Title: Determinants of Adolescent Vulnerability to Early Marriage and Early Sexual Debut in the Context of HIV and AIDS

Authors:

Priscilla A. Idele, *United Nations Children's Fund (UNICEF)*

Livia Montana, *University of North Carolina*

Chiho Suzuki, *United Nations Children's Fund (UNICEF)*

Upjeet Chandan, *Consultant*

Patricia Lim Ah Ken, *United Nations Children's Fund (UNICEF)*

Turgay Unalan, *United Nations Children's Fund (UNICEF)*

Luong Y Nguyen, *United Nations Children's Fund (UNICEF)*

Attila Hancioglu, *United Nations Children's Fund (UNICEF)*

Rachel Yates, *United Nations Children's Fund (UNICEF)*

Abstract:

Introduction: Recent evidence shows that indicators currently used to identify the most vulnerable children in the context of HIV and AIDS (death of one or both parents, presence of a chronically ill parent, and living in a household where in the past 12 months at least one adult died and was chronically ill before he/she died, or co-residence with chronically ill adults in a household) do not consistently identify children and adolescents with poor outcomes across national and epidemic contexts, and therefore call for a re-examination of variables which are more closely associated with child and adolescent vulnerability (Akwara et al. 2010). This analysis, which focuses on two outcomes related to female adolescents and determinants of vulnerability, is part of a broader study that builds on the Akwara et al's work, aiming to identify key predictors of selected poor developmental outcomes for children and adolescents in the context of HIV and AIDS. It contributes to the global level dialogues on global child and adolescent vulnerability measures that may be used to monitor programme progress, as well as guide resource estimates and targeting of programmes, including HIV and AIDS.

Methods: Data from 11 nationally representative household surveys from different epidemic contexts - Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Survey (DHS) - were pooled and analyzed using bivariate and multivariate logistic regression with fixed country effects, to establish if orphanhood or co-residence with a chronically ill adult in a household consistently identified female adolescents with worse outcomes. Outcome measures were marriage before age 18 (early marriage) and first sex before age 15 (early sexual debut) among adolescents aged 15-17 years. The analysis also accounted for the multistage survey designs and controlled for other variables, including age of the adolescent, household wealth status, presence of an adult member in the household who has been sick for 3 or more months in the past year, education level of an adult member in the household, household dependency ratio, living arrangements (lives with either or no parent), community characteristics (urban/rural residence).

The analysis has several limitations. The outcomes are confined to those available in the MICS, AIS and DHS data sets. Household datasets such as the MICS, AIS, and DHS by design capture only children that live in households and exclude those living in streets or institutions. The assets used to calculate the household wealth may be biased towards urban areas, which may appear to be wealthier or better off than rural areas. In spite of these limitations, the high quality of population-based data provides insights into the associations between indicators of vulnerability in the context of HIV and AIDS and health and wellbeing outcomes.

Results: The results of the analysis indicate that after controlling for all other key factors, orphanhood (one or both parents dead) and co-residence with a chronically ill adult in a household made no difference in the odds of engaging in sexual activity before age 15 among female adolescents. However, not living with a parent and living in a poor household (lowest economic quintile) increased the odds of early sexual debut. Co-residence with a chronically sick adult in a household was not associated with early marriage, while being an orphan reduced the odds of early marriage. Perhaps this is because living in wealthier households reduced the odds of early marriage. The presence of a chronically ill adult in the household made no difference in the odds of early marriage, after controlling for all other main factors.

Discussion: Overall, the findings point to the need to incorporate household wealth and an adolescent's living arrangements as key predictors of female adolescent vulnerability. Only household wealth status and not living with a parent consistently showed power to differentiate between the two outcomes. Orphanhood and co-residence with a chronically ill adult in a household are not robust measures of adolescent vulnerability in the context of HIV and AIDS across national and epidemic contexts.

INTRODUCTION

Despite significant achievements in the global AIDS response over the past decade – declining new infections, decreased AIDS-related mortality, and the increased scale-up and availability of antiretroviral therapy – HIV and AIDS continue to have adverse impacts on the lives of children, adolescents, and families worldwide (UNAIDS 2012). As of 2011, an estimated 17.3 million children had lost one or both parents to AIDS globally[1] and millions more have been affected by living in households and communities severely impacted by the epidemic. At the family and household level, commonly reported impacts on children and adolescents affected by HIV and AIDS include the loss of parental care and protection, decreased access to schooling and healthcare, increased child labour, increased risk of abuse and exploitation, psychosocial distress, stigma and discrimination and impoverishment (Nyberg et al 2012).

