Couples' Reports of Household Decision-making and the Utilization of Maternal Health Services in Bangladesh

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ABSTRACT

This study examines the association between maternal health service utilization and household decision-making in Bangladesh. Most studies of the predictors of reproductive health service use focus on the woman's report of her own characteristics. This may be a limitation because, in many societies, decisions to use antenatal care or to deliver in a health facility are strongly influenced by family members, including the husband. Moreover, some have argued that joint decision-making between husbands and wives may yield better reproductive health outcomes than men making decisions alone or women making decisions without input or agreement from their partners. We use matched husband and wife reports about who makes common household decisions to predict use of antenatal and delivery care, using data from the 2007 Bangladesh Demographic and Health Survey. Results from regression analyses suggest that it is important to consider whether husbands and wives agree about who makes household decisions since disagreeing about who makes these decisions is negatively associated with reproductive health care use. In addition, compared to joint decision-making, husband-only decision-making is negatively associated with antenatal care use and facility-based deliveries. Finally, associations between household decision-making arrangements and health service utilization vary depending on whose report is used and the type of health service utilized.

INTRODUCTION

The study of reproductive health, including health care utilization, has been primarily individualistic in nature, with a focus on women (Becker, 1996). Most studies on the utilization of health services during pregnancy and childbirth focus on women's individual characteristics based on their self-reports (Gabrysch & Campbell, 2009; Simkhada et al., 2008). However, decisions about reproductive health care utilization are not made independent of one's social context, and are often strongly influenced by spousal relationships. Although women's characteristics often dominate analyses of reproductive health care utilization, an increasing number of 'couples studies' examine information about both husbands and wives as matched pairs. These studies make unique contributions because they can reveal discrepancies between men's and women's reports of reproductive health attitudes and behaviors. The majority of these studies focus on fertility, family planning, or sexual behavior as the outcome of interest (Bankole & Singh, 1998; Becker, 1996; Becker, 1999; Dodoo, 1998; Gipson & Hindin, 2008; Harvey et al., 2004; Kulczycki, 2008; Lasee & Becker, 1997; McDougall, 2011; Miller et al., 2001; Mullany, 2010).

Recently, couples studies have started to explore the association between health outcomes and couples' reports of household decision-making (Allendorf, 2007; Becker et al., 2006; Ghuman et al., 2006; Jejeebhoy, 2002). These studies frame their analyses of decision-making as an examination of women's relative power (Becker et al., 2006) or women's autonomy (Allendorf, 2007; Ghuman et al., 2006; Jejeebhoy, 2002). However, it has been suggested that the autonomy paradigm is not adequate for understanding women's reproductive health in the South Asian context because of the importance of inter-dependence within families (Mumtaz & Salway, 2009). Specifically, women's independence and autonomy, with respect to health-related decision-making, may be restricted in a society where women are embedded in social relationships and have strong cultural and structural ties to men. Furuta and Salway (2006) argue that focusing on a woman's independence from her husband and family is

inappropriate in South Asia and greater attention should be placed on household decision-making processes that involve multiple people. Others have suggested that couples' joint decision-making may yield better reproductive health outcomes (Mullany et al., 2005) compared to men making decisions alone or women making decisions without input or agreement from their partners. This could arise because joint decision-making is associated with greater male involvement in health behaviors (Mullany et al., 2005) or because joint decision-making allows the husband and wife to share the responsibility of the decision, especially in cases where there are negative consequences (Carter, 2002). Very few studies explore the ways in which different patterns of household decision-making predict health service utilization (Allendorf, 2007; Becker et al., 2006).

Understanding the decision-making process as a negotiation between husbands and wives is particularly important in Bangladesh. The husband is often involved in decisions about his wife's health care, especially when it requires her to leave the home. This is likely due to women's limited mobility and limited educational and economic opportunities in Bangladesh (Paul and Rumsey, 2002; Rozario, 1998). Women's limited mobility likely arises from the Muslim institution of *parda* (or *purdah*), which creates a strict separation between men and women. Since most doctors in Bangladesh are male, women often need their husband's permission before seeking care. Women's limited educational and economic opportunities give men more authority in the household, which leads to male involvement in women's health care needs. These social barriers may, in part, be responsible for the low rates of maternal health service utilization. Currently, only 27% of all births in Bangladesh are assisted by skilled professionals and only 23% of births take place in a health facility. In addition, only 54% of women received at least one antenatal care visit from a medically trained provider and only 23% received four or more antenatal care visits (BMMS, 2010). Improvements in the use of adequate antenatal care and professional delivery care have the potential to reduce the high rates of maternal and neonatal

mortality in Bangladesh (Campbell & Graham, 2006; Moss et al., 2002); therefore, it is critical to better understand the kinds of relationships that may encourage or inhibit use.

The current literature on antenatal care and delivery care in Bangladesh focuses on socioeconomic, demographic, and geographical barriers to service utilization (Collin et al., 2007). Studies that address interpersonal factors related to maternal health service utilization, such as decision-making and husband's involvement, tend to focus on specific, non-representative subpopulations (Amin et al., 2010; Choudhury & Ahmed, 2011). Using a nationally representative sample from Bangladesh, this study will make two primary contributions to the existing literature. The first contribution is methodological: we propose a new way to operationalize household decision-making information from surveys that interview both husbands and wives. The second contribution is substantive: using this more detailed measure, we describe the association between different household decision-making arrangements and maternal health service utilization from the couple's perspective.

BACKGROUND

The observed association between couples' decision-making and reproductive health outcomes may vary for a number of methodological reasons, including the way in which decision-making is measured, the type of respondent (i.e., wife, husband, or both), and the outcome of interest (e.g., utilization of antenatal care or contraceptive use). Four previous studies have examined the association between decision-making and health outcomes along at least one of these three dimensions (Allendorf, 2007; Becker et al., 2006; Ghuman et al., 2006; Jejeebhoy, 2002), but no study has addressed all three. Additionally, no study has comprehensively examined the predictive power of different types of household decision-making arrangements on maternal health care utilization.

