# Does Husband-wife fertility preference matter? : Couples' Fertility Preference and its effect on Subsequent Contraceptive Use in Nepal

## Contents

## Motivation behind Research

Among the different proximate factors influencing fertility, contraceptive use is of particular interest to public health officials. Success and failure of family planning programs depend not just on the awareness of and provision of contraceptives but also the use of contraceptives. However, contraceptive use to either limit or stop childbearing occurs as a result of negotiations within a couple. Gender relationships play an important role in this negotiation and few studies have shown that husbands' preferences regarding number of children or having more children supersedes their wives' fertility preference. In studies carried out in Sub-Saharan Africa and South Asia, husbands' fertility preference influenced their wives' fertility preferences, contraceptive use, and childbearing outcomes (Bankole 1995, Bankole 1998, Dahal et al. 2008; DaVanzo et al. 2003 ; DeRose, 2002; Dodoo 1998 ; Ezeh 1993; Yue et al. 2010). On the other hand, few studies in Bangladesh have shown that husbands' fertility preference is not as important as both husband and wife agreeing on their fertility desires (Gipson and Hindin 2009; Razzaque 1999). The recent study by Gipson and Hindin also showed that there may be covert contraceptive use or non-use by females to achieve their fertility desires when their husband did not agree with their desires (Gipson and Hindin 2007; Gipson and Hindin 2009). The covert use of female-based contraceptives by women, particularly in situations where it is difficult for them to negotiate male-based family planning, requires further understanding. It is known from earlier analysis of Demographic Health Surveys (DHS) that discordant reporting of contraceptives occurs between husband and wives (Becker and Costenbader 2001) but not many studies have attempted to understand how differences in fertility desires of husbands and wives may be related to discordance in contraceptive use reports of couples.

In this study, I attempt to understand three research questions (1) whether husbands' and wives' agreement or disagreement on fertility desires influences their contraceptive use in general (2) Broader dichotomy of contraceptive use does not allow for us to understand the subtle power dynamics underlying the choice of contraceptives used i.e. husbands or wives covertly using a contraceptive method within his/her control. Therefore, I also examine whether concordant or discordant fertility desires influence the type of contraceptives used. In other words, if husbands and wives disagree on their fertility preference, are they more likely to use a contraceptive within husband's control or wives' control (3) Unlike earlier studies that have examined contraceptive use as reported by the wives, I examine how this relationship plays out separately for wives' and husbands' report of contraceptive use.

## Context of Study

Nepal, a developing country in South Asia, has undergone a substantial change in fertility, family planning, and contraceptive use. Fertility has declined from a total fertility rate (TFR) of 6.25 in mid-1980s to 4.6 in 1996 and further to 3.1 in 2006 (Retherford and Rele 1989; Ministry of Health [Nepal], 1996). While fewer than 10 percent of married women used any form of contraception in the early 1980s but by 1996, 26 percent married women were using modern method of family planning. The proportion of women who had used any modern method of family planning had increased to 44 percent by 2006 (Axinn and Yabiku 2001; Ministry of Health [Nepal] 2006). The Government of Nepal is seeking to reduce the country's TFR to 2.1 by 2017, putting further emphasis on family planning provisions in the country (Ministry of Health [Nepal] 2006). Although unmet need in the country among currently married women has decreased from 31% in 1996 to 24.6 % in 2006, the proportion is still high (Marcro International 2007). Therefore, most family planning research in Nepal have focused on the dynamics of

contraceptive use vs. non-use and have examined the influence of individual factors such as women's education, employment for earnings, son preference on women's current contraceptive use (Gubhaju 2009; Satyavada and Adamchak 2000; Stash 1999; Stash 2001). The few studies that have examined the role of couple dynamics on contraceptive use have shown positive influence of spousal communication and partner's approval on women's contraceptive use (Chapagain 2005; Yue, O'Donnell, and Sparks 2010). As expected from the patriarchal normsr prevalent in the society, women were more likely to use contraceptive when their husbands approved of contraceptive use (Yue et al. 2010) and although there was joint decision-making on contraceptive use, husband's opinion was more influential in the process (Chapagain 2005). Although these studies show that spousal communication influences reproductive decision-making among couples, the role of actual fertility desires of the husbands and wives in the contraceptive use of both husband and wives still remains understudied.

In this study, I utilize a rich dataset collected in Chitwan Valley in Nepal that provides information on respondents' and their spouses' lifetime contraceptive use and fertility desires in a baseline survey in 1996. This survey is followed up with detailed family planning data collection from husbands and wives separately. Therefore, I will be able to examine the impact of couples' concordant or discordant fertility desires on their future contraceptive use and the type of contraceptives used. This study will also be effective in understanding how this relationship differ betweens wives and husbands.

## Method

### Data

The data for the study comes from the *Chitwan Valley [Nepal] Family* study conducted by University of Michigan. This study employed a unique combination of ethnographic and

survey research methods to gather 171 neighborhood histories, 5,271 individual life histories, and prospective family formation and residential information for individuals in Western Chitwan, Nepal.

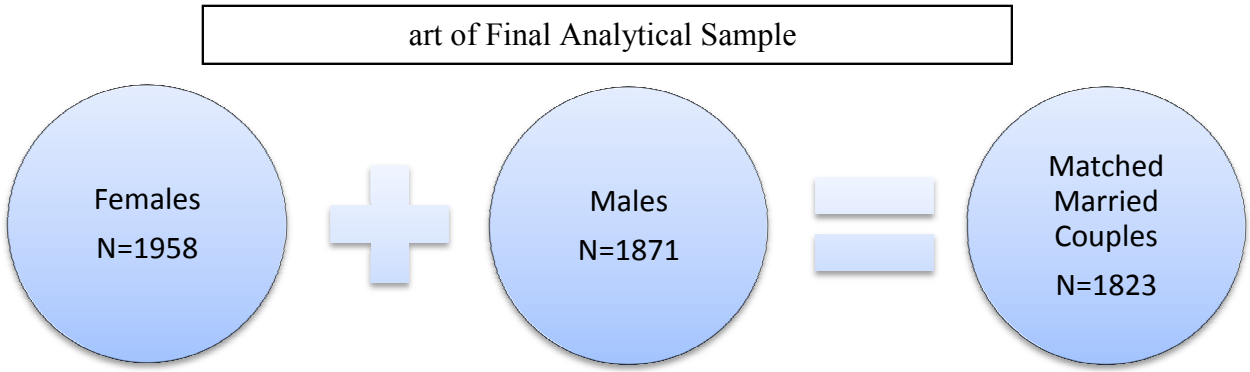
The study area is located in Chitwan Valley which is situated in the central plain sub-region in Southern area of Nepal (see Appendix A for map). The sample neighborhoods chosen for the study are representative of the neighborhoods in Western Chitwan, including each of the five major ethnic groups inhabiting the area: high and lower caste hindus, hill Tibeto-Burmese, indigenous terai Tibeto-Burmese, Newar, and others. Detailed information on the sampling strategy is found in Barber et al. (1997). This area saw an increase in family planning service provision from 1965 to 1996 where 70 out of the 85 health service centers provided family planning services.

