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Integrating family planning and prevention of mother to child HIV transmission in Zimbabwe

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Abstract

Objective—Integrate enhanced family planning (FP) and prevention of mother-to-child HIV transmission (PMTCT) services in order to help HIV-positive Zimbabwean women achieve their desired family size and spacing as well as to maximize maternal and child health.

Study Design—HIV-positive pregnant women were enrolled into a standard-of-care (SOC, n=33) or intervention (n=65) cohort, based on study entry date, and followed for three months post-partum. The intervention cohort received education sessions aimed at increasing FP use and negotiation power. Both groups received care from nurses with enhanced FP training. Outcomes included FP use, FP knowledge, and HIV disclosure, and were assessed with Fisher's exact, binomial, and t-tests.

Results—The intervention cohort reported increased control over condom use (p=0.002), increased knowledge about IUDs (p=0.002), increased relationship power (p=0.01), and increased likelihood of disclosing their HIV status to a partner (p=0.04) and having that partner disclose to them (p=0.04), when compared to the SOC cohort. Long-acting reversible contraception (LARC) use in both groups increased from ~2% at baseline to >80% at three months post-partum (p<0.001).

Conclusions—FP and sexual negotiation skills and knowledge, as well as HIV disclosure, increased significantly in the intervention cohort. LARC uptake increased significantly in both the intervention and SOC cohorts, likely because both groups received care from nurses with enhanced FP training. Successful service integration models are needed to maximize health

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Implications: This study provides a rigorously-evaluated intervention to integrate FP education into ante- and post-natal care for HIV-positive women, and also to train providers on FP. Results suggest that this intervention had significant effects on contraception use and communication with sexual partners. This intervention should be adaptable to other areas.

outcomes in resource-constrained environments; this intervention is such a model that should be replicable in other settings in sub-Saharan Africa and beyond.

Keywords

Contraception; HIV/AIDS; intervention; maternal child health; provider training; prevention education

INTRODUCTION

Providing access to family planning is an important strategy for HIV prevention in sub-Saharan Africa [1, 2]. In Zimbabwe, HIV prevalence among antenatal clinic attendees was 16.1% in 2009[3]. Furthermore, only 56% of HIV-positive pregnant women, and 35% of HIV-exposed infants, received antiretroviral therapy (ART) for prevention of mother-to-child transmission (PMTCT), resulting in high vertical transmission rates[4]. In the Harare region, 41% of pregnancies are unplanned, and unmet family planning (FP) need nationwide is ~13% [5, 6].

HIV-positive women who wish to plan and space pregnancies need enhanced access to FP for several reasons. First, FP access is essential to meet the United Nation's Millennium Development Goals (MDGs) related to maternal-child health and HIV[7]. Second, Zimbabwe's National HIV and AIDS Strategic Plan 2011-2015 (ZNASP II) calls for a decrease in unmet FP need for HIV-positive women[8]. Third, FP services may prevent more pediatric infections and be more cost-effective than traditional approaches to PMTCT [1, 2]. Fourth, many African women want to limit total fertility and close birth-spacing [9, 10]. Finally, FP use leads to increased economic and educational opportunities[11].

In Zimbabwe, recent use of modern FP (oral contraceptive pills, intra-uterine devices (IUDs), injections, implants, condoms, and sterilization) among married women was 45-62% [12]. In Harare, the most popular contraceptives were pills (46%), with injectables and implants used at 3.5% each [12]. *Current* FP use in married and co-habitating women may be ≤10% [13]. Furthermore, long-acting reversible contraception (LARC) methods (IUDs and implants) are under-utilized, at <4% in both Zimbabwe and sub-Saharan Africa generally[12, 14]. LARC is highly effective at preventing pregnancy, generally safe for HIV-positive women, more cost-effective than condoms or pills, and discontinued at lower rates than other FP options[15, 16].

Little is known about FP use among HIV-positive Zimbabwean women, although one study found that 93% of positive women had *ever* used FP, predominantly pills (74%), condoms (46%), and injectables (28%) [17]. Neither current nor consistent use were measured. Reported barriers to FP in Zimbabwe include side effects, complications, social stigma, decreased sexual pleasure, partner resistance, gender-based violence, concerns about efficacy, and cost[18, 19].

Integration of health services not only improves the uptake of services and enhances program efficiency, but also improves health outcomes when compared to separate services [20, 21]. Research is needed, however, to test integration models. This project assessed the feasibility and effectiveness of an intervention integrating FP into PMTCT services in order to help HIV-positive Zimbabwean women achieve their desired family size and spacing as well as to maximize maternal and child health.

