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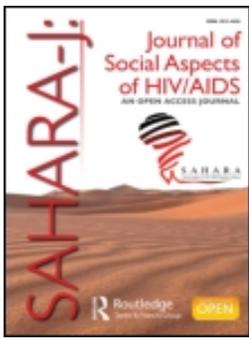
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Predictors of parent–child communication among a nationally representative sample in Nigeria

Katrina Berg*, Christina J. Sun, Stella Babalola

Abstract

This study explores what constructs are associated with parent–adolescent communication about AIDS/sexually transmitted infections (STIs) and sexual relationships in Nigeria. The analyses use data from the 2007 National HIV/AIDS and Reproductive Health Survey on 2593 men and women who had at least one child over the age of 12 years. The respondents were classified as low, medium, or high communicators. Low communicators were parents who did not talk to their child about either AIDS/STIs or sexual relationships. Medium communicators were parents who discussed only one topic with at least one child. High communicators were parents who discussed both topics with at least one child. Logistic regression was used to compare high communicators with low/medium communicators. There are commonalities and differences among men and women in the factors associated with parent–adolescent communication. Age, religion, and knowing where to obtain information about HIV/AIDS were associated with the extent of communication, regardless of the parent's gender. Perceived social support was an important correlate for fathers, while knowledge of female STI symptoms showed a significant association only for mothers. Programmatic and communication implications of the findings include addressing men and women differently, developing strategies to specifically reach younger parents and Muslims, and increasing general awareness of HIV/AIDS information resources. Further research is needed to understand the context, content, and timing of parent–adolescent conversations about AIDS/STIs and sexual relationships and how these factors affect the sexual behaviors of adolescents.

Keywords: parent–adolescent communication, AIDS, STIs, Nigeria

Résumé

Cette étude explore les concepts associés à la communication parent-adolescent sur le SIDA/ les maladies sexuellement transmissibles (MSTs) ainsi que les relations sexuelles au Nigéria. Les analyses ont utilisé les données de l'enquête nationale de 2007 sur le VIH/ SIDA et la santé reproductive effectuée sur 2593 hommes et femmes qui avaient au moins un enfant âgé de plus de 12 ans. Les répondants ont été classés par communicateurs faibles, moyens ou élevés. Les faibles communicateurs étaient les parents qui ne parlaient pas à leurs enfants du SIDA/MSTs ou des relations sexuelles. Les communicateurs moyens étaient les parents ayant discuté de l'un ou l'autre sujet avec au moins un enfant. Les grands communicateurs étaient des parents qui ont parlé des deux sujets à la fois avec au moins un enfant. La régression logistique a été utilisée pour comparer les grands, moyens/faibles communicateurs. Il existe des points communs et des différences entre les hommes et les femmes dans les facteurs associés à la communication parent-adolescent. L'âge, la religion et savoir où obtenir des informations sur le VIH/SIDA ont été associés avec le niveau de communication parent-adolescent, quelque soit le sexe du parent. La perception du soutien social était un important corrélat pour les pères, tandis que la connaissance des symptômes des MSTs par les femmes a montré une association significative seulement pour les mères. Les implications programmatiques et de la communication des résultats montrent qu'il faut s'adresser différemment aux hommes et aux femmes, et développer des stratégies ciblant en particulier les jeunes parents, les musulmans, et accroître la sensibilisation générale des ressources d'information sur le VIH/ SIDA. Des recherches complémentaires sont essentielles pour comprendre le contexte, le contenu et le calendrier des conversations parent-adolescent sur le SIDA/ MSTs ainsi que les relations sexuelles et comment ces facteurs influent sur les comportements sexuels des adolescents.

