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Couple's reports of household decision-making, unmet need for contraception, and unintended pregnancy in Bangladesh

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Abstract

Introduction: Previous researches emphasize the role of wife's sole contribution in household decision-makings as predictor of family planning and reproductive health behaviors in many developing countries. These studies tend to overlook how couple's joint decision-making may promote better reproductive health outcomes than any partner's sole decision-makings which lack input or agreement from other partner in a marital relationship. Using married couple's matched responses in decision-making questions; this study examines the association between couples' concordant and discordant decision-makings, and wife's unmet need for contraception and unintended pregnancy in Bangladesh.

Methods: This study used couple's dataset (n= 3336) of Bangladesh Demographic and Health Survey of 2007. Multivariate logistic regression was used to examine the likelihood of unmet need for contraception, and unintended pregnancy among married women of reproductive age.

Findings: Study findings reveal that there are substantial levels of both concordance and discordance in responses to household decision-making items. Results from logistic regression analyses suggest that compared to couple's joint decision making, husband-only or wife-only decision-making is associated with higher risk for women in having both unmet need for contraception and unintended pregnancy. Regression results also indicate that unmet need for contraception and unintended pregnancy are lower among women with lower parity, women from relatively richer households, and women heard family planning messages on television.

Conclusion: As couple's joint decision-making is significantly associated with better reproductive outcomes, policy makers may promote community based outreach programs, and communication campaigns for family planning focusing on egalitarian gender role approach.

Key words: Contraception, pregnancy, women's power, household decision-making.

Introduction

Unmet need for contraception and unintended pregnancy have been two key issues of concern in family planning programs in many developing countries. In fact, unintended pregnancy has been a global epidemic. Recent estimates suggest that approximately 40 percent of all pregnancies are unintended, and more than 20 percent births results from such pregnancies,[1,2]. Unintended pregnancy often results in abortion-related morbidity and mortality,[3]. In addition, unintended pregnancies are widely reported to be associated with an array of negative socio-psychological and health outcomes for both mothers and children,[4–6]. For example, mothers who have mistimed or unplanned pregnancies are less likely to utilize antenatal care in a timely manner than those whose pregnancies are intended,[7,8].

Women's control over their reproductive desires is often adversely affected by their status at the households in many developing countries. In a poor conservative country such as Bangladesh, women's inferior status at the household puts them in weaker position that undermines their achievement of desired reproductive goals such as using contraceptives for spacing or limiting childbirth. Understanding the household decision-making as a power relation between partners in marital relationship is particularly important in Bangladesh, where men often dominate household decisions related to family affairs, including reproductive matters. Most of the previous studies of determinants of use of contraceptives focus on women's reports; however, men are often involved in these decisions as well. Recently, couple studies on maternal and reproductive health care have started examining the association between various health outcomes and couples' household decision-making dynamics,[9–11]. These studies used the analyses of decision-making as a proxy measure of either women's relative power,[9,10] or women's autonomy,[11]. Using these measures, studies tend to argue that couple's joint decision-making is favorable for better maternal health outcomes than decisions made by only one partner,[9].

Existing literature on unmet need for contraception and reproductive behavior primarily focuses on the role of socioeconomic, demographic, and family planning program access factors,[12–15]. A few studies looked at the household decision-making factors related to contraceptive behavior and unintended pregnancy. However, these studies restricted their analysis using only the women's report of household decision-making,[16,17]. These studies have not addressed how couple's concordance or discordance in household decision-makings could be associated with women's unmet demand for contraceptive and unintended pregnancy in Bangladesh. Drawing upon a married couple's sample from Bangladesh, this study will make twofold contributions to the existing literature on family planning and reproductive health care. First, using the operationalization of couple's decision-makings used by Story and Burgard, [9], we will measure couple's decision-makings by matching husbands and wives' concordant or discordant responses to a set of household decision-making questions. A couple's concordant responses would include whether both wife and husband agree that they jointly make the decision, or wife alone makes the decision, or husband alone makes the decision, or someone else with them take part in the decision; and discordant responses would include whether wife and husband disagree about who makes the decision [9]. Second, using the above decision-making measures, and controlling for relevant socio-economic characteristics, we will finally examine the association between different decision-making arrangements (e.g. women, men, and couple's report) and women's risk for having unmet need for contraception and unintended pregnancy in Bangladesh.

Methods

Data and sample

This study draws upon data from the Bangladesh Demographic and Health Survey (BDHS) of 2007. BDHS is a nationally representative household survey, which collects detail information on maternal and child health, mortality, fertility, and family planning from the eligible household members. Following a multi-stage stratified sampling procedure, BDHS conducts standardized separate survey for ever married women and men,[18]. In BDHS of 2007, a total of 10,996 women age 15-49 (98.4% response rate) and 3771 men (92.6% response rate) were interviewed. For the purpose of this study, we restricted our analytic sample to 3336 married couples in which both partners were interviewed.

