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2016

Online at <https://mpra.ub.uni-muenchen.de/88825/>
MPRA Paper No. 88825, posted 12 Sep 2018 13:40 UTC

Social Structure and Variation in the Family Formation Process: The Case of Age at First Marriage and Duration between First Marriage and First Birth in selected sub-Saharan African Countries

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ABSTRACT

The present study employed the Cox proportional hazard regression model to examine the effect of select socio-demographic factors on the family formation process in five sub-Saharan African countries using the most recent Demographic and Health Surveys (DHS) data for the respective countries. Specifically, the study examined the effects of education, residence, religion and age at first marriage on age at first marriage, age at first birth and the duration between first marriage and first childbirth in Ethiopia, Ghana, Kenya, Nigeria and Zambia. On the whole, we found that Ghana has the highest median age at first marriage, while Ethiopia has the lowest median age at first marriage. Both level of urbanisation and education were inversely related to the proportion of women ever married in all five countries. While education was positively associated with age at first marriage in all five countries, it was negatively associated with duration between marriage and first birth in all the countries with the exception of Ghana. With the exception of Ghana and Nigeria, there were no statistically significant differences in the median age at first marriage between rural and urban areas in Ethiopia and Kenya; the hazard of early marriage was higher in urban than rural settings in Zambia.

Keywords: Sub-Saharan Africa, Age at first birth, Age at first marriage, Cox proportional regression, Social Structure.

Introduction

The timing of such central family as marriage, childbearing and divorce defines the family as a social institution. The timing of these central family events in turn are affected by social, cultural, economic, and political factors such as education, level of urbanization or place of residence, participation in the labour force, relative availability of potential marriage partners or the sex ratio, religion, normative expectations with regard to the appropriate time for the occurrence of these events and to a certain extent, legislation (e.g. Feng and Quanhe, 1996; Kumar and Danabalan, 2006; Islam, 2009). The importance of understanding the factors affecting the timing of marriage and the duration between marriage and first child birth cannot be overemphasised.

Even though increasingly births are occurring outside of marriage in many societies, the bulk of childbearing still occurs within the context of marriage as a vital social institution (Caraël 1995). The timing of marriage has several implications as far as the definition of the family as a social institution is concerned. Firstly, the age at which marriage occurs has implications for not only the duration between marriage and childbirth, but also the subsequent level of fertility or size of the family. Age at first marriage has been found to be one of the major determinants of fertility since a woman who marries early compared to the one who marries late has longer exposure to the risk of childbearing (e.g. Bongaarts 1982; Coale and Treadway 1986; Rosero-Bixby 1996; Westoff, 1992). Moreover, apart from the implication it has for fertility, early age at first marriage has implications for one of the Millennium Development Goals (MDGs) because of the poor maternal and child health it engenders (Carmichael 2011; Green et al. 2009).

Also, age at marriage has implications for the stability of the marriage itself since people who marry early may not be experienced enough to negotiate the intricacies that

characterise marriages such as marital conflicts etc. Also, some studies in sub-Saharan Africa have found that girls who marry early are more vulnerable to such sexually-transmitted diseases as STDs and HIV/AIDS because of the simultaneous increase in coital frequency and decrease in condom use among married couples (e.g. Carmichael 2011; Clark 2004; Green et al. 2009).

Moreover, since in most cases these girls are married to older men they are not able to successfully negotiate the use of family planning services such as condom use with their partners. Further, studies have found that adolescent mothers are more likely to have children with low birth weight, inadequate nutrition and anaemia, and these young women are more likely to develop cervical cancer later in life (Hindin et al. 2008), while others suggest that higher median age at first marriage directly correlates with higher rates of enrolment of girls in school (UNICEF 2005). Thus, studying age at first marriage and the duration between first marriage and first birth is important as it helps to know where a country stands in terms of its marriage setup and family functioning or malfunctioning.

It is against this background of the importance of understanding the timing of marriage and the duration between marriage and first birth that the current study looks at the socio-demographic factors that affect variations in these central family events in selected sub-Saharan African countries. Specifically, the current study examines the timing of marriage and the duration between marriage and first child birth in Ethiopia, Ghana, Kenya, Nigeria and Zambia. Among the selected factors the study examines are region of residence, place of residence, educational background, religion, ethnicity and polygyny (Bloom and Trussell, 1984; Singh and Samara, 1996; Harwood-Lejune, 2001).

Review of the Literature

Globally, over the last 30 years age at first marriage has been increasing in most countries (UNFPA 2011). This increase in the age at first marriage has been found to be a function of both the changing socioeconomic conditions wrought by modernisation processes

and policy interventions by many states through legislation to limit the minimum age at marriage to 18 years. But these state actions notwithstanding, there are still variations both between and within countries with regards to the timing of marriage and the duration between age at first marriage and first birth. Even with a shift towards later marriage in many parts of the world, approximately 82 million girls in developing countries who are between the ages of 10 and 17 will be married before their 18th birthday (UNFPA, 2005).