Within this context, identifying and monitoring a core set of global indicators of child vulnerability has been essential for monitoring progress in service coverage, assessing global resource needs and ensuring resources are reaching the most vulnerable children. However, because impacts vary and not all children and adolescents affected by AIDS are necessarily vulnerable, identifying indicators which are relevant globally has been challenging.

Existing definitions of child and adolescent vulnerability within the context of HIV and AIDS have largely been shaped by indicators developed in conjunction with the Declaration of Commitment on HIV and AIDS adopted by the United Nations General Assembly Special Session (UNGASS) on HIV and AIDS in 2001 as well as the UNAIDS Monitoring and

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[1] UNAIDS unpublished HIV estimates, 2012

Evaluation Reference Group's (MERG) working definition of a 'vulnerable child' (UNICEF and UNAIDS 2005). According to the 2005 UNICEF and UNAIDS definition, a child made vulnerable by HIV and AIDS is below the age of 18 and:

- Has lost one or both parents, or

- Has a chronically ill parent (regardless of whether the parent lives in the same household as the child), or

- Lives in a household where in the past 12 months at least one adult died and was sick for 3 of the 12 months before he/she died, or

- Lives in a household where at least one adult was seriously ill for at least 3 months in the past 12 months, or

- Lives outside of family care (i.e., lives in an institution or on the streets)

Recent evidence however indicates that global indicators used to identify the most vulnerable children in the context of HIV do not consistently identify children with poor outcomes. An analysis of 2008-2009 DHS and MICS household survey data undertaken by Akwara et al (2010) for example concluded that orphanhood or co-residence with a chronically ill or HIV-infected adult did not consistently identify the most vulnerable children when examining three age-disaggregated outcomes: wasting among children aged 0 to 4; school attendance among children aged 10 to 14 and; early sexual debut among adolescents aged 15 to 17. Rather other factors such as the wealth status of the household (as measured by household asset-based wealth quintiles), the relationship of the child to the caregiver, and the education level of adults in the household had stronger associations with outcomes for children. Moreover, household wealth status was the only consistent predictive factor across age-disaggregated outcomes.

The results of the Akwara et al. analysis are consistent with other research which has found disparate effects associated with orphanhood status, as a key marker of vulnerability utilized within the context of HIV and AIDS (Sherr 2008). Much of the literature examines the impact of orphanhood on educational outcomes (cf. Bicego, Rutstein & Johnson. 2003; Ainsworth & Filmer, 2006; Case, Paxson & Ableidinger 2004; Parikh et al 2007; Guo, Li, and Sherr, 2012;

Kidman et al 2012) and to a lesser extent health nutritional, and psychosocial outcomes (Lindblade, Odhiambo, Rosen & DeCock, 2003; Monasch and Boerma 2004; Antwine, Cantor-Graae, and Bajunirwe 2005; Cluver, Gardener, and Operario 2007; Johnson, Padmadas, and Smith 2010; deSilva 2012).

More recently, researchers have begun to look more closely at adolescent vulnerability in the context of HIV and AIDS. Adolescence is a time of significant physical and psychological change as well as sexual maturation, marking the crucial transition from childhood to adulthood WHO 2001). Sexual debut often occurs during adolescence and it is also a time of heightened risk-taking (Steinberg 2008; Pharo et al 2011). With the recognition that the death of a parent and/or loss of parental care could contribute to engaging in higher risk behaviors, various studies have explored the relationship between orphanhood and HIV risk (Gregson et al 2005; Thurman et al 2006; Operario et al 2007; Cluver and Operario 2008; Hallman 2008; Birdthistle et al 2008). A recent systematic review and meta-analysis examining the association between orphan status and HIV risk in 10 studies (across 12 countries) of youth (male and female) aged 24 years and younger, for example, found that orphaned youth were nearly two times more likely to be HIV positive and also exhibited higher levels of sexual risk behavior than their non-orphaned peers, with indications that female orphaned youth may be at particularly high risk for HIV infection (Operario et al 2011).

