Minimum Marriage Age Laws and the Prevalence Of Child Marriage and Adolescent Birth: Evidence from Sub-Saharan Africa

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CONTEXT: *The relationship of national laws that prohibit child marriage with the prevalence of child marriage and adolescent birth is not well understood.*

METHODS: *Data from Demographic and Health Surveys and from the Child Marriage Database created by the MACHEquity program at McGill University were used to examine the relationship between laws that consistently set the age for marriage for girls at 18 or older and the prevalence of child marriage and teenage childbearing in 12 Sub-Saharan African countries. Countries were considered to have consistent laws against child marriage if they required females to be 18 or older to marry, to marry with parental consent and to consent to sex. Associations between consistent laws and the two outcomes were identified using multivariate regression models.*

RESULTS: *Four of the 12 countries had laws that consistently set the minimum age for marriage at 18 or older. After adjustment for covariates, the prevalence of child marriage was 40% lower in countries with consistent laws against child marriage than in countries without consistent laws against the practice (prevalence ratio, 0.6). The prevalence of teenage childbearing was 25% lower in countries with consistent minimum marriage age laws than in countries without consistent laws (0.8).*

CONCLUSION: *Our results support the hypothesis that consistent minimum marriage age laws protect against the exploitation of girls.*

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Child marriage is widely acknowledged to be a harmful sociocultural practice that is both a cause and an outcome of human rights violations.[1,2] Defined as marriage or cohabitation before age 18,[3,4] child marriage undermines a girl's rights to autonomy, to live a life free from violence and coercion, and to attain an education.[1,2,5] Because a husband frequently expects his wife to bear children soon after marriage (the couple's families often have similar expectations),[5,6] child marriage also permits sexual exploitation and places a girl's health at risk. In addition, children of adolescent mothers start life at a disadvantage, thus perpetuating a cycle of poverty and relative deprivation.[5]

Two major international agreements aim to protect the rights of children in Sub-Saharan Africa: the 1989 United Nations Convention on the Rights of the Child (CRC) and the 1990 African Charter on the Rights and Welfare of the Child (ACRWC). All African countries except Somalia have ratified the CRC, which, without expressly referring to child marriage, describes several child rights violated by the practice.[7] African countries were underrepresented in the CRC drafting process, however, and felt the need for a complementary regional convention that addresses the specific realities of African children.[8] The ACRWC thus emphasizes that signatories need to take action to end child marriage, set the minimum age for marriage at 18 and make the registration of all marriages compulsory.[9] As of January 2014, all African Union member countries had signed the ACRWC, though seven had yet to ratify it.*[9]

In principle, countries in Sub-Saharan Africa are legally bound by the terms of these agreements. In practice, however, the political will to change marriage laws varies considerably, and efforts to do so have been inconsistent. For example, 37 of 41 countries in Sub-Saharan Africa (90%) have legislated minimum marriage ages of 18 or older for females.† However, 12 of the 37 permit marriage before age 18 with parental consent, thus allowing parents to marry off their daughters before they reach adulthood.§ Furthermore, marriage laws in almost all Sub-Saharan African countries have provisions that allow children to marry under customary law or other circumstances (such as if they are pregnant), without specifying a minimum age.

*The countries that have signed but not ratified the ACRWC are the Central African Republic, Democratic Republic of Congo, Sahrawi Arab Democratic Republic, Somalia, Sao Tome and Principe, South Sudan and Tunisia. Sudan and Egypt ratified the convention with reservations and do not consider themselves bound by Article 21(2), which concerns child marriage. Botswana does not consider itself bound by Article 2, which defines children as "every human being below the age of 18 years."

†The four countries that do not have national minimum marriage ages of 18 or older for girls are Cameroon, Chad, Mali and Sudan. Information on child marriage policies was unavailable for eight additional countries in the region: Botswana, Cape Verde, Djibouti, Eritrea, Mauritius, Réunion, South Sudan and Seychelles.

§The 12 countries, and the age at which they permit girls to marry with parental consent, are Burkina Faso (17), Gabon (15), Kenya (16), Malawi (16), Mozambique (16), Niger (15), Sao Tome and Principe (14), Senegal (16), Swaziland (16), Tanzania (15), Zambia (16) and Zimbabwe (16).

Inconsistent legal proscription is problematic because in Sub-Saharan Africa, child marriage has been practiced for generations and is still seen as a culturally legitimate way of protecting girls from premarital sex and any potentially dishonorable consequences (e.g., unintended pregnancy, STIs).[2,10] In addition, factors that contribute to the demand for and supply of child brides—such as poverty, high fertility rates, poor educational opportunities, women's subordinate status, and economic shocks from unemployment and HIV/AIDS—continue to plague the region.[6,10,11] Consequently, poor parents with limited resources may weigh the costs of raising and educating girls against the immediate promise of receiving a dowry and decide that the financial incentives justify marrying off their daughters early. Countries that allow child marriage in cases of parental consent or other circumstances thus may be providing official sanctioning of a harmful custom. Passing clear and consistent laws against child marriage may be the first step in curbing the practice and possibly improving key population dynamics in Sub-Saharan Africa.