Decision-making is typically measured by using a summative index, which incorporates a variety of decision-making variables. The past studies that examined the association between couples' decision-making and health outcomes each used different measures of decision-making to create such indices. Two of the four studies measured decision-making by using questions related to the 'final say' on specific household decisions (Allendorf, 2007; Becker et al., 2006). Each study created a spouse-specific summary score based on men's and women's responses. Ghuman and colleagues (2006) measured autonomy using a set of 11 decision-making questions related to freedom of movement, child care, and household tasks. Lastly, Jejeebhoy (2002) measured three aspects of autonomy using indices for each construct: mobility, access to economic resources, and economic decision-making.

As mentioned earlier, three of the four previous studies examining decision-making were operationalizing a latent construct—women's autonomy—with the measures they created. Therefore, these studies place a greater value on the wife alone making a decision when creating the score or index to represent autonomy. This approach does not allow the investigator to study the association between a more detailed variety of decision-making arrangements and health outcomes. Each of these prior studies also examined the percent agreement in the responses of wives and husbands about who made each type of decision. Although a large and significant proportion of couples disagreed about who made each of the studied decisions (between 10% and 53%), information about the level of disagreement was not used in the final regression models of the association between decision-making and health outcomes. Whether couples disagree about who makes household decisions has important implications for health service use (Mullany, 2010). Disagreement may point to deficiencies in spousal communication or other relational attributes, which can affect predictions about maternal health care utilization. Prior evidence from couples studies could be limited if disagreement among partners influences the estimated association between particular decision-making arrangements and health care utilization.

Furthermore, while all four prior studies have shown that partners often disagree about who makes a particular decision, it is not clear whether the estimated association with health care utilization varies depending on whose report about decision-making is used: women's, men's, or both members of the couple. Lastly, the effect of decision-making arrangements on health service utilization may vary according to the type of health service examined. Only two of the four studies examined the association between decision-making and maternal health service utilization (Allendorf, 2007; Becker et al., 2006) and neither study discussed why decision-making arrangements were differentially associated with various health care utilization outcomes.

STUDY AIMS

This study will make both methodological (Aims 1 & 2) and substantive (Aim 3) contributions to the existing literature on couples' reports about decision-making and health service utilization. We aim to examine (1) the agreement and disagreement in husbands' and wives' responses to questions about who makes particular decisions in the household, (2) the potential variability in our estimates of the association between decision-making arrangement and the use of maternal health services when we vary whose report is used (wife's reports only, husband's reports only, or the couple's joint reports), and (3) the association between decision-making arrangement and the use of maternal health services for two types of health services (antenatal care and delivery care).

METHODS

Data Source and Sampling Strategy

This study uses data from the 2007 Bangladesh Demographic and Health Survey (BDHS) (NIPORT, 2009). The survey focuses on women between the ages of 15 and 49 who had been or were currently married. A survey of men was conducted along with the survey of women among a sub-sample of one of every

two households selected for the women's survey. All men between the ages of 15 and 54 and who had ever been married were eligible for the male survey.

A total of 10,996 women age 15–49 (98.4% response rate) and 3,771 men (92.6% response rate) were successfully interviewed. For the purpose of this study, the sample was limited to 3,336 married couples in which both partners were interviewed. We created an analytic sample of 1,649 couples with a child under five years old, as only these respondents were asked questions about the use of antenatal and delivery care. Further omitting those couples with item missing data yielded a final analytic sample of 1,625 couples.

Response Variable

The binary response variables for this study are (1) whether the woman received at least one antenatal care visit and (2) whether the woman's last birth took place at a health facility, such as a government hospital, a non-governmental organization clinic, or a private hospital/clinic. The choice to use one visit as the threshold for antenatal care is appropriate in Bangladesh since the utilization rate of antenatal care is low. Additionally, this measure has been used by other studies of couples (Allendorf, 2007). The measure of delivery care is closely associated with the proportion of women whose last birth was attended by a skilled health professional. Due to the high proportion of home-based deliveries in Bangladesh and the limited number of qualified health professionals, giving birth in a hospital or clinic is one of the best ways to ensure adequate care for the mother and newborn. These two indicators were chosen based on their positive association with improved maternal and neonatal health outcomes (Campbell & Graham, 2006). They also represent two very different types of decisions: antenatal care use is a planned behavior that can occur multiple times during pregnancy, whereas in Bangladesh, delivery at a health facility is often an unplanned decision made at a crisis point, such as during a difficult labor (Parkhurst et al., 2006).

Predictor Variables

The primary predictor variables for this study are measures of household decision-making. The BDHS includes a total of six questions related to household decision-making (Figure 1). Most other couple studies use the decision-making questions to quantify a theoretical construct (e.g., women's autonomy) that is not directly measurable. We propose instead to use these questions directly, to assess who makes decisions within the household. These six questions were asked in the exact same way to both the husband and wife. The response options for each were also the same: respondent only, spouse only, respondent and spouse jointly, or someone else. We decided to use only four of the items in our analysis. The fifth question inquires about the use of money the wife earns and only 18% of the women in our sample had any earnings. The sixth question asks about decisions about health care for 'yourself,' which made it impossible to compare men's responses to women's responses because the object of inquiry was different.

