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Gender-Focused HIV and Pregnancy Prevention for School-Going Adolescents: The *Mpondombili* Pilot Intervention in KwaZulu-Natal, South Africa

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Abstract

This pilot study evaluated a 15 session classroom intervention for HIV and pregnancy prevention among grade 8–10 boys and girls (ages 14–17) in rural South Africa, guided by gender-empowerment theory and implemented by teachers, nurses, and youth peer educators. Pre- and post-intervention surveys included 933 male and female students in two intervention and two comparison schools. Main outcome: condom use at last sex; secondary outcomes: partner communication; gender beliefs and values; perceived peer behaviors; self-efficacy for safer sex. At five months post-intervention, change in condom use did not differ between intervention and comparison schools. Intervention school youth had greater increases in self-efficacy for unsafe sex refusal [OR=1.61; 95% CI=1.01, 2.57] and condom use [OR=1.76; 95% CI=1.07, 2.89], partner communication [OR=2.42; 95% CI=1.27, 4.23], and knowledge of HIV testing opportunities [OR=1.76; 95% CI=1.08, 2.87]. This gender-focused pilot intervention increased adolescents' self-efficacy and partner communication, and has potential to improve preventive behaviors.

Keywords

adolescents; gender; school-based intervention; HIV prevention; pregnancy; South Africa

INTRODUCTION

In South Africa, unequal gender relations structure patterns of HIV risk, contributing to disproportionately high HIV prevalence among young women (Stirling et al., 2008). Among youth aged 15–24, HIV prevalence among women increases from 5.6 percent at ages 15–19 to 17.4 percent at ages 20–24, versus 0.7 percent among teenage males and 5.1 percent of men aged 20–24 (Shisana et al., 2014). Incidence of new HIV infections also differs sharply by gender: 2.5 percent in 15–24 year old women vs. 0.6 percent in men (Shisana et al., 2014). Young women’s higher HIV prevalence partially results from sexual relationships with older partners more likely to be HIV-infected (Dunkle et al., 2004; Harrison, Cleland & Frohlich, 2008). Young women often cannot negotiate safer sex in relationships, and may experience violence for insisting on condom use (Luke, 2003; Hoffman et al., 2006; Andersson, Cockcroft & Shea, 2008).

Substantial research documents sexual risk behaviors among South African adolescents (Eaton, Flisher & Aaro, 2003; Pettifor et al., 2005) and young women (Jewkes et al., 2008; Wingood et al., 2013). Although self-reported condom use at last sex is 50–80 percent among both young men and women in national surveys (Shisana et al., 2014), condoms symbolize infidelity and remain stigmatized in committed relationships (Heeren et al., 2007). Even in casual relationships, reported condom use among adolescents is often inconsistent (Moyo et al., 2008). Consistent condom use is also important for reducing unplanned pregnancies; 35–40 percent of South African women have a first child by age 19, with most adolescent pregnancies unplanned (Kaufman, DeWet & Stadler, 2001; Jewkes, Morrell & Christofides, 2010).

‘Gender-transformative’ interventions focus on reducing gender inequalities as a pathway to HIV prevention (Gupta, 2000; Exner et al., 2003). Stepping Stones (Jewkes et al., 2008), and more recently SISTA South Africa (Wingood et al., 2013) are gender-focused HIV prevention interventions for young adults. Recent research argues for addressing gender as a structural factor underpinning HIV risk (Wingood & DiClemente, 2000; Dunkle & Jewkes, 2007; Rao Gupta et al., 2008; Ehrhardt et al., 2009). However, bringing such interventions to scale can be challenging; some research highlights the limitations of governmental institutions for delivering complex interventions (Bold et al., 2013).

To date, relatively few adolescent behavioral interventions in sub-Saharan Africa have adopted an integrated approach to gender, HIV and pregnancy prevention. We developed, piloted, and evaluated a school-based intervention for male and female adolescents, focused on HIV infection and pregnancy prevention via consistent condom use and delayed sexual debut, with emphasis in the curriculum on gender beliefs and values. In this paper, we report the results of this study for eighth, ninth and tenth-grade students aged 14–17 years in four schools in KwaZulu-Natal Province.

