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The Differential Impact of Wives' and Husbands' Education on Contraceptive Method Choice in Nepal, 1996-2006

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ABSTRACT

The effect of education on fertility, contraceptive behavior, and contraceptive method choice has been extensively researched in the family planning literature. The education levels completed by husbands and wives have been shown to be salient factors in determining the use of specific contraceptive methods. One issue that has been less explored, particularly in the context of Nepal, is how relative education between husbands and wives influences their choice of certain methods.

One objective of this paper is to investigate the differential impact of the education levels of husbands and wives in Nepal on their contraceptive method choices using the Nepal Demographic and Health Surveys from 1996, 2001, and 2006. A second objective is to examine how the role of education in family planning use has changed over the past decade, given that significant changes in fertility and family planning have occurred in Nepal during this period. Multinomial logistic regression models are estimated to assess the effects of relative education and of the education gap between spouses on contraceptive method choice while controlling for key socioeconomic determinants of family planning.

The results show that although the wife's education is one of the primary determinants of the type of method chosen by the couple, the husband's education has more influence on the selection of male methods. Furthermore, the effects of wives' and husbands' education differ by their relative education and by their education gap. Finally, differences in the use of any method of family planning by education level have narrowed considerably in the past decade, although differentials remain in the use of some methods.

These findings highlight the importance of focusing on couples and involving men in family planning efforts because husbands do seem to play a role in choosing family planning methods, especially in the choice of male methods.

INTRODUCTION

Significant changes have occurred in Nepal within the past three decades in fertility, family planning, and contraceptive choice. In the mid-1970s, fertility peaked at 6 births per woman and only 3 percent of women used some form of birth control (Feeney et al., 2001). The 2006 Nepal Demographic and Health Survey (NDHS) showed some remarkable progress in recent years. Fertility declined to 3.1 births per woman in 2006 from 4.1 births in 2001. Moreover, although only a decade earlier, 26 percent of currently married women were using a modern method of family planning, this rate had increased to 44% in 2006 (Tuladhar, 2007). The last decade has also been an interesting period in Nepal's history because the past 10 years have been marked, not only by significant changes in fertility and family planning, but also by violent conflicts due to the Maoist insurgency. These conflicts might have affected access to and availability of contraceptive supplies in certain parts of the country.

In recent years, there have been significant shifts in the contraceptive method mix used in Nepal. When Nepal began its family planning program in 1968, sterilization—both male and female—was heavily emphasized by the government in an effort to reduce the fertility rate in the largely rural and illiterate population. Male sterilization was the predominant method when Nepal began its family planning program, but it was soon replaced by female sterilization. Although female sterilization has continued to be the predominant method of contraception in Nepal, its percent share relative to other methods has gradually been declining with the increase in the use of temporary methods. The use of injections, in particular, has increased steadily, beginning in 1991, and increased sharply from 1996 to 2001. The 2006 NDHS shows additional changes in the method mix, with the increased use of pills and condoms (Ministry of Health and Population [Nepal], New ERA, and Macro International Inc., 2007).

The family planning literature in Nepal has so far focused primarily on the dynamics of contraceptive use and nonuse (Schuler et al., 1985; Schuler and Goldstein, 1986; Axinn, 1992;

Morgan and Niraula, 1995; Stash, 1999; Stash, 2001; Satyavada and Adamchak, 2000). In part, this is because overall use of contraception in Nepal remains low and there is a high unmet need for family planning.

The dominant concern among policy makers has been the need to increase contraceptive prevalence in an effort to reduce fertility levels. Much less attention has been paid to the issue of method choice, although a few recent studies have explored this issue (Stash, 2001; Chapagain, 2005; Chapagain, 2006; Gubhaju, 2006; Dahal et al., 2008). Stash (2001) differentiated between factors that influence temporary versus permanent methods of birth control in the Chitwan district of Nepal. Chapagain (2006) examined joint husband-wife involvement in contraceptive decisionmaking in two rural population clusters in Nepal. Chapagain found that unequal husband-wife power relationships lead to the husband's domination in decisions regarding whether to use contraception, choice of a method, and continuation of a method.

At a national level, Dahal et al. (2008), using the 2001 NDHS survey, examined the contraceptive choices made by men. Gubhaju (2006) examined the contraceptive choices made by women, also with the 2001 NDHS. The study by Dahal et al. (2008) found that sex composition and parity are important in determining the use of permanent methods of family planning among men. Gubhaju (2006) emphasized the role of the education level of both the wife and the husband in determining which method the couple uses. Although higher levels of education in women significantly increased the likelihood that the women would use temporary hormonal methods and condoms, women's education levels did not have any effect on the likelihood that their partner would be sterilized. In contrast, higher levels of education in husbands had particularly strong positive effects not only on the use of condoms, but also on the use of male sterilization.

Descriptive data from the 2006 NDHS show that the percent use of male sterilization is lowest in couples in which the woman has completed secondary or higher education but is highest in couples in which the husband has completed secondary or higher education. This raises an important, unexplored question about the interesting couple-level dynamics that influence the relationship between the education levels of husbands and wives and their choices of family planning methods. For example, how will method choice vary if both husband and wife are uneducated, if both are educated, if the husband is more educated than the wife, or vice versa? In previous studies, the independent and additive effects of wives' and husbands' education levels on family planning have been explored extensively. However, few studies have explored the combined effects of the education levels of both wives and husbands on the types of contraceptive methods used by couples.

Thus, this paper attempts to expand upon previous studies in Nepal by giving more needed attention to the question of contraceptive method choice and offering a more in-depth examination of the link between education and contraceptive method choice by examining the combined effects of the husband's and wife's education levels. A further question that this paper considers is how the role of education—of the wife, the husband, and both the wife and the husband—on contraceptive use and method choice in Nepal has changed over the past 10 years. The availability of the 1996, 2001, and 2006 NDHS data makes it possible to explore these questions.

LITERATURE REVIEW

The impact of women's education levels on fertility, contraceptive behavior, and contraceptive method choice has been extensively studied. Higher education levels in women have consistently been shown to have a significant negative effect on fertility levels and a positive effect on the use of contraception, although the exact mechanism through which education influences such behaviors and the direction of the relationship has not been identified (Cochrane, 1979; Caldwell, 1986; Mason, 1987; Jejeebhoy, 1995; Martin, 1995; Stash, 2001; Moursund and Kravdal, 2003; Al Riyami et al., 2004; Saleem and Bobak, 2005; Omariba and Rasugu, 2006). A large-scale analysis of DHS survey data from 25 developing countries confirmed that better educated women are more likely to practice contraception (Martin, 1995).

One of the explanations for the effects of higher education levels on contraceptive use has been its indirect influence on increasing the cost of raising children and thereby reducing the fertility level (See Mason, 1987 for a detailed explanation). Lower fertility, in turn, increases the likelihood that women with more education will need to use fertility control measures (Martin, 1995). Education is also believed to improve women's independence and has been suggested to increase women's ability to engage in innovative behavior, such as using family planning. Specifically, education increases women's knowledge of contraception and makes it more likely that they will have the financial means needed to acquire appropriate methods (Caldwell, 1986).

With regard to method choice, previous studies have found that sterilizations —both male and female—have been the method most commonly used by couples in which the woman has a lower education level, particularly in South Asia, where government family planning programs tend to focus on poor, uneducated, rural women. Studies have found that women with higher levels of education are more likely to opt for temporary than permanent methods of

birth control (Bulatao, 1989; Bhende et al., 1991, Stash, 2001; Mannan, 2002; Pal and Makepeace, 2003).

There has been mixed evidence in the literature on the impact of women's education levels on the use of modern versus traditional methods of contraception. Some studies have found that educated women are more likely to use modern methods than traditional methods (Alpu and Fidan, 2006) because they are more likely to be aware of and have access to more effective methods of birth control. As a result, educated women are less likely to rely on the less effective methods of withdrawal and periodic abstinence.

However, the use of traditional methods requires knowledge of the menstrual cycle (for periodic abstinence) and cooperation from the woman's partner; the literature has suggested that educated women have more awareness of their menstrual cycles and more ability to persuade their partners to cooperate in withdrawing or abstaining (Bulatao, 1989). Traditional method use has been increasing in some less developed countries. Using the National Family Health Survey in India 1992-93, Basu (2005) investigated the impact of differences in education and rural versus urban residence on current use of traditional methods. She found that the most highly educated and urban women in India were using traditional methods of birth control and the illiterate and rural women were opting for modern methods. Using the 1998 Mongolian Reproductive Health Survey, Gereltuya et al. (2007) also found that higher levels of education in women were associated with a greater likelihood of using traditional methods than using the intrauterine device (IUD) or other modern methods.

