

## Family structure effects on early sexual debut among adolescent girls in Rakai, Uganda

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This study assessed the association between household family structure and early sexual debut among adolescent girls, ages 15–19, in rural Rakai District, Uganda. Early sexual debut is associated with detrimental physical, emotional, and social outcomes, including increased risk of HIV. However, research on the family's role on adolescents' sexual risk behaviors in sub-Saharan Africa has been minimal and rarely takes into account the varying family structures within which African adolescents develop. Using six rounds of survey data (2001–2008) from the Rakai Community Cohort Study, unmarried adolescent girls ( $n = 1940$ ) aged 15–17 at their baseline survey, were followed until age 19. Parametric survival models showed that compared to adolescent girls living with both biological parents, girls who headed their own household and girls living with stepfathers, grandparents, siblings, or other relatives had significantly higher hazards of early sexual debut before age 16. Adolescent girls were significantly more likely to debut sexually if neither parent resided in the household, either due to death or other reasons. In addition, the absence of the living biological father from the home was associated with a higher risk of sexual debut, regardless of the biological mother's presence in the home. Our study's findings suggest that family structure is important to adolescent girls' sexual behavior. There is need for research to understand the underlying processes, interactions, and dynamics of both low and high-risk family structures in order to devise and strategically target interventions for specific types of family structures.

**Keywords:** family structure; sexual debut; adolescents; Africa

By age 18, 40–80% of sub-Saharan African young women have sexually debuted (Gupta & Mahy, 2003). Early sexual initiation is associated with unprotected and non-consensual sex, more sexual partners, and greater exposure to pregnancy and sexually transmitted infections, potentially resulting in negative health outcomes for female adolescents (Dixon-Mueller, 2009; Gupta & Mahy, 2003; Wellings et al., 2006). Since female adolescents account for an estimated 76% of HIV-infected adolescents in sub-Saharan Africa (UNAIDS, 2010), early sexual debut represents a major concern among young women in the region.

Family – one social context which may influence the timing of sexual debut – remains understudied in sub-Saharan Africa. The African family, though heterogeneous,

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bears the greatest burden from the multiple stresses that society experiences, including HIV/AIDS (Adepoju, 1997; Weisner, 1997). To change HIV/AIDS-related population parameters (e.g., sexual debut age) in Africa, understanding the “pressures exerted by the family on their individual members of the family” is essential (Adepoju, 1997). Improved understanding of the influences of family context on adolescent girls’ sexual behaviors may provide insights for the development of preventive intervention strategies.

This paper assesses associations between family structure and adolescent sexual debut by drawing on three theoretical perspectives. The socialization perspective suggests caregivers indirectly and directly convey sexual attitudes and behaviors to children. Indirectly, caregivers model behaviors for their children (Barnes, Farrell, & Cairns, 1986; Moore & Chase-Lansdale, 2001). Adolescents who witness their parents’ explicit sexual relationships may imitate them as is possible since privacy is minimal in small (1–2 bedrooms) rural sub-Saharan African homes (Kinsman, Nyanzi, & Pool, 2000). Directly, caregivers convey attitudes and values concerning sexual behaviors via communication, discipline, and childrearing practices (Thornton & Camburn, 1987). Traditionally, aunts rather than parents socialized girls into womanhood, including sex and marriage (Muyinda, Nakuya, Pool, & Whitworth, 2003). Modernization, coupled with the HIV epidemic, has led to the disappearance of this institution, leaving young women without a potentially valuable resource, thus possibly shifting more responsibility to other family and household members.

