Determinants of the Use of Modern Contraceptives by Women in Nepal

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Abstract

This study, using the data from Nepal Demographic and Health Survey 2006, has run a logistic regression model to identify the determinants of the use of modern contraceptives by women in Nepal. The study has found that women's age, religion, social group (caste/ethnicity), the husband's occupation, total number of children, the decision maker regarding the use of contraceptives, the frequency of talking to the husband about family planning, the husband's approval in using contraceptives, and the role in the final decisions on health-related issues of women have a significant association with the use of modern contraceptives by currently-married women in Nepal. However, other likely factors such as place of residence, women's literacy, the husband's education, wealth index, the working status of women, the women's occupation, the earning level of women, fertility preference, the desire of children, and the media were not found to have such a significant

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relationship. The study concludes that the difficulty in achieving the target of contraceptive prevalence rate and controlling population growth in Nepal is largely due to social, psychological and behavioral factors, and the failure of the effectiveness of the education, awareness, and knowledge-related factors. Policy makers should take these factors into account in creating policies related to contraceptive prevalence and population control in the country.

Keywords: *Modern Contraceptives, Contraceptive Prevalence, Nepal*

ปัจจัยที่มีอิทธิพลต่อการใช้การคุมกำเนิดสมัยใหม่ของสตรีในประเทศเนปาล

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บทคัดย่อ

การศึกษาในครั้งนี้ได้ใช้ข้อมูลที่ได้จากการสำรวจด้านประชากรศาสตร์และสุขภาพ ปี 2549 ของประเทศเนปาล มาทำการวิเคราะห์ตัวแบบการถดถอยโลจิสติก เพื่อระบุปัจจัยที่มีอิทธิพลต่อการใช้การคุมกำเนิดสมัยใหม่ของสตรีในประเทศเนปาล จากการศึกษา พบว่า อายุของสตรี, ศาสนา, กลุ่มทางสังคม (วรรณะ/กลุ่มเชื้อชาติ), อาชีพของสามี, จำนวนบุตร, ผู้ตัดสินใจในการใช้การคุมกำเนิด, ความถี่ในการพูดกับสามีในเรื่องการวางแผนครอบครัว, ความเห็นพ้องของสามีในการใช้การคุมกำเนิด, และบทบาทในการตัดใจขั้นสุดท้ายในประเด็นด้านสุขภาพของสตรี มีความสัมพันธ์อย่างมีนัยสำคัญกับการใช้การคุมกำเนิดสมัยใหม่ของสตรีซึ่งเพิ่งแต่งงานในประเทศเนปาล อย่างไรก็ตาม การศึกษาปัจจัยอื่น ๆ เช่น ถิ่นที่อยู่, การรู้หนังสือของสตรี, การศึกษาของสามี, ฐานะทางเศรษฐกิจของครอบครัว, สถานะการทำงานของสตรี, อาชีพของสตรี, ระดับรายได้ของสตรี, รสนิยมเรื่องเพศสัมพันธ์, ความต้องการมีบุตร, และสื่อ พบว่าไม่มีความสัมพันธ์อย่างมีนัยสำคัญ การศึกษาครั้งนี้จึงสรุปได้ว่า อุปสรรคในการบรรลุเป้าหมายอัตราการคุมกำเนิดและการควบคุมการเจริญเติบโตของประชากรในประเทศเนปาล โดยส่วนใหญ่เป็นผลมาจากปัจจัยด้านสังคม, จิตวิทยา, พฤติกรรม และการขาดผลสัมฤทธิ์ทางการศึกษา รวมถึงการขาดความตระหนักถึงความสำคัญและความรู้เกี่ยวกับปัจจัยที่เกี่ยวข้อง

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ดังนั้น ผู้กำหนดนโยบายจึงควรพิจารณาถึงปัจจัยเหล่านี้ในการจัดทำนโยบายที่เกี่ยวข้องกับการคุมกำเนิดและการควบคุมจำนวนประชากรในประเทศเนปาล

คำสำคัญ: *การคุมกำเนิดสมัยใหม่ การคุมกำเนิด ประเทศเนปาล*

Introduction

In the past six decades, the population of the world has grown very rapidly. In 1950, the total population of the world was 2.5 billion, which by the year 2012 reached around 7 billion and is projected to reach 9 billion by 2050 (PRB, 2012). Developing countries are experiencing a relatively higher population growth rate than developed countries. According to the World Bank, the average annual population growth rate in low-income countries between 1995 and 2010 was 1.5 percent, followed by 1.2 percent in middle-income countries and 0.4 percent in high-income countries (WB, n.d.). The continued rapid growth of the population is considered as one of the major problems of development in most of the developing countries. Several scholars and development partners have suggested that developing countries need to control the population growth. In order to do so, the use of modern contraceptives has been considered as the most effective tool. The developing countries across the world are implementing population control policies as one of the major policies in the country. Moreover, United Nations Population Fund (UNFPA) has also recognized that family planning is an inexcusable human right. In developing courtiers, around 876 million women of childbearing age are in need for modern contraceptives. However, of the total need, due to the lack of access to contraceptives, access to reliable information and quality services, attitude towards contraceptive use or social and economic forces, still around 25.34 percent (222 million) of the women in developing countries are unable to exercise the right to family planning services (UNFPA, 2012).

