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ABSTRACT

Previous studies, conducted mainly in Asian countries, have shown that women's empowerment is associated with contraceptive use, lower fertility, and longer birth intervals. Yet little is known about the association of women's empowerment with fertility desires in sub-Saharan African countries where overall fertility levels remain high. This study tries to fill this gap, exploring whether women's empowerment affects their ideal number of children and their ability to have only the number of children they want. This study used couples data from four recent Demographic and Health Surveys (DHS) in sub-Saharan Africa: Guinea 2005, Mali 2006, Namibia 2006/2007, and Zambia 2007. Women's empowerment was measured by women's participation in household decision-making, and by two indices representing gender-role attitudes: attitudes toward wife beating and attitudes toward refusing sex with one's husband. The results of the multivariable models indicate that, in two of four countries, having egalitarian gender-role attitudes was associated with having a smaller ideal number of children, even after adjusting for other factors. Greater household decision-making was not as consistently associated with a smaller ideal number of children. In all four countries, a husband having a greater ideal number of children was associated with the woman having a greater ideal number of children, regardless of her level of empowerment. Additionally, in Namibia, empowered women were more likely than less empowered women to have more children than they desired. This finding likely reflects dissatisfaction felt by more empowered women whose fertility is high, consistent with social norms, but who personally value smaller families. Additional research is needed that evaluates the validity of the household decision-making index as an indicator of empowerment in the context of sub-Saharan communities.

INTRODUCTION

The body of research on women's empowerment has conceptualized and defined this construct in many ways and used different terms, often interchangeably, including "autonomy," "status," and "agency" (Lee-Rife and Edmeades 2011; Malhotra et al. 2002; Upadhyay and Hindin 2005). A review of the literature also shows different measures for the same conceptualization. For example, studies often measure women's autonomy with an index that assesses their participation in decision-making in various household issues. This index represents women's degree of control over their environment. Some researchers include both major and minor decisions, while others include only major decisions, excluding day-to-day household decisions and those that are traditionally within the woman's domain. Women's empowerment encompasses many dimensions, including economic, socio-cultural, familial/interpersonal, legal, political, and psychological (Malhotra et al. 2002), which contributes to the wide variation in conceptualizations of women's empowerment.

Given this variation in conceptualization, it is difficult to measure women's empowerment consistently. Kabeer (2001), whose definition is widely accepted, defines empowerment as "the expansion of people's ability to make strategic life choices in a context where this ability was previously denied to them." Two central components of empowerment are agency and resources needed to exercise life choices (Kabeer 2001; Malhotra et al. 2002). Even with a clear definition, these constructs are difficult to quantify in a standardized way. Additionally, to measure empowerment at an individual level, researchers must translate the amorphous constructs into a set of specific questions that population-based surveys can ask of individual respondents (Kishor and Subaiya 2008).

Another challenge is the variation in cultural contexts that affect the measurement of women's empowerment. It is desirable to use standardized questions that enable cross-cultural comparisons of empowerment. Yet a measure that captures empowerment in one context may have limited relevance in another, as is the case with measures that assess mobility in a community where women's free movement is the norm. While many existing measures of empowerment were originally conceptualized and developed for the context of Asia, and for South Asian countries in particular (Dyson and Moore 1983; Mason 1987), measures that are

universally applicable regardless of the gender equity environment, such as those used in Demographic and Health Surveys (DHS), are most useful for cross-national comparisons.

Using the available standardized measures of women‘s empowerment among several population-based samples from sub-Saharan Africa will allow us to make comparisons and better understand whether the available measures adequately capture empowerment in these settings. It is still unknown whether the same dimensions of empowerment that were developed elsewhere are relevant in sub-Saharan Africa, where the gender environment is completely different than in other regions. In Africa, empowerment is likely to look different than elsewhere because of such differences as more working women who have control over their earnings, more polygamy, more nuclear families (as opposed to extended families), and larger ideal family size, and because women‘s status is often tied to their fertility.

Empowerment and Reproductive Health

A broad body of research exists on women‘s empowerment and reproductive outcomes. Substantial research, primarily focused on Asia, demonstrates that women‘s empowerment is associated with contraceptive use (Gwako 1997; Morgan and Niraula 1995; Schuler et al. 1997; Woldemicael 2009), lower fertility (Balk 1994; Dyson and Moore 1983; Hindin 2000), and longer birth intervals (Upadhyay and Hindin 2005). Some researchers have suggested that women‘s empowerment is a key pathway through which education influences fertility (Jejeebhoy 1995; Mason 1987). To operationalize women‘s empowerment, much of the research literature uses the previously mentioned index of participation in household decision-making. The standard DHS questionnaire includes a set of questions about household decision-making. Other approaches include assessing women‘s acceptance of reasons that a husband is justified for beating his wife, and also reasons that a wife is justified in refusing sex with her husband (Ethiopian Society of Population Studies 2008). The DHS includes questions about these issues. Such gender-role attitudes measure the extent of women‘s acceptance of norms that justify men‘s control over women. As expected, they are associated with lower levels of power over household decision-making among women (Dhaher et al. 2010; Hindin 2003; Linos et al. 2010).

Few studies on women‘s empowerment and reproductive outcomes have been conducted in Africa. A review of 12 studies of women‘s empowerment and fertility and contraceptive use (Malhotra et al. 2002) yielded only 2 studies that specifically looked at countries in sub-Saharan Africa. The first, using data from the Togo 1988 DHS, found that women who selected their own spouses were more likely to communicate about family planning with their spouses and to use contraception than women who had an arranged marriage, as were women who worked for cash or participated in credit or savings schemes compared to those who did not (Gage 1995). The second study, which examined gender equity at the community level and at the individual level in five Nigerian states, found that equity at the community level affects reproductive behavior—specifically, desire for more children and contraceptive use—net of the individual effects. Individual measures of women‘s empowerment had the strongest impact on reproductive behavior in communities with lower levels of gender equity (Kritz et al. 2000).

