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Mass media, gender, and contraception in Nepal¹

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Abstract. Using 1996 data from the western Chitwan Valley of Nepal, we examined the effects of exposure to family planning programming in audio, visual, and audio-visual mass media on shaping individual contraceptive attitudes and behaviors. We further investigated whether the effects vary by gender. The results of a pooled analysis that included both men and women indicated that the exposure to audio media was important in shaping contraceptive attitudes and that the exposure to audio-visual media was important in shaping contraceptive practice. However, the results of a gender disaggregated analysis revealed that the effectiveness of media exposure differed between men and women. While the exposure to audio media (radio) was important among men in shaping their contraceptive attitudes, the exposure to audio-visual media (television, movies) was important among women. But the exposure to audio-visual media was important among men in shaping their contraceptive behaviors, whereas none of the media were found to be important for influencing contraceptive practice among women. The results suggest that a blanket approach of information, education, and communication (IEC) campaigns that disregards gender may not be effective in increasing contraceptive use among individuals in farming communities in developing countries.

Keywords: Chitwan Valley, Nepal, contraceptive attitudes, contraceptive behaviors, communication media

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Introduction

Nepal is characterized by an agriculturally based economy, rapid population growth, and a high human fertility rate. Four-fifths of the total population is primarily engaged in agriculture for its livelihood. The population increased by an annual growth rate of 2.27 percent during 1991-2001 (CBS 2002). The total fertility rate was estimated to be an average of 4.1 children per woman in 2004 (Population Reference Bureau 2004), a decrease from 6.3 in 1971 (United Nations 1997). Despite this decrease in births, a high fertility rate is still one of the key determinants of Nepal's rapid population growth and therefore an ongoing concern.

Realizing that high population growth is a problem for economic development, the government of Nepal enacted its first population policy during the Third National Development Plan (1965-1970) to bring down the birth rate. Subsequent plans pursued a similar population policy. Efforts such as the provision of family planning and maternal child health services were made to meet the goal. As a result, the total fertility rate has declined since the 1970s, but at a slower rate (United Nations 1997). The Ninth Plan (1997-2002) further extended Nepal's 20-year population policy to encourage couples to reduce family size and bring down the fertility rate to a replacement level of 2.1 children per woman by 2015 (NPC 1998). The current Tenth Plan (2003-2007) has also embraced this policy to achieve the goal (NPC 2003).

Provision of education and information by non-governmental and governmental agencies has been important for reducing the country's birth rate. The Nepal Family Planning Association, a non-governmental organization, has been in operation since 1959 to increase awareness and encourage the use of family planning. This was when family

planning information and services were first made available to the Nepalese people. Other non-governmental organizations have been mobilized and strengthened to provide family planning services in rural areas. The public sector introduced family planning in 1968 with the formation of the Family Planning and Maternal Child Health Board (Nepal South Asia Center 1998). At present, its successor, the Family Health Division is the provider of family planning and health services in the country.

Knowledge of contraceptive methods is an important precondition for their effective and widespread use (Ministry of Health [Nepal], New Era, & ORC Macro 2002). In Nepal, where education is not universal, dissemination of information through various mass media is considered an important and effective means to provide knowledge of family planning methods to rural people. Therefore, the government has been providing information and education on population growth to popularize the concepts of limiting childbirth to two children, increasing the age of marriage, and improving the social status of women (NPC 1998) through various communications media such as radio, television, cinema, and newspapers. As a result of such efforts, the recent Demographic and Health Survey, Nepal (DHS/Nepal) has reported almost universal knowledge of at least one modern method of family planning among currently married men and women (Ministry of Health [Nepal], New Era, & ORC Macro 2002). Despite this fact, contraceptive prevalence in the country is still low and is the second lowest after Pakistan in the South Asian region (Population Reference Bureau 2004). Still only 39 percent of the currently married women of reproductive ages (15-49 years) used any method of contraception in 2004. The wide gap between knowledge and the practice of contraception in Nepal obviously raises a question as to the effectiveness of various mass

media in creating positive attitudes and behaviors of individuals toward contraception. Moreover, the 2001 DHS/Nepal survey indicated differences in the current use of contraceptives by gender. The survey reported that married men are significantly more likely than married women to use a family planning method (Ministry of Health [Nepal], New Era, & ORC Macro 2002). However, little is known about the extent to which men and women differ in responding to these mass media messages on contraception. Therefore, in this study, we investigated two questions: *(a) Does exposure to mass-media contribute to shaping the attitudes and behaviors of individuals toward contraceptive use, and (b) does the effectiveness of various media in shaping contraceptive attitudes and behaviors vary by gender?*

Why is this study important?