Nepal also has recognized the problem of population growth in national development through the first plan period itself (1956-61). In 1959, the Family Planning Association of Nepal (FPAN) was established as the first non-governmental organization to deal with the reproductive health and family planning services under the initiatives of a few medical doctors and social workers. The policy of population control was introduced formally in the third plan (1965-70). The country has considered the use of modern contraceptives as one of the measures to help in controlling the population growth in the country. The government, in support of many national and international organizations, has been trying to increase the contraceptive prevalence in the country. However, despite long effort in promoting modern contraceptives

as family planning devices in Nepal, both the population growth rate and the level of the contraceptive prevalence rate (CPR) have not yet reached the level of expectation. Nepal has an average annual population growth of 1.7 percent (WB, 2012) and a total fertility rate (TFR) of 3.1 percent (MOHP, 2007). The present CPR in Nepal, like many other developing countries, is very low. According to the Nepal Demographic and Health Survey (NDHS) 2006, the current use of contraceptives among the women of reproductive age, i.e. 15 to 49 years old in Nepal, is only 37.3 percent (MOHP, 2007), whereas the average CPR in developed countries is 69 percent and in developing countries it is 59 percent (UNFPA, 2006). This indicates that there is room for modern contraceptive policies to work further in Nepal.

Despite much effort by the government and several non-governmental organizations, the continued low level of CPR in Nepal is a matter of concern for public policy makers. There might be several factors affecting the use of modern contraceptives. The existing literature on determining the use of contraceptives point out different socio-demographic, economic, psychological, behavioral, awareness, and knowledge-related factors. For example, Ullah & Chakraborty (1993) observed that women's education, followed by women's participation in family planning decision making, type of husband's occupation, desire for additional children, sex composition of living children, and urban residence were some of the important factors affecting the current use of contraception. Similarly, Khan (1996) also observed the influence of the level of education, the number of children, existence of son(s), and the attitude of the wife and husband toward family planning in the use of contraception in Bangladesh. Similarly, the factors related to the husband's and wife's role in decisions regarding contraceptive use, the willingness to bear children, religious beliefs, and women's education were found to have a significant effect on the use of contraception in Pakistan (Mahmood & Ringheim, 1996). Joyce *et al.* (1998) have mentioned that young women's race and ethnicity, age at first intercourse, and the mother's education have an effect on contraceptive use. Regarding the age gap between the partners, they argue that the partners that are closer in age, even when both are young, are more likely to take precautions and actively prevent adverse consequences than couples with

larger age discrepancies. The women whose partners are seven or more years older, compared to other women, are less likely to use contraceptives at first-intercourse. In addition, ethnic groups also have differentials on contraceptive use (Addai, 1999).

Barkat-e-khuda *et al.* (2000), in their study about family planning and fertility, have found inter-spousal communication regarding family planning, desire for children, women's education and employment status, access to mass media, and program efforts as the major determining factors in contraceptive use. Similarly, Stone & Ingham (2002) also have observed that parents' openness and warmth of communication about contraceptive behavior and talking openly about sex with their children in early childhood and in the teenage years are more likely to encourage the use of modern contraception in their age at first sex. Paraskevopoulou *et al.* (2003) observed that age, education, and familiarity with contraceptive methods influenced contraceptive use among Iranian women. In Isthanabhul, Turkey, the rural/urban residence, socio-cultural level, religious beliefs and higher educational level, women with higher income, and the number of children of women were believed to affect their contraceptive choices (Baksu *et al.*, 2005). Likewise, Saleem & Pasha (2008) also found that contraceptive use was strongly associated with women's education, the husband's desire for more children, sex preference regarding the next child, and the number of living children. They argued that improvement in the husband's and wife's educational level results in the greater reproductive autonomy of the women and an increased use of contraception. The woman's poor educational attainment was the main barrier to contraceptive use.

The knowledge, attitudes, and perceptions of the users were also found to have significant influences on the use of contraceptives. Ayangade (1984) found that due to the strong culture of the preference for a son in the society, families consisting of fewer than 2-3 male children were less likely to use contraceptives. Similarly, a study conducted in Sri Lanka also has found that contraceptive devices are used more by women that intend to have at least one additional child than among those that want to stop childbearing especially because of the preference for a son (Indralal & Silva, 2000). In the same way, Kabir *et al.* (2002) in their study conducted in Bangladesh also have observed the son preference as an

important determinant of contraceptive use. Wu *et al.* (2002) have found that knowledge of contraception, the boyfriend's approval of contraceptive use, perceived risk of getting pregnant, perceived availability of contraceptive services, and discussion of contraception with the boyfriend were important indicators of a young woman's contraceptive use behavior. Similarly, Casterline *et al.* (2003) also have found that using a contraceptive involved the woman's perception that such behavior would conflict with her husband's fertility preferences and his attitudes toward family planning and her perception of the social or cultural unacceptability of contraception. Likewise, Saleem & Pasha (2008) also have mentioned that the women's education, number of living children, sex preference for the next child, and the women's working status were strongly associated with the use of contraceptives. Further, they mentioned that a highly-significant relationship was found between the illiterate respondents that had a preference for a son for the next child and the non-users of contraceptives in Pakistan.

This brief picture of the factors associated with the use of contraceptives as presented by various scholars across the world indicates that there are certain factors that determine the use of contraceptives by women. In the context of Nepal, almost no studies have been conducted so far in exploring the determinants of the use of modern contraceptives by women. This study, therefore, aims at idenitifying the determinants of the use of modern contraceptives by currently-married women in Nepal and at making specific policy recommendations to improve contraceptive prevalence and make population control policies more efficient and effective in the country.