METHODS

Study Site and Setting

The study site was an administrative sub-district of Umkhanyakude District in rural northern KwaZulu-Natal province, located on South Africa's east coast approximately two hours north of Durban, a major city. The area is economically disadvantaged, underserved, and historically a site of labor out-migration, recognized as contributing factors in the region's severe HIV/AIDS epidemic (Lurie et al., 2003). In KwaZulu-Natal, HIV prevalence is 16 percent in the general population, compared to 11 percent nationally, and 14 percent among 15–19 year old pregnant women attending antenatal services, 27 percent at ages 20–24, and 39.5 percent at ages 25–29, compared to 30 percent across all age groups nationally (SA National AIDS Commission, 2012). The sub-district borders a national highway, with a mix of rural scattered homesteads, several small towns, a large trading center, and an adjacent township, and also includes five secondary schools, three public health clinics, and one district hospital. Annual average household income in rural KwaZulu-Natal is about US \$1000; about one-third of households are female-headed (Statistics South Africa, 2012). Most residents' primary language is *isiZulu*.

Secondary school enrolment is above 80 percent in South Africa, making school interventions important for reaching young people (Statistics South Africa, 2012). This intervention – implemented between 2003–2004 - was designed to complement and extend, via more in-depth modules on sexuality, HIV and pregnancy prevention, the national Life Orientation program, a mandatory school curriculum that provides an overview of sexuality and health, including HIV/AIDS, and life skills such as financial literacy and vocational preparation (RSA DoE, 2003), although poor implementation is an ongoing concern.

Design

A quasi-experimental design was employed for this pilot study. Four of the five sub-district schools were pair-matched on size of student body, geographical location (proximity to a town or highway), and number of teachers. Using non-random assignment, one school within each pair was designated to receive the intervention, and the other to receive assessment only. Selection criteria for intervention schools were principal willingness, availability in the school's timetable, and teacher interest and preparedness, including prior training in sexuality education, which usually comprised attendance at one government-sponsored training session (Smith and Harrison, 2013). In each school, two cross-sectional surveys were conducted, one immediately before the 4-month, 15-session classroom-based intervention (baseline) and the other approximately five months after completion (follow-up). Youth in grades 8, 9 and 10, participated in the baseline survey, while the follow-up survey one year later included youth in grades 9, 10 and 11, to account for transition to a new school year. Comparison schools received the standard government Life Orientation curriculum.

Intervention Curriculum and Development

The *Mpondombili* intervention curriculum, written in English and *isiZulu*, included 15 sessions in three content areas: (1) gender-related attitudes and social norms, (2) self-

efficacy, communication and negotiation skills, and (3) knowledge, attitudes and behaviors for HIV/AIDS and pregnancy prevention. Formative research with the adolescent target population highlighted unintended pregnancy as a major concern. Thus, the intervention addressed concurrent prevention of pregnancy and HIV/STIs, using a range of age-appropriate methods (Harrison, 2002; Mantell et al., 2006). The project adapted the family planning term ‘dual protection’ to refer to use of two methods (e.g., non-barrier contraceptive plus condom) or one method (the condom), to prevent both HIV/STIs and pregnancy (Cates & Steiner, 2001). *Consistent condom use* (the condom alone or with a non-barrier contraceptive, such as hormonal contraception) and *delayed sexual debut* were emphasized as appropriate prevention methods for this age group, which included some sexually inexperienced youth. Condoms are the only reliably available prevention method for young people in this setting. With regard to *gender-related attitudes and social norms*, the intervention addressed gender equality, changing gender-role norms, unequal relationship power, and sexual coercion/gender-based violence. In the area of *self-efficacy, communication and negotiation skills*, demonstrations and role plays were used to build self-efficacy and skills in condom use negotiation, partner communication, and unsafe or unwanted sex refusal.

The curriculum was developed over 15 months via a participatory process detailed elsewhere (Harrison, 2002; Mantell et al., 2006). This involved a community-research partnership of Adult Role Models - 6 teachers with prior training (3 from each of the 2 intervention schools) and 3 primary care nurses from adjacent clinics; Youth Peer Educators - 3 male and 6 female students from grades 8–10 at each intervention school; and the US and South African research team (Mantell et al., 2006). Using more female peer educators was intended to strengthen girls’ roles; 3 Senior Peer Educators (grade 11) per school were also selected. Youth Peer Educator selection was competitive, based on motivation, leadership capacity and interpersonal skills.