Palermo and Peterman (2009) looked more broadly at orphanhood status as a determinant for early marriage, early sexual debut, and teen pregnancy among adolescent females 15-17 years using 2003-2006 DHS data from 10 sub-Saharan countries. Overall, they found few associations between orphanhood and early marriage or teen pregnancy across the ten countries, but in four countries (Cote D'Ivoire, Lesotho, Mozambique, and Tanzania), orphanhood was significantly associated with early sexual debut[2].

The impacts on children living with a chronically ill adult have been less studied (see Gray 2006 however), although there is a growing body of literature on how living in households affected by HIV and AIDS impacts child and adolescent outcomes, relating to education, nutrition, abuse

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[2] In the Palermo and Peterman study, the outcome "ever had sex" was used as a proxy for early sexual debut among adolescent girls (aged 15-17). This differs from the current analysis, which defines early sexual debut as first sex before the age of 15.

and transactional sex (Bele, Valsangkar and Bodhare 2011; Cluver et al 2011; Magadi 2011; Ndirangu et al 2011; Cluver et al 2012).

STUDY OBJECTIVE

From an aid effectiveness and equity perspective, it is critical that global and national resources for children and adolescents affected by AIDS are reaching those in greatest need. In addition, consistent monitoring at the global and national levels is needed to assess the extent to which the most vulnerable children and adolescents are being reached with a range of health, education, child and social protection interventions.

With this objective in mind, this study aims to answer the following research question:
1. Are adolescent girls who are orphans more likely to have early sexual debut and early marriage than non-orphans?
2. Are adolescent girls living in households with chronically ill or HIV-positive adults more likely to have early sexual debut and early marriage than those not living with chronically ill or HIV-positive adults?
3. Aside from orphaning and adult illness in the household, what other factors are associated with early sexual debut and early marriage among adolescent girls?[3]? This analysis which focuses on two outcomes - early sexual debut and early marriage -- is part of a broader study on the determinants of child vulnerability in the context of HIV and AIDS, which builds on Akwara et al's 2010 work.[4]

METHODS

Data source

Data used in this analysis are derived from household surveys collected from 11 countries through the Multiple Indicator Cluster Survey (MICS), the Demographic and Health Survey (DHS) and AIDS Indicator Survey (AIS) (see Table 1). The data sets were selected to represent a

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[3] Adolescent males were not included in the analysis due to the small size of the adolescent male (15-17 years) sample, which precluded meaningful analysis of the data.

[4] The broader study examines eight key outcomes along a child's developmental lifecycle. For young children aged 0-4, the following outcomes were assessed: received final dose of Diphtheria, Pertussis and Tetanus immunization (DPT3); received fever treatment; slept under insecticide-treated mosquito nets (ITNs), whether the child was stunted, and if the child's birth was registered. For older children, outcomes included were school attendance (aged 7–17) and child labour (aged 5–14), and for female adolescents (aged 15-17), early sexual debut and early marriage.

range of HIV prevalence rates and geographic areas, as well as to contain the key analytic and outcome variables of interest for this study. The most recent surveys available at the time the analysis was undertaken were chosen. Surveys were carried out between 2005 and 2008.

Table 1. Survey data sets included in this analysis

Data source	Country	Survey year	HIV prevalence among adults 15-49 years*
MICS	Central African Republic	2006	4.7
MICS	Malawi	2006	11.0
MICS	Sierra Leone	2005	1.6
DHS	Haiti	2005–06	1.9
DHS	Rwanda	2005	2.9
DHS	Swaziland	2006–07	25.9
AIS	United Republic of Tanzania	2007–08	5.6
DHS	Uganda	2006	6.5
DHS	Zambia	2007	13.5
DHS	Zimbabwe	2005–06	14.3
DHS	Cambodia	2005	0.5

*Source for HIV prevalence data: Joint United Nations Programme on HIV/AIDS estimates (2010).

MICS

UNICEF assists countries in the collection and analysis of data to fill data gaps in monitoring the status of women and children through its international household survey initiative, the MICS. Now in its fourth round, more than 200 MICS have been conducted in more than 100 countries since the mid-1990s. MICS data are utilized to produce local estimates on a wide range of health, education, child protection, water and sanitation, and HIV and AIDS indicators that are internationally comparable.