Data and Methods

Data Access and Management

The NDHS 2006 (Nepal Demographic Health Survey 2006) was the main source of data for this study. The NDHS 2006 has enumerated the data from 10,793

respondents across the country*. The full dataset from the Women's Questionnaire includes data on the women's background, reproduction, marriage and cohabitation, contraception, pregnancy and postnatal care, child immunization and health and the child's and woman's nutrition, sexual life, fertility preference, the husband's background and the woman's work, HIV/AIDS, other health related issues, and maternal mortality. As this study dealt only with the use of modern contraceptives by currently-married women, relevant parameters were depicted in the data. Moreover, as the study considers currently-married women only as samples, the cases of unmarried/divorced/separated women, male sterilization, female sterilization, and the use of male condom were filtered out from the data set. The final filtered sample included in the study was 5,962. SPSS Version 20 was used to produce the frequency, percentage, cross-tabs, Chi-square, and regression results.

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* "The 2006 NDHS used the sampling frame provided by the list of census enumeration areas with population and household information from the 2001 Population Census. Administratively Nepal is divided into five development regions, 75 districts and the districts are subdivided into Village Development Committees (VDCs) and municipalities. Each VDC is divided into 9 wards but municipalities into various wards, from 9 to 35 wards. The primary sampling unit (PSU) for the 2006 NDHS was a ward in rural areas, and a sub-ward in urban areas. The sample for the survey was based on a two-stage, stratied, nationally representative sample of households from 13 area domains identified by cross-dividing the five development regions and the three ecological zones, where the mountain zones of the West, Mid-West and Far-west development regions were combined. At the first stage of sampling, a total of 260 PSUs incorporating 82 from urban areas and 178 from rural areas were selected using systematic sampling with probability proportional to size. A complete household listing operation was then carried out in all the selected PSUs to provide a sampling frame for the second stage selection of house holds. At the second stage of sampling, systematic samples of about 30 households per PSU on average in urban areas and about 36 households per PSU on average in rural areas were selected in all the regions, in order to provide statistically reliable estimates of key demographic and health variables thereby adjusted to properly represent urban areas and the final estimates of samples were derived for rural and urban areas for the country as a whole. Finally, the survey was designed to obtain completed interviews of 8,600 women age 15-49 and 4,300 men age 15-59, surveyed in every second household of the total sample household."[20]

Key Variables in the Study

The usage of modern contraceptives by Nepalese married women is a dichotomous variable (yes/no) used as the dependent variable in this study. A number of socio-demographic, economic, awareness and knowledge, and psychological and behavioral factors have been used as the independent variables for analysis in this study. The demographic factors include the age of the women and the number of children. The social and economic factors include a range of qualitative variables such as the type of place of residence, religion, social groups, literacy, women's education, husband's, education, wealth status, state of working with women, women's occupation, husband's occupation and level of the earnings of women. The psychological and behavioral factors include fertility preference, desire to have children, decision-maker for using contraception, women frequently talking to husbands/partners about family planning, and the husband's approval and final say in health related matters. The awareness and knowledge factors include reading newspapers or magazines, listening to the radio and watching television.

The Model used in the Study

The data analysis in this study was carried out in two stages: (i) preliminary analysis and (ii) regression analysis. In the preliminary analysis, frequency/ percentage, cross tables and chi-square statistics were produced to describe the basic interrelationships of the variables. In the second stage, as the dependent variable - use of modern contraceptive by currently married women in Nepal is a dichotomous variable, a binary logistic regression model was run for further inferential analysis. A number of socio-demographic, economic, psychological and behavioral, and awareness and knowledge factors having an association with the use of contraceptive as identified in the literature and presented in the preliminary analysis below were used as the independent variables in the model. The regression equation can be read as follows:

$$logit(Y) = ln = \left[\frac{p}{1 - p}\right] \alpha + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n \qquad .....(i)$$

where

Y is the probability of using modern contraceptive by women.

$\chi_1\ \chi_2 \ldots \chi_n$ refer to the independent variables.

p refers to the probability of an event.

α refers to the intercept.

$\beta_1, \beta_2 \ldots \beta_n$ refer to the effect on the probability of an event as X changes by one unit or relative to the reference category.

The equation explains the probability of using modern contraceptives by women, which depends on socio-demographic, economic, psychological and behavioral, and awareness and knowledge factors ($\chi_1, \chi_2, \ldots \chi_n$).

Preliminary Analysis

Contraceptive Use Behavior of Nepalese Women

Preventing unwanted pregnancies and maintaining birth spacing are some of the major problems of currently-married women in Nepal. Contraceptives play a vital role in preventing unwanted pregnancies, maintaining birth spacing, and improving overall reproductive health. There are various types of contraceptive methods in practice, including traditional and modern methods in Nepal.

This study has observed that a large majority of the currently-married women (74.30%) do not use any kind of contraceptives. Among total contraceptive users, over three-fourths of the women use modern contraceptives (78.61%). The rest of the women are using traditional methods of contraceptives such as withdrawal and periodic abstinence. In this study it was found that injections are the major modern contraceptives among Nepali women. Among total modern contraceptive users, over two-thirds of the women (68.91%) use injections to avoid unwanted pregnancy or in maintaining birth spacing. Compared to injection users, the percentage of pill users is around one-third only. The percentage of currently-married women using implants and intra urinal device (IUD) contraceptives is very low, i.e. 4.56 percent and 4.06 percent, respectively (see Table 1). The figures show that the IUD is the least popular modern contraceptive among the currently-married women in Nepal. The following tables show details of the contraceptive use behavior among Nepalese women.