The effect of husbands' education levels on women's contraceptive behavior has also been taken into consideration in previous studies. It has been argued that because husbands play a major role in their wives' contraceptive decisions, it is necessary to examine how their education influences family planning use. Axinn (1992) emphasized that in Nepal, due to the popularity of vasectomy in rural areas, it is imperative in research to include information on the

husband's characteristics in the contraceptive decisionmaking framework. The use of other male methods, such as condoms and withdrawal, is also dependent on the cooperation of the husband. Chapagain (2005) further argued that husbands play a significant role in influencing their wives to use female methods. Dang (1995), using data from the Vietnam DHS survey, found that husbands' education levels have an even greater influence on contraceptive use than women's education levels. Kulczycki (2004) and Alpu and Fidan (2006) found that husbands' characteristics have a particularly important impact on the use of withdrawal in Turkey.

In Nepal, men with at least a secondary education were more likely than men with no education to use male-based methods, although only men's characteristics were included in the study (Dahal et al., 2008). Other studies have found no significant effects of husbands' education level on method choice after controlling for the wives' education level (Koc, 2000).

The results of research on the relationship between husbands' education levels and family planning behaviors so far have been inconclusive because previous studies have found varying effects of husbands' education levels on contraceptive use and method choice. Nonetheless, the importance of husbands' education for their wife's contraceptive behavior, whether through direct or mediating effects, has prompted researchers to consider the role of men in family planning and the relative influence of husbands and wives on contraceptive decisionmaking (Dodoo, 1998). Recently, couples' characteristics and family planning decisions have received much greater attention in the literature than women's characteristics alone in attempts to capture the gender-power dynamics within marital and nonmarital relationships (Becker, 1996; Bankole and Singh, 1998).

In most previous studies, regardless of whether the authors analyzed women's data or couples' data, wives' and husbands' education levels have been considered separately in the analytical models. Thus, the independent and additive effects of each partner's education on contraceptive behavior have been well assessed. However, the combined effects of husbands'

and wives' education levels have not been investigated, particularly in the context of Nepal. This paper attempts to investigate the varying nature of these relationships to assess how relative education levels and education gaps influence method choice in Nepal using the last three DHS surveys available for the country.

DATA, VARIABLES, AND METHODS

The analysis for this paper is based on the NDHS surveys of 1996, 2001, and 2006. These surveys collected data from nationally representative samples of households and included 8,429 respondents in 1996, 8,726 respondents in 2001, and 10,793 respondents in 2006. For the first time in Nepal, the 2006 survey included unmarried women. However, unmarried women are excluded from this analysis so that the results from 2006 are comparable to those of previous surveys. The sample for the analysis in this paper consists of all currently married women who stated that they were not pregnant at the time of the survey. Missing values were excluded and data on unmarried women, pregnant women, and women who did not know their husband's education level were deleted. The final sample for the descriptive and bivariate analyses consists of 6,843 respondents in 1996, 7,395 respondents in 2001, and 7,612 respondents in 2006.

Although users of traditional methods are included in the descriptive and bivariate analyses, these women are not included in the multivariate results so that the effects of explanatory variables on method choice can be assessed for modern methods of family planning only. Therefore, the final sample for the multivariate analysis includes 6,652, 7,071, and 7,308 respondents in 1996, 2001, and 2006, respectively.

Variables

The dependent variable is a categorical measure of the current contraceptive method type used. This is a five-category variable that is coded as currently (1) not using any method, (2) using female sterilization, (3) using male sterilization, (4) using hormonal methods (pills, injections, IUD, implants, foams, or jelly), or (5) using condoms. Users of traditional methods (periodic abstinence, withdrawal, or other) are included in a separate category in the descriptive results but are excluded from the multivariate analysis.

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Various measures of wives' and husbands' educational attainment are the key independent variables used in the analytical models.

First, both wives' and husbands' education levels are considered separately so that their independent effects on contraceptive method type used can be examined. A continuous measure of wives' and husbands' education level has been recoded into a trichotomous variable indicating whether the wives or their husbands have (1) no education, (2) any primary education, or (3) any secondary or higher education.

Second, the education gap between husbands and wives is captured by creating a continuous education difference variable that has been recoded into a three-category variable indicating whether: (1) both the wife and husband have the same level of education or the wife has a higher education level than the husband, (2) the husband has completed 1-5 years more education than wife, or (3) the husband has completed at least 6 more years of education than the wife.

Third, a variable for combined couples' education levels is constructed by combining the education levels of wives and their husbands so that an interactive measure of both partners' education levels on method choice can be assessed. The constructed variable has seven categories: (1) both have no education, (2) both have any primary education, (3) both have any secondary or higher education, (4) the wife has no education and the husband has any primary education, (5) the wife has no education and the husband has any secondary or higher education, (6) the wife has any primary education and the husband has any secondary or higher education, or (7) the wife has completed more education than her husband.

Several other independent variables that have been well established in the previous literature as salient determinants of contraceptive adoption and method choice are also included in the analytical models. Because of its multicollinearity with women's age and parity, women's age has been dropped from the multivariate models. Instead, these models

include the age difference between husband and wife. Other variables included in the models are parity, whether the woman has at least one son, the woman's work status, the woman's knowledge of contraceptive methods, whether the woman has discussed family planning with her husband, whether the husband approves of family planning, household wealth index,[1] whether the woman lives in an urban area, and development region of residence.

Like parity, the presence of a son plays an important role in a couple's adoption of contraception, particularly in the use of permanent methods in South Asia (Stash, 2001; Dahal et al., 2008; Jayaraman et al., 2008).

Urban residence and region of residence are included to assess the effects of location; these variables also serve as proxy measures for access to and availability of family planning services and contraceptive methods. The central development region is the most developed economically, followed by the eastern and western development regions. The midwestern and far-western regions are the least developed.

The analytical model

The analysis is conducted using descriptive, bivariate, and multivariate techniques. Due to the categorical and nominal nature of the dependent variable, multinomial logistic regression is employed.

In Model 1, the effects of the wife's education level and the husband's education level are included as separate variables to assess the effects of women's education on method choice while controlling for husband's education and vice versa. Model 2 addresses the effects of the education differences between husbands and wives and, thus, includes the women's education

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[1] Household wealth index is calculated from a household's ownership of certain durable goods. For further details, refer to Rutstein and Johnson (2004)

level and education gap variables. Model 3 includes the combined couple's education variable. All models shown in the tables control for all other independent variables.

All analyses are conducted separately for the 1996, 2001, and 2006 surveys instead of pooling the data so that the results across the three survey samples can be compared. All descriptive, bivariate, and multivariate results presented in this report are weighted and adjusted for survey data clustering.

RESULTS

Sample characteristics

Table 1 describes the characteristics of respondents in the three surveys. The percentage of women currently not using any method decreased from 68 percent in 1996 to 48 percent in 2006, indicating that the level of contraceptive use has increased by 63 percent in the past 10 years. In terms of method choice, there has been an increase in the use of almost all methods, with the exception of male sterilization, used by only 6-7 percent of the husbands of respondents between 1996 and 2006. The percentage using female sterilization increased from 13 percent in 1996 to 20 percent in 2006. The use of hormonal methods increased from 8 percent in 1996 to 12 percent in 2001 and 16 percent in 2006. Although the increase in the use of hormonal methods between 1996 and 2001 was mainly due to a sharp rise in the use of injections, pill use also increased between 2001 and 2006. Condom use, which only increased slightly from 2 percent in 1996 to 3 percent in 2001, rose to 5 percent in 2006. The use of traditional methods also increased slightly from 3 percent in 1996 to 4 percent in 2001 and remained at 4 percent in 2006.

The education levels of wives and husbands show that there have been substantial improvements in educational attainment in Nepal in the past decade. The percentage of wives and husbands who have no education has declined, with a corresponding increase in the percentage of wives and husbands with any primary and of those with any secondary or higher education. The proportion of women with secondary or higher education increased from 10 percent in 1996 to 21 percent in 2006. The proportion of women having a husband with secondary or higher education also increased, from 34 percent to 47 percent, during this period.