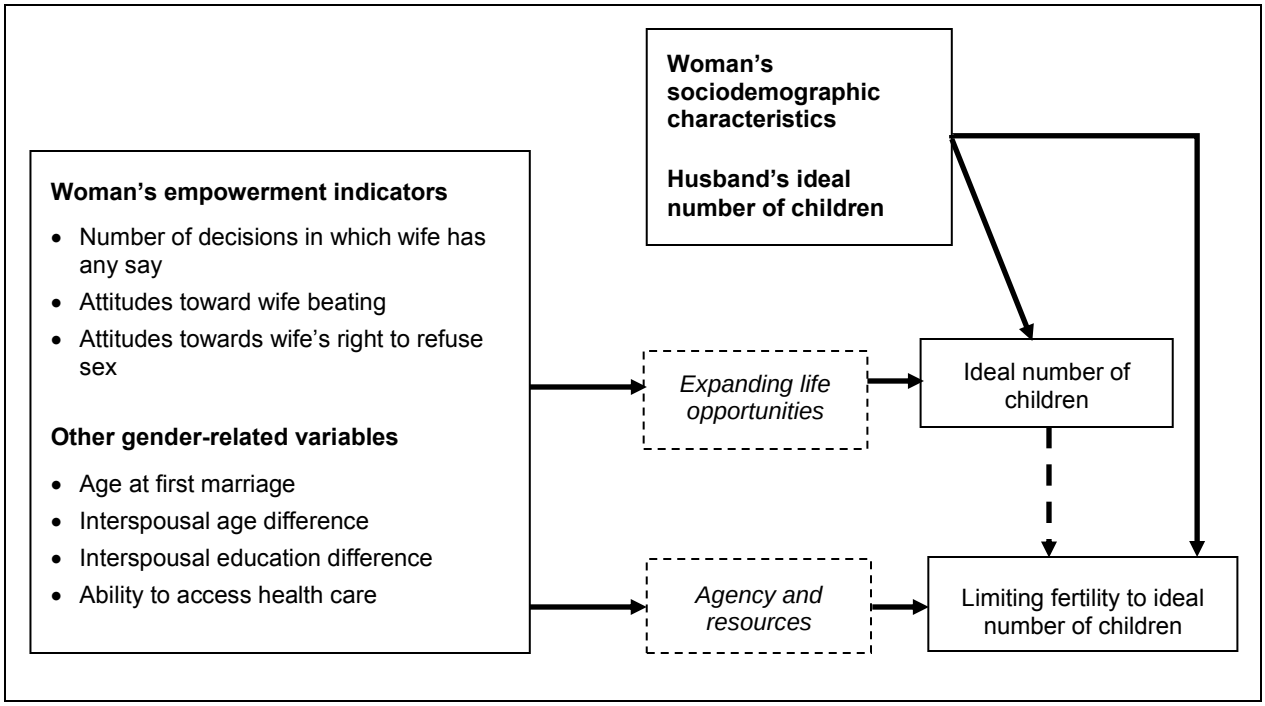
Two other studies that have focused on the relationship between women‘s empowerment and reproductive outcomes in Africa both used the household decision-making index as a measure of women‘s empowerment. In a study using Zimbabwe 1994 DHS data, Hindin (2000) found that women‘s increased household decision-making was not associated with contraceptive use but was associated with lower fertility. Hindin demonstrated that the addition of decision-making variables provided independent explanatory power beyond that of traditional measures of women‘s status, such as educational attainment and labor force participation. A more recent study using the Eritrea 2002 DHS examined the effect of women‘s autonomy on reproductive preferences (Woldemicael 2009). Women‘s final say in decisions regarding day-to-day household purchases was significantly associated with wanting no more children, having a small ideal family size, and ever using modern contraception. The authors found that sociodemographic factors such as employment and economic status affect women‘s reproductive preferences directly, and also indirectly by increasing women‘s autonomy, which in turn influences reproductive preferences.

Our review of the literature found no other studies, in Africa or elsewhere, that have specifically examined the role of women‘s empowerment on women‘s ideal number of children and whether empowerment impacts their ability to achieve their ideal fertility.

Exploring the relationship between women‘s empowerment and ideal fertility in several sub-Saharan African countries with comparable measures will help fill the research gap. Understanding this relationship is imperative in sub-Saharan Africa, where fertility remains high and where the fertility transition has slowed or stalled in recent years. Fertility rates in sub-Saharan Africa are the highest in the world, with women averaging five to six children in their lifetimes (United Nations Population Division 2008). Yet there is also a substantial unfulfilled demand for smaller families among African women. Unmet need for family planning is high in sub-Saharan Africa, with 24% of married women age 15-49 reporting that they do not want to have another child soon or at all, but nevertheless not using any contraceptive method (Sedgh 2007). One study determined that, on average, the total fertility rate (the number of children per woman) in sub-Saharan Africa would decline considerably if women had just the number of births they wanted (Westoff and Bankole 2002). Such statistics led us to ask would improving women‘s empowerment help them have just the number of children they want and reduce fertility rates in the region?

Our study aims to answer this question and explores whether women‘s empowerment affects their ideal number of children and the achievement of their desired fertility. We also examine how husbands‘ fertility desires influence the relationship between women‘s empowerment and their ideal number of children. There is wide consensus that men strongly influence couples‘ childbearing behavior (Bankole and Singh 1998; Ezeh 1993; Speizer 1999). While men‘s ideal number of children in Africa tends to be higher than women‘s (Gebreselassie 2008; Short and Kiros 2002; Westoff and Bankole 2002), one study in Ghana has suggested that husbands‘ declining fertility desires are largely responsible for national-level reductions in fertility (DeRose et al. 2002).

Figure 1. Conceptual framework.



This study seeks to explore the pathways through which women's empowerment may influence ideal number of children and achievement of that ideal number (see Conceptual Framework, Figure 1). There could be two mechanisms through which women's empowerment affects fertility. One pathway seeks to determine whether a woman's level of empowerment affects her ideal number of children, independent of her husband's ideal number of children or her sociodemographic characteristics. Women's empowerment may stimulate a desire for expanded life opportunities, driving down their ideal number of children. This makes the assumption that more empowered women desire additional roles and objectives beyond motherhood. Ideal number of children therefore seems to be a plausible outcome of women's empowerment. However, this pathway does not incorporate women's ability to achieve their desires.

The second pathway examines whether a woman's level of empowerment affects her ability to achieve her ideal number of children. This pathway rests on the assumption that empowerment expands a woman's agency and resources so that she can control her environment in order to achieve her stated ideal number of children. The actual number a woman states as her

ideal will affect her likelihood of having more children than she wants; that is, a woman having a very small ideal number of children is less likely to be able to limit her actual number of births to her ideal, especially in a socio-cultural context of high fertility. This influence is not specifically examined in our study, and thus it is represented by a dotted arrow in the conceptual framework. This pathway from empowerment to limiting fertility to her ideal necessitates intensive, on-going effort to use contraception and to control fertility over her reproductive life. Such efforts may be possible with a high degree of agency and resources.

Thus we hypothesize that more empowered women will have a smaller ideal family size than less empowered women because having fewer children will allow them greater freedom to pursue other life opportunities. We also hypothesize that more empowered women will be more likely to limit fertility to their desired number of children than less empowered women because they have the agency and resources to take the actions needed to achieve their desired fertility.

DATA AND METHODS

Data Sources

The data for this study are from four nationally-representative Demographic and Health Surveys: Guinea 2005, Mali 2006, Namibia 2006/2007, and Zambia 2007—the four most recent DHS in sub-Saharan Africa that contain the data required to answer our research questions. The surveys collected data on behavioral, social, and demographic indicators, including women's status, desired number of children, and fertility, as well as many other topics. All surveys were approved by the Institutional Review Board of Macro International and approved by the local governments and implementing partners.

Because husband's fertility desires are also a key issue of interest, our analysis focused on matched couples. The analysis includes 1,997 matched couples in Guinea (weighted sample size 1,995), 2,665 matched couples in Mali (weighted sample size 2,668), 867 matched couples in Namibia (weighted sample size 849), and 3,129 matched couples in Zambia (weighted sample size 3,204). All reported sample sizes are weighted samples. Use of the DHS couples file limits the sample to currently married women age 15-49 with husbands who are physically present, living in the same household and age 15-59 (except for Namibia where men age 15-49 were surveyed). We compared socio-demographic characteristics and empowerment indicators among all women in the individual file and the subsample of women in the couples file and found few significant differences between the two files (see Appendix Table). Overall, the larger individual sample of women was slightly older and wealthier than the couples subsample, with the exception of Namibia. Empowerment indicators of decision-making and attitudes toward wife beating were similar across both groups. Women in the couples sample reported fewer reasons that women are justified in refusing sex than those in the individual sample.