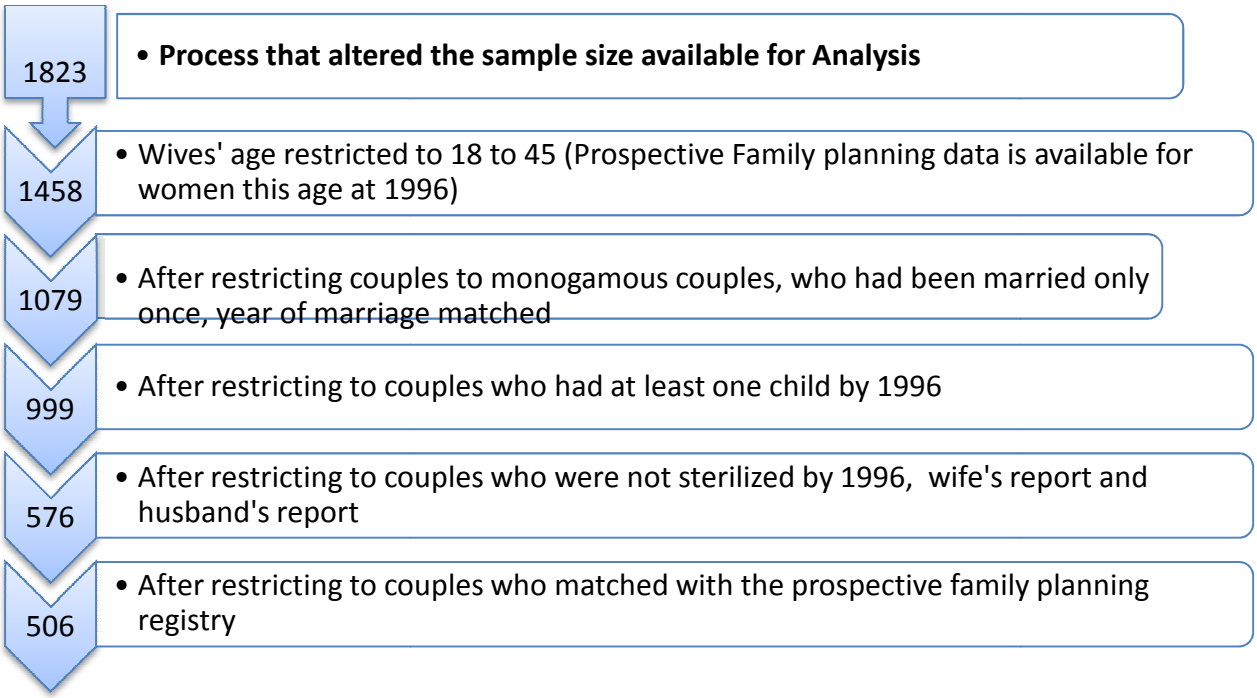
This paper utilizes information from the 1996 baseline individual-level and household-level data, retrospective life-history calendar, and prospective family planning quarterly data for 1997. The individual baseline survey provided information on 5,271 individuals' age, gender, ethnicity, education, marital history, and fertility preference. Fertility preference was calculated using questions asked in the family planning section of the individual survey (see Appendix A for list of questions). Prior contraceptive use and childbearing (including total surviving children and total surviving sons) was calculated from the life history calendar. The 1996 household relationship grid data provided information on the household members and identification of monogamous couples within a household. The 1996 household survey of agricultural practices and consumption provided information on agricultural practices, household resources, and consumption. The information from this survey was used to construct a wealth index for the household.

The prospective quarterly family planning registry collected detailed family planning from females ages 12 to 45 and their spouses beginning in Feb 1997 on the use of ten contraceptive methods (abstinence, condoms, Depo-Provera or injectables, IUD, Norplant, foam, birth control pills, respondent's sterilization, spouse's sterilization), and other methods.

## Analytical Sample

To arrive at the final sample for analysis, I included matched couples in monogamous marriages who were married only once, who were not sterilized and neither their spouses in 1996. After choosing couples who had at least one child, and had matching information from the prospective family planning data, the final sample consisted of 506 couples. I have restricted the age of the wives to ages 18 to 45, women below age 18 would have just entered into their childbearing age and would be unlikely to use contraceptive.






## Measures

### *Outcome Variables:*

Two outcome variables were used: (1) Used any contraceptive in 1997 (2) Type of contraceptive used. The second outcome consisted of three categories: (a) no use of contraceptive (b) female-based methods include methods that can be controlled by females such as pills, IUDs, Depo (injectables), Norplant, female sterilization (c) male-based methods include methods that are male-based and are generally under the control of men, including condom, male sterilization, abstinence, withdrawal.

### *Explanatory Variables*

*Couple's Joint Fertility Preference:*

Similar to previous studies (Dodoo 1998; Razzaque 1999), fertility desires of couples is measured by their responses to question on "whether the wife/husband would like to have more children?" A couple can either agree on having or not having more children in the future or disagree on the issue. In this analysis, this fertility preference is examined for couples who have

at least one child. In the context of Nepal, this criterion is appropriate for examining future contraception use because an earlier study in same area (Barber et al. 2004) has found that married couples without any children are very unlikely to use contraception. Even at the national level the same pattern holds: only seven percent of women with no living children use modern contraception (Demographic Health Survey 2006).