This study is important for three main reasons. First, various theories explain the roles of social, economic, institutional, religious, and other factors in fertility transition. These factors directly or indirectly work through various proximate determinants (Bongaarts, Frank & Lesthaeghe 1984; Bongaarts & Potter 1983; Bongaarts 1978; Easterlin 1975; Davis & Blake 1956). Of the eleven proximate determinants reported by Davis and Blake (1956), four of them, namely, breastfeeding, age at first marriage (proportion married), abortion, and contraceptive use, directly reduce fertility to a major extent (Bongaarts et al. 1984; Bongaarts & Potter 1983; Bongaarts 1978). Among these four, contraceptive use is one of the most effective proximate determinants of fertility (Bongaarts et al. 1984; Bongaarts 1978). The use of contraceptives has been one of the strongest contributors to fertility decline in many developing countries of Sub-Saharan Africa (e.g., Kirk & Pillet

1998), Latin America (e.g., Bramabila 1998; Martine 1996), and Asia (e.g., Caldwell et al. 1999; Haughton 1997; Cleland et al. 1994; Gwatkin 1979). Despite these facts, as Westoff and Bankole report (1999), the effect of the spread of mass media in transmitting modern ideas related to the issues of childbearing has received little scientific attention. Because the government of Nepal has made a concerted effort to disseminate family planning information through various media, an understanding of the effectiveness of the media in shaping individuals' attitudes and behaviors towards contraceptive use is essential for both research and policy reasons.

Second, in Nepal, family planning programming on radio, newspapers, and in visual media, such as television and cinema, are important means of disseminating this kind of information. However, the exposure to these media varies by gender. For example, a recent Demographic Health Survey of Nepal (Ministry of Health/Nepal, New Era, & ORC Macro 2002) reported that more men than women were exposed to various communications media. Thapa and Mishra (2003) also reported that men had a higher lifetime exposure to various mass media channels than women among urban youths in Nepal. But whether all these communications media are equally effective in shaping reproductive attitudes and behaviors of individuals is not clear. Thus, one of the contributions of this study was to determine the effect of the media on contraceptive and reproductive education, which could help lower birth rates.

Third, several studies in the past examined the effects of various media, focusing particularly on women (Sharan & Valente 2002; Agha & Rossem 2002; Rogers et al. 1999; Foreit et al. 1998). But even though men's roles are equally important in fertility decisions in many developing countries, family planning studies have not focused well on

men. Further, in many developing countries, women's fertility desires do not always translate into reproductive behaviors for many reasons, including resistance from husbands, family members, and community members (Short & Kiros 2002). Casterline et al. (1997) also reported that the husband's resistance could be an important obstacle to contraceptive use by women. Therefore, an important aim of this study was to add further insights on family planning research by examining the relative effectiveness of various mass media in shaping contraceptive attitudes and behaviors among both men and women. The findings of this study could be useful in understanding and identifying the effective means of mass communication for the successful implementation of information, education, and communication (IEC) campaigns promoting contraception in the country.

Mass media, gender, and contraception

Rogers (1960) reported the contribution of communications media to awareness creation and the adoption of new ideas. Demographers also believe that the dissemination of information, education, and communication can change couples' reproductive behaviors (Bongaarts et al. 1990). To be specific, exposure to family planning messages in television, radio, and newspapers is important in shaping individuals' reproductive attitudes and behaviors (Agha & Rossem 2002; Sharan & Valente 2002; Olenick 2000; Westoff & Bankole 1999). Such media exposure increases awareness of modern ideas about family, childbearing, consumption, individualism, and related issues that are communicated through these channels (Westoff & Bankole 1999). Individuals exposed to various media improve their knowledge as well as shape their perceptions and attitudes

about, among other things, their sexual and reproductive behaviors (Thapa & Mishra 2003; Ministry of Health [Nepal], New Era, & ORC Macro 2002). And the attitudes and perceptions of individuals toward contraceptive use are important in influencing their contraceptive behaviors (Westoff & Bankole 1999).