Variable Description and Measures

Dependent Variables

The first outcome of interest is wives' ideal number of children. The DHS assesses ideal family size by asking women with children, "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" For women with no children at the time of the survey, the questionnaire asks, "If you could choose exactly the number of children to have in your whole life, how many would that be?" Both questions allow non-numeric responses such as "As God decides." A sub-analysis demonstrated that there were few differences in empowerment indicators between women who provided numeric responses and those who provided non-numeric responses. Thus, non-numeric responses were recoded to the mean numeric value for the rest of the sample, and ideal family size was treated as a continuous numeric variable in the analysis.

The second outcome of interest is the ability of women to have just the number of children they want. This outcome was operationalized as a dichotomous measure of whether a woman had more living children than her reported desired number of children. It was calculated as the woman's number of living children minus her ideal number of children. If the total was more than zero, she was coded as having more children than her stated ideal. Women who provided a non-numeric ideal number of children were coded as not having more children than their stated ideal.

Independent Variables

In this study, the key explanatory variables of interest are three indicators of women's empowerment: women's role in household decision-making, and two types of attitudes about gender roles. These are based on sets of questions included in the standard DHS questionnaire.

Women's role in household decision-making: This indicator is designed to assess women's degree of control over their environment and is often used as a measure of women's autonomy. The DHS asks women who in their family usually has the final say in four types of household

decisions: (1) respondent‘s own health care; (2) making major household purchases; (3) making household purchases for daily needs; and (4) visits to family or relatives. Women_s answers are coded into one of the following categories: respondent alone, respondent jointly with her husband, respondent_s husband alone, respondent jointly with others, or others only. The empowerment indicator is constructed by grouping women into two categories: women who have any say (alone or jointly) in all four household decisions, indicating a higher level of empowerment, and women who do not have any say in one or more decisions.

Attitudes about gender roles: The next two indicators explore women‘s acceptance of unequal gender roles. The surveys ask women, ―Sometimes a husband is annoyed or angered by things that his wife does. In your opinion, is a husband justified in hitting or beating his wife in the following situations: If she goes out without telling him? If she neglects the children? If she argues with him? If she refuses to have sex with him? If she burns the food?” This measure is dichotomized into two categories: women who report none of the reasons are justified for a husband beating his wife, indicating a higher level of empowerment, and women who report one or more reasons are justified.

For the other measure of acceptance of unequal gender roles, the surveys ask women, ―Husbands and wives do not always agree on everything. Please tell me if you think a wife is justified in refusing to have sex with her husband when: She knows her husband has a sexually transmitted disease? She knows her husband has sex with other women? She has recently given birth? She is tired or not in the mood?” This measure is dichotomized into two categories: women who report all of the reasons are justified for refusing sex, indicating a higher level of empowerment, and women who report one or more are not justified. A missing response for any of the items in the indices was considered to be a non-affirmative response, representing a zero value for each measure.

Other gender-related variables: Additional gender-related variables that can serve as a proxy for empowerment examined in the study include the wife‘s age at first marriage, interspousal age difference (husband‘s reported age minus wife‘s reported age) and interspousal education difference (husband‘s reported years of education minus wife‘s reported years of education).

These factors shape the conditions or environment in which a woman can exercise her agency, and thus they serve as facilitators or impediments to empowerment. Women‘s empowerment researchers often use interspousal age and education differentials to measure the relative status of husbands and wives (Abadian 1996; Frankenberg and Thomas 2001; Jejeebhoy 2000). One study demonstrated that such measures influence marital decision-making power (Frankenberg and Thomas 2001). All three of these measures were included in our analyses as continuous measures. Number of years of education was missing for 20 cases in Mali, 3 in Namibia, and 10 in Zambia. For these cases, the interspousal educational difference was set to the country‘s mean education difference.

Additionally, two novel measures assess empowerment in the health care domain. The surveys ask women, ―Many different factors can prevent women from getting medical advice or treatment for themselves. When you are sick and want to get medical advice or treatment, is each of the following a big problem or not? Getting permission to go? Not wanting to go alone?" Each of these two measures was dichotomized into two categories, women who report that the factor is not a big problem, indicating a higher level of empowerment, and women who report that the factor is a big problem.

Husband's influence: The analyses controlled for the effects of husbands‘ ideal number of children, which was measured using the same questions described above for women. For the husband, however, responses are divided into the following four categories: 0 to 2, 3 to 5, 6 or more children, and non-numeric responses. For the analysis modeling the probability of a woman having more children than her ideal, we controlled for the husband‘s ideal number, relative to his wife‘s response. That is, we divided the husband‘s ideal number of children into the following categories: husband agrees with wife (including non-numeric responses), husband‘s ideal is more than wife‘s, husband‘s ideal is fewer than wife‘s, and husband gave a non-numeric response when the wife did not. This measure was not used in the analysis modeling the woman‘s ideal number of children because it was too closely tied to the outcome.

Sociodemographic variables: Additionally, the analyses included several sociodemographic variables that served as controls: current age, a household wealth index, education, weekly media exposure, employment status, number of living children, and urban/rural residence. Weekly media exposure was defined as reading a newspaper, listening to the radio, or watching television at least once per week. Employment status included anyone who is currently working or has worked in the past 12 months.

Data Analyses

We conducted the analyses in several steps. First, we described the characteristics of the matched couple sample. We estimated means and prevalence rates on fertility desires/behavior, women‘s empowerment indicators, other gender-related factors, and sociodemographic characteristics.

Second, we used linear regression to estimate unadjusted and adjusted effects of women‘s empowerment, other gender-related factors, and husbands‘ ideal number of children on women‘s ideal number of children, controlling for sociodemographic characteristics. This model examines the first pathway in our conceptual framework. Beta coefficients and 95% confidence intervals are reported. To confirm that the three empowerment indicators were independent, each indicator was first included alone in a model with other gender-related factors, husbands‘ ideal number of children, and sociodemographic variables. Beta coefficients were similar to those found in models that included all three indicators (not shown). The final multivariable models included the three empowerment indicators together, along with the other covariates.

Third, to examine the second pathway in our conceptual framework, we used multiple logistic regression to model the probability of having more children than desired. Young women, in the midst of their reproductive years, are unlikely to have completed childbearing. Therefore, this analysis included only women age 35 and older. This model incorporated all of the variables used in the previous analyses as independent variables: the women‘s empowerment indicators, other gender-related factors, husbands‘ ideal number of children (relative to their wives‘), and sociodemgraphic variables. Additionally, it controls for whether the woman ever experienced a pregnancy loss, stillborn, or death of a child, because women who have experienced such events

may be less likely to have more children than their stated ideal. While a woman‘s ideal number of children is likely causally related to whether she can achieve that ideal, we did not include it in the model due to potential endogeneity, given that ideal number of children was used to calculate the outcome.