Table 1: The Use of Modern Contraceptives by Women

Modern Contraceptive Methods	Usage (%) (N = 1206)
Pill	22.47
IUD	4.06
Implants	4.56
Injections	68.91

Source: NDHS, 2006

Bivariate Analysis of Socio-demographic, Economic, Awareness and Knowledge, and Psychological and Behavioral Factors in the Use of Modern Contraceptives

A number of socio-demographic factors (8), economic factors (5), awareness and knowledge factors (3), and psychological and behavioral factors (6) as presented above in the key variables subheading have been used as the independent variables for analysis for this study.

The list of factors, corresponding variables, and related values are presented in table 2 and a summary of the distribution of factors and their association with the use of modern contraceptives by currently-married women in Nepal is presented in appendix 1.

Table 2: Summary Distribution of the Values of Each Independent Variable related to the Use of Modern Contraceptives by Currently-married Women in Nepal

Factors	Variables	Values (χ^2 Distribution Significant at 0.05 Level)
Socio-demographic factors	Age group of the women	15-19; 20-24; 25-29; 30-34; 35-39; 40-44; 45-49
	Number of children	No children; Fewer than 2 children; Above 2 children
	Type of place of residence	Urban; Rural
	Religion	Hindu; Buddhist; Muslim; Others (Christians, Kirats, etc.)
	Social groups	Dalits; Janajati; Cheetri; Brahamin; Others
	Literacy	Can't read at all; Can read

Table 2: Summary Distribution of the Values of Each Independent Variable related to the Use of Modern Contraceptives by Currently-married Women in Nepal (continued)

Factors	Variables	Values (χ^2 Distribution Significant at 0.05 Level)
Economic factors	Wealth status	Poorest; Poorer; Middle; Richer; Richest
	State of working of women	Not working; Currently working
	Women's occupation	Not working; Professional/Technical/ Managerial; Clerical; Sales; Agri self-employed; Agri-employee; Services; Skilled manual; Unskilled manual
	Husband's occupation	Not working; Professional/Technical/ Managerial; Clerical; Sales; Agri self-employed; Agri-employee; Services; Skilled manual; Unskilled manual; Don't know
	Level of earnings of women	About the same; Less than husband/ partner; More than husband
Awareness and Knowledge factors	Reading newspaper or magazine	No /Yes
	Listening radio	No /Yes
	Watching television	No /Yes
Psychological and Behavioral factors	Fertility preference	Have another; Undecided; No more
	Desire of the children	Both want same; Husband wants more; Husband wants fewer
	Decision maker for using contraception	Mainly respondent; Mainly husband/ partner; Joint decision
	Women frequently talking to husbands/partners about FP	No /Yes
	Husband's approval	No /Yes
	Final say in health related matters	Respondent alone; Respondent and husband; Husband alone; Someone else
		Values χ^2 Distribution not Significant at 0.05 Level)
Socio-demographic factors	Women's education	No education; Primary level; Secondary level; Higher level
	Husband's education	

The preliminary analysis found a bivariate relationship between a great majority of factors and the use of modern contraceptives by women in Nepal. Except for the women's and husband's education, all other variables had a significant association with the use of modern contraceptives. The following factors had a positive association with the use of modern contraceptives by women (see appendix 1 for details): socio-demographic factors: age of women below 40 years, number of children, being an urban resident, Buddhist, *Janajati* and being literate; and economic factors: wealth, being a working woman, being in an unskilled manual occupation, having a husband with a professional/technical/managerial occupation and having about the same level of earning as the husband; awareness and knowledge related factors: reading the newspaper, listening to the radio and watching television; and psychological and behavioral factors: preference for no more children, having the same desire as the husband regarding the number of children, being the main decision maker in the use of contraception, having frequent talks with husband about family planning, getting the husband's approval for using contraceptives, and having joint final decision regarding health issues.

Logistic Regression Analysis

The preliminary analysis presented the bivariate relationship between several socio-demographic, economic, awareness and knowledge, psychological and behavioral factors, and the use of modern contraceptives. Taking the results of the preliminary analysis by including socio-demographic (6), economic (5), awareness and knowledge (3) and psychological and behavioral (6) variables, as discussed in the preliminary analysis section, this study has further undertaken a multivariate analysis by running a binary logic regression model using the model as presented above. The regression analysis confirmed only one third of the variables having a significant association with the use of modern contraceptives by currently-married women in Nepal. A brief summary of the regression analysis is presented in table 3 and explanations concerning the socio-demographic, economic, awareness and knowledge, and psychological and behavioral factors are given below in the table.

Table 3: Summary Findings of Factors Affecting the Use of Modern Contraceptives by Currently-married Women in Nepal

Factors	Significant Variables	Non-significant Variables
Socio-demographic factors	- Age of women - Religion - Social group - Total number of children	- Place of residence - Women's literacy
Economic factors	- Husband's/Partner's occupation	- Wealth - Working status of women - Women's occupation - Earning level of women
Awareness creation and knowledge building factors		- Reading newspapers - Listening to the radio - Watching television
Psychological and behavioral factors	- Husband's approval - Decision making in the use of contraceptives - Frequency of talking to husband about family planning - Final say on health-related issues	- Fertility preference - Desire for children