A substantial body of evidence reveals clear associations between child marriage and various adverse maternal and child health outcomes, such as adolescent childbearing. The vast majority of adolescent births in Sub-Saharan Africa occur within a marriage or union, and women who marry before age 18 are more likely than their peers to have children as adolescents.[10–14] Moreover, adolescent childbirth is associated with an elevated risk of serious obstetric outcomes.[15–18] For instance, compared with women aged 20 or older, girls who give birth at ages 10–14 are 5–7 times as likely to die from childbirth, and those who give birth at ages 15–19 are twice as likely to do so.[19] In addition, children of adolescent mothers have poorer outcomes—including lower birth weights and higher rates of morbidity, stunting, and neonatal, infant and child mortality—than children of older mothers.[16,20–23]

Marriage before age 18 is also an important correlate of women's reproductive behavior and health; compared with those who marry at or after age 18, women who marry before age 18 have higher rates of repeated unwanted pregnancies, total fertility, obstetric fistula, intimate partner violence and HIV.[6,18,24–31] In addition, Clark and colleagues found that mean spousal age differences in Africa and Latin America were higher among women who married as children than among those who married as adults.[29] Such age differences may constrain women's ability to negotiate with their husbands, and may also compromise control over their own reproductive health. In other words, child marriage adds "another layer of vulnerability" beyond the background characteristics associated with adolescent childbirth, such as lower education, poverty and living in rural areas.[26(p. 557)]

Studies of child marriage have focused primarily on South Asia; little empirical evidence is available about Sub-Saharan Africa. This is a significant oversight, given the disproportionate burden of child marriage in the region. A United Nations Children's Fund (UNICEF) report on child marriage found that 46% of 15–24-year-olds in South Asia had married before age 18, compared with 37% of those in Sub-Saharan Africa.[32] However, 15 of the 20 countries with the highest rates of child marriage are in Sub-Saharan Africa (Table 1). In Niger, for example, three-quarters of 20–24-year-olds had married before age 18.[32] Sub-Saharan African countries have some of the highest rates of child marriage in the world, but have been neglected in rigorous research on the topic.

The global consensus is that laws setting the minimum marriage age at 18 or older are important, and substantial evidence has linked child marriage to adolescent childbearing and reproductive health problems. Yet, to the best of our knowledge, no studies have examined child marriage from a policy perspective. This study thus makes a much needed contribution to the literature by examining the associations of minimum marriage age laws with child marriage and adolescent birth in Sub-Saharan Africa.

Data

We merged information from three sources, the first of which was Demographic and Health Surveys (DHS). Our analyses focused on data from DHS women's questionnaires, which collect information about socioeconomic characteristics, reproductive history, maternity care, sexual activity and contraceptive use, as well as health histories and anthropometric data for children younger than five.[33]

The second source, the Child Marriage Database, was created by McGill University's MACHEquity[34] research program to track information on the 121 low- and middle-income countries currently included in the DHS program or covered by UNICEF's Multiple Indicator Cluster Surveys (MICS). The database, which was created through a systematic review of marriage legislation, civil codes and

TABLE 1. Countries that have the highest percentage of 20–24-year-olds who were married or in a union before age 18

Country	%
Niger	75
Chad	68
Central African Republic	68
Bangladesh	66
Guinea	63
Mozambique	56
Mali	55
Burkina Faso	52
South Sudan	52
Malawi	50
Madagascar	48
Eritrea	47
India	47
Somalia	45
Sierra Leone	44
Zambia	42
Dominican Republic	41
Ethiopia	41
Nepal	41
Nicaragua	41

Note: Data are from the most recent (2002–2011) Multiple Indicator Cluster Survey or Demographic and Health Survey conducted in each country. *Source:* reference 32.

child protection legislation from 1995 to 2012, includes such indicators as the legal minimum age for marriage and the circumstances in which marriage is permitted at younger ages. Information is captured for both girls and boys, which allows for the analysis of gender inequalities in marriage laws. However, the present study is limited to girls, because child marriage affects more girls than boys, and because many of the health risks associated with child marriage, such as those arising from adolescent birth, are specific to girls.[5]

The third source, which provided data on age of sexual consent, was the Global Resource and Information Directory (GRID)[35] maintained by the Family Online Safety Institute, an international nonprofit organization focusing on comprehensive research of the issues, challenges and risks facing children online. GRID is an up-to-date online resource that not only provides data and information on Internet safety, but also on national laws regarding sexual offenses (including the legal age of sexual consent).

Analyses were restricted to the most recent (2010–2012) DHS women's data sets for Sub-Saharan African countries, and used 2009 policy data on child marriage to approximate a cross-sectional data set. In addition, the sample was restricted to women aged 15–26, because this cohort, unlike older ones, grew up in an era in which child marriage was globally condemned (as signified by the widespread ratification of CRC and the ACRWC).

For the period 2010–2012, DHS data were available from Burkina Faso (2010), Burundi (2010), Cameroon (2011), Ethiopia (2011), Gabon (2012), Malawi (2010), Mozambique (2011), Rwanda (2010), Senegal (2010), Tanzania (2010), Uganda (2011) and Zimbabwe (2010).

Measures

The independent variable in our analyses was whether a country had three consistent laws that set the minimum marriage age at 18 or older for girls; that is, the general minimum marriage age, the minimum age for marriage with parental consent and the age of sexual consent were all at least 18. The general minimum age refers to the age at which girls can get married without parental consent. The minimum age with parental consent refers to the age at which girls may marry with their parents' approval. The age of sexual consent refers to the age at which a girl is legally capable of agreeing to sexual intercourse, so that an adult male who engages in sex with her cannot be prosecuted for statutory rape. Countries whose laws set the minimum age at 18 years or older for girls in all three contexts were classified as having consistent laws against child marriage.