All analyses were performed using STATA 11 (STATA Corporation, 2009). We used STATA‘s svy (survey) commands to take into account the complex survey design of the DHS by incorporating women‘s sampling weights and adjusting the standard errors for the cluster sampling of primary sampling units. Thus, population-based estimates take into account the differential probability of selection into the survey.

RESULTS

Table 1 presents the characteristics of the sample. Substantial variability was found among the four countries in the women‘s empowerment indicators. Namibia had the most empowered women, with the most reporting any say in all four household decisions (67.7%), the most reporting that none of the five reasons justified wife beating (68.5%), and the most reporting that all three reasons were justification for refusing sex (74.5%). Mali had the fewest women reporting any say in all four household decisions (10.6%) and the fewest reporting that all three reasons justified refusing sex (9.5%). Guinea had the fewest women reporting none of the five reasons justified wife beating (11.8%).

The other gender-related independent variables also varied substantially. Mean interspousal age difference among the matched couples ranged from 3.7 years in Namibia to 11.7 years in Guinea, and the interspousal education difference ranged from -0.6 years in Namibia to 1.7 years in Zambia. Mean age at first marriage was 16.3 in Guinea and Mali, 17.8 in Zambia, and 22.4 in Namibia. Getting permission to go for health care or not wanting to go alone was not a problem for most women, with 86.1% of women in Guinea and Mali, 89.5% of women in Namibia, and 95.4% of women in Zambia reporting that getting permission was not a big problem. Not wanting to go for health care alone was not a big problem for 77.7% of women in Namibia, 78.2% in Guinea, 82.3% in Mali, and 95.4% in Zambia.

Table 1. Characteristics of women in matched couples (frequency or mean).

	Guinea 2005 (n=1,997) n=1,995	Mali 2006 (n=2,665) n=2,668	Namibia 2006/2007 (n=867) n=849	Zambia 2007 (n=3,129) n=3,204
Fertility Desires/Behavior				
Woman's ideal number of children (%)				
0-2	2.1	1.8	38.3	6.7
3-5	38.0	29.8	47.7	53.0
6+	48.5	50.1	12.4	33.5
Non-numeric response	11.4	18.3	1.7	6.8
Woman's ideal number of children (mean)[1]	6.0	6.6	3.4	5.1
Husband's ideal number of children (%)				
0-2	1.4	1.6	28.7	7.5
3-5	18.8	18.5	44.3	46.4
6+	67.7	58.7	25.0	41.9
Non-numeric response	12.1	21.2	2.0	4.2
Husbands' ideal number of children (mean)	9.9	9.3	4.8	5.7
Couple agrees on ideal number of children (%)[2]	13.0	13.7	23.3	25.4
Woman had more children than her ideal (%)	7.0	6.2	18.4	12.0
Woman had more children than her ideal (%) (age 35+ only)	15.3	12.0	26.3	27.7
Women's Empowerment Indicators				
Decision-making				
Woman has any say in all 4 decisions (%)	33.8	10.6	67.7	36.2
Number of household decisions in which woman has any say[3] (0-4) (mean)	2.0	1.0	3.2	2.6
Attitudes toward wife beating				
Belief that none of the 5 reasons for wife beating are justified (%)	11.8	24.7	68.5	36.4
Number of reasons for which wife beating is justified[3] (0-5) (mean)	3.2	2.4	0.8	2.1
Attitudes toward refusing sex				
Belief that women have a right to refuse sex for all 3 reasons (%)	29.2	9.5	74.5	38.4
Number of reasons given for refusing to have sex with husband[4] (mean)	1.7	1.1	2.6	2.0
Gender-related Variables				
Interspousal age difference (mean years)	11.7	11.2	3.7	5.8
Interspousal education difference (mean years)	1.6	0.8	-0.6	1.7
Age at first marriage	16.3	16.3	22.4	17.8
Getting permission to go for health care treatment is not a big problem (%)	86.1	86.1	89.5	95.4
Not wanting to go alone for health care is not a big problem (%)	78.2	82.3	77.7	95.4

[1] Non-numeric responses are entered as the mean ideal number of children

[2] Does not include non-numeric responses

[3] Women reporting they have final say alone or jointly with their husbands/partners in the following decisions: respondent's own health care; making major household purchases; making household purchases for daily needs; and visits to family or relatives.

[4] Women reporting a husband is justified in beating his wife for none of the following reasons: if the wife goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food.

[5] Women reporting that a woman is justified in refusing sexual intercourse with her husband or partner for the following reasons: if her husband has a sexually transmitted infection, her husband has sex with other women, and when she is tired or not in the mood.

Results of the linear regression model of women‘s ideal number of children produced different results by country, but there were some overall trends (Table 2). In general, most of the coefficients of the empowerment indicators were in the expected direction; that is they were inversely associated with ideal number of children, even though they were not all significant. Among the empowerment indicators, gender-role attitudes were more consistently associated with wives having a smaller ideal number of children than was participation in household decision-making. The decision-making index was significant in only one country (Guinea). Reporting that none of the five reasons justified wife beating was associated with having a smaller ideal number of children in Guinea and Zambia after controlling for other factors. In Mali, contrary to expectations, reporting that none of the five reasons justified wife beating was associated with having a larger ideal number of children. Reporting that a wife has the right to refuse sex for all three reasons was associated with having a smaller ideal number of children in Guinea and Zambia in the unadjusted models, and in only Guinea after controlling for other factors.

Several of the other gender-related factors also were significantly associated with women having a smaller ideal number of children in the adjusted models. In Guinea, for every year in age that the husband was older than his wife, the wife‘s ideal number of children increased. Older age at first marriage was associated with a smaller ideal number of children in Guinea and Namibia. None of the other gender-related factors, interspousal education difference, not requiring permission to go for health care, and not wanting to go for health care alone, was significant in any of the four countries.

Husband‘s ideal number of children was significantly associated with women‘s ideal number of children in all countries. When a husband‘s ideal number of children was 0-2 or 3-5, women had a smaller ideal number of children compared to when the husband‘s ideal number of children was 6 or more.

Table 2. Unadjusted and adjusted beta coefficients from linear regression of women's empowerment and husband's ideal number of children on women's ideal number of children (matched couples only).

