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**What's in the Gap? Factors Associated with the Interval Between Age at First Sex
and Age at First Marriage in Cameroon and Their Implications for Reproductive
Health and Women's Empowerment**

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ABSTRACT

Recent research on reproductive and sexual health has focused on age at marriage as a determinant of an array of population and health outcomes. We argue that, for many reproductive health concerns, it is not age at marriage that should be the focus of analysis but rather the number of years that have elapsed between sexual debut and marriage. This paper explores the factors associated with the length of the interval between initiation of sex and formation of a union in order to gain insight into this aspect of women's reproductive lives.

Using data from the 2004 Cameroon DHS, our sample consists of ever-married women between the ages of 19-34 (N= 4,681). Chi-square tests of difference were used in the bivariate analysis while OLS regression was the multivariate method selected.

Distributions by age at first sex and age at first union show that individual women vary more by their age at marriage than by their age at first sex. The bivariate and multivariate analyses show that having a birth prior to first union, initiating sexual activity while still in school, number of lifetime partners, terminating a pregnancy, and practicing contraception are associated with significantly longer intervals of premarital sexual activity.

Women accrue both benefits and penalties when they have longer intervals between sexual debut and union formation. Education is a critical benefit associated with a delay in marriage; however, the health penalties associated with such a delay can be considerable.

INTRODUCTION

Research on reproductive and sexual health has focused on age at marriage and age at first sex as determinants of an array of population and health outcomes. Early sexual debut has been associated with risky sexual behavior and therefore analyzed for its relationship to HIV and other sexually transmitted diseases such as herpes and HPV (cf. Rosenberg, 2002). Early sexual debut also leads to early childbearing, which increases risks for poor health outcomes including obstructed labor and its attendant risks of maternal mortality and morbidity (e.g., Melah, 2007). Later age at marriage has also been found to be related to increased risk of HIV/AIDS (Bongaarts, 2007) as well as higher rates of premarital births (cf. Garenne and Zwang, 2006). However, late age at marriage does not necessarily mean increased premarital sexual activity: not all women have sex before marriage, and those who do may have sex only infrequently. Further, later age at marriage is desirable for women from the perspective of women's education and human development. Given the importance of both reproductive health and education for women's long-term well-being, there is a need to be more precise in our understanding of what happens in women's lives between the points of sexual debut and marriage/union. Thus, in societies where premarital sexual activity is not culturally proscribed, it is necessary to assess the role of the years that elapse between first sex and marriage in shaping women's reproductive health as well as what women do with their lives in the interim.

Accordingly, this paper explores the factors that are associated with the length of the gap between initiation of sex and formation of a union in Cameroon. It is expected that women who have longer premarital intervals of sexual activity are also more likely to have a higher number of sexual partners and premarital births and be more likely to suffer from both sexually transmitted diseases as well as from abortion and its sequelae. However, it is also expected that these women will have benefited from the opportunity to pursue more years of schooling.

LITERATURE

Rather than later age at marriage per se, it is the exposure to risk of disease transmission and pregnancy that has physical and social implications for women. For example, sexually transmitted infections (STIs) can lead to infertility, which has both physical (inability to bear children) and social (stigma) implications for women; similarly, HIV and some human papillomaviruses can lead to stigmatizing illness and death. Thus, the period of time between a woman's age at sexual debut and her age at first union is a context of concern when trying to understand women's sexual health³. Two sets of factors influence the length of this interval: factors that influence a woman's age at first sex and factors that influence her age at first union.

The focus on age at first sex is of a recent nature. Changes in the institution of marriage as well as the interest in adolescent sexuality in the age of HIV/AIDs have resulted in more attention being given to premarital sexual activity. Available data show that there has been little variation over time in the age at first sex in West Africa and Central and Southern Africa, but that it has decreased slightly in Latin America and the Caribbean, Europe, and the USA. In East, Central, and Southern Africa, the mean age at first sex has stayed the same or increased slightly (Bozon, 2003). Also, age at first sex is culture-specific and is not easily influenced by external factors.