Social Control Theory focuses on parental control over children’s behavior (Moore & Chase-Lansdale, 2001; Wu & Thomson, 2001), whereby parental supervision and monitoring reduces adolescents’ opportunities for sexual activity. Monitoring and supervision may vary according to household adults’ relationship to the adolescent (Moore & Chase-Lansdale, 2001). In traditional two-parent African families, mothers’ roles have generally focused on nurturing and protecting children using emotional support, while the roles of fathers have been described as providing discipline and supporting family needs (Defo & Dimbuene, 2012; Mirembe & Davies, 2001; Ngom, Magadi, & Owuor, 2003). However, in part as a result of HIV, 3 in 10 Ugandan adolescents aged 12–19 do not live with a biological parent (Defo & Dimbuene, 2012; Neema, Ahmed, Kibombo, & Bankole, 2006). Additionally, adolescents living in households with a polygamous father may receive less monitoring and supervision if the father lacks sufficient time with each child (Defo & Dimbuene, 2012).

The instability and turbulence theoretical perspective focuses on how household disruptions and transitions negatively affect children’s behaviors (Moore & Chase-Lansdale, 2001; Thornton & Camburn, 1987; Wu & Thomson, 2001). In sub-Saharan Africa, as elsewhere, loss of a parent via divorce or remarriage can represent a major disruption, and loss due to mortality occurs more frequently than in developed settings. These family structure changes may weaken non-resident parent–child relationships, reduce support and supervision, and result in grief that may contribute to problematic adolescent behaviors (Monasch & Boerma, 2004; Moore & Chase-Lansdale, 2001; Porter et al., 2004; Wu & Thomson, 2001).

Six rounds of the Rakai Community Cohort Study (RCCS) were used to investigate how family structure affects adolescent Ugandan girls’ sexual debut timing. We broadly define family structure to include biological parent, non-traditional parent (e.g., stepparent), and non-parent (e.g., sibling) structures. We also investigate parental survival status effects on sexual debut age. We hypothesize: (1) girls in two biological married parent

families will report later age at sexual debut relative to other family types; and (2) girls not living with either parent will report earliest sexual debut compared to other family types.

## **Method**

### ***Participants and setting***

AIDS was identified in Rakai, a rural district in southwest Uganda, in the early 1980s (Serwadda et al., 1985). HIV incidence between 1999 and 2008 among 15–19 year olds in Rakai was 4 times greater in women than men (Santelli et al., 2013).

The RCCS is a longitudinal, population-based open cohort study of 56 rural Ugandan communities (see Wawer et al. (1999) for detailed study procedures). Since 1994, consenting adolescents and adults ages 15–49 have been enrolled and followed. A standardized questionnaire is administered every 12–18 months by same-sex interviewers. More than 90% of eligible residents have agreed to participate in each round. Ugandan and the United States' human subjects review boards have approved all RCCS-related studies.

Participants included in these analyses met five criteria: (1) female; (2) unmarried; (3) permanent resident of Rakai; (4) age 15–17 at baseline; and (5) participation in any of 2001–2008 RCCS survey rounds. The final sample consisted of 1940 adolescents who were followed until age 19.

### ***Measures***

#### *Sexual debut age*

Both sexually experienced and inexperienced girls were recruited into the sample. Sexual debut age was measured via the question “How old were you the first time you had sexual intercourse?” Girls who sexually debuted before cohort entry (37%) reported their sexual debut age at baseline; 44% debuted within 1 year prior to cohort entry, 32% debuted 2 years prior, 14% debuted 3 years prior, and 10% debuted 4+ years prior.

#### *Family structure*

Approximately every 10–18 months, Rakai Health Sciences Program (RHSP) conducted a census of households in the RCCS communities, enumerated all household residents, and collected data on the relationship of each household member to the household head. Information included whether each member's parent(s) were household residents and if they were not, whether they were alive or deceased. Each household member received a lifelong unique identification number (ID); the ID number included digits designating each individual community, household within the community, and each resident within the household. Family structure was derived using the adolescent's and her parents' ID numbers, and their relationship to the household head. Ten family structures were identified: (1) two biological parents, (2) biological father/stepmother, (3) biological mother/stepfather, (4) single mother, (5) single father, (6) grandparent, (7) sibling, (8) other relatives, (9) non-relatives, and (10) head of her own household.