Mots clés: communication parent-adolescent, SIDA, MSTs, Nigeria

Introduction

High-risk sexual behavior among adolescents in Nigeria is a public health concern, as it may lead to increases in HIV prevalence, sexually transmitted infections (STIs), and unplanned

pregnancies. According to the 2008 Nigeria Demographic and Health Survey (NDHS), 22.6% of males and 51.5% of females have had sex before age 18 (National Population Commission (NPC) & ICF Macro, 2009). Other studies looking at adolescent sexual behavior in Nigeria have found that at least one-third of

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youth (age 24 and under) have engaged in sexual activity (Abiodun & Balogun 2009; Akinwale, Omotola, Manafa, Adeneye, Idowu, Sulyman, *et al.* 2006; Amoran, Onadeko & Adeniyi 2004; Mathew, Shugaba & Ogala 2006; Odimegwu, Solanke & Adedokun 2002; Sunmola, Dipeolu, Babalola & Adebayo 2002). One study noted a high rate of risky sexual behavior among adolescents, with almost half the sample reporting that they had had multiple sex partners in the preceding 30 days (Adeimeji, Heard, Odutolu & Omololu 2008). While a large proportion of Nigerian adolescents know of contraception, they seldom use it (Abiodun & Balogun 2009; Adeimeji *et al.* 2008; Sunmola *et al.* 2002). Condoms are the best known contraceptive method among young people (Abiodun & Balogun 2009; Federal Ministry of Health 2008; Sunmola, Dipeolu, Babalola & Adebayo 2003). However, the frequency of condom use is quite low. According to the NDHS (2008), 92% of sexually active unmarried women between the ages of 15 and 24 knew of condoms, but only 36% had used a condom during the last sexual encounter. Among men of the same age and marital status, 98% knew of condoms, but 50% had used a condom during the last sexual encounter (NPC & ICF Macro 2009). Other studies in Nigeria have found similar gaps between condom knowledge and use (Adebiyi & Asuzu 2009; Adeimeji *et al.* 2008; Adiodun & Balogun 2009; NPC & ICF Macro 2009).

Most of the literature about parent-adolescent communication concerns populations outside Africa. Studies have found that parent-adolescent communication is associated with safer sexual practices among adolescents (Adu-Mireku 2003; Atienzo, Walker, Campero, Lamadrid-Figueroa & Gutierrez 2009; Buzi, Smith & Weinman 2009; DiIorio, Kelley & Hockenberry-Eaton 1999; Hadley, Brown, Lescano, Kell, Spalding, Diclemente, *et al.* 2009; Hutchinson, Jemmott, Jemmott, Braverman & Fong 2003; Leland & Barth 1993). The literature also reports a strong association between parent-adolescent communication and condom use. Parent-adolescent communication about sexual issues has been associated with condom use during the first sexual encounter (Atienzo *et al.* 2009), consistent or more frequent condom use (Adu-Mireku 2003; Hutchinson 2002; Hutchinson & Wood 2007; Whitaker, Miller, May & Levin 1999), and higher condom-use intention and perception of self-efficacy (Cha, Kim & Doswell 2007). Parent-adolescent communication about sexuality has also been associated with adolescents communicating with their sexual partners about birth control, condoms, STIs, and HIV/AIDS (Whitaker *et al.* 1999).

Studies have also looked at the relationship between parent-adolescent communication and age at sexual initiation. Findings have been mixed. In some studies parental involvement in their children's sexual education has been associated with delayed sexual initiation (DiIorio *et al.* 1999; Hutchinson 2002; Lenciauskiene & Zaborskis 2008; Odimegwu *et al.* 2002; Whitaker & Miller 2000). In contrast, no association between parent-adolescent communication and age at sexual initiation was found among adolescents in Tanzania (Kawai, Kaaya, Kajula, Mbwanbo, Kilonzo & Fawzi 2008). Other studies have found parent-adolescent communication about sexual issues to be associated with earlier sexual initiation (Amoran *et al.* 2004; Clawson & Reese-Weber 2003; Zhang, Li, Shah, Baldwin &

Stanton 2007). Regardless of the outcome, most of these studies did not assess the timing of parent-adolescent communication about sexual issues relative to their children's sexual debut. It is possible that some parents wait until their children have already engaged in sexual relations to speak with them about sexual issues.