## *Control Variables*

Earlier literature on contraceptive use and fertility has identified a host of demographic and lifecycle characteristics that influence contraceptive use.

### *Age*

Contraceptive use is lowest among women who are yet to start childbearing and those who have finished childbearing. Similarly age also shows a cohort effect such that younger aged women have more knowledge and access to contraceptives. Similarly, age has an inverted-U relationship with fertility as known from the demography literature. Therefore, age was categorized into 10 year age-cohorts which is comparable to the DHS fertility studies. For men, Nepal DHS 2006 has shown that they are more likely to use contraceptive in their late 20s and early 30s and that contraceptive use tapers down after age 45.

### *Education*

Literature has consistently showed that education increases women's ability to determine their reproductive preferences. However, DeRose et al.'s (2002) study that found that although education increased women's perceived power in determining their reproductive preferences in married life, their educated husbands were not willing to yield control over fertility preferences

to their future wives thus indicating that men were more likely to have stronger influence on actual fertility behavior irrespective of women's education. Another study done in Nepal by Gubhaju (2009) has showed that husbands' education influences the use of male contraceptive methods such as condoms.

In this analysis, education of wives and husbands has been categorized into four groups: no education, primary, secondary education but before SLC (School leaving certificate- National level exam in Nepal), and higher secondary level (pass SLC and above).

### *Ethnicity*

In the context of Chitwan, earlier studies have identified that use of and access to contraceptives, and childbearing differ by the ethnic groups (Barber et al 2004; Biddlecom 2005). Five ethnic categories are used similar to previous studies: Upper caste hindu, lower caste hindu, hill tibeto-burmese, terai tibeto-burmese, and newars.

### *Childbearing history:*

As mentioned before, couple's parity has strong effect on their contraceptive use and future childbearing. In the case of Nepal, contraceptive use is highest among women with three of four children. In this analysis, women's total number of surviving children is included in the model.

In the Nepali context, giving birth to a male offspring to carry the husband's lineage is important for a woman to establish herself in the household. Another study has shown that men who are interested in limiting their number of children because of costs associated with raising children still delay contraceptive use until they have two sons (Dahal et al. 2008). Therefore, it is important to consider the number of sons instead of just presence of sons. I have created four categories: no sons, at least one son, two sons, and more than two sons in this analysis.

*Contraceptive history:*

Women and men who have used contraceptives in the past are selectively different than those who have never used any contraceptives. Contraceptive use in the past is included as a dichotomous variable indicating whether wife or husband have ever used any type of contraceptive before 1996. This does not include sterilized men or women.

*Household wealth:*

In Nepal, household wealth has been found to have a positive effect on women's contraceptive use such that women in the wealthiest household were most likely to use contraceptive (DHS 2006). In this analysis, wealth quintiles were constructed using variables indicating ownership of commodities and living conditions using a principal component analysis. The variables used mirror the variables commonly used in Nepal DHS survey. After creating the index, the index was divided into quartiles to indicate low, medium1, medium2, and high wealth categories.

## Statistical Analysis:

This study utilized three models: (i) logistic regression model to estimate the respondents' probability of using any contraceptives in the 1997-2003 time period (ii) multinomial logistic regression models to estimate the respondents' probability of using different types of contraceptives. I estimate separate models for husbands and wives. In the model for wives, wives' report of contraceptive is taken as the outcome variable and her demographic characteristics, contraceptive history are used as control variables. Similar model is estimated for the husband.

Based on the literature review, we can expect the following relationships to hold:

H1: Likelihood of contraceptive use should be highest when both husband and wife do not want additional children and likelihood should be lowest when both want children. Given the patriarchal norms in Nepal, when there is disagreement and the husband still wants more children, contraceptive use should be lower according to wives' and husbands' report.

H2: When there is disagreement on fertility preference, the type of contraceptive will matter. I foresee three scenarios: (a) if husbands' preferences prevail, both husbands and wives will report use of most commonly used contraceptive. Earlier research in Nepal has found that husbands perceive contraceptive use to be wife's responsibility and encourage female-based method which does not put more burden on the men (Dahal et al. 2009, Chapagain 2005). Therefore, I expect the likelihood of female-based method to be high even when wives still want children but the husbands do not want children and female-based method to be low even when wives no longer want children. This reporting will be similar for both husbands and wives (b) If, however, women are able to covertly utilize methods within their control, their likelihood of using a female-based method will be higher when they no longer want children but their husband do. On the contrary, the husbands will report lower use of female-based method in the same situation. (c) In contrast, if husbands suspect their wives of manipulating the female-based method, they may be more likely use male-based method when they no longer want children but their wives want children.

# Results

## Descriptives:

Descriptive for the sample is provided in Table 1. Contraceptive use is low among this sample with 31 percent of women and 45 percent of ever married men reporting use of any type

of method but is comparable to the 1996 DHS national sample where 29 percent of currently married women were using contraceptives. However, husbands report significantly higher use than their wives.

Among the different types, wives report highest use of Depo-provera, which is an injectable that is easily accessible at health centers, works for a relatively long duration, and is convenient to use and can be kept private (DHS 2006). The husbands seem to be aware of the high use of Depo-provera by their wives, with 24% reporting Depo-Provera use. On the other hand, husbands report highest use of condom with 37% using condoms. When collapsed by the female and male controlled method, wives report slightly higher use of female-based methods than male-based methods (16 % vs. 15%), while husbands report much higher use of male-based method than female-based methods (25% vs. 21%). In general, husbands report much higher contraceptive use.

Therefore, I examine the discordance of contraceptive reports of husbands and wives. As seen in figure 1, when husbands report that there has not been any use, three percent of their wives report using female-based method and four percent perceive their husbands using male-based method. This proportion is not as high suggesting that wives are mostly using contraceptives as perceived by their husbands. On the other hand, when wives are reporting 'no use' of contraceptives, 10 percent of their husbands report using male-based method. This may be because of husbands using condoms in extra-marital relationships or covertly undergoing sterilization. Similarly, husbands perceive that their wives are using female-based method while their wives are reporting no use, thus suggesting that husbands overestimate the use of contraceptives among their wives.