This study has observed that women's age was one of the factors having a significant effect on the use of modern contraceptives. It also supports the findings of Joyce *et al.* (1998) and Praskevopoulu *et al.* (2003)—that that the women of higher ages compared to 15-19 years are less likely to use modern contraceptives. For instance, the women in the 30-34 year age group, as compared to 15-19 years, were around 85 percent less likely to use modern contraceptives. Similarly, the women of the 40-44 and 45-49 year age group, as compared to the same group, were less likely to use modern contraceptives by around 94 percent and 96 percent, respectively. However, the study does not find any significant difference in the 20 to 30 and 35-39 year age groups (see appendix 2 for details). This may be because 15-19 year old women are too young to conceive. They might use more contraceptives. After that until the age of 29, women might use relatively fewer contraceptives, as the Nepalese women normally tend to give birth during this period, but still

the majority might continue to use contraceptives. That is why there was no significant difference in the use of modern contraceptives in these age groups with reference to the 15-19 year age group. However, in the case of succeeding age groups of women, the reason behind the significantly less use of modern contraceptives should be different. In the context of Nepal, on the one hand, generally husbands are older than wives. On the other hand, the government has also encouraged male sterilization. Because of higher age of women and the government's encouraging policy, males tend to choose sterilization, consequently resulting in the low use of modern contraceptives by women. In the case of women above the age of 40-44, menopause is another reason behind the significant low use of modern contraceptives compared to the 15-19 year age group.

Although the preliminary analysis has shown an association between the type of place of residence and the use of modern contraceptives, the binary logistic regression model did not present a significant association between the variables (appendix 2). It did not support the findings of Ullah & Chakraborty (1993) or those of Baksu *et al.* (2005), for example. This may be because in Nepal a large majority of the population lives in rural areas. The areas, which have been declared as urban, are also not based on the level of development and access to facilities, but are based mainly on population criteria. Many so-called municipalities also include rural villages, which are not much different from the rural in terms of awareness, literacy, education, and access to facilities and services.

This study has found a significant association between religion and the use of modern contraceptives. It shows that compared to the Hindu women, Christians or *Kirant* women are 78 percent less likely to use the modern contraceptives (appendix 2). This may be because in Nepal the number of Christian or *Kirant* is very low. Moreover, many of the Christians have recently been transformed from Hindu or other religions. They are generally relatively poorer in the community, and thus their access to modern contraceptives might be low. Similarly, it also might be because of their increasing level of awareness regarding the side effects of modern contraceptives due to their involvement in different kind of social activities and the newly-extended Christian network. However, the study did not find a significant difference in the use of modern contraceptives between Hindu and Muslim women. One reason behind this

might be because, in the context of Nepal, a great majority of the population is Hindu, and the culture is quite a mixed type. There is no significant difference in culture or behavior among the people among different religious groups. Women from other religions also seem less likely to use modern contraceptives; however, the factors were not significant.

This study has also observed a significant effect of the social group (caste/ethnicity) on the use of modern contraceptives. This indiates that *Janajati* and *Brahmin* women as compared to *Dalit* women are less likely to use the modern contraceptives by 73 percent and 84 percent, respectively (appendix 2). In the context of Nepal, *Dalit* is known as the most disadvantaged and poor group of people. Especially since the 1990s, many government policies and programs by national and international organizations have targeted the *Dalit* communities. These programs might have increased the knowledge, awareness, and access of Dalits regarding modern contraceptives.

Women's literacy, the husband's education, the wealth status of women, the work status of women, women's earnings, and the women's occupations kinds of socio-economic factors did not have a significant effect on the use of modern contraceptives by currently-married women in Nepal, although the preliminary bivariate analysis of this study and many previous studies (Khan, 1996, Barkat-e-khuda *et al.*, 2000, Paraskevopoulou *et al.,* 2003, Saleem and Pasha, 2008) suggested a relation between some of these variables. The reason behind such association between these variables in Nepal might be because of the significant level of illiteracy or low level of education, widespread poverty, and the involvement of women in formal employment in rural Nepal. Moreover, there is no significant difference in the literacy, wealth status, working status, or occupation between women and men and among themselves in the poor and rural households in Nepal. In such settings, as mentioned in the above paragraphs, the social and religious factors might have played a significant role instead.

Although women's occupation does not have a significant influence on the use of modern contraceptives, the occupation of husband is likely to have significant effects on the use of the modern contraceptives by women. Compared to the women whose husband is involved in professional or technical or managerial

types of occupation, the women whose husbands are involved in skilled manual and unskilled manual types of occupations are significantly more likely to use modern contraceptives by a factor of 6.027 and 7.975, respectively (appendix 2). The reason behind this might be of a quite different kind; for example, people that are involved in professional or technical or managerial types of positions/occupations live in urban areas, and the rural people that are involved in these types of occupations normally stay away from their families. Similarly, the people in these types of professions also are more aware of the importance of small family size, the consequences of unwanted births, and they are relatively more mature as well; thus they sometimes become sterilized and this results in less use of contraceptives compared to husbands involved in manual types of occupations.

The study has also found that the total number of children has a significant influence on the use of modern contraceptives. The women that have fewer than or equal to two children and more than two children, compared to the women having no children, are more likely to use modern contraceptives by a factor of 11.89 and 25.94, respectively. This result is obvious and seems to have a linkage with fertility preferences and the desire for children. If a couple does not have children but has a desire or fertility preference, they tend not to use contraceptives. But surprisingly, except in the preliminary analysis, the study did not find a significant effect of fertility preference and desire for children on the use of modern contraceptives. This might be because, as these variables have an inter-linkage, the significant effect of total number of children might have diminished the effect of other variables significantly.