#### *Parental presence*

Categorization of parental presence was based on whether one or both biological parents were household residents, non-residents, or deceased. Parental presence was defined as:

(1) both in the home, (2) both alive but not in the home, (3) both deceased, (4) resident mother/non-resident father, (5) resident mother/deceased father, (6) resident father/non-resident mother, (7) resident father/deceased mother, (8) non-resident mother deceased father, and (9) non-resident father/deceased mother.

### *Additional family factors*

Other family factors assessed were those previously reported to influence adolescent sexual behaviors (Biddlecom, Awusabo-Asare, & Bankole, 2009; Defo & Dimbuene, 2012; Pearson, Muller, & Frisco, 2006). (1) *Wealth*. We controlled for overall household wealth in analyzing family structure effects. Since, in this rural setting, family cash income is irregular and does not capture key family assets, household assets and building materials were used as proxies for estimating economic status (Wagstaff & Watanabe, 2003). The RHSP census collects information on durable asset ownership, utilities (e.g., electricity), and housing characteristics (e.g., building material). Principle component analysis (PCA) was used to create a wealth index, with a wealth score assigned to each household that has a mean equal to zero and a standard deviation equal to one (Filmer & Pritchett, 2001; Vyas & Kumaranayake, 2006). The wealth scores were divided into quintiles, where the first and fifth quintiles represent the poorest and richest households, respectively. PCA was conducted using all households in the census and households with adolescents were later selected for analysis. (2) *Household size* was determined by the number of individuals reported living in a household at the time of the census. (3) *Polygamous household*. The census indicated whether the household was headed by a male who had multiple wives. Polygamy was assessed because residing in polygamous households has been reported to be associated with increased likelihood of sexual activity in adolescents (Amaran, Onadeko, & Adeniyi, 2004; Rwenge, 2000; Slap et al., 2003).

### *Adolescent characteristics*

We controlled for the confounding effects of *occupation, religion, tribe, and alcohol use* in prior 30 days.

### **Statistical analyses**

Adolescents' characteristics at baseline were examined with descriptive statistics, frequencies, and means. Survival analyses were used to assess the association family structure/parental presence and probability of sexual debut. The Kaplan–Meier survival analysis was used to estimate the cumulative probability of sexual debut by family structure and parental presence with differences tested using the log-rank test. This survival analysis method accommodates censoring of those not sexually active by the last survey or age 19.

The relationship between baseline household family structure and sexual debut was assessed using parametric hazard models with a Weibull distribution because the proportionality assumptions required for Cox proportional hazard models were not met (Schoenfeld, 1982). We estimated unadjusted and adjusted hazard ratios (HRs) and 95% confidence intervals (CIs). Because family structure and parental presence were collinear, but each contributes to understanding family effects on sexual debut, we fitted models separately for each variable. Early sexual debut was defined as before age 16.

Approximately 23% of the sample were lost to follow up and were right-censored. Hazard models account for this type of censoring in the resulting estimates. Lost to follow up did not differ by family structure nor parental presence. For girls who sexually debuted before cohort entry, their baseline family structure might not be representative of their structure at the time of sexual debut, so we conducted sensitivity analyses only including girls who entered the cohort within 2 years of their sexual debut. The results from this reduced sample did not significantly differ from the larger sample, so the larger sample was used. Additionally, only 3% of adolescents changed family structure during the survey periods, indicating family structure stability in Rakai.

Because data were collected from a community-based study, the observations are likely to be correlated within clusters (i.e., communities) (Cleves, Gould, Gutierrez, & Marchenko, 2008; McCullagh & Nelder, 1990). Although some households contained siblings or multiple adolescents, we adjusted only at the community level as per the study’s design at execution. Thus, design-based analysis procedures were used where the variance estimator depends only on the first stage of the sample design; thus, design information for additional levels is not needed (Williams, 2000; Skinner, Holt, & Smith, 1989). We used frailty models by Wei Lin and Weissfeld to obtain the ‘robust’ estimate of variance accounting for correlations within communities. All analyses used STATA.SE, version 11.1 (StataCorp LP, College Station, Texas, USA).