DHS/AIS

The USAID-supported DHS programme collects a wide range of data on women, men and children in developing countries in the areas of population, health, and nutrition. The household surveys are nationally and regionally representative. Modules on HIV and AIDS knowledge, attitudes and behaviour are included in most surveys, and HIV testing has been included in more than 50 surveys to date. Similar to DHS, AIS is a nationally representative household survey;

however, AIS specifically allows measurement of indicators for monitoring national HIV/AIDS programmes.

Key outcome measures

Early sexual debut and early marriage were chosen as the key measures of vulnerability, as both have been linked to wide range of negative outcomes for female adolescents.

Sexual Debut

Early sexual debut refers to first sex before the age of 15. Early sexual debut puts female adolescents at risk for teen pregnancy and at risk for sexually transmitted infections, including HIV (Jensen and Thornton, 2003; Pettifor et al 2004; Kaestle et al 2005; Stockl et al 2013).

Early Marriage

Early marriage refers to marriage or union before the age of 18. Early marriage is a violation of human rights, and disproportionately affects girls. It can lead to early pregnancy, social isolation, and poor future health outcomes. It is also linked to low levels of schooling as well as higher maternal and child mortality rates (Clark, 2004; Nour 2006; Jain and Kurz, 2007; UNICEF 2005, 2009; Walker 2012).

Analytical variables

The analytical (background) variables used in the regression analyses include age, wealth quintile ranking of the household, adult chronic illness in the household, household dependency ratio, living arrangements, education level of any adult in the household, orphanhood status, and community characteristics. The analytical variables are defined in Table 3.

Similar to the 2010 analysis, of the five criteria identified by UNICEF and UNAIDS 2005 (above), orphanhood status and whether an adult in the household was sick for three of the past twelve months were included as analytical variables. The current analysis, however, differs from the original 2010 analysis in that orphanhood and living arrangements are analysed

independently in the current analysis, so that both the independent and combined effects can be quantified.

Table 3. Definitions of analytical variables

Variable Name	Variable Definition
CHILD VARIABLES	
Age	15 (reference)
	16
	17
HOUSEHOLD-LEVEL VARIABLES	
Household wealth quintiles	
Wealth Quintile 1 (reference)	Household is in the lowest wealth quintile.
Wealth Quintile 2	Household is in the second lowest wealth quintile.
Wealth Quintile 3	Household is in the middle wealth quintile.
Wealth Quintile 4	Household is in the second highest wealth quintile.
Wealth Quintile 5	Household is in the highest wealth quintile.
Household Dependency Ratio	
Low household dependency ratio <1 (reference)	Household dependency ratio is less than one.[5]
High household dependency ratio or no household member aged 15-64	Household dependency ratio is greater than one or there are no adults of working age in the household.
Household Health	
No adult sick (reference)	No adults in the household have been sick for three or more months in the past 12 months.
Adult sick in household	An adult in the household was sick for three or more months in the past 12 months.
Household Education	
At least one adult in household had primary level education (reference)	At least one adult (18 years and older) in the household has received some education.
No education is highest level of education among all adults in household	None of the adults (18 years and older) living in the household has received any education.
ORPHANING VARIABLE	
Both parents alive (reference)	Both parents are alive.
Single orphan	One parent is dead and one parent is alive.
Double orphan	Both parents are dead.
LIVING ARRANGEMENTS VARIABLE	
Lives with one or both parents (reference)	The child lives with one or both parents.
	The child lives with other relatives or no relatives.

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[5] The household dependency ratio is the ratio of adults over age 64 and children under age 15 to adults age 15–64.

Lives with other relatives or with no relatives	
COMMUNITYVARIABLE	
Rural	Relative to urban (reference).

Descriptive statistics indicate the unadjusted averages for each outcome and analytical variables, by country. The descriptive estimates were generated using the survey commands *svy* in Stata 12 (StataCorp 2011), which account for the multi-stage survey designs and produce weighted percentages using the sample weights provided in each dataset.

Data were pooled for 11 countries and were analyzed using bivariate and multivariate methods. The number of countries with available data varies by outcome measure. In the bivariate analysis, key measures of vulnerability for adolescents were compared by key background characteristics (i.e., analytical variables) described in Table 3 above. Assessments of statistically significant differences (at the p<0.05 level) were made using chi-squared tests (results not included here). Multivariate analysis using logistic regression containing nine sets of analytical variables was undertaken to provide controls that allow for the quantification of the strength of associations between analytical and outcome variables, while controlling for other characteristics.