Moreover, according to the results of the Demographic and Health Surveys (DHS), 37% of women aged 20 to 24 years in East and Southern Africa and 45% of women in West and Middle Africa were married before their eighteenth birthday as compared to 53% and 58% of women aged 40 to 44 years in those regions (Mensch, Singh and Casterline 2005). In sub-Saharan Africa, Garenne (2004) investigated levels, trends and socio-economic factors that determine age at first marriage in 32 countries using fertility surveys and DHS data and found age at first marriage to be in low age range between 15 to 19 years for most countries with the exception of Namibia, Botswana and South Africa.

Palamuleni (2011) studied the socio-demographic factors affecting age at marriage among women in Malawi, using data from 2000 and 2004 DHS. He found that marriages in Malawi take place early, with the mean age at first marriage being 17.4 years. He further observed that the age at marriage varied by age of the respondents, region, rural-urban residence, religion, ethnicity, wealth, and education. Ayiga and Rampagane (2013) examined the incidence and correlates of age at first marriage for South Africa and Uganda using the 2003 and 2006 DHS data respectively. They found that the median ages at first marriage were 29 years and 19 years for South Africa and Uganda respectively. Moreover, they found that that age at first marriage in the two countries was affected by ethnicity, level of education and age at sexual debut.

Women's education has been found to affect age at first marriage and age at first birth in several countries in both developed and developing countries. Education engenders a new outlook as well as equipping women with new skills. For example, women with higher levels of education are not likely to conform to the traditional expectations and beliefs about marrying early since parts of their time have been invested in schooling. In the absence of education in the old days in many sub-Saharan African societies, girls married early to ensure that their virginity was kept intact (e.g. Feng and Quanhe 1996; Garenne 2004; Mensch, Grant and Blanc, 2006; UNICEF 2001). Gaisie (1984) found that the median age at first birth for women with secondary or tertiary education was 25 years compared to a median age of 19 years for women with primary school education, while Axinn and Thornton (1992) and Quisumbing and Hallman (2003) found that young women aspiring to obtain college education were likely to delay the time of their marriage.

Feng and Quanhe (1996) have identified four trends engendered by modernisation with regard to changes in age at first marriage: the decline in arranged marriages, increase in formal education of both boys and girls, changes in sexuality norms as a result of media and government intervention through family planning program. In Ghana, previous work has found a positive, linear effect of education on the intervals between successive births (GSS and MI, 1999). In Nigeria, Adedokun (1999) observed that the duration of schooling had strong relationship with age at first marriage. Specifically, he observed an increase in the mean age at marriage of women from 20 years to 22.6 years for young women in primary and secondary education, respectively. Also, the millennium DHS reports of year 2000 observed an increase in the median age of women from 17.4 years for those with no education, 17.5 years for those with primary education, 18 years for those with senior secondary education, and 20 years and above for those with secondary education (Malawi Government 2002). Glick, Handy and Sahn (2015) investigated the impact of schooling on the timing of marriage and beginning of child

bearing in Madagascar using survey data of young women aged between 12 and 25 years. They found that a delay of one year marriage delayed the age of first birth by 0.5 years. They further found that parental education and wealth also significantly affected schooling, age at marriage and age at first birth. Ikamari (2005) investigated the effect of education on the timing of marriage of women in Kenya using the 1998 DHS data. They found that education, among other socio-demographic factors, had a significant and strong positive influence on the age at first marriage of Kenyan women, while Jejeebhoy (1995) found that education was the only factor that strongly influenced the postponement of marriage.

As far as rural/urban residence is concerned, the many studies have observed that early age at first marriage is higher in rural or low-income areas than in the urban areas (e.g. Garenne 2004; Laurie 1986; McLaughlin et al. 1993; UNFPA 2011; Westoff 2003). In West Africa, many studies in several of the countries in the region have observed that the median age at first marriage of women has risen since the end of 1970s, especially in the urban areas (Antoine, Razafindrakoto and Roubaud 2001; Calvès 2007; Hertrich 2007; Marcoux and Piché 1998; Tabutin and Schoumaker 2004).

Religion is another important variable that affects both ages at marriage and at first birth. For example, in Tanzania, it has been found that Muslims marry earlier than members of other religious groups (Adedokun, 1999; Grenier et al., 1985; Ngalinda, 1998, Pande, 2003). And in Nigeria, Adedokun (1999) found differences in the mean age at marriage for various religious groups. For instance, he reported that Muslims have a mean age at marriage of 21.5 years compared with an average of 22 years for Christians (non-Catholic), and 22.5 years for Catholics.