**Results**

The sample’s baseline characteristics are presented in Table 1. Approximately 37% of the girls were sexually experienced at baseline. The median age of debut was 16.5 years (interquartile range: 15-NA) (results not shown). A majority reported student as their occupation (69%) and Catholic as their religious affiliation (56%). Ten percent reported alcohol use. The average family size was 7.3 individuals [standard deviation (sd): 2.8] and 18% of families had a polygamous head of household. About 14% and 25% of girls resided in the lowest and highest wealth quintiles, respectively.

Table 1. Baseline characteristics of adolescents in Rakai, Uganda entering cohort at ages 15–17 (*n* = 1940).

	<i>n</i>	% <sup>a</sup>
<b>Individual-level characteristics</b>		
<b>Age (in years)</b>		
15	898	46.3
16	664	34.2
17	378	19.5
<b>Occupation</b>		
Agriculture for the home	344	17.7
Agriculture for selling	73	3.8
Housework in home	149	7.7
Student	1335	68.8
Other	39	2.0
<b>Religion</b>		
Catholic	1080	55.7
Protestant	402	20.7
Save/Pentecostal	105	5.4
Muslim	353	18.2
<b>Tribe</b>		
Muganda	1659	85.5

(Continued)

Table 1. (Continued).

	<i>n</i>	% <sup>a</sup>
Munyankole	117	6.0
Munyarwanda	49	2.5
Murundi/Makiga	34	1.8
Mutanzania	43	2.2
Other	38	2.0
<b>Alcohol use in prior 30 days</b>		
No	1750	90.2
Yes	190	9.8
<b>Ever had sex</b>		
No	1229	63.4
Yes	711	36.6
<b>Family-level characteristics</b>		
<b>Wealth</b>		
Low	274	14.1
Low–mid	393	20.3
Mid	433	22.3
High–mid	360	18.6
High	480	24.7
<b>Family size, mean(sd)</b>	1940	7.3 (2.8)
<b>Polygamous household</b>		
No	1592	82.1
Yes	348	17.9
<b>Family structure</b>		
Both biological parents	754	38.9
Single mother	342	17.6
Single father	30	1.5
Biological father/stepmother	101	5.2
Biological mother/stepfather	55	2.8
Grandparent	285	14.7
Sibling	51	2.6
Other relatives	256	13.2
Non-relatives	44	2.3
Alone (adolescent-headed)	22	1.1
<b>Parental status</b>		
Both in home	754	38.9
Both out of home	183	9.4
Both dead	282	14.5
Resident mother/non-resident father	155	8.0
Resident mother/deceased father	244	12.6
Resident father/non-resident mother	70	3.6
Resident father/deceased mother	61	3.1
Non-resident mother/deceased father	113	5.8
Non-resident father/deceased mother	78	4.0

Note: <sup>a</sup>Percentages reported for all variables except for family size where mean and standard deviation is reported.

At baseline, 39% of girls lived with two biological parents, 8% in stepfamilies, 19% with a single parent, 15% with grandparents, 16% with other relatives, and 3.4% with non-relatives or by themselves. Both biological parents were non-residents or deceased for 9% and 14.5% of girls, respectively.

Among girls living with neither biological parent, 43% lived with grandparents, 47% with other relatives, 6.5% with non-relatives, and 2.5% by themselves (results not shown).

Among those with non-resident mothers and deceased fathers, 84% lived with a relative while 16% lived by themselves or with non-relatives. These numbers were 93% and 7%, respectively, for non-resident fathers and deceased mothers. For those living with single parents, 37% of the other parent was alive. Half of the girls with a stepfather had a living biological father, while 58% of the girls with a stepmother had a living biological mother.

The poorest households were those with a resident mother but an absent father (results not shown). The wealthiest households were headed by non-relatives and other relatives. Two-parent and stepmother households had the largest families.