This study has also found that the use of modern contraceptives is dependent on the person that makes the decisions on contraceptives. This indicates that as compared to the women that make the decisions about using contraceptives themselves, the women that decide jointly with their husband are around 63 percent less likely to use the modern contraceptives. Similarly, the study has also observed that the women that frequently talk to their husband about family planning are around 58 percent less likely to use the modern contraceptives (appendix 2). From the contraceptive usage perspective, it seems to be quite contrasting with the general expectation. It might be due to the fact that the women that make decisions jointly with their husbands or frequently talk about the family planning might

have influenced their husbands in the use of male contraceptives rather than female contraceptives. The NDHS has also presented some supporting facts—that among the total currently-married women not using the modern contraceptives, around 17 percent do not use modern contraceptives due to the fear of side effects and health concerns, whereas only a very few women (3%) (MOHP, 2007) do not use it due to the husband's opposition. However, the husband's approval has remained highly important in the usage of modern contraceptives. The study found that the women whose husbands did not approve of their use were 83.2 percent less likely to use modern contraceptives than those whose husbands approved (appendix 2). This is because in the Nepalese context, due to the patriarchal nature of the family, husbands tend to play a dominant role in decision making over their female partners. This study also observed a significant relation between the final say on the health-related issues of women and the use of modern contraceptives. Surprisingly, this suggests that the women that make the final decision on their health jointly with their husband and whose husband alone makes the final decision on her health, as compared to the women that make the final decision themselves, use significantly fewer modern contraceptives by around 63 percent and 58 percent respectively (appendix 2). It also might be due to the husband's dominant role over the wife in decision making. The NDHS 2006 also presents the facts that the reason of not using modern contraceptives by currently-married women in Nepal due to husband's opposition (3%) is relatively higher than those opposed by the wife/woman herself (0.7%) (MOHP, 2007).

Despite the observation in the preliminary analysis and the findings of some previous studies, such as family planning-related communication programmes, as stated by Tawiah (1997), access to the mass media as mentioned by Barkat-e-khuda *et al.* (2000), the logistic regression in this study did not find sufficient evidence to support the significant effect of the access to media (print/newspaper, audio/radio and visual/TV media) on the use of modern contraceptives by currently-married women.

Conclusions and Policy Implications

The overall use of modern contraceptives by currently-married women in Nepal is low. This study has identified various socio-demographic, economic,

psychological, and behavioral factors determining the use of modern contraceptives by currently-married women in Nepal. Among the many factors included in the study, women's age, religion, social group (caste/ethnicity), husband's occupation, total number of children, husband's approval, the decision making role in using modern contraceptives, frequency of talking to the husband about family planning, and the person that makes the final decisions on health-related issues of women were the major factors that were likely to have a significant influence in the use of modern contraceptives by currently-married women in Nepal. Other likely factors, such as place of residence, women's literacy, husband's education, wealth index, the working status of women, the women's occupation, the earning level of women, fertility preferences, the desire for children, and the media did not have a significant relationship with the use of modern contraceptives by currently-married women.

Regarding policy implications, as the use of modern contraceptives by currently-married women is largely determined by the social, psychological, and behavioral factors, and the failure of the effectiveness of educational, awareness, and knowledge-related factors, policy makers should take these factors into account in creating policies related to contraceptive prevalence and population control. More specifically, knowledge- and awareness-related programs should target more the Christian/*Kirat* religious groups and *Janajati*, *Brahmin* and *other* social groups so that the level of modern contraceptives in these groups can be increased. Similarly, the policies and programs related to women's empowerment and the strengthening of their role in decision making in the family should be made more effective so that women can make decisions on the use of contraceptives and health-related issues by themselves; therefore resulting in increased CPR and decreased population growth in the country.

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References

Addai, I. (1999). Ethnicity and contraceptive use in sub-Saharan Africa: The case of Ghana. *Journal of Biosocial Science*, *31*, 105-120.

Ayangade, O. (1984). Characteristics of contraceptive acceptors in an urban Nigerian setting. *International Journal of Gynaecol Obstet, 22*(1), 59-66.

Baksu, A., Gunes, G., Aki, G., Tuysuz, F., & Goker, N. (2005). Change in contraceptive choices and the effect of education on use of contraception at the family planning clinic of Sisli Etfal Training and Research Hospital, Istanbul, Turkey. *The European Journal of Contraception and Reproductive Health Care June, 10*(2), 98-104.

Barkat-e-khuda, K., Roy, N.C ., & Rahman, D.M . (2000). Family Planning and Fertility in Bangaladesh. *Asia Pacific Population Journal, 15*(1), 41-45.

Casterline, J.B., Sathar, Z.A., & Haque, M. (2003). Obstacles to contraceptive use in Pakistan: A study in Punjab. *Studies in Family Planning*, *32*(2), 95-110.

Indralal, W., & Silva, D. (2000). Influence of son preference on the contraceptive use and fertility of Sri Lankan women. *Family Planning Prospect,* 32(3), 124-31.

Joyce A., Anne, D., & Kristin, M. (1998). Young women's degree of control over first intercourse: An exploratory analysis. *Family Planning Perspectives, 30*(1), 12-18.

Kabir, A., Ali, R., & Islam, M.S. (2002). The effect of sex preference on contraceptives use in Bangladesh. *Online Journal of Biological Sciences, 2*(4), 247-249.

Khan, M.A. (1996). Factors affecting use of contraception in Matlab, Bangladesh. *Journal of Biosocial Science*, *28*(3), 265-279.

Mahmood, N., & Ringheim, K. (1996). Factors affecting contraceptive use in Pakistan. *The Pakistan Development Review*, *35*(1), 1-22.