Outcome variables

Unmet need for contraception

The concept of ‘unmet need for contraception’ simply refers to the proportion of women who do not want to become pregnant but are not currently using contraceptives. In other words, unmet need for contraception is the discrepancy between a woman’s stated desire to limit or space childbearing and her actual use of contraceptives. The BDHS of 2007 defined unmet need using a conventional algorithm developed based on a set of standardized survey questions. These questions were asked to eligible women to determine whether the women desired to either terminate or postpone childbearing. This study used a binary measure of unmet need for contraception indicating whether a married woman had any unmet need for contraception (both for spacing and limiting childbearing). The detail calculation procedures of this conventional measure and recently instituted revisions are reported elsewhere,[19].

Unintended pregnancy

The DHS considers unintended pregnancy as pregnancies that are reported to have been either unwanted (i.e., child born when no more children were desired) or mistimed (i.e., birth occurred earlier than desired). The BDHS of 2007 asked the following question to women who gave birth to a child in the last three years preceding the survey: “At the time you became pregnant, did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all?” Three response categories to this question included: (a) wanted then; (b) wanted the pregnancy to happen later; (c) did not want at all. For this study, the last two categories were merged and considered as ‘unintended pregnancy.’

Predictor variables

Couples concordance about household decision-making

In the BDHS of 2007, both husband and wife were asked four questions related to household decision-making. We used these questions to assess couple’s concordance about who makes decisions within the household. Following the measure of couple’s concordance used by Story and Burgard [9], we created four categories for each question in which wives and husbands gave concordant responses: (a) Wife only made the decision, (b) Husband only, (c) Jointly, and (d)

Other. When analyzing couples data, each of these four categories represented concordant responses by both wife and husband. An additional category ‘Disagree’ was included in the analysis to measure wives’ and husbands’ discordant reports. In this case, we measured ‘Disagree’ comprising of all discordant reports together. Previous studies reported that couple’s joint contribution in decision-making is associated with better reproductive health behavior and maternal health care utilization [9,20,21]. We think that couple’s joint participation, representing an inclusive, consultative, and shared responsibility of the couple, functionally suits to Bangladeshi culture where women’s status is culturally tied to men. Thus, we used the category “Jointly” as the reference group in all regression models.

We selected other predictor variables based on existing literature,[9,22–24] that documented significant association between socio-demographic factors and indicators of reproductive and maternal health care in Bangladesh. Demographic characteristics for this study included woman’s age, parity, and place of residence. Age is used as a continuous variable, and parity is measured as the reported number of living children. Socioeconomic characteristics included wife’s education, wife’s employment, and household wealth status. Education is measured using three categories: no schooling, primary education, and secondary or above. Employment of wife is a binary variable with two categories: unemployed and employed. The household economic status is measured using a wealth index. The index is calculated using information on a household’s ownership of selected assets and dwelling characteristics. Each asset was assigned a weight generated through principal components analysis. Each household was then assigned a score for each asset, and the scores were summed for each household. Finally, household members (here couple) were ranked according to the total wealth score of the household in which they resided.

Statistical Analysis

Our analysis starts with presenting descriptive statistics. Cross-tabulations were used to show concordance and discordance between wives’ and husbands’ reports on each decision-making question. Then we used bivariate analyses which compared the association between decision-making arrangements (women, men, and couple report) and the unmet need for contraception and unintended pregnancy. Finally, multivariate logistic regression models were used to examine the association between decision-making arrangements and two outcome variables, controlling for other socio-demographic and economic factors. The modeling strategy was to consecutively add different variables as controls. The first model included couple’s concordant and discordant responses to decision-making, the second model added controls for only socio-demographic factors, the third model included exposure to family planning information; the final model added whether wives ever had any forced sex.

Results

Characteristics of the sample

The mean age of the women was 29.56 with a standard deviation of 8.55. The forty-three percent of the women had 1-2 living children, while around 48% had ≥ 3 living children (Table 1). The sixty-two percent of the households were living in rural areas at the time of survey. Over one quarter (28.72%) of the women in our sample had no formal education and 70% were

unemployed. About one third (32.91%) of the women heard family planning (FP) messages on television and 12% of them heard FP messages on radio. Around 3.6 % of the women ever had forced sex with their husbands.

Concordance and discordance in decision-making

Cross-tabulation of wives' and husbands' responses to each of the decision-making items shows the magnitude of concordance and discordance responses (Table 2). The bold figures show the concordant responses. The most common concordant response category was that couples jointly made the decision, which ranged from 17.25% in relation to purchases for daily household needs to 36.38% in decision related to child's health care. Couple's concordant responses indicate that the wife only made the decision was generally the least frequent arrangement (range: 0.34% - 4.08%). The highest magnitude of concordance was found concerning decisions about major household purchases (51.47%) and the lowest concordance was related to purchases for daily household needs (37.16%).