A draft curriculum, drawing on theory-based HIV prevention interventions and theories of psychological and community empowerment (Wallerstein & Bernstein, 1988; Freire, 1994; Campbell & MacPhail, 2002), gender and power (Connell, 1987), gender-power applied to HIV prevention (Wingood & DiClemente, 2000) and social learning (Bandura, 1986), formed the basis of three stakeholder workshops. The workshops centered on interactive discussion of intervention content – with attention to gendered beliefs and attitudes and the need to foster healthy peer and intergenerational relationships – and received training in participatory methods and skills-building. Workshop participants also critiqued the draft intervention material, including cultural ‘fit’ and adaptability. At the first workshop, the Youth Peer Educators named the project *Mpondombili* (a two-horned newborn calf in *isiZulu*), connoting the idea of a two-pronged approach, or ‘dual protection’. Before implementation, the Youth Peer Educators received two months of weekly training, and the Adult Role Models received two booster sessions.

Intervention Delivery

The in-school curriculum was delivered successfully in the two intervention schools over four months. Teachers led the intervention delivery, supported by the 2 Youth Peer Educators

per session. Weekly sessions were held in each guidance period for grades 8–10, generally three classes of 45 minutes each per grade, in the two intervention schools. The assigned teacher, accompanied by 1 male and 1 female Youth Peer Educator, visited the guidance periods for each grade to deliver each week's lesson. Teachers presented each session's learning objectives, factual information, and skills development goals, which the Youth Peer Educators supported with role plays, vignettes, and demonstrations. The nurses joined the teachers and peer educators for specific lessons on pregnancy, contraception and HIV/STIs. All 15 intervention sessions were completed successfully in all classes in grades 8–10 during the four-month intervention period. The two comparison schools completed the assessments only.

The intervention was well received by administrators, teachers and students. Of the six intervention teachers, only one missed more than one session; that teacher missed 3 sessions due to prior school commitments. Although per-student intervention dosage is unknown, the qualitative process evaluation of 45 students who received the intervention found that, on average, students completed at least 12 sessions and retained key messages (Roberts, 2005). Built-in mechanisms for review and students' opportunities to obtain information from peer educators may also have increased exposure to intervention content. Non-intervention classroom teachers willingly made time for intervention sessions. Operational problems are common in under-resourced school settings in South Africa, and some school- and classroom-level challenges were experienced. These included school-level factors such as large classes (ranging from 30–45 students) that worked against interactive teaching styles, absences by non-intervention teachers, which heightened classroom disorganization and disrupted the learning environment, and student-level factors such as occasional lack of respect for peer educators, and fluctuating attendance that is common in rural schools, due to transportation difficulties, family needs, or lack of resources. One comparison school even experienced an extended closing due to community violence (although this did not affect timely completion of the final assessment).

Participants and Survey Administration

All students aged 14–17 years in grades 8–10 were eligible for study participation. In line with Institutional Review Board guidance at the time of the study, students aged 14 and older provided individual informed consent, based on the age of consent for medical procedures and because the program was embedded in the school curriculum. Parents were informed of the study through a flyer sent home with students, but did not have to provide formal parental consent. Ethical approval to conduct the study was obtained from the Institutional Review Boards of the New York State Psychiatric Institute-Columbia University, Department of Psychiatry, New York, and the University of KwaZulu-Natal, Faculty of Medicine, Durban, South Africa. Approval was also obtained from the district-level Department of Education.

A 40-item survey was administered in *isiZulu* during 45-minute class periods at baseline (immediately before the intervention), and post-intervention (five months after completion). Limited classroom time necessitated a brief survey that precluded multi-item scales. In each classroom, 2–3 trained interviewers read the questions aloud. Students were spaced at some

distance to protect their privacy; they recorded their responses on paper forms and, if needed, could request interviewer assistance. Teachers and other school personnel were not present during the survey.

Measures

Behavioral Outcomes—The primary outcome was condom use at last sexual intercourse among sexually active participants. At baseline, participants reported ‘age at first sex’ and ‘condom use at last sexual intercourse’. Participants who reported an age at first sex were categorized as ‘ever sexually active’. An additional sexual behavior variable was included, ‘ever having talked to a partner about condom use’ (see Table 1 for item wording). These self-reported measures, although subject to potential bias, were the only feasible and cost-effective methods for this study. Other variables measured were:

Risk Perception: Single items (with responses recoded to be dichotomous as strongly agree or agree/strongly disagree or disagree) were used to assess risk perception for HIV and for pregnancy on a four-point scale. *Knowledge* of where to obtain an HIV test also was assessed.