Only a few studies have examined the factors associated with parent-adolescent communication about sexuality. In most of these studies parents' perception of their ability to speak with their child about sexual issues has been associated with parent-adolescent communication (DiIorio, Resnicow, Dudley, Thomas, Wang, Van Marter, *et al.* 2000; Miller, Fasula, Dittus, Wiegand, Wyckoff & McNair 2009; Miller & Whitaker 2001; Raffaelli, Bogenschneider & Flood 1998). Several studies also found that parents who have more favorable expectations of conversations about sexual issues are more likely to speak with their adolescents about sexual issues (DiIorio *et al.* 2000; Lehr, Demi, DiIorio & Facticeau 2005). Parents who are supportive of adolescents engaging in sexual activity are more likely to discuss sexual issues with their children than parents who would promote abstinence (Lehr *et al.* 2005; Miller & Whitaker 2001; Raffaelli *et al.* 1998). Other factors found to be associated with parent-adolescent communication include belief that condoms prevent HIV, having received information from a health related source, perceiving that their child is at risk, being comfortable discussing sexual issues with their child, and perceived social norms about premarital sexual activity (Miller & Whitaker 2001; Raffaelli *et al.* 1998). Reported barriers to discussing sexual issues with adolescents include parents feeling embarrassed and being inadequately informed about the topic (Jaccard, Dittus & Gordon 2000).

These studies generally find that parent-adolescent communication about sexual topics is more common with mothers than with fathers (Atienzo *et al.* 2009; DiIorio *et al.* 1999). In some studies boys may speak to both parents equally (Ogle, Glasier & Riley 2008), but girls appear to consistently speak more frequently and openly with their mothers (Hutchinson & Wood 2007; Ogle *et al.* 2008). Communication with mothers has been found to be a stronger predictor of regular condom use for girls than communication with fathers (Hutchinson 2002).

Based on the few studies that have been done in Nigeria, it appears that parent-adolescent communication about sexual issues is uncommon. In Lagos, Akinwale *et al.* (2006) found that 45.3% of adolescents had discussed sexuality with their parents, but Sunmola *et al.* (2002) found that only 8.4% of adolescents had obtained information about sexual disease prevention from their parents. In Niger State, almost 70% of parents had never discussed sex or contraception with their children (Odimegwu *et al.* 2002). Several studies indicate that adolescents receive information about sexual issues more from their peers than from their parents (Abiodun & Balogun 2009; Akinwale *et al.* 2006; Amoran *et al.* 2004; Odimegwu *et al.* 2002; Sunmola *et al.* 2002). Those for whom peers were the primary source of information were more likely to be sexually active than those who received information from parents, teachers, and other sources (Amoran *et al.* 2004).

Some factors associated with parents speaking to their adolescent children about sexuality issues include age, religion, education, and family size. One study of 96 parents living in Lagos found that younger parents were more likely to discuss sexuality issues and that Christian and Muslim parents focused on discussing different sex-related topics (Akinwale, Adeneye, Omotola, Manafa, Idowu, Adewale, *et al.* 2009). A study of high school students in Ilorin found that parents with more education communicated about HIV/AIDS more (Musa, Akande, Salaudeen & Soladoye 2008). A study in Lagos made the same observation (Akinwale *et al.* 2009). Also, high school students in families of five or fewer people reported greater communication about HIV/AIDS with their parents than did students in larger families (Musa *et al.* 2008).

As mentioned, there is a dearth of research about parent-adolescent communication in developing countries in general and specifically in Nigeria. The purpose of this study is to understand factors associated with parent-adolescent communication about AIDS, STIs, and sexual relationships in Nigeria. The study has two specific objectives: (1) to examine the parental factors associated with engaging in parent-adolescent communication about sexual issues and (2) to highlight differences in these factors between men and women. It is expected that findings from the study will help program planners to design more effective interventions aimed at strengthening parent-adolescent communication about sexual issues.

Methods

The data derive from the 2007 National HIV/AIDS and Reproductive Health Survey (NARHS), Nigeria. NARHS is based on a nationally representative sample, with participants randomly selected from all states of Nigeria. The survey was a collaborative effort by the Federal Ministry of Health (FMOH), the National Agency for the Control of AIDS, the Society for Family Health, and other stakeholders. The purpose of the survey was to obtain information about HIV/AIDS and reproductive health knowledge and behavior, risk factors related to HIV transmission, reproductive and sexual health trends, factors that influence reproductive and sexual health, and the impact of family planning and HIV/AIDS program interventions.

