

Annexes

Polygamy in West Africa: Impacts on Fertility, Fertility Intentions, and Family Planning

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Annex 1: Methodologies

Data for this analysis come from 10 nationally representative Demographic and Health Surveys (DHS). These recent data are from West African countries, including Benin (DHS 2017-18), Burkina Faso (DHS 2010), Côte d'Ivoire (DHS 2011-12), Ghana (DHS 2014), Guinea (DHS 2018), Mali (DHS 2018), Niger (DHS 2012), Nigeria (DHS 2018), Senegal (DHS 2019), and Togo (DHS 2013-14). These countries were chosen because they have the highest rates of polygamy in West Africa. Since we are studying differences among women by union type (polygamy or monogamy), our sample is restricted to women who have ever been married. The data focus on age, marital status, household wealth quintile, education level, number of co-wives, wife rank, unmet need for family planning, ideal number of children, current use of family planning, and number of children born alive. To this end, the primary outcomes of interest in this analysis are total fertility rate, ideal number of children, and current use of a contraceptive method. Our main explanatory variable is union type (polygamous union and monogamous union).

The first step in our analysis (bivariate analysis) was to construct descriptive statistics on our dependent variables by the primary explanatory variable for each of the 10 countries included in our analysis. First, the proportion of married women in polygamous unions was estimated by country. Then, for each country, the total fertility rate (TFR) was estimated by women's union type and by socioeconomic indicators. To answer the other two research questions, as in the previous case, according to union type we calculated the average ideal number of children (second question) and the proportion of women using family planning, including traditional and modern contraceptive methods (third question) in each country. We also calculated the rate of unmet need, the percentage of demand for family planning met by modern methods, and the percentage of current female family planning users who make the decision with their husbands by marital status in each country. Second, we used explanatory regression analysis methods to identify any differences between women in polygamous and monogamous unions. To account for geographic specificity, we constructed a regression model with country included. An ordinal logistic model was implemented to measure the difference in fertility intentions through the ideal number of children. To measure the difference in family planning use between polygamous and monogamous unions (question 3), we used a binary logistic regression. All analyses were done using Stata (version 16) software.

Annex 2: Total Fertility Rate of Women by Socioeconomic Factors and Union Type

Characteristics	Married, monogamous union TFR [95% CI]	Married, polygamous union TFR [95% CI]
Area of residence		
Urban	5.93 [5.84, 6.01]	5.96 [5.78, 6.14]
Rural	7.09 [7.01, 7.16]	7.00 [6.90, 7.10]
Standard of living		
Poor	7.345 [7.25, 7.44]	7.14 [7.01, 7.27]
Average	6.84 [6.71, 6.98]	6.85 [6.66, 7.04]
Rich	5.89 [5.80, 5.97]	6.11 [5.97, 6.27]
Education		
None	7.05 [6.97, 7.14]	6.91 [6.81, 7.01]
Primary	6.41 [6.28, 6.54]	6.52 [6.30, 6.74]
Secondary +	5.83 [5.72, 5.93]	5.81 [5.57, 6.05]
Occupational activity		
Inactive	7.17 [7.07, 7.29]	7.29 [7.13, 7.43]
Active	6.43 [6.35, 6.50]	6.53 [6.42, 6.64]
Wife's rank		
First		7.22 [7.03, 7.40]
Second		6.74 [6.62, 6.86]
Third		6.48 [6.20, 6.77]
Fourth +		5.64 [5.22, 6.06]
Number of co-wives		
None	6.61 [6.55, 6.67]	
One		6.84 [6.75, 6.94]
Two		6.66 [6.43, 6.89]
Three		6.28 [5.77, 6.79]

Four or more		5.46 [4.95, 5.97]
Unmet need for contraception		
Yes	8.81 [8.67, 8.97]	9.12 [8.90, 9.34]
No	8.18 [7.99, 8.37]	8.61 [8.39, 8.83]