The regression results are presented as odds ratios (OR) with standard errors and p-values. Country variables were included in all models as fixed effects, in order to control for country-specific unobserved effects. Region and country fixed effects were included in earlier versions of the models, and there was little difference in the overall fit of the model, or in the coefficient sizes and significance, as compared with models with only country fixed effects. Therefore the final models include only country fixed effects. Standard errors are clustered at the primary sampling unit level in order to account for the multi-stage survey designs. Assessments of statistical significance were made at 0.05 level and better.

The analyses presented in this paper are based on an analytical sample of 16,213 female adolescents (aged 15-17) for the outcome of sex before age 15 and 16,186 female adolescents (aged 15-17) for the outcome of marriage before age 18. Only adolescents with complete data for all variables were included in the analysis.

LIMITATIONS OF THE ANALYSIS

Although both MICS and DHS are widely considered to be reliable and high-quality sources of population and health information, there are also limitations associated with these data sources. A major limitation is the surveys do not capture any children who live outside households. MICS and DHS therefore do not provide representative estimates for all orphans; they only capture orphans who live in households. Some of the most vulnerable children are those living outside the family environment, which will not be captured in these surveys. This is an important distinction when considering targeting of new programmes.

Moreover, HIV status was not available in all of the surveys selected for this report, and where it was, the sample size was not always large enough for the purposes of this study. HIV status of the parent(s) and of the children is not accounted for, and this may be a limitation. There is a strong likelihood that some adolescents who have lost one or both parents, due to AIDS-related illnesses, are HIV-positive themselves. The HIV status of these children can affect their physical health and cognitive development, yet it is not possible to show associations between HIV status and dimensions of vulnerability in cross-sectional surveys.

Another limitation is the use of the wealth index to classify relative wealth of the survey populations. The wealth indices are survey-specific, relative indicators of overall asset ownership, which serves as a proxy for wealth or poverty. However, the index is often biased towards urban areas (which may appear to be wealthier or better off than rural areas) and may not correlate precisely with poverty as measured from consumption or expenditures. Despite these limitations, the assets index has been proven to be a highly useful proxy of wealth (Filmer and Scott 2012).

In addition, the outcomes selected for this analysis are confined to those available in the DHS, MICS, and AIS data sets and cannot represent all important outcomes.

Furthermore, the role of social norms and socio-economic determinants of adolescent outcomes, including those that shape gender roles, local understandings of adolescence, as well as discrimination based on gender, ethnicity, and religion, cannot be measured in a survey

instrument such as the MICS, DHS, or AIS. These may have important influences on both the outcomes and determinants of vulnerability.

Finally, while household survey data provide rich and extensive data on households, the survey data used are cross-sectional for each country. It is not known, for example, the age at which a child was orphaned, or the previous household living conditions of the orphan. Orphanhood status and living arrangements may have changed before – or after – the critical period of the outcomes analysed in this study. The duration of the current living arrangement is not known, nor is the timing of the acquisition of assets of the household. And though the directly measured indicator was not used for this analysis, HIV status itself cannot be situated in the life history of children or their parents, or household members, as there is no way to know when the virus was contracted among those who are HIV-positive. Therefore, assumptions are made, and the results presented here can only inform us of the associations between these outcomes and selected determinants, regardless of timing of events.

Despite these limitations, the high-quality population-based data provide insights into the associations between indicators of vulnerability (including vulnerability due to HIV) and health and well-being outcomes.

FINDINGS

Descriptive results

The distributions of variables for each of the two outcomes analysed in the pooled analysis are presented in Table 4. Slightly more than ten per cent of adolescent girls (aged 15- 17) had sex before age 15 and married before the age of 18. Of all adolescent girls included in the analysis, 36% were 15 years old, 35% were 16 years old, and 29% were 17 years old. Seventeen per cent of adolescent girls sampled lived in households in the lowest economic quintile, 17% in the second economic quintile, 19% in the third economic quintile, 22% in fourth economic quintile and 25% in the highest economic quintile. Seven per cent resided in a household with an adult who was sick for three or more months in the past year, while 18% resided with an HIV-positive adult. Eight-eight per cent lived in households where at least one adult (age 18 and over) had at

least primary level education, while 12% lived in households where no adult had any education. With regard to orphanhood status, seventy-four per cent of adolescent females were not orphans (both biological parents alive), 20% were single orphans (only one parent alive), and 6% were double orphans (both biological parents dead). In terms of living arrangements, 66% lived with one or both parents, while 34% lived with other relatives or non-relatives.

