

Contraceptive literacy among school-going adolescents in Botswana

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Abstract

Aim: To examine adolescent contraceptive literacy and condom knowledge in Botswana.

Background: In Botswana, adolescent HIV infection rates remain high and unintended pregnancies are the predominant reason girls drop out of school. Despite a national mandate for comprehensive sexuality education and youth-friendly health services, access to accurate sexual and reproductive health information for adolescents remains limited.

Methods: Two hundred forty adolescents attending secondary schools in Maun, Botswana, completed cross-sectional surveys in 2020. Bivariate and logistic regression examined factors associated with contraceptive literacy and self-reported condom knowledge.

Findings: Although 90% of students were aware of one or more forms of contraception, only 67% could name a method for which they knew a source and only half of sexually active respondents had used birth control during their last sexual experience. Respondents reported that teachers and family members were the most important sources of information; only 8.2% of respondents identified health professionals in that role. Adolescents who consulted nurses had eight times greater odds of reporting correct condom-use knowledge than those who consulted teachers.

Implications for Nursing Policy: The positive association between adolescents' condom-use knowledge and nurses as information resources supports a call to expand nurses' role in health education in secondary schools and clinics in Botswana. Education and training programs for health professionals that build communication skills for working with adolescents should be promoted as an essential step in youth-friendly service provision.

Conclusion: Contraceptive literacy among adolescents in Botswana is low and may contribute to risk behaviors that drive rates of HIV and pregnancies in this population. Interventions to reduce adolescent HIV risk behaviors and unintended pregnancy may prove more effective if they involve nurses as communicators and educators.

KEYWORDS

adolescent care, Africa, contraception, contraceptive literacy, developing countries, HIV/AIDS, nurse-patient, sexuality, secondary schools

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INTRODUCTION

In 2009, the World Health Organization (WHO) called for strengthening how health sectors address adolescent health and development through improved prevention, treatment, and care relating to HIV and early pregnancy (World Health Organization, 2009). Despite improvements, roughly 1.75 million adolescents are HIV positive and accounted for 11% of new adult HIV infections worldwide in 2020 (UNICEF, July 2021). Globally, 23 million girls aged 15–19 years have an unmet need for contraception, and 16 million girls give birth before their 16th birthday (Alkema et al., 2016). Adolescent girls under the age of 15 often face complications during pregnancy and childbirth. Maternal mortality is a leading cause of death in this age group in developing countries. Inadequate sexual and reproductive health (SRH) knowledge adds additional risk to adolescent health. Eighty-five percent of all HIV-infected adolescents globally live in sub-Saharan Africa, where they are often limited in their ability to access SRH information, resources, and clinical care (Woog et al., 2015; Yakubu & Salisu, 2018).

Radio/TV and peers have been identified in numerous studies as primary sources of SRH information for adolescents in sub-Saharan Africa (Smith, 2020). Studies in South Africa and Ethiopia have reported that parents are important resources (Ramathuba, Khoza, & Netshikweta, 2012; Melaku et al., 2014), whereas other studies found that parents played only a limited role (Kagashe & Honest, 2013). Studies that examined the role of nurses and other health providers as SRH educators and information resources for adolescents are few.

Health literacy is defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Ratzan & Parker, 2000, p. iv). Understanding contraceptive literacy, operationalized in this study as knowledge relating to contraception and the correct use of condoms, is an important first step in equipping adolescents to make healthy decisions in sexual relationships.

Adolescent SRH in BOTSWANA

Adolescents represent one fifth of Botswana’s total population and are one of the most at-risk groups for HIV acquisition. Despite a national mandate to improve adolescent SRH education and services (Republic of Botswana Ministry of Youth, Sport and Culture, 2010a, 2010b), implementation has been slow due to inadequate human and physical resources. Adolescent risk behaviors and teen pregnancy remain a major health concern in Botswana, where three in every 10 new HIV infections in 2018 occurred among young people aged 15–24 years and the adolescent fertility rate was five per 1000 births (UNICEF Botswana, n.d.; Malao, 2017). Recent work by these authors has contributed to a broader understanding of the attributes and behaviors among Botswana adolescents that predict whether or not they have engaged in sexual intercourse and are confident in their ability to insist

on condom use (Barchi et al., 2021). Predictors of sexual experience included sources of SRH information, attitudes about the acceptability of adolescent sex, and perception of sexual activity by one’s peers. Adolescents’ confidence in their ability to insist on condoms was significantly associated with age, reported knowledge of correct use of condoms, and endorsement of prevailing gender norms. However, information on adolescent knowledge about modern contraceptive methods in general and the correct use of condoms in order to prevent pregnancy and HIV infection remains limited. The current study addresses this gap by (1) establishing a foundational understanding of adolescent contraceptive literacy in Botswana and (2) identifying the factors associated with adolescent self-confidence regarding correct condom use.