In terms of fertility preference, a high percentage of husband and wife are in agreement about not having another child (66 percent) and a considerable proportion (23 percent) agree on having another child. Among couples who disagree, slightly higher percentage of couples have wives interested in having another child while the husbands do not (6% vs. 4.5 %). The couples who do not agree on their fertility desires will be referred to as discordant couples for ease of interpretation from here on. It is important to note that although 66 percent of the couples agree on not having another child, a much lower proportion of couples report using any kind of contraceptive in the subsequent year.

Among other demographic characteristics, the sample size has a higher average age, perhaps because only married couples with at least one child were included in the sample. However, most of the respondents are coming from the highest childbearing age group of 20 to 29 years. Therefore, examining contraceptive use and childbearing among this group will be quite applicable to the family planning policy makers.

In general, the sample has highest proportion of upper caste hindus, followed by the indigenous ethnic group of terai Tibeto-Burmese in the Chitwan area.

There are marked differences in educational level between husbands and wives that mirrors the gender differences in education in the whole country. More than 50 percent of wives have no education and only nine percent have achieved higher education. In contrast, only one-fourth of men have not gotten any education and considerable proportion (22%) have higher education. Therefore, there could be some selective effect of education for women because so few women are highly educated and this group could be a risk-taker group that does not conform to the regular norm.

## Multivariate Analysis:

In comparison to concordant couples who do not agree on having at least one child, the odds of using contraceptive is lower for all other groups, particularly for those where both wife and husband both want children (see Table 2). This relationship is similar for wives and husbands. Although the results are not statistically significant, the results show important relationship between contraceptive use and fertility preferences as seen from the predicted probability. Figure 2 shows the predicted probability of using any kind of contraceptive for wives and husbands while keeping other covariates at mean. As expected from the first hypothesis, the likelihood of using contraceptive is highest when both husbands and wives do not want any children. Among couples who disagree on having additional children, both wives and husbands report higher likelihood of contraceptive use when the wife does not want any more children. On the other hand, if the wife still wants more children but the husband does not, the likelihood of contraceptive use is lower for both husbands and wives. This result is contradictory to the hypothesis and shows that wives' fertility preference may supersede the husbands' fertility preference in this sample.

Further examination of contraceptive use by type shows similar results for concordant couple but dissimilar results for discordant couples. Likelihood of using male-based and female-based contraceptive use is lower for couples who still want more children in comparison to those who do not want children as seen in Table 2. This relationship holds for both wives' and husbands' report. The likelihood of contraceptive use by type for discordant couples is seen more clearly from the predicted probability estimates as seen in figure 3. In contrast to the result where all types of contraceptive use was collapsed, figure 3 shows that the likelihood of using female-based method is lowest when wives do not want children but husbands still want children. This likelihood is even lower than the case when both husband and wife want children. This indicates

that women are not even able to covertly use methods within their control unless their husband is also in agreement with them on future childbearing. On the other hand, women have high likelihood of using female-based methods even when she wants more children but her husband does not want additional children. It seems like wives are pressurized into using contraceptives at the expense of the fulfillment of their own fertility desires if the husband is reluctant to have any additional children. This situation seems to be a reflection of reality since both wives and husbands report such relationship.

The likelihood of using male-based method looks more complex and differs between the husbands' and wives' report. In general, wives report very low and negligible likelihood of using male-based contraceptive regardless of the couples' fertility desires, while the husbands report a very high likelihood of using male-based methods, similar to the descriptive results (Table 1). For discordant couples, husbands report a higher likelihood of using male-based method when the wives do not want additional children and a lower likelihood of using male-based method when the women wants more children. This result seems counter-intuitive because husbands are reporting use of male-based contraceptive in accordance to their wives' fertility desires. However, since husbands are reporting much higher use of male-based methods than their wives, it could be the case that males are using condoms in extra-marital relationships which has no bearing on the actual fertility desires of their wives. When collecting contraceptive use information, the questions ask about monthly use of contraceptive within marriage or with sex partner rather than just within marriage. Therefore, there is a possibility that husbands are reporting higher use of contraceptives in non-marital relationships. Without in-depth information about the context of contraceptive use, it is difficult to shed more light on this result.

In terms of other covariates, contraceptive use seems to decrease over the life course of both husbands and wives with highest likelihood occurring among the 20-29 year age group similar to the national level DHS results. The effect of education on contraception use increases with the level of education for both men and women. Men and women with highest level of education are the most likely to report use of any contraceptives.

Similar to the results in the World Bank on Gender and Social Exclusion (GSEA-2006) study, the indigenous Tibeto-Burmese Terai women were the least likely to use contraception. This is probably because of this groups' lower access to knowledge and availability of contraceptives.

## Summary and Conclusion

This analysis provides some insightful information regarding the relationship between couples' fertility preference and subsequent contraceptive use and childbearing.

As predicted, contraceptive use was highest among couples who agreed on not having any other child, thus indicating an important need for spousal communication on fertility desires and contraceptive use. Among couples who did not agree on fertility desires, it seemed like contraceptive use followed wife's desire but further examination by method of contraceptive showed that the scenario might be more complex. The first scenario where husbands were able to convince their wives to use female-based method to support the husbands' fertility choice seems most likely in this region. Wives and husbands both reported higher likelihood of using female-based method when husbands did not want any children and lower likelihood of using male-based method when husbands wanted more children. From the husbands' reporting of female-based method, it seems that husbands play an important role in determining their wives' use of

contraceptives similar to earlier studies in Nepal (Dahal et al. 2009, Chapagain 2005). Furthermore, the results also show that husbands perceive much higher use of female-based method among their partner while their wives report much lower use, which could be attributed to women's struggles with using or accessing female-based method that husbands may not know or understand. The fact that there is a lower use of contraceptive among the respondents, including those couples who agree on not having any children further elucidates a need for understanding the role of husbands in wives' use of contraceptive. This result calls for a targeted effort to reach out to male partners to inform them of access to, benefits, and side-effects of female-based methods.

In addition, husbands' higher report of male-based method in the area in contrast to their wives' report of male-based method suggests use of these methods among men in extra-marital relationships. This study did not examine the type of male-method among these couples but condom-use in such sexual relationships should be examined further in the context because of the high in and out migration of males in the area in 1990s (previous research by author).