METHODS

The study adapted and implemented an evidence-based behavior change intervention for HIV-positive pregnant women, and trained healthcare providers in all modern FP methods, including insertion and removal of LARC. Study sites were four public polyclinics in Chitungwiza, Zimbabwe. Informed consent was received from all participants. The study was approved by the Medical Research Council of Zimbabwe (MRCZ) and the Institutional Review Board at the senior author's home institution. There were no protocol deviations or adverse events.

Intervention

The behavioral intervention was adapted from SISTA, a group-level intervention based on Social Learning Theory and the Theory of Gender and Power designed to improve sexual communication skills and condom use. SISTA has been evaluated with African-American and South African women [22, 23]. Focus group and key informant interview data was used to adapt the intervention for this population and these aims while preserving core elements. Our adapted intervention was named "Peers Undertaking Reproductive and Sexual Health Education (PURSE)". PURSE consisted of three 90-minute group sessions held at one of the clinics. The sessions focused on sexual negotiation skills and empowerment, information about HIV, PMTCT, and FP, and communication skills related to sex and FP. Various learning techniques were used, including discussions, behavior modeling, songs/dramatizations, and role-playing. Intervention group women were organized into five cohorts of ~twelve women for the PURSE sessions. All PURSE trainers had previous group facilitation experience and were trained in the PURSE curriculum as well as gender-based violence counseling and referral. Sessions were monitored by the study coordinator for consistency and quality.

The provider training intervention involved educating nurses at participating clinics in provision of all modern FP options, including insertion and removal of LARC. Per Zimbabwean national guidelines, Zimbabwe National Family Planning Commission (ZNFPC) trainers and curricula were used, with additional oversight provided by a member of the research team. The trainings were each five days long and included classroom and clinical components.

For more specific details about the intervention or its implementation, please contact the corresponding author.

Sample Size—We anticipated that having "a lot of control over condom use" would change from 25% to 55% as a result of the intervention [24, 25]. With alpha=0.05, beta=0.80, we needed 33 standard of care (SOC) and 65 intervention participants. The 1:2 ratio of SOC to intervention participants maximize the number of women in the intervention group while maintaining a statistically-valid SOC group within funding constraints.

Participants—This quasi-experimental, prospective intervention trial recruited women from May to August 2011. Women recruited between 27 May and 24 June 2011 were placed in the SOC group and those recruited between 27 June and 24 August 2011 were placed in the intervention group. Women in the intervention group received PURSE, and women in the SOC group did not, but both groups were cared for by nurses receiving enhanced FP training. Participants were HIV-positive women seeking antenatal care (ANC), between 26-38 weeks gestation, 18 to 40 years of age, and English or Shona-speaking. All women who met inclusion criteria during the stated time periods were referred to study staff onsite. No data were collected on women who chose not to participate or were ineligible.

Data Collection and Analysis—Data was collected at baseline, then at the six week post-natal and three month well-child visits. Surveys were given in private study space at the participating clinics. Data on demographics, HIV, PMTCT, pregnancy desires, contraceptive use and knowledge, and relationship power were collected [26]. Two focus groups were conducted among a convenience sample of women from the intervention group in January 2012, after the completion of the follow-up period. Women received small reimbursements for visit attendance per local IRB guidelines. Data were entered by study personnel in Zimbabwe and batch-checked for errors by U.S. staff. All participants were included in the analyses and the unit of analysis was individuals. Data analyses were conducted in SAS 9.3 (Cary, NC) and Fisher's exact tests, t-tests, and binomial tests were used.

RESULTS

Implementation

Overall retention was 96%, with 85% (83/98) and 96% (94/98) completing surveys at six weeks and three months post-partum. Four women were lost to follow-up, 1/33 in the SOC group and 3/65 in the intervention group. In the intervention group, 61/65 (94%) completed all PURSE sessions. Most PURSE sessions happened in the antenatal period, however, 21 (32%) women had at least PURSE session after delivery due to late study entry or early delivery. There were no significant differences between groups at baseline in age, marital status, prior pregnancies, education, or partner employment (Table 1).

Two five-day provider trainings were held. Both covered counseling for all forms of contraception; one also covered implant insertion and removal (January 2011) and the other also covered IUD insertion and removal (March 2011). Each training included classroom training and clinical practice components where devices were actually inserted and removed. For the implant training, 16 nurses attended and all received competency certificates by the end. For the IUD training, 15 nurses attended. Because there were insufficient numbers of patients for the clinical practice section of the IUD training, ZNFPC and study staff followed-up with these nurses over the next year to ensure that all were certified by April 2012.

Overall, 12 nurses received training in both implants and IUDs, three only attending the IUD training, and four only attending the implant training. Out of the 34 nurses working in the study clinics, 19 (56%) were trained in at least one skill set. Training limitations included competing clinical responsibilities and lack of sufficient budget to offer more trainings.

