



# Pathways to sexual health communication between adolescent girls and their female caregivers participating in a structured HIV prevention intervention in South Africa



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## ABSTRACT

**Rationale:** Interventions that promote sexual health communication between adolescents and their parents or other primary caregivers are an important tool for reducing female adolescents' behavioral risk. Understanding the mechanisms by which interventions effectively foster communication can inform future programs.

**Objective:** An initial evaluation of Let's Talk, a structured, family-centered HIV prevention intervention for vulnerable adolescents in South Africa, found an increase in caregiver-adolescent sexual communication. This analysis expands upon initial findings to explore the role of parental knowledge, the quality of the parent-adolescent relationship, and the mental health of both parties on caregiver-adolescent sexual health communication.

**Method:** Using mixed methods data collected in 2015 and 2016, structural equation modeling of differenced pre- and postintervention survey data from 64 female Let's Talk participants ages 13–17 and their caregivers was used to explore the pathway to increased frequency of caregiver-adolescent sexual health communication. Focus group discussions (FGDs) were held with intervention participants ( $n = 25$ ) and facilitators ( $n = 6$ ).

**Results:** The path analysis indicates that caregivers' mental health indirectly affected caregiver-adolescent relationship quality, and adolescents' mental health exerted a direct effect. Relationship quality, in turn, directly affected the level of parental sexual communication reported by the adolescent. FGDs suggested that cultural norms inhibit frank discussions between caregivers and adolescents about sexual health, but that thoughtfully designed interventions such as Let's Talk can mitigate this barrier. Qualitative findings also echoed quantitative findings about the role of caregiver-adolescent relationship quality and mental health on communication frequency and highlighted the importance of enhancing participants' technical knowledge and particularly their skills related to expression, listening, and anger management to help enable sensitive conversations.

**Conclusions:** Findings overall suggest that a holistic intervention approach emphasizing caregiver-adolescent relationship development and designed to support the mental health of both parties may hold significant promise for enhancing sexual health communication.

## 1. Introduction

Effective prevention efforts are urgently needed to address the disproportionate HIV risk among adolescent girls and young women in Southern Africa (Dellar et al., 2015). In South Africa, HIV prevalence among women increases from 6% at ages 15–19 to 16% at ages 20–24, compared to 5% in both teenage boys and young men (Human Sciences Research Council, 2018). Correspondingly, females age 15–24 have the highest annual HIV incidence rates in the country (Human Sciences

Research Council, 2018). In addition to the biological differences that place females at disproportionate risk, high HIV prevalence among young women in South Africa has been attributed to factors including inconsistent condom use, sexual relationships with older partners, and limited self-efficacy for negotiating safer sex (Harrison et al., 2008; Jewkes et al., 2008; Maughan-Brown et al., 2016; Pettifor et al., 2005; Reddy et al., 2016).

Interventions that promote constructive sexual health communication between adolescents and their parents or other primary caregivers

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are an important tool for reducing adolescents' behavioral risk. Over three decades of research from across the globe suggests that healthy parent-adolescent communication about sex supports safer sex behavior, including the use of condoms and other contraceptives (Markham et al., 2010; Widman et al., 2016). In sub-Saharan Africa, parental communication about sex has been associated with adolescents' HIV protective behavior, including male condom use (Juma et al., 2013; Namisi et al., 2013) and HIV testing (MacPhail et al., 2009). For adolescent girls, the effects of parental sexual health communication are even more pronounced. A recent meta-analysis reported the strongest associations between parental communication and safer sex behaviors when the adolescent is a girl and the parent is a mother (Widman et al., 2016). In South Africa and elsewhere in sub-Saharan Africa, parental communication about sex is relatively uncommon, and when discussions do occur, they are often negative or punitive (Bastien et al., 2011; Coetzee et al., 2014). Cultural taboos are often cited as impediments to such discussions in this context (Bastien et al., 2011; Kuo et al., 2016). However, other individual and family level factors are known to play a role in the occurrence, frequency, and quality of these conversations. Greater understanding of factors that contribute to sexual health communication can inform interventions.

