77 (0.37-1.61)	1.14 (0.40-3.28)
Partner has tested for HIV	0.98 (0.79-1.21)	0.92 (0.64-1.32)
Age at first sex	0.99 (0.94-1.03)	1.05 (0.97-1.14)
Number of sex partners	1.03 (0.99-1.08)	0.95 (0.83-1.08)
Socio-economic status-Number of household assets	1.05** (0.99-1.11)	1.09** (0.99-1.19)
Ever contraceptive use	1.51* (1.21-1.90)	2.35* (1.54-3.61)
Parity		
One birth	1.11 (0.87-1.42)	1.13 (0.75-1.70)
Two births	Referent	Referent

	Model 1-Condom Use Relative Risk (Confidence Interval)	Model 2-Dual Protection Relative Risk (Confidence Interval)
Three or more births	1.09 (0.82-1.45)	0.92 (0.56-1.52)
Intervention Arm	0.90 (0.75-1.09)	0.83 (0.61-1.14)

* p=0.05

** p=0.10