	Guinea n=1,995 2005		Mali n=2,668 2006		Namibia n=849 2006/2007		Zambia n=3,204 2007	
	Unadjusted β (95% CI)	Adjusted β (95% CI)	Unadjusted β (95% CI)	Adjusted β (95% CI)	Unadjusted β (95% CI)	Adjusted β (95% CI)	Unadjusted β (95% CI)	Adjusted β (95% CI)
Women's empowerment indicators								
Decision-making								
Any say in all 4 decisions[a]	-0.20 (-0.42,0.03)	-0.28* (-0.49,-0.06)	-0.22 (-0.81,0.36)	-0.31 (-0.71,0.08)	-0.26 (-0.60,0.09)	-0.00 (-0.30,0.30)	-0.11 (-0.29,0.07)	0.13 (-0.03,0.28)
Any say in fewer than 4 decisions or no say in any decisions	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Attitudes toward wife beating								
None of the 5 reasons for wife beating are justified[b]	-0.66*** (-0.96,-0.36)	-0.56*** (-0.88,-0.24)	0.51*** (0.23,0.79)	0.43*** (0.18,0.68)	-0.60*** (-0.91,-0.29)	-0.03 (-0.34,0.27)	-0.46*** (-0.63,-0.29)	-0.23** (-0.38,-0.09)
One or more of the 5 reasons for wife beating justified	(ref)	(ref)	(ref)		(ref)	(ref)	(ref)	(ref)
Attitudes toward refusing sex								
Wife has the right to refuse sex for all 3 reasons[c]	-0.32** (-0.54,-0.09)	-0.36** (-0.57,-0.14)	-0.06 (-0.47,0.35)	-0.08 (-0.46,0.29)	-0.26 (-0.62,0.09)	0.08 (-0.21,0.38)	-0.16* (-0.32,-0.00)	-0.04 (-0.17,0.10)
Wife does not have the right to refuse sex for one or more reasons	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Other gender-related variables								
Interspousal age difference	0.01 (-0.00,0.03)	0.02* (0.00,0.03)	-0.02* (-0.04,-0.00)	-0.01 (-0.03,0.01)	-0.01 (-0.04,0.02)	-0.00 (-0.03,0.02)	0.00 (-0.01,0.02)	0.00 (-0.01,0.02)
Interspousal education difference	-0.04** (-0.07,-0.02)	-0.02 (-0.05,0.00)	-0.03 (-0.07,0.00)	-0.03 (-0.08,0.01)	-0.00 (-0.04,0.04)	-0.01 (-0.05,0.02)	0.05*** (0.03,0.08)	0.01 (-0.01,0.03)
Age at first marriage	-0.08*** (-0.12,-0.05)	-0.05** (-0.09,-0.02)	-0.04 (-0.08,0.00)	-0.02 (-0.06,0.02)	-0.01 (-0.04,0.01)	-0.04** (-0.06,-0.01)	-0.10*** (-0.13,-0.07)	-0.03 (-0.05,0.00)

Cont'd..

Table 2. Cont'd

	Guinea n=1,995 2005		Mali n=2,668 2006		Namibia n=849 2006/2007		Zambia n=3,204 2007	
	Unadjusted β (95% CI)	**Adjusted β (95% CI)**	**Unadjusted β (95% CI)**	**Adjusted β (95% CI)**	**Unadjusted β (95% CI)**	**Adjusted β (95% CI)**	**Unadjusted β (95% CI)**	**Adjusted β (95% CI)**
Permission for health care								
Getting permission to go for health care treatment is not a big problem	-0.14 (-0.45,0.16)	0.05 (-0.29,0.38)	0.11 (-0.21,0.44)	0.14 (-0.14,0.43)	-0.02 (-0.38,0.34)	-0.06 (-0.42,0.31)	-0.17 (-0.62,0.28)	-0.05 (-0.42,0.32)
Getting permission to go for health care treatment is a big problem	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Going alone for health care								
Not wanting to go alone for health care is not a big problem	-0.29 (-0.62,0.04)	-0.16 (-0.50,0.18)	0.04 (-0.25,0.34)	0.03 (-0.24,0.30)	-0.35* (-0.69,-0.01)	-0.03 (-0.37,0.30)	-0.32*** (-0.50,-0.14)	0.04 (-0.13,0.21)
Not wanting to go alone for health care is a big problem	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Husband's influence								
Husband's ideal number of children								
0-2	-1.20** (-2.05,-0.34)	-0.48 (-1.30,0.34)	-0.51 (-1.12,0.10)	-0.46 (-1.05,0.14)	-1.46*** (-1.86,-1.05)	-0.88*** (-1.29,-0.47)	-1.82*** (-2.12,-1.51)	-0.81*** (-1.08,-0.53)
3-5	-0.97*** (-1.23,-0.72)	-0.56*** (-0.80,-0.32)	-0.70*** (-0.98,-0.41)	-0.34* (-0.61,-0.08)	-0.70*** (-1.08,-0.31)	-0.29 (-0.64,0.06)	-1.06*** (-1.23,-0.89)	-0.39*** (-0.57,-0.22)
6+	(ref)	(ref)	(ref)	(ref)	(ref)		(ref)	
Non-numeric response	-0.04 (-0.31,0.23)	-0.17 (-0.45,0.11)	0.37 (-0.01,0.74)	0.33 (-0.02,0.68)	0.69 (-0.89,2.26)	0.48 (-1.08,2.04)	-0.16 (-0.57,0.26)	-0.17 (-0.55,0.21)
Sociodemographic and health variables								
Current age	0.03*** (0.02,0.05)	0.03** (0.01,0.04)	0.04*** (0.03,0.06)	0.02 (-0.00,0.04)	0.06*** (0.04,0.07)	0.05*** (0.03,0.07)	0.07*** (0.06,0.08)	0.04*** (0.02,0.05)
Urban residence	-0.60*** (-0.86,-0.34)	0.00 (-0.36,0.36)	-0.58* (-1.06,-0.10)	-0.04 (-0.33,0.26)	-0.76*** (-1.05,-0.47)	0.25 (-0.11,0.62)	-1.01*** (-1.20,-0.82)	-0.15 (-0.41,0.10)
Rural residence	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)

Cont'd..

