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## Family Factors and Gender Norms as Protective Factors Against Sexual Risk-Taking Behaviors Among Adolescent Girls in Southern Uganda

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### Abstract

Adolescent girls and young women are at a higher risk for HIV infection stemming from barriers to accessing comprehensive sexual health education, unequal cultural, social, and economic statuses, limited access to education and health care services, and gender-based violence. This makes adolescent girls susceptible to high-risk sexual behaviors. This study examines the protective role of family, social support factors and gender norms against sexual risk-taking behaviors among secondary school adolescent girls in Uganda. Baseline data from the National Institute of Mental Health-funded Suubi4Her study were analyzed. A total of 1260 girls aged 14–17 years and enrolled in the first or second year of secondary school were recruited across 47 secondary schools. Hierarchical linear regression models were conducted to determine the role of

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**Availability of Data and Material** The datasets analyzed during the current study are available from the corresponding author on reasonable request.

**Ethics Approval and Consent to Participate** The study received approval from Washington University Institutional Review Board (IRB #201703102), the Uganda Virus Research Institute (GC/127/17/07/619), and the Uganda National Council of Science and Technology (SS4406). It is also registered in the Clinical Trials database [NCT03307226](https://clinicaltrials.gov/ct2/show/study/NCT03307226). Voluntary written consent from caregivers and assent from adolescents were obtained prior to study participation. Adolescents' assent was obtained separately from their caregivers to avoid coercion. During the consenting/assenting process and data collection, all participants received monetary compensation for their time, transport refund to and from the research venue, and a drink and a snack. Each interviewer received Good Clinical Practice training and obtained the Collaborative Institutional Training Initiative (CITI) Certificate before interacting with study participants.

**Conflict of Interest** The authors declare no competing interests.

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family, social support factors and gender norms on sexual risk-taking behaviors. Results indicate that traditional gender norms, family care and relationships, and social support were all associated with lower levels of sexual risk-taking intentions—a proxy for engaging in sexual risk behaviors. Findings point to the need to develop family level support interventions to equip adolescent girls with adequate sexual health-related knowledge and skills to facilitate safer sexual practices and reduce high-risk sexual-taking behaviors, as they develop and transition into young adulthood.

## Keywords

Sexual risk-taking; Gender norms; Social support; Adolescent girls; Uganda

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## Introduction

Sub-Saharan Africa (SSA) is home to two-thirds of all people living with HIV globally (UNAIDS, 2021a). Adolescent girls and young women (AGYW) between 15 and 24 years are twice as likely to be living with HIV compared to young men. In 2020, 6 in 7 new HIV infections among adolescents in SSA were among girls (UNAIDS, 2021b). In Uganda, 37% all new HIV infections in 2020 were among young people aged 15–24 years, with 79% among AGYW (Uganda Ministry of Health, 2021). Adolescent girls experience risk factors that increase their vulnerability to HIV infection, such as unequal cultural, social, and economic conditions, including poverty, lack access to education, limited access to health care services, harmful gender norms, and gender-based violence (Achen et al., 2022; Kyegombe et al., 2020; Ninsiima et al., 2018; UNAIDS, 2019). As a result, adolescent girls lack effective HIV prevention strategies, including comprehensive sexual and reproductive health and rights, which increases their risk of engaging in high-risk sexual behaviors (UNAIDS, 2019, 2021b).

Sexual risk-taking behaviors—defined as “any sexual activity that increases the risk of contracting HIV or other sexually transmitted infections (STIs) or becoming pregnant” (Taylor-Seehafer & Rew, 2000)—contribute profoundly to the sustained spread of HIV among young people worldwide. These behaviors include unprotected sex, inconsistent condoms use, multiple sexual partners, early sexual debut, high-risk sexual partners, and engaging in transactional sex (Boislard et al., 2016; Pengpid & Peltzer, 2021; Taylor-Seehafer & Rew, 2000; Scott et al., 2011). Achieving the global health target of ending the HIV epidemic and AIDS by 2030 will require an understanding of protective factors for HIV prevention to reduce the HIV infection gender disparity. Thus, this study examines the protective role of family factors and gender norms against sexual-risk taking behaviors among adolescent girls—a group at a higher risk of engaging in such behaviors and at risk of HIV infection.