Data and Methods

Data for the present analysis come from the Demographic and Health Surveys (DHS) data for the selected countries. The DHS are nationally representative cross-sectional surveys of women of reproductive age (15-49 years) undertaken periodically in many developing countries¹. For each country, we utilize data from the most recent DHS survey conducted between 2011 and 2014 in five sub-Saharan African countries. Among the countries are Ethiopia (2011), Ghana (2014), Kenya (2014), Nigeria (2013), and Zambia (2013/14). All women are asked a series of questions regarding their marital status, and whether they have ever cohabited with a man.

Women who reported that they have ever married or ever-lived with a man are asked to indicate their age at the time they started living with a man as a wife for the first time. Those who indicate that they have never been in a union or lived with a man are considered unmarried and as a result are not asked about their ages at first marriage². The demographic and socio-demographic factors we use as predictors of age at first marriage and the duration between first marriage and first childbirth are education, residence, ethnicity and religion (e.g. Feng and Quanhe 1996; Gurm and Etana 2014; Islam 2009). Among the ever-married women, we record the ages they first cohabit with a man or in formal marriage with a man³. For the five countries considered in this paper, after removing non-responses, the sample sizes of ever-married women used in the analysis are: Ethiopia (10,024), Ghana (4,964), Kenya (28,046), Nigeria (15,204) and Zambia (10,249).

¹ The DHS collects multi-topic survey information on major demographic characteristics of women and their households, as well as detailed information fertility, family planning, mortality, maternal and child health, nutrition, HIV/AIDS, and other topics in population and health.

² These unmarried women are filtered off the entire dataset in each country (Kishor 2003; Ikamari 2005; Mensch, Grant and Blanc, 2006).

³ This becomes the survival time from an unmarried state to married state. Censored cases require special regression analysis in estimating exposure time since ordinary regression procedures are not appropriate (see Allison, 1995). We therefore use continuous time event history analysis techniques (Allison, 1984, 1995).

Statistical Approach

Initial data analysis involved the use of such descriptive measures as cross-tabulations, proportions and mean difference tests, based on the Analysis of Variance (ANOVA). Because the data contain a censored variable, we employed continuous time event history analysis techniques as proposed by Allison (1984, 1995). Specifically, the Cox proportional hazard regression model was used to assess the effect of socio-demographic factors on the marriage experience of women in a multiple regression framework.⁴ Following Cox (1972) and Clark et al. (2003), the Cox model is written as:

$$h(t) = h_0(t) \times \exp\{b_1x_1 + b_2x_2 + \dots + b_px_p\}$$

where the hazard function $h(t)$ is the dependent variable, which is dependent on a set of p covariates (x_1, x_2, \dots, x_p) , whose impact is measured by the size of the respective coefficients (b_1, b_2, \dots, b_p) . The term h_0 is the baseline hazard, which gives the value of the hazard if all the x_i are equal to zero. Empirically, estimating Cox regression involves the status, time and covariate variables. The status variable is the dependent variable, $h(t)$ in the regression which is expected to be binary responses, that is the marriage experience of a woman. The dependent variable is therefore whether or not marriage has occurred. The responses are coded 0 for those women who indicate that they have never been in union or lived with a man, while those that indicate that they have ever-lived with a man are coded 1 and their ages at first cohabitation are determined as a proxy for age at first marriage.⁵

⁴ See Bracher and Santow (1998) and Arnaldo (2004) and Ikamari (2005) for the application of Cox hazard regression model in studying demographic processes such as marriage formation and its effects on socio-demographic factors.

⁵ The worldwide DHS program used this standard way in determining the age at first marriage.

Age at first marriage is considered as a survival time from unmarried state to married state. The time variable measures the duration to the event defined by the status variable, that is, the age at first marriage. The covariates are the predictors/independent variables which are categorical socio-economic and demographic factors as applied in this work. The use of Cox model allows us to specify the hazard function and makes inferences about the underlying risk of observations on the timing of events. The proportional hazard model assumes that the hazard function for an individual depends on the values of the covariates and the value of the baseline hazard.

The key concept of the proportional hazards model is the hazard rate.⁶ It measures the risk of making a transition from the absence of an event to the presence of an event, such as being from unmarried state to married state. A lower hazard rate implies a longer duration of waiting time for marriage to occur. The results are presented as risk ratios, that is, the relative likelihood of a woman in a specific variable level in comparison to a woman in the appropriate reference group, usually the first level of the variable. The risk ratio of the reference group is assigned 1.00 (i.e. 100%). If the risk ratio of a given variable level is greater than 1.00 (> 100%), it implies higher risk of marrying, and when the risk ratio is less than 1.00 (< 100%), it indicates a lower risk of marrying compared to the reference group.