The outcome variables were child marriage and adolescent birth. Child marriage was a binary variable indicating whether a woman's age at first marriage or cohabitation was less than 18. Adolescent birth was a binary variable indicating whether a woman was younger than 20 at first birth. Our primary research question was whether living in a country with three consistent minimum marriage age laws was associated with the practice of child marriage; our secondary question was whether living in a country with such laws was associated with adolescent birth. Our analyses adjusted for the following characteristics:

- *Household wealth.* Using the DHS wealth index, we created a series of indicator variables that categorize women into quintiles according to household wealth. The index is based on ownership of specific assets (e.g., bicycle, radio, television), housing characteristics (e.g., type of water source, sanitation facilities, materials used for housing construction) and environmental conditions. The wealthiest quintile served as the reference group.
- *Location.* This was a binary variable indicating whether the household was located in a rural area or an urban one.
- *Educational attainment.* We classified a respondent's highest level of schooling as secondary school or higher or as primary school or less.
- *Religion.* This categorical variable indicated whether the respondent was Christian, Muslim, not religious or a follower of a traditional or animist religion. Because the DHS

TABLE 2. Minimum ages for marriage and age of sexual consent in selected Sub-Saharan African countries, by sex, 2009

Country	Minimum age for marriage		Minimum age for marriage with parental consent		Age of sexual consent	
	Males	Females	Males	Females	Males	Females
Countries with consistent laws						
Burundi	21	21	u	18	18	18
Uganda	21	21	18	18	18	18
Ethiopia	18	18	u	u	18	18
Rwanda	21	21	u	u	18	18
Countries with inconsistent laws						
Burkina Faso	20	20	u	17	13	13
Cameroon	Unclear	Unclear	18	15	16	16
Gabon	21	21	18	15	18	18
Malawi	18	18	15	15	13	13
Mozambique	18	18	16	16	u	u
Senegal	18	18	u	16	16	16
Tanzania	18	18	u	15	18	18
Zimbabwe	18	18	u	16	16	16

Notes: Ages are listed as unclear if the age is uncertain because of contradictions in the laws, and as unavailable if legislation has not indicated a specific age. u=unavailable. *Sources:* Child marriage—reference 34. Age of consent—reference 35.

TABLE 3. Prevalence of child marriage and adolescent birth among women aged 15–26, by country

Country	Survey year	Sample size	% of total sample	No. married before age 18	% married before age 18	% had first birth before age 20	Age of marriage with parental consent
All	**na**	**79,567**	**100.0**	**23,759**	**29.8**	**34.8**	**16.7†**
Mozambique	2011	6,515	8.1	2,538	42.3	48.1	16
Burkina Faso	2010	7,889	9.9	3,144	41.5	41.1	17
Malawi	2010	11,226	14.3	4,297	37.6	46.2	15
Ethiopia	2011	8,534	10.8	2,939	33.6	28.4	u
Cameroon	2011	7,922	10.0	2,570	32.2	37.1	15
Uganda	2011	4,375	5.4	1,286	30.4	39.3	18
Senegal	2010	8,127	10.0	2,778	29.3	28.7	16
Tanzania	2010	4,778	6.0	1,191	27.9	38.6	15
Zimbabwe	2010	4,529	5.7	1,075	25.4	34.0	16
Gabon	2012	3,960	5.1	882	17.6	36.7	15
Burundi	2010	4,971	6.2	671	14.2	20.5	18
Rwanda	2010	6,741	8.4	388	6.0	12.6	u

†Mean. *Notes:* Data are from Demographic and Health Surveys. All percentages are weighted, and may not total 100.0 because of rounding. u=unavailable. na=not applicable.

codes religion differently for each country, we harmonized the variable by recoding all unspecified observations as missing.

• *Child marriage*. In addition to being an outcome measure, this binary variable was used as a covariate in analyses for the secondary research question to identify respondents whose age at first marriage or cohabitation was younger than 18.

Statistical Analyses

We performed descriptive analyses separately for each country as well as for all countries in the sample. We calculated descriptive statistics, including those for the independent and control variables, and identified bivariate associations between consistent minimum marriage age laws and the outcome variables. Multivariate log binomial regression models were used to examine the association between consistent laws and child marriage; log Poisson regression models were used to estimate the association between law consistency and adolescent birth, because log binomial models failed to converge.[36] Independent variables were added one at a time in a series of regression models to test the strength of the coefficients; results are presented as prevalence ratios with 95% confidence intervals. The highest variance inflation factor was 2.4, indicating little multicollinearity among the variables.

Most DHS surveys use a two-stage, stratified cluster-sampling design to randomly select a fixed number of households from primary sampling units that correspond to census enumeration areas. All eligible members in the household are asked to participate; that is, all women aged 15–49 and men aged 15–59.[37] This sampling technique may introduce intracluster effects, potentially leading to underestimation of coefficient standard errors. For instance, women in a particular household or region may be more likely than those in other households or regions to

TABLE 4. Percentage distribution of women who married as children, according to age at marriage, and median age at marriage—all among women aged 15–26; and minimum age for marriage with parental consent, by country

Country	Age at marriage					Total	Median age	Minimum age with parental consent
	≤13	14	15	16	17			
Countries with consistent laws								
Burundi	5.1	9.1	16.3	27.6	41.9	100.0	18.8	18
Uganda	13.6	10.6	21.2	26.0	28.6	100.0	17.5	18
Ethiopia	25.8	14.1	23.4	18.7	18.0	100.0	16.7	u
Rwanda	4.6	7.1	12.7	30.7	45.0	100.0	20.3	u
Mean	**12.3**	**10.2**	**18.4**	**25.8**	**33.4**	**100.0**	**18.3**	**na**
Countries with inconsistent laws								
Burkina Faso	7.2	13.5	22.1	26.6	30.6†	100.0	17.1	17
Cameroon	18.9	17.5	22.6†	19.9	21.1	100.0	17.0	15
Gabon	13.1	15.8	18.5	24.6	28.0	100.0	18.3	15
Malawi	9.7	11.6	20.6	28.2	29.9	100.0	17.3	15
Mozambique	14.8	15.3	22.3	26.3†	21.2	100.0	16.9	16
Senegal	23.1	15.9	22.2	18.7	20.2	100.0	17.3	16
Tanzania	6.2	11.2	21.2	31.3	30.2	100.0	17.7	15
Zimbabwe	4.7	9.0	19.6	29.3†	37.4	100.0	18.3	16
Mean	**12.2**	**13.7**	**21.1**	**25.6**	**27.3**	**100.0**	**17.5**	**na**

†Indicates the four largest proportions that coincided with a country's minimum age for marriage with parental consent. *Notes:* All data are from Demographic and Health Surveys conducted in 2010–2012. Percentages are weighted and refer to all women aged 15–26 who married before age 18 (N=23,759). Percentages may not total 100.0 because of rounding. Median age at marriage is the weighted value for all women aged 15–26 in the country (N=79,567). u=unavailable. na=not applicable.