However, there was also considerable disagreement in couples' reports on each decision-making item. The column and row totals indicated that wives were more likely than husbands to report that only wife made decisions. For example, 30.46% of wives reported that they usually made decisions about daily household purchases, whereas only 10.91% of husbands reported that their wives alone made these decisions. Another pattern appeared in which wives were also more likely than their husbands to report that the husband only made decisions for three of the four decision-making items. For example, 29.08% of wives reported that husband usually made decisions about visit to family or relatives, and in contrary, 23.46% of husbands reported that they usually made these decisions. Finally, across all four decision-making items, husbands were more likely than wives to report that they jointly (jointly by husband and wife) made decisions. For example, 61.40% of husbands reported that they both jointly made decision to visit family or relatives, compared to 51.59% of wives reporting the same.

Decision-making arrangements and unmet need for contraception and unintended pregnancy

We present the results of bivariate logistic regression analyses of the association between decision-making arrangements and two outcome variables in Table 3. According to wives' reports, compared to the odds of unmet need for contraception when spouses jointly made decisions, the odds of unmet need for contraception were higher when only husband made decisions [range of odds ratio (OR): 1.41 – 1.47]. The magnitude of the association was slightly weaker (closer to 1) when using husband's reports and the odds ratios were statistically significant for only two of the four decision-making questions. For example, according to husbands' reports, compared to when spouses jointly made decisions, the odds of unmet need for contraception were lower when only wife made decisions (OR=0.46, 95% CI: 0.21-0.98). According to couples' reports, the estimated odds of unmet need for contraception were higher when only husband made decisions (range of OR: 1.14-1.61). According to women's reports across three of the four decision-making items, compared to the odds of unintended pregnancy when spouses jointly made decisions, the odds of unintended pregnancy were higher when wife alone made decisions (range of OR: 1.77-2.65). No significant association is found when using husbands' reports about decision-makings. On the other hand, when using couples' reports, no

clear pattern was noticed about the association between decision-making arrangements, and unintended pregnancy.

Concordant decision-making and unmet need for contraception, and unintended pregnancy

Multivariate logistic regression analyses presented in Table 4 indicate that compared to spouse's joint decision-making, decision-making of most other type was associated with higher unmet need for contraception (Table 4). For example, compared to the odds of having unmet need for contraception when spouses jointly made household decisions regarding visiting family or relatives together, the odds of having unmet need for contraception were higher when the husband alone made decisions (OR=2.00, 95% CI: 1.01-3.98). In addition, women with higher parity were more likely to have higher unmet need for contraception. Women from richest households were less likely than women from poorer households to have unmet need for contraception. Women who exposed to FP information on radio and television were less likely to have unmet need for contraception.

Logistics regression analyses presented in Table 5 suggest that unintended pregnancy was higher among women with higher parity, women living in urban areas, and women from relatively poorer households. Women exposed to FP messages were less likely to have unintended pregnancy. However, unlike the unmet need, the associations between decision-making concordance and unintended pregnancy were less clear (Table 5). Higher unintended pregnancy was associated with couple's disagreement and wife's sole control in decision-making. For example, compared to the odds of having unintended pregnancy when spouses jointly made decisions regarding visiting family or relatives together, the odds of having unintended pregnancy were higher (OR = 2.02, 95% CI: 1.05-3.89) when wife alone made these decisions.

Discussion

This study used a new way of measuring household decision-makings by comparing couple's responses to a set of common decision-making questions. This operationalization used by Story and Burgard, [9], allowed us to observe couple's concordance and discordance in responses to household decision-makings, which has not been typically used by previous researches. Applying this new measure, this study reveals several important findings. First, though couple's joint contribution to decision-making has been most common, there are also substantial levels of discordance in responses to each household decision-making question. Second, household decision-making by either husband alone or wife alone, and involvement of others in decisions result in higher risk for women in having unmet need for contraception and unintended pregnancy, compared to couple's joint decision making. Finally, compared to using women's or couples' reports, using only the husband's reports yields significantly weaker and less clear pattern of associations between decision-making arrangements, and unmet need for contraception, and unintended pregnancy.

In most of the analyses a consistent finding was that concordant reports of decision-making by husbands alone are associated with higher unmet need for contraception and unintended pregnancy, compared to concordant reports of couple's joint decision-making. One possible explanation of this finding is that husbands' sole control over decision-making may limit women's access to reproductive health care services and inhibit the use of contraceptive. Studies

concerning reproductive and maternal health care service utilization supported such explanation too. For example, women's reproductive health decisions are limited by their reliance on their husband's control of household assets in Uganda,[25]. Another study in India [26] reported that husbands' restrictions on wives' movements affect their use of maternal health care. On the other hand, a couple's joint decision-making indicates a strong communication between husband and wife. Joint contribution to household decisions also allows a couple to mutually share the responsibility of the decision. In the context of empowerment potential of microcredit in rural Bangladesh, Kabeer [27] demonstrated that both husbands and wife's joint contribution to household decisions has the potential to result in more positive outcomes compared to any partner's independent decision-making. Other researchers also suggested that couples' joint decision-making may yield better reproductive health outcomes,[21] compared to men making decisions alone or women making decisions devoid of input from significant others.