On the other hand, much research has been devoted to the factors associated with age at first marriage, which has increased over time (National Research Council and Institute of Medicine, 2005). Important factors that have been offered as explanations for the increasing delay of marriage are education, wealth, urbanization, and women's employment (Singh and Samara, 1996). Educational attainment is widely viewed as the primary factor in the delay in marriage of women (Mathur et al., 2003). Singh and Samara (1996) find that education is strongly associated with age at marriage at both the individual level and the societal level. Not only do additional years of schooling tend to

³ Women who are married are not exempt from risk of sexually transmitted infection; however the context of the risk is different from that which is addressed in this study.

push a woman's date of marriage further into the future, education itself ostensibly provides women with the autonomy to control the timing of their marriage and choice of marriage partners (Jejeebhoy, 1995). Research also shows that women from wealthier households are less likely to marry at younger ages compared to women from poorer households, likely because they have more options for education and employment (National Research Council and Institute of Medicine, 2005). Employment works to delay marriage by influencing the ability and desire of both women and their parents to delay marriage (Mason, 1993). Finally, it has been suggested that urban women are more likely to marry later than women in rural areas, in part due to their higher educational attainment and labor force participation (Smith, 1983).

While the factors associated with age at first marriage have been well researched, what is lacking is an understanding of what factors are associated with longer intervals and what the implications of those factors might be for women's health and welfare. This study explores this question in the sub-Saharan context of Cameroon.

DATA

Cameroon was chosen for this analysis because there is reasonable variation in the relationship between initiation of sexual activity and union formation (rather than in a country such as Cambodia, for example, where age at first sex and age at first union are almost universally the same). Another consideration in choosing Cameroon for the analysis is the fact that the 2004 Cameroon DHS included a question on the number of sexual partners the respondent has had during her lifetime. Prior DHS surveys only asked about the number of partners a respondent has had in the year prior to the survey; this variable has little utility in our analysis compared to the variable on lifetime number of partners, which ostensibly captures sexual behavior over a longer period of time. Because we expect that women who have a longer interval between age at first sex and age at first marriage will have a larger total number of sexual partners over their lifetime (which has implications for risk of disease), it was important to use a dataset that captured this information.

For the 2004 CDHS, a representative probability sample of 11,556 households was selected using a 2-stage sample design. The first stage selected primary sampling units from enumeration areas established during the mapping operations for Cameroon's third General Population and Housing Census, conducted by the Bureau Central des Recensements des Études de la Population in 2002/2003. The second stage involved the systematic sampling of households from within the aforementioned enumeration areas. Ninety-eight percent of eligible households responded to the CDHS, and 94 percent of all eligible women had completed interviews (INS, 2004).

The sample used in this analysis consists of ever-married women between the ages of 19-34. This age range was selected for two reasons: first, because by the age of 19, most women will have had the opportunity (in terms of age only) to attain a secondary education; and second, to ensure that the sample was fairly homogenous in terms of cohort experiences and norms while maintaining a large enough sample size for our analysis. Two hundred and twenty cases were dropped from the analysis because they did not have a consistent age at first sex, leaving a total sample size of 4,681 ever-married women.

METHODS

One-way analyses of variance are conducted for the bivariate analysis. Ordinary least squares (OLS) regression is then used to discern key factors associated with the length of the interval between age at first sex and age at first marriage. All statistical analysis was conducted using SPSS 11.5.

The dependent variable in the analysis is a continuous variable reflecting the interval of interest measured in years. Factors associated with the length of the interval have been assigned to three conceptual categories: factors that are hypothesized to be directly associated with the length of the interval, factors that are hypothesized to be indirectly associated with the length of the interval, and control variables. Variables representative of each conceptual category are included in the analysis and discussed here in brief.

Factors hypothesized to be directly associated with the length of the interval

The factors hypothesized to have a direct association with the length of the interval include whether the respondent had already had a child or was visibly pregnant prior to marriage, if the respondent had attended school in the interval, the number of sexual partners reported by the respondent over her lifetime, whether she experienced a pregnancy termination in the interval, and whether her first contraceptive use occurred in the interval.