Each of the four remaining decision-making questions was used separately in our analysis in order to retain the ability to directly compare husbands' and wives' responses. Four dummy variables were created for each question to compare the wife's and husband's responses: (1) Wife only made the decision, (2) Husband only, (3) Jointly, and (4) Other. The 'Other' category combined two additional responses: 'someone else' and 'you and someone else.' When analyzing couple data, each of the four dummy variables represented responses in which the wife and husband agreed. A fifth dummy variable—Disagree—was included in the analysis of couple data. We classified all disagreements together, though they could be comprised of many different combinations of men's and women's reports about who made decisions. 'Jointly' was used as the reference group in the regression models because it has been associated with better reproductive health outcomes (Carter, 2002; Mullany et al., 2005) and it has an adequate number of observations for comparison purposes (Table 1). This analytic

strategy is different from other couple studies, which have combined the decision-making questions to create an aggregate score of woman's autonomy in decision-making (Allendorf, 2007; Becker et al., 2006). As discussed above, our strategy makes it possible to examine husbands' and wives' disagreement about who makes decisions as an informative category, as well as the other distinctive types of arrangements.

This study uses other key predictor variables based on their association with antenatal and delivery care as cited by previous studies on the determinants of maternal mortality in Bangladesh (Chowdhury et al., 2007). These variables are divided into three categories: previous use of health services, demographic characteristics, and socioeconomic characteristics. Previous use of health services refers to a woman's prior experience with antenatal care, prior complication during childbirth, and experience in childbearing. A woman's prior experience with antenatal care is used as a response variable as well; therefore, it is used as a predictor variable in models of delivery care utilization only. Antenatal care is self-reported and is a binary variable coded as 1 if the wife reported attending at least one antenatal care check-up and 0 otherwise. Previous complications during pregnancy were assessed by asking the woman whether or not she had any miscarriages, abortions, stillbirths or menstrual regulations (any treatment administered within 14 days of a menstrual period to ensure that a woman either is not pregnant or does not remain pregnant) that ended before 2002. Previous complications were coded as 1 if the woman responded in the affirmative and 0 if not. Previous experience with childbirth is measured by the number of children a woman has, also known as parity. A high value is often placed on the first pregnancy and, in some settings, a woman's family will help her to access the best care possible. Additionally, women of higher parity may not feel the need to receive professional care if previous deliveries were uncomplicated (Gabrysch & Campbell, 2009). Parity is self-reported and is coded 1 if the woman has two or more children and 0 if she has only one child.

Demographic characteristics include wife's age and place of residence. Age is self-reported and used as a continuous variable in this study. A quadratic term for age and age splines were both considered when specifying the model; however, neither transformation of age improved the model fit. Place of residence is measured by the cluster from which the household is selected (clusters were either all urban or all rural) and was coded as 1 for urban and 0 for rural. Socioeconomic characteristics include wife's education and household wealth quintile. Education is self-reported and divided into four distinct categories: no education, primary education, secondary education, and college or above. Dummy variables were created for each level of education and compared to no education in the regression models. Wealth is measured using the wealth quintile index in the BDHS. This index uses information on household ownership of consumer items and dwelling characteristics. Each asset is assigned a weight generated through principal components analysis. Each household is then assigned a score for each asset, and the scores are summed for each household. Couples are ranked according to the total wealth score of the household in which they resided. The sample is divided into quintiles from one (lowest) to five (highest). Dummy variables were created for each wealth quintile and compared to the poorest quintile in the regression models.

Analytic Strategy

Descriptive statistics are presented for each response and predictor variable (Table 1). Bivariate analyses were performed to compare the association between decision-making arrangements and the use of maternal health services, varying the respondent from whom the report of decision-making was obtained (women, men, and couples). Multivariate logistic regression models were used to determine the association between decision-making arrangement and the use of antenatal care and delivery care, controlling for other factors. Four models were estimated, one for each decision-making variable. Odds ratios and 95% confidence intervals are presented for each of the regression models. Criterion for

statistical significance is $p<0.05$. Survey estimation procedures were used to adjust for the multi-stage sample design and sampling weights. All statistical analyses were conducted using Stata 11.1.

RESULTS

Fifty-eight percent of the women received at least one antenatal care visit and 15% delivered their most recent child at a health facility, such as a government hospital, a non-governmental organization clinic, or a private hospital/clinic (Table 1). More than half of the women (56%) reported having only one child and only 17% of women had a previous complication during pregnancy. The average age of the women in the sample is 25.9 years and 26% have no formal education. Seventy-nine percent of the households in the sample are rural.

Study Aim 1: Agreement and Disagreement about Decision-Making

Table 1 shows that there is substantial disagreement between husbands and wives concerning each one of the decision-making questions (range: 51% to 62%). The largest percentage of disagreement is for decisions about daily household purchases. Across all four decision-making questions, the most typical response on which couples agree was that they made the decision together (range: 18% to 34%). Agreement that the wife made the decision alone is generally the least frequent arrangement (range: 0% to 4%).

In order to better understand the patterns of disagreement among couples, wives' and husbands' responses to one of the decision-making questions were cross-tabulated (Table 2). Although there are variations across the four different decision-making items, the item asking about child health care decisions was selected because of its relevance to the outcome of interest—health care utilization during pregnancy and childbirth. The percentage of spouses who disagree about who makes the decision about their child's health care is 56.2%. Husbands are more likely than wives to report that the

wife alone made the decision (18.6% and 11.6%, respectively); whereas, wives are more likely than husbands to report that the husband alone made the decision (23.1% and 15.0%, respectively). Approximately 61% of husbands reported that they made the decision jointly with their spouse compared to 56% of wives.

Study Aim 2: Decision-Making and the Type of Respondent

The bivariate analyses in Table 3 and Table 4 show that the strength of the association between decision-making arrangement and maternal health care utilization depends on whose report is used. According to wives' reports, compared to the odds of antenatal care use when spouses make household decisions together, the estimated odds of antenatal care use are lower when the husband alone makes decisions (range: 0.52 to 0.64). The odds ratios are statistically significant for each of the four decision-making questions. According to husbands' reports, compared to when spouses make decisions together, the estimated odds of antenatal care use are lower when the husband alone makes decisions (range: 0.59 to 0.93). The magnitude of the association is slightly weaker (closer to 1) than when using women's reports and the odds ratios are statistically significant for only two of the four decision-making questions. According to couples' reports, compared to when spouses make decisions together, the estimated odds of antenatal care use are also lower when the husband alone makes decisions (range: 0.31 to 0.62). The magnitude of the association is slightly stronger than women's reports and the odds ratios are statistically significant for three of the four decision-making questions.