Education had an interesting influence on use of contraceptives and childbearing. Highly educated men and women are more likely to report use of male-based method. Since male-based method is not decomposed into condom or male sterilization, it is difficult to ascertain the actual method used. However, it seems likely that educated couples do not place the burden of contraceptive use on females and use condom which has less adverse effects on women than hormonal methods. On the other hand, it may be the case that education provides women with knowledge or bargaining power to convince their partners to use contraceptive methods. This result is similar to previous study by Ghubaju(2009) which showed that highly educated females and males were more likely to use condoms.

These results together highlight the importance of studying contraceptive use by type and comparing both husbands' and wives' reported use instead of just examining any type of contraceptive use and wives' reported use.

In this analysis, there were a very low proportion of couples who disagreed on having children and used contraceptives indicating a higher unmet need in the sample. Since studies have reported a decrease in unmet need in Nepal by 2006[1], replication of the analysis with the 2008 baseline data would provide more statistically robust results. Also, the study used the characteristics of husbands and wives in separate analysis, however including comparative characteristic of husbands and wives such as age difference, educational difference would probably add more to the study, especially understanding the husbands' role in women's contraceptive use decisions.

Overall, this study indicates a need to bring men into reproductive decision-making to effectively design family planning and health care programs in Nepal. Studies have shown that programs that have encouraged and removed structural barriers for men's involvement in their partners' reproductive health lead to higher use of contraceptive and health care services for women in two separate cultural contexts - India and South Africa (Greene et al. 2006; Population Council 2005). Similar success stories have been noted in Madagascar and Ethiopia where women whose husbands' participated in information session about contraceptive use were using the contraceptives more effectively than those women whose husbands did not participate in the program (Bongaarts 1995).

[1] Decrease of unmet need from 31% to 25% among currently married women from 1996 to 2006 (Macro International 2007).

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Table 1. Descriptive Statistics of Couples by Gender, Chitwan Valley Family Study, 1996

| Variable | Wives | Husbands |
|---|---|---|
| Total N (matched couples) | 506 | 506 |
| ***Outcome Variable (Contraceptive use as reported by Wives and Husbands)*** | | |
| *Used any kind of contraceptive in 1997 (year after baseline survey)* | 31.23 | 45.45 |
| *Male vs. Female based Method* | | |
| Couple did not use any contraceptive | 68.77 | 54.55 |
| Only Male-based method (condom, male sterilization, abstinence, withdrawal, foam) | 15.22 | 24.70 |
| Only Female-based method (pills, IUDs, Depo, Norplant, female sterilization) | 16.01 | 20.75 |
| ***Other characteristics of Contraceptive use as reported by Wives and Husbands*** | | |
| *Particular Methods of Contraceptive among those using contraceptives* | | |
| Female Sterilization | 5.70 | 3.91 |
| Male Sterilization | 24.05 | 14.78 |
| Pills | 12.66 | 14.78 |
| Depo-Provera (Injectable) | 34.81 | 24.35 |
| IUD | 2.53 | 1.74 |
| Condom | 20.89 | 36.96 |
| Norplant | 4.43 | 3.04 |
| Other (Abstinence, Spermicidal, other methods) | 8.86 | 20.43 |
| *Use of more than one type of contraceptive* | | |
| Only one type of contraceptive | 27.08 | 36.76 |
| Two types of contraceptive | 3.95 | 8.30 |
| More than two types of contraceptive | 0.20 | 0.40 |
| *Discordance in report between husbands and wives* | | |
| Both wife and husband agree on 'No use' | 50.59 | |
| Wife reports 'Use' but Husband reports 'No use' | 3.95 | |
| Wife report 'No Use' but Huband reports 'Use' | 18.18 | |
| Both wife and husband agree on 'Use' | 27.27 | |
| ***Explanatory Variable (Husband-wife's joint fertility preference)*** | | |
| **Fertility preference of husband vs. wife based on whether they wanted any more children** | | |
| Both wife and husband want | 23.32 | |
| Wife does not but Husband wants | 4.55 | |
| Wife wants but Husband does not | 5.93 | |

| | | |
|---|---|---|
| Both Wife and husband don't want | 66.21 | |
| ***Controls :Demographic Characteristics*** | | |
| **Age** | | |
| Mean age | 27.7 (7.0) | 32.6 (8.3) |
| *Husband's/Wife's age cohorts* | % | % |
| Less than 20 years | 5.93 | |
| 20-29.99 years (wives)/19.99-29.99 years (husbands) | 61.86 | 43.08 |
| 30-39.99 years | 23.72 | 36.17 |
| 40-44.99 years ( wives)/ 40-49.99 years (husbands) | 8.50 | 16.01 |
| Greater than & equal to 50 (husbands only) | | 4.74 |
| **Ethnicity** | | |
| Upper Caste Hindu | 43.28 | 44.47 |
| Lower Caste Hindu | 9.49 | 9.68 |
| Hill Tibeto-Burmese | 15.61 | 14.62 |
| Terai Tibeto-Burmese | 23.91 | 24.31 |
| Newar | 6.52 | 6.13 |
| **Educational level** | | |
| No formal education | 52.96 | 24.51 |
| School education until 5th grade | 16.40 | 23.52 |
| School educ until 10th grade but has not passed SLC | 21.34 | 30.04 |
| Passed SLC and higher education in college | 9.29 | 21.94 |
| ***Controls: Marital, childbearing and contraceptive History until 1996*** | | |
| **Contraception History** | | |
| Ever used contraceptive before 1996 | 37.94 | 48.02 |
| **Childbearing History** | | |
| Mean number of living children born before 1996 | 2.7 | |
| Mean number of surviving sons | 1.2 | |
| 0 son | 23.52 | |
| 1 son | 45.65 | |
| 2 sons | 20.36 | |
| >2 sons | 10.47 | |
| ***Household level Characteristics*** | | |
| Mean Wealth Index Score | 0.6 (0.9)<br>Range:<br>-2.35 to 2.49 | |

Table 2. Odds Ratios (Std errors) from Logistic and Multinomial Logistic Regression Predicting Likelihood of Using Contraceptives in 1997 for wives and husbands, CVFS 1996-1997.