The Cox model is different from other regression models in the sense that the baseline hazard function is estimated non-parametrically and the survival times are not assumed to follow a particular probability distribution. Also, the Cox model is transformed to a multiple linear regression model once logarithm of both sides of the model is taken. In that case, the baseline hazard becomes the intercept term which varies with time and the covariates. .

⁶ The coefficient of the covariate are transformed by exponentiation and interpreted as risk ratios. The risk ratio of the reference group /a category is 1.00 (100%) and if the risk ratio of other category is greater than 1.00 (> 100%), this indicates greater risk of having a first child early, and when the risk ratio is less than 1.00 (<100%), it indicates a lower risk of having a first child early, as compared to the reference category.

Results

Table 1 shows the distribution of the proportion of ever-married women, age at first marriage and the interval between marriage and first birth (in months) by age group. The proportion of ever married women is positively associated with age of the woman in all five countries. Ghana has the lowest proportion of ever married women amongst women below 20 years of age and the highest median age at first marriage (18.17 years). On the other hand, Ethiopia has the highest proportion of ever married women amongst women below 20 years of age and the lowest median age at first marriage (15.58 years). Generally, there is not much variation between respondents' ages and the median ages at first marriage within each of the five countries. However, there is a positive association between the age of a woman and the duration between age at first marriage and age at first birth. In other words, women in the younger age groups tend to have shorter duration between marriage and first childbirth, while women in the older age groups have longer duration between marriage and first childbirth.

INSERT TABLE 1 ABOUT HERE

Table 2 shows the distribution of age at first marriage, proportion ever married, age at first birth and duration between age at first marriage and first birth of women by type of residence. The proportion of ever married women decreases as the level of urbanization increases in all five countries. In other words, the marriage rate is higher in rural and in urban areas in all the countries. However, there is no statistically significant difference between rural and urban areas as far as the median ages at first marriage in Ethiopia, Kenya and Zambia are concerned. The only countries that exhibit statistically larger differences between rural and urban areas with regard to the median ages at first marriage are Ghana and Nigeria. For

example, in Ghana the median age at first marriage is 18.83 years in urban areas compared 17.83 years in rural areas. Also, in Nigeria, the median age at first marriage in urban areas is 18 years compared with a median age at marriage of 16.67 years in rural areas. Table 2 also shows that of the five countries, Zambia has the shortest duration between age at first marriage and age at first birth (13 months), whereas Ethiopia and Ghana have the longest duration between age at first marriage and age at first childbirth (20 months respectively).

The differences in the timing of marriage between rural and urban settings in Ghana and Nigeria are mirrored in the differences in the duration between age at first marriage and age at first birth in the two countries. For example, in Ghana, the duration between age at first marriage and age at first birth in urban settings is 22 months compared to duration of 19 months for rural areas. On the other hand, in Nigeria, the duration between first marriage and first childbirth in urban areas is 17 months compared to duration of 15 months for rural areas.

INSERT TABLE 2 ABOUT HERE

Table 3 shows the relationship between education on one hand, age at first marriage, age at first birth and the duration between marriage and first birth (in months), on the other hand. As the table shows, the proportion of women ever married is inversely associated with educational attainment in all five countries. But, as the shows, there is a positive association between education and age at first marriage across all five countries. For instance, in Ethiopia, the median age at first marriage is 15.50 years for women without education compared to a median of 18.92 years for their counterparts with tertiary education. Also, in Nigeria, the median age at first marriage is 15.33 years for women without education compared to a median of 21.25 years for those with tertiary education.

However, with the exception of Ghana, there is a negative association between the level of educational attainment and the duration between age at first marriage and age at first birth in all the countries. For example, in Ethiopia, the duration between age at first marriage and age at first birth is 21 months for women with no education whereas the duration between age at first marriage and age at first birth is 17 months for women with tertiary education. In the case of Ghana on the other hand, the duration between age at first marriage and age at first birth is 18 months for women with no education compared to duration of 22 months for women with tertiary education. The most plausible explanation of the shorter duration between age at first marriage and age at first birth for educated women in Ethiopia, Kenya, Nigeria and Zambia is that perhaps because women in these countries marry late due to educational and other pursuits, they tend to make up for the lost time insofar as the family building process is concerned (see e.g. Gurmu and Etana, 2014; Ikamari, 2005; Palamuleni, 2011).

INSERT TABLE 3 ABOUT HERE

Table 4 shows the relationship between religion on one hand and proportion ever married, age at first marriage and duration between age at first marriage and age at first birth (in months), on the other. The table shows that Zambia has the highest proportion of ever-married non-Catholic Christians (82%), followed by non-Catholic Christians in Ghana (67.4%). And amongst Catholics, Kenya has the highest proportion of ever-married women (21%), while Ethiopia has the lowest proportion of ever-married women (1.3%). As far as the timing of marriage is concerned, Catholics in Ghana and non-Catholic Christians in Nigeria wait the longest before they marry (18.58 years and 18.58 years respectively). On the other hand, Traditionalist/Other religionists in Nigeria have the lowest median age at first marriage (15.25 years), followed by non-Catholics in Ethiopia (15.33 years).