TABLE 5. Mean percentage distribution of sample, and percentages of women who married as children and women who gave birth as adolescents, by consistency of laws against child marriage—all according to selected characteristics

Characteristic	% distribution	Child marriage		Adolescent birth	
		Consistent laws	Inconsistent laws	Consistent laws	Inconsistent laws
Wealth quintile					
Poorest	16.2 (13.7, 19.4)	29.4 (9.6, 45.5)	46.6 (26.1, 58.4)	32.7 (17.9, 50.5)	52.4 (48.4, 57.1)
Poor	18.2 (16.6, 20.2)	25.7 (5.4, 41.5)	41.6 (23.5, 55.2)	30.0 (13.2, 50.0)	47.5 (38.3, 54.8)
Middle	19.5 (17.4, 22.6)	23.3 (6.2, 39.3)	36.3 (20.1, 51.1)	27.3 (11.8, 43.6)	43.3 (24.9, 53.7)
Rich	20.8 (18.9, 24.4)	18.9 (5.5, 25.0)	29.2 (5.5, 47.2)	22.3 (11.1, 34.1)	37.1 (20.8, 53.8)
Richest	25.4 (21.6, 29.3)	13.0 (3.9, 17.5)	14.8 (7.8, 20.9)	18.1 (10.2, 27.1)	22.7 (15.6, 35.0)
Location					
Rural	63.9 (10.3, 88.5)	23.4 (6.3, 83.9)	40.1 (27.8, 50.9)	27.1 (12.6, 42.0)	46.9 (38.8, 54.6)
Urban	36.1 (11.5, 89.7)	13.3 (4.4, 18.7)	20.7 (15.6, 30.1)	19.2 (12.9, 29.9)	29.7 (18.4, 42.2)
Religion					
Christian	73.1 (4.2, 98.1)	20.3 (5.8, 31.8)	25.8 (10.6, 40.8)	24.0 (12.3, 38.1)	34.6 (18.3, 47.4)
Muslim	23.8 (0.3, 95.4)	27.6 (10.9, 38.0)	40.9 (20.5, 58.2)	37.5 (24.0, 47.3)	45.8 (29.1, 56.1)
Traditional	0.9 (0.0, 5.6)	na	51.5 (10.1, 80.8)	na	61.5 (54.4, 72.0)
None	2.2 (0.0, 9.1)	28.0 (24.8, 31.2)	42.4 (31.1, 59.0)	42.5 (39.1, 45.8)	48.3 (36.4, 66.7)
Education					
None	21.2 (0.5, 63.8)	39.0 (18.8, 58.4)	52.3 (35.1, 53.9)	43.4 (28.4, 62.3)	58.2 (42.9, 67.7)
Primary (1–6 yrs.)	34.7 (8.2, 71.2)	20.5 (5.5, 38.5)	38.2 (21.4, 58.1)	23.9 (12.6, 44.6)	44.9 (22.8, 60.3)
Secondary (7–12 yrs.)	40.3 (13.7, 85.7)	10.5 (2.2, 22.7)	18.4 (6.6, 25.9)	15.0 (5.9, 35.8)	27.5 (7.8, 38.0)
Postsecondary (≥13 yrs.)	3.8 (0.7, 10.9)	2.6 (0.0, 7.1)	4.3 (0.0, 12.4)	5.2 (2.6, 6.9)	6.7 (0.3, 24.0)
All	**100.0**	**21.6**	**33.4**	**24.4**	**39.5**

Notes: Values in parentheses are the lowest and highest values in individual countries. All data are from Demographic and Health Surveys conducted in 2010–2012. Percentages are weighted and refer to all women aged 15–26 (N=79,567), except for the analysis of religion, which was restricted to women in the 11 countries for which DHS data on this measure were available (N=74,173). na=not applicable (data were available for only one country). Percentages may not total 100.0 because of rounding.

have married before age 18.

There is no formal test to determine the appropriate clustering level for this type of survey design.[38] The general convention is to be conservative and cluster at the highest level when possible.[39] We performed the analysis with robust variance clustered alternatively at the household and country levels. The estimated standard errors were highly sensitive to this choice of clustering, and the country-level clustering was considerably less precise. In our primary analyses, the more precise household clustering likely underestimates the true uncertainty of our estimates; the alternative choice—clustering at the country level—likely overestimates the uncertainty because of the relatively small numbers of exposed and unexposed clusters.

Much of the published literature recommends the more conservative approach of overestimating uncertainty, on the assumption that Type I errors are more costly than Type II errors in the context of statistical testing.[38,39] We do not focus on statistical testing in this paper, and base interpretation more on the point estimates than on the associated intervals. Although the point estimates may still be subject to endogeneity bias from unmeasured characteristics of countries with consistent laws against child marriage, the widening of the confidence intervals through the use of the robust clustering at the higher level does not correct this bias, but instead merely provides a more conservative interpretation of the estimates by representing them in the context of greater uncertainty. Faced with a choice between exaggerating the precision of our estimates and exaggerating their imprecision, we opt for the less conservative depiction in our primary analyses because of our belief that consistent marriage age laws are much more likely to be beneficial than harmful. Nonetheless, the confidence intervals in our regression models should be viewed in light of this choice.