METHODS

Cross-sectional data were collected in 2020 from adolescents aged 14–19 attending secondary public schools in Maun, Botswana. The study forms the research component of the *Aka! Re Koo!* Project (ARK), a 2-year program under the direction of WoMen Against Rape (WAR), to reduce adolescent sexual risk behaviors by improving their knowledge about and access to information about SRH.

Study setting

Maun is an urban town of approximately 56,000 residents. At the local level, health care is provided by a District Health Management Team overseeing a primary hospital and a network of health clinics and posts (Ogundipe & Mash, 2018). Although there is usually one doctor assigned to each clinic, doctors typically rotate among clinics, leaving service provision to nurses.

Sample

Study participants comprised students enrolled in five school-based ARK Clubs established by WAR to help adolescents build emotional skills and be better informed about intimate relationships and SRH. Each club meets weekly to provide SRH-related activities for 50 male and female adolescents aged 14–19 years. Of the 250 students participating in the five ARK clubs, 10 did not participate either due to parental refusals ($n = 2$) or absence on the day surveys were administered ($n = 8$); seven of the surveys conducted were blank or did not specify the gender of the respondent and were omitted from the final analytic sample of 233 respondents.

Measures

The survey instrument was composed of questions adapted from WHO’s Illustrative Questionnaire for Interview Surveys with Young People and the 2005 Botswana Global



School-based Health Survey (Cleland, 2001; Centers for Disease Control and Prevention for HIV-AIDS, Viral Hepatitis, STD, and TB Prevention, 2005). Questions were included about sociodemographic attributes, HIV risk behaviors, pregnancy prevention, condom knowledge, and sources of SRH information. Pilot testing of the survey took place with adolescents at an area private school and minor adjustments, largely in phrasing of questions, were made prior to actual survey administration.

Contraceptive literacy was assessed using a series of true/false/do-not-know statements about four modern forms of contraception—pills, injections, condoms, and emergency contraceptive pills—and awareness of sources where each of these could be obtained. Two composite variables were created from responses, one to indicate if a respondent was familiar with at least one form of contraceptive, and one to indicate if a respondent was able to identify at least one form of contraceptive for which they knew a source. All respondents were asked if they were sexually active and if they knew how to use a condom correctly.

Students were asked whom they considered their most important sources of SRH information. Students could indicate teachers, various family members, nurses and doctors, peers, or other. The survey contained a limited number of sociodemographic measures including age, gender, household structure, school, and grade level. Surveys were written in both English, the language used in all secondary schools in Botswana, and in Setswana, the predominant local language.

Ethical considerations

The study was approved by ethics committees at Rutgers University (2019001151), the University of Botswana (UBR/RES/IRB/BIO/162), the Ministry of Health and Wellness (HPDME:13/18/1), and the Ministry of Basic Education (NWRE 1/12/1 III (22)). The study team received ethics approval to use a “passive” form of parental consent in which parents were presumed to have given permission for their child to participate in the study if they did not communicate their refusal to a school principal after receiving study information. Accordingly, principals at four of the schools sent home an information sheet about the study and asked that parents who wished to have their children “opt out” of the survey contact the school. One school principal, however, preferred an “active” consent process in which parents were asked to return a signed consent document; this preference was accommodated. ARK Club members were given information about the survey on the day it was to be administered and questions answered. The first page of the survey provided information about the study and asked students to indicate their willingness to participate. Students were asked to tick one of two checkboxes to indicate their assent/refusal. On-site members of the study team advised the students that they did not have to answer questions that made them uncomfortable or that they considered too sensitive. Students were encouraged to ask

for assistance if study questions reminded them of upsetting experiences and they wished to speak with a WAR counsellor.

Analysis plan

Distributions were calculated and bivariate analyses examined the association of all study variables with gender. A logistic regression model identified factors associated with self-reported knowledge of correct condom use and explored the potential role played by SRH information sources. Data were analyzed using Stata version 16 (StataCorp, 2019). Methods and findings are reported in accordance with the STROBE Guidelines for Reporting of Observational Studies in Epidemiology (Von Elm et al., 2007).

