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UNDERSTANDING UNMET NEED IN GHANA: RESULTS FROM A FOLLOW-UP STUDY TO THE 2014 GHANA DEMOGRAPHIC AND HEALTH SURVEY

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Understanding Unmet Need in Ghana: Results from a Follow-up Study to the 2014 Ghana Demographic and Health Survey

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Abstract

Unmet need, a central concept in family planning research and a key indicator for programmatic interventions, is a composite measure based on apparent contradictions between women's reproductive intentions and non-use of family planning. Demographic and Health Surveys, the largest source of data on contraceptive patterns in developing countries, compute unmet need based on responses to 18 questions asked at different points during the women's interview. This study reports the results of a mixed-methods follow-up study nested within the 2014 Ghana Demographic and Health Survey (GDHS). Women in 13 clusters who were identified as having unmet need, along with a reference group of women who reported using family planning, were approached to be reinterviewed (RR=92.3%) within an average of three weeks from their GDHS interview. Among fecund women identified by the 2014 GDHS as having unmet need, follow-up interviews revealed substantial underreporting of method use, particularly traditional methods. Complete postpartum abstinence was sometimes the intended method of family planning but was overlooked during questions about method use. Other respondents classified as having unmet need had ambivalent fertility intentions. In several cases, respondents expressed revised fertility intentions upon follow-up that would have made them ineligible for inclusion in the unmet need category. The reference group of family planning users also expressed unstable fertility intentions. Interviews with women who had consistent fertility intentions and perceived themselves at risk of an unintended pregnancy but who were not using family planning revealed multiple reasons for aversion to modern method use, particularly the risk of side effects, personal or partner opposition to family planning, and religious views. The most common side effect women were concerned about was menstrual irregularities. Partners have an important influence on fertility intentions and family planning use. In some cases women's desire to avoid pregnancy is weaker than their desire to please their husbands. While unmet need is typically used as a proxy for latent demand for family planning, among those studied, potential demand for family planning appears to account for a relatively small proportion of unmet need. The study reveals some data quality concerns, largely in the area of traditional method measurement. In addition to these substantive findings, study results produce lessons learned for nested qualitative studies and for population-based surveys that measure family planning.

1 Context

It is estimated that in 2012 there were more than 74 million unintended pregnancies in the developing world, including 4.6 million in West Africa (Sedgh, Singh, and Hussain 2014). Unwanted pregnancies frequently lead to unsafe abortions or maternal complications and place the health of mothers and children at risk (Ahmed et al. 2012). Family planning provides women and families with the power to plan and space births in line with their own reproductive preferences, and thus helps to ensure the safety and well-being of both mother and children.

Unmet need, a central concept in family planning research and a key indicator for programmatic interventions, is a composite measure of the apparent discrepancy between women's reproductive intentions and non-use of family planning. It is described as a measure of latent or potential demand for family planning (Casterline and Sinding 2000; Westoff 1988); as such, it does not involve direct questions about women's own contraceptive preferences and proclivities.

The Demographic and Health Surveys Program, the largest source of data on contraceptive patterns and unmet need in developing countries, conducts national surveys during which interviewers ask women questions about sexual activity, fertility preferences, fecundity, contraceptive use, and other topics. Unmet need for family planning is computed based on women's responses to 18 questions throughout the interview (Bradley et al. 2012). Married or sexually active fecund women who are not using any method of family planning but who wish to postpone giving birth for 2 or more years or stop childbearing altogether are classified as having unmet need. Additionally, women who are pregnant or postpartum amenorrheic with an unwanted or mistimed pregnancy are considered to have an unmet need for family planning.[1] Ongoing measurement of unmet need is pivotal for programmatic efforts and unmet need among married women is one of the indicators used to measure progress on Millennium Development Goal 5 (MDG-5), improving maternal health.

One concern with the concept of unmet need is that the term itself implies a demand for family planning—and, in fact, is summed with contraceptive prevalence to compute an indicator called "demand for family planning"—but the term does not necessarily reflect actual or potential interest in method use. In particular, it does not reflect how women themselves perceive their risk of pregnancy, the strength of their intentions, or their resistance to family planning. An additional concern about the measurement of unmet need is the failure to differentiate married women who are sexually active from those who are not, and thus at no risk of pregnancy (Bradley and Casterline 2014). Other concerns are the underreporting of natural methods (Rossier, Senderowicz, and Soura 2014), the failure to include male partners (Bankole and Ezeh 1999; Becker 1999), and instability in professed fertility intentions (Agadjanian 2005; Kodzi, Johnson, and Casterline 2010; Stash 1999; Tan and Tey 1994).

Open-ended, qualitative questions can provide substantial insight into ambivalence, perceptions, and attitudes, and can be leveraged to help gauge effective supply-side interventions and to understand reasons for discontinuation and non-use. Qualitative and mixed-methods studies are well-positioned to provide important insights about demographic behaviors (Knodel 1997; Obermeyer 1997) and are particularly relevant to understanding the meanings that respondents attach to responses in surveys such as the DHS (Schatz and Williams 2012). However, open-ended responses are time-consuming to gather, transcribe, and

[1] Specifically, women are considered to have unmet need if they are in any of the following three categories: (1) at risk of becoming pregnant, not using contraception, and want no more children, or want children but do not want to become pregnant within the next 2 years, or are unsure if or when they want to become pregnant; (2) pregnant with a mistimed or unwanted pregnancy; or (3) postpartum amenorrheic for up to 2 years following an unwanted or mistimed birth and not using contraception. See Bradley et al. (2012) for additional details.

analyze, and nuanced responses for a limited number of respondents are rarely generalizable at the regional or national level. This paper reports on a novel mixed-methods follow-up study about unmet need that leveraged the existing sampling structure and data collection within the Ghana 2014 DHS (GDHS) survey to provide additional insights into reproductive preferences and family planning use. The follow-up study described in this report was fielded in 13 clusters in three regions of Ghana: Northern, Central, and Greater Accra. Married and sexually-active unmarried GDHS respondents age 15-44 in 13 clusters who consented to be re-contacted and either meet the definition of unmet need or were a random subset of women currently using family planning at the time of the survey were approached for a follow-up interview.

1.1 The Concept of Unmet Need

The development of the concept of unmet need is rooted in the KAP (Knowledge Attitude, and Practice) surveys of the 1970s (Westoff 1977). The KAP surveys identified married women whose intentions and behavior appeared contradictory: they wanted to limit or space childbearing but were not using a method of family planning. The KAP surveys gave way to the World Fertility Surveys in the 1970s and 1980s and ultimately evolved into the Demographic and Health Surveys (DHS), which covered a wider range of topics starting in 1984. The algorithm for determining unmet need grew increasingly complex over time as questions on fertility intentions evolved and data from the contraceptive calendar was included when available. Recently, a consensus DHS/MICS definition of unmet need was established using a standard algorithm (Bradley et al. 2012). A comprehensive history of unmet need and evolution of the classification schema has been detailed by other authors (Bradley and Casterline 2014; Robey, Ross, and Bhushan 1996; Westoff 2006; Westoff and Ochoa 1991).

The extent to which survey measures of unmet need gauge the latent demand for family planning has long been questioned (Bongaarts and Bruce 1995; Dixon-Mueller and Germain 1992). Even in the early days of the development of unmet need as a measure of demand for family planning, it was known that less than half of women with unmet need were currently at risk of pregnancy (Westoff and Ochoa 1991); unmet need is computed to include both immediate and anticipated near-future demand. Nonetheless, the use of unmet need as a direct proxy for demand for family planning has taken on substantial importance in the era of the Millennium Development Goals (MDGs) and the global FP2020 Partnership, which aims to provide modern family planning for an additional 120 million by the year 2020 (Carr et al. 2012).

Despite concerns about its measurement, unmet need is a powerful concept. Abortions, surreptitious use of family planning, and unwanted pregnancies attest to an ongoing need for family planning that is unfulfilled (Cleland, Harbison, and Shah 2014). How to assess women's "need" or demand for family planning has proven difficult, however. In particular, evidence indicates that—even among respondents whose fertility operates within the "calculus of conscious choice"—the answers to prospective fertility preference questions are fraught with ambiguity and uncertainty (Agadjanian 2005; Stash 1999). Measures of unmet need depend on women's tendency to plan and articulate fertility intentions in a two year window. Fertility preferences are subject to both social context (Casterline and Sinding 2000) and to vital conjunctures in women's lives (Johnson-Hanks 2005; Johnson-Hanks 2007), including husband's desire for children (Becker 1999), future economic well-being, marital stability, survival of current children, and so forth. Longitudinal evidence finds substantial instability in individual women's fertility intentions over time (Kodzi, Casterline, and Aglobitse 2010; Sennott and Yeatman 2012).

Proponents of unmet need assert that classifications of unmet need status should not be scrutinized at the individual level because unmet need is intended as an aggregate indicator (Bradley and Casterline 2014). Yet it is unclear why unmet need would be held to a different standard than any other population-level demographic indicator or health metric. Unmet need becomes an aggregate indicator precisely through its application to individual cases. When researchers and policymakers want to understand the characteristics of current contraceptive users, women who give birth at home, stunted children, or any number of health

behaviors and statuses, they use datasets to disaggregate individuals with those behaviors or characteristics. Even for a relatively rare event such as child mortality that is typically measured at the population level, we compare cases of child deaths to non-deaths in order to examine systemic causes and influences. It is indeed defensible to say that standardization of the unmet need algorithm requires a certain number of probabilistic assumptions that may not always hold in individual circumstances (Cleland, Harbison, and Shah 2014). But to say that unmet need should be examined in sum and not in parts is contrary to the standard approach to studying other demographic phenomena and public health issues. This study seeks to understand the lived experiences and intended meaning behind survey answers that give rise to the classification of unmet need; such an understanding is of obvious import to researchers and policymakers who seek to reduce its levels.

1.2 The Ghana Situation

At the time of survey planning, Ghana had recorded one of the highest levels of unmet need for family planning among married women on the African continent, at 36 percent in 2008 (Ghana Statistical Service, Ghana Health Service, and ICF International 2009). Yet modern contraceptive use among married women was higher than in 20 other African countries, at 17 percent. It may be that high unmet need in Ghana in 2008 partly reflected women's growing tendency to articulate a need for spacing or limiting intention. The percentage of women with unmet need could be increasing even as demand for family planning is being satisfied simply due to an increased interest in reducing fertility during early stages of the demographic transition (Casterline, El-Zanaty, and El-Zeini 2003). Ghana's total fertility rate (TFR) declined from 6.4 births per woman in 1988 to 4.0 births per woman in 2008. The 2014 GDHS survey found that the TFR increased slightly, to 4.2 births per woman in 2014 (Ghana Statistical Service, Ghana Health Service, and ICF International 2015).

The 2014 GDHS found an increase in modern contraceptive prevalence since 2008 (from 17 to 22 percent) and a decline in unmet need (from 36 to 30 percent) among married women ages 15-49. This brings the country on par with levels of unmet need in neighboring West African countries. Including all women in the country as a whole, regardless of marital status or sexual activity, 21 percent of all women age 15 to 49, or 1.4 million women, were estimated to have an unmet need for family planning in 2014.[2]

While unmet need is typically measured among currently married women only, the focus of this study is currently married and sexually active women combined, as both groups of women are at risk of unwanted pregnancies. Nationwide, 29 percent of married and sexually active unmarried women in Ghana had an unmet need for family planning as measured by data from the 2014 GDHS. Figure 1.1 shows how the level of unmet need and family planning use among married and sexually active unmarried women varies by region. The Eastern region has the highest level[3] of unmet need, while the lowest level of unmet need is in the Upper West region. The three study regions—Northern, Greater Accra, and Central—all have moderate levels of unmet need. This is a departure from the 2008 GDHS when unmet need was highest in the Central region.

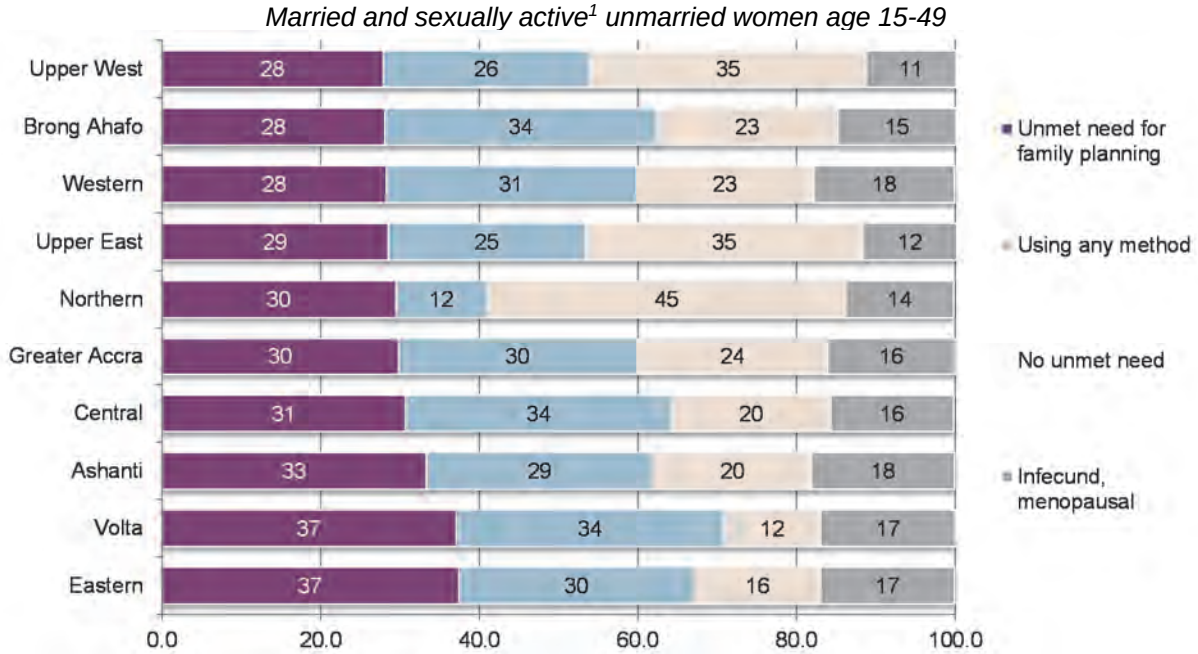
Unmet need is sometimes assumed to have an inverse relationship with levels of contraceptive use, but this is not necessarily the case. Among fecund, non-pregnant women, unmet need reflects not only family planning use but also prospective fertility intentions and women's own perceptions of the risk of pregnancy. In addition to unmet need, Figure 1.1 shows reported levels of family planning use among married and sexually active unmarried women by region. Despite moderate levels of unmet need, the three study regions

[2] Computed based on the UN population estimate for women age 15-49 in 2014 (United Nations Population Division 2015).

[3] The ranking of regions on unmet need shown here differs from the GDHS Final Report and StatCompiler, as it is measured among sexually-active unmarried and married women combined.

have divergent levels of family planning use: Northern region is the lowest nationally, with less than half the level of family planning use of any other region, while Central region is among the highest overall.

Figure 1.1. Unmet need and family planning use among married and sexually active[1] unmarried women by region, 2014 GDHS



[1] Sexually active within the month preceding the survey

Ghana has a relatively strong family planning program. Women can obtain methods from public and private sources. Family planning is inexpensive but not free (Machiyama and Cleland 2014). Ghana does experience occasional contraceptive supply issues and there are some limits to the method mix offered.[4] Social marketing campaigns have proven successful but some very remote areas of the country remain a few hours' distance from the nearest clinic. Awareness of and access to emergency contraception is low (Nettey et al. 2015).

Perceptions about side effects and attitudinal factors pose a challenge to increased family planning use in Ghana. Focus group discussions from a hospital in Legon found women's concern with menstrual regularity in Ghana results in dissatisfaction with methods that prevent menstruation (Hindin, McGough, and Adanu 2014). Another study found that Ghanaian women perceive family planning as ineffective or unsafe (Aryeetey, Kotoh, and Hindin 2011), and DHS data from 1988 to 2008 show that attitudinal resistance has been an increasing component of unmet need in Ghana (Machiyama and Cleland 2014). Male attitudes toward contraception are mixed: in the 2014 GDHS, 73 percent of men age 15-59 rejected the idea that contraception is a woman's business and men should not have to be involved, but 46 percent supported the statement that women who use contraception may become promiscuous (Ghana Statistical Service, Ghana Health Service, and ICF International 2015). Husband's attitudes toward family planning can remain a barrier to its use; married Ghanaian women's sexual empowerment is a statistically significant predictor of contraceptive use, even after controlling for other factors (Crissman, Adanu, and Harlow 2012).

[4] Dr. Patrick Kuma-Aboagye (Ghana Health Service), in discussion with the author, September 2014.

1.3 Purpose

The primary objective of this mixed-methods follow-up study is to better understand the lived experience and meanings underlying the apparent contradiction in fertility intentions and reproductive behavior that produce statistical estimates of unmet need in the DHS surveys. Do the survey questions about current family planning use and reproductive intentions retain their intended meaning in the field? How do respondents perceive their own risk of an unintended pregnancy? How stable and well defined are their fertility intentions, and how do they explain their non-use of family planning? We compare respondents classified as having unmet need with a reference group of respondents who were using family planning at the time of the survey.

Accurately measuring the demand side of family planning has taken on increased importance in recent years because of the attention brought to unmet need via MDG 5 and to new efforts to scale up family planning for millions of women by USAID and several donors as part of FP2020 (Carr et al. 2012). Qualitative and mixed-methods studies can help us to better understand the underlying factors behind observed variations in unmet need, and the potential realizable demand among non-users. Relatively few non-users of family planning report that cost or access are the major reasons for not using contraceptives (Sedgh and Hussain 2014; Sedgh et al. 2007), suggesting the importance of demand rather than supply. Better interpretation of respondents' answers to the questions related to unmet need and to underlying attitudes and preferences will increase the usability of data for programmatic efforts.

In addition to the overarching goals described, the present study specifically examines the three components of unmet need: perceptions of pregnancy risk, fertility intentions, and influences on family planning non-use. First, in terms of pregnancy risk: Do women themselves feel they are at risk of an unwanted pregnancy? Second, how unwanted would a pregnancy be? We seek to assess the short-term stability of fertility preferences and to better understand the ambivalence behind professed intentions compared with those of current users. Third, we seek to understand influences on non-use, including religion, partner's preferences, side effects, and opposition. We compare these influences on non-use to influences on current use, and also aim to assess current users' satisfaction with their method.