Table 1. Sample distribution of currently married, nonpregnant women age 15-49 years by selected background characteristics, Nepal, 1996, 2001, and 2006

	1996		2001		2006	
	%	N	%	N	%	N
Current contraceptive use						
Not using any method	68.0	4,656	56.5	4,180	48.3	3,673
Female sterilization	13.4	916	16.5	1,218	19.5	1,482
Male sterilization	6.1	414	7.0	516	6.8	521
Hormonal methods	7.5	512	12.4	918	16.3	1,238
Condoms	2.2	154	3.2	239	5.2	394
Traditional (periodic abstinence, withdrawal, or other)	2.8	191	4.4	324	4.0	304
Wife's education						
No education	79.1	5,415	71.6	5,295	62.5	4,758
Any primary	11.2	769	14.9	1,105	16.9	1,285
Any secondary or higher	9.6	659	13.5	996	20.6	1,569
Husband's education						
No education	42.5	2,910	35.3	2,608	25.5	1,940
Any primary	23.3	1,594	25.7	1,897	27.9	2,125
Any secondary or higher	34.2	2,340	39.1	2,890	46.6	3,546
Education difference between husband and wife						
Same level or wife has more education	47.0	3,213	42.7	3,158	37.0	2,820
Husband has 1-5 more years	30.4	2,081	34.4	2,545	40.0	3,043
Husband has at least 6 more years	22.6	1,549	22.9	1,691	23.0	1,750
Combined education (husband and wife)						
Both have none	40.6	2,776	33.1	2,448	23.4	1,780
Both have primary	2.7	182	4.3	321	5.3	402
Both have secondary or higher	8.9	606	12.3	907	18.2	1,386
Wife has none, husband has primary	20.1	1,377	20.4	1,507	20.7	1,577
Wife has none, husband has secondary or higher	18.4	1,262	18.1	1,339	18.4	1,401
Wife has primary, husband has secondary or higher	6.9	472	8.7	644	10.0	760
Wife has more education than husband	2.5	169	3.1	229	4.0	307
Woman's age						
15-24	29.9	2,049	28.3	2,094	26.2	1,996
25-34	36.1	2,472	36.2	2,679	35.7	2,721
35+	33.9	2,323	35.4	2,621	38.0	2,895
Age difference between husband and wife						
Same age or wife is older	14.5	991	13.0	964	14.0	1,064
Husband is older by 1-5 years	51.5	3,523	55.5	4,105	56.5	4,302
Husband is older by 5-10 years	23.1	1,580	22.5	1,663	21.7	1,648
Husband is older by more than 10 years	11.0	750	9.0	663	7.9	598
Number of living children						
Zero to one child	26.2	1,790	24.6	1,821	24.4	1,858
Two to three children	38.9	2,660	40.6	3,005	46.0	3,499
Four or more children	35.0	2,394	34.7	2,569	29.6	2,255

(Cont'd)

Table 1 – cont'd

	1996		2001		2006	
	%	**N**	**%**	**N**	**%**	**N**
Has at least one son	76.1	5,205	76.0	5,617	78.2	5,950
Woman's work status						
Not working	16.1	1,101	16.1	1,193	16.1	1,229
Working in agriculture field	76.0	5,200	76.3	5,642	72.4	5,513
Working in nonagriculture field	7.9	542	7.6	559	11.4	870
Knowledge of family planning methods						
Knows of 0-4 methods	24.7	1,689	7.3	543	4.7	356
Knows of 5-7 methods	49.9	3,417	52.8	3,903	52.7	4,010
Knows of 8 or more methods	25.4	1,737	39.9	2,949	42.6	3,246
Wife's discussions of family planning with husband						
Never	57.2	3,917	58.7	4,340	57.5	4,375
Sometimes	33.4	2,283	28.7	2,126	30.7	2,335
Often	9.4	644	12.6	928	11.9	902
Husband approves of family planning						
Yes	74.0	5,063	79.4	5,872	82.6	6,284
No	13.0	890	10.9	808	10.0	764
Don't know	13.0	890	9.7	715	7.4	564
Urban Residence	8.6	587	9.8	722	14.9	1,135
Region of Residence						
Eastern	23.4	1,600	24.1	1,784	21.4	1,632
Central	32.9	2,253	31.7	2,345	32.8	2,498
Western	19.6	1,344	20.7	1,527	19.5	1,485
Midwestern	14.4	984	13.8	1,024	11.7	893
Far western	9.7	663	9.7	714	14.5	1,105
Wealth Index						
Poorest	21.4	1,464	21.7	1,607	18.5	1,409
Poorer	18.6	1,274	19.2	1,422	19.6	1,491
Middle	20.5	1,405	18.7	1,386	21.1	1,609
Richer	19.9	1,359	20.0	1,476	20.0	1,524
Richest	19.6	1,342	20.3	1,503	20.7	1,579
Total	**100.0**	**6,843**	**100.0**	**7,395**	**100.0**	**7,612**

Note: Weighted percentages and frequencies are presented. Frequencies may not add up to 100% due to rounding

The distribution of education differences shows that the percentage of couples in which husband and wife have the same level of education declined between 1996 and 2006, while the percentage of couples in which the husband has 1-5 more years of education than the wife increased. The percentage of women whose husband has at least 6 more years of education than she does remained the same, at 23 percent, from 1996 to 2006. The proportion of couples in which both wives and husbands have no education declined from 41 percent in 1996 to 23 percent in 2006. The proportion of couples in which both husbands and wives have any primary education increased from 3 percent to 5 percent, while the proportion of couples in which both have any secondary or higher education increased from 9 percent to 18 percent. The proportion of couples in which the wife has more years of education than the husband also increased slightly from 3 percent in both 1996 and 2001 to 4 percent in 2006.

The percent breakdown of the respondents' ages has remained similar in the results of the three surveys: approximately one third of the women are age 15-24 years, one third are age 25-34, and one third are age 35 or older. The age gap between husbands and wives has also remained unchanged, although there has been a slight increase in the percentage of women with a husband 1-5 years older than she is (from 52 percent in 1996 to 57 percent in 2006) and a slight decrease in the percentage of women with a husband 10 or more years older (from 11 percent to 8 percent).

About one quarter of respondents have no children or one child in all three surveys. The proportion with two or three children increased slightly from approximately 40 percent in 1996 and 2001 to 46 percent in 2006, while the proportion of women who have more than three children decreased from 35 percent in 1996 and 2001 to 30 percent in 2006. Slightly more than three quarters of women have at least one son in all three samples.

Approximately 16 percent of women are not working in all three surveys. The proportion working in the agricultural sector has declined slightly in recent years, from 76

percent in 1996 and 2001 to 72 percent in 2006. The proportion of women working in the nonagricultural sector increased from 8 percent in 1996 to 11 percent in 2006.

There has been a substantial increase in levels of knowledge of family planning methods from 1996 to 2006. In 1996, approximately one quarter of women in Nepal knew of less than five contraceptive methods and one quarter knew of eight or more methods. In 2006, the proportion of women with knowledge of fewer than five methods declined to 5 percent and the proportion with knowledge of eight or more methods increased to 43 percent.

However, only a small proportion of women discuss family planning with their husband. In 2006, almost 60 percent of women stated that they had never discussed family planning with their husband, about one third discussed it sometimes, and only 12 percent discussed it frequently. These percentages have changed very little over the three surveys.

Despite the lack of communication regarding family planning between spouses, 74 percent of women in 1996, 79 percent in 2001, and 83 percent in 2006 stated that their husband approves of family planning. In 2006, 10 percent of respondents stated that their husband does not approve of family planning and 7 percent reported that they do not know the opinion of their husband. The proportion of women who do not know the opinion of their husband decreased from 13 percent in 1996 to 7 percent in 2006.

The proportion of respondents living in an urban area increased from 9 percent in 1996 to 15 percent in 2006. In 2006, the highest percentage of respondents live in the central region (33 percent), followed by the eastern region (21 percent), western region (20 percent), far-western region (15 percent), and midwestern region (12 percent).

Because the wealth index is constructed using quintiles, about one fifth of respondents are distributed across each wealth quintile.

Relationship between education level and contraceptive method use

Table 2 presents crosstabulations between the various educational attainment variables and the contraceptive method currently used**.** The results of separate analyses of wives' and husbands' education levels show that in 1996 and 2001, the percent use of contraception was lowest among women who had no education and those whose husband had no education, followed by women with any primary education and women with any secondary or higher education. The positive education gradient by wives' and husbands' education level of contraceptive use in 1996 decreased slightly in 2001, and in 2006 there is almost no difference by education level in use of any method (approximately 50 percent for all education levels). This is mainly because contraceptive use has been rising among respondents with no education and those with primary education but has remained mostly unchanged among respondents with secondary or higher education.