FINDINGS

Sociodemographic characteristics, sources of SRH information, and their association with gender are reported in Table 1. The majority of respondents were female, aged 15 years, and lived in parent-headed households. Roughly one fifth of participants reported having had sexual intercourse. Almost half of all respondents identified teachers as the most important source of SRH information. When they had an SRH question, more than half of all girls spoke with a teacher and nearly 30% with a family member. Forty-five percent of boys consulted teachers, whereas more than half consulted a family member or peer. Only 8.2% of all respondents identified a nurse or doctor as the most important source of SRH information.

Frequencies and bivariate analyses of contraceptive literacy are reported in Table 2. More than three quarters of all adolescents were aware of oral contraceptives and condoms as pregnancy-preventive methods; awareness of condoms varied significantly by gender, with boys more likely than girls to agree that condoms could be used to prevent pregnancy. There was a significant difference between boys and girls in their awareness of injectable contraception (usually referred to in Botswana as “depo”), and fewer than half of all respondents knew that girls could have periodic injections to prevent pregnancy. Fewer than 19% of all respondents were familiar with emergency contraceptive pills. With the exception of condoms, far fewer adolescents reported that they knew where various forms of contraceptives could be obtained even when they were aware of their existence. Although 90% of students were aware of one or more modern forms of contraception, only 67% knew of a contraceptive for which they also knew a source. Of sexually active adolescents, only 57% of those indicating they could identify one or more forms of contraception and its source had used any form of birth control the last time they had intercourse. Of sexually active adolescents who were aware that condoms could prevent pregnancy and knew where to acquire them, only 65% had used condoms the last time they had sexual intercourse.

Awareness of the protective effects of condoms against pregnancy, HIV/AIDS, and other STDs was high in this sample

TABLE 1 Distribution of respondent sociodemographic characteristics and SRH information sources according to gender (N = 233)

Variable	Values		Males		Females		χ^2	p
	n	%	n	%	n	%		
Gender								
Male	106	45.5						
Female	127	54.5						
Age (Years)								
14	65	27.9	19	18.6	46	37.1	30.74	<0.001
15	123	52.8	51	50.0	72	58.1		
16 and over	38	16.3	32	31.4	6	4.8		
Missing	7	3.0						
Head of household							4.33	0.363
Father	121	51.9	57	55.3	64	52.0		
Mother	52	22.3	21	20.4	31	25.2		
Other male	29	12.5	13	12.6	16	13.0		
Other female	21	9.0	9	8.7	12	9.8		
Self	3	1.3	3	2.9	0	0.0		
Missing	7	3.0						
Year in school							4.87	0.087 ^a
Form 1	7	3.1	6	5.8	1	0.8		
Form 2	220	94.4	96	93.2	124	98.4		
Form 3	2	0.9	1	1.0	1	.8		
Missing	4	1.7						
Sexual intercourse ever							15.98	<0.001
Yes	48	20.6	34	32.4	14	11.0		
No	184	79.0	71	67.6	113	89.0		
Missing	1	0.4						
Most important information source on sexual and reproductive system							4.77	0.189
Family member	66	28.3	29	28.2	37	29.8		
Teacher	115	49.4	47	45.6	68	54.8		
Nurse/doctor	19	8.2	10	9.7	9	7.3		
Peer	27	11.6	17	16.5	10	8.1		
Missing	6	2.6						
To whom are you most likely to talk if you have a question about SRH system in men and women?							10.66	0.014
Family member	62	26.6	25	24.8	37	29.8		
Teacher	104	44.64	39	38.6	65	52.4		
Nurse/doctor	19	8.2	11	10.9	8	6.5		
Peer	40	17.2	26	25.7	14	11.3		
Missing	8	3.4						
Ever had an HIV test							0.64	0.424
No	132	56.7	56	56.0	76	61.3		
Yes	92	39.5	44	44.0	48	38.7		
Missing	9	3.9						
Knows HIV status							0.00	0.947
No	124	53.2	53	60.2	71	60.7		
Yes	81	34.8	35	39.8	46	39.3		
Missing ^a	28	12.0						

^aFisher's exact.