Perceptions of Peer Behavior: Perceptions of peer behavior were assessed in relation to sexual debut and condom use using a four-point scale (1= none to 4=most/all). Two items assessing expectations that girls and boys would be abstinent formed a scale with moderate reliability ($\alpha=.62$), and two separate items assessed peer expectations regarding boys’ and girls’ condom use.

Gender Beliefs and Values: Two items, with responses ranging from 1=strongly disagree to 4=strongly agree, assessed beliefs regarding boys’ and girls’ right to refuse sex in the absence of condom use, with higher scores reflecting more positive, egalitarian beliefs about refusal (“*It is okay for a girl/boy to refuse sex when her/his boyfriend/girlfriend won’t use a condom*”) ($\alpha=0.68$). Another two-item scale using the same response options (Nunnally, 1978) evaluated the degree to which youth rejected the notion that condom use implies that boys and girls have had multiple partners (“*When a girl/boy suggests using a condom, it means s/he has had sex with many people*”) ($\alpha=0.73$).

Safer Sex Self-Efficacy: Two items with 4-point Likert responses ranging from 1=strongly disagree to 4=strongly agree, assessed self-efficacy in relation to refusing sex and condom use (*I would be able to tell my partner that I would like to use a condom*); responses were subsequently recoded to be dichotomous (strongly agree or agree/strongly disagree or disagree). These two items did not form a reliable scale and were treated as single indicators.

Statistical Methods

The primary analysis entailed a comparison of the change over time in the intervention vs. the comparison group. Secondary analyses were intended to compare the same individuals prior to and after the intervention in a linked sub-sample; however, only 196 students at follow-up could be matched with baseline participants. We used generalized linear models (GLM) with an identity link function for continuous variables and for dichotomous

outcomes, we used a logit link function. Dichotomous measures are shown as proportions at baseline and follow-up and the ratio of two odds ratios, i.e., the odds ratio comparing follow-up to baseline in the intervention group relative to the odds ratio comparing follow-up to baseline in the comparison group. An odds ratio larger than 1 indicates that there was a greater increase in the odds of the outcome in the intervention group compared with the change in the odds of the outcome in the comparison group. For continuous measures, mean values at baseline and follow-up and the difference of two differences are shown, i.e., the difference between follow-up and baseline in the intervention group minus the difference between follow-up and baseline in the comparison group.

Because individuals were clustered within schools and some overlap existed between the baseline and follow-up samples, the standard error was inflated to obtain unbiased tests of significance. The following approach was used to obtain an appropriate standard error. We first identified all participants for whom gender, school, mother's initials, and month and day of birth matched at baseline and follow-up. For these participants (about 20% of the sample), the generalized estimating equations (GEE) methodology was sufficient to account for the within-subject correlation. For the remaining participants – those without a precise match – we identified all possible matches from those in the sample at the other time point (i.e., baseline or follow-up) who reported the same gender, school, mother's initials, and date of birth within less than one year of difference (older or younger). For these participants, the correlation between themselves and all possible matches on each outcome variable was also included in the final estimates of standard errors for the regression coefficients. This conservative approach provided adequate inflation of the standard error to account for uncertainty concerning the number of students for whom we had repeated measures. Analyses were conducted for the entire sample and among girls and boys separately.

RESULTS

Participants

A total of 933 students completed usable questionnaires at baseline, including 628 at intervention (I) schools and 305 at comparison (C) schools. 924 completed the questionnaire at follow-up, including 583 at intervention schools and 341 at comparison schools (Table 2). Consistent with the schools' censuses, girls outnumbered boys.

At baseline, 23 percent of students (23.5% (I) vs. 21.8% (C)) reported they were sexually active; boys were more likely than girls to report being sexually active (33.0% boys (I) vs. 38.8% boys (C) and 15.2% girls (I) vs. 11% girls (C)) (Table 2). Among sexually active students, 42 percent of those in intervention schools and 32 percent of those in comparison schools reported using a condom at last intercourse (Table 2). Across both groups, approximately half said they had talked with their partner about condom use (48.6% (I) vs. 53.5% (C)). Risk perception for HIV was higher than it was for pregnancy; 83.5% of youth in intervention schools reported they felt at risk for HIV (vs. 78.2% in (C) schools), and compared with 55.0 percent who felt at risk for pregnancy in intervention schools (vs. 48.5% in (C) schools). Significant baseline differences between the intervention and comparison school students were found for perception of HIV risk (76.1% girls in (C) schools vs. 84.4% in (I) schools), perceptions of peer behavior with respect to sexual debut (mean=4.4 (C) vs

3.8 (I) and condom use (42.0% (I) vs. 32.2% (C)), gender beliefs and values (higher among girls in (C) schools on both items), and knowledge of where to get an HIV test (62.1% boys (C) vs 56.0% (I) and 44.5% girls (C) vs 52.1% (I)).