The findings also demonstrate that women's sole participation in decisions has consistently been associated with higher likelihood of unmet need for contraception and higher unintended pregnancy. These findings call into question the individualistic framework of women's power that puts the entire burden on women and none on other relevant actors in a relationship. Instead, in valuing women's contribution to household decision-makings, we should be careful, as researches suggest, to not draw responsibility away from the significant others,[28]. In the context of South Asia, researchers argue that individualistic autonomy paradigm doesn't fully work in societies where women are culturally embedded in social relationships and strongly tied to men,[28]. To a large extent, the results confirm the argument that in its manifestations of higher status for women, Bangladeshi culture supports interaction and negotiation between husband and wife. Within this poor Muslim-majority society, couple's joint rather than any partner's independent decision-making capacity matters in explaining unmet demand for contraception and unintended pregnancy. Couples who are supportive of a more egalitarian approach are seen to be more powerful in meeting their contraception demands.

This study acknowledges several limitations. First, we cannot establish a causal association between decision-makings and the dependent variables. Household decision-makings are not static characteristics. We acknowledge that prior experiences could also shape couple's participation in decision-makings over time. Another limitation to our analysis is the use of women's report of unmet need for their contraception. There is a growing recognition that the concept of unmet need should be measured at the couple level. Besides, unmet need for contraception should also account for women's future intention to use contraceptives and their husbands' preferences about contraception. Despite these limitations, the measure used for unmet need in this study has a key strength—it can be applied consistently across time and countries.

References

- 1 Sedgh G, Singh S, Hussain R. Intended and unintended pregnancies worldwide in 2012 and recent trends. *Stud Fam Plann* 2014;**45**:301–14.
- 2 Darroch JE, Singh S. Trends in contraceptive need and use in developing countries in 2003, 2008, and 2012: an analysis of national surveys. *Lancet* 2013;**381**:1756–62.

- 3 Klima CS. Unintended pregnancy. Consequences and solutions for a worldwide problem. *J Nurse Midwifery* 1998;**43**:483–91.
- 4 Gipson JD, Koenig MA, Hindin MJ. The effects of unintended pregnancy on infant, child, and parental health: a review of the literature. *Stud Fam Plann* 2008;**39**:18–38.
- 5 Marston C, Cleland J. Do unintended pregnancies carried to term lead to adverse outcomes for mother and child? An assessment in five developing countries. *Popul Stud (NY)* 2003;**57**:77–93.
- 6 Hardee K, Eggleston E, Wong EL, *et al.* Unintended pregnancy and women's psychological well-being in Indonesia. *J Biosoc Sci* 2004;**36**:617–26.
- 7 Eggleston E. Unintended pregnancy and women's use of prenatal care in Ecuador. *Soc Sci Med* 2000;**51**:1011–8.
- 8 Joyce TJ, Kaestner R, Korenman S. The effect of pregnancy intention on child development. *Demography* 2000;**37**:83–94.
- 9 Story WT, Burgard SA. Couples' reports of household decision-making and the utilization of maternal health services in Bangladesh. *Soc Sci Med* 2012;**75**:2403–11.
- 10 Becker S, Fonseca-Becker F, Schenck-Yglesias C. Husbands' and wives' reports of women's decision-making power in Western Guatemala and their effects on preventive health behaviors. *Soc Sci Med* 2006;**62**:2313–26.
- 11 Jejeebhoy SJ. Convergence and Divergence in Spouses' Perspectives on Women's Autonomy in Rural India. *Stud Fam Plann* 2002;**33**:299–308.
- 12 Islam M., Rashid M. Determinants of unintended pregnancy among ever-married women in Bangladesh. *J Fam Welf* 2004;**50**:40–7.
- 13 Barkat-e-khuda, Roy NC, Rahman DM. Unmet contraceptive need in Bangladesh: evidence from the 1993/94 and 1996/97 Demographic and Health Surveys. *Asia-Pacific Popul J* 1999;**14**:37–50.
- 14 Kamal M, Islam A. Prevalence and socioeconomic correlates of unintended pregnancy among women in rural Bangladesh. *Salud Publica Mex* 2011;**53**:108–15.
- 15 Khatun M, Rahman M, Khan ABMNI. Men and women's unmet need for family planning in Bangladesh: An empirical study. *J Asiat Soc Bangladesh* 2007;**52**:143–65.
- 16 Rahman MM, Mostofa MG, Hoque MA. Women's household decision-making autonomy and contraceptive behavior among Bangladeshi women. *Sex Reprod Healthc* 2014;**5**:9–15.