2 Data and Methods

The 2014 Ghana Demographic and Health Survey (GDHS) is a nationally representative survey of 9,396 women age 15-49 and 4,388 men age 15-59 residing in 11,835 interviewed households (Ghana Statistical Service, Ghana Health Service, and ICF International 2015). The survey provides information on fertility, family planning, infant and child mortality, maternal and child health, nutrition, malaria, HIV, and noncommunicable diseases in relation to demographic characteristics. The GDHS provides representative estimates at the national level and at the urban and rural level within 10 regions.

Fieldwork for the GDHS was conducted by the Ghana Statistical Service (GSS) and the Ghana Health Service (GHS), with technical assistance from ICF International through The DHS Program, which is funded by USAID. As is standard DHS protocol (ICF International 2012), the GDHS used a two-stage sampling design with probability proportional to sample size. In total, 427 clusters from across the country were selected, and within each cluster 30 households were randomly selected for inclusion. The GDHS attempted to interview all women of reproductive age in each selected household. The household response rate was 98.5 percent, and among women age 15-49 in selected households, the response rate was 97.3 percent (Ghana Statistical Service, Ghana Health Service, and ICF International 2015).

2.1 Study Design

This study was designed as a data-linked nested qualitative study, of the type described by Schatz (2003, 2012). While the study was funded, planned, and fielded independently from the main GDHS, nesting the study design within the larger GDHS survey had a number of advantages. First, the study benefited from the rigorous and standardized sampling and household listing process undertaken by DHS surveys. By definition, the main group of interest for this study was married or sexually active, fecund women who want no more children but who are not using family planning. These women are particularly difficult to locate through the kind of convenience sampling for small-scale studies that might typically take place within or outside health facilities. Current users of family planning are included as a reference group.

The study has some qualitative elements, but it is best described as a mixed-methods study as the semi-structured questionnaires included a combination of closed and open-ended questions. A large sample size would have been unwieldy because the study involved audio recordings, transcriptions, and textual analysis. As with other qualitative and mixed-methods studies, the small sample size precludes regional or national representativeness. But by nesting within the GDHS the study benefits from an exceptionally more diverse sampling frame than would otherwise be possible with such a small sample size.

Second, the study was aided by a rich array of information already gathered about respondents' demographic characteristics, reproductive histories, contact with health facilities, and familial context in GDHS. Interviews could be conducted more quickly than otherwise possible. Third, by reinterviewing original respondents, the study has the opportunity to shed light on the data collection process and provide insight about the narratives and nuances that shape existing patterns in the data.

Fieldwork for the follow-up study was conducted by the Institute for Statistical, Social, and Economic Research (ISSER) at the University of Ghana, Legon. The study selected 13 GDHS clusters for follow-up fieldwork: five clusters in Northern region, a very high-fertility region (with TFR of 6.8 in 2008 and 6.6 in 2014), five clusters in Central region, a moderate-fertility region (with TFR 5.4 in 2008 and 4.7 in 2014), and three clusters in Greater Accra, the region with the lowest fertility (with TFR 2.5 in 2008 and 2.8 in 2014). These three regions were selected based on cultural and socioeconomic diversity, the disparities in use of family planning and unmet need identified in the 2008 GDHS, population size, and logistical feasibility. It was decided in advance of fieldwork that within Greater Accra all three clusters sampled

would be urban, and that within Northern and Central regions there would be one urban and four rural clusters each. This ensured both a balance of urban and rural respondents and some diversity among the urban population.

The GDHS clusters were selected through a well-documented survey design process (ICF International 2012). The clusters for the follow-on survey were selected as the GDHS was being fielded. A completely random subsample of GDHS clusters would not have been feasible; cluster selection needed to balance diversity with logistical practicality. GDHS fieldwork extends over several months, but the follow-up study was fielded by six interviewers working full-time over the course of a single month. The aim was to visit clusters in October 2014 within two to four weeks of the date of initial interview. Hence there were a limited number of clusters available for selection. Ghana Statistical Services shared fieldwork team itineraries and progress reports with the follow-up study fieldwork contractor, ISSER. Based on an examination of these schedules, and reflecting a desire for geographic and cultural diversity, ISSER proposed final cluster selections to ICF, which exercised some oversight for geographic diversity. The approximate locations of the final 13 clusters selected for the follow-up study are shown in Figure 2.1.[5]

Figure 2.1. Map of study regions and clusters in Ghana

[5] To ensure respondent confidentiality, cluster locations illustrated on the map have been randomly displaced up to ten kilometers from their actual location using standard DHS procedures described by Burgert et al. (2013).

Ethical clearance for follow-up interviews was obtained from the ICF Institutional Review Board (IRB). Upon IRB clearance, permission to share data between GDHS and the follow-on survey was obtained from the GSS, which implemented the GDHS. At the conclusion of the 2014 women's GDHS interview, all female respondents age 15-49 were asked (in the language of their interview) if they would consent to be re-contacted for a follow-up study on family planning and childbearing. Appendix Figure B.1 shows the English translation of the question as read out loud to all GDHS respondents to the woman's interview. The final GDHS 2014 women's dataset includes a variable for women's responses to this question.

The 2014 GDHS used computer-assisted field editing (CAFE). Interviews were conducted with paper questionnaires, and initial data entry was done in the field before the GDHS team moved to the next cluster. Paper questionnaires were sent to the Ghana Statistical Services home office in Accra for validation. As the data for each of the 13 selected follow-up clusters arrived in the home office, and after the initial data entry had been validated, data processing staff used a CSPro program to confidentially select eligible follow-up respondents from among those who had consented to be contacted for a follow-up interview: married or sexually active women age 15-44 who either met the standard DHS definition of unmet need (excluding post-partum amenorrheic[6]), or were in a subset of other GDHS respondents in the cluster.[7]

The semi-structured questionnaires for the follow-up study, which are available upon request from the author, were designed to verify the respondent's identity, re-ask a small number of GDHS questions, and follow up with open-ended questions to learn more about the meaning of women's responses to GDHS

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[6] Postpartum amenorrheic women whose most recent birth is unintended are also considered to have unmet need. Because the questionnaires for the survey needed to be programmed on tablets and translated into four languages, we opted to limit the sample to three groups (non-pregnant fecund women with unmet need, pregnant women with unmet need, and current family planning users) and exclude postpartum amenorrheic women from the sample.

[7] The intended algorithm for the CSPro program to select GDHS respondents in the 13 clusters eligible for follow-up was that respondents should meet six criteria:

(1) Consent to be contacted for follow-up;
(2) Be 15 to 44 years old;
(3) Be married, living with a man as if married, or unmarried and sexually active in the past 30 days;
(4) Be pregnant with unmet need (see 6b) or fecund as defined in the unmet need algorithm. As described in Bradley et al. (2012), fecund means that none of the following categories apply:
  (a) married 5 or more years ago, had no children in the past 5 years, and never used contraception;
  (b) responded "cannot get pregnant" when asked about wantedness of future children;
  (c) responded "menopausal/hysterectomy" for reason not using contraception;
  (d) reported that it has been at least six months since last menstrual period and is not postpartum amenorrheic (0 to 59 months);
  (e) responded "menopausal/hysterectomy" or "never menstruated" for time since last period;
  (f) response to time since last period is "last period was before last birth," and last birth was at least 5 years ago;
(5) Not postpartum amenorrheic (if she gave birth in the past 2 years, her period has returned since the birth);
(6) Is one of the following:
  (a) a member of a random sub-sample of modern family planning users (excluding sterilization);
  (b) pregnant and did not want current pregnancy at that time or wanted it later;
  (c) not using family planning, not pregnant, and either:
    (i) wants no more children
    (ii) wants next child after at least 2 years
    (iii) wants child and is undecided on timing, or
    (iv) is undecided about wanting a child.

See Bradley et al. (2012) for additional details about the DHS definition of unmet need. Due to an error in the coding of the selection algorithm, women who gave the special response on timing of next birth as "wants now or as soon as possible" were counted as having unmet need and therefore interviewed. Additionally, there was a glitch in coding related to fecundity that resulted in a small number of women determined to be infecund being interviewed. Women who wanted a birth now or as soon as possible and women classified as infecund are excluded from the present analysis, as originally intended.

questions. Verification questions were asked at the start of the follow-up interview to ensure that the respondent interviewed in the GDHS had been correctly identified as the appropriate respondent for the follow-up interview. The semi-structured questionnaire contained questions about reproductive intentions, ambivalence, decision-making, and family planning. Questions from the GDHS that were repeated in the follow-up interview were used to ascertain reliability and consistency. Respondents were re-asked some key pieces of identifying information and asked about pregnancy, family planning use, fertility intentions, and reasons for non-use. Additionally, they were asked open-ended questions about fertility desires, family planning use, attitudes toward family planning, role of partner and extended family in decision-making, and barriers to access.

Among respondents with unmet need, the questionnaire was designed to understand which components of unmet need were most important (fecundity, fertility intentions, misreporting, difficulty accessing contraception, opposition to family planning, or ambivalence). Several questions asked about the attitudes and influence of the woman's partner on her reproductive intentions and contraceptive decision-making. Open-ended questions were designed to ask about the perceived benefits and disadvantages of having another child, being pregnant, how women think their partner feels, and key influences on their decisions. At various points in the study, interviewers asked women to rate the strength of their intentions, using questions from the Relationship Dynamics and Social Life Study (Barber, Kusunoki, and Gatny 2015). Women were asked to gauge their response relative to a scale of 0 to 5. As numeracy in some parts of Ghana is low, interviewers carried a bar chart graph showing amounts from 0 to 5 to help visualize the scale (Appendix Figure B.2). Respondents who gave responses to fertility preference questions that differed from original responses to GDHS (factoring in time between interviews) were asked to discuss the discrepancy and describe their feelings in a more open-ended way.

Although the follow-up study was not specifically designed as a reinterview study, it re-asked women a few of the exact questions from the GDHS on family planning use and non-use, and on fertility intentions. The questionnaire was implemented in Mobile Data Studio software on Android Samsung Galaxy tablets. Closed-ended responses were entered into tablets, and open-ended responses were designed to be captured using audio recorders (if respondents consented to audio recording), or hand-written in notebooks. All respondents consented to audio recording and notebooks did not prove necessary. In order to indicate the identity of selected respondents and to enable the tablet to display appropriate GDHS data entry next to questions, a remote secure server had been set up to pre-populate data in follow-up questionnaires after selection of an eligible respondent and electronically-signed verification (by the interviewer) that she had obtained the respondent's consent to be interviewed. After the interview was completed and a field supervisor reviewed the tablet data entry, it was uploaded to the remote secure server and exported to Excel. Data was checked against audio transcripts. Missing and out-of-bound values were sought. After cleaning, quantitative responses were imported into Stata. Ultimately records were linked to the final GDHS dataset.

2.2 Interviewer Training and Pre-testing

From September 16-29, 2014, eight female candidates participated in interviewer training, translation, and pretesting. Training was conducted onsite at the University of Ghana–Legon. The training gave field supervisors and interviewer candidates an overview of the study research questions and design, introduced the GDHS, and reviewed key parts of the original questionnaire, the concept of unmet need, and principles of qualitative interviewing.

Over the course of the 11-day training, candidates engaged in extensive role play with the questionnaires and worked on their translation into the four main local languages (Twi, Ga, Ewe, and Hausa). Professional translators prepared the initial translations from English into each of the four languages prior to the pre-test. Interviewer candidates, who were well-versed in the meaning of each question, did back translations into English and suggested revisions.

Field procedures (relocating respondents, asking for consent, handling unusual circumstances) were discussed extensively throughout training, and interviewers were shown how to use the audio recorders and Android tablets. Throughout the training, the tablet program for survey implementation was tested, updated, and revised. Candidates frequently had the opportunity to practice use of the tablets during role-plays with the questionnaire.

The survey was pre-tested on September 22 in two GDHS clusters at the western edge of Accra. A representative of GSS worked with interviewers to help relocate households by number. On the first day of the pre-test, 10 out of 12 GDHS respondents pre-selected for follow-up were available to be interviewed and consented to the study. Consent was not always entirely straightforward, however; two respondents complained that GDHS interviews had previously taken too much time and asked interviewers to limit themselves to 30 minutes, which they did. After the pre-test, slight revisions were made to the questionnaire and to the tablet program. Final role-plays of the fieldwork process from start to finish were conducted, including re-locating the respondent, asking for consent, using the tablets and audio recorders, handling unusual circumstances, and conducting the interview.

2.3 Fieldwork

Fieldwork was conducted in October 2014. Along with one or two guides from GSS, field teams attempted to relocate the selected GDHS respondents within two to four weeks of the original survey by using the household address, the name of the head of household, and the woman's relationship to the head of household. In rural areas, the village leader was approached for permission before beginning fieldwork. Interviewers returned to households up to three times to complete the interview. Interviews were randomly audited by the GSS guide to ensure that they were correctly completed.

The tablets used for the follow-up interviews imported records for eligible women that were pre-populated with selected fields from the GDHS. This was done to determine appropriate question skip patterns and to enable interviewers to inquire about any discrepancies in responses to key questions. Because the GDHS had already collected extensive background information about respondents' education, reproductive history, marital status, and knowledge of family planning, qualitative interviews were conducted in fewer than 30 minutes on average.

Fieldwork involved several challenges. It was frequently difficult to relocate households. In areas without street names and numbers, GDHS listing teams typically paint structure numbers onto households; in the interim period between the two surveys, many numbers had washed away or been painted over. Interviewers had to ask several neighbors to locate the correct household; this was particularly difficult in clusters where households were numbered in a serpentine pattern and difficult to locate.

Because the GDHS interview data were collected on paper and identifying information was not included in data entry, the follow-up study did not have access to women's names. Identifying respondents for the follow-up study relied on the name of the household head and the relationship to the household head recorded in the GDHS. Proper identification of respondents occasionally proved confusing when, for example, there were multiple wives or multiple daughters of the household head. In these cases, original respondents within the same household were differentiated based on year of birth, marital status, or number of resident children.

Scheduling a time for the interview was occasionally difficult as many women in Ghana work long hours. If the respondent was unavailable upon first approach, the interviewer attempted to reschedule a return visit, up to three times. Respondents occasionally asked interviewers to limit the amount of time spent, which proved possible. Questionnaires had been translated into four local languages, but by chance one sampled

cluster in the North spoke an uncommon language called Konkomba, a Gur language. Interviewers did not speak this language and had to rely on local translators for assistance.

2.4 Response Rate and Data Processing

Consent for follow-up was asked of every GDHS respondent to the individual woman's interview. Out of 9,396 total female respondents age 15 to 49 in the 427 GDHS clusters, 99.6 percent responded "yes" to question 1113, consent to a follow-up study (see Appendix Figure B.1).

In the 13 clusters selected for the follow-up study, a data processing program determined 142 respondents to be eligible for follow-up based on their permission and the qualifying criteria discussed earlier. Of these, 135 women were successfully re-located and reinterviewed. Two women refused at the time of follow-up, and five were away or unable to schedule a follow-up interview despite repeated attempts.

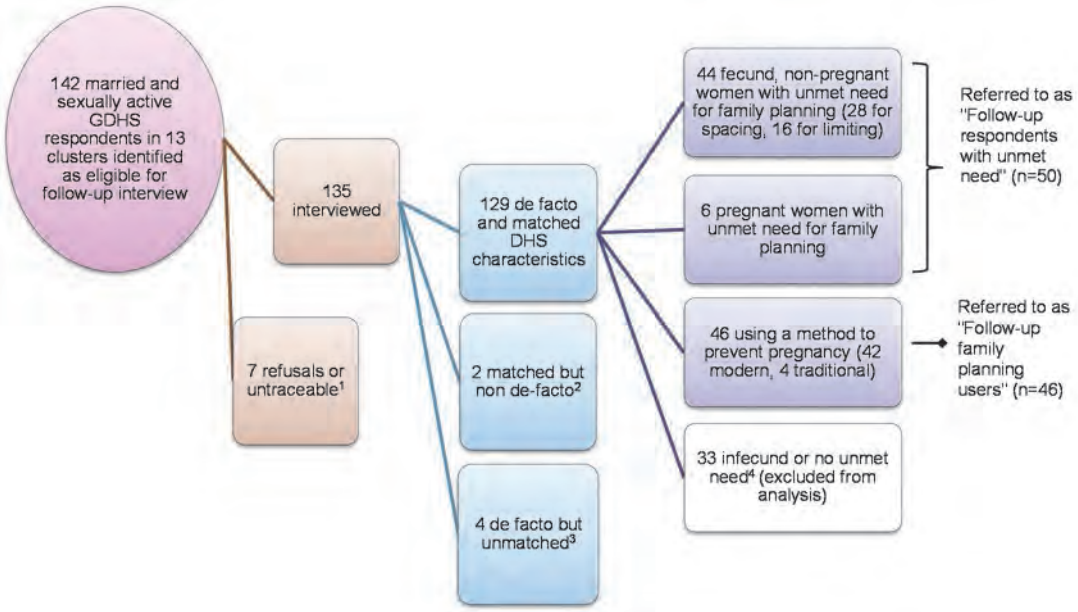
Respondents were re-identified by household number or address, name of household head, and relationship to the head named during the GDHS household interview. The follow-up interviewer posed additional questions to the potential follow-up respondent to verify her identity, including month and year of birth, whether she had ever given birth, number of resident sons and daughters, and current marital status. Despite having matched on household address or structure number, name of head of household, and relationship to head of household, it was determined during the data processing phase that four of the 135 respondent identities could not be correctly verified.[8] After excluding these unverified respondents, the final response rate was 92.3 percent (131 of 142 selected).

Two of the respondents interviewed during the follow-up study were excluded from the GDHS dataset, as they were not de facto residents. These women were interviewed by the GDHS, but their records did not undergo data processing, cleaning, and imputation—for example, there was no wealth index and no composite characteristics. They were therefore excluded from the analysis. The final number of follow-up participants included 129 original GDHS respondents that were successfully reinterviewed. Figure 2.2 shows the case results of the follow-up study.