In addition, with regard to orphan status, Table 4 presents the distribution by three categories (both parents alive; one parent alive; both parents dead). Given the small percentage of children falling into the category of having both parents dead, single and double orphanhood were combined into one category for the multivariate analysis.

Table 4. Distribution of the survey respondents by outcome and analytical variables, pooled data from 11 countries for adolescent girls aged 15-17 years[6]

Variables		Adolescent girls aged 15-17 years (%)
Outcome variables (%)		
Sex before age 15		10.1 (n= 16213)
Married before age 18		10.7 (n=16186)
Analytical variables (%)		
Child characteristics		
Age	15	35.9
	16	34.6
	17	29.4
Household characteristics		
Wealth	Lowest quintile	17.1
	Second quintile	17.4
	Third quintile	18.9
	Fourth quintile	22.0
	Highest quintile	24.5
Adult sick in household for three+ months in past year	Adult sick in household	6.5
HIV positive adult in household*	At least one adult HIV positive	17.5 (n=6188)
Sex of household head	Female	30.9
Highest education level of any adult in household	No adult age 18 and over had education	11.8
	Highest education is primary level+	88.2
Household dependency ratio	Dependency ratio greater than 1 or No adult age 15-64 in HH	25.1
*Number of adults over age 64 and children under age 15 to adults age 15-64	Dependency ratio less than 1	74.9
Orphan status	Both biological parents alive	74.1
	Only one parent alive	19.8
	Both biological parents dead	6.0
Living arrangement	Lives with one or both parents	65.8
	Lives with other relatives or with non-relatives	34.2
Community characteristics		
Place of residence	Rural	28.8

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[6] See Table 1 for countries included in the analysis

Logistic regression results

Pooled logistic regression results for the outcomes in the study are presented in Table 5, and the associations between the outcomes and the key analytical variables are described below.

Table 5. Multivariate logistic regression odds ratios for reporting having had sex before age 15 and marriage or union before age 18 for adolescent females aged 15-17, pooled country data

Variables		Had sex before age 15 among females aged 15-17 years	Married or in union before age 18 among females aged 15-17 years
Child characteristics			
Age ((ref= Age 15))	Age 16	0.9* (0.06)	2.3*** (0.20)
	Age 17	0.8** (0.06)	6.0*** (0.50)
Household characteristics			
Wealth (ref=lowest quintile)	Second quintile	1.1 (0.09)	0.8* (0.08)
	Third quintile	0.9 (0.09)	0.6*** (0.06)
	Fourth quintile	0.8* (0.08)	0.4*** (0.04)
	Highest quintile	0.6*** (0.06)	0.1*** (0.02)
At least one adult sick in HH for three+ months in past year (ref=?)	Adult sick in household	1.2 (0.13)	1.0 (0.13)
Sex of household head (ref=male)	Female	0.9 (0.06)	0.5*** (0.04)
Education level of any adult in HH (ref=At least one adult in HH had primary level education or more)	No adult age 18 and over had education	1.1 (0.09)	1.0 (0.10)
Household dependency ratio (ref= <1 or no adult age 15-64 in HH)	Dependency ratio greater than 1	0.9 (0.06)	0.7*** (0.05)
Orphan status (ref= not orphan)	Only one parent alive or both parents dead	1.1 (0.07)	0.8*** (0.06)
Living arrangement (i.e., other relatives or non-relatives) (ref= lives with parents)	Lives with anyone other than parents	1.8*** (0.11)	7.2*** (0.53)
Community characteristics			
Place of residence (ref=urban)	Rural	1.1 (0.08)	1.3** (0.11)
Observations		**16213**	**16186**

Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.0001

Determinants of early sexual debut

Female adolescents living in the wealthiest households were less likely to have experienced sexual debut before age 15 compared with those living in the poorest households (OR 0.8, quintile 4; OR 0.6, quintile 5). Female adolescents living with other relatives or no relatives had increased odds of experiencing sex before age 15, compared with adolescents who lived with one or both parents (OR 1.8).

Determinants of early marriage

Across all quintiles, the odds of early marriage among female adolescents were significantly lower compared with the poorest group. Those living in the wealthiest households were less likely than those living in poorest households to be married before age 18 (OR 0.1).