Among women with no education, 30 percent, 40 percent, and 53 percent were using any method in 1996, 2001, and 2006, respectively. Similarly, among women with a husband who has no education, 25 percent, 37 percent and 50 percent were using any method in 1996, 2001, and 2006, respectively. Among women with any secondary or higher education, 48 percent were using any method in 1996; this proportion increased to 58 percent in 2001 but declined to 51 percent in 2006. Use of any method among women whose husband has secondary or higher education increased from 40 percent in 1996 to 50 percent in 2001 and 53 percent in 2006.

Table 2: Percent distribution of current contraceptive use by various education categories in currently married, nonpregnant women, Nepal, 1996, 2001, and 2006

	Using any method			Female sterilization			Male sterilization			Hormonal			Condoms			Traditional			Currently not using			Total	Number of women		
	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006	Total	1996	2001	2006
Women's education																									
No education	29.6	40.2	52.6	13.4	17.9	24.6	6.1	6.4	7.5	6.4	10.9	15.1	1.5	1.7	2.5	2.1	3.4	3.0	70.4	59.8	47.4	100.0	5,415	5,295	4,758
Any primary	34.6	46.3	49.6	14.7	13.4	13.5	5.9	9.7	7.1	8.8	14.8	18.5	1.6	3.9	6.6	3.5	4.6	3.9	65.4	53.7	50.4	100.0	769	1,105	1,285
Any secondary or higher	48.3	57.5	50.8	11.5	12.4	8.8	5.6	7.1	4.7	14.4	18.0	18.1	9.2	10.6	12.1	7.5	9.5	7.1	51.7	42.5	49.2	100.0	659	996	1,569
Husband's education																									
No education	25.3	36.7	50.3	12.7	17.9	25.4	4.5	4.2	5.3	5.3	9.9	15.3	0.9	1.0	1.8	1.8	3.7	2.6	74.7	63.4	49.7	100.0	2,910	2,608	1,940
Any primary	31.9	43.5	50.4	13.7	15.9	20.5	7.3	8.3	6.4	7.2	13.7	17.5	1.6	2.4	3.1	2.1	3.2	2.9	68.1	56.5	49.6	100.0	1,594	1,897	2,125
Any secondary and higher	40.2	49.6	53.3	14.0	15.5	15.6	7.1	8.6	8.0	10.4	13.8	16.1	4.3	5.8	8.3	4.4	5.8	5.4	59.8	50.4	46.7	100.0	2,340	2,890	3,546
Education difference b/w husband and wife																									
Same level or wife has more education	27.2	39.1	49.6	12.8	16.9	20.0	4.5	4.5	5.3	6.1	11.4	16.4	1.5	2.0	4.2	2.3	4.3	3.6	72.8	60.9	50.4	100.0	3,213	3,158	2,820
Husband has 1-5 more years	34.0	47.4	50.7	12.4	14.8	17.4	6.8	8.6	6.0	8.6	14.3	16.7	3.1	4.6	6.3	3.1	5.1	4.2	66.0	52.6	49.3	100.0	2,081	2,545	3,043
Husband has at least 6 more years	39.0	45.7	57.1	15.8	18.2	22.2	8.2	9.2	10.7	8.9	11.3	15.3	2.6	3.4	4.7	3.5	3.6	4.2	61.0	54.3	42.9	100.0	1,549	1,691	1,750
Combined education (husband and wife)																									
Both have none	24.9	36.4	50.4	12.5	18.1	26.4	4.5	4.1	5.3	5.2	9.6	14.6	0.9	1.0	1.4	1.8	3.6	2.6	75.1	63.7	49.6	100.0	2,776	2,448	1,780
Both have primary	32.7	42.8	54.0	15.0	10.6	13.9	5.3	10.0	6.5	9.0	16.2	25.6	0.0	3.2	4.1	3.4	2.8	4.0	67.3	57.2	46.0	100.0	182	321	402
Both have secondary or higher	48.3	58.4	52.1	10.8	11.8	8.8	5.4	7.4	5.0	14.1	17.7	17.4	9.7	11.2	13.0	8.2	10.2	7.9	51.7	41.7	47.9	100.0	606	907	1,386
Wife has none, husband has primary	31.3	43.4	50.7	13.5	17.0	23.2	7.6	8.1	6.8	6.5	12.8	15.4	1.7	2.0	2.5	2.0	3.4	2.8	68.7	56.6	49.4	100.0	1,377	1,507	1,577
Wife has none, husband has secondary or higher	38.0	43.8	57.8	15.3	18.6	23.8	8.1	8.7	11.1	9.2	10.9	15.3	2.5	2.6	3.8	3.0	3.0	3.7	62.0	56.2	42.2	100.0	1,262	1,339	1,401
Wife has primary, husband has secondary or higher	35.7	49.5	47.4	14.6	14.4	12.9	6.6	10.4	7.6	8.7	14.5	15.0	2.2	4.8	7.8	3.6	5.4	4.0	64.3	50.5	52.6	100.0	472	644	307
Wife has secondary or higher	37.6	43.3	43.9	16.2	16.1	11.8	5.1	5.3	3.5	12.1	15.8	20.7	1.9	2.4	5.9	2.4	3.7	1.9	62.4	56.7	56.1	100.0	169	229	760

Note: Weighted percentages and frequencies are presented. Frequencies may not add up to 100% due to rounding

When the results are examined by education difference between husbands and wives, the proportion using contraception in all three surveys is higher among women with a husband who is more educated, particularly when the husband has at least 6 more years of education than the wife. In the three surveys, 39 percent of couples in which the husband has at least 6 more years of education than the wife used contraception in 1996, 46 percent in 2001, and 57 percent in 2006, compared with 27 percent, 39 percent, and 50 percent, respectively, of couples in which the partners have the same level of education or the wife has more education than the husband.

When the education levels of husbands and wives in 1996 and 2001 are combined, the percent use of contraception is highest when both partners have secondary or higher education. In 2006, the percent use of contraception is highest among women who have no education and those whose husband has secondary or higher education. The proportion using any method of contraception was lowest among women when both they and their husband had no education in 1996 (25 percent) and 2001 (36 percent). In 2006, the proportion using contraception is lowest among women who have more education than their husband (44 percent).

The type of contraceptive used by education level shifted between the 1996 and 2006 survey periods. In 1996, the percentage of women in couples using the permanent methods of female or male sterilization was similar by education group; approximately 12-15 percent used female sterilization and 6 percent used male sterilization. The difference widened in 2001 (12-18 percent used female sterilization and 6-10 percent used male sterilization). In 2006, the difference widened further; 25 percent of women and 8 percent of their husbands with no education used sterilization, but only 9 percent of women and 5 percent of men with secondary or higher education used sterilization.

In contrast, for hormonal methods, there was a positive education gradient in 1996 in which women with secondary or higher education were more likely to use hormonal methods

(14 percent) than women with no education (6 percent). This education gradient has narrowed considerably over the years. In 2006, 15 percent of women with no education, 19 percent with any primary education, and 18 percent with secondary or higher education were using hormonal methods.

For other temporary methods, such as condoms and traditional methods, there is a clear positive education gradient. Women with no education are least likely to use these methods whereas women with secondary or higher education are most likely to use these methods.

The association between the husband's education and contraceptive method choice is similar to that observed for women's education, except for the positive association with male sterilization. The husbands of women with secondary or higher education are least likely to use male sterilization; in contrast, the percent use of male sterilization is highest among women whose husband has secondary or higher education. The association between education gap and type of method used is most prominent with regard to the use of male sterilization, whereas the differences are marginal for other methods. Couples in which the husband and wife have the same level of education are least likely to use male sterilization (approximately 5 percent in all three survey years), whereas couples in which the husband has at least 6 more years of education than the wife are most likely to use male sterilization (8 percent, 9 percent, and 11 percent in 1996, 2001, and 2006, respectively). Another point to note is that the percentage using condoms and traditional methods is slightly higher among women whose husband has 1-5 years more education than in women whose husband has the same level of education or at least 6 more years of education than the wife.

The relationship between wives' and husbands' education levels can be further scrutinized by examining differentials between the combined education categories. For female sterilization, there were no striking differences between the combined education categories in 1996 and 2001. However, in 2006, couples in which both partners have secondary or higher

education are least likely to use female sterilization (9 percent) and couples in which both partners have no education are most likely to use this method of family planning (26 percent). The proportion using male sterilization by different combined education categories ranged from 5 to 8 percent in 1996, 4 to 10 percent in 2001, and 4 to 11 percent in 2006.