Empirical evidence also suggests that the mass media have an important role in shaping individual reproductive attitudes and behaviors. For example, Foreit et al. (1998) reported the importance of family planning advertising in sensitizing the audience to the issue of fertility regulation and for providing information on a wide range of contraceptive methods. They expected that such advertising campaigns might have a strong influence on disseminating family planning messages and family planning uses in areas where contraceptive prevalence is lower. Westoff and Bankole (1999), in their study of South Asia, reported a significant impact by general media programming and family planning messages on reproductive attitudes and behaviors. Agha and Rossem (2002) also provided evidence that exposure to a mass media campaign influenced female condom use among Tanzanian men and women because of the resulting discussions with their sexual partner. In Nepal, Sharan and Valente (2002) provided evidence that exposure to radio programs encouraged interaction between spouses, and encouraged their use of family planning, especially contraceptives.

There is no theoretical explanation, however, as to why the exposure to a given media may have a differential impact on shaping reproductive attitudes and behaviors of men and women. Thus, we next explain the things that we believe are important regarding the relative effectiveness of various media on contraceptive use by gender.

Biologically, the ultimate burden of childbearing is borne by women. Most modern contraceptives developed so far are targeted to influence women's reproductive behaviors. In the patriarchal societies of many developing countries like Nepal, the use of contraceptives is considered a cultural taboo, and therefore women may be hesitant to change their behaviors toward using them. Moreover, there are serious health-related side effects of contraceptive use, particularly of birth control pills, Depo-Provera, or other injectable types of contraceptives that may directly affect women's health. Thus, the use of a contraceptive is considered risky behavior (Stash 1999), which is believed to curtail a woman's ability to work or hold a job. Therefore, we argue that women require a greater amount of reliable information through appropriate channels to have confidence in adopting contraceptives, compared to men. This may affect the relative influence of a given media among men and women regarding contraceptive use. For instance, although the mass media basically create awareness of issues (Rogers 1960), audio messages such as family planning information delivered through radio, or visual messages through newspapers may have an important role in raising awareness about contraception. However, audio-visual messages through television and/or cinema or video movies may have a "seeing-is-believing" impact, which may be relatively more effective among women in shaping their contraceptive attitudes and behaviors. Therefore, we expect a different impact from various media in shaping individuals' reproductive attitudes and behaviors.

Moreover, it is believed that reproductive goals vary by gender (Mason & Taj 1987). The differing fertility goals between men and women depend upon their social and economic relations to children as well. For instance, in farming communities, child labor

contributions are substantial in household production. Although the labor contributions of children in a household may substitute for both men's and women's time allocation, the extent of substitution may vary. But it is believed that children substitute for women's time in most cases. This factor may shape different attitudes in men and women on the value of children, and determine a couple's ultimate fertility goals. In Nepal, where the status and autonomy of women are low as compared to their male counterparts (Morgan & Niraula 1995; Thapa & Mishra 2003), it is plausible that women may have different fertility goals. For example, a research conducted in this Chitwan Valley showed that women perceived having children as less costly and hence demanded for more number of children as compared to their men counterparts (Shrestha and Bhandari 2004). In this sense, we argue that there may be a different impact by the mass media in shaping men's and women's reproductive attitudes and behaviors.

Other influences on contraceptive attitudes and behaviors

Other factors—for example individual characteristics, such as age, age at marriage, education, parity, and religiosity, as well as family background characteristics, such as the mother's fertility, household socioeconomic status, ethnicity, and organization of agriculture that affect human fertility—may shape individual contraceptive behaviors in a variety of ways. For example, the age of an individual, one of the proximate determinants of fertility (Bongaarts 1978; Davis & Blake 1956), is associated with activities such as marriage, divorce, and frequency of intercourse that affect fertility attitudes and behaviors (Simmons 1985). For a married couple or an individual, the higher their age the higher the likelihood of their being in a sexual union. This may increase their chances of

having more surviving children, thus shaping different contraceptive attitudes and behaviors among individuals who are in different stages of their life cycle. Similarly, those who marry at a young age may already have the desired number of children and therefore may choose different contraceptive behaviors than those who marry later in life.

Child mortality experience is another important issue associated with high fertility in developing countries. Individuals may want to replace an already deceased child or may wish to increase the number of children as future insurance for the parents (Preston 1978). Acharya (1998) also reported a significant and positive relationship between high child mortality and recent rates of fertility in Nepal, which may negatively shape individual contraceptive attitudes and behaviors. We also controlled for the effect of the presence of the number of living children of an individual.