Table 2. Cont'd

	Guinea n=1,995 2005		Mali n=2,668 2006		Namibia n=849 2006/2007		Zambia n=3,204 2007	
	Unadjusted β (95% CI)	Adjusted β (95% CI)	Unadjusted β (95% CI)	Adjusted β (95% CI)	Unadjusted β (95% CI)	Adjusted β (95% CI)	Unadjusted β (95% CI)	Adjusted β (95% CI)
Household wealth index								
Poorest	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Poorer	0.06 (-0.31,0.43)	0.10 (-0.25,0.46)	-0.09 (-0.45,0.27)	-0.06 (-0.43,0.30)	-0.60 (-1.28,0.09)	-0.48 (-1.14,0.17)	-0.02 (-0.27,0.22)	0.04 (-0.18,0.27)
Middle	-0.14 (-0.45,0.18)	-0.01 (-0.30,0.29)	-0.37* (-0.74,-0.01)	-0.27 (-0.63,0.09)	-1.17*** (-1.76,-0.59)	-0.93** (-1.49,-0.36)	-0.17 (-0.38,0.04)	0.02 (-0.17,0.21)
Richer	-0.20 (-0.54,0.15)	-0.02 (-0.36,0.32)	-0.48* (-0.88,-0.08)	-0.31 (-0.73,0.10)	-1.54*** (-2.07,-1.00)	-1.25*** (-1.81,-0.69)	-0.76*** (-1.00,-0.52)	-0.22 (-0.53,0.10)
Richest	-0.83*** (-1.21,-0.46)	-0.28 (-0.76,0.21)	-1.01** (-1.67,-0.35)	-0.45 (-1.12,0.23)	-1.67*** (-2.21,-1.13)	-1.28*** (-1.93,-0.64)	-1.47*** (-1.73,-1.21)	-0.55** (-0.90,-0.21)
Education								
No education	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Primary	-0.77*** (-1.14,-0.41)	-0.39* (-0.78,-0.01)	-0.44* (-0.82,-0.07)	-0.34 (-0.75,0.07)	-0.02 (-0.56,0.52)	0.24 (-0.29,0.77)	-0.62*** (-0.89,-0.35)	-0.37** (-0.63,-0.11)
Secondary or higher	-1.13*** (-1.59,-0.66)	-0.49 (-0.99,0.00)	-1.74*** (-2.10,-1.38)	-1.39*** (-2.00,-0.78)	-0.92*** (-1.42,-0.41)	0.11 (-0.47,0.68)	-1.85*** (-2.14,-1.57)	-0.81*** (-1.11,-0.51)
Weekly media exposure	-0.28* (-0.51,-0.04)	-0.12 (-0.35,0.10)	-0.22 (-0.55,0.12)	-0.02 (-0.31,0.27)	-1.27*** (-1.84,-0.70)	-0.40 (-0.96,0.16)	-0.58*** (-0.75,-0.40)	-0.17* (-0.34,-0.01)
Currently employed	0.30 (-0.02,0.63)	0.01 (-0.28,0.30)	-0.40* (-0.77,-0.03)	-0.39* (-0.70,-0.07)	-0.19 (-0.49,0.11)	-0.05 (-0.33,0.23)	0.34*** (0.18,0.49)	0.12 (-0.02,0.26)
Polygamous union	0.28** (0.08,0.48)	-0.18 (-0.38,0.03)	-0.06 (-0.28,0.16)	-0.30* (-0.54,-0.06)	0.07 (-0.31,0.46)	0.08 (-0.28,0.44)	0.26* (0.01,0.50)	-0.23 (-0.48,0.01)
Number of living children								
0	-1.01*** (-1.41,-0.61)	-0.50* (-0.98,-0.03)	-0.89*** (-1.33,-0.45)	-0.45 (-0.99,0.10)	-2.19*** (-2.70,-1.68)	-1.01** (-1.64,-0.38)	-2.00*** (-2.32,-1.69)	-1.06*** (-1.41,-0.71)
1-2	-0.88*** (-1.13,-0.63)	-0.54*** (-0.82,-0.26)	-1.16*** (-1.56,-0.76)	-0.81*** (-1.20,-0.43)	-1.70*** (-2.16,-1.25)	-0.71** (-1.24,-0.18)	-1.71*** (-1.90,-1.52)	-0.82*** (-1.08,-0.56)
3-4	-0.49*** (-0.77,-0.22)	-0.32* (-0.59,-0.05)	-0.82*** (-1.15,-0.49)	-0.59*** (-0.90,-0.29)	-0.99*** (-1.48,-0.49)	-0.44 (-0.97,0.08)	-0.90*** (-1.09,-0.71)	-0.48*** (-0.69,-0.26)
5+	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)

Cont'd..

Table 2. Cont'd

[a] Women reporting they have final say alone or jointly with their husbands/partners in all 4 of the following decisions: respondent's own health care; making major household purchases; making household purchases for daily needs; and visits to family or relatives.

[b] Women reporting a husband is justified in beating his wife for none of the following reasons: if the wife goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food.

[c] Women reporting that a woman is justified in refusing sexual intercourse with her husband or partner for all of the following reasons: if her husband has a sexually transmitted infection, her husband has sex with other women, and when she is tired or not in the mood.

***p<0.001, **p<0.01, *p<0.05

The results of the logistic regression models among the subsample of women age 35 and older show that, while few of the odds ratios for the empowerment indicators reached statistical significance, most of the odds ratios were greater than one (Table 3). This indicates that women‘s empowerment may be positively associated with having more children than ideal. Empowerment indicators were significant in only two countries. In Namibia, women who had any say in all four household decisions were more likely to have more children than their ideal (AOR=2.72 CI=1.19-6.24). In Mali, women reporting that none of the five reasons justified wife-beating were less likely to have more children than their ideal (AOR=0.35 CI=0.18-0.71).

Additionally, the variable representing the difference between a husband‘s ideal number of children and his wife‘s ideal number was significant in all countries. When a husband‘s ideal number of children was larger than his wife‘s, she was more likely to have more children than her ideal—as much as 16 times more likely in Mali. In two countries (Guinea and Mali) this risk also increased when a woman‘s husband gave a non-numeric response.

Table 3. Adjusted odds ratios from multivariable logistic regression of women's empowerment and husband's ideal number of children on having more children than desired (matched couples with women >=35 only).

	Guinea 2005 n=726	Mali 2006 n=786	Namibia 2006/2007 n=303	Zambia 2007 n=945
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Women's empowerment indicators				
Decision-making				
Any say in all 4 decisions[a]	1.43 (0.88,2.31)	1.27 (0.63,2.56)	2.72* (1.19,6.24)	0.81 (0.56,1.19)
Any say in fewer than 4 decisions or no say in any decisions	(ref)	(ref)	(ref)	(ref)
Attitudes toward wife beating				
None of the 5 reasons for wife beating are justified[b]	0.81 (0.39,1.66)	0.35** (0.18,0.71)	1.20 (0.50,2.91)	1.19 (0.85,1.68)
One or more of the 5 reasons for wife beating justified	(ref)	(ref)	(ref)	(ref)
Attitudes toward refusing sex				
Wife has the right to refuse sex for all 3 reasons[c]	1.34 (0.87,2.08)	1.05 (0.46,2.41)	1.45 (0.67,3.16)	1.34 (0.95,1.89)
Wife does not have the right to refuse sex for one or more reasons	(ref)	(ref)	(ref)	(ref)
Other gender-related variables				
Interspousal age difference	0.95* (0.91,1.00)	1.02 (0.96,1.09)	0.99 (0.92,1.06)	1.01 (0.98,1.04)
Interspousal education difference	1.04 (0.98,1.11)	0.97 (0.87,1.07)	1.08 (0.98,1.19)	1.00 (0.95,1.05)
Age at marriage	0.98 (0.92,1.05)	1.00 (0.94,1.06)	0.96 (0.91,1.02)	0.91*** (0.86,0.96)
Permission for health care				
Getting permission to go for health care treatment is not a big problem	0.66 (0.33,1.32)	1.00 (0.44,2.31)	2.62 (0.70,9.77)	1.25 (0.51,3.04)
Getting permission to go for health care treatment is a big problem	(ref)	(ref)	(ref)	(ref)
Going alone for health care				
Not wanting to go alone for health care is not a big problem	1.78* (1.03,3.08)	1.08 (0.41,2.82)	0.29* (0.11,0.77)	1.09 (0.74,1.59)
Not wanting to go alone for health care is a big problem	(ref)	(ref)	(ref)	(ref)
Husband's influence				
Husband's ideal number of children				
Husband agrees with wife	(ref)	(ref)	(ref)	(ref)
Husband's ideal is more than wife	3.84** (1.52,9.66)	16.11** (2.83,91.86)	4.48** (1.52,13.23)	3.16*** (1.90,5.25)
Husband's ideal is fewer than wife	0.67 (0.20,2.27)	1.14 (0.16,8.27)	0.39 (0.12,1.24)	0.55* (0.33,0.91)
Husband gave non-numeric response but wife did not	3.97* (1.38,11.48)	8.73* (1.46,52.37)	3.00 (0.44,20.65)	1.19 (0.53,2.66)

Cont'd..