MOHP [Ministry of Health and Population] (2007) [Nepal], New ERA, and Macro International Inc, *Nepal Demographic Health Survey 2006*. Kathmandu, Nepal: Ministry of Health and Population, New ERA, and Macro International Inc.

Paraskevopoulou, E., Raymond, L., & Oakeshott P. (2003). Factors influencing contraceptive use in Tehran. *Family Practice*, *20*(4), 493.

PRB [Population Reference Bureau] (2012). *2012 World Population Data Sheet.* Retrieved January 6, 2013, from http://www.prb.org/pdf12/2012-population-data-sheet_eng.pdf

Saleem, A. & Pasha, G.R. (2008). Women's reproductive autonomy and barriers to contraceptive use in Pakistan. *European Journal of Contraception & Reproductive Health Care*, *13*(1), 83-89.

Stone, N., & Ingham, R. (2002). Factors affecting British teenagers' contraceptive use at first intercourse: The importance of partner's communication, *Perspectives on Sexual and Reproductive Health*, *34*, 191-197.

Tawiah, E.O. (1997). Factors affecting contraceptive use in Ghana. *Journal of Biosocial Science*, *29*(2), 141-149.

Ullah, M.S. & Chakraborty, N. (1993). Factors affecting the use of contraception in Bangladesh: A multivariate analysis. *Asia-Pacific Population Journal*, *8*(3), 19-30.

UNFPA [United Nations Population Fund]. (2006). *State of world population 2006: A passage to hope, women and international migration.* Retrieved January 5, 2013, from http://www.unfpa.org/upload/lib_pub_file/650_filename_sowp06-en.pdf

UNFPA [United Nations Population Fund]. (2012). *The State of World Population 2012.* Retrieved January 6, 2013, from http://www.unfpa.org/public/home/publications/pid/12511

WB [The World Bank]. (2012). *World Bank Data 2008-2012.* Retrieved January 13, 2013, from http://data.worldbank.org/indicator/SP.POP.GROW

WB [The World Bank]. (n.d.) *World Population Growth.* Retrieved January 7, 2013, from http://www.worldbank.org/depweb/beyond/beyondco/beg_03.pdf

Wu, J., Wang L., Rauyajin, O. and Good, S. (2002). Contraceptive use behavior among never married young women who are seeking pregnancy termination in Beijing. *Chinese Medical Journal*, *115*(6), 851-855.

APPENDIXES

Appendix 1: Percentage Distribution of Factors in the Use of Modern Contraceptives by Currently-married Women in Nepal

Variables	Modern Contraceptives Usage		
	Sample Population (N=5,962)	Don't Use (79.80%)	Use (20.20%)
Age 5-year groups (N=5962), χ^2:184.172, p<.000			
15-19	12.29	92.60	7.40
20-24	24.22	83.00	17.00
25-29	20.88	76.50	23.50
30-34	13.28	72.00	28.00
35-39	11.44	71.00	29.00
40-44	9.61	76.10	23.90
45-49	8.27	88.60	11.40
Type of place of residence (N=5962), χ^2:184.172, p<.000			
Urban	24.52	75.30	24.70
Rural	75.48	81.20	18.80
Religion (N=5962), χ^2:19.043, p<0.000			
Hindu	85.31	79.80	20.20
Buddhist	7.72	74.80	25.20
Muslim	4.13	88.60	11.40
Others (Christians, *Kirats*, etc.)	2.85	79.40	20.60
Social Group (N=5962), χ^2:46.822, p<0.000			
Dalits	17.38	84.70	15.30
Janajati	37.25	75.60	24.40
Cheetri	26.97	80.20	19.80
Brahamin	13.17	82.80	17.20
Others	5.23	83.70	16.30
Literacy (N=5958), χ^2:8.153, p<0.05			
Can't read at all	51.14	81.23	18.77
Can read	48.86	78.25	21.75
Respondent's education (N=5958), χ^2:Not significant			
No education	59.34	80.10	19.90
Primary	18.23	79.30	20.70
Some secondary	15.45	79.20	20.80
SLC and above	6.98	79.30	20.70

Appendix 1: Percentage Distribution of Factors in the Use of Modern Contraceptives by Currently-married Women in Nepal (continued)

Husband's education (N=5946), χ^2:Not significant			
No education	24.08	79.90	20.10
Primary level	28.19	79.10	20.90
Secondary level	39.14	80.50	19.50
Higher level	8.59	78.50	21.50
Wealth index (N=5962), χ^2:67.214, p<0.000			
Poorest	25.06	85.40	14.60
Poorer	19.67	81.50	18.50
Middle	18.00	80.10	19.90
Richer	18.95	76.50	23.50
Richest	18.32	73.40	26.60
Working status of women (N=5962) χ^2:10.059, p<0.000			
Not working	25.96	82.60	17.40
Currently working	74.04	78.80	21.20
Respondent's occupation (N=5962), χ^2:85.127, p<0.000			
Not working	16.99	82.20	17.80
Professional, technical, managerial	1.43	81.20	18.80
Clerical	0.23	71.40	28.60
Sales	3.71	66.50	33.50
Agric-self-employed	66.81	81.00	19.00
Agric-employee	6.64	80.10	19.90
Services	1.51	62.20	37.80
Skilled manual	1.86	64.00	36.00
Unskilled manual	0.82	55.10	44.90
Husband's occupation (N=5938), χ^2:61.279, p<0.000			
Do not work	0.88	90.40	9.60
Professional, technical, managerial	5.66	75.30	24.70
Clerical	10.96	81.10	18.90
Sales	7.90	76.80	23.20
Agric-self-employed	39.27	78.60	21.40
Services	9.30	87.50	12.50
Skilled manual	12.65	78.20	21.80
Unskilled manual	10.76	77.20	22.80
Don't know	2.63	95.50	4.50