Education also has a negative effect on fertility (Easterlin & Crimminis 1985; Becker 1981). Educated individuals may have good skills, and thus good employment. Education may also increase individuals' socioeconomic status, which negatively affects their fertility behaviors. Moreover, educated persons may have a good knowledge of the advantages and disadvantages associated with contraceptive use and may have better attitudes toward contraceptives as compared to their illiterate or less educated counterparts. Results of several studies conducted in the Chitwan Valley setting also reported a negative association between education and fertility preferences (e.g., Pearce 2000; Gajurel 2001). Religiosity also plays an important role in family formation. It is expected that relatively more religious individuals are less likely to use modern contraceptives. Moreover, male sterilization is generally equated with castrated goats in Nepal (Ministry of Health [Nepal], New Era, & ORC Macro 2002). Castrated male goats

are not considered holy for offerings to the gods in religious ceremonies in Hindu culture. Similarly, sterilized human males are equated with castrated goats and are considered not acceptable to perform religious activities and rituals for their deceased parents. Such a perception might have a strong effect on an individual's contraceptive attitudes and decision to use contraceptives.

Household and family background characteristics may have an important effect on shaping individuals' attitudes towards and practice of contraception. For example, given the experience of a large number of children, the mother's fertility, and the resulting burden in the household, he/she might be motivated to use contraceptives to have fewer children in the future. On the other hand, if the mother had a large number of children due to certain cultural, social, or economic reasons, these factors may discourage his/her use of contraceptives. The availability of a toilet facility at home, an indicator of a household's socioeconomic condition, may contribute positively to attitudes toward and use of contraceptives. Previous studies in this research setting observed a variation in fertility behaviors of individuals by ethnicity as well (Bhandari et al. 2004; Bhandari 2002; Pearce 2000; Axinn & Barber 2001; Gajurel 2001; Biddlecom et al. 2000). Therefore, we also controlled for the effect of ethnicity in this study.

The organization of agricultural production, particularly the ownership of land and the size of a cultivated holding, have important effects in shaping reproductive behaviors of individuals in an agricultural setting (Stokes, Schutjer, & Bulatao 1986; Stokes & Schutjer 1983). For landowners, the owned land can serve as collateral against loans or as a means of financial support in old age. Thus having land may reduce the need for having more children in the future, also called the land-security hypothesis. Land

ownership might influence the landowner's decision to limit fertility in their family and thus motivate them to use contraceptives. However, individuals in a household with a large amount of cultivated land may demand more labor for cultivating it, thus motivating them to have more children, also called the land-labor demand hypothesis. Gajurel (2001) provided empirical evidence of both hypotheses in the western Chitwan Valley.

The study setting

The Chitwan Valley, situated in the southern plain of central Nepal, was the setting for this study. Chitwan, once known as Death Valley, is now one of the fastest growing districts in the country. Before the 1950s, like other Terai plains, this Valley was infested with malaria. Only the local indigenous people such as the Tharus lived in the area. During the 1950s, the Nepalese government initiated rehabilitation of the Valley by clearing the dense forest, and it was opened for habitation by distributing land for agricultural purposes. Since then the volume of migrants particularly from the Hills, the high hills (or mountains), and other parts of the country has increased substantially.

The Valley is well connected with other parts of the country. The national highway called the Mahendra Highway runs east-west through this district, which links other important cities such as Kathmandu, the capital city, and Pokhara, one of the major tourist hubs of the country. Rapid transformation in the Valley resulted in a proliferation of government services, businesses, and wage labor jobs in Chitwan by the mid-1980s (Bhandari 2004; Shivakoti et al. 1999).

A Family Planning Project is located in Bharatpur, the district headquarters, which provides various contraceptive information and services. The District Hospital

located in Bharatpur also provides these services. Health posts and sub-health posts established in the Valley also provide information and distribute temporary contraceptive means free of cost and refer interested people to Bharatpur Hospital for sterilization. As per the government's policy, the hospital provides sterilization service free of charge and provides nominal money to the clients as an additional incentive. Pharmacies established by the private sector also sell contraceptives. Radio, television, and newspapers are important sources of family planning information in the Valley. Besides, cinema halls/movie theatres located in different parts of the area studied display advertisements related to contraceptive use and provide information on family planning. These theatres play a significant role in disseminating family planning messages to urban as well as rural people. Contraceptive information is also displayed in billboards throughout the Valley.