A review of research from sub-Saharan Africa identified parental lack of knowledge of sexual and reproductive health as a crucial barrier to communication for both parents and children (Bastien et al., 2011). For example, a cross-sectional study in Nigeria illustrated an association between maternal knowledge of STI symptoms and more frequent parent-child communication (Berg et al., 2012). A comparative study in the US and Kenya found that in both locations the occurrence of parental HIV communication was associated with receipt of information to educate their child about sex, as well as the parents' self-reported level of skill, comfort, and confidence to communicate about sexuality (Poulsen et al., 2010a). Research from North America also points to the influence of parents' sexual knowledge and comfort level on communication with the adolescent (Byers et al., 2008; Diiorio et al., 2003; Jerman and Constantine, 2010; Sutton et al., 2014).

Naturally, communication between a parent and adolescent can also be affected by parental wellbeing and broader family dynamics. A review of related literature from North America and Australia highlighted the potential for the quality of general communication, healthy family interactions, and positive maternal relationships to impact parent-adolescent communication about sex (Diiorio et al., 2003). For example, adolescent reports of satisfaction with the mother-adolescent relationship predicted the extent of sexual health discussions reported by both the adolescent and mother (Jaccard et al., 2000). Conversely, adolescent depression has been associated with impaired parent-youth communication in studies from both North America and South Africa (Coetzee et al., 2014; Yu et al., 2006). One study from the US similarly suggests that maternal depression may impede parent-teen sexual risk communication (Cederbaum et al., 2013).

Overall, existing research suggests that parent-adolescent sexual health communication may be influenced by related parental knowledge, the quality of the parent-adolescent relationship, and the mental health of both parties—all factors amenable to intervention. Results from a pilot evaluation of Let's Talk, a structured HIV prevention intervention engaging both adolescents and caregivers in South Africa, demonstrated improvements in each of these outcomes alongside increased adolescent-caregiver communication about sexuality (Thurman et al., 2018). The present analysis utilizes mixed methods, including structural equation modeling and qualitative data, to explore the role of these and other potential factors in achieving improved parent-adolescent communication about sex among female intervention participants.

## 2. Method

### 2.1. Intervention

Let's Talk is a structured, manualized, closed small-group intervention for adolescents age 13 or older and their caregivers. It consists of a 14-week group program including separate and joint sessions for adolescents and their caregivers and is designed to enable implementation by community-based facilitators working in resource-limited settings. The intervention was developed in South Africa by the Tulane University Highly Vulnerable Children Research Center in collaboration with researchers from the University of Pretoria, with funding from President's Emergency Plan for AIDS Relief (PEPFAR) via the United States Agency for International Development (USAID) Southern Africa.

The intervention's development and content have been described in detail elsewhere (Visser et al., 2018). Briefly, the Let's Talk conceptual model, based on ecodevelopmental (Szapocznik and Coatsworth, 1999) and social learning theory (Bandura, 1977), suggests that the communication and care provided by their primary caregivers affects adolescents' HIV prevention behavior. Intervention sessions were thus designed to help caregivers communicate more effectively with adolescents, build family strengths, set boundaries, solve problems, and manage difficult family situations. The initial part of the program focuses on emotional wellbeing and family relationships while the latter part focuses on information and skill-building directly related to mitigating sexual risk. Caregivers discuss adolescent risk behavior and barriers to communication about sex, and role-play communicating with adolescents about sensitive issues. Adolescents also discuss the importance of talking about sexual health issues with their caregivers and have opportunities to gain broader self-efficacy skills such as saying no to sex, negotiating condom use and protecting themselves from risky situations. In addition to four joint sessions, caregivers and adolescents have overlapping homework assignments in an effort to build communication skills and improved relationships.

Caregiver-adolescent pairs were recruited for intervention participation by two South African non-profit organizations focused on capacity building of community-based organizations that serve orphans and vulnerable children (OVC) and their families in peri-urban and rural program sites in the City of Johannesburg and Sedibeng districts of Gauteng Province as well as in the Umgungundlovu District of KwaZulu-Natal Province.