Even though women in Ethiopia marry early compared to their counterparts in the other countries, they tend to wait the longest before having their first child. For instance, even though followers of Traditional/Other religions in Ethiopia marry relatively early (15.58 years), they have the longest duration between first marriage and first childbirth (25 months). On the other hand, Muslims in Zambia have the shortest duration between first marriage and first childbirth (6.50 months), followed by Traditionalist/Other religionists in Zambia (10 months). The fact that the duration between first marriage and first childbirth in among Muslims in Zambia is less than nine months is evidence of pre-marital conception which is common among Muslims because of their marriage customs.

Like a traditional African marriage, Muslim marriage is characterised by a series of discrete events as opposed to the once-off event which marks the beginning of the marriage in Western culture (Ahmed, 2016, Eilers, Seitz and Hirschler, 2008 and Gianni, 2013).

INSERT TABLE 4 ABOUT HERE

INSERT TABLE 5 ABOUT HERE

Because of the fact that generally women who marry late as a result of their pursuit of higher education have shorter duration between marriage and first birth, we conducted mean comparison test on the duration between age at first marriage and age at first birth using Analysis of Variance (ANOVA) with one independent factor to verify this fact. To use age at first marriage as a factor in the ANOVA, it was recoded into a categorical variable as follows: less than 15, 15-17, 17-20 and above 20 years. The dependent variable is the interval (in months) between marriage and first birth, which is shown in column 3 of table 5, while column

4 shows the 95% confidence interval for the mean duration between first marriage; first birth with their accompanying F-statistics which are shown in column 5.

Table 5 essentially confirms the finding of significant differences in the duration between age at first marriage and age at first birth based on age at first marriage. Specifically, the table shows that there is an inverse relationship between age at first marriage and duration between first marriage and first birth in all the countries, except Ghana; in Ghana, age at first marriage is positively related to the duration between age at first marriage and age at first birth.

Table 6 shows the relationship between residence, education and religion on one hand and age at first marriage on the other, using the Cox proportional hazard regression model. The table shows that while there is no significant difference between rural and urban areas with regards to the timing of marriage in Ethiopia (104%) and Kenya (102%), the hazard of early marriage is higher in rural areas as opposed to urban areas in Ghana and Nigeria. However, the hazard of early marriage is higher in urban areas in Zambia. The differences between Ghana (111%) and Nigeria (109%) on one hand, and Zambia (90%) on the other could be a reflection of their respective rates of urbanisation. Zambia is one of the highly urbanized countries in sub-Saharan Africa with about 41% of its population living in urban centres (US Central Intelligence Agency, 2015)⁷.

As far as education is concerned, table 6 shows that there is an inverse relationship between educational attainment and the timing of marriage. In other words, as educational level increases there is decline in the hazard of early marriage across all five countries in the study. However, the magnitude of the effect of education on the timing of marriage varies across the

⁷ The corresponding proportions of urban populations in Ethiopia, Ghana, Kenya, and Nigeria are 19.5%, 54%, 25.6%, and 47.8% (CIA, 2015).

five countries. For example, in Ghana, the change in the hazard rate from primary education to tertiary education is 61% as opposed a change of 38% in Nigeria. Also, in Zambia there is a change of 51% in the hazard rate from primary to tertiary educational level as against a change of 49% and 48% in Ethiopia and Kenya respectively. In terms of religion, table 6 shows that the hazard of early marriage highest among Muslims compared to non-Catholic Christians in Ghana, Kenya and Nigeria. Furthermore, the hazard of early marriage is higher among Catholics compared to non-Catholic Christians in Zambia.

INSERT TABLE 6 ABOUT HERE

Discussion and Conclusion

The current study investigated the effect of select socio-demographic factors on crucial aspects of the family formation process in five sub-Saharan African countries, using the most recent data from the Demographic and Health Surveys for each country. Specifically, the study sought to examine the relationship between education, residence and religion on one hand and the proportion of women ever married, ages at first marriage first birth and the duration between the latter two family defining events in Ethiopia, Ghana, Kenya, Nigeria and Zambia.

As a social institution, the family interfaces symbiotically with other social, economic, political and cultural institutions in its environment. Changes in these institutions therefore are bound to engender changes in both the prevalence and timing of such central family events as marriage, childbearing and the duration between these two crucial family defining events. The finding of the negative association between educational attainment and urbanization on one hand, and the prevalence and timing of marriage on the other hand, is consistent with several

existing studies on the subject (Adedokun 1999; Feng and Quanhe 1996; Gaisie 1984; Garenne 2004; Mensch, Grant and Blanc, 2006; UNICEF 2001).