Multi-stage probability sampling was used to select survey participants (Federal Ministry of Health 2008). In the first stage the research team selected rural and urban localities in each of the 36 states and the Federal Capital Territory. Within the selected localities, enumeration areas were selected. Subsequently, households and individual respondents were chosen within the selected enumeration areas. Data were collected in 2007, with over 10,000 individuals surveyed. Women age 15–49 years and men age 15–64 years were included. Women over the age of 49 were not considered to be of reproductive age and therefore were excluded.

The authors were not involved in the collection of the data. Permission was obtained from the FMOH to use the data for secondary analysis. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board determined that this study does not qualify as human subjects research, as the analysis is based on a pre-existing dataset that has no identifying information about the respondents (IRB No: 00002400).

Measures

Dependent variable

The dependent variable was the level of communication about sexuality between parents and their adolescent children over the age of 12. Parents were asked if they had spoken to their child(ren) about each of eight topics over the preceding 12 months, including both AIDS/STIs and sexual relationships. Respondents answered yes to each topic separately if they had spoken to their child about that specific topic, regardless of whether they had discussed other topics. Based on the data, it is possible to define three levels of communication: low, medium, and high. Low communicators were parents who had not spoken to their children at all in the preceding 12 months about either AIDS/STIs or sexual relationships. Medium communicators had discussed one topic, either AIDS/STIs or sexual relationships, with at least one child. High communicators had discussed both topics with at least one child. For the analyses, medium and low communicators were grouped together and compared with high communicators. By filtering out the high communicators, we expect to identify potentially modifiable factors that can be the focus of efforts to promote greater parent-adolescent communication about sexuality.

Independent variables

Descriptive norm: Participants were asked if they think people talk openly about AIDS in Nigeria. Responses were dichotomized as yes or no.

Perceived social support for young males to use condoms: Participants were asked if they think each of the following groups supports young men using condoms to protect themselves from HIV and STIs: relatives, friends, religious leaders, other young people, healthcare workers, community leaders, and the government. There was high internal consistency among these items (Cronbach's $\alpha = 0.93$). A point was given for each person or organization the participant perceived as supportive. A score was calculated by summing the points and dividing the total by the number of questions answered. The quotient was then multiplied by 10, such that the coefficient obtained can be interpreted as the change in the dependent variable associated with a 10% change in the independent variable.

Perceived social support for young females to use condoms: In the same fashion participants were asked which groups support young women using condoms. Cronbach's alpha for the items was 0.94. Scores were calculated in the same way as for young men.

HIV stigma: Participants were asked a battery of eight questions about discriminatory attitudes, such as unwillingness to eat from the same dish as, and unwillingness to care for, a person with AIDS (see Appendix 1 for full list of these stigma and discrimination-related questions). There was high internal consistency among these items ($\alpha = 0.92$). We computed a score by summing the responses to the eight items. Thus, higher values represent more stigmatizing attitudes.

Knowledge about STI symptoms in women and in men: Participants were asked if they could identify the main symptoms of STIs in women and in men. Because of the low level of knowledge,

these variables were dichotomized as either no knowledge or some knowledge (i.e. could identify at least one symptom).

HIV/AIDS knowledge: Knowledge about HIV/AIDS was assessed by asking participants 14 questions about basic HIV transmission and 12 questions about prevention. Cronbach's alpha was 0.88. A summary score was computed, such that a higher value represented more knowledge.

Access to HIV/AIDS information: Participants were asked if they knew where to obtain HIV/AIDS information. This variable was dichotomized as knowing or not knowing.

Socio-demographic variables: We included the following socio-demographic variables in the models: education, religion, socio-economic status (SES), type of marital union, and age. SES was measured by the number of household appliances owned.