The odds of early marriage were more than seven times greater for adolescents living with other relatives or no relatives compared with those living with one or both parents (OR 7.2). Orphans, single and double, were 20% less likely to marry early compared with non-orphans (OR 0.8).

Main findings by background characteristics

Household characteristics

Only in the top two wealth quintiles are female adolescents significantly less likely to engage in early sex (fourth quintile OR 0.8; highest quintile OR 0.6)) when compared with female adolescents in the poorest households. The odds of marrying before age 18 drops with each increase in wealth ranking compared with the poorest households.

Figure 1: Odds ratios of reporting sex before age 15 and marriage before age 18 for adolescent females aged 15-17, 11 country pooled data by household wealth quintile
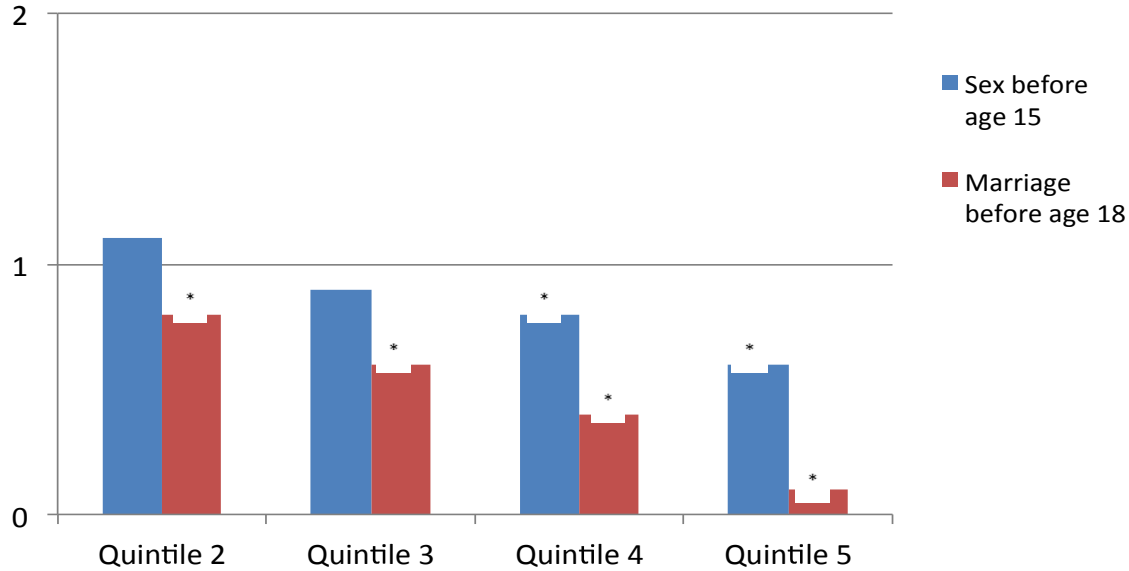

Reference: Lowest wealth quintile (poorest household)
* Indicates statistical significance at $p<0.05$.

The odds of early sexual debut and early marriage are greater for female adolescents living with those other than their parents (early sexual debut OR 1.8; early marriage OR 7.2) as compared with those living with one or both parents. Orphans have no different odds of early sexual debut compared with non-orphans; yet, orphans are less likely to be married or in union before age 18 compared with non-orphans (OR 0.8).