Audio files from the interviews were translated and transcribed into English, resulting in over 1,000 single-spaced pages of transcripts. Transcripts were input into ATLAS.ti qualitative analysis software and coded by question number. A number of themes were established and listed at the start, based on the questionnaire, while additional themes were added inductively by iteratively reading transcripts. A list of themes was developed, refined, and independently applied to a set of test transcripts by two raters to compare reliability. After finalizing the schema, the themes were consistently applied to the transcripts in ATLAS.ti. Variables created directly from tablet entry information were reviewed for missing and inconsistent values and, when possible, filled in or manually verified against transcripts.

[8] For example, they reported never having given birth when the DHS respondent had or vice versa. In one case it appears the sister of a GDHS respondent with unmet need was interviewed instead of the original respondent.

Figure 2.2. Case results of follow-up study



NOTES

[1] Includes two refusals and five who were away from the cluster during fieldwork (traveling or had been temporary visitors on the day of DHS).

[2] Did not spend the night before the DHS interview in the household. They were de jure (usual) household members who were interviewed by GDHS and retained in the household recode but not included in the women's recode data file. Their identifying information was passed along to the follow-up field team, and they were interviewed and matched. However, because their responses to the original GDHS questions did not undergo typical data cleaning and processing, they were not analyzed in this study.

[3] Women identified by address, name of household head, and relationship to head of household but who gave conflicting background information that was impossible to reconcile with GDHS data. Excluding these respondents, the response rate was 131 of 142 (92.3%).

[4] Determined infecund by GDHS or declared they wanted a child within 2 years.

In keeping with IRB regulations, the confidentiality of the respondent's information was maintained at all stages of the survey. Anonymous cluster and respondent identifiers were used for ISSER recordkeeping. The original information used to relocate respondents (name of household head, address, and all initial data entry from GDHS) was destroyed by ISSER at the conclusion of fieldwork, and only an anonymized identification number was maintained for correspondence with the DHS home office.

Because HIV testing of respondents was conducted during the 2014 GDHS, cluster and household numbers for all respondents nationwide were scrambled according to established DHS protocol, and original records of cluster and household numbers were destroyed prior to linking respondents' information with HIV test results. With permission from GSS and the IRB, the follow-up study was able to maintain an internal, confidential linkage between follow-up respondents and the final, scrambled GDHS dataset. This required a second round of scrambling the anonymized identifiers from the follow-up study between ISSER records and a new set of anonymized identifying numbers, to guard against any possible re-identification of respondents. The DHS home office holds the only linkage between the anonymized identifiers and the final GDHS dataset.

3 Characteristics of Respondents

The 96 GDHS follow-up respondents analyzed in this paper were systematically selected from among married or sexually-active unmarried women who were either classified by GDHS as having an unmet need for family planning or were currently using family planning. The follow-up sample was meant to be diverse, but due to its small size it would have been impossible for it to be representative at the national or regional level. Table 3.1 indicates how the characteristics of the sample compared with family planning users nationwide, with women who had an unmet need nationwide, and with women who had an unmet need in the three selected regions. GDHS sample weights are applied to estimated national and regional percentages, but—given the uniformity of sample weights within each cluster, the small sample size, and the desire for consistency with subsequent tables—follow-up responses are kept unweighted.

The follow-up study did not include women age 45-49, as fecundity is lower among this group. Table 3.1 shows that respondents to the follow-up study were more concentrated in their 30s than their respective national and regional counterparts. Fewer follow-up respondents were age 15-19. Follow-up respondents were more predominantly rural than both family planning users and women with unmet need in the country as a whole.

Women who report using family planning in the GDHS were more highly educated and wealthier than women with unmet need. Compared to the women with unmet need nationwide, the follow-up sample was more representative of women with no education. Both follow-up samples were more representative of the lowest wealth quintile than the national and regional averages.

The follow-up sample exhibited religious diversity despite its small size, but was more heavily traditional/spiritualist and no stated religion than women nationwide in both the unmet need and family planning groups. One of the clusters in the North was Konkomba-speaking, and respondents were ethnically Gurma; the follow-up study sample was thus much more heavily comprised of Gurma women than the country as a whole.

In the GDHS, a random sub-sample of respondents was asked to give a few drops of blood to be anonymously tested for HIV. The biomarker information is linked to respondent data only after a number of protocols are followed to ensure the anonymity of the resulting data files. The 2014 GDHS found that the national HIV prevalence among women age 15-49 is 2.8 percent. Of the 96 respondents in the follow-up study, 44 were tested for HIV, and only one was later determined to be HIV positive. Her serostatus did not emerge as a theme of the discussion. Due to anonymity concerns, her case is not discussed in further detail here.

Table 3.1. Background demographic characteristics of follow-up respondents compared with married and sexually active unmarried women nationwide and in three selected regions, GDHS 2014

	Percentage distribution of background characteristics within the following groups:					
	Family planning users nationwide	Family planning users in three study regions	Follow-up family planning users‡	Women with unmet need nationwide	Women with unmet need in three study regions	Follow-up respondents with unmet need‡
Age						
15-19	6	3	2	10	10	4
20-24	18	17	20	17	17	18
25-29	23	26	28	20	20	12
30-34	18	22	22	17	18	26
35-39	16	14	20	20	21	22
40-44	13	12	9	12	9	18
45-49	7	7	▪	5	4	▪
Residence						
Urban	50	61	39	50	60	26
Rural	51	39	61	50	40	74
Region						
Western	12	▪	▪	10	▪	▪
Central	12	33	41	10	27	32
Greater Accra	20	56	28	18	49	14
Volta	9	▪	▪	9	▪	▪
Eastern	10	▪	▪	11	▪	▪
Ashanti	18	▪	▪	19	▪	▪
Brong Ahafo	10	▪	▪	8	▪	▪
Northern	4	11	30	9	24	54
Upper East	3	▪	▪	4	▪	▪
Upper West	2	▪	▪	2	▪	▪
Education						
No education	17	15	20	23	27	46
Primary education	19	16	11	20	17	16
Secondary +	64	69	70	57	56	38
Wealth Quintile						
Poorest	15	11	33	18	19	50
Poorer	18	9	7	20	12	10
Middle	21	16	15	21	15	10
Richer	22	24	13	22	25	14
Richest	24	40	33	19	29	16
Religion						
Catholic	10	8	20	9	6	6
Anglican	1	1	0	1	2	0
Methodist	7	8	7	6	5	4
Presbyterian	6	7	7	6	4	4
Pentecostal/Charismatic	43	41	37	43	44	32
Other Christian	18	20	11	14	13	14
Islam	11	11	11	16	20	20
Traditional/Spiritualist	1	2	4	3	4	10
No religion	3	2	4	3	3	10
Other	0	0	0	0	0	0
Ethnicity						
Akan	55	52	57	47	41	34
Ga/Dangme	7	14	4	8	14	6
Ewe	15	14	7	16	12	6
Guan	2	1	0	2	3	0
Mole-Dagbani	12	9	9	16	16	18
Grusi	3	2	2	3	1	0
Gurma	4	5	22	6	9	36
Mande	1	0	0	1	0	0
Other	2	3	0	2	3	0
Total number of women	**1,744**	**625**	**46**	**2,003**	**746**	**50**

‡ National and regional estimates are weighted. Follow-up respondents are shown unweighted for ease of comparison with case count tables.

▪ Zero by definition or due to sampling criteria

Reproductive characteristics of the six groups (national, regional, and follow-up respondents who were family planning users and who had unmet need in GDHS) are shown in Table 3.2. There are no striking differences in marital status. Follow-up respondents with unmet need had somewhat higher parity than the national average. Women's knowledge of family planning methods in Ghana is high. Nationwide, over 99 percent of women with unmet need know at least one modern method. In the follow-up survey, one respondent was identified by GDHS as not having known any method of family planning, another as only knowing traditional methods. The majority of women with unmet need have used a family planning method before.

Table 3.2. Background reproductive characteristics of follow-up respondents compared with married and sexually active unmarried women nationwide and in three selected regions, GDHS 2014

	Percentage distribution of background characteristics within the following groups:					
	Family planning users nationwide	Family planning users in three study regions	Follow-up family planning users‡	Women with unmet need nationwide	Women with unmet need in three study regions	Follow-up respondents with unmet need‡
Marital Status						
Never in union	14	14	17	16	17	14
Currently in union	81	83	76	79	80	84
Formerly in union	4	4	7	4	4	2
Number of children ever born						
0	14	17	13	12	14	14
1-2	31	31	41	32	34	20
3-5	40	40	39	39	38	36
6+	15	12	7	17	14	30
Knowledge of family planning						
Knows no method	▪	▪	▪	0	1	2
Knows only traditional method	0	0	0	0	1	2
Knows modern method	100	100	100	99	99	96
Unmet need						
Unmet need for spacing	▪	▪	▪	65	69	62
Unmet need for limiting	▪	▪	▪	35	31	38
Using for spacing	62	61	78	▪	▪	▪
Using for limiting	38	39	22	▪	▪	▪
Ever use of family planning						
Ever	100	100	100	58	62	66
Never	▪	▪	▪	42	39	34
Total number of women	**1,744**	**625**	**46**	**2,003**	**746**	**50**

‡ National and regional estimates are weighted. Follow-up respondents are shown unweighted for ease of comparison with case count tables.

▪ Zero by definition or due to sampling criteria

Characteristics of respondents currently in union are shown in Table 3.3. The follow-up sample, which drew from the rural North, was more heavily weighted toward women with multiple co-wives, particularly among women with unmet need. Over half of family planning users and slightly under half of women with unmet need nationwide said that decisions on their own health care were made jointly with their husband. Follow-up family planning users had a distribution consistent with the national average, and follow-up respondents were more heavily weighted toward women who said their husband alone made the decision. Who makes decisions about contraception is only asked among women who currently use family planning. In the national sample, almost two-thirds of users indicated that decisions on contraception were made jointly with their husbands or partners; for one-tenth, the decision was made primarily by their husband or partner. The distribution of responses for follow-up family planning users was consistent with the national average.

Table 3.3. Background characteristics of married[1] follow-up respondents compared with married women nationwide and in three selected regions, GDHS 2014

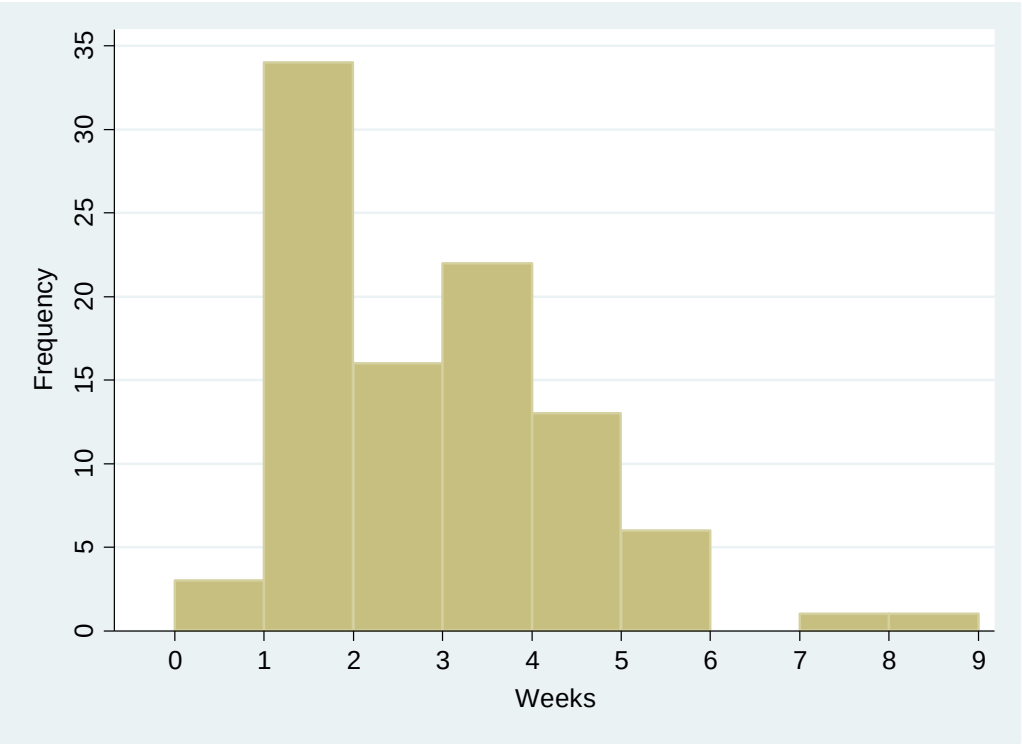
	Percentage distribution of background characteristics within the following groups:					
	Married family planning users nationwide	Married family planning users in three study regions	Married follow-up family planning users‡	Married women with unmet need nationwide	Married women with unmet need in three study regions	Married follow-up respondents with unmet need‡
Number of co-wives						
None	88	90	86	85	85	71
1-2	11	10	14	14	15	24
3+	0	0	0	0	0	5
Don't know	0	0	0	1	0	0
Person who usually decides on respondent's healthcare						
Self alone	25	25	31	30	25	17
Husband/partner alone	17	18	14	24	37	55
Joint	58	56	54	45	37	29
Someone else/Other	1	0	0	1	1	0
Decisionmaker for using contraception[2]						
Mainly self	27	27	26	▪	▪	▪
Mainly husband	10	8	9	▪	▪	▪
Joint	63	65	66	▪	▪	▪
Other	1	0	0	▪	▪	▪
Missing	0	0	0	100	100	100
Total number of married women	**1,419**	**517**	**35**	**1,590**	**597**	**42**

‡ National and regional estimates are weighted. Follow-up respondents are shown unweighted for ease of comparison with case count tables.
▪ Zero by definition or due to sampling criteria
[1] Here and throughout the report, married includes living with partner as if married.
[2] Not asked of non-users

The background characteristics of respondents described in this chapter were drawn from the GDHS data. In the follow-up survey, women were re-asked a few questions in order to verify their identity. Appendix A reports on matching of these key characteristics between GDHS and the follow-up study.

Follow-up interviews were conducted anywhere from 5 to 60 days after the GDHS interview; on average women were reinterviewed 20 days (3 weeks) after their GDHS interview. Figure 3.1 shows the number of weeks elapsed between GDHS interviews and follow up. The modal number of weeks between interviews was one. Around one-fourth of the sample was interviewed after the preferred 4-week mark due to data processing turnaround time, fieldwork itineraries, and difficulty relocating respondents, including two women who were reached between seven and nine weeks after their GDHS interview.

Figure 3.1. Number of weeks elapsed between GDHS interview and follow-up interview



In the GDHS interview, as with standard DHS interviews, respondents who are fecund, non-pregnant, sexually active or married, want to limit or space births, and not using a method to prevent pregnancy are asked their reason for not using family planning. The question is open-ended; interviewers are given 22 of the most common responses pre-coded and asked to select the most appropriate response or "other - specify." After giving one response, respondents are asked "any other reasons?" Table 3.4 shows the reasons for not using family planning given by women with unmet need nationwide, and by 34 follow-up respondents who were asked about their reason for non-use.[9] Side effects and health concerns are the most frequently-cited reasons; nearly one-half of women with unmet need in all three groups identified side effects or health concerns as a reason for their non-use. This is an increase from 2008 and a continuation of increasing mention of side effects as a reason for non-use in Ghana over the past 25 years (Machiyama and Cleland 2014). The second most commonly-cited reason for non-use nationwide and in the study sample is no sex or infrequent sex (20, 20, and 12 percent, respectively), followed by breastfeeding or postpartum amenorrhea (12, 7, and 9 percent). The three top reasons mentioned—side effects, infrequent sex, and breastfeeding—comprise the majority of all reasons for non-use given by women nationwide. Cost or access related issues are cited by 9 percent or less of the respondents in both samples. Additional reasons include opposition of husband or partner (15 percent in the follow-up sample but 5 percent nationwide), religious prohibitions, and no knowledge.

[9] Women using family planning, pregnant women, women who want to delay birth until after marriage, and women who are undecided about the timing of the next birth are not asked this question.

Table 3.4. Reason(s) given to GDHS why respondents with unmet need are not using family planning

Among GDHS and follow-up respondents with unmet need who were asked why they were not using a method,[1] the percentage who volunteered the item as a reason why they were not using a method to prevent pregnancy[2] (multiple responses permitted)

Reason	Women with unmet need nationwide	Women with unmet need in three study regions	Follow-up respondents with unmet need
Fear of side effects/health concerns or interferes with body's processes	49	48	41
No sex/infrequent sex	20	20	12
Breastfeeding/postpartum amenorrheic	12	7	9
Respondent opposed	7	11	0
Cost/access/availability[3]	7	7	9
Inconvenient to use	5	6	6
Fatalistic	5	4	0
Husband/partner opposed	5	5	15
Not married	2	2	0
Subfecund/infecund	2	2	6
Religious prohibition	2	2	9
Others opposed	1	1	3
Knows no method	0	0	3
Other	4	5	0
Don't know	0	1	0
Number of respondents	1,357	521	34
Total reasons	1,667	627	38
Average reasons per respondent	***1.2***	***1.2***	***1.1***

[1] Not all respondents with unmet need are asked this question. Pregnant women, women who were undecided about having another birth, and women who wanted to delay birth until after marriage, were not asked this question. Only 34 of 50 follow-up respondents with unmet need were asked this question.

[2] In response to the DHS question "You have said that you do not want (a/another) child soon [or You have said that you do not want any (more) children.] Can you tell me why you are not using a method to prevent pregnancy? Any other reason?" Possible responses are not read out loud; interviewers classify each response with one of 22 pre-coded responses or "other-specify."

[3] Includes too expensive, too far, lack of access, knows no source, preferred method not available, no method available.

4 The Risk of Pregnancy

The algorithm to determine unmet need in DHS surveys for non-pregnant, non-postpartum amenorrheic women involves three key components: (1) exposure to the risk of pregnancy; (2) current non-use of family planning; and (3) fertility intentions. For pregnant and postpartum amenorrheic women, the algorithm is modified slightly. Fecundity is not assessed, and for these groups, fertility intentions are classified in relation to the current pregnancy or most recent birth rather than prospectively.

This chapter and the next two chapters explore each of these components of unmet need in turn. In this chapter we examine sexual activity and fecundity among women who were not pregnant but who were classified by GDHS as having an unmet need for family planning. We then compare them with a reference group of other women who were not pregnant but who reported using family planning at the time of the original GDHS interview.