Data

For this study, we used data from the Population and Ecology Research Laboratory (PERL) collected in 1996 as part of the Chitwan Valley Family Study (CVFS) and the Population and Environment Study (PopEnv). We used both individual- and household-level data. While household-level data were collected from a total of 1,805 households within a given cluster called a neighborhood, individual-level data were collected from a total of 5,271 individuals from 15 to 59 years of age and their spouses in these households (See Barber et al. 1997 for a detailed description of the sample selection procedure.). A face-to-face interview technique was used by the interviewer to collect both kinds of data. The response rate of the household-level data was 100 percent and that of the individual-level data was 97 percent. In our study, the unit of analysis

consisted of currently married individuals between 15 and 49 years of age who are living in farming households. With this specification, the total sample size for the analysis was 2,753, of which 1,548 were women and 1,205 were men.

Measurement of the variables

The dependent variables used in this study were (a) the attitudes toward contraceptive use and (b) the current use of any modern contraceptive method. The data for the attitude variable were collected by asking, *Is it wrong to use contraceptives or other means to avoid or delay pregnancy? Would you say you strongly agree, agree, disagree, or strongly disagree?* For the purpose of this study, we recoded this variable into two-category dummy variables referring to a positive attitude (strongly disagree or disagree combined) as '1' and '0' for a negative attitude (strongly agree or agree combined).

The next dependent variable, the current use of any modern contraceptive, was extracted from the life-history calendar of each respondent. For this calendar, each individual was asked whether he/she had used any contraceptive during the survey year, 1996. Individuals were asked to provide information separately for the use of each contraceptive method, for example, birth control pills, Depo-Provera, condom, foam, IUD, Norplant, and sterilization, including spouse sterilization. Whether an individual or spouse was currently using any modern contraceptive was obtained based on the information. The response was coded '1' for those who are currently using any modern contraceptive and '0' otherwise.

The lifetime exposure to mass media was the major explanatory variable used. We grouped various exposure variables into three categories: (a) exposure to audio media

– ever listened to family planning programming on radio; (b) exposure to visual media – ever read a newspaper; and (c) exposure to audio-visual media – ever watched a television and/or movies. In the survey, these variables were measured dichotomously as ‘1’ ever exposed to these media and ‘0’ otherwise, by asking, *Have you ever listened to family planning programs on the radio/read a newspaper/watched a movie/watched a movie on a VCR/watched television?* The first two exposure variables, exposure to audio and visual media, were dichotomously measured, while a combined index was created for the third, the audio-visual media. The combined index of audio-visual media was created by adding together the responses of ever watched a movie, a television, and watched a movie on a VCR. This provided an index with a range from 0 to 3, with 0 being no exposure to any of the audio-visual media, whereas 3 being exposure to all of the media in the question. In the analysis, this variable was used as a continuous variable.

Controls

We controlled the effects of several individual and household-level characteristics described earlier to net out the effects of the independent variables. The individual’s age and age at marriage were used as continuous variables measured in years. The number of living children at the time of the survey was used as a continuous variable. Child mortality experienced by an individual was dichotomously coded as whether or not an individual ever experienced child mortality in her/his life. Education was measured as the number of years of schooling. Religiosity was coded as whether or not an individual prays at home.

An individual’s mother’s fertility was measured by the number of children born to

her/his mother at the time of the survey. Toilet facility at home was measured by whether a household has a toilet facility (yes = 1) or not (otherwise = 0). Ethnicity was categorized as 1 for High Caste Hindu, 2 for Low Caste Hindu, 3 for Hill Tibetoburmese, 4 for Newar, and 5 for Terai Tibetoburmese as used in other studies in this research setting (e.g., Gajurel 2001; Pearce 2000). Similarly, the access to cultivated land was measured as the amount of cultivated land in *kattha*, a local unit of land (30 *kattha* = 1 hectare). Land ownership was measured as full owners (coded 1), part owners (coded 2), and sharecroppers (coded 3).

Analytic strategy

We used univariate, bivariate, and multivariate statistical tools for data analysis. Mean, standard deviation, and percentage were the descriptive statistics used. Pearson correlation was used to examine the bivariate association between interest variables and as a test of multicollinearity. We used logistic regression analysis to examine the net effects of exposure variables on the dependent variables as both of the dependent variables (attitudes toward contraceptive use, and current contraceptive use) were dichotomously coded. The results are presented as odds ratios.

For each dependent variable, four different models were run. While the results in models 1 through 3 present the odds ratio estimates predicting the net effect of the individual exposure variable on the dependent variable, the results in model 4 are the net effects of exposure variables when these variables were simultaneously included in the analysis along with other control variables.