The same patterns are observed for facility-based deliveries (Table 4). According to wives' reports, compared to the odds of delivery care use when spouses make household decisions together, the estimated odds of delivery care use are lower when the husband alone makes decisions (range: 0.50 to 0.65). The odds ratios are statistically significant for each of the four decision-making questions. According to husbands' reports, compared to when spouses make decisions together, the estimated

odds of delivery care use are lower when the husband alone makes decisions (range: 0.64 to 0.74). The magnitude of the association is slightly weaker than women's reports and the odds ratios are statistically significant for three of the four decision-making questions. According to couples' reports, compared to when spouses make decisions together, the estimated odds of delivery care use are also lower when the husband alone makes decisions (range: 0.29 to 0.55). The magnitude of the association is slightly stronger than women's reports and the odds ratios are statistically significant for three of the four decision-making questions. In summary, using husbands' reports alone yield associations that are significantly weaker than when women's reports or couples' reports are used.

Study Aim 3: Decision-Making and the Type of Maternal Health Service

The multivariate analyses reveal that, compared to joint decision-making, couples in which the husband makes household decisions alone and couples who disagree about who makes household decisions use less antenatal care (Table 5) and delivery care (Table 6). Compared to the odds of antenatal care use when spouses make household decisions together, the estimated odds of antenatal care use are smaller when the husband alone makes decisions (range: 0.33 to 0.75) and when couples disagree about who makes decisions (range: 0.61 to 0.81). Each of these odds ratios are statistically significant for three of the four decision-making questions. This pattern of association is similar for facility-based deliveries, but fewer odds ratios are statistically significant (Table 6). Compared to the odds of having a facility-based delivery when spouses make household decisions together, the estimated odds of facility-based delivery are generally smaller when the husband alone makes decisions (range: 0.43 to 0.88) and when couples disagree about who makes decisions (range: 0.64 to 1.04). When the husband alone makes decisions, only one of the decision-making questions shows a statistically significant association with facility-based delivery and when couples disagree, only two show significant associations. In summary, compared to

joint decision-making, decision-making of any other type is associated with less antenatal care and delivery care use.

DISCUSSION

In this study we aimed to make both methodological and substantive contributions to the literatures on couples' decision-making and maternal health care use. Methodologically, we propose a new operationalization of household decision-making variables, by comparing spouse's responses to common household decision-making questions. We create a more detailed typology of responses than is typically used and retain information about spousal disagreement. Using this new measure, we uncovered four important findings. First, levels of disagreement are higher than those found in previous couples studies. Second, disagreeing about who makes household decisions and household decision-making by husbands alone result in lower maternal health care utilization compared to joint decision making. Third, associations between household decision-making arrangements and health service utilization are stronger for antenatal care than delivery care. Finally, compared to using women's or couples' reports, using only the husband's reports yields significantly weaker associations between household decision-making arrangements and maternal health care utilization.

The level of disagreement presented in our study (between 51% and 62%) is higher than the amount of disagreement about common household decisions reported in previous couple studies, which was between 10% and 53% (Allendorf, 2007; Becker et al., 2006; Ghuman et al., 2006; Jejeebhoy, 2002). This difference could arise because we compared responses to individual household decision-making items. Two of the previous four studies used summative scores to measure autonomy, which does not allow for the direct comparison of wives' and husbands' responses to each question (Allendorf, 2007; Becker et al., 2006). In the other two studies, couples were asked a series of 'Yes/No' questions about women's autonomy (Ghuman et al., 2006; Jejeebhoy, 2002). By limiting the number of response options

to two, the amount of variation for each response was reduced and the probability of agreement between spouses increased.

Disagreement among couples is not a neutral finding. By examining each member of a couple's response to each decision-making question, our study shows that, compared to couples who agree that they make household decisions jointly, use of maternal health services is lower among couples who disagree about household decisions. If the disagreement measure indicates a lack of communication between the husband and wife (Mullany, 2010), then this may point to the importance of improving spousal relationships in order to increase maternal health care utilization. There is a need to further explore the patterns of disagreement across all four items about common household decisions in order to better understand their relationship with reproductive health care decisions. Specifically, it would be critical to examine whether disagreement is a product of gendered responses to decision-making questions (Miller et al., 2001) or is related to actual roles within the household. Future couples studies should consider disaggregating household decision-making questions—as well as other scores created by aggregating attitudinal questions—in order to assess the impact of spousal disagreement on health care utilization.

We also found that household decision-making by husbands alone results in poor maternal health care utilization. This is a unique finding because most studies on decision-making only measure the level of women's power in decision-making. The models used to predict health care utilization in previous studies reflect an implicit assumption that the level of women's autonomy is a key predictor (Allendorf, 2007; Becker et al., 2006; Ghuman et al., 2006; Jejeebhoy, 2002), and consequently do not measure the control that men may or may not have in household decision-making.

The few studies that have examined male involvement in reproductive health decisions show mixed results. In Pakistan, men's participation in household decision-making was not necessarily associated with their involvement in reproductive health decisions (Mumtaz & Salway, 2009). Male

control over household decisions is seen as a cultural expectation and a wife's failure to acknowledge his authority is perceived as 'an erosion of their husband's masculinity.' However, although he may have the final say, there is an expectation that the husband and wife will discuss and negotiate the decision at hand. This expectation emphasizes the importance placed on joint decision-making in this context. In Nepal, husbands' domination of household decision-making has been associated with less male involvement during pregnancy and childbirth, whereas joint decision-making was associated with higher levels of male involvement (Mullany et al., 2005). In Guatemala, the more power husbands were reported to have in household decision-making, the more likely women were to report that their husbands provided advice or care during pregnancy (Carter, 2002). The Guatemala study also suggested that there was a positive association between husbands' involvement during pregnancy and reproductive health care use; however, this may not be true in all social contexts.