In 1996, couples in which both partners had secondary or higher education were most likely to use hormonal methods (14 percent), but in 2006, use of hormonal methods is highest among couples in which both partners have primary education (26 percent).

A consistent pattern that is observed for condom use and traditional method use in all three surveys is that couples in which both partners have secondary or higher education are most likely to use these methods.

Multivariate results: education and current contraceptive method type

In the multivariate models, the strength of the relationships between the educational attainment variables and current contraceptive method use is tested after controlling for key variables that influence the use of family planning. Tables 3, 4, and 5 show the multinomial logistic regression results of the likelihood of using female sterilization, male sterilization, hormonal methods, and condoms (compared with not using any method) for the 1996, 2001, and 2006 surveys, respectively. The results are presented as relative risk ratios for easier interpretation.

Model 1 includes the independent effects of wives' education and husbands' education. Model 2 is an examination of the effects of the education gap between the husband and wife. Model 3 is an exploration of the effects of the combined education variable on contraceptive method use.

The results are shown after all independent variables are controlled for. Unadjusted and reduced models of the various educational attainment measures were also assessed, but the

results are not shown in the tables. Tables 3-5 also present the adjusted effects of other explanatory variables in the models.

Table 3 presents the results for the 1996 survey. In Model 1, women's educational level exhibits a significant relationship with the use of condoms. The husbands of women with any primary education were less likely to use condoms than those with no education, whereas the husbands of women with any secondary or higher education were more likely to use this method. In the unadjusted models (results not shown), women with any primary education or any secondary or higher education were also more likely to use hormonal methods, but this relationship loses significance once other controls are added to the models. Higher levels of education (both primary education and any secondary or higher education) in the husband significantly increase the likelihood that the husband will use male sterilization. Having secondary or higher education also significantly increases the likelihood that a man will use condoms.

In Model 2, in which the analysis controls for education gap rather than the husband's education, women with any secondary or higher education are significantly more likely than women with no education to use hormonal methods. The significant negative relationship between having any primary education and condom use loses significance, whereas the significant positive relationship between having secondary or higher education and condom use increases in magnitude and significance. In addition, the results show that when women have a husband with more education than they do, their husband is slightly more likely to use male sterilization. Use of hormonal methods and condoms is slightly associated in a positive direction with the education gap between the husband and the wife.

Table 3: Determinants of current contraceptive method type among currently married women who are not pregnant: multinomial logistic regression relative risk ratios, Nepal, 1996

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Wife's education												
No education (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-
Any primary	1.09	0.89	0.85	0.45 *	1.13	0.95	0.91	0.52 +	-	-	-	-
Any secondary or higher	0.90	0.87	1.23	1.74 *	1.00	1.07	1.49 *	2.57 ***	-	-	-	-
Husband's education												
No education (ref)	1.00	1.00	1.00	1.00	-	-	-	-	-	-	-	-
Any primary	1.05	1.43 *	1.09	1.25	-	-	-	-	-	-	-	-
Any secondary or higher	1.10	1.58 **	1.32 +	1.90 *	-	-	-	-	-	-	-	-
Education difference between husband and wife												
Same level or wife has more education (ref)	-	-	-	-	1.00	1.00	1.00	1.00	-	-	-	-
Husband has 1-5 more years	-	-	-	-	0.92	1.35 *	1.08	1.17	-	-	-	-
Husband has at least 6 more years	-	-	-	-	1.15	1.68 ***	1.35 *	1.70 *	-	-	-	-
Combined education (husband and wife)												
Both have none (ref)	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00
Both have primary	-	-	-	-	-	-	-	-	1.30	1.11	1.10	@ ***
Both have secondary or higher	-	-	-	-	-	-	-	-	0.91	1.30	1.48 +	3.32 ***
Wife has none, husband has primary	-	-	-	-	-	-	-	-	1.04	1.48 **	1.01	1.43
Wife has none, husband has secondary or higher	-	-	-	-	-	-	-	-	1.18	1.63 **	1.45 *	1.81 +
Wife has primary, husband has secondary or higher	-	-	-	-	-	-	-	-	1.11	1.46	0.98	0.98
Wife has more education than husband	-	-	-	-	-	-	-	-	1.50	1.29	1.66	1.07
Age difference between husband and wife												
Same age or wife is older (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Husband is older by 1-5 years	1.72 ***	1.06	0.75 +	1.15	1.72 ***	1.00	0.75 +	1.13	1.72 ***	1.01	0.76 +	1.14
Husband is older by 5-10 years	1.72 ***	1.30	0.77	1.37	1.72 ***	1.30	0.77	1.35	1.72 ***	1.30	0.77	1.36
Husband is older by more than 10 years	1.97 ***	1.31	0.68 +	0.51	1.95 ***	1.31	0.67 +	0.49	1.97 ***	1.31	0.66 +	0.50

(Cont'd)

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Table 3 – cont'd

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Number of living children												
Zero to one child (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two to three children	14.09 ***	6.98 ***	2.64 ***	1.15	14.12 ***	7.00 ***	2.62***	1.14	13.99 ***	6.94 ***	2.59 ***	1.14
Four or more children	18.91 ***	8.22 ***	3.97 ***	0.85	18.94 ***	8.25 ***	3.94 ***	0.82	18.79 ***	8.15 ***	3.89 ***	0.83
Has at least one son	18.51 ***	6.60 ***	1.99 ***	1.83 **	18.47 ***	6.57 ***	1.98 ***	1.82 **	18.70 ***	6.65 ***	1.99 ***	1.83 **
Woman's work status												
Not working (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Working in agriculture field	0.84	1.55 *	1.58 **	0.59 *	0.85	1.59 *	1.59***	0.60 *	0.84	1.56 *	1.56 **	0.58 *
Working in nonagriculture field	1.39 +	2.33 **	3.01 ***	0.88	1.42 +	2.41 ***	3.05 ***	0.89	1.38 +	2.35 ***	3.01 ***	0.86
Knowledge of family planning methods												
Knows of 0-4 methods (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Knows of 5-7 methods	1.73 ***	1.65 **	2.20 ***	3.56 **	1.73 ***	1.65 **	2.19***	3.58 **	1.71 ***	1.65 **	2.17 ***	3.66 **
Knows of 8 or more methods	2.49 ***	2.31 ***	3.05 ***	5.76 ***	2.50 ***	2.29 ***	3.05 ***	5.94 ***	2.49 ***	2.30 ***	3.04 ***	5.84 ***
Wife's discussions of family planning with husband												
Never (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sometimes	0.44 ***	0.38 ***	3.44 ***	3.63 ***	0.44 ***	0.38 ***	3.45 ***	3.70 ***	0.44 ***	0.38 ***	3.44 ***	3.63 ***
Often	0.61 **	0.31 ***	4.41 ***	7.06 ***	0.61 **	0.32 ***	4.42 ***	7.12 ***	0.61 **	0.31 ***	4.43 ***	7.12 ***
Husband approves of family planning												
Yes (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
No	0.25 ***	0.03 ***	0.38 ***	0.14 *	0.25 ***	0.03 ***	0.38 ***	0.14 *	0.25 ***	0.03 ***	0.38 ***	0.14 *
Don't know	0.07 ***	0.07 ***	0.14 ***	0.46	0.07 ***	0.07 ***	0.14 ***	0.46	0.07 ***	0.07 ***	0.14 ***	0.46
Urban residence	1.13	0.90	1.91 ***	2.23 **	1.13	0.91	1.93 ***	2.25 **	1.15	0.91	1.92 ***	2.23 **

(Cont'd)

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Table 3 – cont'd

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Region of residence												
Central (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Eastern	0.87	0.67*	0.90	1.25	0.88	0.67*	0.91	1.26	0.88	0.67*	0.90	1.26
Western	0.59***	1.05	0.62**	0.86	0.60***	1.05	0.62**	0.87	0.60***	1.05	0.62**	0.86
Midwestern	0.80+	0.92	0.72*	1.67*	0.81+	0.92	0.73*	1.68*	0.81+	0.93	0.74*	1.67*
Far western	0.54***	0.58**	0.69*	0.77	0.55***	0.58**	0.70*	0.78	0.54***	0.58+	0.69*	0.77
Wealth Index												
Poorest (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Poorer	1.83***	1.36	1.00	1.16	1.80***	1.34	0.99	1.15	1.81***	1.36	0.99	1.18
Middle	2.26***	1.40+	1.06	1.84+	2.24***	1.39+	1.06	1.85+	2.24***	1.40+	1.05	1.86+
Richer	2.45***	1.46+	1.12	1.20	2.43***	1.43+	1.12	1.22	2.44***	1.45+	1.12	1.21
Richest	2.85***	3.04***	2.54***	1.40	2.84***	2.97***	2.53***	1.45	2.86***	3.05***	2.56***	1.42
Intercept	-7.59***	-6.56***	-5.53***	-6.50***	-7.58***	-6.57***	-5.52***	-6.44***	-7.61***	-6.59***	-5.55***	-6.54***
-2 log-likelihood	10112.13				10108.59				10084.347			

+p<0.10; *p<0.05; **p<0.01; ***p<.001

@ = result suppressed because category has no cases

ref = reference category

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Model 3 reinforces these results and also shows that the likelihood of using male sterilization is slightly higher in couples in which the wife has no education and the husband has either primary education or secondary or higher education than in couples in which both partners have no education. The likelihood of using a hormonal method is slightly higher when the wife has no education and the husband has secondary or higher education. Couples in which both the wife and husband have secondary or higher education are more than three times as likely to use condoms as couples in which both partners have no education.