## Family Relationships and Adolescents’ Sexual Risk-Taking Behaviors

Family relationships, as well as positive parenting behaviors, including parent–child communication, relationship, monitoring, and supervision, influence adolescents’ sexual risk-taking behaviors (Grossman et al., 2019; Madkour et al., 2012; Potter & Font, 2019; Rogers, 2017; Shangase et al., 2022; Usonwu et al., 2021). For example, a systematic

review of the processes by which parent-adolescent communication influence adolescents' sexual intentions and behaviors found that communication is associated with less permissive attitudes towards engaging in sexual intercourse, greater awareness of the consequences of sex, more positive attitudes towards using condoms, greater ability to buy and use condoms, and to talk to sexual partners about healthy sexual practices (Rogers, 2017). In addition, adolescents who are closely monitored are less likely to engage in sexual activities, delay sexual debut, and more likely to use contraception (Ethier et al., 2016; Madkour et al., 2012; Markham et al., 2010; Huang et al., 2011).

In SSA, however, parent-adolescent sexual discussions tend to be irregular, authoritarian, one-sided, and characterized by vague warnings rather than open discussions (Bastien et al., 2011; Maina et al., 2020). Discussions are often influenced by unpleasant occurrences, such as HIV-related deaths or early pregnancies in the community, and tend to focus on warnings against intersex relationships and engaging in sexual activity, promotion of abstinence, and warnings against pregnancy and abortion (Bekele et al., 2022; Mbachu et al., 2020; Wamoyi et al., 2010). Barriers to effective sexual discussions include inability or unwillingness to discuss sex, generation gap, socio-cultural norms, parental discomfort, lack of knowledge and self-efficacy, and fear of encouraging promiscuity among adolescents (Bastien et al., 2011; Duby et al., 2022; Motsomi et al., 2016). Taken together, these barriers combined with fear-based communication discourage adolescents from disclosing sexual relationships to parents (Maina et al., 2020), and prevent adolescents from making healthy sexual and reproductive health choices.

### **Gender Norms and Adolescents' Sexual Risk-Taking Behaviors**

Gender norms play a critical role in individuals' health behaviors (Fleming & Agnew-Brune, 2015; Weber et al., 2019). Gender norms are the spoken and unspoken society rules about the acceptable behaviors of how girls and boys should act, look, think, and feel (Weber et al., 2019). Socialized at an early age, gender norms shape individuals' attitudes, opportunities, experiences, and behaviors—with critical health consequences through adulthood (Heise et al., 2019). Studies have documented the influence of gender norms on adolescents' sexual behaviors, including the time of sexual debut and negotiation of safe sexual practices (Khumalo et al., 2020; Lawoyin & Kanthula, 2010; Macia et al., 2011; Warner, 2018). More gender equitable norms have been associated with intentions to use contraception, higher condom use self-efficacy, less adolescent relationship abuse, and less pornography use (Hill et al., 2021; Nalukwago et al., 2019).

In many SSA cultures, however, dominant gender norms favor men more than women. Specifically, practices such as early sexual debut and having multiple sexual partners are indicative of male prowess, yet for females, having multiple sexual partners is frowned upon by society (Khumalo et al., 2020; Kreager & Staff, 2009; Lawoyin & Kanthula, 2010). Moreover, while risky health behaviors are expressions of masculinity for males, young women's relationships are often hidden, yet sexual relationships are an important part of the transition to adulthood (Harrison, 2008; Wingood & DiClemente, 2000). Given the power inequalities and the sexual double standard that tolerates and praises boys for engaging in sexual behaviors while girls' permissiveness is associated with damaged reputations and

“spoiled” identities (Endendijk et al., 2022; Kreager & Staff, 2009; Nyanzi et al., 2001), women and girls are often unable to negotiate safe sexual practices including condom use, which predisposes them to HIV and other STIs (Bukuluki et al., 2021; Mabaso et al., 2018; Macia et al., 2011; Ninsiima et al., 2018; Underwood & Schwandt, 2016).