Although some research suggests that women who have already “proven” their fertility are considered desirable partners (e.g., Meekers, 1995), other studies have found that women who have children prior to marriage take longer to find a husband and are at high risk of never marrying (e.g., Calvès, 1999). Since premarital fertility may affect the length of the gap, a variable reflecting a woman’s marital status around the time of her first live birth was constructed with four categories: never having had children, having had a pregnancy and birth after marriage, having had a child prior to marriage, and having been visibly pregnant prior to marriage with the birth occurring within marriage.

Early sexual activity is believed to have a negative association with educational attainment. However, it is also believed that one of the reasons that the gap between age at first sex and age at first marriage is growing is because some proportion of girls is attending school rather than seeking marriage (National Research Council and Institute of Medicine, 2005). It is therefore of interest to look at the relationship between educational attainment, age at first sex, and age at first marriage. Because we are interested in factors that may affect the length of the gap, we created a variable with mutually exclusive categories that indicates whether the respondent never had any education, whether she had completed her final year of education before sexual debut, whether her last year of education occurred in the gap between first sex and marriage, whether her last year of education occurred after or at the same time as marriage, and whether her last year of education occurred at the same time as sexual debut. It is important to note that this variable was constructed based on the assumption that the respondents began school on time according to the official age of entry, which is six years in Cameroon.

While not causal, the number of sexual partners a woman has had over the course of her lifetime is likely to be positively associated with the length of the gap. This variable allows for an assessment of the additional risk in terms of number of sexual partners taken on with each additional year of time spent in the gap.

It is expected that premarital utilization of methods that interrupt fertility will be associated with a longer gap. Those who first use a contraceptive method prior to marriage are either not ready to begin childbearing, are not desirous of a pregnancy with their current sexual partner, or are waiting until marriage to have a child. Women using contraception (i.e., condoms) in the premarital period to protect themselves from STIs also fall into one of these categories. Therefore, we have included a variable that indicates whether the respondent first began using a contraceptive method prior to marriage or not. Those who did not use a method prior to marriage include both women who did not have sex prior to marriage as well as women who had sex prior to marriage but did not use contraception. Since induced termination of pregnancy is quite common in Cameroon, particularly among adolescents (Leke, 1989), and is likely to be related to the length of the gap for reasons similar to those given for contraceptive use, we have

also included a variable indicating whether a woman experienced a termination of pregnancy prior to marriage. The question used to elicit these data asks only whether the respondent experienced a terminated pregnancy and does not ascertain whether the termination was induced or spontaneous.

Factors hypothesized to be indirectly associated with the length of the interval

The factors hypothesized to have an indirect association with the length of the interval include household wealth, region, and residence.

An asset-based indicator of relative household economic status is incorporated into this analysis. Household wealth status has been shown to have a positive association with later age at marriage (National Research Council and Institute of Medicine, 2005); however, this is likely to be correlated with educational attainment and place of residence. Ideally, this analysis would include an indicator of the household wealth of the respondent's natal family at the time that the respondent married. However, given the cross-sectional nature of the dataset used, this is not possible. Rather, we incorporate a current-status indicator of the respondent's household wealth; this choice relies on an assumption of assortative mating: the tendency of individuals to seek out spouses who are like themselves in terms of educational and economic status (Becker, 1976). Based on this theory, we assume that the economic status of the woman's current household approximates that of her natal household. Details on the methodology used to construct the wealth quintiles used here are provided in Rutstein and Johnson (2004).

Two geographical variables are also included in this analysis: region and residence. Region is included as a rough indicator of cultural context: marital patterns vary somewhat by ethnicity in Cameroon, and ethnic groups are often associated with specific geographical regions. Residence is also included, given that women in urban areas typically marry at later ages (National Research Council and Institute of Medicine, 2005). Here, a four category variable is used: respondent has always lived in an urban area, respondent has always lived in a rural area, respondent currently lives in an urban

area but spent her childhood in a rural area, and respondent currently lives in a rural area but spent her childhood in an urban area.