Respondents and sample

For the purposes of this research, we used a subsample of the survey participants. Eligibility criteria included age (25–64 years), having at least one biological or foster child over the age of 12 years, and answering questions about communicating with their child(ren). Respondents less than 25 years of age were excluded in order to avoid including adolescents who are responsible for raising their younger siblings. Of the initial 10,801 participants, 7834 were removed because they did not fit the age criterion and/or did not have a child over the age of 12. An additional 140 participants were removed because they did not answer questions about the outcome variable, communicating with their children. This left a sample of 2827 parents used for this analysis.

Analysis plan

A review of the literature indicated that mothers communicate with their children about sexual issues more than fathers do. Therefore, we ran separate logistic regression models for men and for women (Greene 2008:774).

Results

Descriptive analysis

Table 1 shows the distribution of the dependent variable and demographic variables for the parents in the study. Slightly less than half of the parents had not spoken to their children about either topic. About one-third were high communicators, speaking to their children about both HIV/AIDS and sexual relationships. There was no significant difference in the level of communication by gender of the parent.

The mean age of mothers in this study was just over 37 years (range 25–49), and the mean age of fathers was nearly 47 years (range 25–64). Among fathers, just over half were Muslim; among mothers, half were Muslim. Slightly less than half of the mothers and about one-third of the fathers had no education.

There were significant differences between men and women for all the independent variables except descriptive norm for discussion about AIDS (see Table 1). Men had more knowledge about HIV/AIDS than women, and more men than women were able to

identify male and female STI symptoms. Men perceived more social support for both young males and females to use condoms and had less stigmatizing attitudes toward people with HIV. In addition, more men than women reported knowing where to obtain information about HIV/AIDS.

There were noticeable differences between high communicators and low/medium communicators in socio-demographic and ideational characteristics (Table 2). The differences are notable among both men and women. For example, male and female high communicators were better educated and less likely to be Muslim than the low/medium communicators. Similarly, high communicators were, on average, older and more likely to be of high socio-economic status. In addition, more of the high communicators are knowledgeable about STIs and HIV and are more likely to perceive more social support for condom use by young men and women. The confounding effects of these underlying differences between high communicators and low/medium communicators need to be taken into account as we seek to identify the correlates of parent–child communication.

Factors associated with level of parent–adolescent communication

Fathers

For fathers, age, education, religion, SES, polygamy, perceived support for young women's condom use, knowledge of where to obtain HIV/AIDS information, and the perception that people in the community talk openly about HIV/AIDS were all significantly associated with being a high communicator (see Table 3). For every 1-year increase in age, fathers were 3% more likely to be high communicators than medium or low communicators ($p < 0.001$). Those who had completed primary school ($p < 0.05$) or had higher than secondary education ($p < 0.05$) were more likely to be high communicators than those who has no formal education. Non-Muslim religion was associated with being a high communicator (odds ratio = 2.05, $p < 0.001$). Fathers in the highest SES bracket were 1.46 times more likely to discuss sexual issues with their children than fathers in the lowest SES bracket ($p < 0.05$). Fathers in polygamous relationships were 1.46 times more likely to be high communicators than those in monogamous relationships ($p < 0.01$).

Fathers who perceived that the community openly discusses HIV/AIDS were 1.67 times more likely to be high communicators than medium or low communicators ($p < 0.05$). Fathers who knew where to get HIV/AIDS information were 1.54 times more likely to be high communicators than medium or low communicators ($p < 0.05$). Also, fathers who perceived that the community supports women's use of condoms were 8% more likely to be high communicators ($p < 0.05$).

Mothers

For mothers, age, religion, SES, and knowledge of female STI symptoms were all significantly associated with being a high communicator rather than a low/medium communicator (see Table 3). Knowing where to get HIV/AIDS information was marginally associated with being a high communicator ($p = 0.06$).

Table 1. Sample demographics and significant differences by gender.