### Theoretical Framework

The study is positioned within the social control theory (Hirschi, 1969, 1977), which posits in part that an individual will engage in delinquent behavior when their social bond to society, including attachment, commitment, involvement, and beliefs, is weakened. Specifically, an individual with strong bonds and stable attachment to others within society (e.g., family, friends, or community institutions) is less likely to violate social norms. They are more likely to contemplate their decision and avoid deviant behavior due to perceived dismay from their valued society attachments. Similarly, if an individual has invested time, energy, and resources into conforming to social norms and expectations, they are less likely to deviate from them, as they have a lot to lose. In addition, having large amounts of structured time spent in socially approved activities (e.g., school, employment) reduces the time available for deviance; and individuals who strongly believe in society’s shared norms are less likely to deviate from them (Hirschi, 1969, 1977).

For adolescents, family members may act as a source of social control against engaging in sexual risk-taking behaviors. Specifically, adolescents may be directly controlled through constraints imposed by their families, as well as traditional gender norms, through the use of punishments and rewards to incentivize specific behaviors—in this case punish engagement in sexual risk-taking behaviors, or through indirect control such as showing affection to those who conform and adhere to social norms, or through guilt to encourage conformity to gender norms. Taken together, adolescents may refrain from engaging in sexual risk-taking behaviors, for fear of going against their parents’ wishes and societal norms.

### The Current Study

The protective role of family factors and gender norms against adolescents’ sexual health has been limitedly examined among vulnerable adolescent girls in low-resource settings, including in Uganda (Nalukwago et al., 2019; Ninsiima et al., 2018). Thus, the current study examines the protective role of family and social support factors and gender norms on sexual-risk behaviors among secondary school adolescent girls in Uganda. At the secondary school level, where most students pay school fees, many families find the costs associated with schooling prohibitive and girls are more likely to be denied the opportunity to advance their education—beyond the first 2 years of secondary schooling. Indeed, it is not uncommon for girls in Uganda to drop out of school in the first 2 years of secondary education. This places girls at an increased risk of engaging in HIV risk-taking behaviors to earn a living.

This study contributes to the limited literature by exploring two research questions: (1) What are the family-level and social support factors associated with sexual risk-taking behaviors among adolescent girls? and (2) Do gender norms play a protective role against sexual risk-taking behaviors among adolescent girls? Guided by the social control theory and

previous literature, we hypothesize that (1) having caring, stable family relationships, and higher perceived social support will be associated with lower sexual risk-taking behaviors; and (2) beliefs in traditional gender norms will be associated with lower sexual risk-taking behaviors. Findings may inform the development of strategies to improve sexual health communication between parents and adolescents, reduce fear-based communication, and to ensure healthy sexual and reproductive health choices among adolescents.

## Methods

### Sample and Study Setting

This study utilized baseline data from the Suubi4Her study, a 5-year longitudinal study (2017–2022) funded by the National Institute of Mental Health, aimed at HIV risk prevention among older adolescent girls. The study recruited 1260 adolescent girls from 47 secondary schools in five geopolitical districts in the greater Masaka—a region heavily affected by HIV/AIDS in Uganda (Uganda Ministry of Health, 2021). Study participants were eligible to participate if they were (1) female, (2) aged 14–17 years, (3) enrolled in their first or second year of secondary school, and (4) living within a family. Detailed information on participants' recruitment and selection process is provided in the supplementary document and is described in the study protocol (Ssewamala et al., 2018) and elsewhere (Byansi et al., 2022; Nabunya et al., 2020).

### Data Collection and Measures

Data were collected using a 90-min interviewer administered survey. Survey instruments were translated into Luganda—the most widely spoken language in the study region—and back translated into English to ensure accuracy. This process was overseen by certified language experts at Makerere University in Uganda. All measures have been tested in our previous studies among adolescents in the study region (Ismayilova et al., 2012; Shato et al., 2021; Nabunya et al., 2021; Nyoni et al., 2019; Ssewamala et al., 2010).