| | Wives' Report | | | Husbands' Report | | |
|---|---|---|---|---|---|---|
| | Any contraceptive use vs. no use | Female-based Method vs. no use | Male-based method vs. no use | Any contraceptive use vs. no use | Female-based Method vs. no use | Male-based method vs. no use |
| **Fertility preference of husband vs. wife based on whether they wanted any more children** | | | | | | |
| Both Wife and husband do not (Ref) | | | | | | |
| Wife does not but Husband wants | 0.88 | 0.25 | 1.80 | 0.52 | 0.48 | 0.60 |
| | (0.487) | (0.281) | (1.129) | (0.277) | (0.329) | (0.369) |
| Wife wants but Husband does not | 0.47 | 0.69 | 0.34 | 0.58 | 0.35 | 0.65 |
| | (0.274) | (0.522) | (0.278) | (0.284) | (0.294) | (0.351) |
| Both Wife and husband want | 0.52* | 0.53 | 0.54 | 0.50* | 0.47 | 0.52 |
| | (0.204) | (0.290) | (0.259) | (0.180) | (0.226) | (0.217) |
| **Age** | | | | | | |
| <20 years (wife ref)/ <30years (husband reference) | | | | | | |
| 20-30 years | 0.61 | 1.09 | 0.54 | | | |
| | (0.306) | (0.929) | (0.302) | | | |
| 30-39 years | 0.32* | 0.62 | 0.23** | 0.67 | 0.61 | 0.74 |
| | (0.188) | (0.582) | (0.164) | (0.181) | (0.205) | (0.232) |
| 40-45 years (wife)/40-49 years (husband) | 0.09*** | 0.34 | 0.00 | 0.40** | 0.36** | 0.47 |
| | (0.073) | (0.368) | (0.000) | (0.154) | (0.170) | (0.224) |
| >50 years (only husbands) | | | | 0.33* | 0.26* | 0.41 |
| | | | | (0.206) | (0.199) | (0.366) |
| **Educational Level** | | | | | | |
| No formal education (Ref) | | | | | | |
| Primary | 1.15 | 0.93 | 1.67 | 1.06 | 0.94 | 1.21 |
| | (0.384) | (0.399) | (0.743) | (0.344) | (0.375) | (0.524) |
| Secondary | 1.28 | 0.87 | 2.01 | 1.47 | 1.00 | 2.22* |
| | (0.436) | (0.387) | (0.890) | (0.480) | (0.400) | (0.936) |
| Higher secondary | 1.86 | 0.93 | 3.21** | 2.40** | 0.91 | 5.02*** |
| | (0.815) | (0.563) | (1.687) | (0.874) | (0.427) | (2.262) |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Ethnicity** | | | | | | |
| Upper Caste Hindu (Ref) | | | | | | |
| Lower Caste Hindu | 0.69 | 0.98 | 0.33* | 0.51* | 0.57 | 0.38* |
| | (0.281) | (0.476) | (0.219) | (0.201) | (0.262) | (0.215) |
| Hill Tibeto-Burmese | 0.67 | 1.18 | 0.28** | 0.97 | 1.04 | 0.82 |
| | (0.229) | (0.487) | (0.151) | (0.308) | (0.396) | (0.328) |
| Terai Tibeto-Burmese | 0.47** | 0.43* | 0.56 | 0.77 | 0.38** | 1.32 |
| | (0.158) | (0.204) | (0.237) | (0.226) | (0.159) | (0.452) |
| Newar | 1.53 | 2.12 | 1.10 | 1.34 | 1.66 | 1.11 |
| | (0.715) | (1.206) | (0.602) | (0.604) | (0.868) | (0.591) |
| **Childbearing and Contraceptive History** | | | | | | |
| Ever used contraceptive before 1996 | 4.34*** | 8.78*** | 1.98** | 4.51*** | 5.26*** | 3.93*** |
| | (0.979) | (2.738) | (0.593) | (0.956) | (1.462) | (1.010) |
| Total number of living children | 1.25** | 1.19 | 1.43** | 1.05 | 1.16 | 0.94 |
| | (0.137) | (0.160) | (0.229) | (0.105) | (0.139) | (0.121) |
| No son(Ref) | | | | | | |
| 1 son | 2.47** | 2.80* | 2.46** | 1.69* | 3.63*** | 1.14 |
| | (0.884) | (1.489) | (1.073) | (0.516) | (1.714) | (0.393) |
| 2 sons | 2.40** | 3.70** | 1.22 | 2.21** | 4.00** | 1.75 |
| | (1.030) | (2.209) | (0.695) | (0.857) | (2.199) | (0.784) |
| > 2 son | 2.50* | 2.55 | 2.58 | 1.41 | 2.32 | 1.21 |
| | (1.300) | (1.771) | (1.766) | (0.665) | (1.474) | (0.705) |
| Household Wealth | | | | | | |
| Lowest quartile (Ref) | | | | | | |
| Lower middle quartile | 1.07 | 1.00 | 1.34 | 0.94 | 0.70 | 1.29 |
| | (0.348) | (0.394) | (0.644) | (0.279) | (0.257) | (0.474) |
| Upper middle quartile | 1.49 | 0.84 | 2.83** | 1.05 | 0.73 | 1.47 |
| | (0.492) | (0.363) | (1.277) | (0.326) | (0.287) | (0.553) |
| Highest quartile | 1.00 | 0.64 | 1.84 | 1.06 | 0.87 | 1.35 |
| | (0.346) | (0.284) | (0.870) | (0.335) | (0.340) | (0.515) |
| Observations | 506 | 506 | 506 | 506 | 506 | 506 |
| chi2 | 123.6 | 190.5 | 190.5 | 126.7 | 177.7 | 177.7 |

std. error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1. Discordant Reporting of Contraceptive Use between Husbands and Wives, CVFS 1996