4.1 Sexual Activity

Unmet need for family planning is designed to be computed among women who are exposed to the risk of unintended pregnancy. Exposure to the risk of pregnancy is assessed in two stages: first through sexual activity, and second through estimated fecundability. As it does here, the definition of unmet need can apply to sexually-active unmarried women. By definition, all women who are currently in union are assumed to be at risk of pregnancy (Bradley et al. 2012). The obvious concern about this assumption is that a non-negligible proportion of women who are currently in union report long spells of sexual abstinence, for example, due to spousal migration or postpartum abstinence. A recent analysis finds that, along with side effects, infrequent sexual activity is one of the two most common reasons cited for not using family planning among women with unmet need in Africa, Asia, and Latin America (Sedgh and Hussain 2014). In Nepal, where spousal migration is high, the increase in unmet need from 2006 to 2011 was comprised entirely of women whose husbands were away at the time of the survey (Khanal et al. 2013).

To provide context on sexual activity as measured by GDHS, Table 4.1 shows months since last sexual intercourse at time of interview among married family planning users. Also shown are married women with unmet need in Ghana as a whole, as well as within the three regions and among the follow-up sample for each group. As expected, married women nationwide who use family planning are much more likely to report being sexually active in the months before the survey than their counterparts with unmet need (78 versus 56 percent). Fifteen percent of married women with unmet need in GDHS reported not having had sex since having given birth, compared with two percent of married family planning users. The follow-up sample with unmet need was less representative of this trend than nationwide.

The numbers in Table 4.1 exclude sexually-active unmarried women, who by definition must have reported having had sex within the past four weeks prior to the GDHS interview. There were 11 such follow-up family planning users and seven such respondents with unmet need.

Contraception is not needed to avoid pregnancy when there is no sexual activity. If women who were in union but cited infrequent or no sexual activity were excluded from the numerator of unmet need, the estimated percentage of women with unmet need would decline by an average of 16 percent (Bradley and Casterline 2014). However, there are reasons for including married women despite lack of sexual activity – even in the most clear-cut case where the partner is absent, he may return at any time. Lack of current protection places the woman at risk of an unintended pregnancy.

Table 4.1. Reported number of months since last episode of sexual intercourse at time of GDHS interview

Among married women who reported using a method of family planning in GDHS, or who were identified by GDHS as having unmet need for family planning, percentage distribution of time since last sex

	Married family planning users nationwide	Married family planning users in three study regions	Married follow-up family planning users‡	Married women with unmet need nationwide	Married women with unmet need in three study regions	Married follow-up respondents with unmet need‡
Within the past month	78	80	74	56	55	60
1-2 months	14	12	9	14	13	19
3-5 months	4	4	3	5	7	5
6+ months	2	2	6	4	4	2
Before last birth	2	1	3	15	16	7
Inconsistent	1	1	6	6	6	7
Total number of women	**1,419**	**517**	**35**	**1,590**	**597**	**42**

‡ National and regional estimates are weighted. Follow-up respondents are shown unweighted for ease of comparison with case count tables.
[1] By definition, unmarried respondents must have reported having sex within the past month in order to be assessed for unmet need. Hence, they are not included in the table. In the follow-up study there were 11 unmarried family planning users and 7 unmarried women determined to have unmet need.

What is missing from DHS assessments of abstinence, but emerges from follow-up interviews, is the intentionality behind abstinence. In their follow-up interview, eight of 44 non-pregnant respondents indicated that abstinence or infrequent sex was *intentionally* ongoing and was the most important factor in their non-use of family planning. For example, one respondent [R#12.05] said that *"if he sleeps with me I will be pregnant, and I don't want to be, and he is okay with the decision [to be abstinent]."* In a few cases, complete abstinence as an intentional method of family planning only became clear when the respondent was asked why she was not using family planning:

> Interviewer: *You said earlier that you don't want another child now but that you are not using anything. Can you tell me why you are not using any family planning method to avoid pregnancy?*
>
> Respondent [R#12.02]: *The only thing I am using is not allowing my husband to be close to me.*
>
> Interviewer*: Please tell me more.*
>
> Respondent: *When I take the tablet [the pill] all my body aches. I don't have sex with my husband now so I cannot get pregnant.*
>
> Interviewer: *Can you tell me how you and your husband came to believe that family planning is not good for you.*
>
> Respondent: *Because when I take the injection it worries me and the pill too, my body pains me a lot so that is why we don't want it. And my husband doesn't like it.*

Other women indicated that they were abstinent because their husbands were traveling, or that they were withholding sex because of womanizing. But the most recurrent reason for abstinence was that it was intentionally designed to avoid pregnancy, typically to allow time for their youngest child to grow, and unlikely to cease soon: in other words, being used as a method of family planning.

4.2 Fecundity

The DHS criteria for establishing fecundity among non-pregnant women are complex; the most important exclusion is that a woman must have had her period within the past six months and not be postpartum

amenorrheic.[10] It remains true, however, that some women categorized as fecund by DHS perceive themselves to be at low risk of giving birth.

Table 4.2 shows women's perception of the risk that they might become pregnant in the next few months based on a division between users and non-pregnant women (per GDHS). Women were asked to rate their chances of becoming pregnant on a scale from 0 to 5, with reference to an illustrated card of these values (Appendix B). Among non-pregnant respondents determined to have unmet need in the GDHS, more than one-quarter (27 percent) believe that they are at zero risk of a pregnancy in the next few months, while slightly more believe themselves to be at high or very high risk (32 percent rate themselves at 4 or 5 on the scale). In recognition that no method of family planning is one hundred percent effective, current users were also asked to rate their chances of becoming pregnant. The majority of GDHS family planning users (57 percent) perceive themselves at zero risk of pregnancy. Interestingly, nearly one in six of these respondents (15 percent) perceives herself to be at the highest level of risk.

There were discrepancies in family planning use as reported in the GDHS and in the follow-up survey. These will be detailed in Chapter 6. When current reported use is factored into account, on the rightmost columns, fewer follow-up respondents who are not using family planning perceive themselves at zero risk of pregnancy. The gap in the average risk score between users and non-users widens slightly, from an average of 1.4 among current users to 2.5 among non-users.

Table 4.2. Perception of pregnancy risk among follow-up respondents

Among non-pregnant women, percentage distribution of response to the follow-up survey question *"Using a scale of 0 to 5, where 0 indicates no chance and 5 indicates high chances, how likely do you think it is that you will become pregnant in the next few months?"*

Score	GDHS: Follow-up family planning users	GDHS: Follow-up respondents with unmet need	Follow-up: Declared current family planning users	Follow-up: Declared non-users
0	57	27	59	13
1	11	14	7	22
2	9	14	9	16
3	7	14	3	22
4	2	16	7	13
5	15	16	16	16
Total	100	100	100	100
Average score	***1.3***	***2.3***	***1.4***	***2.5***
Number of women	46	44	58	32

This rating was intended for respondents to assess their *chances* of becoming pregnant rather than their *desire* to do so, which was asked about separately. Interviewers were asked to monitor respondent's answers carefully. For example, the phrase *"I cannot become pregnant"* should not be interpreted literally without follow-up; women often mean that they really do not want to become pregnant, in the sense of not wanting to imagine it. As practiced, interviewers were careful to clarify to respondents that this was about chances rather than desire. Even so, based on the transcripts, it was clear that in a few cases, women were self-reporting their desire to become pregnant. The interviewers often asked follow-up questions if they felt respondents were interpreting the question as a preference, but some respondents were nonetheless reluctant to assess the risk of pregnancy. As one respondent indicated *"It depends on God. I can be pregnant but if only God says I should be pregnant. He causes people to get pregnant, I am a mere man."* [R#5.04]

[10] A woman can also be classified as infecund if she (a) married 5 or more years ago, had no children in the past 5 years, and never used contraception; (b) said she "cannot get pregnant" or is menopausal in response to questions about wantedness of future children; (c) responded to a question about time since her last period by saying "menopausal/hysterectomy" or "never menstruated"; or (d) reported her last period as "before last birth" and that birth was at least 5 years ago.

A handful of respondents reported—in contradiction to the GDHS—that they had not begun their periods since giving birth less than two years ago and therefore did not perceive themselves at any risk of pregnancy.

In sum, only about one-third of respondents with unmet need in GDHS, and a slightly smaller number of declared non-users of contraception, perceived themselves at high or very high risk of pregnancy.

5 Fertility Intentions

Fertility intentions are a pivotal component of unmet need. Among women who are not currently pregnant or postpartum amenorrheic, declared intention to have a/another birth and the intended timing of the next birth determine unmet need status. The two questions on reproductive intentions used to compute unmet need for this group are: (1) *Would you like to have (a/another) child, or would you prefer not to have any (more) children?* Allowable responses to this question are: (a) want a/another; (b) no more; (c) cannot get pregnant; and (d) don't know/undecided. Respondents who want a/another child are then asked: (2) *How long would you like to wait from now before the birth of (a/another) child?* The answer must be either a specific number of years and months, soon/now, waiting until after marriage, cannot get pregnant, or undecided. While the questions used to ascertain fertility preferences are seemingly straightforward, women's ability and willingness to articulate a fixed timeline for their preferred time to next birth, are culturally and temporally variable. This section compares fertility intentions between the two surveys and explores some of the components of fertility intentions among follow-up respondents.

5.1 Comparison of Fertility Intentions

The DHS questionnaire asks non-pregnant women "Now I have some questions about the future. Would you like to have another child, or would you prefer not to have any more children?" Pregnant women[11] are asked "After the child you are expecting now, would you like to have another child, or would you prefer not to have any more children?" A comparison between responses to the question from GDHS and the follow-up survey[12] are shown in Table 5.1. As the table indicates, 18 percent of follow-up respondents with unmet need and 13 percent of follow-up family planning users gave inconsistent answers to this question between surveys. The largest shift in responses was between women who were undecided in the GDHS. Six of seven follow-up respondents with unmet need and two of two follow-up family planning users shifted from undecided to wanting another child in the follow-up interview. The second largest shift was from women who declared they wanted no more children in the GDHS but who wanted another child in the follow-up interview.

Details on these discrepancies in desire for a/another child among women with unmet need are shown in Appendix Table C.1. In four cases the revised preference or added time window would have changed the classification of unmet need.

[11] Unmet need status for pregnant women is assessed based on intendedness of current pregnancy rather than on future fertility intentions. All six pregnant women who were re-interviewed were consistent about the unintendedness of their current pregnancy. Only one of the six had different prospective fertility intentions between interviews.
[12] The follow-up questionnaire maintained consistent translation of these questions with DHS.

Table 5.1. Comparison of preference for a/another child[1] as reported to GDHS and in follow-up survey

Panel A: Follow-up respondents with unmet need					
	Follow-up: Have a/another	Follow-up: Undecided	Follow-up: No more	Total	Discrepant
GDHS: Have a/another	23	0	1	24	4%
GDHS: Undecided	6	1	0	7	86%
GDHS: No more	2	0	17	19	11%
Total	**31**	**1**	**18**	**50**	18%
Panel B: Follow-up family planning users					
	Follow-up: Have a/another	Follow-up: Undecided	Follow-up: No more	Total	Discrepant
GDHS: Have a/another	33	0	1	34	3%
GDHS: Undecided	2	0	0	2	100%
GDHS: No more	3	0	7	10	30%
Total	**38**	**0**	**8**	**46**	13%

[1] Non-pregnant women are asked: "Now I have some questions about the future. Would you like to have (a/another) child, or would you prefer not to have any (more) children?" Pregnant women are asked: "After the birth of the child you are expecting now, would you like to have a/another child or would you prefer not to have any more children?"

While six pregnant women were included in the preceding comparison, their unmet need status is based on the intendedness of their current pregnancy. Table 5.2 compares intendedness of current pregnancy in GDHS and follow-up. All six respondents were consistent in not having wanted to become pregnant at that time; one shifted from wanting later to not wanting at all.

Table 5.2. Comparison of intendedness of current pregnancy as reported in GDHS and follow-up survey

In response to the questions: *"When you got pregnant, did you want to get pregnant at that time?" If no: "Did you want your baby later on or did you not want any (more) children?"*

	Follow-up: Wanted then	Follow-up: Wanted later	Follow-up: Did not want	Total	Discrepant
GDHS: Wanted then	0	0	0	0	0%
GDHS: Wanted later	0	3	0	3	0%
GDHS: Did not want	0	1	2	3	33%
Total	**0**	**4**	**2**	**6**	17%

Women who wanted a/another child were asked, both in the GDHS and in the follow-up survey, how long they wanted to wait from now until the birth of the child. In the GDHS, responses were fixed time intervals, but in the follow-up survey women were allowed to give a fixed time or a range. Responses to this question, grouped by minimum wait time into one-year intervals, are shown in Table 5.3 for follow-up respondents with unmet need. Twenty of 31 respondents indicated a desire to wait until a single point in time, while 11 gave a time range that averaged 22.5 months.

Of the 31 women with unmet need who indicated in the follow-up interview that they wanted a/another birth, 11 of them indicated a minimum waiting time of *less* than two years. For seven of these 11, two years encompassed both the minimum and maximum waiting time, which would have classified them as having no unmet need. The other four respondents gave a range of time that started before two years. If they had been asked to give a fixed number and settled on less than two years, they would also have been excluded from the definition of unmet need.

One respondent explained the discrepancy in follow-up by describing the length of the GDHS interview.

> Interviewer: *Please, the information I have is that you are not sure if you want another child or not. It's from your responses from those who were here earlier, is this information correct please?*
>
> Respondent [R#03.08]: *Well no. I don't remember exactly what I said that day with regards to this question, you know they asked a lot of questions so if they said that, then maybe it's because I said I was waiting for my husband to change [stop womanizing] but I've always known that I wanted another child. We would eventually have one more or so.*

Another respondent (Konkomba speaking) said that the original issue was with translation "*When [the GDHS interviewer] came I was not understanding the Twi well that's why.*" And a third who gave a fairly wide interval for the timing of her next birth—3 months to 3 years—said that she was consistent with her original GDHS response.

> Interviewer: *Now I have some questions about the future. Would you like to have another child, or would you prefer not to have any more children?*
>
> Respondent [#R11.11]: *I would like to have another child.*
>
> Interviewer: *How long would you like to wait from now before the birth of another child?*
>
> Respondent: *3 months to 3 years*
>
> Interviewer: *You told my colleagues you don't know when you'd like to give birth again.*
>
> Respondent: *No I didn't.*

In sum, 41 of 50 respondents with unmet need consistently answered the question about desirability of a/another child in the follow-up. The main source of inconsistency was movement from undecided to wanting another child. There were 12 additional cases of a substantial shift in timing of the next birth. Between the two questions, desire and timing, 11 of the follow-up responses could have affected unmet need classification.

The follow-up survey also asked women the strength of their desire to wait that long for the next birth. Results are shown in Table 5.3. Desires were strongest for under a year and for more than four years.

Table 5.3. Preferred minimum waiting time to next birth among follow-up respondents with unmet need, according to follow-up survey

Among follow-up respondents with unmet need who want a/another child, response to the question in follow-up study *"(After the birth of the child you are expecting now / How long would you like to wait from now) before the birth of (a/another) child?"*

Wait time (minimum)	Fixed	Range[1]	Total	Average strength of desire to delay that long[2]	Would affect unmet need designation?
Soon, now	3	-	**3**	0.3	Yes
Under a year	1	2	**3**	4.3	Yes, if fixed at <2 years
1 year	3	2	**5**	3.8	Yes, if fixed at <2 years
2 years	4	1	**5**	3.2	No
3 years	2	3	**5**	2.6	No
4 years	1	1	**2**	5.0	No
5 years	4	1	**5**	4.2	No
6 + years	1	1	**2**	4.5	No
don't know	1	-	**1**	1.0	No
	20	**11**	**31**		

[1] Average width of range is 22.5 months.
[2] Response to question *"Now, please tell me how strongly you feel about waiting that long to get pregnant. Please give me a number between 0 and 5, where 0 means you don't mind becoming pregnant before the time you stated and 5 means you really want to avoid getting pregnant before that time."* Note: the average strength of "no more" (for 18 respondents not listed here) is 3.6.

5.2 Components of Fertility Intentions

The follow-up questionnaire asked women about the positive and negative aspects of having a/another child and about the value a/another child might bring to the household. Among women and couples for whom childbearing is under the "calculus of conscious choice" (Coale 1973; Van de Walle 1992), there is an inherent trade-off between the number of children desired in an ideal sense and the number that can be afforded or cared for – a kind of quality/quantity tradeoff (Becker 1981).

Inherent in examining fertility intentions is the difference between what is desired and what is affordable or practical. Follow-up respondents with unmet need, who were selected based on the unintendedness of their current pregnancy or their professed intent to limit or space births past two years, repeatedly expressed difficulty in trying to decide whether to provide for children or to limit or space births. *"Because of economic crisis and salaries are small, cost of living is also high and school fees is too high so if you give birth to many children you will not be able to take care of them"* [R#11.07].

Universally, nulliparous respondents wanted children at some point in their lives. Among women who had already given birth, reproductive ambivalence was common. Respondents routinely described how joyful it would be to have another child, and then how difficult or impossible it would be to care for a child or another child. Even respondents who did not want to become pregnant or were pregnant with an unintended pregnancy had complicated feelings; frequently they expressed that there might be some intrinsic happiness from having a baby, but were concerned about health, birth spacing, and cost. One married respondent in the Central region who wanted to delay her next birth summarized her positive feelings this way:

> *Well, it would be good to have another child, and it would be especially good to have a safe delivery. Even the Bible tells us that children are a blessing and a gift from God, so if I have another child and am able to take care of him or her such that he grows to become responsible and respectable person, it would even bring honor to me. People would point at him and say, oh there goes Sister [Name]'s son, and that would bring me fulfillment and joy… I do not know how far the child might go in life; he might even be an important personality and bring honor to our family, so that could be a value that having lots of children might bring us... Even if you look at the Bible, it says to be fruitful and multiply and to replenish the earth, it's out of many children that some grow to be important personalities of the world but it's due to economic and financial hardships that people face that's why they may decide to have fewer children but ideally, you should have more, you never know which of your children would be of significance someday.* [R#03.08]

Another respondent who was unexpectedly pregnant described her disappointment with the pregnancy but willingness to accept it:

> Respondent [R#04.05]: *I didn't want to get pregnant at the time I did, I know pregnancy is good but I didn't want it and now it's here.... I am not happy with the pregnancy and I won't be really happy with the childbirth. Maybe a little but now I am not happy… During the pregnancy, I do not have any negative aspects but after I have the child, I know I will have financial difficulties because I will be staying at home and therefore cannot work to earn some money to support my children and I, that's major reason why am not happy with this pregnancy and didn't want another child.*
>
> Interviewer: *Thank you. So what value do you think another child would bring to your household? I mean your husband, children, and yourself?*
>
> Respondent: *Oh, I will be joyful that I have delivered safely and have my child in good health, so that would be a source of joy to all of us. Apart from that, that child whom I have reservations*

about may be the one to look after the family. He may be the star of the family and bring us honor. Not many people have safe deliveries so once I am able to and I have my child and myself in perfect health, we have to be happy. Besides nobody can tell what will happen in the future or even why this happened now.