Sexual risk-taking behaviors were measured by *sexual risk-taking intentions*, a proxy to actual behaviors, given the social desirability associated with reporting sexual activity among adolescents. Specifically, adolescents were asked if they had ever engaged in sex, and only 3.3% ( $n = 42$ ) reported doing so. As such, the reported number was too small to warrant further analysis. Thus, sexual risk-taking intentions were assessed by asking respondents to rate how several statements focused on sexual activity applied to them. The scale included 5 items rated on a 5-point Likert scale with 1 = *never* to 5 = *always*. Scores range from 5 to 25 (Cronbach's alpha = 0.73), with higher scores indicating high sexual risk-taking intentions.

*Gender norms* were measured using 10 items from the Attitudes Towards Women Scale for Adolescents (AWSA) used to measure adolescents' attitudes towards women's rights and roles (Galambos et al., 1985). Participants were asked to indicate whether they agreed with each statement related to how men and women act, coded as *yes/no*. Summated scores were created, with higher scores indicating more traditional gender norms that emphasize gender inequities between boys and girls.

Measures of family support included family cohesion, perceived child-caregiver support, patterns of family care and relationships, and family communication, all adapted from the Family Environment Scale (Moos & Moos, 1994) and the Family Assessment Measure (Skinner et al., 1983). *Family cohesion* was measured using 7 items that describe the degree of commitment, help, and support that family members give to each other. Participants were asked whether their family members felt close to one another, did things together as a family, and liked to spend time with each other. Responses were rated on a 5-point scale with 1 = *never* and 5 = *always*. Scores range between 7 and 35 (Cronbach's alpha = 0.72), with higher scores representing higher levels of family cohesion. *Family care and relationship* was measured using 6 items that assess the way parents relate with their children. Participants were asked to rate how they interacted with their parents/caregivers on a 5-point Likert scale, with 1 = *never* and 5 = *always*. Scores range between 6 and 30 (Cronbach's alpha = 0.60), with higher scores indicating higher levels of family care and relationships.

*Family communication* was measured via two dimensions: (1) frequency of conversation with caregivers on specific topics; and (2) level of comfort discussing these topics with caregivers. To assess the *frequency of communication* with the caregiver, participants were asked to indicate how often they discussed 11 specific topics with their caregiver, substance use, puberty, relationships, education, and sexual risk taking. Responses were rated on a 5-point Likert scale with 1 = *never* and 5 = *always*. Scores range between 11 and 55 (Cronbach's alpha = 0.81), with higher scores indicating high communication frequency levels. *Level of comfort* felt when discussing the above topics was also assessed. Responses were rated on a 4-point scale, with 1 = *very uncomfortable* and 4 = *very comfortable*. Scores range between 11 and 44 (Cronbach's alpha = 0.84), with higher scores indicating higher comfort levels of communication with the caregiver.

*Perceived child-caregiver support* was measured using the Social Support Behaviors Scale (SS-B scale) (Vaux et al., 1987). Responses were rated on a 5-point Likert scale, with 1 = *never* and 5 = *always*. Score range between 17 and 85 (Cronbach's alpha = 0.78), with higher scores indicating higher levels of perceived child-caregiver support. *Social support from multiple sources* was measured using 30 items from the Friendship Qualities scale (Bukowski et al., 1994). This scale assesses the impressions of the quality of children's friendships and relationships with their classmates, peers, teachers, and parents. Responses were rated on a 5-point Likert scale, with 1 = *never* and 5 = *always*. Scores range between 30 and 150 (Cronbach's alpha = 0.81), with higher scores representing higher levels of social support from multiple sources.

Finally, sociodemographic and household characteristic included in the model as control variables were participants' age, orphanhood status, primary caregiver, household composition, and household assets.

### Data Analysis Procedures

All data analysis procedures were conducted in Stata software version 12.1. We analyzed sociodemographic and household characteristics of the entire sample, followed by bivariate analyses of predictors of sexual risk-taking intentions (sociodemographic and household



characteristics, family and social support factors, and gender norms) across two distinct participants' age groups—younger adolescents (14–15 years) and older adolescents (16–17 years)—given that the medium age at first sex for young women in Uganda was estimated at 16 years (Mbalinda et al., 2015; Renzaho et al., 2017). We estimated the chi-square or *t*-test values for each of the variables. Hierarchical regression models were conducted to determine the predictors of sexual risk-taking intentions. We conducted three models, with each model controlling for a block of predictors. Model 1 controlled for sociodemographic and household characteristics; model 2 controlled for family and social support factors, and model 3 controlled for gender norms. To check for multicollinearity, we ran the variation inflation factors (VIF) at each subsequent model to examine the likely correlation across the predictors. The findings indicated that at each level, the mean values ranged from 1.4 to less than 5, which is the conservatively recommended standard.