TABLE 2 Distribution of respondent pregnancy prevention and condom knowledge according to gender ($N = 233$)

Variable	Values		Males		Females		χ^2	p
	n	%	n	%	n	%		
Women can take a pill daily to prevent pregnancy (OCP)							4.00	0.135
Not true	30	12.9	18	17.1	12	9.45		
True	124	53.2	50	47.6	74	58.3		
I do not know	78	33.5	37	35.2	41	32.3		
Missing	1	0.4						
Aware of OCP and source							0.56	0.454
Yes	50	21.5	20	20.0	30	24.2		
No	174	74.7	80	80.0	94	75.8		
Missing	9	3.9						
Women can have an injection every 2 or 3 months to prevent pregnancy							7.77	0.021
Not true	21	9.0	15	14.7	6	4.9		
True	106	45.5	41	40.2	65	52.9		
I do not know	98	42.1	46	45.1	52	42.3		
Missing	8	3.4						
Aware of injectable contraceptives and source							1.47	0.226
Yes	40	17.2	14	15.4	26	22.0		
No	169	72.5	77	84.6	92	78.0		
Missing	24	10.3						
A man can use a condom to prevent pregnancy							11.15	0.004
Not true	24	10.3	7	7.1	17	13.6		
True	174	74.7	87	87.8	87	69.6		
I do not know	26	11.2	5	5.1	21	16.8		
Missing	9	3.9						
Aware of condoms and source							1.44	0.230
Yes	131	56.2	62	64.6	69	56.6		
No	87	37.4	34	35.4	53	43.4		
Missing	15	6.4						
A woman can take a pill (ECP) soon after intercourse to prevent pregnancy							2.38	0.305
Not true	86	36.9	34	34.7	52	43.7		
True	45	19.3	24	24.5	21	17.7		
Unaware of ECP	86	36.9	40	40.8	46	38.7		
Missing	16	6.9						
Aware of ECP and source							0.01	0.933
Yes	30	12.9	15	20.3	15	20.8		
No	116	49.8	69	79.7	57	79.2		
Missing	87	37.3						
Aware of one or more forms of contraception							3.61	0.057
Yes	211	90.6	100	96.2	111	89.5		
No	17	7.3	4	3.9	13	10.5		
Missing	5	2.15						

(Continues)

TABLE 2 (Continued)

Variable	Values		Males		Females		χ^2	<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Aware of one or more forms of contraception for which respondent is aware of a source							-0.01	0.923
Yes	157	67.4	75	80.7	82	81.2		
No	37	15.9	18	19.4	19	18.8		
Missing	39	16.7						
Respondent used some form of birth control at time of most recent sexual intercourse							16.94	<0.001
Yes	20	8.6	18	17.8	4	3.2		
No	22	9.4	12	11.9	8	6.4		
Not applicable	184	79.0	71	70.3	113	90.4		
Missing	7	3.0						
Respondent or partner used a condom at time of most recent sexual intercourse							14.29	0.001
Yes	29	12.5	12	11.7	5	3.9		
No	17	7.3	20	18.4	9	7.1		
Not applicable	184	79.0	71	68.9	113	89.0		
Missing	3	1.3						
Condoms can prevent pregnancy							2.46	0.292
Agree	170	73.0	82	77.4	88	69.8		
Disagree	38	16.1	13	12.3	25	19.8		
I do not know	24	10.3	11	10.4	13	69.8		
Missing	2	0.4						
Condoms can protect against HIV/AIDS							5.56	0.062
Agree	159	68.2	74	71.8	85	69.1		
Disagree	33	14.2	19	18.5	14	11.4		
I do not know	34	14.6	10	9.7	24	19.5		
Missing	7	3.0						
Condoms can protect against sexually transmitted diseases							0.62	0.733
Agree	145	62.2	64	63.4	81	65.9		
Disagree	31	13.3	16	15.8	15	12.2		
I do not know	48	20.6	21	20.8	27	22.0		
Missing	9	3.9						
I feel I know how to use a condom correctly							18.75	<0.001
No	154	66.1	55	52.9	99	79.8		
Yes	74	31.8	49	47.1	25	20.2		
Missing	5	2.2						
I am confident I can insist on using a condom every time I have sex							4.91	0.027
No	101	43.4	38	36.9	63	51.6		
Yes	124	53.2	65	63.1	59	48.4		
Missing	8	3.4						


TABLE 3 Characteristics and sources of reproductive health information associated with self-reported knowledge of correct condom use ($n = 196^a$)