Table 3. Cont'd

	Guinea 2005 n=726	Mali 2006 n=786	Namibia 2006/2007 n=303	Zambia 2007 n=945
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Sociodemographic and health variables				
Current age	1.06* (1.01,1.12)	1.00 (0.95,1.06)	0.99 (0.90,1.09)	1.04* (1.00,1.08)
Urban residence	1.49 (0.58,3.82)	1.28 (0.61,2.72)	0.78 (0.32,1.90)	1.00 (0.59,1.68)
Rural residence	(ref)	(ref)	(ref)	(ref)
Household wealth index				
Poorest	(ref)	(ref)	(ref)	(ref)
Poorer	0.65 (0.34,1.27)	1.19 (0.61,2.34)	2.61 (0.65,10.43)	0.96 (0.57,1.63)
Middle	0.83 (0.44,1.56)	0.96 (0.39,2.34)	2.17 (0.63,7.42)	1.30 (0.79,2.13)
Richer	0.67 (0.33,1.35)	1.20 (0.50,2.88)	0.68 (0.18,2.64)	0.96 (0.52,1.80)
Richest	0.59 (0.18,1.88)	0.64 (0.21,1.98)	0.92 (0.17,5.00)	1.58 (0.68,3.69)
Years of education				
No education (ref)	(ref)	(ref)	(ref)	(ref)
Primary	1.30 (0.41,4.13)	1.08 (0.42,2.82)	0.88 (0.31,2.55)	1.44 (0.86,2.39)
Secondary or higher	1.41 (0.53,3.78)	1.79 (0.60,5.31)	0.77 (0.22,2.71)	1.08 (0.48,2.40)
Weekly media exposure	0.72 (0.44,1.18)	1.55 (0.74,3.24)	2.14 (0.83,5.50)	0.92 (0.66,1.28)
Currently employed	1.40 (0.54,3.65)	2.29* (1.18,4.46)	1.45 (0.63,3.31)	1.22 (0.88,1.68)
Polygamous union	0.65 (0.40,1.06)	1.09 (0.64,1.85)	0.81 (0.31,2.13)	1.01 (0.65,1.57)
Ever had a miscarriage, stillborn, or child death	1.39 (0.81,2.40)	1.31 (0.66,2.61)	0.46 (0.20,1.06)	1.82*** (1.29,2.59)

[a] Women reporting they have final say alone or jointly with their husbands/partners in all 4 of the following decisions: respondent's own health care; making major household purchases; making household purchases for daily needs; and visits to family or relatives.

[b] Women reporting a husband is justified in beating his wife for none of the following reasons: if the wife goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food.

[c] Women reporting that a woman is justified in refusing sexual intercourse with her husband or partner for all of the following reasons: if her husband has a sexually transmitted infection, her husband has sex with other women, and when she is tired or not in the mood.

***p<0.001, **p<0.01, *p<0.05

DISCUSSION

This study demonstrates that several dimensions of women‘s empowerment and gender-related factors are associated with a desire for fewer children in sub-Saharan African countries. In two of the four countries examined (Guinea and Zambia), women‘s egalitarian gender-role attitudes are important in predicting a smaller ideal number of children. In one country (Mali), women‘s egalitarian gender-role attitudes are associated with both a larger ideal number of children and with limiting fertility to their desired number of children. In Namibia, empowerment appears to be strongly associated with having more children than desired—a finding that was contrary to our hypothesis. This finding likely reflects a dissatisfaction felt by more empowered women whose fertility is high, consistent with social norms, but who personally value smaller families.

By comparing actual fertility and ideal fertility, we develop a proxy measure for unwanted fertility. This measure may be better than the conventional measure of unintended pregnancies, which requires women to say whether a particular child was wanted or not. In the countries in this study, 12% to 28% of women age 35 and over reported having more children than their ideal. Substantial reductions in the high total fertility rate could occur if women could avoid undesired fertility and have only the number of children they consider ideal.

Women‘s autonomy, as measured by household decision-making, is associated with women‘s ideal number of children in this analysis in only one country. We used a standardized household decision-making index that has also been used in other studies to measure women‘s empowerment and/or autonomy. The decision-making variable was not significant for the other countries even after recoding it as a continuous variable, and testing other permutations of individual or joint decision-making. In contrast, previous studies have found that higher autonomy is associated with lower fertility (Balk 1994; Dyson and Moore 1983; Hindin 2000). Most of the previous studies using this measure have been done in Asia. This discrepancy in findings may be a result of the differences in cultural context between Africa and Asia. Decision-making may not be as relevant an indicator for empowerment in the sub-Saharan African context; gender-role attitudes may be better at capturing variation in empowerment among these populations. Qualitative research that explores what empowerment means in this region is needed to develop more contextually appropriate indicators of women‘s empowerment.

Other researchers have posited that the well established effect of women‘s education on fertility may be explained by education‘s effect of empowering women (Jejeebhoy 1995; Mason 1987). Our study suggests, however, that women‘s empowerment does not sufficiently account for the association. In all countries examined except Namibia, higher levels of education are mostly still significantly associated with a smaller ideal number of children, even after controlling for women‘s empowerment. Thus, education probably affects women‘s fertility in other ways than increasing their empowerment. Similarly, women‘s empowerment affects fertility beyond what is explained by education. In future studies it will be important to separate and examine the individual contributions of education and empowerment.

This study demonstrates that husbands have a strong role in influencing women‘s preferences as well as women‘s ability to achieve their reproductive preferences. As expected, having a husband with a smaller ideal number of children is associated with a woman having a smaller ideal number of children, regardless of her level of empowerment. There are two explanations that contribute to this finding. First, women may marry like-minded men, and thus their ideal family sizes agree. Second, after marriage, spouses may conform to each other‘s ideals. In a sub-analysis none of the women‘s empowerment indices predict husband-wife agreement on ideal family size, confirming that couple agreement is not limited to empowered women. The finding that empowerment as measured by household decision-making and gender role attitudes was less influential in predicting achievement of ideal fertility than husband‘s desires suggests that even empowered women are sometimes powerless in their reproductive behavior when their husbands have different fertility goals. Perhaps a measure that captures empowerment specifically in family planning and fertility domains needs to be considered and developed.

One limitation of this study is the presence and treatment of non-numeric responses to the DHS question on ideal number of children. We also explored this subsample and determined that they were similar to the rest of the sample on most of the women‘s empowerment indicators. Thus, we were comfortable with setting non-numeric responses to the mean ideal number of children, with the rationale that this group is likely to have a variation in preferences similar to the rest of the sample.

The study is unique in that it examined men‘s influence on women‘s wanted and actual

fertility—an influence that is rarely included in other studies. We used men‘s actual reports of their own ideal family size in our models. While doing so required the use of a subsample of matched couple dyads, thereby compromising our sample size, we believe examining their influence greatly adds to the richness of the findings. In all four countries, we found that men‘s ideals about family size strongly influence women‘s ideals. Husband‘s ideals also have a strong effect on whether wives achieve their desired family size, especially if the husbands want more children than their wives. These findings suggest that addressing men‘s needs for information and resources for spacing and limiting their children is useful and a good investment for policies and programs.