The negative effect education and level of urbanization exert on the prevalence of and timing of marriage should be understood from the point of view of modernization theory which posits that as societies evolve from their elementary forms into higher forms through such coordinates as education and urbanization, social institutions like the family similarly change both quantitatively and qualitatively. Education does not only become a competing activity to family life like marrying and having children, it equips women with skills such as knowledge about the benefits of family planning, achievement of desired family size and negotiating skills in marriages which gives them autonomy in the decision making processes in the domestic domain in realizing the above-mentioned benefits. Needless to say, such liberalizing influences are antithetical to the values of early marriage and childbearing which predominate in pre-modern and traditional societies.

But, we also found that with regards to duration between age at first marriage and age at first birth it was only in Ghana where education was positively associated with it; all the countries had shorter duration as education increased. This is hardly surprising as it shows the importance of family life amongst Africans despite the increasing modernization of traditional societies in the region through the quest for formal education.

Like education, the finding about the inverse relationship between residence and prevalence of marriage and to some extent, the timing of and duration between marriage and childbirth in Ghana and Nigeria is consistent with existing studies on the subject (e.g. Garenne 2004; Laurie 1986; Kabir and Sufian 2009; Lesthaeghe et al., 1989; McLaughlin et al. 1993; Moore et al., 1993; Saxena and Kulczycki, 2004; UNFPA 2011; Westoff 2003; Yabiku, 2003). The existence in urban areas of modern social and economic amenities such as schools, clinics, wage employment, recreational amenities, and radio and television are some of the reasons for

the differential family formation patterns in urban and rural areas in sub-Saharan Africa. These amenities act as alternative attractions to girls in urban areas who otherwise would be compelled to enter marriage early to bear children as domestic and farm hands in the rural subsistence economies.

But again, like education, the effect of residence is not uniform across and within the five countries in the current study. The two countries where there were rural-urban differences were Ghana and Nigeria. The increasing convergence of rural and urban values in the region is evidenced by the absence of variation in Ethiopia and Kenya, while in Zambia early marriages predominate in urban rather than rural areas. In conclusion, the present study has shown that while modernizing influences in the broader society are certainly engendering transformations in the institution of the family, the institution is adapting to this change in ways that combine the old with the new values in producing a unique African family system both in form and in substance.

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Table 1: The relationship between age at first marriage and duration between first marriage and first birth (in months) by age group

Country	Age Group	Proportion of Ever-Married Women	Median Age at first Marriage	Median Age at first birth	Duration between first marriage and first birth (months)
Ethiopia	15-19	1.1 (110)	14.42	16.00	15.00
	20-24	5.6 (561)	15.67	17.50	18.00
	25-29	13.9 (1393)	15.67	18.00	18.00
	30-34	16.2 (1624)	15.58	18.00	21.00
	35-39	21.1 (2115)	15.50	18.00	20.00
	40-44	20.5 (2055)	15.75	18.00	22.00
	45-49	21.6 (2165)	15.50	18.00	21.00
		100.0 (10024)	15.58	18.00	20.00
Ghana	15-19	0.4 (20)	14.50	15.00	12.00
	20-24	3.7 (184)	16.42	17.00	16.50
	25-29	8.5 (422)	18.33	19.00	23.00
	30-34	15.6 (774)	18.67	19.00	17.00
	35-39	20.1 (998)	18.25	19.00	22.00
	40-44	24.7 (1226)	17.67	19.00	21.00
	45-49	26.9 (1335)	18.50	19.00	20.00
		100.0 (4964)	18.17	19.00	20.00
Kenya	15-19	0.7 (196)	15.58	16.00	11.00
	20-24	5.1 (1430)	16.83	17.00	13.00
	25-29	13.7 (3842)	17.25	18.00	14.00
	30-34	17.3 (4852)	18.00	18.00	14.00
	35-39	21.9 (6142)	18.17	19.00	14.00
	40-44	21.6 (6058)	18.00	19.00	16.00
	45-49	19.5 (5469)	18.42	19.00	15.00
		100.0 (28046)	18.00	19.00	14.00
Nigeria	15-19	0.6 (91)	15.33	16.00	12.50
	20-24	4.1 (623)	16.92	18.00	16.00
	25-29	10.7 (1627)	17.00	18.00	15.00
	30-34	15.4 (2341)	17.25	18.00	16.00
	35-39	18.4 (2798)	17.67	19.00	16.00
	40-44	22.2 (3375)	17.54	19.00	14.00
	45-49	28.6 (4348)	17.00	18.00	16.00
		100.0 (15204)	17.25	19.00	16.00
Zambia	15-19	0.8 (82)	16.00	17.00	10.50
	20-24	49 (5022)	17.00	17.00	13.00
	25-29	12.1 (1240)	17.33	18.00	12.00
	30-34	18.6 (1906)	17.17	18.00	13.00
	35-39	23.2 (2378)	17.33	18.00	12.00
	40-44	22.0 (2255)	17.75	18.00	14.00
	45-49	18.4 (1886)	16.92	18.00	13.00
		100.0 (10249)	17.33	18.00	13.00