Intervention Outcomes

Intervention outcomes are shown in Table 2. Among sexually active youth, the relative change from baseline to follow-up in the odds of condom use at last intercourse did not differ between intervention and comparison schools overall (OR = 1.55, 95% CI = 0.77, 3.11) nor among girls and boys separately. There was a greater increase among intervention vs. comparison school youth in self-efficacy for unsafe sex refusal between the two time periods (OR = 1.61; 95% CI = 1.01, 2.57); however, the association was not significant among either girls or boys separately. In intervention relative to comparison schools, there also was a greater increase in self-efficacy for condom use for boys and girls combined (OR = 1.76; 95% CI = 1.07, 2.89) and among girls alone (OR = 1.84; 95% CI = 1.06, 3.18). Significant differences were found between intervention and comparison schools regarding increased partner communication for condom use (OR= 2.42; 95% CI = 1.27, 4.63); this association was present among girls (OR=5.5; 95% CI= 1.80, 16.83) but not boys. For the measure rejecting the concept that initiating condom use implies promiscuity, intervention school youth had a greater increase in mean score relative to comparison school youth (mean difference=1.31, 95% CI = 0.96, 1.67 for girls; mean difference = 1.22, 95% CI 0.49, 1.95 for boys). There were no differences between the two groups in the degree of change in endorsement of beliefs about the acceptability of refusing sex, although youth in both intervention and comparison schools increased their endorsement of this measure. Intervention youth had greater relative change in the odds of knowing where an HIV test could be obtained (OR = 1.76; 95% CI = 1.08, 2.87) overall; the association was significant among boys (OR = 2.50; 95% CI = 1.08, 5.78) but not among girls.

DISCUSSION

This pilot intervention found no difference between intervention and comparison school youth in change in reported condom use at last sex. However, changes favoring intervention group youth overall were observed in measures of self-efficacy for refusal and negotiation, and partner communication. Moreover, for intervention group girls, significant changes in self-efficacy for initiating condom use and in partner communication also were evident. This finding is encouraging given the often-stated need to enhance girls' ability to negotiate, although the lack of change in communication self-efficacy for boys underscores their different needs, possibly with separate strategies. The increase in perceived self-efficacy to refuse unsafe sex among boys and girls may suggest important nascent changes in protective behaviors. More favorable attitudes toward condoms were found; both girls and boys in intervention schools were less likely than comparison school youth to equate condom use with promiscuity. Intervention school youth also had increased knowledge of where to obtain HIV testing. It is not clear why the intervention did not significantly increase reported condom use at last sex, although this result is similar to other South African school-based studies, which also were characterized by small behavioral impacts. Condom access is generally good, although adult attitudes toward adolescent sexual activity remain

judgemental (Harrison, 2008). The observed changes do represent movement toward more gender-equitable and safer sexual behaviors through improved partner communication and self-efficacy.

This study – like many similar reports in the literature - relied on self-reported behaviors to measure outcomes. Although the use of ACASI (audio computer-assisted self-interview) and other data collection methods designed to reduce reporting bias is expanding in under-resourced settings, the problem of bias in self-reported sensitive behaviors remains, and may be particularly acute in younger populations (Jaspan et al., 2007; Phillips, Gomez, Boily & Garnett, 2010; Kelly, Soler-Hampejsek, Mensch & Hewett, 2013), and in school settings, where privacy concerns may be greater. Results need to be interpreted with this limitation in mind, and future research should integrate novel data collection methods that may reduce reporting biases.