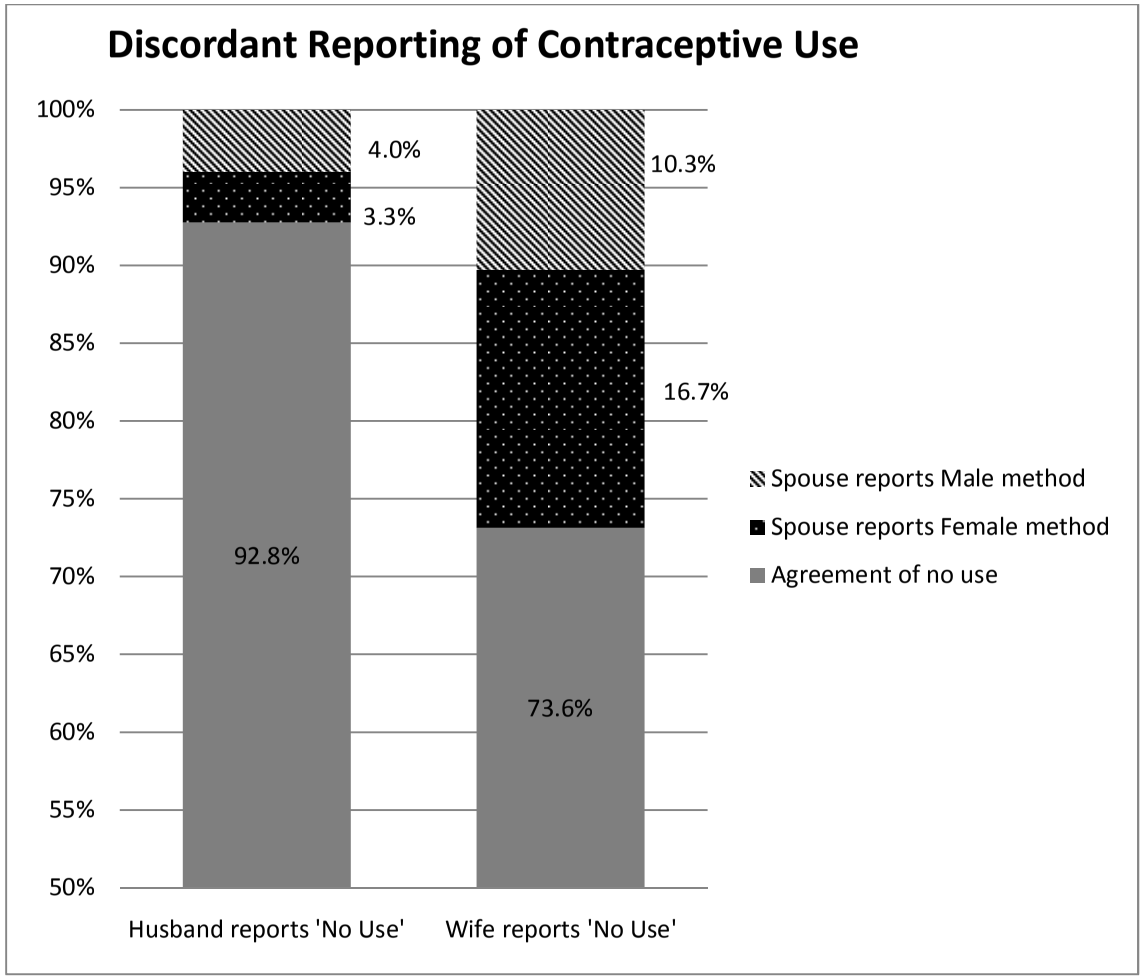


Figure 2. Predicted probability of contraceptive use as a function of couple's fertility preferences with covariates set at mean from logistic regression.