- 17 Rahman M. Women's Autonomy and Unintended Pregnancy Among Currently Pregnant Women in Bangladesh. *Matern Child Health J* 2011;**16**:1206–14.
- 18 National Institute of Population Research and Training (NIPORT), Mitra Associates, ICF International. Bangladesh Demographic and Health Survey 2007. 2009.
- 19 Bradley SEK, Croft TN, Fishel JD, *et al.* Revising Unmet Need for Family Planning. DHS Analytical Studies No. 25. Calverton, Maryland, USA: 2012.
- 20 Carter M. Husbands and maternal health matters in rural Guatemala: wives' reports on their spouses' involvement in pregnancy and birth. *Soc Sci Med* 2002;**55**:437–50.
- 21 Mullany BC, Hindin MJ, Becker S. Can women's autonomy impede male involvement in pregnancy health in Katmandu, Nepal? *Soc Sci Med* 2005;**61**:1993–2006.
- 22 Chakraborty N, Islam MA, Chowdhury RI, *et al.* Determinants of the use of maternal health services in rural Bangladesh. *Health Promot Int* 2003;**18**:327–37.
- 23 Collin SM, Anwar I, Ronsmans C. A decade of inequality in maternity care: antenatal care, professional attendance at delivery, and caesarean section in Bangladesh (1991-2004). *Int J Equity Health* 2007;**6**:9.
- 24 Amin R, Becker S, Bayes a. NGO-promoted microcredit programs and women's empowerment in rural Bangladesh: quantitative and qualitative evidence. *J Dev Areas* 1998;**32**:221–36.
- 25 Parkhurst JO, Rahman SA, Ssengooba F. Overcoming access barriers for facility-based delivery in low-income settings: insights from Bangladesh and Uganda. *J Health Popul Nutr* 2006;**24**:438–45.
- 26 Allendorf K. The quality of family relationships and use of maternal health-care services in India. *Stud Fam Plann* 2010;**41**:263–76.
- 27 Kabeer N. Conflicts Over Credit: Re-Evaluating the Empowerment Potential of Loans to Women in Rural Bangladesh. *World Dev* 2001;**29**:63–84.
- 28 Mumtaz Z, Salway S. Understanding gendered influences on women's reproductive health in Pakistan: Moving beyond the autonomy paradigm. *Soc Sci Med* 2009;**68**:1349–56.

List of Tables

Table 1: Socio-demographic characteristics of the sample (n = 3336)		
	N	%
Wife's age	3336	Mean = 29.56 s.d. = 8.55
<i>Parity</i>		
0	310	9.29
1-2	1436	43.05
≥3	1590	47.66
<i>Residence</i>		
Rural	2077	62.26
Urban	1259	37.74
<i>Wife's education</i>		
No education	958	28.72
Primary	1049	31.44
Secondary or above	1329	39.84
<i>Employment</i>		
No	2338	70.1
Yes	997	29.9
<i>Wealth Index</i>		
1st Quantile	546	16.37
2nd Quantile	643	19.27
3rd Quantile	657	19.69
4th Quantile	638	19.12
5th Quantile	852	25.54
<i>Exposure to FP information</i>		
Heard FP on radio	408	12.23
Heard FP on television	1,098	32.91
<i>Ever having forced sex</i>		
No	2931	96.45
Yes	108	3.55

Table 2: Cross-tabulation of couples' responses to all four decision-making items.

Wife's response	Husband's response				Total
	Wife	Husband	Jointly	Other	
Who usually makes decisions about your child's health care?					
Wife	3.89	1.75	8.1	0.32	14.07
Husband	3.39	3.55	12.67	1.05	20.65
Both Jointly	11.13	7.84	36.38	2.12	57.47
Other	1.32	1.14	3.75	1.6	7.81
Total	19.73	14.28	60.9	5.09	100
Spousal agreement = 45.42%					
Who usually makes decisions about making major household purchases?					
Wife	0.34	1.49	3.26	0.28	5.37
Husband	0.49	8.53	15.69	3.35	28.07
Both Jointly	1.25	12.36	34.18	4.73	52.52
Other	0.09	2.29	3.23	8.42	14.04
Total	2.18	24.68	56.37	16.78	100
Spousal agreement = 51.47%					
Who usually makes decisions about making purchases for daily household needs?					
Wife	4.08	10.22	14.37	1.79	30.46
Husband	1.94	8.92	8.98	1.35	21.18
Both Jointly	4.34	12.06	17.25	1.63	35.28
Other	0.55	3.29	2.33	6.91	13.08
Total	10.91	34.5	42.92	11.68	100
Spousal agreement = 37.16%					
Who usually makes decisions about visits to your family or relatives?					
Wife	0.52	1.5	5.45	0.35	7.82
Husband	0.99	7.87	17.14	3.08	29.08
Both Jointly	1.44	11.88	35.08	3.19	51.59
Other	0.09	2.2	3.72	5.48	11.5
Total	3.04	23.46	61.4	12.11	100
Spousal agreement = 48.95%					