Despite inherent challenges, this study contributes further evidence, albeit preliminary, for reducing adolescent sexual risk behaviors, HIV/AIDS, and unintended pregnancy in African settings, in school and non-school settings (reviewed in Gallant & Maticka-Tyndale, 2004; Harrison et al., 2010; Kirby et al., 2006; Michielsen et al., 2010), and to the smaller group of potentially efficacious youth HIV prevention interventions with a gender focus (Morrell et al., 2002; Jewkes et al., 2008; Wingood et al., 2013). In South Africa specifically, several adolescent HIV prevention interventions have achieved modest improvements in self-reported protective behaviors, including condom use (Karnell et al., 2006; Coffman et al., 2011) and delayed sexual debut (Visser, 2007; Jemmott et al., 2010). Other studies have shown an impact on potential mediating factors such as self-efficacy (Coffman et al., 2011), and associated risk behaviors such as alcohol and drug use (Karnell et al., 2006; Coffman et al., 2011), and gender inequalities and leisure-time use (Harrison et al., 2010). To date, none of these interventions – or larger adolescent HIV prevention trials in Africa (Ross et al., 2007; Cowan et al., 2010) - has lowered HIV incidence, and they have shown limited effects on other biological outcomes, eg., herpes simplex virus-2 (HSV-2) (Jewkes et al., 2008) and self-reported pregnancy (Cowan et al., 2010). Interventions with an economic component have shown promise: in Kenya, paying for school uniforms lowered dropout rates and teen childbearing, compared to other prevention strategies, in a randomized evaluation (Dupas, 2011).

The development of gender-focused interventions is especially important in South Africa, given the high levels of gender inequalities and gender-based violence among young people, and the links between these outcomes and HIV infection (Dunkle et al., 2004; Wingood et al., 2013). There are few published accounts of school-based interventions targeting gender and HIV prevention (Morrell et al., 2002), despite calls for a more concerted gender focus in the government's life skills program (Govender & Edwards, 2009).

Several features suggest that the Mpondombili intervention would be feasible and acceptable in South African schools. The modular format is ideal for classroom delivery, and the standardized manual includes detailed 'scripts' in two languages for peers and teachers, making fidelity and replication easier. Further, an integrated approach involving teachers, peer educators, and outside health professionals for intervention delivery increases

feasibility, and addresses teachers' oft-stated requests for implementation support (Ahmed et al., 2012). Pairing peer educators with teachers may improve their performance (Mason-Jones, Mathews & Flisher, 2011; Kim & Free, 2008), and enhance intervention affordability and feasibility. Finally, engaging nurses may lessen judgmental attitudes toward adolescents (Wood & Jewkes, 2006).

This study also has important limitations. First, the non-randomized design does not rule out the possibility that observed effects may be due to superiority in intervention school characteristics apart from the intervention (notably, some baseline characteristics were significantly different.). However, in this small pilot study, random assignment was deemed infeasible, due to the need for a high level of stakeholder and community engagement in the intervention schools over an extended period. Future evaluations should adopt a randomized evaluation design. Second, as a pilot study, the project's resources were limited. The evaluation relied on serial cross-sectional surveys that did not permit evaluation of effectiveness in promoting individual behavior change, given that only a small number of participants could be matched from baseline to follow-up. This left unanswered questions about differences in reported sexual activity (or other behaviors) at the two assessment points, differences in behavior in those who became sexually active after (as opposed to before) the intervention began, and most critically, possible shifts in the composition of the intervention and comparison groups (including crossover between groups, or contamination from outside schools). Finally, the measures of key constructs such as self-efficacy and gender beliefs and values were limited, and thus may not capture the full range of these concepts.

Despite myriad challenges in South African school environments, schools remain an important venue to reach large numbers of young people (Mason-Jones, Mathews and Flisher, 2011; Mathews et al., 2012). Thus, finding ways to mitigate these difficulties is important for future studies. In this study, the level of buy-in and support from the Adult Role Models, both teachers and nurses, Youth Peer Educators and students in the schools, and school officials, was high, contributing to implementation success despite school-level challenges.

Despite the lack of generalizability, these pilot results contribute to emerging evidence on youth HIV prevention interventions in sub-Saharan Africa. The changes in self-efficacy for initiating positive preventive behaviors and partner communication may be important steps toward more gender-equitable outcomes. The lessons learned and small but important changes observed in the short, five-month follow-up period suggest guarded optimism regarding future evaluations of the Mpondombili intervention. The importance of changing unequal beliefs and values about gender-related attitudes and social norms in South Africa cannot be overstated. With an HIV epidemic that remains unmitigated among young women, a concomitant epidemic of gender-based violence, and high rates of unplanned pregnancy, identifying strategies to address these outcomes concurrently, during the adolescent years, is a top national and global health priority. Importantly, South Africa's new national contraceptive policy prioritizes 'dual protection' (RSA DOH, 2012), and a supportive new school health policy is also in place. Evidence from pilot and small-scale interventions is essential to build on this receptive policy environment, leading to eventual scaling-up of

feasible, evidence-based and cost-effective strategies. The Mpondombili project's integrated approach to gender, HIV and pregnancy is in line both with young people's needs, and with South Africa's current policy priorities.