Control variables

Control variables in this analysis include current age and early age at first sex. Inclusion of current age (as a grouped variable) is meant to control for cohort effects that might influence the length of the gap. We also include a variable to control for a very young age at sex (less than 14 years): it is hypothesized that when sex occurs at a very young age, it is more likely to be nonconsensual, and first experience of nonconsensual sex may impact the length of the interval.

RESULTS

Descriptive Analysis

Table 1 presents the mean age at first sex, mean age at first marriage, and mean length of interval between age at first sex and age at first marriage in years for ever-married women age 19-34 according to selected background characteristics: age, education, region, place of residence, wealth of household, and current marital status. The mean age at first sex is 16 years for this sample, and the mean age at first marriage is 17 years, resulting in a mean interval between age at first sex and age at first marriage of nearly one and a half years.

Age at first sex in Cameroon for this sample of women varies little by these background characteristics. While the direction of the association between selected background variables such as age, education, and wealth is in the expected positive direction and fairly monotonically so, the variation in mean age at first sex is not large with a few notable exceptions. Women who have more than secondary education have a mean age at first sex of 18 years, which is 3 years older than those with no education. At 17 years, Douala has the highest mean age at first sex among all regions, while Adamaoua, Nord, and Extreme Nord regions have the lowest mean age at first sex at 15 years.

On the other hand, there is considerable variation in mean age at first marriage by these selected characteristics. While mean age at first marriage increases with increasing age category, it is believed that this is largely due to selection. Mean age at first marriage varies significantly by educational attainment: the relationship is positive and monotonic, with women who have no education having a mean age at marriage of 15 years, women with at least some primary education having a mean age at marriage of 17 years, and those with some secondary education having a mean age at marriage of 19 years. Although the youngest women in our sample may not have had the opportunity to begin higher than secondary education, nevertheless, among the women in the sample who have, their mean age at first marriage is 22 years. Among all regions, the highest mean

age at first marriage is 20 years, found in Douala, while the lowest mean age at first marriage is 15 years, in Extreme Nord. Regarding residential characteristics, women who have always lived in an urban area have a mean age at first marriage of 19 years; those who have always lived in a rural area marry an average of 2 years younger than their urban counterparts. Age at first marriage increases positively and monotonically with wealth, with women living in the wealthiest households marrying almost 3 years later than women living in the poorest households.

Table 1. Mean age at first sex, mean age at first marriage, and mean length of interval between first sex and first marriage (in years) among ever-married women age 19-34 according to selected background characteristics, Cameroon Demographic and Health Survey 2004

Background Characteristic	Age at first sex		Age at first marriage		Interval between first sex and first marriage	
	Mean	N	Mean	N	Mean	N
Age						
19-24	15.8	2,007	16.6	2,011	0.9	2,007
25-29	15.9	1,591	17.6	1,602	1.7	1,591
30-34	16.0	1,297	18.0	1,299	2.0	1,297
Education						
No education	14.9	1,192	15.1	1,194	0.2	1,192
Primary	15.7	1,937	17.1	1,942	1.3	1,937
Secondary	16.7	1,677	19.0	1,684	2.3	1,677
Higher	18.1	89	21.6	90	3.4	89
Region						
Adamaoua	15.3	203	16.0	204	0.7	203
Centre	15.8	386	18.3	386	2.4	386
Douala	17.0	457	19.6	459	2.6	457
Est	15.4	248	16.8	251	1.4	248
Extreme Nord	14.9	902	15.0	903	0.1	902
Littoral	16.4	168	19.4	168	3.0	168
Nord	15.4	516	15.5	516	0.1	516
Nord Ouest	16.2	437	18.3	439	2.1	437
Ouest	16.3	570	16.7	571	0.4	570
Sud	15.6	197	18.7	197	3.1	197
Sud Ouest	16.2	347	18.6	349	2.4	347
Yaounde	16.7	464	19.2	466	2.5	464
Residence						
Always urban	16.5	1,539	18.5	1,546	2.0	1,539
Always rural	15.4	1,960	16.4	1,964	0.9	1,960
Currently urban, childhood rural	15.9	965	17.4	968	1.5	965
Currently rural, childhood urban	15.8	432	17.6	432	1.7	432
Wealth						
Lowest	15.4	1,047	15.8	1,051	0.4	1,047
Second	15.3	849	16.4	850	1.1	849
Middle	15.7	952	17.2	953	1.5	952
Fourth	16.1	1,020	17.8	1,023	1.7	1,020
Highest	16.9	1,028	19.3	1,034	2.3	1,028
Total	15.9	4896	17.3	4911	1.4	4,896