As countries around the world work to promote gender equality and empower women as part of achieving the Millennium Development Goals, it can be expected that demand for smaller families will follow. Additionally, family planning programs can address women‘s empowerment as part of their mission to help women and couples have only the number of children they want. Such programs are likely to generate interest in family planning services, create demand for smaller families, and also reduce unwanted fertility.

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Appendix Table. Characteristics of all currently married/cohabiting women age 20-44 (all women sample) and the subsample of women whose husbands/partners were also interviewed (couple subsample) by selected characteristics, DHS surveys 2005-2007

	Guinea 2005				Mali 2006			Namibia 2006/2007			Zambia 2007		
	All women	Couples			All women	Couples		All women	Couples		All women	Couples	
	n=1,995	n=7,954	F stat	p-value	n=2,668	n=14,583	p-value	n=849	n=9,804	p-value	n= 3,204	n=4,402	p-value
Women's Sociodemographic Characteristics													
Age (%)													
15-24	23.5	23.4	0.01	0.9354	30.5	32.1	0.1807	18.2	14.9	0.0050	27.5	26.5	0.0436
25-34	40.1	35.5	24.96	0.0000	39.3	35.6	0.0013	46.1	39.9	0.0011	43.0	42.7	0.6282
35-49	36.4	41.0	19.66	0.0000	30.2	32.4	0.0469	35.7	45.1	0.0000	29.5	30.8	0.0155
Urban residence (%)	21.7	26.1	23.15	0.0000	26.2	30.7	0.0000	56.5	50.2	0.0001	33.1	35.0	0.0001
Household wealth index (%)													
Poorest	24.8	22.6	4.00	0.0474	21.3	19.0	0.0327	14.8	17.1	0.0631	24.3	20.7	0.0000
Poorer	20.7	20.7	0.00	0.9878	21.0	20.1	0.2524	11.9	15.5	0.0084	18.8	19.6	0.0507
Middle	22.7	20.4	6.03	0.0152	19.1	20.0	0.3770	18.9	20.3	0.2226	19.5	20.2	0.0380
Richer	16.5	18.2	3.56	0.0612	21.3	19.9	0.1807	24.8	23.1	0.2402	19.7	20.7	0.0436
Richest	15.3	18.0	10.77	0.0013	17.3	21.0	0.0012	29.7	25.0	0.0027	17.8	18.7	0.0549
Education (%)													
No education	87.8	85.3	12.60	0.0005	84.9	82.1	0.0005	12.2	11.8	0.7184	12.9	13.0	0.6590
Primary	7.0	8.0	3.07	0.0819	10.5	10.3	0.7828	25.3	30.3	0.0002	62.1	60.8	0.0090
Secondary or higher	5.2	6.6	7.37	0.0074	4.6	7.5	0.0000	62.5	57.9	0.0031	25.0	26.2	0.0081
Weekly media exposure (%)	45.0	46.0	0.90	0.3434	74.3	74.4	0.9289	88.1	86.2	0.1217	66.7	65.4	0.0222
Currently employed (%)	87.6	86.9	0.99	0.3210	63.2	64.0	0.4406	60.9	60.6		60.9	60.0	0.8895
Age at marriage (mean)	16.2	16.3	1.22	0.2719	16.3	16.4	0.1423	22.4	22.8	0.0298	17.8	17.8	0.3539
Polygamous union (%)	50.7	53.1	3.30	0.0712	41.8	40.3	0.3466	15.3	19.0	0.0063	11.4	15.2	0.0000

Cont'd..

Appendix Table. **Cont'd**

	Guinea 2005				Mali 2006			Namibia 2006/2007			Zambia 2007		
	All women	Couples			All women	Couples		All women	Couples		All women	Couples	
	n=1,995	n=7,954	F stat	p-value	n=2,668	n=14,583	p-value	n=849	n=9,804	p-value	n= 3,204	n=4,402	p-value
Number of living children (%)													
0	9.4	10.1	1.80	0.1817	10.0	12.8	0.0002	8.6	7.8	0.3779	7.6	7.2	0.0925
1-2	34.7	32.9	3.47	0.0643	31.9	32.7	0.4347	45.9	42.0	0.0772	32.3	33.1	0.0636
3-4	31.0	30.3	0.66	0.4196	27.8	37.1	0.6053	31.2	30.8	0.8223	31.5	30.7	0.0795
5+	24.9	26.7	3.86	0.0513	30.3	37.4	0.0009	14.3	19.4	0.0001	28.6	29.0	0.4535
Ever had a miscarriage, stillborn, or child death (%)	56.4	53.5	6.82	0.0099	58.5	54.6	0.0004	22.4	27.3	0.0016	48.0	47.4	0.2099
Women's Empowerment Indicators													
Decision-making													
Woman has any say in all 4 decisions (%)	33.8	34.6	0.79	0.3761	10.6	11.1	0.7501	67.7	64.3	0.0502	36.2	37.0	0.1391
Number of household decisions in which woman has any say[3] (0-4) (mean)	2.0	2.0	1.93	0.1665	1.0	1.0	0.3143	3.2	3.2	0.5648	2.6	2.7	0.0084
Attitudes toward wife beating													
Belief that none of the 5 reasons for wife beating are justified (%)	11.8	12.2	0.37	0.5458	24.7	23.3	0.2462	68.5	65.3	0.0479	36.4	36.1	0.4923
Number of reasons for which wife beating is justified[3] (0-5) (mean)	3.2	3.1	4.56	0.0344	2.4	2.5	0.0549	0.8	0.9	0.2116	2.1	2.1	0.2173

Cont'd..

Appendix Table. **Cont'd**

	Guinea 2005				Mali 2006			Namibia 2006/2007			Zambia 2007		
	All women	Couples			All women	Couples		All women	Couples		All women	Couples	
	n=1,995	n=7,954	F stat	p-value	n=2,668	n=14,583	p-value	n=849	n=9,804	p-value	n= 3,204	n=4,402	p-value
Attitudes toward refusing sex													
Belief that women have a right to refuse sex for all 3 reasons (%)	29.2	28.8	0.10	0.7519	9.5	18.7	0.0000	74.5	75.2	0.6429	38.4	38.0	0.2953
Number of reasons given for refusing to have sex with husband[4] (mean)	1.7	2.4	936.30	0.0000	1.1	1.7	0.0000	2.6	2.6	0.5913	2.0	2.0	0.1712

[1] Non-numeric responses are entered as the mean ideal number of children

[2] Does not include non-numeric responses

[3] Women reporting they have final say alone or jointly with their husbands/partners in the following decisions: respondent's own health care; making major household purchases; making household purchases for daily needs; and visits to family or relatives.

[4] Women reporting a husband is justified in beating his wife for none of the following reasons: if the wife goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food.

[5] Women reporting that a woman is justified in refusing sexual intercourse with her husband or partner for the following reasons: if her husband has a sexually transmitted infection, her husband has sex with other women, and when she is tired or not in the mood.