Table 4 presents the results for the 2001 survey. As with the results of the 1996 survey, the husbands of women with any secondary or higher education are three times more likely to use condoms than those with no education. However, in contrast to the 1996 survey, the relationship between a woman having any primary education and condom use by her husband is positive, not negative, although this relationship is only significant at the 10 percent level. Couples in which the husband has any primary education or, particularly, any secondary or higher education have a significantly higher likelihood of using male sterilization and condoms. In 2001, having a husband with any level of primary education is positively associated with the use of hormonal methods. When the analysis controls for education gap (Model 2), the positive relationship between higher levels of women's education and their husband's use of male sterilization becomes significant. Also, the association between the likelihood of a man's using condoms and his wife's education level becomes stronger in both significance and magnitude. As in the 1996 survey, men who have more education than their wife are more likely to use male sterilization and condoms than men who are less educated than or have the same level of education as their wife.

Table 4: Determinants of current contraceptive method type among currently married women who are not pregnant: multinomial logistic regression relative risk ratios, Nepal, 2001

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Wife's education												
No education (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Any primary	0.78 +	1.35 +	1.19	1.53 +	0.77 *	1.45 *	1.15	1.62 *	-	-	-	-
Any secondary or higher	0.89	1.30	1.44 *	3.23 ***	0.84	1.60 *	1.24	3.85 ***	-	-	-	-
Husband's education												
No education (ref)	1.00	1.00	1.00	1.00	1.00	-	-	-	1.00	-	-	-
Any primary	0.96	1.97 ***	1.29 *	1.71 +	-	-	-	-	-	-	-	-
Any secondary or higher	0.89	2.06 ***	0.98	1.83 *	-	-	-	-	-	-	-	-
Education difference between husband and wife												
Same level or wife has more education (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Husband has 1-5 more years	-	-	-	-	0.92	1.77 ***	1.11	1.61 **	-	-	-	-
Husband has at least 6 more years	-	-	-	-	0.89	1.83 ***	0.86	1.58 *	-	-	-	-
Combined education (husband and wife)												
Both have none (ref)	1.00	1.00	1.00	1.00	1.00	-	-	-	1.00	1.00	1.00	1.00
Both have primary	-	-	-	-	-	-	-	-	0.71	3.19 ***	1.54 *	2.21 +
Both have secondary or higher	-	-	-	-	-	-	-	-	0.77	2.77 ***	1.44 *	5.70 ***
Wife has none, husband has primary	-	-	-	-	-	-	-	-	0.97	1.95 ***	1.30 *	1.79 +
Wife has none, husband has secondary or higher	-	-	-	-	-	-	-	-	0.91	2.15 ***	1.54	1.54
Wife has primary, husband has secondary or higher	-	-	-	-	-	-	-	-	0.71 *	2.56 ***	1.14	2.75 **
Wife has more education than husband	-	-	-	-	-	-	-	-	0.94	1.48	1.46	1.82
Age difference between husband and wife												
Same age or wife is older (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Husband is older by 1-5 years	1.31 *	0.77	0.65 ***	0.65 *	1.31 *	0.76	0.63 ***	0.64 *	1.31 *	0.77	0.64 ***	0.63 *
Husband is older by 5-10 years	1.09	0.92	0.78 +	0.37 ***	1.09	0.89	0.76 +	0.36 ***	1.10	0.92	0.78 +	0.36 ***
Husband is older by more than 10 years	1.03	1.09	0.87	0.55	1.03	1.05	0.83	0.52 +	1.03	1.10	0.86	0.53 +

(Cont'd)

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Table 4 – cont'd

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Number of living children												
Zero to one child (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two to three children	31.39***	6.94***	2.25***	0.92	31.43***	6.82***	2.26***	0.90	31.32***	7.02***	2.26***	0.93
Four or more children	36.52***	9.45***	2.94***	1.12	36.61***	9.17***	2.92***	1.08	36.40***	9.58***	2.94***	1.11
Has at least one son	12.30***	6.80***	2.24***	1.58*	12.36***	6.71***	2.24***	1.57*	12.34***	6.78***	2.23***	1.57*
Woman's work status												
Not working (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Working in agriculture field	1.34*	2.60***	1.57**	1.12	1.33*	2.63***	1.56**	1.12	1.33*	2.59***	1.57***	1.11
Working in nonagriculture field	1.73**	3.55***	3.18***	1.78*	1.73**	3.62***	3.18***	1.78*	1.73**	3.55***	3.19***	1.79*
Knowledge of family planning methods												
Knows of 0-4 methods (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Knows of 5-7 methods	2.06***	1.48	1.13	4.02*	2.06***	1.51	1.14	4.09*	2.06***	1.47	1.13	4.18*
Knows of 8 or more methods	3.34***	2.52**	1.64*	4.28*	3.33***	2.62***	1.66*	4.45*	3.33***	2.50**	1.64*	4.45*
Wife's discussions of family planning with husband												
Never (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sometimes	0.59***	0.37***	4.61***	5.32***	0.59***	0.37***	4.63***	5.38***	0.59***	0.37***	4.62***	5.28***
Often	0.55***	0.37***	4.30***	7.84***	0.55***	0.36***	4.32***	7.87***	0.55***	0.37***	4.32***	7.96***
Husband approves of family planning												
Yes (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
No	0.25***	0.01***	0.38***	0.04**	0.25***	0.01***	0.37***	0.04**	0.25***	0.01***	0.38***	0.04**
Don't know	0.06***	0.03***	0.12***	0.08*	0.06***	0.03***	0.12***	0.08*	0.06***	0.03***	0.12***	0.08*
Urban residence	1.53**	1.14	1.95***	1.00	1.53**	1.15	1.97***	1.01	1.53**	1.14	1.96***	1.01

(Cont'd)

Table 4 – cont'd

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Region of residence												
Central (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Eastern	1.05	0.51 ***	1.01	0.95	1.05	0.51 ***	1.01	0.96	1.05	0.50 ***	1.01	0.96
Western	0.66 ***	0.96	0.58 ***	0.60 *	0.67 ***	0.99	0.59 ***	0.61 *	0.66 ***	0.96	0.58 ***	0.60 *
Midwestern	1.08	1.07	0.71 *	1.32	1.08	1.09	0.72 *	1.32	1.08	1.07	0.71 *	1.34
Far western	0.78 *	0.44 ***	0.57 ***	1.78 *	0.78 *	0.45 ***	0.58 ***	1.79 *	0.78 *	0.44 ***	0.57 ***	1.81 **
Wealth Index												
Poorest (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Poorer	1.46 **	0.98	1.20	2.26 *	1.46 **	0.97	1.19	2.25 *	1.46 **	0.98	1.19	2.23 *
Middle	2.68 ***	1.01	1.05	2.89 **	2.67 ***	1.01	1.04	2.91 **	2.68 ***	1.01	1.05	2.91 **
Richer	3.04 ***	1.54 *	1.37 *	4.27 ***	3.04 ***	1.54 *	1.38 *	4.33 ***	3.04 ***	1.53 *	1.36 *	4.30 ***
Richest	4.76 ***	2.90 ***	2.25 ***	6.48 ***	4.74 ***	2.88 ***	2.27 ***	6.59 ***	4.75 ***	2.90 ***	2.24 ***	6.43 ***
Intercept	-8.16 ***	-6.81 ***	-4.19 ***	-7.02 ***	-8.15 ***	-6.72 ***	-4.11 ***	-6.94 ***	-8.15 ***	-6.74 ***	-4.21 ***	-7.03 ***
-2 log-likelihood	12753.41				12755.62				12729.91			

+p<0.10; *p<0.05; **p<0.01; ***p<.001

@ = result suppressed because category has no cases

ref = reference category

The effects of the combined education variable in Model 3 show that the likelihood of using female sterilization is significantly lower when the wife has any primary education and the husband has secondary or higher education than when both partners have no education. The likelihood of using male sterilization is significantly higher among all combined education categories, except when the wife has more education than the husband. The likelihood of using hormonal methods is significantly higher in couples in which both partners have primary education, both have secondary or higher education, or the wife has no education and the husband has primary education, compared to couples in which both partners have no education. In couples in which both partners have secondary or higher education, the husbands are approximately six times more likely to use condoms than men in couples in which both partners have no education. In couples in which the wife has any primary education and the husband has secondary or higher education, the husbands are also approximately three times more likely to use condoms than men in couples in which both partners have no education.