### **Multivariate results**

Household family structure was significantly associated with early sexual debut (Table 2). Compared to those living with both biological parents, girls who were household heads [adjusted hazard ratio (adjHR):1.91; 95% CI:1.01–3.60] and those living with stepfathers (adjHR:1.89; 95% CI:1.21–2.97), grandparents (adjHR:1.66; 95% CI:1.33–2.07), siblings (adjHR:1.70; 95% CI:1.18–2.44), and other relatives (adjHR:1.48; 95% CI:1.21–1.80) were significantly more likely to experience early sexual debut.

In relation to parental presence (Table 3), adolescent girls were significantly more likely to experience early sexual debut if both biological parents were out of the household, either due to death (adjHR:1.51; 95% CI:1.22–1.87) or other reasons (adjHR:1.89; 95% CI:1.52–2.35), and if they had a non-resident father (resident mother/non-resident father – adjHR:1.55; 95% CI:1.19–2.01; non-resident father/deceased mother – adjHR:1.60; 95% CI:1.14–2.24).

### **Discussion**

Studies from sub-Saharan Africa have not described family structure in great detail, typically defining structure as living with both parents, one parent or others (Biddlecom et al., 2009), which may mask important differences within structures. This study defined more complex family household structures; early sexual debut was associated with living in stepfather families, families headed by grandparents, siblings, and other relatives, and families headed by the adolescent.

Risky sexual behavior among girls living in stepfather households has been reported in studies from the West (Moore & Chase-Lansdale, 2001; Wu & Thomson, 2001), but not in sub-Saharan Africa. Under the Social Control Theory, monitoring and supervision of stepdaughters' behaviors by stepfathers is often problematic and not protective against high-risk behaviors (Wu & Thomson, 2001). However, more research is needed into the dynamics of stepfather families in African settings.

Having resident biological fathers appears protective against early sexual debut while having non-resident fathers increases risk of early sexual debut. Other studies in Africa have noted the protective effect of fathers (Babalola, Tambas he, & Vondrasek, 2005). From the socialization perspective, fathers in patrilineal societies like Uganda's have been reported to be authoritative and hold strict values, including expected sexual behaviors (Mirembe & Davies, 2001; Ngom et al., 2003). In line with Social Control Theory, girls without resident fathers may lack protection, becoming targets for sexual advances and exploitation (Kawai et al., 2008).

Our finding of increased risk of early sexual debut in sibling-headed households supports the few studies in the region that reported having older siblings is related to higher

Table 2. Unadjusted and adjusted hazard ratios (HRs) for sexual debut before age 16 among unmarried adolescents in Rakai, Uganda by household family structure and sociodemographic covariates ( $n = 1940$  observations).