Source: Computed by the authors from the latest DHS data

Table 2: The relationship between age at first marriage and duration between first marriage and first birth (in months) by type of residence

Country	Type of Residence	Proportion of Ever-Married Women	Median Age at first Marriage	Median Age at first birth	Duration between age at first marriage and age at first (months)
Ethiopia	Urban	27.1 (2717)	15.83	18.00	20.00
	Rural	72.9 (7307)	15.50	18.00	20.00
		100.0 (10024)	15.58	18.00	20.00
Ghana	Urban	49.6 (2462)	18.83	20.00	22.00
	Rural	50.4 (2502)	17.83	19.00	19.00
		100.0 (4964)	18.17	19.00	20.00
Kenya	Urban	29.3 (8218)	18.17	19.00	14.00
	Rural	70.7 (19828)	18.00	18.00	14.00
		100.0 (28046.0)	18.00	19.00	14.00
Nigeria	Urban	45.5 (6918)	18.00	19.00	17.00
	Rural	54.5 (8286)	16.67	18.00	15.00
		100.0 (15204.0)	17.25	19.00	16.00
Zambia	Urban	41.5 (4253)	17.33	18.00	13.00
	Rural	58.5 (5996)	17.25	18.00	13.00
		100.0 (10249)	17.33	18.00	13.00

Source: Computed by the authors from the latest DHS data

Table 3: The relationship between age at first marriage and duration between first marriage and first birth (in months) by education

Country	Level of Education	Proportion of Ever-Married Women	Median Age at first Marriage	Median Age at first birth	Median First birth interval (months)
Ethiopia	No Education	72.5 (7267)	15.50	18.00	21.00
	Primary Edu.	21.8 (2185)	15.67	18.00	19.00
	Secondary Edu	3.4 (341)	17.58	19.00	19.00
	Tertiary Educ.	2.3 (231)	18.92	21.00	17.00
		100.0 (10024)	15.58	18.00	20.00
Ghana	No Education	30.4 (1509)	17.58	19.00	18.00
	Primary Edu.	22.9 (1137)	17.58	18.00	19.00
	Secondary Edu	44.0 (2184)	18.75	19.00	22.00
	Tertiary Educ.	2.7 (134)	24.00	25.00	22.00
		100.0 (4964)	18.17	19.00	20.00
Kenya	No Education	24.8 (6955)	16.92	18.00	17.00
	Primary Edu.	54.5 (15285)	17.67	18.00	13.00
	Secondary Edu	16.0 (4488)	19.92	20.00	12.00
	Tertiary Educ.	4.7 (1318)	21.83	22.00	13.00
		100.0 (28046.0)	18.00	19.00	14.00
Nigeria	No Education	27.0 (4105)	15.33	17.00	18.00
	Primary Edu.	33.8 (5139)	17.00	18.00	17.00
	Secondary Edu	31.1 (4728)	18.83	19.00	15.00
	Tertiary Educ.	8.1 (1232)	21.25	22.00	14.00
		100.0 (15204)	17.25	19.00	16.00
Zambia	No Education	14.5 (1486)	16.83	18.00	14.00
	Primary Edu.	58.8 (6027)	17.00	18.00	13.00
	Secondary Edu	23.4 (2398)	18.17	18.00	12.00
	Tertiary Educ.	3.3 (338)	21.00	21.00	11.00
		100.0 (10249)	17.33	18.00	13.00

Source: Computed by the authors from the latest DHS data

Table 4: The relationship between age at first marriage and duration between first marriage and first birth (in months) by religion

Country	Religion	Proportion of Ever-married Women	Median Age at first Marriage	Median Age at first birth	Median First birth interval (months)
Ethiopia	Non-Catholic	50.8 (5092)	15.33	18.00	23.00
	Catholic	1.3 (130)	16.08	17.00	18.00
	Islam	45.1 (4521)	15.75	18.00	18.00
	Traditional/Others	2.7 (271)	15.58	20.00	25.00
		100.0 (10024)	15.58	18.00	20.00
Ghana	Non-Catholic	67.4 (3346)	18.25	19.00	21.00
	Catholic	13.1 (650)	18.58	20.00	20.00
	Islam	12.2 (606)	17.58	19.00	19.00
	Traditional/Others	7.3 (362)	18.00	19.00	17.00
		100.0 (4964)	18.17	19.00	20.00
Kenya	Non-Catholic	60.5 (16968)	18.17	19.00	14.00
	Catholic	20.8 (5834)	18.08	19.00	15.00
	Islam	15.4 (4319)	16.92	18.00	16.00
	Traditional/Others	3.3 (926)	17.00	18.00	16.00
		100.0 (8697)	18.00	19.00	14.00
Nigeria	Non-Catholic	57.2 (8697)	18.58	19.00	13.00
	Catholic	12.8 (1946)	17.83	19.00	13.00
	Islam	28.3 (4303)	15.83	18.00	18.00
	Traditional/Others	1.7 (259)	15.25	20.00	14.00
		100.0 (15204)	17.25	19.00	14.00
Zambia	Non-Catholic	81.6 (8363)	17.25	18.00	13.00
	Catholic	17.0 (1742)	17.33	18.00	13.00
	Islam	0.5 (52)	18.50	18.00	6.50
	Traditional/Others	0.9 (92)	16.67	17.00	10.00
		100.0 (10249)	17.33	18.00	13.00