Additional components of fertility intentions that women discussed were whether a baby would help cement the relationship, their husband's intentions, and negative or positive esteem from having a child. A few other women, particularly those over the age of 35, said that they were concerned about their health or that they had been told not to have children over 35. For example, a married woman over 40 in rural Central region expressed her desire to limit as follows:

Respondent [R#02.01]: *As I sit, I can feel that I am growing older and losing energy so what would another baby bring to me? I have three children and my husband also has three, together they are six so what else do I want? If I get pregnant right now, then we are just looking for an opportunity to go through a rough patch.*

Interviewer: *When you say "rough patch", what do you mean?*

Respondent: *I am talking about financial problems. We have to give the older ones a good education. Some are currently in their Senior High School so if we bring another baby, how are we going to take care of it? We would only be worrying it…. In a new marriage, a baby is welcomed but if you take into consideration your stage in life, then you have to realize when enough is enough. At this stage if I try to have another child, I could lose my life.*

Respondents were asked about their husband's fertility intentions during the follow-up. Table 5.4 shows women's perceptions of their husband's fertility proclivities among follow-up respondents with unmet need and follow-up family planning users. Family planning users were slightly more likely than women with unmet need to report that their husband wanted to space or limit children, and slightly less likely to report that their husband favored more children. In a few cases, both themes emerged – for example, women said that their husband very much wanted more children but understood that she was not yet ready.

Table 5.4. Perception of husband/partner's fertility preferences

Panel A. Among 50 follow-up respondents determined to have unmet need (per GDHS), percent who say:

	Husband/partner wants to limit or space		
Husband/partner wants more children	**Not mentioned**	**Wants to limit or space**	**Total**
Not mentioned	18	24	42
In favor of more children	50	8	58
Total	68	32	100

Panel B. Among 46 follow-up respondents using family planning (per GDHS), percent who say:

	Husband/partner wants to limit or space		
Husband/partner wants more children	**Not mentioned**	**Wants to limit or space**	**Total**
Not mentioned	15	37	52
In favor of more children	41	7	48
Total	57	43	100

Women's impression of their partner's desire to limit births was almost always tied to economic circumstances. For example:

> *There is financial difficulty; we are currently struggling to take care of the children. Schools have reopened for about three weeks but it is only today that has been able to raise some money [for school fees]. As we speak now, he has travelled to buy some their books. The money will not be enough for all of them so he will buy for only the girl for the meantime... I was the one who said we should wait in having another child because things are too difficult financially. He also agreed with me to wait.* [R#02.07]

The theme of being torn between joy versus means—or in many cases, potential future value of a child (who could be the "star of the family") versus immediate cost—emerged frequently during interviews. Respondents and their partners valued children highly, but most respondents perceived an inherent trade-off between the value of another child and the financial and/or health costs of too many or closely-spaced births.

6 Use and Non-Use of Family Planning

6.1 Comparison of Method Use

At the beginning of the follow-up survey, after questions to confirm key identifying characteristics, non-pregnant women were asked if they were currently using family planning. The wording of the question was the same as in the DHS *("Are you currently doing something or using a method to delay or avoid getting pregnant?")* Unlike in the DHS, women who responded "no" were prompted about natural methods *("What about the rhythm/calendar method? What about withdrawal?").*

A comparison of method use reported in the GDHS and the follow-up survey is shown in Table 6.1. Out of 44 non-pregnant respondents that GDHS determined to have unmet need for family planning, 15 (34.1 percent) reported in the follow-up interview that they were actually using a method of family planning. Five reported using a modern method, nine reported a traditional method, and one reported both. This respondent is classified as a traditional method user because she reported using primarily traditional methods with a modern method (condoms) very occasionally. Additionally, three respondents who said they were using a method in GDHS reported not using a method in follow-up.

Table 6.1. Comparison of current family planning use, as reported to GDHS and follow-up survey

	Among non-pregnant women				
	Follow-up: Not using	Follow-up: Using traditional	Follow-up: Using modern	Total	*Discrepant*
GDHS: Not using (unmet need)	29	9	6	44	*34%*
GDHS: Using traditional method	0	4	0	4	*0%*
GDHS: Using modern method	3	3	36	42	*14%*
Total	**32**	**16**	**42**	**90**	*23%*

Note: In the GDHS, following a section on knowledge of family planning methods, women were asked: *"Are you currently doing something or using any method to delay or avoid getting pregnant?"* In the follow-up survey, after identity verification, women are asked *"I'd like to begin by confirming the information I received. Are you currently doing something or using any method to delay or avoid getting pregnant?"* If the answer was no, they are asked: *"What about the rhythm method? What about withdrawal?"*

Respondents who reported discrepant use of a method in GDHS and the follow-up survey were closely examined for identity verification questions and checked against other women in the household to see whether the follow-up interview may have been conducted with the wrong household member. None of the GDHS respondents with unmet need who reported using a method at the time of follow-up lived in a household with another woman who used a method. All matched on at least seven of nine pieces of identifying information. Appendix Table C.3 provides detail on these 15 respondents with unmet need in GDHS who reported using a method in follow-up, sorted by method type and region. The three women who used family planning in GDHS but not in follow-up are not included; one said she stopped because she broke up between interviews. One said that DHS misunderstood: she used it previously, but since getting married 10 years ago she has never used family planning, and a third was not asked about the discrepancy.

Some of the women may have started or stopped a method in the intervening days between interviews. However, the average gap in days between surveys was less for the 15 discrepant unmet need users than for follow-up respondents with unmet need as a whole. In cases where women were asked about the discrepancy, none reported starting between interviews. Two users of modern methods said that they were using a method and had told the GDHS interviewers but it was not recorded. Instead, the main theme that emerged among respondents who reported natural methods was that they misinterpreted the GDHS question about method use as being about modern methods. For example:

Interviewer: *I'd like to begin by confirming the information I received. Are you currently doing something or using any method to delay or avoid getting pregnant?*

Respondent [R#07.06]: *No.*

Interviewer: *Please, what about the rhythm method?*

Respondent: *Yes, that is the one I use, but I don't use any pills nor any injection.*

Another respondent, a married woman in rural Central province, revealed she misunderstood the question:

Interviewer: *I'd like to begin by confirming the information I received. Are you currently doing something or using any method to delay or avoid getting pregnant?*

Respondent [R#05.06]: *No, I am not on any medication.*

Interviewer: *Yes, I understand you may not be on any medication to prevent pregnancy but there are other ways of preventing pregnancy such as the rhythm or withdrawal methods. Are you currently using any of these to prevent pregnancy?*

Respondent: *Oh, yes, I didn't understand at first. I use the withdrawal method.*

Interviewer: *Please according to the information I have from the previous interviewer, you are currently not using any method or means to prevent pregnancy. Is that information correct?*

Respondent: *Yes, it is. When they came they only asked about the modern methods of family planning. They didn't ask about the rhythm and the withdrawal like you did. That is why I said no but my husband and I use the withdrawal.*

The DHS question on method use is specifically intended to be inclusive of non-modern methods *("doing something or using a method to prevent pregnancy"*) and in the DHS interview, immediately prior to the question on current method use, respondents are asked whether they have heard of a list of methods, including rhythm or calendar, withdrawal, and lactational amenorrhea. They are read a brief description of each method type. But when follow-up respondents were asked about the discrepancy with GDHS, they frequently reported interpreting that GDHS interviewers were only asking about modern methods. One respondent [R#04.05] said, *"When they asked this question, they asked about the family planning, they didn't explain that the methods included rhythm and withdrawal, that's why."* Three other women gave similar responses.

Overall, of the ten women who had been classified by GDHS as having unmet need but who reported natural methods, eight initially answered "no" to a repeated GDHS question about method use and only revealed natural method use after they were asked about rhythm and withdrawal. One additional respondent explained the discrepancy as stemming from her confusion about GDHS wanting to know about modern methods only.

Additional prompting about natural methods could have potentially elicited some overstatement of method use through acquiescence bias. Respondents may have been more likely to agree even if they were using the method only weakly. A close read of the transcripts from four of the women in Table 6.1 found some inconsistencies in method use. For example a woman would say that she was using the rhythm method but later in the interview she would indicate that she did not refuse sex in order to avoid pregnancy. One woman [R#06.10] said: *"If you see that he is really in need, then you allow him."* At the same time, DHS does not assess proper or consistent use of modern methods. Women who say they are using the pill are not quizzed on whether they take it every day, and women use injectables are asked the duration of use but not the date of the most recent injection. Interviewers are instructed to consider the respondent's previous knowledge of the named method, but not the correctness of its use.

Apart from these reports, one additional type of underreporting of protection against pregnancy that emerged from interviews, as described in Chapter 4, was the use of complete abstinence during the postpartum period as a method of family planning. DHS asks about postpartum abstinence and date of last sexual activity, but complete abstinence is typically not considered a method to prevent pregnancy.[13] Data on postpartum abstinence is stored separately from the contraceptive calendar; few researchers who assess postpartum family planning use factor the duration of postpartum abstinence into account.[14] Yet the majority of women in Ghana who have had two or more births report at least six months of abstinence between their two most recent births.[15]

A few respondents who were not using family planning cited lengthy durations of postpartum abstinence for the purposes of birth spacing. *"The gods we worship does not allow [family planning] so when you have a small child you avoid sex"* was how one woman [R#10.03] described it. Another respondent [R#10.05] said *"We discussed that the child is small so we should wait for the child to grow first and because of that, I don't sleep in the same room with my husband again... my husband said he will not touch me until my child grows."* Chapter 4 offered additional examples of abstinence as a method of family planning. Hence the discrepancy in method use described above may be understated.

6.2 Method Satisfaction and Discussion of Use among Current Users in Follow-Up Study

The follow-up questionnaire was designed to adjust questions based on current reports about use. For the remainder of this chapter, classification of family planning use is based on the follow-up survey alone without reference to the GDHS. Women who used family planning at the time of the follow-up survey were asked about their satisfaction with their current method and discussion about its use. Table 6.2 details their responses. The vast majority of women reported that their method was the one they most wanted to use, and that they are satisfied or very satisfied with the method. Additionally, all of the traditional users and almost all of the modern method users said they think that their husband or partner is aware of their family planning use. A smaller number, but still a majority, had discussed the method as a way to prevent pregnancy. Only a minority had discussed the method with anyone else.

Table 6.2. Method satisfaction and discussion of use among current users in follow-up study

Among women who reported using a method in follow-up, by type of family planning:		
	Traditional method users	Modern method users
Is/are your current method(s) the one(s) that you most wanted to use? (% yes)	92	83
How satisfied are you with your current method(s) of family planning? (% satisfied or very satisfied)	92	95
Do you think your husband/partner is aware that you are using your method? (% yes)	100	83
Have you and your partner ever discussed using (current method) to avoid pregnancy? (% yes)	92	80
Have you discussed your current method with anyone besides your partner, such as a friend or family member? (% yes)	31	46
Total number of women[1]	**13**	**40**

[1] Five respondents who were originally classified as having unmet need in GDHS but who reported using traditional methods on follow-up were incorrectly skipped out of these questions (4 traditional, 1 modern) and are excluded from the denominator.

[13] Not only in DHS but in international definitions of family planning and in other similar surveys, complete abstinence is not considered a method of family planning, perhaps in part because the intentionality is unclear. The DHS question on family planning method use is itself open-ended; respondents may volunteer any answer.
[14] For a notable exception see Wamala, Kabagenyi, and Kasasa (2015).
[15] Author's computations from GDHS data.

Of the 53 current users at follow-up who were asked about satisfaction and side effects, most reported satisfaction and few reported side effects. The most frequent concern was irregular menstrual cycles. There was only one mention of nausea and one mention of dizziness.

Traditional family planning methods almost by definition require consent or involvement of the male partner. As mentioned above, all 13 traditional family planning users reported that their partner was aware of their method. When describing their discussion about the traditional method with the partner, they frequently revealed that he was concerned about side effects. A married 26-year old respondent in Accra who uses the rhythm method described their discussion this way:

> Interviewer: *Why did you choose the rhythm method?*
>
> Respondent [R#03.06]: *Well it was my boyfriend's idea to use it. He said that the modern methods are not good. They have side effects which could affect you in the future. Some people after using it are unable to have children when they want to. Others also develop certain health conditions like high blood pressure, and the rest. So we decided to use the rhythm because it's safe. Even the withdrawal can fail you because you can never be sure if all the semen came out.*

While most modern users indicated that their husband was aware they were using contraception, the ability to use the method without detection was advantageous for some respondents whose partners opposed family planning. One 39-year old respondent in a rural part of Central region described her surreptitious use this way:

> *I started using the injectable and my husband said that he had heard that it makes women grow fat and it has whole lots of complications so he made me stop it. I did the IUD in secret so my husband is not aware and so we use the withdrawal as well... I sometimes want to tell him about it but am a bit hesitant to do so because I want him to come out of his own volition and suggest that I use the family planning method, then I'll probably tell him. Because he's opposed to its use so if he finds out that I've done it or am using it anyway, then it will mean that I didn't respect his wishes and it could bring problems in our marriage.* [R#01.04]

A few other modern users indicated that they used their method in secret, but the vast majority of current users had either discussed family planning with their husband or said that they think he is aware of it.

6.3 Influences on the Use and Non-Use of Family Planning

The follow-up survey asked women about a variety of influences on their decision to use or not use family planning, including the role of religion, husband/partner, and other family members. Results from these questions on influence shown in Table 6.3 by family planning use at the time of the follow-up interview.

As Table 6.3 shows, 67 percent of users and 47 percent of non-users reported that their religion was an influence on their decision to use or not use family planning, respectively. The majority of both groups (63 percent and 62 percent) said that their partner or husband had an important influence on their decision, but that other family members like in laws, parents, or siblings had an unimportant role.[16] We discuss each of these influences in turn.

[16] In some cases the transcripts indicate these questions were not always completely understood. Women sometimes seemed to be commenting on the importance of religion in their lives or on the importance of their husband or relatives to them in general rather than whether their religion or their husband influenced their decision.

Table 6.3. Influences on follow-up respondents' use of family planning

Among non-pregnant follow-up respondents, assessment of the importance of the influence on use or non-use		
	Non-users (%)	**Users** (%)
Do your religion's views on family planning influence your decision to (not) use family planning?		
Yes	47	67
No	38	29
DK/NA	16	3
What about the role of your husband or partner on your decision to (not) use a method to prevent pregnancy. How important an influence is he on your decision?		
Important	63	62
Somewhat Important	6	5
Somewhat Unimportant	3	3
Unimportant	28	28
DK/NA	0	2
What about the role of other family members in your decision to (not) use a method to prevent pregnancy? How important of an influence are they on your decision?		
Important	41	26
Somewhat Important	3	3
Somewhat Unimportant	0	0
Unimportant	53	65
DK/NA	3	5
Total number of women	**32**	**58**

6.3.1 Religion

Respondents came from a diversity of religious backgrounds, as shown earlier, including Christian, Muslim, and atheist. In the follow-up survey women were first asked about their religion and what their religion's view of family planning was. Women's interpretation of their religion's views on family planning varied widely, some Christian and Muslim women said that it was opposed; others characterized their religion as tolerant of or even encouraging family planning. Women were then asked whether their religion's views influenced their decision to use or not use family planning.

Many women indicated that their religion was supportive of family planning or that religion was negative but did not have an influence. For example, here is one exchange with a married respondent whose religion opposed family planning but for whom it was not felt to be an important factor:

> Interviewer: *Please can you tell me a bit about your religion's views on family planning?*
>
> Respondent [R#04.07]: *They say it's not good. According to them, the Bible says that we should be fruitful and multiply and replenish the earth so if you do that, it's a sin against God.*
>
> Interviewer: *So is this view the reason why you're not using family planning? Does this view influence your decision to not use it?*
>
> Respondent: *Oh, no. According to the Bible, God helps those who help themselves. So it may be true that that's what the Bible says but you also have to help yourself by guarding against difficulties and hardships. So if you have to use it, you must use it. Having lots of children brings nothing but hardship.*

In Ghana, some religious practices have made an effort to promote family planning. One current IUD user who was classified as Pentecostal/Charismatic by the GDHS described the positive influence of her church:

> *There was a lecture / education in our church to the women's group on what women go through during child birth, caring for the babies, financial problems and how to space the children so that you don't get pregnant as a Christian and cause abortion which brings problems and sin into our*

lives. So they have realized that family planning is good for the woman to protect herself and gives you the woman the freedom to do your work to take care of them. I went to church that day and came to inform my husband that this childbearing is something else. I told him that in order for me to not get pregnant and cause several abortions he should allow me to go and fix a family planning method. They were also featuring some advertisements about the family planning on the television, radio and everywhere you go. And he said if that is the case, if [family planning] will not bother me, then I should go for it. He even said that if we decide that we will not have any more children, then it is okay. [R#07.04]

While religious support could clearly be helpful or even conducive to initiating use, religious opposition was also a reason for non-use. As described above, around half of non-users said that religious opposition to family planning was an influence on their decision not to use family planning. These respondents tended to cite their traditional, fundamentalist Christian faith or Muslim faith as being opposed to family planning. Respondents whose religion opposed family planning tended not to elaborate on their religion's views, except to say, *"My religion preaches that any means to prevent a pregnancy is equal to committing abortion and this is a sin"* [R#03.02] or *"my religion says it is not good for a Muslim to use family planning"* [R#13.05].