Table 3 Bivariate logistic regression analysis of the association between decision-making arrangement, unmet need for contraception and unintended pregnancy

	Unmet need for contraception						Unintended pregnancy					
	OR	Wives [95% CI]	OR	Husbands [95% CI]	OR	Couples [95% CI]	OR	Wives [95% CI]	OR	Husbands [95% CI]	OR	Couples [95% CI]
Decision-making items												
Who decides about your child's health care?												
Jointly												
Wife Only	0.89	[0.52 - 1.52]	0.59	[0.26 - 1.35]	0.42	[0.05 - 3.36]	2.65**	[1.62 - 4.34]	1.26	[0.54 - 2.95]	0.75	[0.12 - 4.90]
Husband Only	1.41**	[1.07 - 1.86]	0.65**	[0.48 - 0.89]	0.78	[0.49 - 1.23]	0.91	[0.69 - 1.21]	1.07	[0.82 - 1.41]	0.86	[0.55 - 1.34]
Others	1.25	[0.88 - 1.79]	0.87	[0.62 - 1.23]	0.95	[0.58 - 1.55]	0.57**	[0.40 - 0.83]	0.85	[0.59 - 1.23]	0.64*	[0.40 - 1.02]
Disagree					0.97	[0.73 - 1.28]					1.19	[0.90 - 1.59]
Who decides about making major household purchases?												
Jointly												
Wife Only	0.72**	[0.53 - 0.99]	0.69	[0.43 - 1.10]	0.71	[0.35 - 1.44]	1.14	[0.84 - 1.55]	1.33	[0.86 - 2.06]	1.73	[0.86 - 3.48]
Husband Only	1.17	[0.84 - 1.64]	1.01	[0.76 - 1.35]	1.14*	[0.70 - 1.88]	1.07	[0.78 - 1.47]	1.19	[0.91 - 1.57]	1.31*	[0.82 - 2.09]
Others	1.20	[0.84 - 1.72]	1.12	[0.77 - 1.64]	1.30	[0.79 - 2.14]	0.67*	[0.45 - 1.00]	0.83	[0.56 - 1.24]	0.91	[0.52 - 1.59]
Disagree					0.93	[0.66 - 1.32]					1.35*	[0.99 - 1.85]
Who decides about making daily household purchases?												
Jointly												
Wife Only	0.79	[0.51 - 1.21]	0.46**	[0.21 - 0.98]	0.86	[0.26 - 2.84]	2.36**	[1.51 - 3.68]	1.20	[0.62 - 2.33]	1.77	[0.35 - 8.89]
Husband Only	1.23	[0.95 - 1.60]	0.78	[0.57 - 1.07]	1.05	[0.67 - 1.63]	1.08	[0.83 - 1.40]	0.79	[0.59 - 1.05]	1.02	[0.64 - 1.63]
Others	1.12	[0.78 - 1.60]	0.93	[0.62 - 1.40]	0.95	[0.57 - 1.61]	0.60**	[0.41 - 0.87]	0.80	[0.52 - 1.22]	0.64*	[0.38 - 1.07]
Disagree					0.91	[0.69 - 1.19]					1.03	[0.80 - 1.33]
Who decides about visits to your family or relatives?												
Jointly												
Wife Only	1.06	[0.71 - 1.60]	0.79	[0.56 - 1.12]	0.67	[0.32 - 1.41]	1.77**	[1.25 - 2.51]	1.11	[0.83 - 1.49]	2.12**	[1.17 - 3.87]
Husband Only	1.47**	[1.11 - 1.95]	0.92	[0.63 - 1.32]	1.61*	[0.90 - 2.87]	1.19	[0.89 - 1.60]	0.84	[0.60 - 1.19]	0.86	[0.46 - 1.61]
Others	1.37	[0.89 - 2.13]	0.91	[0.54 - 1.53]	1.89	[0.92 - 3.87]	0.85	[0.56 - 1.29]	0.92	[0.52 - 1.63]	1.06	[0.46 - 2.43]
Disagree					0.99	[0.77 - 1.28]					1.02	[0.77 - 1.33]

Significance level: ** p<0.01, * p<0.05

Table 4 Multivariate logistic regression analysis of the association between decision-making arrangement and unmet need for contraception controlling for socio-demographic factors