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Table 1

Assessment Items and Scales, Mpondombili HIV and Pregnancy Prevention Intervention in Schools, KwaZulu-Natal, South Africa

Construct and Items	Response Options	Range	α
Behavioral Outcomes			
If Sexually Active How old were you the very first time you had sexual intercourse?	If age reported 13 (1) Otherwise (0)	0–1	–
If Condom Used at Last Intercourse The very last time you had sex, whenever that was, did you or your partner use a condom?	Yes (1) No (0)	0–1	–
If Talked with Partner about Condoms Have you ever talked to your (current) partner about using condoms?	Yes (1) No (0)	0–1	–
Risk Perception			
1. My partner or I could get <u>HIV infected</u> if we had sex with no condom. 2. I believe I am at risk of <u>getting pregnant or getting my partner pregnant</u> .	Strongly disagree or disagree (0) Strongly agree or agree (1)	0–1	
Perceptions of Peer Behavior			
Peer Norms for Sexual Activity 1. Of the girls you know, how many do you think have had sexual intercourse? 2. Of the boys you know, how many do you think have had sexual intercourse?	None (4); A few (3); Some (2); Most/all (1)	2–8	0.62
Peer Norms for Condom Use 1. Of the girls you know, how many do you think ask their partners to use condoms? 2. Of the boys you know, how many do you think use condoms with their girlfriends?	None (4); A few (3); Some (2); Most/all (1)	1–4	–
Gender Beliefs and Values			
Beliefs about refusal 1. It is okay for a girl to refuse sex when her boyfriend won't use a condom. 2. It is okay for a boy to refuse sex when his girlfriend does not want him to use a condom. Rejection of idea that condoms symbolize promiscuity 1. When a boy suggests using a condom, it means he has had sex with many people. 2. When a girl suggests using a condom, it means she has had sex with many people	Strongly disagree (1)- Strongly agree (4) Strongly disagree (1)- Strongly agree (4)	2–8	0.68 0.73
Self-efficacy for safer sex behaviors			
1. If I did not want to have sex, I would be able to say no to a partner. 2. I would be able to tell my partner that I would like to use a condom.	Strongly disagree or disagree (0) Strongly agree or agree (1)	0–1	–
HIV Prevention Knowledge If I wanted to have a test for HIV, I would know a place where I could get one.	Yes (1) No (0) Not sure (0)	0–1	–

Table 2
Outcomes for Mpondombili HIV and Pregnancy Prevention Intervention in Schools

	Baseline N = 933			Follow-up N = 924			p-value	95% CI
	Comparison 305	Intervention 628	Comparison 341	Intervention 583	Relative change ^b			
Age, mean years	15.6*	15.4	15.8	16.0				
Gender, %								
Male	39.0*	47.0	44.2	39.3				
Female	61.0	53.0	55.8	60.7				
If sexually active, % ^c								
Total Sample	21.8	23.5	31.2	41.5	1.39		1.02, 1.91	
Girls	11.0	15.2	23.7	27.9	1.09		.71, 1.87	
Boys	38.8	33.0	40.5	62.7	1.85		1.15, 2.97	
Behavioral Outcomes								
If condom used last intercourse, % ^d								
Total Sample	32.2	42.0	28.7	48.7	1.55	.22	0.77, 3.11	
Girls	20.0	37.9	32.6	57.9	1.17	.79	0.37, 3.73	
Boys	40.0	44.7	26.8	41.9	1.62	.29	0.66, 4.02	
If talked with partner about condoms, % ^d								
Total Sample	53.5	48.6	48.7	65.4	2.42	<.01	1.27, 4.63	
Girls	66.7	46.9	43.3	64.9	5.50	<.01	1.80, 16.83	
Boys	46.8	49.6	54.1	64.6	1.39	.43	0.62, 3.13	
Risk Perception								
Perceived at-risk for HIV, %								
Total Sample	78.2	83.5	86.5	90.8	1.10	.71	0.67, 1.78	
Girls	76.1*	84.4	83.7	87.8	0.83	.50	0.48, 1.44	
Boys	81.6	82.4	90.8	94.6	1.67	.31	0.62, 4.51	