6.3.2 Husband or Partner

In discussing their decisions about family planning, women frequently mentioned the role of their husband, live-in partner, or boyfriend. Transcripts were thematically coded for whether the woman indicated at any point that her husband or partner opposed family planning and for whether he supported or accepted it. Table 6.4 shows, for the 32 non-users at follow-up, versus 58 users at follow-up, the extent to which women mentioned that their husband/partner opposes or favors/accepts family planning. Half of the 32 confirmed non-users mentioned at least once that their husband opposed family planning. As one respondent [R#02.01] described, *"He always says that if the fish had decided to use family planning, would we have gotten any to eat? He is against it."* However, she felt that his opinion was not important to her and she avoided family planning for other reasons. In some cases, women felt that their partner's opinion was crucial. One respondent [R#13.12] described, *"I have to get his consent before I go in for the service."* In another case, a woman had an unintended pregnancy in part because of her husband's opposition to family planning:

[Before I got pregnant] I had been trying to persuade him to let me use the family planning methods, but he refused because he said he had heard about the side effects that these methods had. So he wouldn't permit me to use but he said if I insist on doing it, I should go ahead but be ready to take responsibility for my actions. It's something he always says… He was using withdrawal… When I realized that I was pregnant, I asked him how that was possible since he said he used the withdrawal, but he said he didn't understand either. [R#04.05]

Follow-up family planning users were somewhat more likely to report that their partners favored or accepted family planning. One respondent who uses the pill recounted her conversation with her husband this way:

My Mom told me that because of the way the world is today, I mean about the hardships, so we should space our births so that we don't have to have such a hard time. So I went to tell [my husband] what she had said and he said that it doesn't matter because when it was their turn to have children, nobody stopped them, and they had as many children as they wanted and only stopped when they were much older and couldn't have anymore. Then I told him that the economic conditions of today are not as pertained back in their days so we should try and space our births so that we will be able to cater for our children's needs in relative comfort. So that

when we're able to, we'll continue having other children. Then he said that even if I become pregnant now, he will be very happy. I told him that there was no way that would happen because I am using a method to prevent pregnancy. Then he said he's okay with it. [R#04.06]

In a small number of cases shown in Table 6.4, women assessed that their husband had both supportive and opposing views of family planning. This was most often because the husband opposed modern methods but supported traditional methods. In another case, the husband's view of family planning evolved over time. For example:

My husband's role is very important. You see he opposed it initially because of the rumors about side effects. So when he realized I had been using it for three years and yet had not experienced any of those side effects he had heard about, he realized it was safe after all and gave his consent. He even started encouraging and reminding me to take the pill because he realized I was only helping him and had the family's best interest at heart. [R#03.08]

In comparison to non-users, only a minority of family planning users indicated that their husband or partner opposed family planning. However, only around half indicated that he was tolerant or supportive.

Table 6.4. Perception of husband/partner's views on family planning

Panel A. Among 32 non-pregnant respondents who report not using a method of family planning in follow-up, percent who say:

	Husband/partner opposes family planning		
Husband/partner is in favor of or accepting of family planning	**Not mentioned**	**Opposes**	**Total**
Not mentioned	25	44	69
Favors or accepts	25	6	31
Total	50	50	100

Panel B. Among 58 respondents who report using family planning in follow-up, percent who say:

	Husband/partner opposes family planning		
Husband/partner is in favor of or accepting of family planning	**Not mentioned**	**Opposes**	**Total**
Not mentioned	38	16	53
Favors or accepts	41	5	47
Total	79	21	100

Note: in cases where both themes emerge, the husband is either in favor of natural methods and against modern methods, or originally opposed to family planning but later accepted it.

6.3.3 Other Family Members

Women were also asked about the role and importance of other family members, such as in-laws, parents, and siblings, in their decision to use family planning. Very few women said that the views of outside family members were known or important. In one case an unmarried woman living with her parents said that her parents had a very important role. Two women mentioned their mother-in-law's desire for additional children. And one woman in rural Ghana [R#12.07] explained that if her family found out about her use of family planning *"They can set the gods against me. My siblings', parents', and in-laws' views are important."*

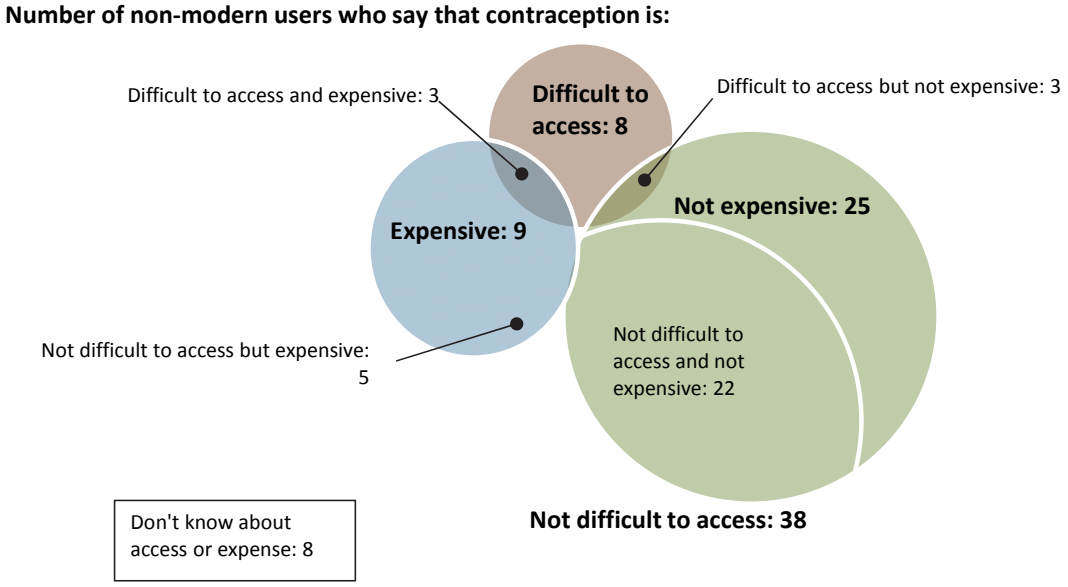
But in an era where Ghanaian households are largely nuclear (Annim, Awusabo-Asare, and Amo-Adjei 2013), few respondents felt that relatives other than their husband were important. Most indicated it was not something they would even discuss with other family members. *"Oh no, those issues are only between my husband and I"* said one respondent [R#05.06]. Another respondent, [R#02.10] said, *"The decision affects me and my husband, so I would not consult any of my family members on this."*

6.3.4 Cost and Access

Follow-up respondents were asked about perceived cost and access barriers to obtaining contraception. The term *contraception*, not *family planning*, was used to indicate modern methods, as the question does not apply to traditional methods. Figure 6.1 is a Venn diagram showing responses to these questions among 55 women who said that they were not using a modern method. The vast majority (38 of 55 women) did not perceive contraceptives as difficult to access, and around half thought they were inexpensive (25 women). At the same time, 14 non-users perceived a cost and/or access barrier to family planning. Access barriers include not only distance to health facility, waiting time, and availability of supplies, but also operating hours: a study in the Nkwanta district of Ghana found that favorable opening hours was the most significant access factor (Eliason et al. 2014). Eight additional women did not have an opinion on cost or access; most stating it was because they had never tried to obtain it.

Figure 6.1. Perceived cost and access barriers to contraception

Among 55 follow-up respondents who said that they are not using a modern method of family planning:



Note: Residuals comprised of don't know in either direction. For example, 11 women said not difficult to access but don't know expense.

Table 6.5 displays the results on cost and access barriers among non-users in percentage terms, and in comparison to confirmed users. Here we can see that the vast majority of users do not perceive contraceptives as expensive or difficult to access (83 percent, respectively). This is twice the proportion of non-users, only 40 percent of whom perceive contraception as both inexpensive and easy to obtain.

As indicated in both Table 6.5 and Figure 6.1, the majority of respondents with unmet need did not perceive any access barriers to contraceptives. Respondents mentioned that they were available in hospitals, clinics, and pharmacies. *"Every pharmacy sells some. Immediately you mention what you want, they will give it for you unless they don't have some,"* said one respondent in Accra [R#06.02]. Another respondent in rural Central region [R#05.04] said, *"They can easily be accessed from the hospitals and the pharmacy shops at a low cost."* The only concerns about access tended to be in rural Northern villages. *"There is no way you can access the service in this village. We have to travel to the clinic which is far from here, to get the service"* [R#13.12].

Table 6.5. Comparison of perceived cost and access barriers to contraception among contraceptive users and non-users

Panel A: Among 55 follow-up respondents who said they are not using a modern method, percent who say:				
	Difficult to access	Not difficult to access	Don't know	**Total**
Expensive	5	9	2	**16**
Not expensive	5	40	0	**45**
Don't know	4	20	15	**38**
Total	**15**	**69**	**16**	**100**

Panel B: Among 41 follow-up respondents who said that they are using a modern method, percent who say:				
	Difficult to access	Not difficult to access	Don't know	**Total**
Expensive	7	5	0	**12**
Not expensive	2	83	0	**85**
Don't know	0	2	0	**2**
Total	**10**	**90**	**0**	**100**

Family planning is not free in Ghana, but it tends to be offered at very low cost. Among confirmed non-modern users, 38 percent were unaware of cost or had had no opinion on it. Only one respondent [R#12.03] explicitly cited a cost barrier. She said, *"If I am thinking of doing it that means I have to steal some money to go and buy that why I say is difficult because I don't have money to buy."* In general most respondents with unmet need felt that expense did not pose a barrier. *"For something that you can use to avoid pregnancy and space your child births, it should have been really expensive, but it has been made in such a way that everyone can afford to use it"* [R#02.01].

Consistent with GDHS, the majority of respondents in the follow-up study with unmet need reported knowing a source of family planning. In general, contact with health care facilities had a positive or somewhat neutral influence on non-users. Women reported having been educated through their contact with fieldworkers and health providers. According to the respondent above:

> *Yes, it was a doctor in Cape Coast who taught me the rhythm method. I took my children to the hospital for treatment, and when he saw us, he asked whose kids they were. I said they were both mine, and he really reprimanded me. So he told me about the modern method and also taught me the rhythm [method]. I was really going through a tough time [health-wise], so I chose the rhythm.* [R#02.01]

Two respondents indicated that they had been turned away from obtaining contraception until their menses returned. One respondent who gave birth over two years ago reported a conversation with a recent fieldworker as follows:

> *I said I want to do the family planning, and they show me the pill, injection, and they educate us on how to go buy them, but after that I told them I have not started bleeding yet and they said I cannot do it.* [R#13.12]

This response suggests a missed opportunity to administer postpartum family planning to a woman who was interested. However being turned away from postpartum family planning arose in only two cases, so it is difficult to generalize.

6.4 Resistance to Use

6.4.1 Side Effects

Among women classified as having unmet need, side effects were by far the most commonly-cited reason for not using modern methods. The theme of side effects arose in 34 of the 50 interviews with follow-up respondents who had unmet need in the GDHS. Women had typically experienced side effects from a hormonal method or had heard about them secondhand and had decided to abandon modern methods. In a few cases, the side effects were only rumored. The side effect mentioned overwhelmingly was menstrual disorders, specifically the absence of menstruation caused by hormonal methods. Also of concern was weight gain and the difficulty conceiving after injectables; heart palpitations or chest pains, headaches, nausea, and dizziness were mentioned infrequently. A common concern was weight gain and the absence of menstruation on injectables.

> Respondent [R#06.05]: *Previously, I used the injection but I stopped when I gave birth to my daughter.*
>
> Interviewer: *So why did you stop?*
>
> Respondent: *The side effect I had was that anytime I go in for the injection, I grow big and my stomach also grows big; that is why I stopped. With the injection, your menses does not come regularly, but as human beings our menses is supposed to come regularly.*

As one 29-year old married respondent in Accra described:

> *For me if I get family planning, I will do it. But I went for a three-months injection after giving birth to my firstborn and the problem I had was that, I started experiencing something. I didn't think it was a problem, so I went to the government hospital where I did it and they said it's nothing. So I came back home but after I started experiencing something funny, I felt something was moving inside my stomach as if am pregnant. So I went for checkup and they said am not pregnant, but still the thing is disturbing me... They told me that they will change the method but I told them that for what I have been through already, I can't continue. I wish I can go in for another [method], but am scared.* [R#06.04]

She said if not for her experience she would have gone in for 20 years of family planning, but now she is determined not to use modern methods any more. However, she knows that traditional methods are risky and does not feel fully confident with them. Her husband is also encouraging her to try a modern method. Respondents cited additional health concerns based on their own experience:

> Respondent [R#08.04]: *I have used the family planning before [injectable] but I developed health issues. As I speak now I have high blood pressure due to the method I used, so now I have to use the withdrawal.*
>
> Interviewer: *So, you are currently using the withdrawal to prevent pregnancy. Why did you choose to use the withdrawal? Was it what you most preferred?*
>
> Respondent: *Well, first of all, I want to avoid getting pregnant and secondly, I do not want to develop any other health conditions due to the side effect of a family planning method. In my case, I have a lot of issues. I do not even menstruate [on injectables]. So I think the withdrawal is better.*

In a few cases women had tried multiple modern methods without satisfaction. As one respondent explained:

> *Personally, when I use those modern methods, it does not help me. It has an effect on me. After I removed the IUD, I wanted to try some method but I realized that for exactly a year it was disturbing me. For me to get to the hospital, I was helped by people to sit in a car. My waist, I could not help it at all; that is why I want to remove it. As I got to the hospital and told the nurse what I was going through, she said, if that is the case, for me to be free, it has to be removal. Now I am free after it was removed. After that, I went to the doing store to buy another method [pills]; when I take it, I feel a burning sensation in my whole body. I realized that none of the family planning method is good for me, so I've discussed with [my husband] not to use any type of contraceptive. So at least if anything, he will withdraw. I also use my date to calculate.* [R#06.10]

In addition to side effects, some respondents expressed an overall dislike of chemicals or hormones in their body. As one respondent described,

> *The clinic and hospital are near us; when you step in you will get it done. The monetary aspect is not expensive, but when you consume it is expensive because it can cost you the future... I don't want to consume more chemicals into my system... I will rather just abstain from sex.* [R#11.07]

Concerns about the lack of menstruation on hormonal methods arose frequently during interviews with users and non-users alike; the majority of respondents mentioned menstruation at least once during their interview. Weight gain and subsequent difficulty conceiving was also discussed. Meanwhile headaches, dizziness, nausea, heart palpitations, and abdominal or chest pains were mentioned infrequently.

6.4.2 Gaps in Knowledge and Education

Interviews revealed some important gaps in knowledge and education. At the extreme were a small number of respondents who did not know a method or did not know how to access a method, mostly in the rural Northern part of the country. But additional interviews reveal other gaps in coverage and knowledge:

> Interviewer: *Have you and your partner ever discussed using a method to delay or avoid pregnancy?*
>
> Respondent [R#11.11]: *Yes*
>
> Interviewer: *please share with me what you discussed.*
>
> Respondent: *He suggested we do sterilization, and by then it was too late and I told him too late now.*

Sterilization is not widely available in Ghana, but it was not clear why sterilization would be too late for her and her husband. In her case, rumored side effects indicate opportunities for education.

> Interviewer: *You said you don't want another child soon. Can you tell me why you are not using a method to prevent pregnancy?*
>
> Respondent: *Because I was told it gives side effect. Only that.*
>
> Interviewer: *What kind of side effects are you concerned about?*
>
> Respondent: *When you do it a time will come that, you want to give birth and you can't, or you will be bleeding profusely.*

Interviewer: *Tell me more about how you and your husband came to believe that contraception was not a good choice for your family.*

Respondent: *My husband and I don't know the truth about it.*

Interviewer: *But do you and your husband believe it has side effects?*

Respondent: *No, we don't believe but hear people talk about it.*

Additionally, women's own perception of their risk of pregnancy occasionally seemed to reflect an opportunity for additional education about fecundity and biological processes.

Interviewer: *You have told me you don't really want to have any child even though your husband wants another baby, please why are you not using any method to delay or prevent getting pregnant?*

Respondent [R#05.04]: *I won't get pregnant. I've advised my womb not to get pregnant again so I won't get pregnant... I've learnt about family planning. I just don't want to use any method. My womb is a family planning on its own.*

For some respondents, it was easier to discuss lack of awareness in their community as a whole rather than individually. For example, one respondent in rural Central region said:

I know a lady in this area she has seven children and is pregnant again. She is not even up to 30 years. Her last child is not even up to two years old. Neither she nor her husband is working but she is pregnant again. Here they just give births. They don't understand the concept of planning your family…. Family planning education is very low here so from time to time people should come and educate the people of this community about the need to plan their families and its importance. The dialogue should include both men and women so that everyone understands it. And they should point out to them that family planning is not demonic and it doesn't mean you are killing your children, but it is to ensure that they have enough time and energy to work and take care of their families and even live healthy lives. [R#02.01]

Responses suggesting opportunities for education at the community or individual level were fairly infrequent, but they do suggest that outreach to rural communities may be particularly helpful.

6.5 Overall Comparison of Reasons for Non-use

The GDHS survey asked most women with unmet need about their reasons for non-use in an open-ended way. *("You have said that you do not want (a/another) child soon [or: You have said that you do not want any (more) children.] Can you tell me why you are not using a method to prevent pregnancy? Any other reason?"*) Responses to this question were presented earlier.

Toward the end of the follow-up survey, women who confirmed that they were not using family planning were asked the same open-ended question. For the 30 women who were asked the GDHS question about non-use, reinterviewed for the follow up survey, and confirmed as non-modern method users, we examined the follow-up transcript for reasons for non-use, including the repeated question when applicable.[17] Table 6.6 shows the results of this comparison by reason type. Each reason and its count from GDHS are shown. On the right-hand side, the table shows the percentage of cases where that theme was independently confirmed as a reason for non-use of family planning. We also indicate the number of respondents who indicated that theme as a reason for non-use in the follow-up survey but had not mentioned it in the GDHS

[17] Respondents who were correctly switched from Group A to Group C based on the new report of traditional family planning use were not asked the reason for non-use. Nonetheless these respondents frequently gave reasons for not using a modern method, which are included here.

survey. On average, respondents gave 1.1 reasons for their non-use of family planning in the GDHS but 3.0 reasons in the follow-up; the latter estimate would have been higher if respondents who reported actually using a method were excluded.