Outcomes

Key outcomes included: (1) women's control over condom use, (2) uptake of LARC, and (3) increased sexual negotiation power and ability to advocate for FP. We also hoped to improve uptake of PMTCT services and HIV disclosure by including PMTCT and HIV information in PURSE. No significant differences were observed at baseline on these outcomes (Table 2), although the "Intend to use condom over next three months" variable was close to significance (p=0.07), with 91.9% of the intervention and 78.8% of the SOC group reporting this intent.

At the six-week visit, 100% of mothers in both groups had discussed contraception with their partners (Table 3). There were significant differences between the groups in reporting having "a lot" of control over condom use (p=0.04), disclosing HIV status to a partner (p=0.048), and in the Relationship Dominance Subscale, with the intervention group being more female-dominant (p=0.01).

At three months post-partum (Table 4), the intervention group reported significantly increased knowledge about IUDs (p=0.002), more power in their relationships (p=0.01), more control over condom use (p=0.002), increased likelihood of disclosing their HIV status to a partner (p=0.04), and having a partner disclose to them (p=0.04). There were no significant SOC versus intervention differences in uptake of contraceptives.

Finally, we compared FP uptake before the most recent pregnancy and at three months post-partum (Table 5). Both cohorts were combined as there were not significant differences between them. There was a significant increase in LARC use (p<0.001) from baseline to three months post-partum. Furthermore, only two women had not accepted modern FP, this was significant from 19 women at baseline (p=0.04).

Qualitative Data

Focus groups suggested that the intervention effectively dispelled misconceptions about both implants and IUDs. These discussions also illustrated reasons for the high uptake of implants and low uptake of IDUs. Women preferred implants because: (1) they felt more comfortable with the five year duration of effectiveness of the implants over the ten years provided by the IUD, (2) they liked not having to return for a follow-up medical visit (women choosing IUDs had to return for one additional visit for safety), and (3) they liked having a procedure on their arm and being able see the implant.

DISCUSSION

This study tested an intervention to enhance FP services within PMTCT programs in order to help HIV-positive women reach their desired family size and spacing, reduce perinatal HIV transmission, and maximize maternal-infant health. The intervention was feasible to implement in this setting, with no major fidelity issues. We observed significant differences between the intervention and SOC groups in terms of increases in: (1) women having “a lot” of control over condom use, (2) identification of IUDs as effective FP methods, (3) disclosure of HIV status to partners, (4) partners disclosing their HIV status, and (5) power in sexual decision-making for women on the Relationship Dominance Subscale.

Three of these five significant effects were apparent at six weeks, but the other two took longer to manifest. We believe this is primarily due to the nature of the immediate post-partum period. Couples are asked to refrain from sex in the first six weeks post-partum, so FP negotiation skills are not relevant where partners are willing to abstain. Furthermore, nine women did have a PURSE session between six weeks and three months post-partum. Further research may be warranted to see when these effects are strongest and if they decrease over time.

There was no significant difference in either any FP uptake or LARC uptake between the two groups. There was, however, a significant change in LARC uptake from “ever used LARC” at baseline to “currently using LARC” at three months post-partum. Within the group of women who accepted a LARC method, virtually all choose implants over IUDs, primarily because of the shorter duration of effectiveness of the implants. We also found a significant increase in women accepting any modern FP method. We hypothesize that the finding that all women (not just the intervention group) increased their uptake of LARC and any modern FP was related to two factors. First, since provider training in provision of LARC and counseling on all FP options was offered to all providers in these clinics for ethical reasons, women in both the SOC and intervention groups had access to providers with this new skill set. Previous evidence suggests that nurses in sub-Saharan Africa frequently lack training specifically in FP [27]. Second, it is well-documented that most women in the immediate post-partum period do not want to become pregnant again quickly,

which may in turn increase FP uptake [9, 10]. Additional research is needed to better understand the effect of the behavioral versus training components of the intervention, as well as the effect of outside factors, on these outcomes.

There were no significant differences between the groups in the “never discussed contraception with partner” variable, as 100% of women in both groups discussed FP with a partner by six weeks post-partum. Anecdotal evidence from study staff suggests that the survey questions about FP use may have been sufficient to spark discussions even among women in the SOC group. Furthermore, the provider training component, which better equipped providers to discuss FP issues with these women, may have helped women have the language and confidence to start these discussions with their partners.

This intervention also had a capacity-building effect, as nurses at the four clinics became certified in IUD and implant insertion and removal. In addition, four health workers were trained to provide the group intervention sessions, providing them with additional skills and experience to work in both HIV and FP-related environments effectively.