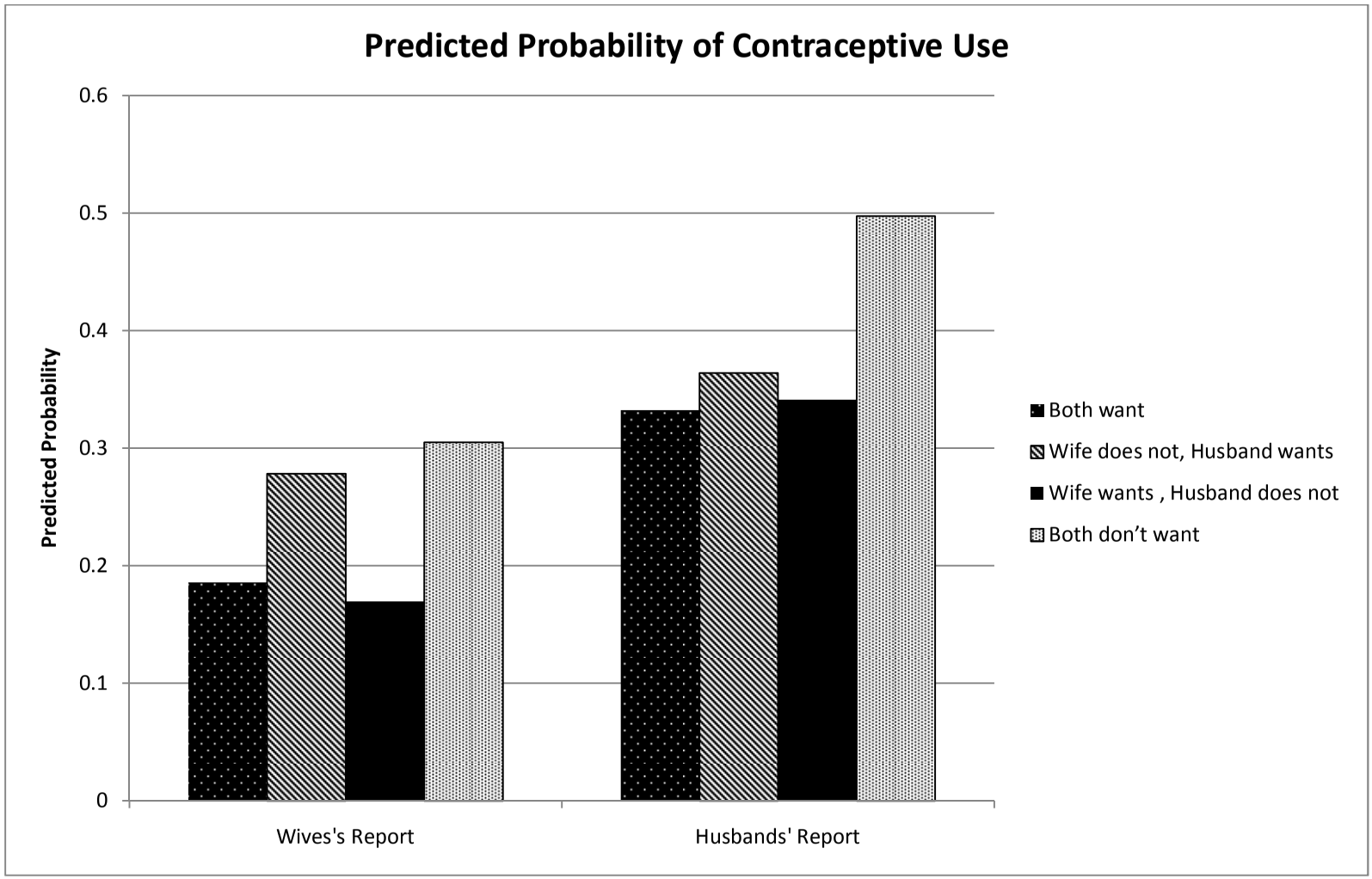
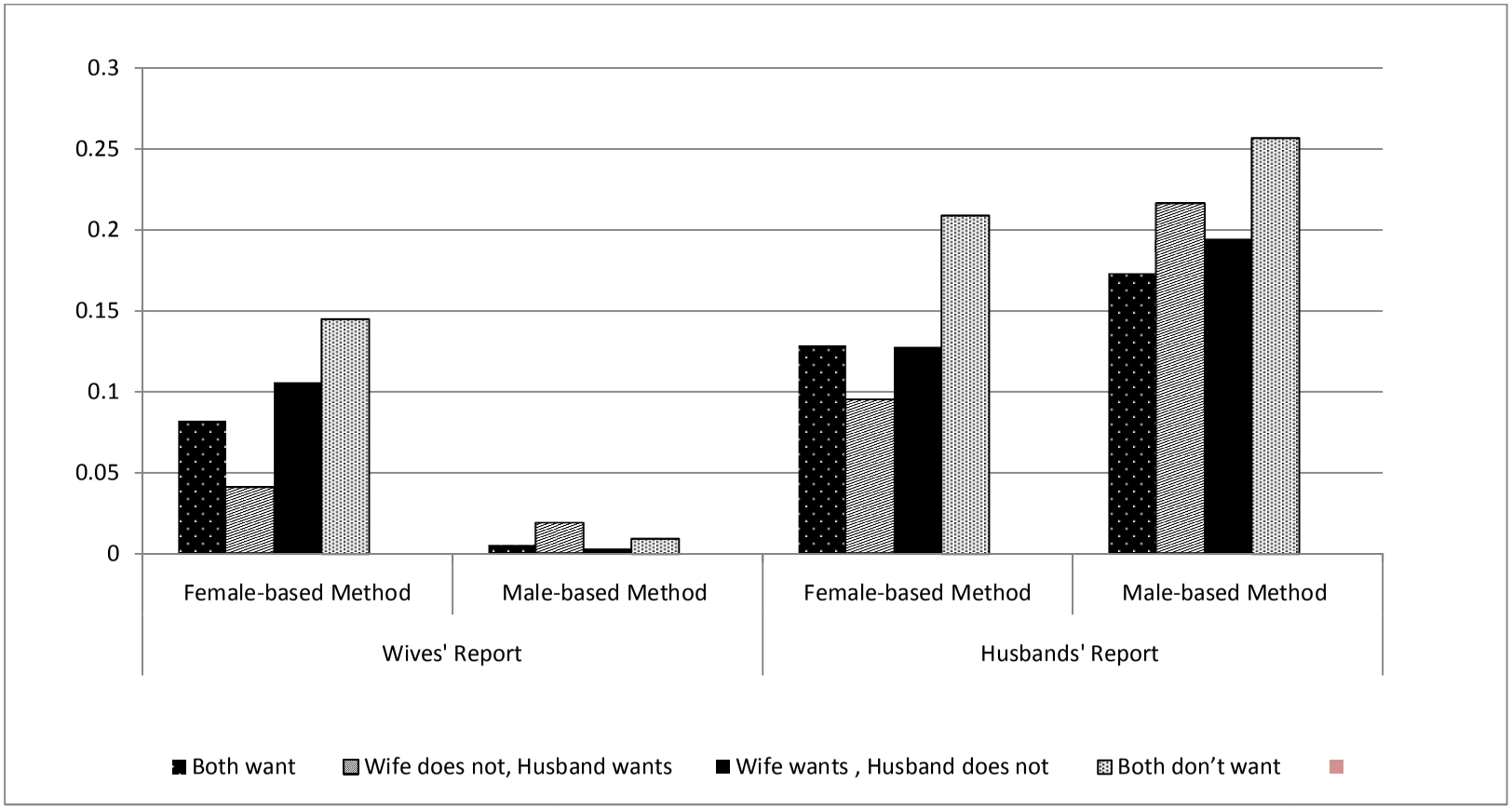


Figure 3. Predicted probability of male-based and female-based contraceptive use as a function of couples' fertility preference with covariates set at mean from multinomial logistic regression


0.3
0.25
0.2
0.15
0.1
0.05
0
Female-based Method
Male-based Method
Female-based Method
Male-based Method
Wives' Report
Husbands' Report
Both want
Wife does not, Husband wants
Wife wants , Husband does not
Both don't want

# Appendix A

*Map of the Chitwan Valley Family Study Area*


Source: (Bhandari 2004)

*Question used to create fertility preference from Individual-level data*

## Section F
## Childbearing

| | | | | |
|---|---|---|---|---|
| **F1** | *Interviewer Checkpoint (From LHC).* Respondent has had children | | | |
| **had child ever** | 1 | Yes | | 3627 |
| | 0 | No | → Go to F4 | 1621 |
| | . | No response given | | 23 |
| **F2** | Would you like to have more children? | | | |
| **want more kids** | 1 | Yes | | 460 |
| | 0 | No | → Go to F7 | 3167 |
| | .A | Inappropriate / skip F1 = 0 | | 1621 |
| | .D | Don't know | | - |
| | . | No response given | | 23 |