Table 1 demonstrates that while there is not a great deal of variation in age at first sex according to selected background variables, women's age at first union varies by their socio-economic characteristics. Thus, in Cameroon, the variation in the length of the interval between women's age at first sex and age at first union is more likely to be determined by her age at first marriage.

Bivariate Analysis

Table 2 presents the percent distributions of the variables used in the analysis as well as the mean length of the interval according to the variables of interest, using one-way ANOVAs to test the significance of the differences.

Table 2. Frequencies and mean length of interval between age at first sex and age at first marriage (with one-way ANOVA) among ever-married women age 19-34, according to selected variables of interest, Cameroon Demographic and Health Survey 2004			
	Percent distribution	Mean Length of Gap (1-way ANOVA)	N
Factors directly associated with the interval			
Had a child or was visibly pregnant prior to marriage?		<i>p=0.000</i>	
Never had children	12.3	1.73	575
Had birth prior to marriage	15.1	5.45	705
Pregnancy prior to marriage, birth after	9.5	1.31	443
Pregnancy and birth after marriage	63.2	0.52	2,958
If education occurred in the interval		<i>p=0.000</i>	
Never had any education	24.7	0.19	1,177
Last year of education occurs in the interval	5.4	5.50	263
Last year of education occurs before first sex	55.8	1.65	2,740
Last year of education occurs after or same time as first marriage	4.8	-0.32	216
Last year of education occurs same time as first sex	5.8	2.94	285
Number of partners over lifetime		<i>p=0.000</i>	
1	35.3	0.11	1,652
2	20.8	1.12	975
3	16.5	2.15	771
4	9.4	2.78	442
5	7.1	2.76	331
6-9	6.2	3.59	289
10+	4.5	3.96	210
			<i>Continued.....</i>

Table 2. <i>Continued...</i>			
	Percent distribution	Mean Length of Gap (1-way ANOVA)	N
If pregnancy termination occurred in the interval			
No	97.6	<i>p=0.000</i> 1.40	4,570
Yes	2.4	4.80	111
If first contraceptive use occurred in the interval			
No	97.8	<i>p=0.000</i> 1.42	4,576
Yes	2.2	4.66	104
Factors indirectly associated with the interval			
Wealth index			
Lowest	21.9	<i>p=0.000</i> 0.46	1,025
Second	17.2	1.17	807
Middle	19.1	1.61	896
Fourth	20.7	1.78	969
Highest	21.0	2.41	984
Residence			
Always urban	31.2	<i>p=0.000</i> 2.04	1,458
Always rural	40.3	0.98	1884
Currently urban, childhood rural	19.8	1.52	927
Currently rural, childhood urban	8.8	1.82	411
Region			
Adamaoua	4.2	<i>p=0.000</i> 0.69	199
Centre	8.0	2.47	376
Douala	9.2	2.70	431
Est	5.0	1.53	236
Extreme Nord	18.6	0.13	871
Littoral	3.5	3.06	164
Nord	10.9	0.09	510
Nord Ouest	8.7	2.17	407
Ouest	11.6	0.47	545
Sud	3.9	3.31	185
Sud Ouest	6.7	2.73	312
Yaounde	9.5	2.50	445
Controls			
Age			
19-24	41.4	<i>p=0.000</i> 0.91	1,938
25-29	32.4	1.74	1,518
30-34	26.2	2.09	1,225
Was age at first sex below the norm (<14)?			
No	86.3	<i>p=0.154</i> 1.51	4,039
Yes	13.7	1.33	642
Empowerment (household decision making)			
Contributes to making 0 decisions	32.8	<i>p=0.000</i> 0.72	1,537
Contributes to making 1-2 decisions	34.2	1.76	1,600
Contributes to making 3 decisions	10.6	2.22	496
Contributes to making all 4 specified decisions	22.4	1.85	1,046
Total	100.0	1.49	4,681

Factors hypothesized to be directly associated with the length of the interval

In looking at the relationship between the timing of childbearing and the length of the interval, we find that women who had a birth prior to marriage have a significantly longer interval (over five years) compared to the 60 percent of the sample whose first pregnancy and birth occurred after marriage (less than one year).