## Results

Table 1 presents the sample characteristics of 1260 participants enrolled in the study. The average age of participants was 15.4 years, with the majority of participants (57%) between 14 and 15 years. Of the total sample, 83% of participants were non-orphans and 76.6% identified a biological parent as their primary caregiver. The average household size comprised 7 people, with 3 children under the age of 18. The average score on the family asset index (including land, modes of transportation and communication, gardens, farm animals, and small business) was 11.46 out of the expected 21, indicating moderate levels of asset ownership.

Results from bivariate analyses based on adolescents' age groups are presented in Table 2. On average, older adolescents (16–17 years) were slightly more likely to report living with children below 18 years compared to younger adolescent (14–15 years) (3.64 versus 3.39 children). The mean difference between the two groups was statistically significant ( $t = -2.02, p = 0.05$ ). Younger adolescents reported slightly higher scores on all measures of family and social support factors compared to older adolescents. The mean score difference on the measure of family care and relationship was statistically significant ( $t = 5.27, p = 0.001$ ). In addition, younger adolescents were more likely to report slightly higher scores on social support from parents/guardians ( $t = 2.67, p = 0.01$ ) and from teachers ( $t = 2.58, p = 0.01$ ) compared to older adolescent girls.

Regarding gender norms, older adolescents were more likely to report on average, slightly higher scores/more traditional gender norms compared to younger adolescent (mean = 5.41 versus 5.18). The mean difference between the two groups was statistically significant ( $t = -2.39, p = 0.05$ ). Similarly, older adolescents were more likely to report slightly higher scores on sexual risk-taking intentions compared to younger adolescents (mean = 7.78 versus 7.36). The mean difference between the two groups was statistically significant ( $t = -1.97, p = 0.05$ ).

Hierarchical regression analysis results are presented in Table 3. In model 1, we controlled for participants' sociodemographic and household characteristics. None of these characteristics were associated with sexual risk-taking intentions. When we added family

factors in model 2, family care and relationship ( $\beta = -0.07$ , 95% CI =  $-0.12, -0.02$ ,  $p = 0.01$ ) and social support from a friend/peer ( $\beta = -0.06$ , 95% CI =  $-0.09, -0.02$ ,  $p = 0.001$ ) were both associated with lower levels of sexual risk-taking intentions. When we added gender norms in model 3, both family care and relationship ( $\beta = -0.07$ , 95% CI =  $-0.12, -0.02$ ,  $p = 0.01$ ) and social support from peers/friends ( $\beta = -0.06$ , 95% CI =  $-0.09, -0.03$ ,  $p = 0.001$ ) remained significant predictors. In addition, more traditional gender norms were associated with lower levels of sexual risk-taking intentions ( $\beta = -0.13$ , 95% CI =  $-0.25, -0.01$ ,  $p = 0.05$ ).

Model 1 accounted for 0.7% ( $R^2 = 0.007$ ) of the variance in sexual risk-taking intentions. When we added family and social support factors, we were able to explain 4% ( $R^2 = 0.04$ ) of the variance. The percentage change between model 1 and model 2 was 3.4 and statistically significant ( $p = 0.001$ ). When we added gender norms (model 3), we were able to explain 4.4% of the variance in sexual risk-taking intentions ( $R^2 = 0.044$ ). The 0.3 percentage change between models 2 and 3 was statistically significant ( $p = 0.05$ ).