Annex 3: Ordinal Logistic Regression of Union Type on Average Ideal Number of Children, Controlled for Socioeconomic and Demographic Factors

	Odds ratio	95% CI
Marital status (Ref.= Married, monogamous union)		
Married, polygamous union	1.29***	[1.25, 1.33]
Number of children born alive	1.30***	[1.29, 1.31]
Age group (Ref.= <19)		
20 - 29	0.76***	[0.72, 0.80]
30 - 39	0.66***	[0.62, 0.70]
40 - 49	0.66***	[0.62, 0.71]
Number of co-wives (Ref.= One)		
Two	0.98 ns	[0.93, 1.04]
Three	1.01 ns	[0.91, 1.11]
Four or more	0.70***	[0.61, 0.80]
Area of residence (Ref.= Urban)		
Rural	1.33***	[1.28, 1.37]
Standard of living (Ref.=Poor)		
Average	0.75***	[0.72, 0.77]
Rich	0.55***	[0.53, 0.57]
Education (Ref.=None)		
Primary	0.58***	[0.56, 0.60]
Secondary +	0.34***	[0.32, 0.35]
Occupational activity (Ref.=Inactive)		
Active	0.94***	[0.91, 0.96]
Contraception (Ref.=None)		
Traditional	0.68***	[0.64, 0.73]
Modern	0.67***	[0.65, 0.70]

Country (Ref.= Burkina Faso)		
Benin	0.87***	[0.83, 0.91]
Côte d'Ivoire	1.14***	[1.07, 1.22]
Ghana	0.70***	[0.66, 0.74]
Guinea	1.29***	[1.22, 1.36]
Mali	1.57***	[1.49, 1.66]
Niger	2.66***	[2.55, 2.78]
Nigeria	11.65***	[11.0, 12.35]
Senegal	1.60***	[1.50, 1.71]
Togo	0.51***	[0.49, 0.54]

Notes: ns= not significant; *p<0.1; **p<0.05; ***p<0.01; Ref.= Reference category.

Annex 4: Binary Logistic Regression of Union Type on Family Planning Use, Controlled for Socioeconomic and Demographic Factors and Country

	Odds ratio	95% CI
Marital status (Ref.= Married, monogamous union)		
Married, polygamous union	0.86***	[0.82, 0.90]
Ideal number of children	0.90***	[0.89, 0.91]
Number of children born alive	1.28***	[1.26, 1.30]
Partner's age	0.98***	[0.98, 0.99]
Age of woman at first marriage	1.01***	[1.00, 1,013]
Age group (Ref.= <19)		
20 - 29	1.65***	[1.48, 1.84]
30 - 39	1.68***	[1.49, 1.90]
40 - 49	1.18**	[1.02, 1.36]
Number of co-wives (One)		
Two	0.87***	[0.79, 0.96]
Three	0.88 ns	[0.72, 1.08]
Four or more	1.38***	[1.13, 1.69]
Area of residence (Ref.= Urban)		
Rural	0.82***	[0.78, 0.86]
Standard of living (Ref.=Poor)		
Average	1.24***	[1.18, 1.32]
Rich	1.79***	[1.70, 1.89]
Education (Ref.=None)		
Primary	1.69***	[1.60, 1.79]
Secondary +	2.29***	[2.15, 2.43]
Occupational activity (Ref.=Inactive)		
Active	1.45**	[1.39, 1.52]
Country (Ref.= Burkina Faso)		

Benin	0.71***	[0.65, 0.77]
Côte d'Ivoire	0.98***	[0.88, 1.09]
Ghana	0.97 ns	[0.87, 1.08]
Guinea	0.77***	[0.69, 0.85]
Mali	1.05 ns	[0.96, 1.15]
Niger	0.67***	[0.62, 0.72]
Nigeria	1.31***	[1.19, 1.44]
Senegal	2.03***	[1.82, 2.26]
Togo	0.79***	[0.72, 0.87]

Notes: ns= not significant; *p<0.1; **p<0.05; ***p<0.01; Ref.= Reference category.