Study limitations include: (1) short duration prevented assessment of longer-term effects on HIV and pregnancy prevention and FP discontinuation, (2) small study size, (3) inability to tease-out the effects of the provider training versus PURSE in the increase in LARC and other FP uptake, (4) outcomes relied on self-report, and (5) women not receiving ANC were not included in the study, perhaps limiting generalizability. However, ANC uptake remains high (94%) [28] in this region of Zimbabwe, so the intervention probably reached a group similar to the general population.

In conclusion, a documented barrier to integrating FP into maternal-child care programs in order to limit new HIV infections has been lack of evidence-informed models [20, 29-31]; this study provides such a model. The intervention was quickly and effectively adapted for and implemented in this setting and should be replicable in other sites. As there is increasing need to share resources and methods across program areas, especially in resource-constrained settings, this type of intervention may be essential in order to deliver needed services. Finally, this type of intervention, scaled-up, could have broad global implications as it could help realize both the Zimbabwe National HIV and AIDS Strategic Plan target to decrease unmet need for FP for HIV-positive women and the UN MDGs focused on access to FP and HIV prevention.

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TABLE 1

Demographic characteristics at baseline (N=98)

Variable	Intervention group	SOC group	p
Mean age	28.4	28.6	0.81
Marital status, %	--	--	--
Married or living w/partner	90.8	100.0	ref
No current partner	9.2	0.0	0.07
Prior pregnancies, #	1.52	1.48	0.85
Years of school, #	10.0	9.9	0.81
Partner works outside of home, %	19.7	12.1	0.35

TABLE 2

Outcome measures at baseline (n=98)

Variable	Intervention	SOC	Significance
Currently using FP, %	94.1	96.4	0.84
Ever used IUD (%)	2.0	0.0	0.46
Ever used implants (%)	0.0	0.0	NA
Never discussed contraception with partner, %	27.9	24.2	0.70
Sexual Relationship Power Scale: Relationship Dominance Subscale*	2.2	2.0	0.13
Intend to use condom over next three months, %	91.9	78.8	0.07
Have “a lot of” control over condom use	38.7	39.4	0.95
Administered ARVs to infant(s)**, %	17.9	24.1	0.49
Disclosed HIV status to partner, %	84.1	78.8	0.52
Partner disclosed HIV status, %	57.5	51.5	0.71

* 1=partner-dominant; 2=equal; 3=female-dominant [22]

** Primiparous women excluded from this analysis as they would not have had a previous infant to give NVP, n=85

TABLE 3

Outcome measures at 6 weeks postpartum (n=83)

	Intervention	SOC	Significance
Never discussed contraception with partner, %	0.0	0.0	NA
Sexual Relationship Power Scale: Relationship Dominance Subscale	2.6	2.2	**0.01**
Intending to use a condom over next three months, %	94.4	92.9	0.56
Have “a lot of” control over condom use, %	59.3	35.7	**0.04**
Identified IUD as effective at preventing pregnancy	70.4	60.7	0.38
Administer ARVs to infant(s), %	88.7	100.0	0.07
Disclosed HIV status to partner, %	98.2	86.2	**0.048**
Partner disclosed HIV status, %	72.2	55.2	0.11

TABLE 4

Outcome measures at 3 months postpartum (n=94)

Variable	Intervention	SOC	Significance
Currently using LARC, %	87.1	81.8	0.34
IUD	1.6	9.1	0.12
Implant	85.5	72.7	0.11
Using other modern family planning methods*, %	9.7	15.1	0.31
Identified IUD as effective at preventing pregnancy, %	85.5	56.3	**0.002**
Never discussed contraception with partner, %	0.0	0.0	NA
Sexual Relationship Power Scale: Relationship Dominance Subscale	2.5	2.1	**0.01**
Intending to use a condom over next three months, %	93.3	87.1	0.18
Have “a lot of” control over condom use, %	67.2	34.4	**0.002**
Received PMTCT services during pregnancy, %	81.5	87.9	0.42
Administered ARVs to infant(s), %	95.2	96.9	0.58
Disclosed HIV status to partner, %	98.4	87.5	**0.04**
Partner disclosed HIV status, %	75.8	55.2	**0.04**

* Pill, condoms, injectables combined.

Table 5

Family planning use, SOC and intervention cohorts combined

	Ever Used		Recently Used*		3 Months Use		p-value^
Method	**n**	**%**	**n**	**%**	**n**	**%**	
Pill	67	68.4	56	57.1	4	4.1	0.42
LARC	1	1.0	2	2.0	81	82.7	**0.01**
Injection	24	24.5	8	8.2	6	6.1	0.63
Male/female condoms	19	19.4	8	8.2	2	2.0	0.93
None	19	19.4	19	19.4	2	2.0	**0.04**
Total	NA	NA	93	94.9	95	96.9	

* "Recently used" is method used most recently prior to this pregnancy

^ p-value is difference between recent and 3 month use