All descriptive analyses were weighted using the women's individual sample weights and STATA version 12; thus, the univariate and bivariate results are representative of the national populations. Because multivariate analyses were not weighted, the results of these analyses are generalizable only to our analytic sample.[40] The final sample consisted of 79,567 women aged 15–26 in 12 countries. We restricted our analyses to women who were not missing information on key covariates. Most analyses were performed using the entire sample; however, analyses involving educational attainment omitted five women who lacked information on this variable, and those involving religion were restricted to 11 countries (74,188 women), because Tanzania does not capture religious information in their DHS surveys.

RESULTS

Descriptive

Table 2 (page 60) shows the general minimum marriage age, the minimum age for marriage with parental consent and the age of sexual consent for the selected countries in 2009. Two countries—Burundi and Uganda—had minimum ages of at least 18 for females for all three laws and thus were classified as having consistent marriage age

TABLE 6. Mean ages at first marriage, first birth and sexual debut, and percentages of women who gave birth before ages 15 and 20—all by country, according to whether women married as a child or as an adult

Country	Mean age						% who gave birth			
	At first marriage		At first birth		At sexual debut		Before age 15		Before age 20	
	Child	Adult	Child	Adult	Child	Adult	Child	Adult	Child	Adult
Countries with consistent laws										
Burundi	16.4	20.1	17.1	20.4	15.9	17.6	4.9	0.1	87.0	9.6
Uganda	15.8	20.0	16.5	19.3	15.1	16.7	13.4	0.8	88.3	17.9
Ethiopia	15.0	19.9	17.0	20.5	14.7	18.1	7.5	0.0	72.3	6.2
Rwanda	16.5	21.0	17.6	20.8	16.0	17.6	3.5	0.1	90.8	7.7
Mean	**15.9**	**20.3**	**17.1**	**20.3**	**15.4**	**17.5**	**7.3**	**0.3**	**84.6**	**10.4**
Countries with inconsistent laws										
Burkina Faso	16.0	19.6	17.1	20.0	15.8	17.6	4.3	0.1	81.0	12.8
Cameroon	15.4	20.4	16.5	19.2	15.3	16.7	13.6	1.2	78.5	17.5
Gabon	15.8	20.7	16.7	18.1	15.2	16.3	12.6	2.6	74.4	28.6
Malawi	16.0	19.6	16.8	19.4	15.2	16.9	7.7	0.5	88.6	20.6
Mozambique	15.6	20.1	16.4	18.9	14.8	16.1	11.4	1.9	78.3	26.0
Senegal	15.2	20.5	16.4	20.2	15.3	18.2	14.9	0.5	75.9	9.2
Tanzania	16.1	20.1	17.0	19.2	15.1	16.6	5.7	1.0	86.1	20.3
Zimbabwe	16.3	20.3	17.0	19.9	16.1	18.8	3.7	0.2	84.6	16.7
Mean	**15.8**	**20.2**	**16.7**	**19.4**	**15.4**	**17.2**	**9.2**	**1.0**	**80.9**	**18.9**

Notes: All data are from Demographic and Health Surveys conducted in 2010–2012. All means are weighted; 23,759 women were classified as having married as children and 17,343 as adults.

laws. Rwanda and Ethiopia did not mention an exception to the general minimum marriage age with parental consent, although their age of sexual consent was 18; they were classified as having consistent marriage age laws for the purposes of this research. The countries in which one or more of the three laws set the minimum age at less than 18—Burkina Faso, Cameroon, Gabon, Malawi, Mozambique, Senegal, Tanzania and Zimbabwe—were classified as having inconsistent laws.

The number of ever-married women who had participated in the most recent DHS surveys in the 12 countries was 41,103, of whom 23,759 (57% after weighting) had married before age 18 (Table 3, page 61). The highest prevalence of child marriage was in Mozambique, where more than two-fifths of the women surveyed had married before age 18 (42%), followed closely by Burkina Faso (42%) and Malawi (38%). The prevalence of child marriage was lowest in Rwanda, where slightly more than one in 20 respondents (6%) had married before age 18.

Levels of adolescent childbearing were generally high in the countries surveyed. Mozambique (48%), Malawi (46%) and Burkina Faso (41%) had the highest proportions of respondents who had given birth to their first child before age 20. Gabon had the biggest difference between the prevalence of child marriage and that of adolescent birth; the proportion of women who had given birth before age 20 was twice the proportion who had married before age 18 (37% vs. 18%).

Girls' ages at the time of child marriage, and the median age of all marriages, were slightly lower in countries with inconsistent laws against child marriage than in those with consistent laws (Table 4, page 61). For example, on average, 26% of women who had married as children in these countries had married before age 15, compared with 23% of those in countries with consistent laws. Among women who had married as children, the proportion who had married before age 15 was highest in Ethiopia (40%), Senegal (39%) and Cameroon (36%). The three countries in which the largest proportion of child marriages occurred when the girl was at the age of parental consent were Burkina Faso (31%), Cameroon (23%) and Mozambique (26%).

Differences by Women's Characteristics

Overall, high proportions of women had characteristics associated with child marriage (Table 5, page 62). For example, the majority of women lived in rural areas (64%) and had low levels of educational attainment (only 4% had completed 13 or more years of schooling). However, women's characteristics varied widely across countries; for example, nearly two-thirds (64%) of women in Burkina Faso had never gone to school, compared with fewer than 1% of women in Zimbabwe (not shown).