	Baseline N = 933			Follow-up N = 924			Relative change ^b	p-value	95% CI
	Comparison 305	Intervention 628	Comparison 341	Intervention 583	Comparison 341	Intervention 583			
Perceptions of Peer Behaviour									
Perceived at-risk for pregnancy, %									
Total Sample	48.5	55.0	49.2	60.4	49.2	60.4	1.21	.29	0.85, 1.72
Girls	48.9	55.0	47.8	67.9	47.8	67.9	1.05	.84	0.66, 1.66
Boys	47.8	55.0	51.7		51.7		1.48	.17	0.85, 2.55
Perceptions of Peer Behaviour									
Norms for sexual activity, mean									
Total Sample	4.40***	3.83	3.67	3.38	3.67	3.38	0.28	.08	-0.04, 0.59
Girls	4.55***	3.87	3.73	3.39	3.73	3.39	0.35	.11	-0.08, 0.79
Boys	4.17*	3.79	3.65	3.37	3.65	3.37	0.10	.78	-0.65, 0.86
Perceptions of Peer Behaviour									
Norms for boys= condom use, mean									
Total Sample	2.20	2.33	2.32	2.48	2.32	2.48	0.03	.73	-0.12, 0.17
Girls	2.09	2.20	2.18	2.39	2.18	2.39	0.10	.26	-0.08, 0.28
Boys	2.39	2.48	2.50	2.61	2.50	2.61	0.02	.88	-0.23, 0.27
Perceptions of Peer Behaviour									
Norms for girls= condom use, mean									
Total Sample	2.08***	2.33	2.24	2.42	2.24	2.42	-0.07	.46	-0.27, 0.12
Girls	2.15*	2.33	2.25	2.46	2.25	2.46	0.02	.87	-0.25, 0.30
Boys	1.97***	2.32	2.22	2.34	2.22	2.34	-0.23	.11	-0.52, 0.05
Gender Beliefs and Values									
Beliefs about refusal, mean									
Total Sample	4.38	4.19	6.07	6.27	6.07	6.27	0.38	.20	-0.20, 0.97
Girls	4.43**	3.85	6.20	6.29	6.20	6.29	0.68	.27	-0.53, 1.88
Boys	4.29	4.60	6.00	6.25	6.00	6.25	-0.05	.93	-1.30, 1.19
Gender Beliefs and Values									
Rejection of condoms symbolize promiscuity, mean									
Total Sample	4.82	4.57	5.15	6.16	5.15	6.16	1.26	<.0001	0.90, 1.61
Girls	4.87*	4.48	5.25	6.17	5.25	6.17	1.31	<.0001	0.96, 1.67
Boys	4.74	4.68	5.02	6.18	5.02	6.18	1.22	<.01	0.49, 1.95

	Baseline N = 933			Follow-up N = 924			Relative change ^b	p-value	95% CI
	Comparison 305	Intervention 628	Comparison 341	Intervention 583					
Self-efficacy for safer sex behaviors									
Self-efficacy for refusing unsafe sex, %									
Total Sample	71.2	72.0	76.0	84.1	1.61	.04	1.01, 2.57		
Girls	74.3	77.1	77.8	84.8	1.36	.33	0.74, 2.49		
Boys	66.4	66.1	75.5	83.3	1.63	.20	0.78, 3.45		
Self-efficacy for condom use, %									
Total Sample	85.2	87.5	88.1	94.1	1.76	.03	1.07, 2.89		
Girls	85.0	87.4	87.0	93.8	1.84	.03	1.06, 3.18		
Boys	85.6	87.5	89.8	94.5	1.65	.29	0.65, 4.22		
HIV Prevention Knowledge									
Knows where to get HIV test, %									
Total Sample	51.3 *	53.9	62.6	76.6	1.76	.02	1.08, 2.87		
Girls	44.5 *	52.1	59.5	73.7	1.41	.28	0.76, 2.59		
Boys	62.1 *	56.0	67.8	80.4	2.50	.03	1.08, 5.78		

^aSexually active participants only

^bFor dichotomous variables, ratio of 2 ORs; for continuous measures, difference of 2 differences.

Unless otherwise specified, all models compare the ratio of change in the intervention group to the ratio of change in the comparison group.

^cComparison of intervention and comparison groups (ORs) at follow-up only.

Baseline difference between intervention and comparison schools

* p-value .05,

** p-value .01,

*** p-value .001