### 2.2. Study design

A mixed-methods pilot study of the Let's Talk intervention was conducted over two years. The focus of this paper is a secondary data analysis using qualitative data collected through focus group discussions (FGDs) and pre- and post-test data, exploring the pathways to improved sexual health communication.

Prior to intervention initiation, a baseline survey was administered to eligible caregivers and the adolescents in their care in June and July 2015. A follow-up survey was administered three months following the end of the intervention (nine months after the baseline assessment) to enable comparison of the magnitude and direction of change in short-term outcomes among those exposed to the intervention. Details of the pre- and post-test pilot evaluation, including the study design and sample details, are reported elsewhere (Thurman et al., 2018).

FGDs were held with group facilitators throughout 2015 to understand potential program impact as well as opportunities for program refinement. A second set of FGDs was conducted in November 2016 among program participants in KwaZulu-Natal to assess perceived intervention impact on the adolescent-caregiver relationship and sexual health communication.

Ethical approval for the studies was obtained from the Tulane University Institutional Review Board, USA and the Faculty of

Humanities Research Ethics Committee of the University of Pretoria, South Africa. Informed consent was obtained from all participants (and from a caregiver for adolescents under age 18).

### 2.3. Survey data

#### 2.3.1. Measures

Separate survey instruments were utilized for adolescents and caregivers, although some of the same measures were included across the questionnaires for comparability. Face-to-face interviews were administered to participants in their homes utilizing pre-tested survey instruments translated into isiZulu and Sesotho by professional translators familiar with the vernacular in study communities. Adolescents reported on their caregiver-adolescent sexual risk communication via five items derived from a family communication scale used in previous evaluations of adolescent HIV prevention interventions in South Africa and Uganda (Bhana et al., 2004; Ismayilova et al., 2012). A score for the communication scale was created by summing adolescents' coded response scores, with higher scores reflecting greater frequency (on a four-point scale) of communication about HIV, STIs, condoms, sex, and healthy relationships. Adolescents also reported on their caregiver-adolescent relationship quality using the 25-item parent version of the Inventory of Parental and Peer Attachment (IPPA) (Armsden and Greenberg, 1987). By rating how true IPPA statements were for them, adolescents provided information on the communication, trust, and alienation aspects of attachment to their caregivers. Both caregiver and adolescent surveys included the 21-item Depression, Anxiety and Stress Scale (DASS 21) (Lovibond and Lovibond, 1996) as a measure of participants' mental health, with higher scores indicating greater levels of depression, anxiety and stress. All scales showed good internal consistency with high Cronbach's  $\alpha$ s: adolescent DASS-21 = 0.88; caregiver DASS-21 = 0.91; IPPA = 0.80; sexual risk communication = 0.79). Both surveys included an index composed of seven yes/no items assessing knowledge of HIV transmission, testing, and treatment drawn from the South African Demographic and Health Survey (Department of Health, 2007). Further details about the measures are reported elsewhere (Thurman et al., 2018).

#### 2.3.2. Path analysis

This analysis is limited to data from the 64 female adolescents and their caregivers who attended at least one Let's Talk session and completed both the pre- and post-intervention surveys. Five caregivers had two female adolescents enrolled in Let's Talk and provided separate answers for any adolescent-specific survey questions. Post hoc path analysis was performed using structural equation models to test whether changes in key outcomes were associated with improvements in caregiver-adolescent communication about sexual health.

Values of the key indicators from the baseline survey were subtracted from their values at follow-up to create measures of change. The change scores were approximately normally distributed. The SEM command in Stata/IC 14 (College Station, TX) was used to estimate path coefficients. Robust standard errors were calculated to correct for the clustering of adolescents within caregivers. The error terms from the model were tested for correlation and found to be uncorrelated. The model fit was good with a standardized root mean squared residual (SRMR) of 0.03 and an overall coefficient of determination of 0.26.

### 2.4. Qualitative data

#### 2.4.1. Facilitator focus groups

A total of six FGDs were held with intervention facilitators in each of the two study provinces, midway and at the conclusion of the intervention. Each FGD consisted of 10–12 Let's Talk facilitators, lasted between 1 and 1.5 h, and was conducted in English by a senior member of the research team. Facilitators were asked about participants' reactions during the intervention and behavior change they observed in the

groups.