Table 6.6. Correspondence between reasons for not using family planning in GDHS and follow-up

Out of 30 follow-up respondents in the GDHS who were asked their reasons for not using family planning and who confirmed that they are not using a modern method, the number who independently confirmed the reason in a follow-up interview, and number of additional respondents who also had that reason

		Follow-up study				
Reason	**DHS**	**Independent confirmation[2]**	**Number confirmed**	**Number additional[3]**	**Total cases**	**Percent difference**
Fear of side effects/health concerns or interferes with body's processes	12	100%	12	11	**23**	+92%
Husband/partner opposed	5	60%	3	7	**10**	+100%
No sex/infrequent sex	3	67%	2	6	**8**	+167%
Cost/access/availability/source[4]	3	67%	2	0	**2**	-33%
Religious prohibition (includes opposition)[5]	2	50%	1	8	**9**	+350%
Breastfeeding/postpartum amenorrheic	3	0%	0	1	**1**	-67%
Subfecund/infecund	2	50%	1	1	**2**	+0%
Inconvenient to use	1	0%	0	0	**0**	-100%
Others opposed	1	100%	1	3	**4**	+300%
Knows no method	1	100%	1	0	**1**	+0%
Additional reasons						
Respondent opposed	-	-	-	8	**8**	-
Need more information	-	-	-	2	**2**	-
Fatalistic	-	-	-	2	**2**	-
Not married	-	-	-	1	**1**	-
Plan to get soon	-	-	-	1	**1**	-
Using natural (discrepant)	-	-	-	9	**9**	-
Ambivalent intentions (< 2 years)	-	-	-	7	**7**	-
Other	-	-	-	1	**1**	-
Total	**33**				**91**	
Average number of reasons per respondent	*1.1*				*3.0*	

[1] See Table 3.4 for additional information about DHS groupings. Multiple responses allowed in both surveys.
[2] Percentage of the DHS users with that reason who independently gave the same reason in the follow up survey. Interviewers made no reference to the GDHS answer. Responses were considered from the entire follow-up interview and not simply from the question about non-use.
[3] Additional respondents not identified by GDHS who explained non-use for that reason.
[4] Includes too expensive, too far, lack of access, knows no source, preferred method not available, no method available.
[5] The GDHS term is religious prohibition; we included religious opposition, which the woman considered to be an important part of her decision as we suspect a response mentioning religion would normally be included here.

The follow-up study was interested in independently understanding unmet need; no attempt was made to quiz respondents on the validity of the reason given to GDHS for non-use. The results shown in Table 6.6 indicate that side effects, while a major theme from GDHS, were mentioned as a reason for non-use among 23 of 30 respondents. Opposition from husband or partner and religious opposition also appeared to have been underreported in GDHS. Meanwhile, despite additional prompting on cost and access, no additional cases where cost or access posed a barrier were found.

Some respondents gave reasons not mentioned in the GDHS that are included in Table 6.6. Two were explicitly fatalistic about non-use of family planning ("*we are under the care of the gods so am not using anything to protect myself.*" [R#09.06]). Two said they needed more information; one planned to start family planning soon. Seven of the 30 women interviewed had revised their fertility intentions within the two year window, and nine others included a statement along the lines of "*no other reason. I just don't want it,*" or "*our heart does not like it.*"

7 Discussion and Conclusions

This study demonstrates one possible way to build upon established survey mechanisms such as DHS and MICS surveys to shed light on important issues behind trends in maternal and reproductive health. Data-linked follow-up studies benefit from existing data about respondents and can quickly gather additional rich information about fertility preferences and contraceptive demand. Unmet need is a seemingly straightforward concept, but its application is complex and somewhat limited in ability to differentiate potential demand from ambivalence, abstinence, and data quality issues. This study analyzed in depth responses of 96 women located through a nested follow-up study of GDHS respondents age 15 to 44 in 13 clusters in Ghana's Northern, Central, and Greater Accra regions. These respondents were either identified by GDHS as having an unmet need for family planning or identified as a reference group of current users. The follow-up study was able to leverage the large array of data that had already been gathered about these women. The results provide much more detail and nuance about unmet need than is possible through exploration of GDHS data alone. The study overall shows potential for nested studies to enhance existing data collection on reproductive intentions and family planning use.

7.1 Unmet Need

This study endeavored to understand the local meaning and lived experiences behind responses that produce survey measurements of unmet need. A full picture of unmet need requires examining not just barriers to family planning and resistance to modern contraception but also perceptions of risk and fertility intentions that precede interest in use. One major finding of this study is the level of discrepancy between interviews in two key pieces of information that determine unmet need status: use of contraception and fertility intentions. DHS respondents had underreported use of family planning, particularly traditional methods. Additional prompting on traditional methods had been expected to detect some underreporting of traditional method use, in line with findings from a prior survey in Ghana and from a survey in Burkina Faso with simulated DHS questions (Adanu et al. 2012; Rossier, Senderowicz, and Soura 2014).The magnitude of the discrepancy (34 percent) was surprising, however.

Reproductive intentions are known to be unstable over the long-term, but this study finds that intentions had been revised even in the span of a few weeks. Fertility intentions were also unstable among a reference group of family planning users. The most frequent change to the fertility intention questions occurred among women who initially reported themselves as undecided on fertility intentions but had shifted to wanting another child. Additionally, the desired timing of the next birth was frequently revised between surveys. In 11 cases, or 25 percent of all non-pregnant women, revised fertility intentions could or would have affected unmet need status.

Additionally, while all non-pregnant women with unmet need in GDHS were, by definition, determined to be fecund, the respondent's own assessment of their chances of becoming pregnant was fairly low. About four in ten follow-up respondents with unmet need rated their chance of becoming pregnant in the next few months as 0 or 1 out of 5. Even after adjusting for confirmed non-use, one-third of women stated their chances as 0 or 1 out of 5. One theme that emerged was that the deliberate use of abstinence in the postpartum period to avoid pregnancy is overlooked by focusing on periodic abstinence as the only type of abstinence valid for purposes of family planning. Nationwide, nearly one-sixth of married women with unmet need in Ghana report having been abstinent since their most recent child was born.

Among women with unmet need who gave consistent information about family planning and reproductive intentions in GDHS and the follow-up study, the most frequent reason for unmet need was fear of the side effects or health consequences of modern methods. Women have frequently had adverse reactions to hormonal methods of family planning or know someone who has. The overwhelming concern was

menstrual irregularities; weight gain, headaches, dizziness, and other side effects were mentioned infrequently. In only a few cases were reports of side effects based on rumors.

In addition to side effects, other reasons for not using contraception were women's own or husband's opposition, fatalism, and religious convictions. Earlier studies have found attitudinal resistance to family planning in Ghana and an increasing shift toward concern about side effects (Hindin, McGough, and Adanu 2014; Machiyama and Cleland 2014). This mixed-method study supports and extends the picture of opposition to family planning use. In our follow-up discussions with respondents we found opposition was much more multifaceted than in the GDHS: on average, non-users expressed at least three reasons for not using family planning.

Ghana is a religiously diverse country. Religion served as both a positive and a negative influence on family planning. In some cases, family planning users cited religious educational outreach; other family planning users felt comfortable ignoring religious teachings that were in conflict with their own circumstances or life goals. A larger share of family planning users cited religion as an important or very important influence on their decision to use family planning than did non-users. Even so, half of all non-users said that religion had an important influence on their decision not to use family planning.

Unmet need is measured among women, but it is important to recognize the influence of partners as well. DHS surveys only measure decision-making for contraceptives among current users. This mixed-methods follow-up study shows that the husband's or partner's influence appears to be equally important for users and non-users alike (62 and 63 percent). Half of non-users explicitly mentioned that their husband opposed use. Measuring unmet need among men and couples is important but difficult to implement in practice (Bankole and Ezeh 1999; Becker 1999).

7.2 Limitations

The study faced some expected challenges of relocating and re-identifying respondents with limited identifying information. The 96 cases discussed here reflect confident—but imperfect—identity matching. Previous studies in developing countries have found inconsistent results on key questions, even with the exact same survey conducted after only a short delay (Bignami-Van Assche 2003; Curtis and Arnold 1994). A characteristic that might be assumed as static, such as date of birth, may not be known to respondents themselves and thus may vary depending on recall or availability of an identity card. Additionally, the gap between interviews, which averaged two to three weeks, but which ranged from one to nine weeks, may have increased discrepancies in temporally-dependent characteristics, such as marital status or family planning use. Even so, only two of the discrepancies in family planning use were attributed to changed circumstances.

The interview design was careful to anticipate possible discrepancies, but the degree of differential reporting between the DHS and the follow-up study, for example, with family planning use (23 percent discrepant in the span of one to nine weeks), was not expected. Interviewers sometimes overlooked opportunities for inquiry about discrepancies. Reasons for this include the complexity of using tablets and audio recorders, displaying data from GDHS respondents onto tablets for interviewers to compare with current responses, and probing open-ended questions in-depth while occasionally being asked to hurry. Inquiries that might have helped shed light on survey responses include, for example, whether discrepant reporting of method use had to do with just having started it, with translation, or with a lack of privacy at either interview. Naturally some of the questions, such as those on fertility intentions, can be affected by the context and ordering of questions.

The inclusion of a reference group of family planning users provided a useful comparison. Interestingly, fertility intentions were also somewhat inconsistent among non-users, but family planning use was more

consistent. Including an additional reference group of women who indicated to GDHS a desire to wait just under two years could have helped discern whether preferences were equally unstable.

Qualitative and mixed-methods studies that gather nuanced data from open-ended questions are necessarily data-intensive, and a large sample size tends to prove unwieldy. Nonetheless, to the extent that this study functioned as a reinterview study, a slightly larger number of cases with less detail might have been desirable. Respondents are more rural, less wealthy, and less educated than the population of women with unmet need nationwide and may have been more prone to inconsistent responses due to issues with numeracy.

7.3 Recommendations for Population-based Surveys That Examine Unmet Need

The nested follow-up study described in this report was not designed to examine data quality, but the discrepancies in responses between the two surveys posed challenges for analysis. Discrepant responses are not unique to GDHS, nor to Ghana; as discussed previously, other surveys in developing countries have found substantial discrepancies to standard questions upon reinterview. Discrepancies in responses suggest additional oversight or audits may be useful. DHS should be commended for its openness in permitting an internal follow-up study, and similar population-based studies are encouraged to conduct periodic internal reinterview or follow-up surveys to assess data quality.

On a related note, the expanded length of DHS interviews amidst a fixed amount of interviewer training time poses challenges to data quality overall (Bradley 2015). Respondents to the follow-up interview occasionally complained about the length of time that the original GDHS interview had taken. Surveys with a large number of questions can face reduced quality on individual items, particularly when respondents are not compensated for their time.

At the same time, the results suggest that the consolidated question about family planning use causes omission of traditional methods. If underreporting of traditional methods is as extensive as found here and in related surveys (Adanu et al. 2012; Rossier, Senderowicz, and Soura 2014), then prompting on natural methods would be very useful and would have substantial implications for understanding current use and unmet need. In fact, the increasing number of respondents who indicate that side effects are a main reason for not using family planning in Ghana may in fact reflect a growing number of (unreported) traditional users who are implicitly answering the question *"Why are you not using a modern method of contraception?"*

The clear intentionality behind the practice of postpartum abstinence in many parts of Africa is under-recognized in population-based studies. Measures of the potential demand for family planning and would benefit from awareness of complete abstinence as a family planning method. When abstinence is an intentional strategy for child spacing, as practiced in many countries, it reduces the need for family planning.

7.4 Recommendations for Follow-up Studies

The study described in this report is the first mixed-methods follow-up study conducted by the Demographic and Health Surveys Program since its inception more than 30 years ago. There were methodological lessons learned during the course of executing the study that may benefit future follow-up studies. In addition to asking open-ended questions about the topic (here: fertility intentions, contraceptive preferences, and barriers to access), it was also useful to re-ask some of the exact closed-ended survey questions used for determining women's eligibility for the follow-up study. Doing so provided checks on data quality, verified identity, and enabled appropriate contextual follow-up. Anticipating discrepancies and programming skip patterns was an important part of survey preparation.

It is helpful to have access to the respondent's original answers to key questions through data exported from the original interview. Access to original data entry was helpful in two respects. First, it enabled systematic selection of respondents based on a complex algorithm to determine eligibility. Follow-up verbal autopsy studies, for example, tend to filter for selection on a single piece of information (experienced death of a child of a certain age in the past two years, for example) plus consent to follow-up; selection can be done as easily on paper as by computer. This study analyzed unmet need among women of a certain age interval plus additional sub-groups; as such, it required over a dozen pieces of data to determine eligibility. It would have been very difficult to select respondents "by hand" from paper questionnaires.

The second way in which access to original data is useful is that original responses can be displayed on interviewer's tablets, and any discrepancies can be diplomatically discussed with respondents. The reasons for discrepancies can be very useful from a data quality perspective (did the respondent misunderstand a DHS question the first time around or did her situation change in the interim, for example), as well as from a substantive perspective (did fertility intentions change because they were ambivalent to begin with, was there a particular circumstance that changed her mind, or does she think there was a mistake in earlier data input?). Unfortunately, despite training, some discrepancies were not asked about during the follow-up interviews for this study. Interviewers reported confusion with the process of changing to a different questionnaire when respondents reported discrepant family planning use. Improvements in skip pattern design, tablet display of discrepancies, and added emphasis on the importance of discussing discrepancies during training would have yielded more explanations for discrepancies.

Future follow-up studies could consider importing original data into the tablets but not displaying it unless there was a discrepancy. This would help guard against—though not completely preclude—possible collusion to produce inflated estimates of data quality. In this survey there was an audio recording of the exchange between interviewers and respondents plus auditing of fieldwork by GSS, so it was not deemed necessary to hide the original responses. But future studies without an audio component or an outside auditor could consider an additional level of identity verification, particularly if the survey software was able to flag that a discrepant response had occurred despite any subsequent correction.

An additional lesson learned is that the complexity of the algorithm to determine eligibility caused a glitch that resulted in over-identification of respondents. It is easy enough to advise additional checks on the selection program, but future studies may also consider using simpler eligibility criteria and re-filtering respondents at the beginning of the survey as appropriate. However, the disadvantage of doing so is potential loss of time and energy to re-locate respondents, verify their identity, and then deem them ineligible.

The 2014 GDHS was conducted with paper questionnaires. Data entry was done in the field (using the CAFE system) and finalized in the central office after paper questionnaires were received. While the CAFE system improves the speed of data entry substantially, there was necessarily at least a few days between fieldwork and finalized, checked electronic data entry received in the home office for the cluster as a whole. The data entry was needed in order to filter and select respondents and to export data fields to follow-up tablets. Hence a gap of at least several days was necessary before attempting to relocate original respondents. At the same time, due to strict IRB protocol for the GDHS as a whole, it was not possible to gather additional information typically used to relocate respondents in longitudinal surveys, such as telephone numbers or individual household GPS coordinates. In fact, because of the paper questionnaires, the follow-up study lacked data entry on respondent names and had to relocate using the name of the head of household, the relationship to household head, and structure number or address, plus a few other key identifiers. This made re-identification of original respondents fairly burdensome. Future sub-studies may consider linking to a parent survey where it would be possible to gather a phone number to simplify the process of scheduling a follow-up interview. Even a low-tech return identifier like leaving a card with a number on it could be helpful for reconfirming identity.

Barring additional means of re-identification, future qualitative and mixed-methods sub-studies should consider fieldwork during a survey that uses computer-assisted personal interviewing (CAPI), which would enable automatic identification of eligible respondents at the end of a given interview. Permission could be immediately requested from only those eligible for the follow-up. Data required for the reinterview could be securely transmitted via Bluetooth to a follow-up interviewer's tablet and the respondent could be re-located much more easily. Initially interviewee fatigue was a concern, but the follow-on survey took only 20-30 minutes on average; a one-day gap between interviews as currently happens for verbal autopsy modules should be no more taxing than a two week gap.

This study was a standalone, independently-fielded and funded study. Yet as a follow-up study, its sample selection, input data, and fieldwork strategy necessarily relied on an existing study, the 2014 GDHS. Initial planning and permissions for the study began almost a year prior to GDHS fieldwork. Despite a substantial amount of lead time, the process of obtaining permissions, adding the question to the parent survey, and seeking IRB approval was somewhat rushed. It would have been ideal to have begun planning even earlier in the GDHS process in order to enable consultation with local stakeholders prior to questionnaire design and to have begun questionnaire translation and programming well in advance of fieldwork training.

While this study was able to capture women's impressions about their husband's attitudes and report on discussions with their husband, future studies may consider interviewing both members of a couple. Many contraceptive methods such as the pill and injectables give women the opportunity to space and limit births surreptitiously, but ideally family planning and fertility are mutual decisions within a couple. Both major traditional methods involve the control and/or cooperation of the male partner. Additional work that could capture both perspectives would be important.

7.5 Policy Implications

The main policy implication of the study is that the potential for supply-side interventions to ameliorate unmet need is limited: the majority of fecund respondents whom the 2014 GDHS had identified as having an unmet need had not reported a traditional method, were intentionally abstinent, or had changed fertility intentions within the two year window required by the definition of unmet need by the time of follow-up. Only a minority of the women with unmet need appeared to perceive themselves at risk of an unwanted pregnancy, and among those respondents, opposition to modern methods was substantial. Women who are not using family planning because of cost or access are relatively rare, even in isolated, rural communities. After accounting for these factors, it is clear that the potential demand for family planning, an eponymous indicator that unmet need is used to compute[18], seems to be limited to a fairly small group.

A previous study found that the most intractable reasons for not using family planning are attitudinal and religious resistance; concerns about side effects are more easily overcome with education and information (Westoff and Bankole 1998). The present study confirms that women with attitudinal resistance frequently have multiple layers of resistance to modern methods (religious, partner, personal) that would be difficult to overcome. At the same time, it finds a level of strong opposition to modern methods among women who have themselves experienced negative side effects that may not be responsive to additional education or outreach. Some of these respondents determined that a traditional method, while less effective, was worth the perceived health risk of modern methods. Additional education about the importance of consistent use of traditional methods may be helpful, and should include husbands and partners whose cooperation is mandatory for withdrawal and helpful for the rhythm method.