Variables	Model 1		Model 2		Model 3		Model 4	
	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]
Who decides about your child's health care?								
Agree - Jointly (ref)								
Agree - Wife only	0.55	[0.05 - 5.75]	0.38	[0.04 - 3.86]	0.38	[0.04 - 3.92]	0.42	[0.04 - 4.34]
Agree - Husband only	0.57	[0.32 - 1.03]	0.49*	[0.27 - 0.88]	0.48*	[0.27 - 0.86]	0.48*	[0.26 - 0.89]
Agree - Other	0.63	[0.31 - 1.26]	0.67	[0.31 - 1.43]	0.72	[0.34 - 1.52]	0.53	[0.23 - 1.22]
Disagree	0.94	[0.66 - 1.36]	0.88	[0.61 - 1.27]	0.88	[0.60 - 1.27]	0.91	[0.61 - 1.34]
Who decides about making major household purchases?								
Agree - Jointly (ref)								
Agree - Wife only	0.79	[0.36 - 1.77]	0.79	[0.34 - 1.82]	0.83	[0.36 - 1.91]	0.89	[0.38 - 2.08]
Agree - Husband only	1.27	[0.71 - 2.27]	1.18	[0.66 - 2.10]	1.19	[0.66 - 2.12]	1.23	[0.68 - 2.22]
Agree - Other	2.06*	[1.00 - 4.25]	2.69*	[1.26 - 5.76]	2.56*	[1.21 - 5.41]	2.37*	[0.87 - 6.43]
Disagree	1.01	[0.66 - 1.53]	1.05	[0.69 - 1.59]	1.05	[0.69 - 1.59]	1.09	[0.71 - 1.66]
Who decides about making daily household purchases?								
Agree - Jointly (ref)								
Agree - Wife only	1.34	[0.35 - 5.17]	1.36	[0.33 - 5.56]	1.26	[0.31 - 5.17]	1.35	[0.33 - 5.55]
Agree - Husband only	0.97	[0.56 - 1.68]	0.97	[0.54 - 1.73]	0.96	[0.53 - 1.71]	0.95	[0.53 - 1.70]
Agree - Other	0.64	[0.29 - 1.44]	0.67	[0.30 - 1.52]	0.64	[0.28 - 1.45]	0.56	[0.22 - 1.41]
Disagree	0.88	[0.64 - 1.22]	0.85	[0.61 - 1.19]	0.83	[0.60 - 1.16]	0.82	[0.58 - 1.15]
Who decides about visits to your family or relatives?								
Agree - Jointly (ref)								
Agree - Wife only	0.76	[0.33 - 1.72]	0.85	[0.36 - 1.98]	0.85	[0.36 - 1.98]	0.68	[0.27 - 1.73]
Agree - Husband only	2.00*	[1.01 - 3.98]	2.02*	[1.02 - 4.00]	2.03*	[1.03 - 4.00]	2.18*	[1.10 - 4.33]
Agree - Other	2.21	[0.90 - 5.38]	2.45	[0.96 - 6.24]	2.29	[0.91 - 5.78]	2.95	[0.93 - 9.36]
Disagree	1.08	[0.81 - 1.43]	1.20	[0.89 - 1.61]	1.19	[0.88 - 1.61]	1.18	[0.87 - 1.61]
Wife's age			0.97**	[0.95 - 0.99]	0.97**	[0.95 - 0.99]	0.97**	[0.95 - 0.99]
Parity 0 (ref)								
1-2			1.55	[0.90 - 2.67]	1.51	[0.88 - 2.60]	1.70	[0.95 - 3.05]
≥3			3.70**	[2.07 - 6.64]	3.61**	[2.02 - 6.43]	3.95**	[2.11 - 7.37]
Place of residence (rural = ref)								
Urban			0.99	[0.72 - 1.35]	1.02	[0.75 - 1.39]	1.03	[0.75 - 1.42]
Wife's education (no education) (ref)								
Primary			0.95	[0.70 - 1.28]	0.97	[0.72 - 1.30]	1.00	[0.73 - 1.36]
Secondary or above			0.94	[0.63 - 1.38]	1.01	[0.68 - 1.49]	0.96	[0.65 - 1.42]
Wife's employment (No = ref)								
Yes			0.85	[0.63 - 1.13]	0.86	[0.64 - 1.14]	0.86	[0.63 - 1.17]
Wealth Index (first quintile = ref)								
2 nd quintile			1.23	[0.88 - 1.72]	1.25	[0.90 - 1.76]	1.28	[0.90 - 1.81]
3 rd quintile			1.18	[0.79 - 1.75]	1.28	[0.86 - 1.92]	1.34	[0.90 - 2.01]
4 th quintile			0.71	[0.47 - 1.09]	0.86	[0.55 - 1.33]	0.84	[0.52 - 1.34]
5 th quintile			0.43**	[0.26 - 0.70]	0.53**	[0.31 - 0.90]	0.58	[0.33 - 1.02]
Exposure to FP information (No=ref)								
Heard FP on radio					0.74	[0.49 - 1.13]	0.69	[0.44 - 1.09]
Heard FP on TV					0.59**	[0.41 - 0.83]	0.59**	[0.40 - 0.86]
Ever having forced sex (No=ref)								
Yes							0.79	[0.40 - 1.57]

Significance level: ** p<0.01, * p<0.05

Table 5 Multivariate logistic regression analysis of the association between decision-making arrangement and unintended pregnancy controlling for socio-demographic factors