While more than half the sample of women completed their education prior to first sex, about 5 percent of women aged between 19 and 34 years started having sex before finishing their education, and 6 percent had their last year of education at the same time as they started having sex. With an average of almost 6 years gap between first sex and first union, women whose last year of education occurred within the interval had the longest interval of all the groups. The next longest interval was found among women who started having sex at the same time as their last year of education, with an average of 3 years. It is interesting to note that almost a quarter of the sample had no education at all and had one of the lowest intervals of all the education groups (0.19 years).

The average length of the interval increases monotonically with the number of partners that women have over their lifetimes, with women who have only one partner having the smallest interval (0.11), and women who have four or more partners with an interval of three years and over.

Both the termination of a pregnancy and the start of contraception within the interval are significantly associated with its length. Women who terminated a pregnancy before their first union have a mean interval of almost 5 years, while women who did not terminate a pregnancy have a mean of a little more than a year. Similarly, women who started using contraception within the interval have longer intervals (4.7 years) than women who did not start using contraception prior to union (1.4 years).

Factors hypothesized to be indirectly associated with the length of the interval

The results of bivariate analyses presented in Table 2 show that a woman's wealth, her place of residence, and her region of residence are strongly associated with the length of her interval. Women who live in poorer households have smaller gaps than women who live in wealthier households. The length of the interval increases with each category of wealth quintile, and women who live in households that are in the wealthiest quintile have an average interval of almost two years longer than women who live in the poorest quintile.

Women who have always lived in urban areas have the longest interval, with an average of two years, while those who have always lived in rural areas have the shortest interval with an average of almost one year. As expected, the intervals of the women in the other two categories fall in between these two figures: women seem to carry with them the influences of their natal environment but are also influenced by their current context. Women who spent their childhood in urban areas but currently live in rural areas have a slightly longer average interval (1.8 years) than women who grew up in rural areas but are currently in an urban area (1.5 years).

The distribution by region shows that women who live in Littoral and Sud have the longest intervals with over 3 years of gap between their age at first sex and age at first union. They are followed by women in Douala and Yaounde (2.7 and 2.5 years, respectively) and then by women in Centre (2.5 years). Women who live in Extreme Nor and Ouest have the lowest mean intervals of the group (less than half a year).

Controls

The mean length of the interval increases significantly with age, with women in the 30-34 year old age group having a mean interval length of two years, while the youngest age group has a mean interval length of just under one year. However, as

previously discussed, the direction of the relationship is likely affected by selection. A young age at first sex is associated with slightly shorter intervals; however, this relationship is not significant in the bivariate analysis.

Multivariate Analysis

Table 3 presents the OLS estimates from the multivariate analysis of the interval between the age at first sex and the age at first union.

Factors hypothesized to be directly associated with the length of the interval

We find that whether a woman was pregnant prior to marriage or not is significantly associated with the gap. Compared to the reference group (women whose pregnancy and birth occurred after marriage), women who have never had children, women who had a birth prior to marriage, and women who got pregnant prior to marriage but had the birth after marriage all had longer intervals. In fact, having a birth prior to marriage adds 3.6 years to the interval, net of all other factors included in our analysis.

Our results provide some support for the research finding (Calvés, 1999) that women who have a premarital birth are at a disadvantage when it comes to the marriage market. Women who have children prior to marriage have significantly longer intervals of premarital sexuality compared to women who have births after marriage.

Education is found to be strongly associated with the interval. Compared to women who had their final year of education prior to the time that they experienced sexual debut, women whose education continued after their sexual debut had a significantly longer interval by two years. Women whose last year of education occurs at the same time or later than marriage have a significantly shorter interval than the reference group.