## Discussion

This study examined the protective role of family factors and gender norms against sexual risk-taking behaviors among secondary school adolescent girls in Uganda. We find that fewer adolescents reported engaging in sexual activity. Specifically, of the 1260 adolescent girls, only 3.3% reported having engaged in sex activity. This number is lower than that reported among adolescents in Uganda (Bukonya et al., 2020; Renzaho et al., 2017), and among other studies in the region (Girmay & Mariye, 2019; Ziraba et al., 2018). There are a few possible explanations for this finding. First, Ugandan traditional gender norms discourage and punish premarital sex, and emphasize virginity, especially among adolescent girls (Iyer & Aggleton, 2014; Muhanguzi, 2011; Ninsiima et al., 2018). It could be that our study participants under reported this practice for fear of being judged as promiscuous. Second, school enrollment has been documented as a protective factor against sexual risk-taking behaviors (Matovu, et al., 2021; Santelli et al., 2015). As such, by virtue of being in secondary school and learning more about the value of education and making future academic and career plans, it could be that adolescents are generally staying away from sexual risk taking. Third, given that the average age of sexual debut in Uganda is estimated at 16 years (Mbalinda et al., 2015; Renzaho et al., 2017), and that the majority of participants in our sample are below 16 years of age, it could be that adolescents in our study have delayed sexual debut. As such, it is critical to strengthen sexual communication for this group in order to equip them with adequate protective sexual health knowledge and skills to facilitate positive safer sexual choices and practices as they develop and transition into young adulthood.

Guided by the social control theory (Hirschi, 1969, 1977) and previous literature, we hypothesized that having greater family relationships, higher perceived social support, and higher beliefs in traditional gender norms will be associated with lower sexual risk-taking behaviors, as measured by sexual risk intentions. Study findings support these hypotheses. Specifically, adolescents with perceived supportive family relationships, characterized by open and respectful communication, feeling heard and supported, and being cared for, were



more likely to report low levels of sexual risk-taking intentions. This finding is consistent with studies that have documented the protective role of family support and communication (Abiodun et al., 2020; Madkour et al., 2012; Potter & Font, 2019; Usonwu et al., 2021), as well as quality of family relationships, against sexual risk taking (McBride et al., 2005; Shangase et al., 2022). For example, in a South African study, high caregiver support and closeness were associated with delayed sexual debut; and high-quality caregiver-adolescent relationship was associated with lower risk of transactional sex and being with older sexual partners (Shangase et al., 2022). Parkes and colleagues (2011) found that parental supportiveness was positively associated with delayed sexual intercourse, greater condom use, sexual autonomy, and increased likelihood of relationship-based sex. In another study, family connectedness was associated with less sexual activity, unprotected sex, having been involved in pregnancy, for both males and females, and reduced odds of ever having had sex or having initiated sex prior to age 13 among females (Markham et al., 2003). Among adolescent males, parental closeness was associated with greater condom use self-efficacy, less permissive sexual attitudes, fewer sexual partners, and less unprotected sex (Harris et al., 2013).

Similarly, more traditional gender norms that emphasize gender inequities between boys and girls were associated with lower levels of sexual risk-taking intentions. This finding aligns with the social control theory (Hirschi, 1969, 1977), suggesting that close relationships with others, in this case, family members—who are also the primary medium for gender socialization, enforcing societal norms and provision of sexual communication in Uganda (Kinsman et al., 2000)—potentially deter adolescents from deviant behaviors, including sexual risk-taking.

Within the social control theory, parents may use both direct controls (e.g., punishing sexual risk-taking) and indirect controls (rewarding those who conform and guilted those who do not), in order to ensure conformity to gender norms. Indeed, parental disapproval for engaging in sexual activity has been associated with lower occurrence of sexual intercourse, being sexually abstinent, and engaging in fewer heterosocial risks (Aronowitz et al., 2005; Dittus & Jaccard, 2000; Watts & Nagy, 2000). Close family relationships facilitate the transmission of parental beliefs and values to children (Roest et al., 2009)—which in this case may include beliefs around abstinence and staying away from intersex relationships, especially among girls (Iyer & Aggleton, 2014; Muhanguzi, 2011; Ninsiima et al., 2018). Taken together, adolescents may be less likely to engage in risk taking, for fear of disappointing their parents and violating societal expectations.