On average, across all demographic characteristics, women living in countries that did not have consistent laws against child marriage had a higher prevalence of child marriage (33%) and adolescent childbearing (40%) than did women living in other countries (22% and 24%, respectively). The gaps were largest among women in the poorest wealth quintile, those living in rural areas and those with the lowest educational attainment. For example, among women in the poorest wealth quintile, the prevalence of child marriage was 17 percentage points lower among women living in countries with laws that consistently set the age for marriage at 18 or older than among their counterparts in countries without consistent laws against child marriage. In contrast, the difference was only seven percentage points among women living in urban areas. In both sets of countries, Christianity was associated with a lower prevalence of child marriage than were other

TABLE 7. Prevalence ratios (and 95% confidence intervals) from multivariate binomial regression analyses examining associations between selected measures and child marriage among women aged 15–26

Measure	Model 1 (N=79,567)	Model 2 (N=79,567)	Model 3 (N=79,562)	Model 4 (N=79,562)	Model 5 (N=74,188)
COUNTRY LEVEL					
Consistent laws against child marriage					
Yes	0.64 (0.58–0.70)***	0.66 (0.60–0.73)***	0.58 (0.53–0.64)***	0.58 (0.52–0.63)***	0.60 (0.55–0.66)***
No (ref)	1.00	1.00	1.00	1.00	1.00
INDIVIDUAL LEVEL					
Wealth quintile					
Richest (ref)	na	1.00	1.00	1.00	1.00
Richer	na	1.69 (1.61–1.78)***	1.40 (1.33–1.46)***	1.33 (1.26–1.39)***	1.29 (1.23–1.36)***
Middle	na	2.04 (1.95–2.14)***	1.51 (1.44–1.58)***	1.41 (1.34–1.48)***	1.35 (1.28–1.42)***
Poorer	na	2.28 (2.18–2.38)***	1.63 (1.56–1.70)***	1.50 (1.42–1.57)***	1.45 (1.38–1.52)***
Poorest	na	2.61 (2.49–2.73)***	1.74 (1.66–1.82)***	1.60 (1.53–1.68)***	1.53 (1.47–1.61)***
Education					
≤primary school (ref)	na	na	1.00	1.00	1.00
>primary school	na	na	0.37 (0.35–0.38)***	0.38 (0.36–0.39)***	0.41 (0.39–0.43)***
Location					
Urban (ref)	na	na	na	1.00	1.00
Rural	na	na	na	1.14 (1.10–1.19)***	1.19 (1.14–1.24)***
Religion					
Christian (ref)	na	na	na	na	1.00
Muslim	na	na	na	na	1.25 (1.20–1.30)***
Traditional	na	na	na	na	1.31 (1.24–1.39)***
None	na	na	na	na	1.23 (1.15–1.31)***

*p<.05.**p<.01.***p<.001. *Notes:* All models control for clustering at the household level. na=not applicable.

religions. Tenets of traditional religions and Islam are often used to justify the practice of child marriage in Africa,[10] so the proportion of these religious groups in each country may influence both the pervasiveness and the persistence of the practice.

On average, compared with women who had married as adults, women who had married as children had been about four years younger at the time of their marriage, two years younger at the time of sexual debut and three years younger at the time of their first birth; this was true in both countries with and without consistent laws against child marriage (Table 6, page 63). For the full set of countries, the vast majority of women who had married as children (83%) had given birth to their first child before age 20 (not shown); this percentage is more than five times that among women who had married as adults (15%).

Regression models that clustered at the household level revealed that women in countries with laws that consistently set the minimum marriage age at 18 or older were significantly less likely than those in countries with inconsistent laws to have married as children (prevalence ratio, 0.6; Table 7). Poverty, residence in a rural area and certain religious affiliations were positively associated with child marriage. For instance, after adjustment for covariates, the prevalence of child marriage was 53% higher among women in the poorest wealth quintile than among those in the richest wealth quintile (prevalence ratio, 1.5), and 19% higher among women in rural areas than among those in urban areas (1.2). Educational attainment was negatively associated with child marriage; the prevalence of child marriage was 59% lower among women who had attended secondary school than among those who had not (0.4). Finally, the prevalence of child marriage was higher among women who practiced Islam, traditional religions or no religion than among women who were Christians (1.2–1.3).

Our second set of regression models found significant associations between marriage law consistency and adolescent birth, as well as between child marriage and adolescent birth (Table 8, page 65). For example, in fully adjusted models, the prevalence of adolescent childbearing was 25% lower among women who lived in countries with consistent laws against child marriage than among women in countries that lacked consistent laws (prevalence ratio, 0.8), and significantly higher among women who married as children than among other women (4.8). Poverty and not belonging to a religion were positively associated with adolescent childbearing, while higher educational attainment, rural residence, and affiliation with Islam or a traditional religion were negatively associated with it.

DISCUSSION

We found some suggestion that consistent laws against child marriage are negatively associated with the prevalence of child marriage and adolescent birth. After adjustment for household wealth, educational attainment, religion, and rural or urban location, the prevalence of child marriage was 40% lower among women in countries with laws that consistently set the minimum marriage age for girls at 18 or older than among women in other countries, and the prevalence of adolescent childbearing was 25% lower. Our results are consistent with the hypothesis that setting consistent minimum marriage age laws of 18 or

TABLE 8. Prevalence ratios (and 95% confidence intervals) from Poisson regression analyses examining associations between selected measures and adolescent birth among women aged 15–26