Although our study was not designed to explain the relationship between husbands' authority and health outcomes, we posit two potential mechanisms that may account for the negative association between husbands' control over household decision-making and use of maternal health services. First, husbands' control over household decisions may be correlated with more conservative gender norms, which may be associated with conventional reproductive behaviors, that is, reliance on informal birth attendants and avoidance of the formal health system. Second, husbands' control over household decisions may limit women's mobility outside the home, inhibiting uptake of antenatal care and access to resources for delivery care. Further research is necessary in order to elucidate these and other possible mechanisms through which husbands' power in household decision-making affects maternal health care utilization, including qualitative inquiry into the relationship between domestic decision-making and reproductive health decisions (Story et al., 2012).

The strength of the association between health care use and husbands' control over decision-making differs by the type of health outcome. Specifically, compared to joint decision-making, couples

in which the husband makes decisions alone use less antenatal care. Although the pattern of association is similar for delivery care, fewer odds ratios are statistically significant. Since the decisions to use different kinds of maternal health services are made under varying circumstances (e.g., planning for the initiation of antenatal care at some point over several months versus deciding to use professional delivery care in emergency situations), the association between decision-making patterns and maternal health care use should be examined across multiple services in which voluntary decision making is more or less likely to have an influence.

Another major methodological finding is that the strength and magnitude of the association between household decision-making and maternal health care utilization depends on who responds to the question. Three of the four prior studies show substantive differences in the association between decision-making and health outcomes when comparing husbands' and wives' reports (Becker et al., 2006; Ghuman et al., 2006; Jejeebhoy, 2002). Although Allendorf (2007) did not report any substantive differences between husbands' and wives' reports, couple-level data (agreement only) increased the strength of the association between decision-making and health care utilization. Our study also found an increase in the magnitude of the association between decision-making and health care use when using couple-level data compared to using husbands' or wives' reports alone. The increased strength of the association may be due to the creation of a new response category denoting those husbands and wives who disagree about who makes household decisions. Separating responses on which couples disagree, allows us to study the agreement patterns of the other response categories. Assessing the association between health outcomes and the response categories in which husbands and wives agree may more accurately represent the 'true' response or may account for an unmeasured mediating factor, such as good spousal communication. Future research should triangulate across husbands' and wives' self-reports about decision-making in order to improve measurement accuracy.

While this study provides a comparative picture of household decision-making and maternal health care utilization, it was not designed to infer a causal association due to the retrospective, cross-sectional nature of the data. Since reports about decision-making relate to the time of the survey and the maternal health care questions relate to a time in the past 12 months, it is difficult to determine whether husbands' and wives' decision-making patterns changed since the birth of their youngest child. Additionally, our analysis did not allow us to incorporate specific information about other family members frequently involved in reproductive health decisions, such as wife's mother and mother-in-law. Finally, we could not eliminate potential sources of measurement error, such as interviewer effects and response bias. However, measurement error introduced by the interviewer or respondent is not critical if it occurs randomly.

Our results have implications for future maternal health interventions and survey work. Although instances of husbands' unilateral decision-making appear to reduce the use of maternal health services, husbands must not be viewed as the 'problem' and should not be ignored by maternal health outreach efforts. The husband is an important part of the decision-making process and male involvement in reproductive health decisions has the potential to positively impact maternal health care utilization (Carter, 2002; Mullany et al., 2005; Mumtaz & Salway, 2009). Furthermore, we suggest that a focus on the women's autonomy paradigm without consideration of the importance of spousal relationships may overlook a critical part of the decision-making process related to health care use. Therefore, policies and interventions focused on the accessibility of maternal health services in Bangladesh should focus on family relationships and communication by involving husbands in culturally appropriate ways. In addition, given the results of our study, it is important to consider whether future maternal health surveys should interview both husbands and wives. According to Mullany (2010), women are often considered the 'gold standard' for knowledge and practices related to maternal health. However, in our context, men often dominate the decision-making related to large, health-

related purchases in the household. If resources are available to collect data from both men and women, we believe it is important to consider the variation in responses when both partners are interviewed, especially the valuable information available in the patterns of disagreement.

REFERENCES

Allendorf, K. (2007). Couples' reports of women's autonomy and health-care use in Nepal. *Studies in Family Planning*, 38(1), 35-46.

Amin, R., Shah, N.M., & Becker, S. (2010). Socioeconomic factors differentiating maternal and child health-seeking behavior in rural Bangladesh: A cross-sectional analysis. *International Journal for Equity in Health*, 9, 9.

Bangladesh Maternal Morality and Health Care Survey (BMMS). (2010). Summary of key findings and implications. Retrieved from http://www.dghs.gov.bd/dmdocuments/BMMS_2010.pdf, Accessed on September 21, 2011.

Bankole, A., & Singh, S. (1998). Couples' fertility and contraceptive decision-making in developing countries: Hearing the man's voice. *International Family Planning Perspectives*, 24, 15-24.

Becker, S. (1996). Couples and reproductive health: A review of couple studies. *Studies in Family Planning*, 27(6), 291-306.

Becker, S. (1999). Measuring unmet need: Wives, husbands, or couples? *International Family Planning Perspectives*, 25, 172-180.

Becker, S., Fonseca-Becker, F., & Schenck-Yglesias, C. (2006). Husbands' and wives' reports of women's decision-making power in Western Guatemala and their effects on preventive health behaviors. *Social Science & Medicine*, 62, 2313-2326.