#### 2.4.2. Participant focus groups

FGD guides were developed to explore the effect of the intervention on participants' relationships, communication, and mental health. The guides were translated into the local language, isiZulu, by two independent professional translators with any differences resolved by a third party. FGD eligibility was limited to Let's Talk participants with at least 50% session attendance. Approximately one month after the program concluded, 25 focus group discussions were conducted: 14 with female adolescents (13–21 years) ( $n = 92$ ) and 11 with their female caregivers ( $n = 78$ ). More than half of the adolescents were between the ages of 16 and 19 years; 54% of caregivers were age 50 or older. Adolescent and caregiver groups were conducted separately to encourage full participation and limit social desirability bias. Discussions were facilitated by a team of trained and experienced field staff unaffiliated with the service provider, bilingual in isiZulu and English, and working in pairs (moderator and note-taker). Groups were conducted in the participants' vernacular, in a comfortable, convenient location with refreshments and transportation reimbursement provided. Discussions lasted between 1 and 1.5 h and were audio-recorded, transcribed, and translated into English by qualified members of the research team.

#### 2.4.3. Qualitative data analysis

Data analysis began with the development of a codebook that was used to analyze data using Atlas ti. New codes were added on an ongoing basis to accommodate emergent themes identified in the transcripts. A thematic analysis based on a phenomenological framework was performed to classify common ideas emerging from the discussions within and between individual respondent groups (Braun and Clarke, 2006). Two South African researchers interpreted the data independently and reached consensus on the interpretation, to enhance the validity of interpretation (Creswell and Miller, 2000).

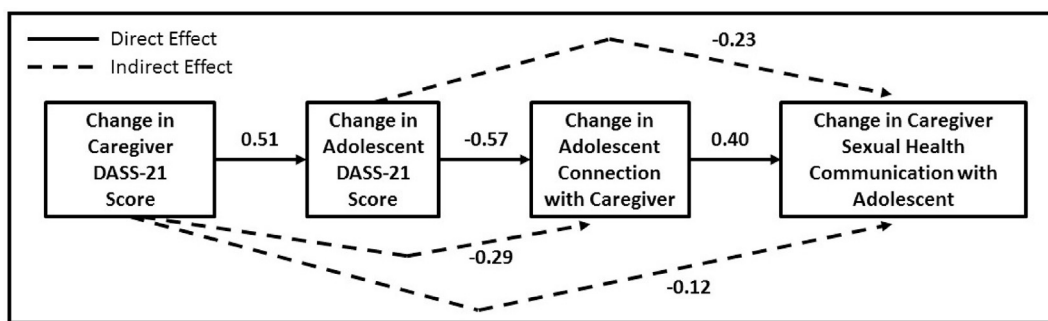
## 3. Results

### 3.1. Path analyses

Fig. 1 depicts the results of the final structural equation model, including only statistically significant factors. It illustrates a positive correlation between a change in caregivers' DASS-21 scores and change in adolescent DASS-21 scores, indicating that an improvement in caregiver mental health was associated with an improvement in adolescent mental health. A change in adolescent DASS-21 scores was inversely correlated with change in adolescent reported adolescent-caregiver connection, meaning that a reduction in adolescent depression, anxiety, and stress was associated with adolescents' improved sense of connection with their caregiver. Adolescent-caregiver connection was positively correlated with improvements in caregiver-adolescent sexual health communication.

No statistically significant direct effects were found for change in caregiver mental health in predicting either changes in adolescent/caregiver connection or sexual health communication, nor was there a significant direct effect of change in adolescent mental health on change in sexual health communication. The statistically significant indirect effects suggest that the level of sexual health communication within an adolescent-caregiver dyad depends in part on the mental health of both parties.