Results and discussions

Descriptive statistics are reported in Table 1. Of the total currently married individuals from 15 to 49 years of age, slightly over half indicated that they approve of contraceptive use to avoid or delay pregnancy. Slightly more men than women expressed their positive attitudes toward contraceptive use. While 57 percent of the men approved of contraceptive use, 50 percent of the women did so to avoid or delay pregnancy. About 41 percent of the men and 16 percent of the women were currently using any modern contraceptive method during the survey year. These results suggest a wide gap between contraceptive attitudes and behaviors in total as well as by gender.

(Table 1 about here)

Slightly less than half of the individuals (46 percent) had ever read a newspaper or a magazine (visual media). By gender, there was a large difference between the men and the women in terms of exposure to various media. For example, about 70 percent of the men were exposed to visual media as compared to only 28 percent of the women. Similar differences were observed between the men and the women in terms of their exposure to audio-visual media (movie, television, and video). The combined index of exposure to the audio-visual media showed that out of a total of 3 points, the average exposure index of the men was 2.45, while that of the women was 2.05.

The results further indicate that the men were slightly older (mean = 33.79 years vs. 31.72 years for the women) and more educated (mean = 5.85 years vs. 2.46 for the women) compared to women. The average age at marriage was about four years higher

for men than for women (20.39 years for the men vs. 16.33 years for the women). A greater proportion of the women were religious, 87 percent of the women vs. 83 percent of the men. The women also reported that their mother's fertility was slightly greater (mean = 6.16) as compared to the mother's fertility (mean = 5.86) of their male counterparts.

We also examined the bivariate association between the dependent variables and the interest variables (results not shown). The results indicate that all the exposure variables, visual, audio, and audio-visual media, are significantly and positively correlated with individuals' attitudes toward contraceptive use and the current use of any modern contraceptive. Moreover, the bivariate association between interest variables considered as a test of multicollinearity shows that all the relationships were below 0.50 except the correlation between newspaper readership and education ($r = 0.75$). We suspected a collinearity problem in the data due to a high correlation between education and newspaper readership. However, when the collinearity diagnostics, the tolerance statistics provided in the OLS regression output of the SPSS, were examined, the coefficients were well above 0.20, indicating there was not a serious collinearity problem (Menard 1995). The associations between major independent variables were also not very high (see Table 2).

(Table 2 about here)

Multivariate results

Tables 3 and 4 present the results of the multivariate analysis predicting the net effects of exposure to visual, audio, and audio-visual communications media on the attitudes

toward and practice of any modern contraceptive, adjusting for the effects of individual, family background, and organization of agriculture variables for all of the individuals surveyed. The results of the pooled analysis indicate that the exposure to visual (newspaper in model 1), audio (family planning programming on radio in model 2), and audio-visual (television, video, and movie in model 3) positively contributed to shaping the attitudes of individuals towards contraceptive use (see Table 3). However, only the effects of audio and audio-visual media were statistically significant. The net of the other factors, individuals who had ever listened to family planning programming on radio, were about 47 percent (odds ratio = 1.474; $p < .001$) more likely to approve of contraceptive use as compared to those who had never listened to it. Similarly, every unit increase in the exposure to television, a movie, or a video increased the odds of positive attitudes toward contraceptive use by 13 percent (odds ratio=1.130; $p < .05$). The effect of the exposure to newspaper information was, however, mediated through education, which turned out to be statistically non-significant when the education variable was included in the analysis. When these three exposure variables, visual, audio, and audio-visual, are included simultaneously in the analysis along with other control variables (model 4), only the net effect of the exposure to audio media remained statistically significant (odds ratio = 1.427; $p < .000$). This result suggests that individuals' exposure to family planning programming on radio independently affects their attitudes toward contraceptive use in this agricultural setting of the western Chitwan Valley.

(Tables 3 and 4 about here)

Results in Table 4 show the net effects of various exposure variables on the current use of any modern contraceptive. Adjusting for the effects of all other factors, only the effect of the exposure to audio-visual media was statistically significant (odds ratio = 1.147; $p < .05$, model 3). The effects of the exposure to visual and audio media were in an expected direction but statistically not important, implying that there is no independent effect of these variables in shaping contraceptive attitudes. When all these three media exposure variables were simultaneously added to the analysis, the effect of audio-visual media on attitudes towards contraception remained statistically significant at the 10 percent level (odds ratio = 1.128; $p < .10$, model 4).