	Male (n = 1427)		Female (n = 1400)			
	n	%	n	%		
Level of communication						
Low	671	47.02	680	48.57		
Medium	256	17.94	257	18.36		
High	500	35.04	463	33.07		
Education (highest level attended)***						
None	534	37.50	654	46.71		
Primary	380	26.69	377	26.93		
Secondary	315	22.12	269	19.21		
Higher	195	13.69	100	7.41		
Religion*						
Islam	776	54.46	696	49.79		
Other	649	45.54	702	50.21		
SES***						
Low	414	29.05	501	35.81		
Medium	489	34.32	479	34.24		
High	522	36.63	419	29.95		
Polygamous marriage**						
Yes	438	30.69	497	35.50		
Open discussion about AIDS is the norm in Nigeria						
Yes	1049	73.72	1015	73.07		
Knowledge of male STI symptoms***						
Some knowledge	913	63.98	491	35.07		
Knowledge of female STI symptoms***						
Some knowledge	785	55.01	606	43.29		
Knowledge of where to obtain HIV/AIDS information**						
Yes	823	57.67	716	51.22		
Age	Mean	SD	Range	Mean	SD	Range
	46.93	9.35	25–64	37.25	6.56	25–49
Mean perceived support for young males to use condoms***	5.57	3.83	0–10	4.61	4.00	0–10
Mean perceived support for young females to use condoms***	5.09	3.97	0–10	4.32	4.01	0–10
Mean HIV stigma***	3.43	3.60	0–10	4.58	3.96	0–10
Mean HIV/AIDS knowledge***	6.79	2.33	0–10	6.21	2.78	0–10

*p < 0.05.
**p < 0.01.
***p < 0.001.

For each 1-year increase in age, mothers were 6% more likely to be high communicators ($p < 0.001$). Non-Muslim mothers were 1.48 times more likely to be high communicators than Muslim mothers ($p < 0.05$). Higher SES was also associated with being a high communicator. For example, mothers of high SES were

1.89 times more likely to be high communicators than mothers of low SES ($p < 0.01$). Mothers with knowledge of female STI symptoms were 1.79 times more likely to be high communicators than mothers who did not know any female STI symptoms ($p < 0.01$).

Table 2. Percent distribution of high communicators and low/medium communicators by selected socio-demographic and ideational characteristics, Nigeria 2007.

Socio-demographic and ideational characteristics	Men		Women	
	High communicators	Low/medium communicators	High communicators	Low/medium communicators
Education				
None	20	45.2	30.5	52.9
Primary	33	23.6	31.6	24.9
Secondary	27.3	21	26.6	17.3
Higher	19.7	10.2	11.3	4.8
Religion				
Islam	36.5	64.8	36.4	56.7
Other	63.5	35.2	63.6	43.3
SES				
Low	16.9	33.5	18.7	42.7
Medium	32	34	35.7	33.2
High	51.1	32.4	45.6	24.1
Polygamous marriage				
No	70.2	69	72.4	61.1
Yes	29.8	31	27.6	38.9
Perceive open discussion about AIDS in Nigeria				
No	16.3	31.8	15.2	32.1
Yes	83.7	68.2	84.8	67.9
Knowledge of male STI symptoms				
No	29.7	40.4	50.9	72
Yes	70.3	59.6	49.1	28
Knowledge of female STI symptoms				
No	38.4	49	40.1	64.7
Yes	61.6	51	59.9	35.3
Knows where to obtain HIV/AIDS information				
No	30.6	48.4	36.6	55.4
Yes	69.4	51.6	63.4	44.6
Mean age in years (range: 25–64)	48.5	46.1	38.7	36.5
Mean perceived support for young men to use condoms (range: 0–10)	7	4.7	6.4	3.8
Mean perceived support for young women to use condoms (range: 0–10)	6.5	4.2	6.2	3.5
Mean HIV stigma score (range: 1–8)	1.6	1.7	1.7	1.9
Mean HIV knowledge score (range: 0–26)	18.8	16.6	18.4	14.8
Number of respondents	500	924	463	935

Discussion

In this paper we examined the factors associated with parent–adolescent communication about sexuality in Nigeria. This study differs from most previous studies in that it examined not only socio-demographic factors but also ideational factors.