Variable	OR	<i>p</i>	95% CI
Age (ref. 14 years)			
15 years	0.27	0.007	0.10, 0.70
16 years and over	0.72	0.609	0.20, 2.59
Form (grade level) (ref. Form 1)			
Form 2	0.23	0.201	0.03, 2.18
Form 3	0.39	0.699	0.00, 45.38
Gender (ref. Female)	3.48	0.006	1.43, 8.43
Head of respondent's household (ref. Father)			
Mother	2.89	0.036	1.07, 7.77
Other male	2.55	0.140	0.74, 8.86
Other female	2.37	0.218	0.60, 9.32
Self	4.67	0.306	0.24, 89.25
Most important source of reproductive health information (ref. Teacher)			
Family member	0.88	0.837	0.26, 3.01
Nurse or doctor	0.51	0.474	0.08, 3.28
Peer	1.54	0.586	0.33, 7.29
To whom is respondent mostly to talk about SRH question (ref. Teacher)			
Family member	1.05	0.943	0.29, 3.77
Nurse or doctor	8.11	0.030	1.23, 53.69
Peer	0.72	0.643	0.18, 2.88
Able to insist on condom use every time (ref. No)			
Yes	3.18	0.045	1.03, 9.83
I do not know.	0.12	0.009	0.02, 0.59
Ever had sexual intercourse (ref. No)	4.28	0.003	1.62, 11.28

McFadden's pseudo- R^2 : 0.34.

Abbreviations: CI, confidence interval; OR, odds ratio.

^aIncludes only those observations for which there were responses for all variables in model.

with awareness ranging from 62% to 73%. Awareness of the correct use of condoms varied significantly according to gender with more boys (47%) than girls (20%) reporting they felt they knew how to use a condom correctly. More than half of the respondents reported that they could always insist on condom use, with boys (63%) being significantly more likely to feel confident than girls (48%).

The results of the logistic regression model examining factors associated with condom use knowledge are reported in Table 3. Being male, living in a household headed by one's mother, feeling confident about insisting on condom use, and having had sexual intercourse were positively associated with self-reported ability to use a condom correctly after controlling for covariates. Males had nearly three and a half times the odds of reporting they knew how to use condoms compared to females. Respondents who lived in homes headed by their mothers were 2.9 times more likely to report knowing correct condom use than those adolescents who lived in father-headed households. Respondents who consulted health professionals on SRH questions had eight times greater odds of reporting they knew the correct use of condoms compared to those who went to teachers with such questions.

Respondents who reported that they could insist on condom use every time were three times more likely to report they knew how to use condoms correctly than respondents who were unable to do so. Sexually active respondents had fourfold greater odds of reporting they knew the correct way to use a condom than those respondents who were not sexually active.

DISCUSSION

This study examines adolescent contraceptive literacy in Botswana and the role that information sources play in young people's confidence regarding correct condom use. It exposes a "gap" in this setting between adolescents' familiarity with various forms of contraception and their behaviors, measured in this study by their awareness of where contraceptives may be obtained and their actual use of them when they engage in sex. This study further explores the important but currently underutilized role that health professionals can play as SRH information resources. In the context of SRH, adolescents make reproductive health decisions based in large part upon their knowledge, their sources of information, and what they

perceive to be the behaviors of their peers (Kyilleh, Tabong & Konlaan, 2018). Prevention campaigns designed with an understanding as to what adolescents do and do not know about SRH are more likely to be successful compared to “off-the-shelf” programs that fail to take baseline SRH knowledge and behaviors into account.

Condoms have been found to be the preferred method of contraception among adolescents and young adults in developing countries (Blank et al., 2012), perhaps a direct result of the many decades of HIV risk reduction campaigns that have promoted the use of condoms to prevent HIV transmission. Importantly, condoms are the only form of contraception among those included in this survey that are widely available to adolescents in Botswana without their having to visit a health clinic or speak with someone about their sexual activity.

Although the number of sexually active adolescents in this sample is small, it is nonetheless concerning that only about a third had used condoms at the time of their most recent sexual intercourse and that 45% had not used any form of birth control whatsoever. Girls were significantly less likely than boys to have used condoms or some other form of contraceptive. These findings differ from those in a 2016 study that found that more than 80% of sexually active adolescents were current and consistent condom users (Ngome, 2016); given the study’s finding of a positive correlation between being older and condom use, this difference is probably due to the younger age of participants in the ARK clubs.