Table 5 presents the results for the 2006 survey. Some changes in the effects of education on contraceptive method choice are observed in 2006. In Model 1, a significant negative relationship is observed between women's education level and use of female and male sterilization. The husbands of women with any primary education are more likely to use condoms than the husbands of women with no education. However, there is no significant difference in the likelihood of condom use between the husbands of women with secondary or higher education and the husbands of women without any education. Any secondary or higher education in the husband also yields significantly lower relative risk ratios for the wife's use of female sterilization or hormonal methods but significantly higher relative risk ratios for using male sterilization.

Table 5: Determinants of current contraceptive method type among currently married women who are not pregnant: multinomial logistic regression relative risk ratios, Nepal, 2006

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Wife's education												
No education (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Any primary	0.64 **	0.77	1.12	1.62 *	0.59 ***	0.88	1.04	1.74 *	-	-	-	-
Any secondary or higher	0.49 ***	0.46 **	0.86	1.31	0.40 ***	0.64 +	0.70 *	1.64 *	-	-	-	-
Husband's education												
No education (ref)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	-	1.00	1.00
Any primary	0.92	1.28	0.92	1.02	-	-	-	-	-	-	-	-
Any secondary or higher	0.71 *	1.64 **	0.71 *	1.44	-	-	-	-	-	-	-	-
Education difference between husband and wife												
Same level or wife has more education (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00
Husband has 1-5 more years	-	-	-	-	0.99	1.12	0.93	1.25	-	-	-	-
Husband has at least 6 more years	-	-	-	-	0.82	1.63 **	0.81	1.38	-	-	-	-
Combined education (husband and wife)												
Both have none (ref)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00
Both have primary	-	-	-	-	-	-	-	-	0.70	1.47	1.52 +	1.62
Both have secondary or higher	-	-	-	-	-	-	-	-	0.36 ***	0.81	0.61 *	2.08 *
Wife has none, husband has primary	-	-	-	-	-	-	-	-	0.92	1.25	0.86	1.22
Wife has none, husband has secondary or higher	-	-	-	-	-	-	-	-	0.75 +	1.82 **	0.82	1.40
Wife has primary, husband has secondary or higher	-	-	-	-	-	-	-	-	0.43 ***	1.09	0.69 *	2.27 *
Wife has more education than husband	-	-	-	-	-	-	-	-	0.55 *	0.68	0.87	1.29
Age difference between husband and wife												
Same age or wife is older (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Husband is older by 1-5 years	1.57 **	1.18	0.64 **	0.74	1.57 **	1.16	0.64 **	0.74	1.57 **	1.18	0.64 **	0.74
Husband is older by 5-10 years	1.39 +	1.00	0.75 +	0.73	1.41 +	1.00	0.75 +	0.72	1.40 +	1.01	0.75 +	0.73
Husband is older by more than 10 years	1.27	1.57	0.98	0.57	1.30	1.54	1.00	0.57	1.27	1.58	0.98	0.58

(Cont'd)

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Table 5 – cont'd

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Number of living children												
Zero to one child (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Two to three children	27.15 ***	9.92 ***	2.11 ***	1.22	27.32 ***	9.88 ***	2.13 ***	1.20	27.36 ***	10.05 ***	2.13 ***	1.23
Four or more children	23.23 ***	8.89 ***	2.15 ***	1.24	23.62 ***	8.86 ***	2.18 ***	1.21	23.57 ***	9.10 ***	2.19 ***	1.25
Has at least one son	15.42 ***	6.02 ***	1.59 ***	0.89	15.29 ***	6.00 ***	1.58 ***	0.89	15.44 ***	6.01 ***	1.59 ***	0.88
Woman's work status												
Not working (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Working in agriculture field	1.47 *	2.79 ***	1.61 **	1.14	1.46 *	2.79 ***	1.60 **	1.15	1.47 *	2.82 ***	1.61 **	1.15
Working in nonagriculture field	1.59 *	3.13 ***	2.74 ***	2.17 **	1.59 *	3.23 ***	2.75 ***	2.17 **	1.60 *	3.15 ***	2.76 ***	2.15 **
Knowledge of family planning methods												
Knows of 0-4 methods (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Knows of 5-7 methods	1.83 **	1.12	2.17 **	0.91	1.81 *	1.13	2.16 **	0.91	1.82 **	1.11	2.14 **	0.92
Knows of 8 or more methods	1.76 *	1.70	2.29 **	1.52	1.71 *	1.74 +	2.25 **	1.54	1.75 *	1.69	2.29 **	1.52
Wife's discussions of family planning with husband												
Never (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sometimes	0.28 ***	0.29 ***	4.53 ***	10.82 ***	0.27 ***	0.29 ***	4.55 ***	10.74 ***	0.27 ***	0.29 ***	4.53 ***	10.76 ***
Often	0.20 ***	0.18 ***	6.08 ***	20.16 ***	0.20 ***	0.18 ***	6.06 ***	20.23 ***	0.20 ***	0.18 ***	6.06 ***	20.11 ***
Husband approves of family planning												
Yes (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
No	0.12 ***	0.06 ***	0.18 ***	0.04 ***	0.12 ***	0.06 ***	0.19 ***	0.04 ***	0.12 ***	0.06 ***	0.19 ***	0.04 ***
Don't know	0.05 ***	0.08 ***	0.18 ***	0.32 *	0.05 ***	0.08 ***	0.18 ***	0.31 *	0.05 ***	0.08 ***	0.18 ***	0.32 *
Urban residence	1.83 ***	1.56 *	1.46 **	1.50 *	1.83 ***	1.57 *	1.47 **	1.47 +	1.84 ***	1.58 *	1.47 **	1.51 *

(Cont'd)

Table 5 – cont'd

	Model 1 (reference: not using)				Model 2 (reference: not using)				Model 3 (reference: not using)			
	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms	Female sterilization	Male sterilization	Hormonal	Condoms
Region of residence												
Central (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Eastern	1.05	0.42 ***	1.44 **	0.80	1.04	0.42 ***	1.43 **	0.80	1.05	0.41 ***	1.43 **	0.79
Western	0.52 ***	0.61 **	0.66 **	0.86	0.51 ***	0.61 **	0.66 **	0.86	0.52 ***	0.60 **	0.66 **	0.84
Midwestern	0.66 **	1.32	1.01	1.08	0.65 **	1.34	1.00	1.09	0.66 **	1.32	1.01	1.06
Far western	1.74 ***	0.47 ***	1.19	2.23 **	1.69 ***	0.48 ***	1.17	2.27 **	1.73 ***	0.47 ***	1.18	2.22 **
Wealth Index												
Poorest (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Poorer	2.75 ***	1.00	1.23	1.60	2.73 ***	0.99	1.21	1.64	2.75 ***	0.99	1.22	1.62
Middle	4.32 ***	1.33	1.63 **	2.13 *	4.24 ***	1.33	1.59 **	2.16 *	4.29 ***	1.30	1.59 **	2.15 *
Richer	4.37 ***	1.78 **	2.14 ***	2.90 ***	4.25 ***	1.76 **	2.06 ***	3.01 ***	4.34 ***	1.75 **	2.09 ***	2.90 ***
Richest	5.27 ***	2.99 ***	3.12 ***	4.66 ***	5.03 ***	2.89 ***	2.96 ***	4.91 ***	5.19 ***	2.89 ***	3.02 ***	4.61 ***
Intercept	-7.66 ***	-6.33 ***	-4.01 ***	-5.37 ***	-7.68 ***	-6.28 ***	-4.03 ***	-5.43 ***	-7.66 ***	-6.35 ***	-4.01 ***	-5.44 ***
-2 log-likelihood	14067.08				14085.42				14057.83			

+p<0.10; *p<0.05; **p<0.01; ***p<0.001

@ = result suppressed because category has no cases

ref = reference category

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In Model 2, in which the analysis controls for education differences, the significant, negative relationship between women's education level and the couple's use of permanent methods of male and female sterilization remains, but the effect of women having any secondary or higher education on the lower likelihood of male sterilization in the husband becomes significant at only a marginal level. Women with secondary or higher education are less likely to use hormonal methods but their husbands are more likely to use condoms. Husbands who have at least six more years of education than their wife are, again, significantly more likely to use male sterilization. All other relationships with education gap are insignificant.