Contrary to other studies, participants' sociodemographic and household characteristics (including age, orphanhood status, primary caregiver, household size, and household assets) were not associated with sexual risk intentions. Specifically, findings from Uganda have documented that living with non-biological parents or being an orphan was associated with sexual risk taking, including early sexual debut (Pilgrim et al., 2014). In another study, living with a biological father was protective against multiple sexual partners among female adolescents (Pilgrim et al., 2015)—indicating that family structure may be protective against sexual risk-taking. Moreover, while older adolescents were slightly more likely to report more traditional gender norms and sexual risk-taking intentions, age was not a significant

predictor of sexual risk-taking intentions. The lack of salient results could be attributed the use of sexual risk intentions as a proxy, as opposed to assessing actual behaviors. Future research could benefit from examining the sociodemographic characteristics associated with sexual risk-taking behaviors among adolescent girls. Findings may be critical to targeting interventions to specific subgroups that may be at a higher risk of engaging in sexual risk-taking behaviors.

### Limitations

We acknowledge a few limitations. We assessed sexual risk-taking intentions as opposed to actual behaviors. However, given the high social desirability, adolescents' sexual risk intentions continue to be used as a proxy measure of behavior in health research (Ismayilova et al., 2012; Shato et al., 2021; Ssewamala et al., 2010). In addition, given the cross-sectional data analyzed, we are unable to make causal inferences. Finally, we analyze data from a sample of school-going adolescent girls. Moreover, we did not have a comparable group of either adolescent boys or out of school adolescents. As such, results should not be generalized to the entire adolescent population.

### Implication and Conclusions

Given the high prevalence of HIV among adolescent girls in SSA, including Uganda, findings have important implications focused on the development of contextually appropriate family level support interventions to equip adolescent girls with adequate sexual health-related knowledge and skills to facilitate safer sexual practices and reduce high-risk sexual-taking behaviors, as they develop and transition into young adulthood. Furthermore, favorable gender norms that eliminate inequities between boys and girls can act as a potential protective factor for preventing adolescent girls from engaging in risk behaviors. Thus, educational programs that advance the equality and engagement of adolescent girls in opportunities could be leveraged to enhance HIV prevention knowledge. Moreover, information about sexual risk-taking behavior is essential to the design and assessment of interventions to improve sexual health among adolescents.

### Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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**Table 1**Sample characteristics ( $n = 1260$ )

Variable	% ( $n$ )
Age, % ( $n$ )	
14 to 15 years	56.98 (718)
16 to 17 years	43.02 (542)
Orphanhood status, % ( $n$ )	
Orphan	17.06 (215)
Non-orphan	82.94 (1045)
Primary caregiver, % ( $n$ )	
Biological parent	76.59 (965)
Grandparent	11.11 (140)
Other relative	12.30 (155)
Household size ( <i>mean (SD)</i> )	
Number of people in HH	7.00 (2.71)
Number of children in HH	3.49 (2.10)
Family assets ( <i>mean (SD)</i> )	11.46 (3.26)

Bivariate analysis results: sociodemographic and household characteristics, family and social support factors, and gender norms, by age group ( $n = 1260$ )

**Table 2**

Variable	Total	14 to 15 years	16 to 17 years	$\chi$ or $t$ -test
Orphanhood status, % ( $n$ )				
Orphan	17.06 (215)	17.27 (124)	16.79 (91)	0.05
Non-orphan	82.94 (1045)	82.72 (594)	83.21 (451)	
Primary caregiver, % ( $n$ )				
Biological parent	76.59 (965)	75.91 (545)	77.49 (420)	1.88
Grandparent	11.11 (140)	10.72 (77)	11.62 (63)	
Other relative	12.30 (155)	13.37 (96)	10.89 (59)	
Household size ( <i>mean, SD</i> )				
Number of people in HH	7.00 (2.71)	6.88 (2.78)	7.16 (6.94)	-1.81
Number of children in HH	3.49 (2.10)	3.39 (2.01)	3.64 (3.45)	-2.02*
Family assets ( <i>mean, SD</i> )	11.46 (3.26)	11.32 (3.29)	11.64 (3.21)	-1.71
Family support ( <i>mean, SD</i> )				
Family cohesion	26.58 (5.69)	26.61 (5.73)	26.53 (5.66)	0.25
Family care and relationship	24.74 (4.27)	25.28 (4.09)	24.01 (4.41)	5.27***
Perceived child and caregiver support	56.85 (6.73)	57.16 (6.72)	56.44 (6.72)	1.85
Family communication	26.97 (6.99)	27.08 (7.05)	26.82 (6.93)	0.65
Social support ( <i>mean, SD</i> )				
Guardian support	23.66 (4.19)	23.93 (4.12)	23.29 (4.25)	2.67**
Classmate support	17.78 (3.52)	17.87 (3.55)	17.67 (3.47)	1.01
Teacher support	22.85 (4.23)	23.11 (4.22)	22.49 (4.21)	2.58**
Friend/peer support	51.63 (7.61)	51.91 (7.51)	51.27 (7.74)	1.48
Gender roles/norms ( <i>mean, SD</i> )	5.28 (1.70)	5.18 (1.75)	5.41 (1.63)	-2.39*
Sexual risk-taking intentions ( <i>mean, SD</i> )	7.54 (3.34)	7.36 (3.69)	7.78 (3.80)	-1.97*