	Sexual debut $n/N$ (%)	Unadjusted HR (95% CI)	Adjusted HR (95% CI) <sup>a</sup>
<b>Individual level characteristics</b>			
<b>Occupation</b>			
Student	459/1335 (34.4)	1.00	1.00
Agriculture for home	163/344 (47.4)	1.39 (1.15–1.68)***	1.29 (1.07–1.56)**
Agriculture for selling	28/73 (38.4)	1.10 (0.81–1.49)	1.12 (0.83–1.53)
Housework in home	69/149 (46.3)	1.48 (1.07–2.05)*	1.36 (1.00–1.86)*
Other	22/39 (56.4)	1.89 (1.28–2.78)**	1.74 (1.23–2.46)**
<b>Religion</b>			
Save/Pentecostal	29/105 (27.6)	1.00	1.00
Catholic	424/1080 (39.3)	1.46 (0.93–2.29)	1.40 (0.88–2.20)
Protestant	262/402 (34.8)	1.28 (0.83–1.97)	1.39 (0.90–2.13)
Muslim	148/353 (41.9)	1.62 (1.05–2.52)*	1.78 (1.13–2.80)*
<b>Tribe</b>			
Muganda	642/1659 (38.7)	1.00	1.00
Munyankole	29/117 (24.8)	0.59 (0.39–0.91)*	0.63 (0.42–0.94)*
Munyarwanda	23/49 (46.9)	1.34 (0.84–2.11)	1.35 (0.90–2.03)
Murundi/Makiga	14/34 (41.2)	1.12 (0.62–2.03)	1.18 (0.66–2.13)
Mutanzania	18/43 (41.9)	1.15 (0.71–1.84)	1.04 (0.63–1.71)
Other	15/38 (39.5)	1.08 (0.60–1.93)	1.09 (0.61–1.95)
<b>Alcohol use in prior 30 days</b>			
No	653/1750 (37.3)	1.00	1.00
Yes	88/190 (46.3)	1.25 (0.99–1.58)	1.22 (0.96–1.53)
<b>Family level characteristics</b>			
<b>Wealth</b>			
High	174/480 (36.3)	1.00	1.00
High–mid	144/360 (40.0)	1.12 (0.92–1.36)	1.08 (0.89–1.31)
Mid	171/433 (39.5)	1.15 (0.92–1.44)	1.13 (0.89–1.42)
Low–mid	139/393 (35.4)	0.98 (0.79–1.23)	0.98 (0.77–1.24)
Low	113/274 (41.2)	1.21 (0.93–1.56)	1.14 (0.88–1.49)
<b>Polygamous household</b>			
Yes	120/348 (34.5)	1.00	1.00
No	621/1592 (39.0)	1.20 (1.01–1.42)*	1.12 (0.95–1.34)
<b>Family size</b>			
	–	0.96 (0.94–0.99)**	0.99 (0.96–1.01)
<b>Family structure</b>			
Both biological parents	239/754 (31.7)	1.00	1.00
Biological father/stepmother	37/101 (36.6)	1.26 (0.91–1.76)	1.21 (0.87–1.69)
Biological mother/stepfather	29/55 (52.7)	1.99 (1.26–3.15)**	1.89 (1.15–3.10)*
Single mother	128/342 (37.4)	1.24 (0.99–1.55)	1.15 (0.92–1.43)
Single father	11/30 (36.7)	1.24 (0.66–2.32)	1.05 (0.49–2.23)
Grandparent	136/285 (47.7)	1.77 (1.38–2.26)***	1.66 (1.31–2.10)***
Sibling	26/51 (51.0)	1.96 (1.27–3.03)**	1.68 (1.06–2.65)*
Other relatives	103/256 (40.2)	1.39 (1.08–1.77)**	1.33 (1.06–1.68)*
Nonrelatives	17/44 (38.6)	1.37 (0.87–2.16)	1.30 (0.82–2.08)
Alone (adolescent-headed)	15/22 (68.2)	2.65 (1.54–4.59)***	1.97 (1.14–3.38)*

Notes: \*  $\leq 0.05$ ; \*\*  $\leq 0.01$ ; \*\*\*  $\leq 0.001$ .<sup>a</sup>Adjusted for other variables in the table.



Table 3. Unadjusted and adjusted hazard ratios (HRs) for sexual debut before 16 among unmarried adolescents in Rakai, Uganda by parental presence and sociodemographic covariates (n = 1940 observations).

	Sexual debut <i>n/N</i> (%)	Unadjusted HR (95% CI)	Adjusted HR (95% CI) <sup>a</sup>
<b>Individual-level characteristics</b>			
<b>Occupation</b>			
Student	459/1335 (34.4)	1.00	1.00
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Muslim	148/353 (41.9)	1.62 (1.05–2.52)*	1.72 (1.08–2.73)*
<b>Tribe</b>			
Muganda	642/1659 (38.7)	1.00	1.00
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<b>Family size</b>			
	–	0.96 (0.94–0.99)*	0.98 (0.96–1.01)
<b>Parental status</b>			
Both in home	239/754 (31.7)	1.00	1.00
Both out of home	88/183 (48.1)	1.75 (1.38–2.23)***	1.66 (1.34–2.07)***
Both deceased	128/282 (45.4)	1.67 (1.36–2.06)***	1.56 (1.27–1.93)***
Resident mother/non-resident father	71/154 (46.1)	1.65 (1.28–2.13)***	1.44 (1.12–1.86)**
Resident mother/deceased father	86/243 (35.4)	1.15 (0.86–1.53)	1.11 (0.84–1.46)
Resident father/non-resident mother	27/70 (38.6)	1.35 (0.95–1.92)	1.24 (0.86–1.79)
Resident father/deceased mother	21/61 (34.4)	1.15 (0.75–1.78)	1.10 (0.72–1.70)
Non-resident mother/deceased father	43/114 (37.7)	1.29 (0.87–1.90)	1.19 (0.82–1.75)
Non-resident father/deceased mother	38/79 (48.1)	1.69 (1.24–2.30)***	1.53 (1.14–2.06)**