Regarding the effects of other factors, the variables of education and the age of individuals significantly and positively contributed to both their contraceptive attitudes and behaviors. Although the variables of having a large number of living children and a person's age at marriage significantly and positively contributed to their current use of contraceptives, they were statistically not important for shaping individual attitudes toward contraceptive use. Nevertheless, the religiosity of an individual—measured as whether a person prays at home—negatively but weakly contributed to their current use of contraceptives. Moreover, there is a clear effect of gender on contraceptive use. Although women are less likely to approve of contraceptive use as compared to their male counterparts, they are statistically not different from them. However, they are significantly less likely to use contraceptives than men.

The availability of a toilet facility in the home, an indicator of the socioeconomic condition of a household, was also positively associated with contraceptive practice, implying that individuals from households with relatively better socioeconomic

conditions are more likely to use contraceptives than those who live in relatively poor socioeconomic conditions. By ethnicity, while the individuals belonging to the Hill Tibetoburmese groups (e.g., Gurung, Magar, and Tamang) and indigenous Terai Tibetoburmese groups (e.g., Tharu, Darai, and Kumal) are significantly less likely to approve of contraceptives, the individuals in the Terai Tibetoburmese groups are significantly less likely to use contraceptives as compared to their High Caste Hindu counterparts. These results are consistent with the findings of other studies (Gajurel 2001) conducted in this setting. Although the results of the organization of agriculture variables, land holding, and land ownership were in an expected direction in our study, their effects are statistically not important in shaping contraceptive attitudes as well as behaviors.

Overall, the exposure to audio media, that is, family planning programming on radio, is important in shaping the contraceptive attitudes of individuals, whereas exposure to audio-visual media is important in shaping their contraceptive behaviors. Moreover, the results also suggest that factors that affect attitudes toward contraceptive use and those that affect contraceptive behaviors vary.

Results of gender disaggregated analysis

The findings discussed in the previous section do not indicate if the same exposure variables are equally effective in shaping contraceptive attitudes and behaviors of men and women. From a policy perspective, this issue is important in a context where the men's role is equally significant in fertility decisions while only women are largely the focus of policies. This situation motivated us to pursue a gender disaggregated analysis,

which is another important contribution of this study to family planning research in developing countries.

Mass media in shaping contraceptive attitudes by gender

The net effects of various exposure variables in shaping contraceptive attitudes of currently married men and women in the Chitwan Valley are provided in Tables 5 and 6, respectively. The results indicate that only the effect of exposure to family planning programming on radio significantly and positively contributed to contraceptive attitudes among men, adjusting for the effects of individual and family background characteristics and organization of agriculture variables. Men who had listened to family planning programming on radio were more than twice as likely to approve of contraceptive use to avoid or delay pregnancy as compared to those who had never listened to radio (odds ratio = 2.229; $p < .000$, model 2, Table 5). The magnitude of the effect slightly increased when other exposure variables were simultaneously added into the analysis along with other control factors (odds ratio = 2.278; $p < .000$; model 4). However, among women, only the effect of exposure to audio-visual media was significantly important in shaping their contraceptive attitudes net of other factors (odds ratio = 1.199; $p < .01$, model 3, Table 6). This result remains statistically significant even when the effects of other exposure variables along with other control variables were adjusted for (model 4).

(Tables 5 and 6 about here)

Differences were observed between men and women with regard to the effects of other variables in shaping their contraceptive attitudes. Among individual characteristics, while education and religiosity were important for men, the variables of age, number of surviving children, and child mortality experience seemed to be important for women. Similarly, ethnicity has an important effect among women, but it was not found to be a strong contributor to contraceptive attitudes among men. Moreover, the size of cultivated land is a weak but statistically significant factor in shaping contraceptive attitudes among men, though its effect was not important among women.

In conclusion, the results suggest that audio messages through family planning programming on radio seemed to be important among men while audio-visual messages on family planning delivered through television, video, or movies seemed to be important in shaping positive attitudes toward contraceptives among women. As discussed earlier, the results suggest that the “seeing-is-believing” was found to be important among women to build more confidence in contraceptive use. Moreover, gender differences were observed regarding the effects of other factors in shaping contraceptive attitudes.

Mass media and current use of contraceptives by gender

The net effects of various exposure variables on the current use of contraceptives for men and women are provided in Tables 7 and 8, respectively. The results in these tables reveal that all the exposure variables had positively contributed to the current use of contraceptives among men and women. However, exposure to audio-visual media statistically significantly contributed to the current use of any modern contraceptive among men net of individual, family background, and organization of agriculture

variables. Every unit increase in exposure to the audio-visual media increased the odds of current contraceptive use by 29 percent (odds ratio = 1.291; $p < .05$, model 3) net of other factors. The effect remains significant even when the effects of all other exposure variables were simultaneously examined along with other control variables (model 4, Table 7).