The results of Model 3 in 2006 show that couples in which both partners have secondary or higher education, the wife has primary education and the husband has secondary or higher education, and the wife has more education than the husband are significantly less likely to use female sterilization than couples in which both partners have no education. The likelihood of using male sterilization is significantly higher among couples in which the wife has no education and the husband has secondary or higher education. Couples in which both partners have secondary or higher education and those in which the wife has primary education and the husband has secondary or higher education are less likely to use hormonal methods. As in the 2001 survey, the likelihood of using condoms in 2006 is more than twice as high among couples in which both partners have secondary or higher education and in which the wife has any primary education and the husband has secondary or higher education than among couples in which both partners have no education.

Effects of other independent variables

In addition to education, other individual and household factors play an important role in contraceptive adoption and method choice. Tables 3-5 show the adjusted effects of these other

factors in the models for the 1996, 2001, and 2006 surveys, respectively. Consistent throughout the three surveys and across all models are the effects of parity, having at least one son, the wife's discussion of family planning with the husband, and approval of family planning by the husband. Couples with two to three children and those with four or more children are significantly more likely to use the permanent methods of female and male sterilization and hormonal methods than couples with no children or only one child. However, condom use is not dependent on parity. Use of all methods of family planning is consistently higher among couples that have at least one son than among couples with no sons, except for condom use in 2006.

Discussion of family planning significantly decreases the likelihood that a couple will use female and male sterilization but increases the likelihood of use of hormonal methods and condoms. Discussion of family planning bears a consistent relationship with method choice throughout the three surveys, but the effect of knowledge of family planning methods is not as consistent.

In 1996, the results are in the expected direction in that the more methods with which a woman is familiar, the more likely she is to use any of the methods. However, in 2001, the likelihood that a couple will use male sterilization or hormonal methods increases only when the woman knows of more than eight methods. In 2006, the wife's knowledge of methods no longer exhibits a significant relationship with her husband's use of male methods (male sterilization and condoms). Women who state that their husband does not approve or who do not know whether their husband approves of family planning are significantly less likely to use any of the methods (with the exception of condom use in the 1996 survey). The effect of age difference between the husband and the wife is greatest in 1996, when women were more likely to use female sterilization as the age gap between wife and husband increased. There is

no consistent relationship between age gap and method choice in the 2001 and 2006 survey results.

Women's work status is associated with contraceptive adoption. In 2001 and 2006, women working in the agricultural or nonagricultural sectors are more likely to use all methods, with one exception: the effect of working in the agriculture sector on condom use is not significant. The effects of work status are less consistent in results from the 1996 survey.

Women's uptake of contraceptive methods generally increases with wealth quintile. For example, women in the lowest wealth quintile are less likely to use female sterilization than women in any other wealth quintile in all three surveys, except for condom use in 1996.

Results from the 2006 survey show that urban residence has a significant, positive association with the likelihood of using both permanent and temporary methods compared with rural residence. The relative risk ratios of using all methods are consistently higher among urban women than rural women in the 2006 survey. However, the effects of urban residence are positive and significant only for hormonal method and condom use in 1996 and only for female sterilization and hormonal method use in 2001. The effect of region of residence on contraceptive method choice varies considerably by survey year and method, and a consistent pattern does not emerge.

DISCUSSION

In this paper, an attempt is made to examine the determinants of contraceptive behavior in Nepal in the past decade using the 1996, 2001, and 2006 NDHS results. The education levels of wives and husbands are considered as key explanatory variables. The main contribution of this paper is the exploration of the effects of relative education between wives and husbands by including variables constructed to measure the education gap between the spouses and to capture the dynamics of combined wives' and husbands' education level rather than examining the effects of each partner's education level separately.

Particular emphasis is placed on investigating contraceptive method choice because this is relevant to the recent fertility and family planning context in Nepal. In the past 10 years, Nepal has experienced a drop in the total fertility rate (TFR), which is currently 3.1 births per woman compared to 4.6 in 1996 (Tuladhar, 2007). Use of any method of family planning has also increased from 32 percent in 1996 to 52 percent in 2006. Moreover, government family planning policy has shifted from an emphasis on the permanent methods of male and female sterilization to a focus on temporary spacing methods, particularly injections. As a result, the contraceptive method mix has been changing in Nepal, with a move away from permanent method use to use of temporary spacing methods, most prominently, with rising levels of injection use and slight increases in pill and condom use. During the last decade, dramatic political events have taken place in Nepal that may have affected access to and delivery of contraceptive supplies in various parts of the country.

The levels of contraceptive use in Nepal have been increasing over time. One of the striking changes has been the change in the profile of contraceptive users commensurate with the increase in overall levels of family planning use among women and men with lower education levels. In fact, the level of contraceptive use among women with secondary or higher education has remained unchanged while the level of contraceptive use among women with no

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education has increased to the same levels as in women with secondary or higher education. Thus, the difference in contraceptive use by education level has narrowed considerably. Martin (1995) argued that once a country is near completion of the fertility transition, education does not play the same role as during the stage of high fertility levels. This seems to have occurred in Nepal.

Education, however, continues to play a significant role in determining the use of specific methods of contraception in Nepal, thus reinforcing the argument that with increasing levels of contraceptive use, education levels have more substantial effects on specific types of methods used and these effects need to be addressed. In 1996, there was no difference in the use of the permanent methods of male and female sterilization by women's education levels but there was a positive relationship between women's education levels and the couple's use of temporary hormonal methods, condoms, and traditional methods. By 2006, a negative association between higher levels of women's education and both female and male sterilization was observed but there no longer were differences in hormonal method use by women's education level. This perhaps has to do with the spread and coverage of injections in Nepal; in recent years, injections have become more widespread and more accessible to less educated women. Higher levels of husbands' education continue to show a positive relationship with the use of male sterilization and condoms.

The results of the study have clearly shown that whereas wives' education levels are one of the primary determinants of the specific types of methods chosen, husbands' education levels are more important for the use of male methods. These results are consistent with those of prior studies that examined the impact of wives' and husbands' education levels on contraceptive behavior (Kulczycki, 2004; Alpu and Fidan, 2006; Gubhaju, 2006; Gereltuya et al., 2007). Furthermore, the results of this study add to the growing education and family planning literature by showing that the effects of wives' and husbands' education levels differ

by relative education and education gap between husband and wife. Especially in recent years (based on the 2006 survey results), female sterilization and hormonal methods are less likely to be used by couples in which both the husband and wife have some education and couples in which the education gap is minimal (couples in which both partners have secondary or higher education and those in which the wife has primary education and the husband has secondary or higher education) than by couples in which both partners have no education. It is among these same couples that the likelihood of using condoms is the highest. However, the likelihood of using male sterilization is highest not only in couples in which the husband has secondary or higher education, but also in couples in which there is a particularly large education difference (couples in which the wife has no education and the husband has secondary or higher education) compared with couples in which both husband and wife have no education.

A number of limitations of the study, however, need to be taken into consideration when interpreting the results. Because the study is based on cross-sectional data, the issue of reverse causality needs to be considered. Specifically, the effects of discussion of family planning between wife and husband and knowledge of family planning, although very relevant as determinants of family planning use, are prone to the problems of reverse causality.

In addition, although this paper discusses contraceptive choice, it is important to recognize that some couples have very limited choice in the methods they adopt. Frequently, their choices are based on a programmatic focus that dictates what methods are available and accessible to specific segments of the population.

The results of the study have several important policy implications. First, family planning programs need to consider wives' educational status relative to that of their husband when trying to understand why certain types of methods are being used or not being used, especially at a time when more choices are becoming available. Family planning programs should also place greater emphasis on the education levels of couples than the education levels

of women and men separately. And lastly, programs should make more effort to involve men in family planning promotion efforts because the results of this paper clearly show that men do seem to play a role in the couple's choice of family planning methods, especially with respect to the use of male methods.

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