Source: Computed by the authors from the latest DHS data

Table 5: Mean comparison test of Duration between First Marriage and First Birth (months) by Age at First Marriage

Country	Age at First Marriage (Years)	Duration Between First Marriage and First Birth (Months)	95% confidence Interval for Duration between first marriage and first birth	F-test
Ethiopia	Less than 20	30.98	(30.31, 31.64)	39.235***
	20-25	20.86	(19.67, 22.05)	
	25-30	21.09	(18.11, 24.06)	
	30 and above	24.92	(24.46, 37.37)	
	Overall	29.72	(29.11, 30.32)	
Ghana	Less than 20	22.69	(22.03, 23.36)	5.342***
	20-25	20.11	(19.01, 21.21)	
	25-30	20.93	(18.86, 23.00)	
	30 and above	17.75	(14.73, 20.77)	
	Overall	22.06	(21.51, 22.61)	
Kenya	Less than 20	20.00	(19.70, 20.31)	46.881***
	20-25	16.06	(15.56, 16.52)	
	25-30	17.08	(16.10, 18.06)	
	30 and above	18.52	(15.20, 21.85)	
	Overall	19.19	(18.93, 19.45)	
Nigeria	Less than 20	15.81	(15.77, 15.85)	17748.718***
	20-25	21.96	(21.91, 22.08)	
	25-30	26.86	(26.77, 26.95)	
	30 and above	32.78	(32.40, 33.17)	
	Overall	18.09	(18.02, 18.16)	
Zambia	Less than 20	16.38	(16.34, 16.43)	11264.469***
	20-25	21.55	(21.49, 21.61)	
	25-30	26.48	(26.36, 26.61)	
	30 and above	33.21	(32.84, 33.57)	
	Overall	18.05	(17.98, 18.13)	

Table 6: Cox regression analysis of age at first marriage

Variable	Classification	Ethiopia		Ghana		Kenya		Nigeria		Zambia	
		Exp(B)	Conf. Intv.	Exp(B)	Conf. Intv.	Exp(B)	Conf. Intv.	Exp(B)	Conf. Intv.	Exp(B)	Conf. Intv.
Type of Residence											
	Urban (RC)	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
	Rural	1.04	(0.99, 1.09)	1.11***	(1.06, 1.18)	1.02	(0.99, 1.04)	1.09***	(1.05, 1.13)	0.90***	(0.85, 0.92)
Level of Education											
	No Education (RC)	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
	Primary Edu.	0.91***	(0.87, 0.96)	1.02	(0.95, 1.10)	0.94***	(0.91, 0.97)	0.79***	(0.75, 0.82)	0.96***	(0.89, 1.03)
	Secondary Edu	0.51***	(0.45, 0.57)	0.73***	(0.68, 0.77)	0.63***	(0.60, 0.65)	0.60***	(0.57, 0.62)	0.76***	(0.70, 0.83)
	Tertiary Educ.	0.42***	(0.37, 0.50)	0.41***	(0.35, 0.48)	0.46***	(0.43, 0.49)	0.41***	(0.39, 0.44)	0.45***	(0.39, 0.53)
Religion											
	Non-Catholic (RC)	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
	Catholic	0.73***	(0.61, 0.87)	0.99	(0.92, 1.07)	0.98***	(0.95, 1.01)	1.08***	(1.03, 1.14)	1.07***	(1.00, 1.14)
	Islam	0.82***	(0.78, 0.86)	1.07	(0.99, 1.17)	1.18***	(1.13, 1.23)	1.56***	(1.47, 1.64)	0.99***	(0.70, 1.40)
	Traditional/Others	0.75***	(0.66, 0.85)	0.99	(0.89, 1.09)	1.15***	(1.08, 1.23)	1.20***	(1.05, 1.37)	0.80***	(0.58, 1.10)
-2 log likelihood		153826.134		93649.793		519115.789		261943.320		103771.666	

*** Indicates significance at 5% level. RC means Reference Category