Notes: \* ≤ 0.05; \*\* ≤ 0.01; \*\*\* ≤ 0.001.

<sup>a</sup>Adjusted for other variables in the table.

risk of pregnancy and early sexual debut, especially if the older sibling was a sister who had experienced an adolescent pregnancy (Diop-Sidibe, 2005). Further assessment of siblings' influence on adolescent risk behaviors is warranted.

Drawing on Social Control Theory, the increased risk of early sexual debut in grandparent-headed households may reflect grandparents' inability to discipline or adequately supervise adolescents (Nyambedha, Wandibba, & Aagaard-Hansen, 2003). Anxiety and depression are reported by grandparent caregivers, especially in HIV-affected households (Cluver & Operario, 2008). Mental illness among caregivers increases the risk of behavioral and emotional problems among their children (Singleton, 2007). In support of the instability and turbulence theoretical perspective, grandparent-headed households tend to be poorer, which may result in young women being withdrawn from school in order to work (Urassa et al., 1997). School attendance is protective against risky sexual behaviors (Jukes, Simmons, & Bundy, 2008). Further examination of grandparents' role in risk behaviors is needed as other studies have reported grandparent households to be protective against sexual debut (Parker & Short, 2009).

Poverty, psychological distress, lack of adult supervision, and exploitation may explain the increased risk of early sexual debut in adolescent-headed households (Operario, Underhill, Chuong, & Cluver, 2011). Lack of financial resources is prevalent in such homes, which may lead to high-risk behaviors for survival. Drawing on Social Control Theory, these girls may be more vulnerable to sexual exploitation without parental protection and support. Young women without parents, especially if due to death, are more likely to have psychological problems, such as depression, which often lead to behavioral problems, including risky sexual behaviors.

The absence of both parents from the household was associated with earlier sexual debut. Studies on orphans have consistently reported increased risky sexual behavior and HIV acquisition (Operario et al., 2011). Our findings suggest that research and prevention must consider the impact of parental absence on young women's vulnerability, not only orphanhood.

The identification of the family structures that affect adolescents' sexual risk behaviors helps to understand how to incorporate the family in prevention efforts, but more research is needed (Davis & Friel, 2001). Because we cannot change family structures, interventions must address the factors within the structures that drive risk. Family processes and parental attitudes toward sexuality play important roles in adolescents' sexual behaviors (Bangpan & Operario, 2012; Pequegnat, 2012). However, research on family processes in sub-Saharan Africa is limited (Defo & Dimbuene, 2012). Creating appropriate family interventions requires identifying modifiable family processes that make a specific family structure high- or low-risk.

Our study has several limitations. The cohort data collection was not designed to measure family processes (e.g., family communication) which may play a significant role in adolescent behavior (Pequegnat, 2012). Nonetheless, family structure establishes a context where family processes develop and unfold (Brown & Rinelli, 2010). We did not have information on individual factors such as the adolescents' psychosocial development, which may in itself influence their context and behaviors (Bronfenbrenner & Ceci, 1994). Finally, our findings may not be generalizable to urban settings.

In conclusion, programmatically, family-centered approaches catering to different family types are needed to protect adolescents from negative health outcomes. For example, understanding how African fathers view their role in prevention efforts may highlight new avenues of support for adolescents (Icard, DiLorio, & Fagan, 2012). Similarly, understanding the needs of non-parental families is important; practitioners might evaluate the

emotional and financial well-being of non-parental households and link these families to existing services as needed.

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