Variables	Model 1		Model 2		Model 3		Model 4	
	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]
Who decides about your child's health care?								
Agree - Jointly (ref)								
Agree - Wife only	0.41	[0.05 - 3.30]	0.29	[0.03 - 2.60]	0.26	[0.03 - 2.30]	0.27	[0.03 - 2.56]
Agree - Husband only	0.75	[0.43 - 1.34]	0.64	[0.36 - 1.13]	0.63	[0.35 - 1.14]	0.70	[0.39 - 1.27]
Agree - Other	0.67	[0.31 - 1.49]	0.73	[0.28 - 1.89]	0.76	[0.29 - 1.97]	0.73	[0.27 - 2.01]
Disagree	1.10	[0.77 - 1.58]	1.07	[0.75 - 1.52]	1.07	[0.74 - 1.53]	1.12	[0.78 - 1.62]
Who decides about making major household purchases?								
Agree - Jointly (ref)								
Agree - Wife only	1.57	[0.71 - 3.47]	1.31	[0.57 - 3.04]	1.42	[0.64 - 3.17]	1.50	[0.67 - 3.33]
Agree - Husband only	1.59	[0.88 - 2.89]	1.39	[0.74 - 2.61]	1.40	[0.74 - 2.67]	1.29	[0.69 - 2.43]
Agree - Other	1.40	[0.55 - 3.54]	1.89	[0.64 - 5.57]	1.83	[0.62 - 5.39]	1.67	[0.49 - 5.68]
Disagree	1.38*	[0.94 - 2.03]	1.38	[0.92 - 2.06]	1.37	[0.92 - 2.06]	1.38	[0.92 - 2.06]
Who decides about making daily household purchases?								
Agree - Jointly (ref)								
Agree - Wife only	0.99	[0.18 - 5.30]	1.14	[0.17 - 7.62]	0.86	[0.14 - 5.29]	0.81	[0.13 - 4.91]
Agree - Husband only	1.03	[0.57 - 1.83]	1.12	[0.59 - 2.11]	1.06	[0.57 - 2.00]	1.07	[0.57 - 2.03]
Agree - Other	0.65	[0.29 - 1.46]	0.78	[0.33 - 1.84]	0.73	[0.31 - 1.71]	0.70	[0.26 - 1.89]
Disagree	0.89	[0.64 - 1.24]	0.98	[0.70 - 1.38]	0.94	[0.67 - 1.33]	0.87	[0.61 - 1.25]
Who decides about visits to your family or relatives?								
Agree - Jointly (ref)								
Agree - Wife only	2.02*	[1.05 - 3.89]	1.94*	[0.97 - 3.90]	2.14*	[1.12 - 4.08]	1.95*	[1.02 - 3.71]
Agree - Husband only	0.84	[0.39 - 1.80]	0.87	[0.40 - 1.88]	0.87	[0.40 - 1.89]	0.86	[0.38 - 1.93]
Agree - Other	1.65	[0.62 - 4.40]	1.88	[0.71 - 4.96]	1.78	[0.65 - 4.89]	1.85	[0.56 - 6.16]
Disagree	1.01	[0.73 - 1.38]	1.02	[0.73 - 1.42]	1.02	[0.73 - 1.42]	1.07	[0.76 - 1.50]
Wife's age								
Parity 1-2 (ref)								
≥3			2.76**	[1.93 - 3.95]	2.83**	[1.97 - 4.08]	2.73**	[1.86 - 4.01]
Place of residence (rural = ref)								
Urban			1.29	[0.95 - 1.76]	1.36	[1.00 - 1.85]	1.38*	[1.01 - 1.89]
Wife's education (no education) (ref)								
Primary			0.96	[0.70 - 1.31]	1.00	[0.73 - 1.36]	0.96	[0.69 - 1.34]
Secondary or above			1.11	[0.77 - 1.58]	1.20	[0.83 - 1.73]	1.23	[0.84 - 1.79]
Wife's employment (No = ref)								
Yes			0.92	[0.69 - 1.22]	0.90	[0.68 - 1.19]	0.90	[0.67 - 1.21]
Wealth Index (first quintile = ref)								
2 nd quintile			1.05	[0.68 - 1.60]	1.07	[0.70 - 1.63]	1.06	[0.69 - 1.65]
3 rd quintile			1.51*	[1.03 - 2.19]	1.65*	[1.12 - 2.42]	1.65*	[1.11 - 2.45]
4 th quintile			0.88	[0.53 - 1.47]	1.08	[0.63 - 1.84]	1.08	[0.61 - 1.90]
5 th quintile			0.77	[0.47 - 1.29]	1.02	[0.59 - 1.74]	0.92	[0.54 - 1.57]
Exposure to FP information (No=ref)								
Heard FP on radio					1.08	[0.69 - 1.70]	1.22	[0.77 - 1.94]
Heard FP on TV					0.52**	[0.38 - 0.71]	0.50**	[0.36 - 0.70]
Ever having forced sex (No=ref)								
Yes							0.77	[0.38 - 1.54]

Significance level: ** p<0.01, * p<0.05