Despite the finding of a significant association in this study between maternal-headed households and self-reported knowledge of correct condom use, very little is known about the effectiveness of mothers as SRH communicators in Botswana. Although research in the United States has found that mothers can exert considerable positive influence on their adolescent children’s risk behaviors (Dancy & DiIorio, 2012), research on the role of parents in their children’s sexual behaviors has produced mixed findings in developing countries (Ramathuba, et al., 2012; Melaku et al., 2014; Kagashe & Honest, 2013). More research is needed to understand the underlying reason for this association, and to test the effectiveness of interventions designed to enhance mothers’ abilities to communicate effectively about SRH topics in this setting.

IMPLICATIONS FOR NURSING POLICY

Findings from this study point to the important but currently underutilized role of health professionals in Botswana in promoting HIV risk behaviors and providing adolescents with effective SRH information. In this study, respondents who saw nurses as people to whom they can go with a question about SRH matters are eight times more likely to feel confident in their ability to use condoms correctly than those respondents who would turn to teachers. Although participants were not specifically asked to provide reasons for their choice of individuals to whom they addressed SRH-related questions, it is probable that students who consulted with nurses did so at the time of a clinical visit for other services such as HIV coun-

selling/testing or clinical care related to HIV or other sexually transmitted diseases, both of which are readily accessible in Botswana.

These findings have several important implications for nursing policy and practice. Although Botswana is a signatory to the 2013 Ministerial Commitments to reduce the adolescent burden of HIV through a multisectoral “whole government” approach to adolescent SRH (Ministries of Education and Health, 2013), there has to date been limited collaboration between the education and health sectors in the delivery of comprehensive sexuality education and health services (Ministries of Education and Health, 2013). Despite the availability of a high-quality comprehensive sexuality education curriculum across all grades (Botswana Ministry of Education and Skills Development, 2005), pre- and in-service training for teachers continues to be limited (UNESCO, 2015).

Licensure and standard-setting organizations, such as the Nursing and Midwifery Council of Botswana, could take a leadership role in supporting greater collaboration between nursing- and teacher-training programs. Nurses could be utilized to good effect in train-the-trainer programs for in-service secondary school teachers, who are viewed overwhelmingly by adolescents in this study as the most important sources for SRH information, in order to equip them to be more effective communicators about the use and availability of condoms and other forms of birth control. Teachers, in turn, should be encouraged to work with in-school nurses and the District Health Management Teams to utilize nurses in delivery of the comprehensive sexuality education curricula.

In order to realize Botswana’s goal of youth-friendly service provision, more opportunities should exist for nurses to interact and communicate with adolescents about contraception and SRH risk reduction, both within secondary schools and in local clinics. Adolescents may underutilize available health services if they have concerns about being shown a lack of respect and/or confidentiality from healthcare providers who disapprove their sexual activity (Chilinda et al., 2014). Some scholars have suggested that continuing education for nurses and midwives might encourage greater empathy in how they deal with sexually active adolescents (Warenius et al., 2006). More opportunities for nursing students to engage with youth as SRH educators would offer a two-way benefit—building communication skills in nurses while at the same time delivering SRH information via an age group that has been shown elsewhere to be a source preferred by adolescents (Smith, 2020). In-school activities for adolescents such as the ARK Clubs can provide an appropriate context in which nurses and nursing students could increase their visibility as youth-friendly sources of SRH information and services.

LIMITATIONS

This study has several limitations. Study participants were recruited from a purposive sample of young people, most of whom were 16 years or younger and who had recently joined



ARK Clubs, thereby indicating their interest and/or willingness to discuss SRH topics. Findings about contraceptive literacy in this population and the persons to whom they turn with questions about SRH may not be generalizable to the adolescent population in Botswana as a whole. Importantly, the parsimonious use of sociodemographic variables, dictated by concerns about the survey's length, and the small sample size precluded our ability to control for all factors that may influence contraceptive literacy in this setting.

CONCLUSION

Considerably more work is needed to improve adolescent contraceptive literacy and HIV-risk reduction behaviors if Botswana is to succeed in reducing the high rates of unwanted pregnancies and HIV infections in its adolescent population. Programs such as the ARK project in Botswana should pay particular attention to the provision of information about types, uses, and sources of contraceptives while underscoring at the same time the importance of condom use to prevent HIV infection. Given the positive association found in this study between condom-use knowledge and the provision of SRH information by nurses, interventions to reduce HIV risk behaviors and unintended pregnancy in adolescents may prove more effective if they involve nurses as communicators and educators.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

FB, ON, HA, and PR designed the study. HA collected the data. FB analyzed the data. FB, HA, and PR supervised the study. FB, ON, HA, and PR wrote the manuscript.

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