Appendix 1: Percentage Distribution of Factors in the Use of Modern Contraceptives by Currently-married Women in Nepal (continued)

Women's earning (N=1337), χ^2:6.485; p<0.05			
About the same	23.11	65.00	35.00
Less than husband	72.77	72.50	27.50
More than husband	4.11	67.30	32.70
Children (N=5962), χ^2:222.113, p<0.000			
No Children	12.90	99.00	1.00
Fewer than 2 children	40.69	79.60	20.40
More than 2 children	46.41	74.60	25.40
Fertility preference (N=5709), χ^2:274.790, p<0.000			
Have another	33.84	90.90	9.10
Undecided	2.01	89.60	10.40
No more	64.14	72.20	27.80
Desire for children (N=5509), χ^2:7.065, p<0.05			
Both want same	72.64	78.20	21.80
Husband wants more	19.62	79.50	20.50
Husband wants fewer	7.73	83.60	16.40
Decision maker regarding the use of contraception (N=1531), χ^2:142.359, p<0.000			
Mainly respondent	18.55	9.50	90.50
Mainly husband, partner	7.97	61.50	38.50
Joint decision	73.48	19.90	80.10
Women frequently talking to husbands about FP (N=5962), χ^2:551.049, p<0.000			
No	51.73	91.60	8.40
Yes	48.27	67.10	32.90
Husband approves (N=5274), χ^2:126.147, p<0.000			
Yes	85.70	74.75	25.24
No	14.30	93.23	6.76
Final say regarding health (N=5957), χ^2:274.261, p<0.000			
Respondent alone	21.74	85.10	14.90
Respondent and husband	23.23	69.70	30.30
Husband alone	31.46	74.30	25.70
Someone else	23.57	92.00	8.00
Read newspaper or magazine (N=5962), χ^2:4.125, p<0.05			
No	73.93	80.40	19.60
Yes	26.07	78.00	22.00

Appendix 1: Percentage Distribution of Factors in the Use of Modern Contraceptives by Currently-married Women in Nepal (continued)

Listen to radio (N=5962), χ^2:21.772, p<0.01			
No	9.29	85.20	14.80
Yes	90.71	79.20	20.80
Watch television (N=5962), χ^2: 21.772, p<0.000			
No	33.09	83.20	16.80
Yes	66.91	78.10	21.90

Source: NDHS 2006

Appendix 2: Odds Ratio Predicting the Use of Modern Contraceptives

	Independent Variables		Odds Ratio [Exp(B)]
Socio-demographic factors	Women's age	15-19	
		20-24	0.897
		25-29	0.945
		30-34	0.150+
		35-39	0.172
		40-44	0.062*
		45-49	0.035**
	Place of residence	Urban	
		Rural	0.770
	Religion	Hindu	
		Budhist	0.741
		Muslim	0.000
		Others (Christian, *Kirant*, etc.)	0.220*
	Social group (caste/ethnicity)	*Dalits*	
		Janajati	0.269+
		Cheetri	0.322
		Brahamin	0.164*
		Others	0.411
	Women's literacy	Can't read at all	
		Can read	0.597
	Total number of children	No Children	
		Fewer than 2 children (<=2)	11.894*
		More than 2 children (>2)	25.942*

Appendix 2: Odds Ratio Predicting the Use of Modern Contraceptives (continued)

	Independent Variables		Odds Ratio [Exp(B)]
Economic factors	Wealth index	Poorest	
		Poorer	0.851
		Middle	0.421
		Richer	0.704
		Richest	0.455
	Working status of women	Currently not working	
		Currently working	0.511
	Women's occupation	Professional, technical, managerial	
		Clerical	0.234
		Sales	2.701
		Agric-self-employed	0.839
		Agric-employee	0.439
		Services	1.708
		Skilled manual	1.309
		Unskilled manual	0.542
	Husband's occupation	Professional, technical, managerial	
		Clerical	1.253
		Sales	0.908
		Agric-self-employed	2.310
		Services	3.355
		Skilled manual	6.027*
		Unskilled manual	7.975*
	Earning level of women	About the same	
		Less than husband	1.729
		More than husband	2.501

Appendix 2: Odds Ratio Predicting the Use of Modern Contraceptives (continued)

	Independent Variables		Odds Ratio [Exp(B)]
Psychological and behavioral factors	Fertility preference	Have another	
		Undecided	0.138
		No more	1.730
	Desire for children	Both want same	
		Husband wants more	0.694
		Husband wants fewer	0.773
	Decision making in the use of contraceptives	Mainly women	
		Mainly husband, partner	0.008
		Joint decision	0.373*
	Women frequently talking to husband about FP	No	
		Yes	0.419*
	Husband approves	Yes	
		No	0.168*
	Final say on health-related issues of women	Respondent alone	
		Respondent and husband	0.371*
		Husband alone	0.416+
		Someone else	0.114
Awareness and knowledge factors	Reading newspaper	No	
		Yes	1.568
	Listening to radio	No	
		Yes	1.745
	Watching TV	No	
		Yes	0.639
		Cox & Snell R Square .330; Nagelkerke R Square .496	
		*** p<0.001; ** p<0.01; * p<0.05; + p<0.10	