Campbell, O.M.R., & Graham, W.J. (2006). Strategies for reducing maternal mortality: getting on with what works. *Lancet*, 368, 1284-1299.

Carter, M. (2002). Husbands and maternal health matters in rural Guatemala: Wives' reports on their spouses' involvement in pregnancy and birth. *Social Science & Medicine*, 55, 437-450.

Choudhury N., & Ahmed, S.M. (2011). Maternal care practices among the ultra poor households in rural Bangladesh: A qualitative exploratory study. *BMC Pregnancy and Childbirth*, 11, 15.

Collin, S.M., Anwar, I., & Ronsmans, C. (2007). A decade of inequality in maternity care: antenatal care, professional attendance at delivery, and caesarean section in Bangladesh (1991–2004). *International Journal for Equity in Health*, 6, 9.

Dodoo, F. N-A. (1998). Men matter: Additive and interactive gendered preferences and reproductive behavior in Kenya. *Demography*, 35, 229-242.

Furuta, M., & Salway, S. (2006). Women's position within the household as a determinant of maternal health care use in Nepal. *International Family Planning Perspectives*, 32(1), 17–27.

Gabrysch, S., & Campbell, O.M. (2009). Still too far to walk: Literature review of the determinants of delivery service use. *BMC Pregnancy and Childbirth*, 9, 34.

Ghuman, S.J., Leeb, H.J., & Smith, H.L. (2006). Measurement of women's autonomy according to women and their husbands: Results from five Asian countries. *Social Science Research*, 35, 1-28.

Gipson J.D., & Hindin, M.J. (2008). ''Having another child would be a life or death situation for her'': Understanding pregnancy termination among couples in rural Bangladesh. *American Journal of Public Health*, 98, 1827–1832.

Harvey, S.M., Bird, S.T., Henderson, J.T., Beckman, L.J., & Huszti, H.C. (2004). He said, she said: Concordance between sexual partners. *Sexually Transmitted Diseases*, 31, 185-191.

Jejeebhoy, S.J. (2002). Convergence and divergence in spouses' perspectives on women's autonomy in rural India. *Studies in Family Planning*, 33(4), 299-308.

Kulczycki, A. (2008). Husband-wife agreement, power relations and contraceptive use in Turkey. *International Family Planning Perspectives*, 34, 127-137.

Lasee, A., & Becker, S. (1997). Husband-wife communication about family planning and contraceptive use in Kenya. *International Family Planning Perspectives*, 23, 15-20 & 33.

McDougall, J., Edmeades, J., & Krishnan, S. (2011). (Not) talking about sex: couple reports of sexual discussion and expression in Bangalore, India. *Culture, Health & Sexuality*, 13, 141-156.

Miller, K., Zulu, E. M., & Watkins, S. C. (2001). Husband-wife survey responses on Malawi. *Studies in Family Planning*, 32, 161-174.

Moss, W., Darmstadt, G.L., Marsh, D.R., Black, R.E., & Santosham, M. (2002). Research priorities for the reduction of perinatal and neonatal morbidity and mortality in developing country communities. *Journal of Perinatology*, 22, 484-495.

Mullany, B.S., Hindin, M.J., & Becker, S. (2005). Can women's autonomy impede male involvement in pregnancy health in Katmandu, Nepal? *Social Science & Medicine*, 61(9), 1993-2006.

Mullany, B.C. (2010). Spousal agreement on maternal health practices in Kathmandu, Nepal. *Journal of Biosocial Science*, 42, 689-693.

Mumtaz, Z., & Salway, S. (2009). Understanding gendered influences on women's reproductive health in Pakistan: Moving beyond the autonomy paradigm. *Social Science & Medicine*, 68, 1349-1356.

National Institute of Population Research and Training (NIPORT), Mitra and Associates, and Macro International. (2009). Bangladesh Demographic and Health Survey 2007. Dhaka, Bangladesh and Calverton, Maryland, USA: National Institute of Population Research and Training, Mitra and Associates, and Macro International.

Parkhurst, J.O., Rahman, S.A., & Ssengooba, F. (2006). Overcoming access barriers for facility-based delivery in low-income settings: Insights from Bangladesh and Uganda. *Journal of Health, Population and Nutrition*, 24(4), 438-445.

Paul, B.K., & Rumsey, D.J. (2002). Utilization of health facilities and trained birth attendants for childbirth in rural Bangladesh: An empirical study. *Social Science & Medicine*, 54(12), 1755-1765.

Rozario, S. 1998. The *dai* and the doctor: Discourses in women's reproductive health in rural Bangladesh. In: K. Ram, & M. Jolly (Eds.), *Maternities and modernities: Colonial and postcolonial experiences in Asia and the Pacific* (pp. 144-176). Cambridge: Cambridge University Press.

Simkhada, B., van Teijlingen, E.R., Porter, M., & Simkhada, P. (2008). Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature. *Journal of Advanced Nursing*, 61(3), 244-260.

Story, W.S., Burgard, S.A., Lori, J.L., Ali, N.A., Taleb, F., & Hoque, D.M. (2012). Husbands' involvement in delivery care utilization in rural Bangladesh: A qualitative study. Manuscript submitted for publication.

Figure 1. Household decision-making questions from the 2007 Bangladesh Demographic and Health Survey.

1. Who usually makes decisions about your child health care?
2. Who usually makes decisions about making major household purchases?
3. Who usually makes decisions about making purchases for daily household needs?
4. Who usually makes decisions about visits to your family or relatives?
5. Who usually decides how the money you earn will be used?
6. Who usually makes decisions about health care for yourself?