Measure	Model 1 (N=79,567)	Model 2 (N=79,567)	Model 3 (N=79,562)	Model 4 (N=79,562)	Model 5 (N=74,188)
COUNTRY LEVEL					
Consistent laws against child marriage					
Yes	0.77 (0.74–0.80)***	0.78 (0.75–0.81)***	0.76 (0.73–0.79)***	0.77 (0.74–0.80)***	0.75 (0.73–0.78)***
No (ref)	1.00	1.00	1.00	1.00	1.00
INDIVIDUAL LEVEL					
Married as a child					
Yes	5.09 (4.86–5.33)***	4.90 (4.67–5.14)***	4.74 (4.53–4.97)***	4.75 (4.53–4.98)***	4.82 (4.58–5.07)***
No (ref)	1.00	1.00	1.00	1.00	1.00
Wealth quintile					
Richest (ref)	na	1.00	1.00	1.00	1.00
Richer	na	1.15 (1.11–1.18)***	1.12 (1.08–1.16)***	1.14 (1.10–1.18)***	1.14 (1.10–1.18)***
Middle	na	1.20 (1.16–1.24)***	1.16 (1.11–1.20)***	1.19 (1.14–1.24)***	1.19 (1.14–1.24)***
Poorer	na	1.23 (1.19–1.28)***	1.18 (1.14–1.23)***	1.22 (1.16–1.28)***	1.22 (1.16–1.27)***
Poorest	na	1.27 (1.23–1.32)***	1.21 (1.16–1.27)***	1.26 (1.19–1.32)***	1.26 (1.20–1.33)***
Education					
≤primary school (ref)	na	na	1.00	1.00	1.00
>primary school	na	na	0.87 (0.84–0.89)***	0.86 (0.83–0.88)***	0.86 (0.83–0.89)***
Location					
Urban (ref)	na	na	na	1.00	1.00
Rural	na	na	na	0.95 (0.92–0.98)**	0.95 (0.92–0.98)**
Religion					
Christian (ref)	na	na	na	na	1.00
Muslim	na	na	na	na	0.87 (0.84–0.89)***
Traditional	na	na	na	na	0.94 (0.89–0.99)*
None	na	na	na	na	1.10 (1.05–1.15)***

*p<.05.**p<.01.***p<.001. *Note:* All models control for clustering at the household level. na=not applicable.

older may protect against the exploitation of girls.

The prevalence of adolescent birth among women who had married before age 18 was nearly five times that among women who had married as adults. This result is consistent with a number of studies indicating an association between child marriage and early childbearing.[12,13] A sizeable literature shows that relative to adult childbearing, adolescent childbearing is associated with worse obstetric, neonatal and child outcomes, such as lower birth weights and higher rates of fistula, miscarriage, preterm birth, stunting and infant and maternal mortality.[15–20,22,24–26] Although levels of adolescent childbearing were lower among women in countries with consistent laws against child marriage than among women in countries without consistent laws against such marriage, the percentages were high in both sets of countries. Two in five women in countries with inconsistent laws (40%) and one quarter of women in countries with consistent laws (24%) had given birth as adolescents, and hence faced elevated risks.

Our analyses adjusted for several characteristics that in previous studies have been associated with both child marriage and adolescent childbearing, such as place of residence, religious affiliation, household wealth and educational attainment. DHS surveys obtain information on educational attainment rather than on educational level at the time of marriage. The former variable may introduce issues of reverse causality, because the relationship between child marriage and education is bidirectional; child marriage limits educational opportunities, but girls who are not in school may be more available for marriage. We used a binary variable for educational attainment to account for this issue, as well as to minimize differences in education systems across countries. Specifically, we classified educational attainment as either primary or less or as secondary or higher. Because relatively low proportions of women had married before age 14, primary school completion likely preceded child marriage in most cases.

A number of other mechanisms may influence the relationship between child marriage and adolescent childbearing. Compared with their peers who marry later, girls in child marriages tend to be less educated, less knowledgeable about contraception and substantially younger than their husband; these factors, combined with the often considerable pressure to prove their fertility soon after marriage, frequently lead girls in child marriages to become psychologically and economically dependent on husbands and in-laws. This may compromise their ability to control or to negotiate a degree of autonomy regarding their own reproductive health.[2,5] Another potentially important variable is region, which we did not adjust for in this descriptive paper. Country-level statistics hide the frequently large regional variation in the practice of early marriage; in Ethiopia, for example, the majority of child marriages occur in the Amhara region in the north of the country.[41]

The statistical significance of the results was sensitive to

how we handled clustering. Angeles and colleagues argue that by clustering at the highest level, it is possible to obtain both reliable point estimates and reliable coefficient standard errors in models with two or more levels.[39] We found that standard errors were substantially larger when we clustered at the country level rather than at the household level. Individual-level variables, such as child marriage and religion, are particularly sensitive when clustering at the highest level. Therefore, clustering and weighting effects may have influenced the results of our models, especially if the many different types of households in each country responded differently to their respective legal and religious environments.

Several unobserved factors may influence the effectiveness of laws in the study countries. Legal frameworks and policy environments governing minimum marriage age laws differ greatly across Sub-Saharan Africa. Some countries criminalize child marriages; some ban or invalidate marriages if one participant is younger than the legally prescribed minimum age; and others merely prescribe a minimum age of marriage without expressly criminalizing or banning child marriage. Punishment also varies, ranging from fines to prison terms or both. Moreover, laws must be communicated to and adopted by communities, particularly in remote rural areas where child marriage is more prevalent. They also must be enforced by local officials; corruption, limited monitoring and enforcement capabilities, and resistance from the community or even local officials may undermine a law's effectiveness. To the best of our knowledge, no studies have examined whether girls, parents and communities are aware of minimum marriage laws, or the extent to which laws are enforced.

The study highlights some of the challenges to curbing the practice of child marriage on a continent where pluralistic legal systems are the norm. For instance, the minimum age of marriage with parental consent is lower than the age of sexual consent in Gabon and Tanzania. This is problematic, because a valid marriage is typically consummated. Many such legal discrepancies result from marriage laws in Sub-Saharan Africa being governed not only by statutory laws, but also by customary or religious laws that may be contradictory and may contravene international or regional human rights agreements. In addition, many Sub-Saharan African countries allow exceptions to laws regarding underage marriage. Almost all of the countries surveyed—including Uganda, which has consistent laws setting the minimum age of marriage at 18—allow marriage at a younger age with court approval or "under exceptional circumstances." Determining how often these exceptions are used is difficult, given the general paucity of marriage data on the continent.