While the relationship is not causal, the number of lifetime partners is significantly associated with longer intervals. The number of sexual partners a woman

has had over her lifetime has a positive and generally monotonic relationship with the length of the interval. Women reporting 10 or more partners have an interval length of nearly two years longer than women who report having had only one sexual partner in their lifetime.

Women who have experienced a termination of pregnancy prior to marriage have a significantly longer interval than women who did not (1.65 years). Women whose first contraceptive use occurred prior to marriage had an interval that was almost one year longer than women who were not using contraception prior to marriage.

Factors hypothesized to be indirectly associated with the length of the interval

Neither wealth nor place of residence is significantly associated with the length of the interval. However, the length of the interval does vary significantly in some regions. Compared to women in Extreme Nord, those who live in Douala and Littoral have intervals about one year longer, while those who live in Nord and Ouest have intervals shorter than the reference group.

Controls

The interval increases significantly and monotonically with increasing age group. Those who are 30-34 years old have an interval that is about one year longer than women age 19-24, while women who are 25-29 years old have an interval that is more than half a year longer than the reference group. This finding suggests that the interval between age at first sex and age at first marriage decreased over time for this sample of women. The variable controlling for very early age of sexual debut is also significant, with women who had a very young age at first sex having longer intervals of a little less than half a year compared with women who did not have a very young age at first sex.

Table 3. OLS estimates of the association between selected characteristics and the interval between age at first sex and age at first marriage for ever-married women age 19-34, Cameroun Demographic and Health Survey, 2004

	Unstandardized coefficients		
	B	Std. Error	Sig.
Factors directly associated with interval			
Had a child or was visibly pregnant prior to marriage?			
Pregnancy and birth after marriage ®			
Never had children	0.843	0.107	0.000
Had birth prior to marriage	3.569	0.097	0.000
Pregnancy prior to marriage, birth after	0.543	0.109	0.000
If education occurred in the interval			
Last year of education completed before first sex ®			
Never had any education	-0.228	0.110	0.038
Last year of education occurs in the interval	2.045	0.144	0.000
Last year of education occurs after or same time as first marriage	-1.815	0.161	0.000
Last year of education occurs same time as first sex	0.527	0.136	0.000
Number of partners over lifetime			
1 ®			
2	0.364	0.094	0.000
3	0.725	0.106	0.000
4	1.224	0.128	0.000
5	0.966	0.140	0.000
6-9	1.440	0.147	0.000
10+	1.776	0.164	0.000
Pregnancy termination occurred in the interval (®: no)	1.645	0.208	0.000
First contraceptive use occurred in the interval (®: no)	0.902	0.224	0.000
Factors indirectly associated with the interval			
Wealth Index			
Lowest ®			
Second	0.126	0.107	0.239
Middle	0.028	0.112	0.805
Fourth	0.021	0.131	0.873
Highest	0.186	0.149	0.211
Residence			
Always rural ®			
Always urban	0.014	0.111	0.902
Currently urban, childhood rural	-0.156	0.108	0.148
Currently rural, childhood urban	-0.090	0.110	0.414
Region			
Extreme Nord ®			
Adamaoua	0.252	0.152	0.097
Centre	0.483	0.176	0.006
Douala	1.026	0.184	0.000
Est	0.121	0.169	0.472
Littoral	0.941	0.187	0.000
Nord	-0.006	0.137	0.966
Nord Quest	0.636	0.174	0.000
Ouest	-0.076	0.159	0.633
Sud	0.528	0.186	0.005
Sud Quest	0.740	0.180	0.000
Yaounde	0.403	0.187	0.031

Continued...