We hypothesized that the factors associated with parent–adolescent communication differ by gender and so conducted separate analyses for men and women. Our analyses, however, did not

indicate any significant differences between men and women in the level of parent–adolescent communication. In our study mothers and fathers spoke to their children about sexual issues equally. This finding is contrary to those of other studies, which generally find that mothers are more likely than fathers to speak to their adolescent children about sexual issues. One explanation for this discrepancy may be that most of the previous research has been done in developed countries, while very little has been conducted in developing countries. This observation underscores

Table 3. Logistic regression model: high communicators compared with low/medium communicators.

Variable	Fathers		Mothers	
	Odds ratio (95% CI)	p-Value	Odds ratio (95% CI)	p-Value
Age	1.03 (1.02, 1.05)	<0.001	1.06 (1.04, 1.08)	<0.001
Education				
None	RC		RC	
Primary	1.53 (1.07, 2.19)	<0.05	1.19 (0.86, 1.66)	0.29
Secondary	1.18 (0.79, 1.77)	0.43	0.98 (0.66, 1.45)	0.92
Higher	1.67 (1.05, 2.67)	<0.05	1.06 (0.63, 1.80)	0.82
Religion				
Islam	RC		RC	
Other	2.05 (1.54, 2.73)	<0.001	1.48 (1.10, 1.99)	<0.05
SES				
Low	RC		RC	
Medium	1.12 (0.79, 1.58)	0.53	1.49 (1.07, 2.09)	<0.05
High	1.46 (1.01, 2.11)	<0.05	1.89 (1.31, 2.73)	<0.01
Polygamous marriage				
No	RC		RC	
Yes	1.46 (1.10, 1.93)	<0.01	0.92 (0.69, 1.23)	0.58
AIDS knowledge	1.06 (0.99, 1.14)	0.12	1.05 (0.99, 1.13)	0.12
Stigma	0.97 (0.94, 1.01)	0.14	0.98 (0.95, 1.01)	0.19
Support for women's condom use	1.08 (1.01, 1.16)	<0.05	1.04 (0.96, 1.12)	0.37
Support for men's condom use	1.04 (0.97, 1.12)	0.24	1.05 (0.97, 1.13)	0.23
Female STI knowledge				
None	RC		RC	
Some	1.04 (0.71, 1.50)	0.85	1.79 (1.20, 2.67)	<0.01
Male STI knowledge				
None	RC		RC	
Some	0.98 (0.66, 1.46)	0.93	0.99 (0.66, 1.48)	0.97
Access to AIDS information				
No	RC		RC	
Yes	1.54 (1.17, 2.02)	<0.01	1.30 (0.99, 1.71)	0.06
Norm is to discuss AIDS openly				
No	RC		RC	
Yes	1.66 (1.20, 2.31)	<0.01	1.26 (0.90, 1.76)	0.18

Note: RC = reference category.

the need for further research in developing countries to explore parent–adolescent communication patterns.

The data revealed some overlap as well as differences between mothers and fathers in the factors associated with parent–adolescent communication. For both men and women, age, religion, and socio-economic status were positively associated with a high level of parent–adolescent communication. In contrast, being in a polygamous union was significant for men, but it did not appear to play an important role for women.

This study found that, for both men and women, older parents were more likely to speak to their children about sexual issues

and STIs/HIV. This finding, too, runs contrary to previous findings, which suggested that younger parents are more likely to speak to their children about these issues (Akinwale *et al.* 2009; Musa *et al.* 2008). In a similar vein, while we found that men in polygamous households were more likely to communicate with their children, another study in Nigeria found no difference in the level of parent–child communication among adolescents from polygamous or monogamous families (Musa *et al.* 2008).

There were differences between men and women in the ideational factors associated with parent–adolescent communication. For men but not for women, knowing where to obtain information about HIV/AIDS was associated with a higher level

of parent-adolescent communication. In contrast, knowing a symptom of STIs in women was a significant factor for mothers only. We did not find this variable explored in earlier studies.

Perceived social support for young women's use of condoms as well as descriptive norms regarding open discussions about HIV/AIDS in the community were significant factors for fathers but not for mothers. Fathers who perceived that open discussion was the norm were more likely to be a high communicator. The importance of norms for parents also emerged in a qualitative study of rural Igbo parents. Izugbara (2007) found a relationship between local norms of not discussing sex and parents' reluctance to discuss sexual matters with their children.