Moreover, age at first marriage and age at first birth were self-reported in the survey data we used and consequently may have been prone to bias. For example, the age at which child marriage was most prevalent coincided with (or rose dramatically at) the minimum marriage age with parental consent in four countries, namely Burkina Faso (17), Cameroon (15), Mozambique (16) and Zimbabwe (16). It is difficult to interpret this age pattern; although parents may have waited until the age of parental consent to marry off their children, it is possible that respondents misreported their age at marriage with a bias toward the legal age.

Because of these limitations, the aim of this study—to examine associations between law consistency, child marriage rates and adolescent childbirth—was narrow. Further, this exploratory, cross-sectional study used data from 2010 to 2012, and did not account for the year that minimum marriage age laws changed. The results therefore do not imply causality, and need to be tested using more rigorous approaches that adjust for longitudinal variation, changing social trends and country-level confounding. Nonetheless, our findings, if confirmed, provide two important insights for policymakers. First, the negative association between laws that consistently set the age for marriage at 18 or older and child marriage rates suggests that having consistent laws against child marriage may have an impact on the practice. Second, the negative association between such laws and adolescent birth suggests that having consistent laws against child marriage may also have an impact on early childbearing.

It is also important to note that consistent laws against child marriage may be associated with lower child marriage rates among women who, according to the literature, are most vulnerable to child marriage (i.e., poor, uneducated women living in rural areas). Women in all demographic subgroups were less likely to marry before age 18 in countries with consistent laws against child marriage than in other countries, but the gap—and thus the potential protective effect—was largest for women in the poorest wealth quintile, those living in rural areas and those with the lowest educational attainment. For example, among rural women, the proportion of who married as children was 17 percentage points lower in countries with consistent laws than in countries with inconsistent laws, whereas among women in urban areas the difference was only seven percentage points.

In future studies, repeated cross-sectional data and causal policy analysis methods can be used to examine the impact of minimum marriage age laws on the practice of child marriage and on a range of reproductive health outcomes. If replicated, our results suggest that raising minimum marriage age laws and harmonizing various laws so that the legal age for marriage and sexual consent is consistently set at 18 years or older is a crucial step to curbing the harmful practice of child marriage and possibly improving maternal and child health outcomes.

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RESUMEN

Contexto: *La relación de las leyes nacionales que prohíben el matrimonio infantil con la prevalencia del matrimonio infantil y el embarazo en adolescentes no se comprende del todo bien.*

Métodos: *Se utilizaron datos provenientes de las Encuestas Demográficas y de Salud, y de la Base de datos de Matrimonio Infantil creada en la Universidad McGill por el programa MACHEquity para examinar las relaciones entre las leyes que consistentemente establecen la edad de matrimonio para las niñas a los 18 años o más con la prevalencia del matrimonio infantil y la maternidad en adolescentes en 12 países de África subsahariana. Se consideró que los países contaban con leyes consistentes contra el matrimonio infantil si requerían que las niñas tuvieran 18 años o más para casarse, para casarse con el consentimiento de los padres y para tener relaciones sexuales*

consensuales. Las asociaciones entre las leyes consistentes y los dos resultados se identificaron usando modelos multivariados con errores estándar robustos para tomar en cuenta la conglomeración de hogares.

Resultados: *Cuatro de los 12 países tenían leyes que establecían consistentemente la edad mínima para el matrimonio en 18 años o más. Después de ajustar por covariables, la prevalencia del matrimonio infantil fue 40% más baja en los países con leyes consistentes contra el matrimonio infantil que en los países sin leyes consistentes contra esta práctica (razón de prevalencia, 0.6). La prevalencia de la maternidad en adolescentes fue 25% más baja en países con leyes consistentes de edad mínima para el matrimonio que en países sin leyes consistentes (0.8).*

Conclusión: *Nuestros resultados apoyan la hipótesis de que las leyes de matrimonio consistentes protegen contra la explotación de las niñas.*

RÉSUMÉ

Contexte: *Le rapport entre les législations nationales qui interdisent les mariages d'enfants et la prévalence de ces mariages et des naissances chez les adolescentes n'est pas bien compris.*

Méthodes: *Les données d'Enquêtes démographiques et de santé et de la base de données sur mariages d'enfants créée par le programme MACHEquity à McGill University ont servi à l'examen du rapport entre les lois qui fixent avec constance l'âge du mariage des filles à 18 ans ou plus et la prévalence des mariages d'enfants et de la maternité à l'adolescence dans 12 pays d'Afrique subsaharienne. Les pays ont été considérés comme ayant une législation constante à l'encontre des mariages d'enfants s'ils exigeaient que les filles aient au moins 18 ans pour pouvoir se marier, se marier avec le consentement de leurs parents ou consentir à un acte sexuel. Les associations entre les législations constantes et les deux résultats considérés ont été identifiées à l'aide de modèles multivariés avec erreurs types robustes pour rendre compte du groupement de ménages.*

Résultats: *Quatre des 12 pays disposaient de législations fixant avec constance l'âge minimum du mariage à 18 ans ou plus. Après correction des covariables, la prévalence du mariage d'enfants s'est avérée de 40% inférieure dans les pays dotés de législations constantes contre le mariage d'enfants, par rapport aux pays dénués de telles lois (rapport de prévalence de 0,6). La prévalence de la maternité à l'adolescence est quant à elle de 25% inférieure dans les pays dotés de législations constantes par rapport à ceux qui ne le sont pas (0,8).*

Conclusion: *Nos résultats appuient l'hypothèse selon laquelle les législations matrimoniales constantes protègent contre l'exploitation des filles.*

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