<i>Table 3. Continued...</i>				
		Unstandardized coefficients		
		B	Std. Error	Sig.
Controls				
Age				
	19-24 ®			
	25-29	0.648	0.076	0.000
	30-34	0.951	0.083	0.000
	Had low age at first sex (<14 years old) (®: no)	0.411	0.099	0.000
	Empowerment (household decision making)			
	Contributes to making 0 decisions ®			
	Contributes to making 1-2 decisions	-0.034	0.083	0.685
	Contributes to making 3 decisions	0.028	0.118	0.814
	Contributes to making all 4 specified decisions	-0.054	0.095	0.570
	(Constant)	-0.682	0.144	0.000

®: Reference group / category

DISCUSSION

The results of bivariate and multivariate analyses highlight the key factors associated with the gap between women's age at first sex and their age at first union in Cameroon. Important variables associated with longer gaps are whether women had a birth prior to marriage, whether their last year of education occurred in the interval, whether a pregnancy was terminated within the gap, and whether contraception was begun in the gap.

These results suggest that what occurs during the interval between sexual debut and union has implications for women's health as well as their human development. For women who have children outside of a union, a longer interval may reflect their marginalization in the marriage market (Calvès, 1999), something that could have a considerable negative effect on their economic well-being. Further, spending longer time periods without a partner is an emotional constraint for single mothers. Terminating a pregnancy and starting contraception, both, are mechanisms that women use to increase the length of the interval between age at first sex and age at first union. The termination of a pregnancy is an unwanted event that may have negative consequences for women's health, particularly an intentional termination conducted under unsanitary conditions.

Conversely, the findings indicate that attending school increases the length of time women stay unmarried; education in itself is a positive outcome, as is the concomitant delay in marriage such that it allows women greater opportunities for autonomous development. However, later age at marriage might mean that women have longer intervals between first sex and marriage. Indeed, the results of the bivariate analysis (in Table 2) show that the average gap between age of first sex and age at marriage increases with women's level of education. The multivariate analysis includes an education variable that measures the timing of each event: the last year of education, first sex, and marriage. The results (in Table 3) show that compared to women who initiate sexual activity after their last year of education, women who begin sex during their education have significantly longer premarital sexual intervals. That is, women who

begin sexual activity while they are studying are likely to add a little more than two years to their interval.

The associations between factors like place of residence and wealth of household and length of the interval are not as strong as the direct factors mentioned above. Even though the distribution of women's intervals by their wealth status shows that women in wealthier households are more likely to have longer gaps, this association is no longer significant when the effects of other factors are controlled for in the full model. This is true of residence as well.

Separate regression models were run to analyze the effects of wealth, residence, and region individually. In the multivariate analysis, the four-category variable measuring residence currently and at the time of childhood is not significant in any of the models. Wealth is associated with the interval in the absence of region, i.e., the introduction of the variable controlling for region absorbs the effect of wealth. Since Douala and Yaounde as urban centers are likely to have a higher proportion of the top wealth quintiles, a regression was run excluding residents of these two regions to see if they were responsible for diluting the effect of wealth on the dependent variable (results not shown). However, the results were unaffected by the exclusion of these two cities. This exercise demonstrated that the effect of region is legitimate in and of itself. Thus, the multivariate results suggest that there is cultural variation in the length of the interval in Cameroon, given that region is a proxy for the broad cultural groupings in Cameroon.

This analysis addresses the gap in our knowledge about what actually occurs in women's lives between the time of sexual debut and entrance into a union. The literature suggests that women accrue both benefits and penalties as a result of delaying the age at marriage. Clearly education is a critical benefit associated with a delay in age at marriage; however, since education does not necessarily result in the postponement of sex, the health penalties associated with such a delay can be considerable. Policymakers must recognize that women are at risk in this context and implement policies and

programs that empower women with the information and resources that they need to protect themselves while continuing to pursue both education and autonomy.

To this end, more effort needs to be devoted to understanding the issues involved, beginning with data collection and research. Currently, national level surveys such as the DHS collect demographic and health information on unmarried women. However, the data does not include variables that measure the respondents' parents' characteristics. Information on natal family socio-demographic characteristics would help to understand the childhood influences on women's decisions about their sexuality and health. Additionally, quantitative data collection and analysis efforts (e.g., Grant, 2008) can be invaluable in discerning local strategies that help (or hinder) sexually active girls who wish to both remain in school and remain healthy.

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