Table 1. Summary statistics for couples in the 2007 Bangladesh Demographic and Health Survey

	n	%
Dependent variables		
Antenatal care		
No visits	642	42
One or more visits	983	58
Place of delivery		
Home	1,340	85
Health facility	285	15
Decision-making		
Who decides about your child's health care?		
Agree – Jointly	503	35
Agree – Wife only	62	3
Agree – Husband only	78	4
Agree – Other	40	2
Disagree	942	56
Who decides about making major household purchases?		
Agree – Jointly	493	33
Agree – Wife only	6	0
Agree – Husband only	176	9
Agree – Other	140	7
Disagree	810	51
Who decides about making daily household purchases?		
Agree – Jointly	259	18
Agree – Wife only	57	4
Agree – Husband only	181	9
Agree – Other	128	7
Disagree	1,000	62
Who decides about visits to your family or relatives?		
Agree – Jointly	488	34
Agree – Wife only	9	0
Agree – Husband only	164	8
Agree – Other	99	6
Disagree	865	52
Previous use of health services		
Previous complication		
No previous complication	1,327	83
Previous complication	298	17
Parity		
One child	896	56
Two or more children	729	44
Demographic characteristics		
Wife's age (Mean)	1,625	25.9

Place of residence		
Rural	1,039	79
Urban	586	21
Socioeconomic characteristics		
Wife's Education		
No Education	416	26
Primary	533	33
Secondary	545	34
Higher	131	7
Wealth		
Poorest	321	23
Poorer	337	22
Middle	323	20
Richer	301	19
Richest	343	16

Notes: All variables are reported at the couple-level unless otherwise specified. There were 1,625 total observations.

Table 2. Cross-tabulation of couples' responses to the first decision-making question, Bangladesh, 2007

Who usually makes decisions about your child health care?					
	Husband's response				
Wife's response	Wife	Husband	Both jointly	Other	Total
Wife	**3.1**	1.3	7.1	0.1	11.6
Husband	3.9	**3.9**	14.0	1.3	23.1
Both jointly	10.0	8.5	**35.0**	2.3	55.8
Other	1.6	1.3	4.8	**1.8**	9.5
Total	18.6	15.0	60.9	5.5	100.0

Table 3. Bivariate logistic regression analysis of the association between decision-making arrangement and having at least one antenatal check-up by respondent type.

Variables	Women (95% CI)	Men (95% CI)	Couples (95% CI)
Decision-making			
Who decides about your child's health care?			
Jointly	1.00	1.00	1.00
Wife only	0.81 (0.55-1.18)	1.31 (0.95-1.79)	0.89 (0.49-1.62)
Husband only	0.52** (0.39-0.68)	0.59** (0.43-0.80)	0.31** (0.17-0.59)
Other	0.97 (0.64-1.46)	1.21 (0.72-2.04)	1.13 (0.50-2.58)
Disagree	--	--	0.85 (0.66-1.10)
Who decides about making major household purchases?			
Jointly	1.00	1.00	1.00
Wife only	0.69 (0.42-1.12)	1.22 (0.53-2.77)	0.71 (0.13-3.97)
Husband only	0.63** (0.48-0.83)	0.73* (0.56-0.96)	0.50** (0.33-0.75)
Other	1.28 (0.84-1.94)	1.16 (0.83-1.63)	1.09 (0.69-1.72)
Disagree	--	--	0.72* (0.54-0.96)
Who decides about making daily household purchases?			
Jointly	1.00	1.00	1.00
Wife only	0.73* (0.55-0.98)	1.39 (0.87-2.23)	1.64 (0.77-3.51)
Husband only	0.61** (0.45-0.83)	0.93 (0.71-1.20)	0.62 (0.39-1.01)
Other	1.13 (0.73-1.75)	1.46 (0.98-2.17)	1.10 (0.63-1.94)
Disagree	--	--	0.67* (0.47-0.96)
Who decides about visits to your family or relatives?			
Jointly	1.00	1.00	1.00
Wife only	0.83 (0.51-1.35)	1.22 (0.63-2.35)	1.57 (0.29-8.35)

Husband only	0.64**	0.80	0.51**
	(0.48-0.85)	(0.62-1.02)	(0.34-0.76)
Other	0.97	1.12	1.24
	(0.65-1.44)	(0.77-1.63)	(0.72-2.15)
Disagree	--	--	0.74*
			(0.57-0.96)

Notes: All data are presented as odds ratios. * = Statistically significant at 5% level. ** = Statistically significant at the 1% level. -- = Not applicable. There were 1,625 observations.

Table 4. Bivariate logistic regression analysis of the association between decision-making arrangement and delivering the youngest child at a health facility by respondent type.

Variables	Women (95% CI)	Men (95% CI)	Couples (95% CI)
Decision-making			
Who decides about your child's health care?			
Jointly	1.00	1.00	1.00
Wife only	0.99 (0.62-1.58)	1.31 (0.89-1.91)	1.35 (0.62-2.91)
Husband only	0.55** (0.37-0.82)	0.74 (0.49-1.12)	0.55 (0.21-1.45)
Other	0.83 (0.49-1.39)	1.36 (0.70-2.66)	1.58 (0.65-3.86)
Disagree	--	--	0.87 (0.64-1.19)
Who decides about making major household purchases?			
Jointly	1.00	1.00	1.00
Wife only	0.95 (0.50-1.79)	0.36 (0.12-1.08)	Omitted
Husband only	0.65* (0.44-0.95)	0.64** (0.44-0.90)	0.50* (0.27-0.92)
Other	1.35 (0.87-2.08)	1.20 (0.79-1.82)	1.34 (0.77-2.33)
Disagree	--	--	0.61** (0.44-0.84)
Who decides about making daily household purchases?			
Jointly	1.00	1.00	1.00
Wife only	0.78 (0.54-1.11)	1.25 (0.71-2.18)	1.03 (0.48-2.24)
Husband only	0.60* (0.37-0.97)	0.68* (0.48-0.95)	0.29** (0.13-0.66)
Other	1.15 (0.73-1.81)	1.67* (1.08-2.60)	1.20 (0.67-2.14)
Disagree	--	--	0.63* (0.43-0.91)
Who decides about visits to your family or relatives?			
Jointly	1.00	1.00	1.00
Wife only	1.42 (0.84-2.40)	0.91 (0.40-2.07)	1.21 (0.22-6.73)
Husband only	0.50** (0.34-0.73)	0.68* (0.47-0.99)	0.53* (0.28-0.99)

Other	1.24 (0.81-1.90)	1.47 (0.94-2.31)	1.81* (1.05-3.11)
Disagree	--	--	0.67* (0.49-0.94)

Notes: All data are presented as odds ratios. * = Statistically significant at 5% level. ** = Statistically significant at the 1% level. -- = Not applicable. There were 1,625 observations.