Table 1 presents descriptive statistics for all terms modeled as well as Pearson's correlations among those terms. The standardized coefficients presented in Table 2 demonstrate that changes in adolescent and caregiver mental health had the largest effects on the pathway to improved caregiver-adolescent sexual health communication. A one standard deviation improvement in caregiver mental health was associated with a 0.51 standard deviation improvement in adolescent



**Fig. 1.** Standardized direct and indirect effects for changes in caregiver mental health on changes in adolescent female mental health, changes in female adolescent mental health on changes in adolescent/caregiver connection, and changes in adolescent/caregiver connection on changes in sexual health communication. All terms are statistically significant.

mental health, while a one standard deviation improvement in adolescent mental health was associated with a 0.57 standard deviation improvement in adolescent/caregiver connection.

Only statistically significant direct effects were retained in the models. The models were tested for confounding by the age of the adolescents, but age was dropped from the final model due to lack of significance and lack of effect on the estimated coefficients. Change in caregiver HIV knowledge was tested for predictive effect on sexual health communication, but dropped from the model due to lack of significance.

**3.2. Qualitative**

Focus group respondents' descriptions of how the program improved participants' mental health and family relationships centered on enhanced communication patterns. Participants referred to an increased ability to express their emotions and to share their problems with each other, which resulted in decreased emotional distress and increased bonding opportunities, illustrated as follows:

We learned the way to behave as a parent at home and how to deal with stress. If something is bothering you, you must talk (Caregiver, 35 years).

I don't have stress any more. Even if it comes, I just tell my grandmother about my problem, then she helps me with it (Adolescent, 18 years).

Anger management skills also helped to foster more positive discussions. Participants recognized that uncontrolled anger disrupted communication and in turn, their relationships. Participants commonly described their use of calming techniques learned in the program:

We learnt the “breath in breath out” exercises. That helped us talk to our kids and to control our anger because anger caused bad communication with our kids (Caregiver, 41 years).

Before I became part of this group, if there was someone I was angry with, I would end up wanting to hit the person, but now I control my temper and tell them politely that I did not like what they did (Adolescent, 14 years).

Facilitators also described the assertive communication and active listening skills participants acquired through the intervention as important contributors to positive adolescent-caregiver interactions:

Most [adolescents] really want to express themselves ... assertiveness gave them some form of power. I think assertiveness created the space for positive communication in the family instead of being angry. Now the emotion is expressed in a proper way that one has to listen and the other has to say what they are thinking (Facilitator).

A parent who never talked to her child said that after a session on emotions, the child came in and was crying. It was the first time they sat down and the parent just listened to the child. It brought back the connection (Facilitator).

Caregivers noted that improved interactions with their adolescents facilitated important conversations about sensitive topics, including abuse and relationships:

She is now open to talk to me about things she couldn't talk about and things she has hidden for 12 years like that her uncle has harassed her. I did not know that until the group started. If it wasn't for the group, I wouldn't have known this (Caregiver, 44 years).

She used to threaten with suicide, but now we share everything, we

**Table 1**  
Descriptive statistics for terms tested in the path model and their correlations.

Model Terms	Descriptive Statistics			Correlations				
	Mean	SD	Skew-ness	Δ Caregiver DASS-21 Score	Δ Adolescent DASS-21 Score	Δ Dyad Connection	Δ Dyad Sexual Health Communication	Age of Adolescent
<b>Final Model</b>								
Δ Caregiver DASS-21 Score	-0.247	0.736	0.216					
Δ Adolescent DASS-21 Score	-0.156	0.559	-0.159	0.514				
Δ Dyad Connection	4.828	11.173	-0.183	-0.383	-0.572			
Δ Dyad Sexual Health Communication	1.891	4.711	1.038	-0.188	-0.241	0.401		
<b>Tested but Not Included in Model</b>								
Age of Adolescent	14.734	1.324	0.256	0.008	0.036	-0.118	-0.152	
Δ Caregiver HIV Knowledge Score	0.109	0.819	-0.207	0.157	0.016	0.136	0.02	-0.076

Note: The delta symbol (Δ) indicates that the terms are measured as change in the values from baseline to follow-up measurements. DASS-21 = 21 item Depression Anxiety Stress Scale.

**Table 2**

Standardized path coefficients for changes in caregiver and adolescent female mental health on changes in connectedness and sexual health communication.