Ghana has a relatively strong family planning program. There are opportunities for improvement, of course. Ready and safe access to methods should be routine and important to support current users. Comprehensive

[18] Demand for family planning is the sum of unmet need and current use.

education and counseling and demand generation activities may be useful, but at the macro-level, evidence has shown that women who are highly motivated to limit and space births tend to find a way to limit childbearing (Pritchett 1994). Programs providing client-centered or couple-centered counseling about contraception that supports total method choice, including proper use of traditional methods and discussion about side effects from modern methods should be supported and expanded. Group-based approaches to family planning counseling and education have been shown to be efficacious in Ghana (Schwandt et al. 2013).

Long-acting reversible contraceptive methods are an important source of long-term protection, but implants and injectables are frequently discontinued due to side effects and method related reasons (Staveteig, Mallick, and Winter 2015). Some interviews indicate women who have a bad experience with one method stop using a method altogether. While the absence of menstruation may be seen as an indirect benefit of contraception in some cultures and contexts, non-users in Ghana perceive the absence of menstruation as particularly problematic.

A few women indicated they would prefer a permanent method. Sterilization is not without controversy and concerns over coercion, but it is a non-hormonal method that could be offered as part of total method choice in Ghana, along with the IUD, which has all but disappeared in Ghana (Osei et al. 2005). In the long-term, clinical development of contraceptive methods that have fewer side effects—particularly methods that don't affect menstruation—could also be an important strategy to address the unmet contraceptive needs of women and couples in Ghana and other developing countries.

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Appendix A: Identity Verification

To verify linkage between the GDHS and the follow-up study, we compared follow-up respondents with GDHS respondents on nine characteristics:

1. Household number and address within the cluster
2. Name of head of household
3. Relationship to named head of household
4. Year of birth
5. Month of birth
6. Marital status
7. Ever given birth
8. Number of resident daughters
9. Number of resident sons

Items 1 and 2 are confidential; item 3 (relationship to head) relies on number 2. The matching of these three items was a prerequisite for the interview by the field team. These results were independently audited by Ghana Statistical Service. Items 4 and 5, year of birth and month of birth, are subject to misreporting, particularly in areas where literacy and numeracy are low (Pullum 2006); nonetheless, they are helpful in unique matching of respondents, and in differentiating respondents within the household. Items 6 and 7, marital status and whether have ever given birth, should match perfectly unless there were status changes in the intervening period. Number of resident sons and daughters should also match perfectly (items 8 and 9), but may be subject to fluctuation (residence of children) and to misinterpretation (biological children, stepchildren, resident children).[19]

Table A.1. Matching year of birth

Yes	70
Respondent doesn't know	7
No	19

Table A.1 indicates the degree of matching on year of birth. Of the 96 follow-up respondents, 70 matched year of birth exactly. Seven did not know their year of birth and did not have an identity card available. Nineteen additional respondents did not match. In the most conservative case, if we consider not knowing year of birth to be a discrepant answer, then there was a 27 percent discrepancy in year of birth. This estimate is within the range found from prior follow-up surveys, which ranged from 21 percent in Indonesia (MacDonald, Simpson, and Whitfield 1978 as cited in Bignami-Van Assche 2003) to 81 percent in Pakistan (Curtis and Arnold 1994).

Generally, discrepancies in year of birth were explained by respondents as having come about through the DHS process of imputing year of birth relative to events if the respondent was not certain of her year of birth, or by ready availability of the respondent's identity card. Here is one example of the process of verifying year of birth:

> Interviewer: *So that I am sure that you're indeed the person to be interviewed can you please give me your date of birth?*
>
> Respondent [R#04.05]: *December 1981, am 31 years old*

[19] It was originally preferred to ask women about number of live births, including number of sons and daughters. However, the total number of live births is computed by DHS based on the birth history and was not a variable that could be exported from initial data entry. Hence the question was asked about number of resident sons and resident daughters.

Interviewer: *Please, your age doesn't correspond with the year of birth. If you're 31, then it should be 1983 and not 1981. Either way, the information I have here from the earlier interviewers doesn't correspond with either date. May I please have your ID card? The date here is December 1980, it means that you'll be 34 years this December. Please how did they come by this date?*

Respondent: *Actually, I showed them my ID card after mentioning my age and date of birth. But I understand what you're saying, the age is 31 years on the ID as you can see, and I had it done during the last elections. So you're right. I'll be 34 years this December and my date of birth on the ID is even December 1980 and not 1981.*

Interviewer: *Thank you, so the information I have is correct?*

Respondent: *Yes, it is.*

In other cases, the original response could not be verified:

Interviewer: *Just to be certain I am speaking with the right person, can you please tell your month of birth?*

Respondent [R#11.04]: *I don't know.*

Interviewer: *Madam, please you told my colleague you were born in 1971?*

Respondent: *No, I didn't, I gave them an event, and they calculated and gave me the age.*

Interviewer: *Okay, Madam.*

Interviewer: *Please can you tell me the month?*

Respondent: *I don't know the month too.*

Similarly:

Interviewer: *Just to be certain I am speaking with the correct person, can you please tell me your year of birth?*

Respondent [R#12.09]: *I don't know. I didn't give them a year because I don't know my age.*

Interviewer: *And can you please tell me your month of birth?*

Respondent: *I don't know.*

Both of the above respondents, as well as some others, were marked in the GDHS dataset as having complete age and year information. Imputation of dates is helpful for analysts to maintain consistency with published estimates and to avoid creating their own imputation scheme (MEASURE DHS and ICF International 2013), but flags to indicate that imputation was done during fieldwork might be helpful for future surveys.

Table A.2 indicates the degree to which the reported year of birth differed. In most cases the reported year of birth was within four years. In two cases the magnitude of difference reported by follow-up respondents was 10 years different from the GDHS. This level of disparity between initial survey and a follow-up survey is not unprecedented in areas where numeracy is low (Bignami-Van Assche 2003; Curtis and Arnold 1994). In one case (R#09.01), the respondent insisted she was 20 years old, not 30, even though she had given birth to five children. As the follow-up study was interested in accuracy relative to

Table A.2. Difference between year of birth in GDHS and follow-up survey

-10	1
-3	2
-2	4
-1	4
0	70
1	4
2	1
4	1
10	1
Unknown	1

GDHS, there was not a formalized procedure for imputing age. In the second case the respondent guessed her age relative to the translator. She matched on other characteristics and was included in the follow-up sample.

Month of birth reporting is even more unreliable than year of birth reporting, particularly in rural areas. Table A.3 indicates the match between reported month of birth and as reported in GDHS. Only 50 of 96 respondents matched month of birth. In 10 cases the GDHS had imputed a month of birth and the respondent was not aware of it; 25 additional respondents were not indicated as imputed in the GDHS but said that they did not know their month of birth. Note that for the purposes of summary matching, respondents who did not know their month of birth and were indicated as imputed in GDHS were considered "matched." No respondents were indicated as imputed for year of birth, and thus none of the discrepant respondents on year of birth were considered matched.

Table A.3. Matching month of birth

Yes	50
GDHS imputed	10
Respondent doesn't know	25
No	11

Marital status should not be subject to substantial misreporting unless it changed in the intervening period. Prior studies have found between a one and five percent discrepancy over the course of several months (Bignami-Van Assche 2003). Due to cultural differences in the understanding of married versus living with a partner as if married, marital status was assessed based on three broad categories: never married, co-resident union (married or living with partner), and divorced, separated, or widowed. As Table A.4 indicates, there was near-perfect matching on whether ever given birth and marital status, with the exception of three respondents who reported that their unions dissolved in between the GDHS interview and the follow-up survey. One additional respondent was listed as living with partner but insisted that she had told the GDHS interviewer that she had a boyfriend but did not live with him. Indeed, the dataset indicates both that she is living with her partner and that he is not present in the household.

Table A.4. Matching marital status

Yes	92
Changed in between[2]	3
No[1]	1

[1] Respondent says she told GDHS she has a nonresident boyfriend. In the GDHS dataset her marital status is "living with partner" but her partner also listed as nonresident.
[2] Two separated in between interviews (after 27 and 60 day intervals), one was widowed in between interviews.

Whether ever given birth should match perfectly; Table A.5 indicates that it does.

Table A.5. Matching whether ever given birth

Yes	96
No	0

Finally, the discrepancy in reported number of sons and daughters resident in household is shown in Tables A.6 and A.7, respectively. There were six discrepancies in number of resident sons and twelve discrepancies in the number of daughters. When asked about these discrepancies, some respondents expressed confusion over whether to include stepchildren, or insisted that they were giving the number they had told the GDHS interviewer. Indeed, six of the answers to number of resident sons or daughters matched perfectly with the total number of sons or daughters ever born in the GDHS. To err on the conservative side, original mismatches were kept.

Table A.6. Matching number of resident sons

Yes	90
No	6

Table A.7. Matching number of resident daughters

Yes	84
No	12

Overall, the most frequent discrepancy was month of birth, followed by year of birth and number of resident daughters and sons. The total number of matches (out of 9), including the three confidential characteristics, are reported in Table A.8. Forty of 96 women matched perfectly, and an additional 36 women had one discrepancy in characteristics. Sixteen women had two discrepancies, four

additional women had three or four discrepancies. These were women who did not recall their date of birth at all and who were apparently confused about the number of resident sons and daughters question.

Note that the gap between interviews had a slightly negative relationship with the number of discrepancies (-14.6 percent correlation).

Prior to beginning analysis, discrepancies between tablet data and GDHS data entry were systematically reviewed in tandem with interview transcripts to ensure confidence of matching. In cases where the reason for the discrepancy was not discussed or not easily explained, we examined the GDHS dataset to determine whether any other women of similar age would have been in that household. Four cases in the follow-up sample were unmatched or the wrong member of the household clearly seemed to have been interviewed. As described in Chapter 3, these respondents were removed from the dataset prior to beginning analysis and counted as nonresponses.

Table A.8. Total number of matches (out of 9)

9	40
8	36
7	16
6	3
5	1
4	0
3	0
2	0
1	0
0	0

Appendix B: Survey Details

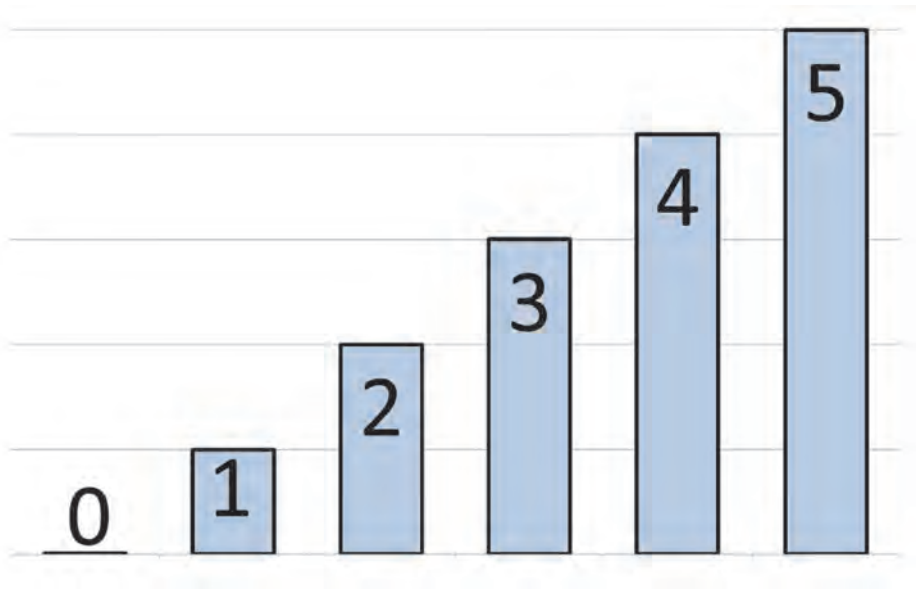
Questionnaires are available from author upon request.

Figure B.1. English translation of permission for reinterview question asked at end of GDHS women's questionnaire

1113	Thank you for taking the time to answer these questions. I would like to inform you that additional information on childbearing and contraception will be collected in the near future in order to find better ways to help couples in Ghana achieve their family goals. Another member of our team may return in a few days or weeks to ask you a few additional questions about these topics. Do you agree to allow another member of our team to contact you about participating in a short interview? Your responses will remain confidential.	YES . . . . . 1 NO 2

Figure B.2. Numeric translation scale shown to respondents

A full-page version of this scale was given to interviewers and laminated to show to respondents throughout the 0 to 5 questions.



Appendix C: Detail on Discrepant Cases

Table C.1. Detail on follow-up respondents with unmet need who had a discrepant desire for a/another child

Among follow-up respondents with unmet need, details on 9 who gave a discrepant desire for a/another child

Case #	GDHS Fertility Prefer-ence[1]	Follow-up Fertility Prefer-ence	Follow-up Timing	Difference would affect unmet need classifi-cation?	Region	Marital status	Age Group	Parity	Number of days between interviews	Pregnant	Number of discre-pancies in identity[2]
7.06	Have a/ another	No more	-	No (shifted from spacing to limiting)	Urban Greater Accra	Formerly in union	30-34	2	26	No	0
9.08	No more	Have a/ another	As soon as possible	Yes	Rural Northern	Currently in union	30-34	8	14	No	2
13.12	No more	Have a/ another	5 years	No (shifted from limiting to spacing)	Rural Northern	Currently in union	35-39	9	10	No	1
13.02	Undecided	Have a/ another	Any moment from now	Yes	Rural Northern	Currently in union	40-44	7	7	No	1
3.08	Undecided	Have a/ another	1 year	Yes	Urban Central	Currently in union	35-39	2	39	No	0
10.13	Undecided	Have a/ another	1 to 3 years	Yes, if settled on less than 2 years	Rural Northern	Currently in union	30-34	8	9	No	2
2.10	Undecided	Have a/ another	4 years	No	Rural Central	Never in union	25-29	1	32	Yes	0
4.07	Undecided	Have a/ another	6 to 8 years	No	Rural Central	Currently in union	30-34	6	29	No	1
13.01	Undecided	Have a/ another	Don't know	No	Rural Northern	Currently in union	35-39	4	6	No	1

[1] Phrasing of question, in GDHS and Follow-up: Now I have some questions about the future. Would you like to have another child, or would you prefer not to have any more children? (If pregnant: After the child you are expecting now, would you like to have another child, or would you prefer not to have any more children?)
[2] See Appendix A

Table C.2. Detail on follow-up respondents with unmet need who had different time to wait before next pregnancy between GDHS and follow-up

Among respondents with unmet need who consistently wanted a/another child in both GDHS and Follow-up survey, detail on 12 cases where timing was different

Case #	DHS: Time to next birth[1]	Follow up: Time to next birth	Affects unmet need classi-fication?	Region	Marital status	Age Group	Parity	Number of days between interviews	Pregnant	Number of discre-pancies in identity[2]
2.05	After marriage	As soon as possible	Yes	Rural Central	Never in union	20-24	0	31	No	0
1.07	After marriage	2 years	No	Rural Central	Never in union	20-24	0	9	No	0
6.08	After marriage	2 years	No	Urban Greater Accra	Never in union	35-39	0	14	No	0
9.09	After marriage	2 years	No	Rural Northern	Never in union	15-19	0	9	No	1
10.03	3 years	5 years	No	Rural Northern	Currently in union	20-24	2	23	No	2
9.05	3 years	1 year	Yes	Rural Northern	Currently in union	35-39	4	12	No	1
13.05	3 years	1 year	Yes	Rural Northern	Currently in union	25-29	4	5	No	0
9.06	4 years	18 months	Yes	Rural Northern	Currently in union	20-24	1	11	No	1
6.04	4 years	2 months to 2 years	Yes	Urban Greater Accra	Currently in union	25-29	3	10	No	2
3.09	4 years	2 years	No	Urban Central	Currently in union	20-24	3	37	No	1
5.02	5 years	5 months	Yes	Rural Central	Currently in union	20-24	1	15	No	1
11.11	6 years	3 months to 3 years	Yes, if settled on less than 2 years	Urban Northern	Currently in union	40-44	6	26	No	0

[1] Phrasing of question, in GDHS and Follow-up: How long would you like to wait from now before the birth of (a/another) child? Possible responses in GDHS are numeric months and years, (sing le choice, no range), soon/now, cannot get pregnant, after marriage, other, and don't know. In the mixed-methods survey we encouraged open-ended responses with some probing and we allowed a range.
[2] See Appendix A.

Table C.3. Detail on follow-up respondents with unmet need who reported actually using a method of family planning

Case #	Method indicated	Region	Marital status	Age group	Parity	Number of days between interviews	Any other FP user in house-hold?	Inconsis-tent use of rhythm or with-drawal[1]	Number of discre-pancies in identity[2]
9.03	Injectable	Rural Northern	Never in union	15-19	0	11	No	-	0
9.09	Injectable	Rural Northern	Never in union	15-19	0	9	No	-	1
10.04	Injectable	Rural Northern	Currently in union	30-34	6	23	No	-	1
3.09	Pill/emergency contraception[3]	Urban Central	Currently in union	20-24	3	37	No	-	1
11.04	Pill	Urban Northern	Currently in union	40-44	6	24	No	-	2
13.04	Rhythm	Rural Northern	Currently in union	30-34	6	7	No	Yes	0
6.05	Rhythm	Urban Greater Accra	Currently in union	35-39	4	11	No	Yes	1
9.10	Rhythm	Urban Northern	Currently in union	20-24	0	14	No	No	1
11.07	Rhythm	Urban Northern	Currently in union	40-44	5	37	No	No	0
2.07	Rhythm; withdrawal	Rural Central	Currently in union	30-34	4	30	No	No	2
7.06	Rhythm; withdrawal	Urban Greater Accra	Formerly in union	30-34	2	26	No	Yes	0
6.10	Rhythm; withdrawal	Urban Greater Accra	Currently in union	35-39	4	13	No	Yes	0
6.08	Rhythm; withdrawal; occasionally condoms	Urban Greater Accra	Never in union	35-39	0	14	No	No	0
5.06	Withdrawal	Rural Central	Currently in union	25-29	2	18	No	No	0
6.04	Withdrawal	Urban Greater Accra	Currently in union	25-29	3	10	No	No	2

[1] Over course of conversation, indicated that she only uses rhythm occasionally, that she never refuses intercourse to avoid pregnancy, or that she uses the method sometimes.
[2] See Appendix A.
[3] Respondent describes her method as the “3-day pill” (emergency contraception) but indicates that she takes it regularly.