Conclusion

The findings presented here have important implications for programs and research. For example, the finding that Muslims were considerably less likely than non-Muslims to communicate with their children points to the need to devise appropriate strategies that specifically address Muslims with messages designed to promote parent-child communication about sex. To be most effective, messages should be tailored to the worldview and reflect the key psychographics of this target audience. Similarly, the finding that older parents (who probably have comparatively older children) were more likely to communicate with their children than younger parents has implications for programing. It is possible that parents wait until their adolescent children are of a certain age before discussing sex with them. It is, therefore, pertinent for parents to understand the need to engage their children in discussions about sexual issues at an early age, especially before the child's sexual debut.

The significance of ideational variables as correlates of parent-child communication suggests that efforts to promote communication between parents and children should address the specific psychographics of the parents. Specifically, strategies to promote parent-child communication should seek to increase parents' knowledge about STIs, to describe where to obtain additional information on HIV, to increase open discussion about AIDS in the community, and to improve social support for condom use.

Finally, the finding that the variables correlated with parent-child communication differ by gender suggests that different strategies will work better for men and women. In terms of psychographics, efforts to promote parent-child communication among men should emphasize access to HIV/AIDS-related information, perceived social support for condom use, and the community norm of open discussion of HIV. For women, our study indicates that strategies should focus on increasing knowledge about STIs, but further research will be needed to clarify women's psychosocial determinants of parent-child communication.

This study has some limitations that deserve mention. First, the ideational and communication variables were measured at one point in time, making it impossible to establish a temporal relationship that might help assess causality. Although the results reflect merely associations, the strength of most of these associations suggests that the programmatic implications identified above are

justified. Second, the outcome, having spoken to their child(ren) about sexual issues, informs us that the conversation occurred, but it does not provide additional information about the context, content, or timing of the conversation. It is also not possible to determine who initiated the conversation - parent or child. It is not possible to know if sexual issues are discussed equally with male and female children or, if parents have both sons and daughters, whether parents discussed sexual issues with both sexes or with just one. Also, there is no way to determine what types of information were discussed or if that information was accurate. We also do not know the age of the children when their parents discussed sexual issues with them or whether parents initiated these conversations before or after their children had begun sexual activity. More in-depth research is needed to understand the full picture of parent-adolescent communication in Nigeria, including gender-related differences, in order to design effective communication campaigns.

At the same time, this study has a number of strengths. Previous studies of parent-adolescent communication in Nigeria have focused on a particular state, region, or sub-population. In contrast, this study uses nationwide data, making the results more generalizable. While other studies in Nigeria have looked at adolescent sexual behaviors and parent-adolescent communication in general, to our knowledge this is the first study to explore the determinants of parent-adolescent communication, including ideational factors. Thus, these findings contribute to the understanding of parent-adolescent communication and adolescent sexual behavior in Nigeria.

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Appendix 1.

Full list of stigma and discrimination-related questions used to create the HIV stigma variable. Taken from NARHS 2007.

- 1 Would you be willing to eat from the same dish with a person you knew had the virus that causes AIDS?
- 2 If a male relative of yours became ill with AIDS, would you be willing to care for him in your household?
- 3 If a student has the virus that causes AIDS but is not sick, should he or she be allowed to continue attending school?
- 4 If a female relative of yours becomes ill with AIDS, would you be willing to care for her in your household?

- 5 If a female teacher has the virus that causes AIDS but is not sick, should she be allowed to continue teaching in school?
- 6 If you knew a shopkeeper or food seller who had the virus that causes AIDS, would you buy food from him/her?
- 7 If a colleague in your work place has the virus that causes AIDS but is not sick, should he or she be allowed to continue working with you?
- 8 If a child has the virus that causes AIDS, should he or she be allowed to attend school with other children?

Note: Response options included 'yes', 'no', and 'I do not know'. Originally, 0 = yes, 1 = no, and 2 = I do not know. For the analyses, responses were recoded such that higher values represent more stigmatizing attitudes.