Figure 2: Odds ratios of reporting sex before age 15 and marriage before age 18 for adolescent females aged 15-17, 11 country pooled data, by household living arrangements and orphanhood status
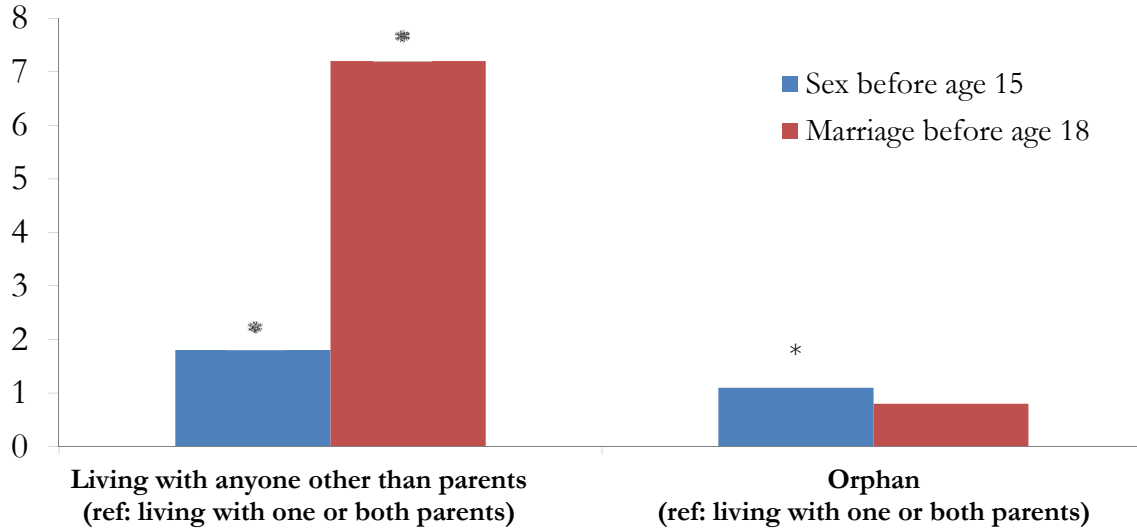
* Indicates statistical significance at $p<0.05$.

There was no significant association between the lack of education amongst adults in the household or adult chronic illness and early marriage or early sex among female adolescents.

DISCUSSION

The results of this study further validate the results of the 2010 Akwara et al. study by using a new set of country data, as well as by using alternative robust statistical techniques, including pooling data sets with fixed country effects, separating orphanhood status from living arrangements and clustering the standard errors of model estimates to account for the survey designs. These results indicate that orphanhood and co-residence with a chronically ill adult in a household are not robust measures of adolescent vulnerability in the context of HIV and AIDS across national and epidemic contexts, when the outcomes of early sexual debut and early marriage are considered.

Orphanhood and co-residence with a chronically ill adult in a household made no difference in the odds of engaging in sexual activity before age 15 among female adolescents. There was also no association between early marriage and co-residence with a chronically sick adult in a household, while being an orphan reduced the odds of early marriage. Further research is required is required to explore why this may be the case.

Rather than orphanhood and co-residence with a chronically ill adult in a household, household wealth status and an adolescent's living arrangements are the most powerful and consistent factors associated with early sexual debut and early marriage for female adolescents. Not living with a parent and living in a poor household increased the odds of both early sexual debut and early marriage. Female adolescents not living with one or both of their parents, in particular, have significantly greater odds of early sexual debut and early marriage. They are nearly two times more likely to have their first sexual experience before the age of 15 and seven times more likely to have been married before the age of 18. Early sexual debut may be related to various factors, including a lack of caregiver-adolescent connectedness and supervision, and warrants further study. Various studies, for example, have found associations between early sexual debut and poor parent-child connectedness and communication (Babalola, Tambashe and Vondrasek, 2005; Peltzer, 2010; Mbaga, Leonard and Leyna, 2012). The findings on early marriage are striking and may reflect that by virtue of not living with one or both parents, female adolescents are more likely to be living with a marriage partner.

Overall, the current findings are consistent with Palermo and Peterman (2011), who found little association between orphanhood and early marriage among adolescent girls (aged 15-17) across ten countries in Sub-Saharan Africa. Although they found some evidence of associations between orphanhood and sexual debut among female adolescents in seven countries, these associations were sensitive to orphanhood subtype (e.g. maternal orphan, paternal orphan, and double orphan) and country setting - leading the authors to conclude that orphanhood status alone was not a sufficient targeting mechanism for addressing these outcomes and more multi-dimensional targeting approaches are needed.

In addition, the finding that household wealth is significant for these two outcomes is consistent with other research, which emphasizes that the negative impacts experienced by some children and adolescents affected by HIV/AIDS are often poverty-related and the most efficient means of reaching those most vulnerable may be through targeting the poorest households (Richter and Desmond 2008; JLICA 2008; Campbell et al 2010; Robertson et al 2012).

Overall, the findings point to the need to incorporate household wealth and an adolescent's living arrangements as key predictors of female adolescent vulnerability in the context of HIV and AIDS. As indicated previously, the current analysis is part of a broader study on the determinants of child and adolescent vulnerability in the context of HIV and AIDS, and as part of this broader analysis is contributing to global dialogues and guidance about how best to target resources and programmes to identify and reach children and adolescents in greatest need.

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