Dependent Variable	Independent Variable	Direct Effects					Indirect Effects					R <sup>2</sup>
		Standardized		Unstandardized		p	Standardized		Unstandardized		p	
		Coef.	se	Coef.	se		Coef.	se	Coef.	se		
Adolescent DASS-21 Dyad Connection	Caregiver DASS-21	0.514	0.118	0.391	0.087	0.000						0.264 0.328
	Adolescent DASS-21	-0.572	0.060	-11.440	2.232	0.000						
Sexual Health Communication	Caregiver DASS-21						-0.294	-0.083	-4.472	1.262	0.000	0.161
	Dyad Connection	0.401	0.110	0.169	0.051	0.000						
	Caregiver DASS-21						-0.118	-0.048	-0.755	0.309	0.014	
	Adolescent DASS-21						-0.229	-0.045	-1.933	0.377	0.000	

even talk about her boyfriends. Life is now easy. There are no more secrets between us (Caregiver, 61 years).

Caregivers further described increased frequency and openness in discussions about sexual health issues with their adolescent children. They attributed this to the program's emphasis on the importance of talking about sex with their children, obtaining knowledge and skills they could use in such conversations, and that the adolescents had also gained knowledge directly from the program:

The group also helped me a lot because we were not used to talking about such sensitive topics with our kids, thinking that they are still young for such talks, but coming to the group really helped a lot. I am now able to talk to her about sex (Caregiver, 67 years).

Adolescents' accounts highlighted similar changes in family communication, which they perceived as resulting from the program's emphasis on the importance of adolescent-caregiver communication and caregiver's enhanced knowledge about HIV, STIs, and pregnancy prevention:

I now talk openly to my mom. I can easily ask her now because she is also now knowledgeable about these things. My mom will also ask me questions (Adolescent, 15 years).

Caregivers' communication with adolescents specific to HIV prevention and HIV testing was described by both caregivers and adolescents as clearly framed and direct:

They always have questions on how you get HIV, so I would explain that you can't get HIV just by kissing or handshake, you will get it if you sleep around not using a condom because you don't know whether they are positive or not (Caregiver, 30 years).

I asked my grandmother how is HIV transmitted, she explained that you get it in different ways like if you try to help someone who is bleeding and is HIV positive, and you don't use gloves, and you have cuts you could get HIV, or if you have unsafe sex (Adolescent, 16 years).

In contrast, caregivers' described their communication with their adolescents about sex (without a specific focus on HIV prevention) as more indirect and negatively framed, often highlighting the adolescents' immaturity and punitive consequences of unprotected sex:

I tell her that ... she is still young and she should wait until her time comes, she should not end up having a kid as she is also a kid (Caregiver, 29 years).

I tell her to condomise and use contraceptives because no one is going to raise her child (Caregiver, 23 years).

Facilitators acknowledged that communication challenges remained but felt significant progress had been made. They emphasized that the intervention's explicit focus on in-depth knowledge about HIV prevention, HIV testing, STIs and pregnancy, and opportunities to role-play sexual health communication with adolescents, provided a unique

forum to both practice and understand the value of these kinds of interactions.

It was a challenge due to their upbringing and culture, but they feel much more prepared. They understand the importance of this kind of communication (Facilitator).

At first, they were not comfortable. Some of them were not sure if they will be able to [communicate with their adolescent about sex]. But at the same time, they know that they need to learn because they want to bridge this gap between them and their adolescents (Facilitator).

#### 4. Discussion

This study identified and described pathways through which sexual health communication improved among female participants of the Let's Talk program, utilizing both quantitative and qualitative data. The path analysis illustrates the indirect effect of caregiver mental health and the direct effect of adolescent mental health on dyad connectedness, which directly influenced the level of communication between adolescents and their caregivers about sexual health. These findings suggest that building a closer relationship resulting in increased sexual health communication between caregivers and adolescents is at least partially contingent on supporting the mental health of both parties. Qualitative findings largely echo the importance of these factors but also denote the significance of enhancing communication and anger-management skills to achieve mental health improvements and create a space where sensitive conversations can occur. Thus, while family-based programming is increasingly recognized as an essential and often missing component of HIV prevention efforts (Kuo et al., 2016; Poulsen et al., 2010b), attention to the psychosocial aspects of such interventions may be particularly crucial.