\*  $p < 0.05$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$

**Table 3**

Hierarchical regression analyses on sexual risk-taking intentions

Variable	Model 1: B (95% CI)	Model 2: B (95% CI)	Model 3: B (95% CI)
Age ( <i>ref: 14 to 15 years</i> )			
16 to 17 years	0.42 (-0.002, 0.84)	0.25 (-0.17, 0.67)	0.28 (-0.14, 0.69)
Orphanhood status: ( <i>ref: orphan</i> )			
Non-orphan	-0.26 (-0.85, 0.32)	-0.16 (-0.74, 0.45)	-0.16 (-0.73, 0.42)
Primary caregiver ( <i>ref: biological parent</i> )			
Grandparent	-0.01 (-0.68, 0.67)	-0.06 (-0.73, 0.61)	-0.08 (-0.75, 0.59)
Other relative	-0.29 (-0.96, 0.38)	-0.3 (-0.98, 0.34)	-0.36 (-1.02, 0.29)
Household size			
Number of people in HH	0.04 (-0.09, 0.16)	0.01 (-0.11, 0.13)	0.004 (-0.12, 0.13)
Number of children in HH	0.01 (-0.15, 0.17)	0.02 (-0.14, 0.17)	0.03 (-0.13, 0.18)
Family assets	-0.05 (-0.12, 0.01)	-0.02 (-0.09, 0.04)	-0.02 (-0.09, 0.04)
Family support			
Family cohesion	0.01 (-0.03, 0.05)	0.01 (-0.03, 0.05)	0.01 (-0.03, 0.05)
Family care and relationship	-0.07 (-0.12, -0.02)**	-0.07 (-0.12, -0.02)**	-0.07 (-0.12, -0.02)**
Perceived child and caregiver support	-0.02 (0.06, 0.01)	-0.02 (0.06, 0.01)	-0.02 (-0.06, 0.01)
Family communication	0.01 (-0.02, 0.04)	0.01 (-0.02, 0.04)	0.01 (-0.02, 0.04)
Social support			
Guardian support	-0.03 (-0.09, 0.03)	-0.03 (-0.09, 0.03)	-0.03 (-0.10, 0.03)
Classmate support	0.03 (-0.04, 0.09)	0.03 (-0.04, 0.09)	0.03 (-0.04, 0.09)
Teacher support	-0.02 (-0.08, 0.04)	-0.02 (-0.08, 0.04)	-0.02 (-0.07, 0.04)
Friend/peer support	-0.06 (-0.09, -0.02)***	-0.06 (-0.09, -0.02)***	-0.06 (-0.09, -0.03)***
Gender roles/norms			
The <i>F</i> -value	1.16	3.47***	3.54***
<i>R</i> -squared	0.0065	0.0402	0.0436
Adjusted <i>R</i> -squared (df)	0.001 (7)	0.028 (15)	0.031 (16)
Change in <i>R</i> -squared		0.034***	0.003*
<i>n</i>	1260	1260	1260

1000 *d*  
\*\*\*  
100 *d*  
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