Table 5. Multivariate logistic regression analysis of the association between decision-making arrangement and having at least one antenatal check-up.

Variables	Model 1	Model 2	Model 3	Model 4
Decision-making				
Who decides about your child's health care?				
Agree – Jointly	1.00	--	--	--
Agree – Wife only	0.70	--	--	--
Agree – Husband only	0.33**	--	--	--
Agree – Other	0.50	--	--	--
Disagree	0.81	--	--	--
Who decides about making major household purchases?				
Agree – Jointly	--	1.00	--	--
Agree – Wife only	--	1.01	--	--
Agree – Husband only	--	0.54**	--	--
Agree – Other	--	0.48**	--	--
Disagree	--	0.70*	--	--
Who decides about making daily household purchases?				
Agree – Jointly	--	--	1.00	--
Agree – Wife only	--	--	1.43	--
Agree – Husband only	--	--	0.75	--
Agree – Other	--	--	0.49*	--
Disagree	--	--	0.61*	--
Who decides about visits to your family or relatives?				
Agree – Jointly	--	--	--	1.00
Agree – Wife only	--	--	--	1.51
Agree – Husband only	--	--	--	0.54**
Agree – Other	--	--	--	0.58
Disagree	--	--	--	0.67**
Previous use of health services				
Previous complication				
No previous complication	1.00	1.00	1.00	1.00
Previous complication	1.11	1.11	1.10	1.11
Parity				
One child	1.00	1.00	1.00	1.00
Two or more children	0.69*	0.71	0.67*	0.68*
Demographic characteristics				
Wife's age	0.996	0.991	0.993	0.995
Place of residence				
Rural	1.00	1.00	1.00	1.00
Urban	1.42*	1.36*	1.33	1.38*
Socioeconomic characteristics				
Wife's Education				
No education	1.00	1.00	1.00	1.00
Primary	1.55*	1.56*	1.59**	1.61**
Secondary	3.03**	3.04**	3.06**	3.00**
Higher	6.42**	6.96**	6.64**	6.91**

Wealth				
Poorest	1.00	1.00	1.00	1.00
Poorer	0.98	0.98	0.97	0.99
Middle	1.71*	1.76*	1.67*	1.72*
Richer	1.64*	1.69*	1.71*	1.71*
Richest	4.09**	4.24**	4.29**	4.11**

Notes: All results are reported as odds ratios. All variables are reported at the couple-level unless otherwise specified. * = Statistically significant at 5% level. ** = Statistically significant at the 1% level. -- = Not applicable. There were 1,625 observations.

Table 6. Multivariate logistic regression analysis of the association between decision-making arrangement and delivering the youngest child at a health facility.

Variables	Model 1	Model 2	Model 3	Model 4
Decision-making				
Who decides about your child's health care?				
Agree – Jointly	1.00	--	--	--
Agree – Wife only	1.30	--	--	--
Agree – Husband only	0.88	--	--	--
Agree – Other	0.99	--	--	--
Disagree	1.04	--	--	--
Who decides about making major household purchases?				
Agree – Jointly	--	1.00	--	--
Agree – Wife only	--	Omitted	--	--
Agree – Husband only	--	0.64	--	--
Agree – Other	--	0.75	--	--
Disagree	--	0.64*	--	--
Who decides about making daily household purchases?				
Agree – Jointly	--	--	1.00	--
Agree – Wife only	--	--	0.65	--
Agree – Husband only	--	--	0.43*	--
Agree – Other	--	--	0.76	--
Disagree	--	--	0.65	--
Who decides about visits to your family or relatives?				
Agree – Jointly	--	--	--	1.00
Agree – Wife only	--	--	--	1.14
Agree – Husband only	--	--	--	0.76
Agree – Other	--	--	--	1.15
Disagree	--	--	--	0.66*
Previous use of health services				
Antenatal care				
No visits	1.00	1.00	1.00	1.00
One or more visits	3.56**	3.50**	3.55**	3.51**
Previous complication				
No previous complication	1.00	1.00	1.00	1.00
Previous complication	1.54	1.55	1.56	1.55
Parity				
One child	1.00	1.00	1.00	1.00
Two or more children	0.37**	0.36**	0.37**	0.36**
Demographic characteristics				
Wife's age	1.054	1.051	1.056	1.057
Place of residence				
Rural	1.00	1.00	1.00	1.00
Urban	2.07**	2.05**	2.08**	2.11**
Socioeconomic characteristics				
Wife's Education				
No education	1.00	1.00	1.00	1.00
Primary	1.11	1.11	1.16	1.17
Secondary	2.72**	2.75**	2.80**	2.75**

Higher	6.05**	5.86**	5.88**	6.18**
Wealth				
Poorest	1.00	1.00	1.00	1.00
Poorer	0.51	0.51	0.51	0.51
Middle	1.37	1.46	1.42	1.42
Richer	1.09	1.12	1.13	1.12
Richest	2.87**	2.98**	2.91**	2.82**

Notes: All results are reported as odds ratios. All variables are reported at the couple-level unless otherwise specified. * = Statistically significant at 5% level. ** = Statistically significant at the 1% level. -- = Not applicable. There were 1,625 observations.