Comprehensive sexuality education, including HIV transmission knowledge, is a common component of adolescent risk reduction programs in South Africa and elsewhere on the continent, albeit with inconsistent effects on risk behavior (Harrison et al., 2010; Michielsen et al., 2010). The initial Let's Talk pilot evaluation showed small but significant improvements in HIV knowledge among intervention participants (Thurman et al., 2018), but this factor was not associated with sexual health communication in the present analysis (see Table 1). While it's encouraging that caregivers are transmitting better information about HIV transmission, knowledge was generally high at baseline, and the measure was limited to key HIV transmission mechanisms and rejection of common misconceptions about HIV; a more comprehensive measure may have led to different results. At the same time, while qualitative findings suggested the importance of the increased technical knowledge caregivers gained, these participants stressed the significance of enhanced self-confidence and comfort to have these conversations. Prior research in South Africa has similarly found that female caregivers' perceived competence to provide information about sexual risk is associated with the occurrence of these conversations with



their adolescent (Goodnight et al., 2014). This finding highlights the importance of providing more than HIV education; caregivers also need skills and practice to gain comfort and confidence in their abilities.

Similar to other studies exploring sexual communication in South African communities, the qualitative research confirmed the existence of cultural taboos surrounding frank sexual discussions between parents and children (Bastien et al., 2011; Phetla et al., 2008). Qualitative findings from this study underscored that although these barriers exist in the study community, they are surmountable. Both caregivers and adolescents reported discussing HIV prevention methods and the importance of protective behaviors; however, caregivers' messages concerning intimate relationships showed a persistent focus on the negative consequences of sexual activity. Nonetheless, the exchange of values and expectations embedded within these conversations may be particularly influential. In a mediation analysis of an effective HIV prevention intervention for young South African adolescents, abstinence in the previous three months was mediated by the belief that parents would or would not approve of the child being sexually active (O'Leary et al., 2012). However, the style of communication – whether open, interactive, comfortable, and skilled – has also been found to be an important mediator between communication and adolescent risk behavior (Diiorio et al., 2003).

#### 4.1. Limitations

Path analyses are typically performed with large datasets and the small sample size in this study prevents the examination of other pathways, including those leading to sexual risk behavior. Few intervention participants were sexually active (Thurman et al., 2018), and the pre- and post-intervention assessment occurred over only a relatively short period. Neither the DASS-21 or IPPA have been normed with similar samples; however, the DASS-21 has been validated among working adults in South Africa (Dreyer et al., 2019) and both scales had good internal consistency in this sample. Nonetheless, the generalizability of the study's results is limited, as participants self-selected into an OVC program and the intervention dose varied among them. Similarly, context-specific considerations may modify the importance of these factors elsewhere within and outside of South Africa. All focus group participants had attended at least half of the intervention sessions whereas the survey sample did not have such a strict threshold. As such, participants in the qualitative analysis may have been more motivated to participate in the intervention than those included in the quantitative analysis, which could result in more positive affirmations about the program's potential among the former group. However, the inclusion of focus group participants with adequate program exposure was necessary and intentional to ensure an informed perspective on the program's processes and potential results.

#### 5. Conclusions

Improved parental communication around sexual health is a key outcome for many adolescent sexual health interventions that target the adolescent-caregiver dyad (Poulsen et al., 2010b; Wight and Fullerton, 2013). The present analysis is meant to provide insight into the pathways to improved communication from one such intervention, thereby informing a framework for future interventions with similar aims. Findings suggest a multi-faceted approach that includes emphasis on improving caregiver-adolescent relationships and supporting the mental health of both caregivers and adolescents may enhance sexual health communication. Results also highlight the importance of building communication skills broadly among both caregivers and adolescents to provide a foundation for effective conversations on sensitive topics. Future intervention research utilizing a robust study design should attempt to replicate this pathway and explore additional outcomes, especially adolescent girls' sexual risk behaviors.

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