(Tables 7 and 8 about here)

Interestingly, among women, although all the exposure variables positively contributed to the current use of contraceptives consistent with the results of Westoff and Bankole (1999) in studies in India, Bangladesh, and Pakistan, none of these exposure variables contributed independently to the current use of contraceptives in Nepal (see Table 8). There could be several reasons behind this result. In the Nepalese context, where patriarchal culture is deeply rooted, the man's role may be very important in a couple's decision to use contraceptives. A married woman may not be able to decide independently on the matter of fertility issues due to her low status and autonomy even if she has a positive attitude toward contraceptive use. The difference in our results could also be due to the fact that exposure variables may have worked indirectly through encouraging discussion between partners, as suggested by Agha and Rossem (2002). Along this same line, Sharan and Valente (2002) indicated the importance of exposure to radio drama series on spousal communication and family planning adoption.

On the effects of other factors, while age and number of surviving children were significantly important motivations for the current use of contraceptives among both men

and women, differences were observed on the effects of other variables. For example, education, religiosity, availability of toilet facilities, and land ownership were important among men, whereas these factors were not important among women. Moreover, the Terai Tibetoburmese men were significantly different from those of High Caste Hindu men. However, among women, Newar and Terai Tibetoburmese ethnic groups were found to be significantly different from those of the High Caste Hindu group in using contraceptives. In both men and women, these individuals were less likely to use modern contraceptives as compared to High Caste Hindus. In summary, the results of the gender disaggregated analysis indicate that while exposure to audio-visual messages was an important contributing factor for influencing the contraceptive behaviors of men, none of these exposure variables were found to be important among women.

Conclusions

In this study, we addressed two issues. First, we examined the effects of the exposure to audio (ever listened to family planning programming on radio), visual (ever read a newspaper), and audio-visual (ever watched television, movie, and video) mass media on contraceptive attitudes and current use of contraceptives among individuals of farming communities in the Chitwan Valley of Nepal. Second, we investigated whether the effectiveness of various mass media programming on family planning differs by gender.

Overall, the findings of the pooled analysis, which included both men and women, suggest that while exposure to audio communications media, particularly family planning programming on radio, is important in shaping positive attitudes toward contraceptive use, the exposure to audio-visual media is important in the decision to use

contraceptives, controlling for the effects of all other factors. Based on this finding, a blanket approach of disseminating information and communication through all kinds of media may be suggested for both men and women in order to increase contraceptive prevalence. However, first, it would be appropriate to examine if these results hold true for both men and women in order to effectively target the information and communication campaigns to individuals.

The findings of a gender disaggregated analysis, however, revealed that the effectiveness of media exposure variables in shaping contraceptive attitudes and behaviors differed between men and women. Among men, those who had listened to family planning programming on radio were significantly more likely to approve of contraceptive use to delay or avoid pregnancy than those who were not exposed to it. On the other hand, among the women, the exposure to audio-visual media was important in shaping their positive attitudes toward contraceptive use. Differences were also observed by gender on the influence of communications media in shaping contraceptive behaviors. While the exposure to audio-visual communications media was important in the decision to use contraceptives at the current time among men, none of the media were found to be significantly important in shaping current contraceptive behaviors among women.

The findings of the gender disaggregated analysis have important implications. First, a blanket approach of disseminating information to men and women seems misleading. Therefore, a gender disaggregated approach is needed to effectively implement information, education, and communication (IEC) campaigns in developing countries, which, in fact, have been neglected in the past by family planning programs. Second, while exposure to audio-visual media is important among men in shaping their

contraceptive behaviors, none of the communications media considered in this study were found to be effective among women. The findings suggest that a focus on women only is not sufficient to increase contraceptive prevalence in the country. Hence, men should not be ignored by family planning policies and programs, since the roles of men are equally important in fertility decisions. Further, there is a need to find an alternative mechanism(s) that influences women's contraceptive behaviors. For this purpose, a further investigation is needed to find out whether exposure to media encourages mechanisms like communication between spouses as suggested by Sharan and Valente (2002) and Agha and Rossem (2002), or communication between friends or through other social networks that may ultimately encourage contraceptive use among women.

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TABLES

Table 1. Descriptive statistics of variables disaggregated by gender (N=2,753)

Variables	Total (N=2,753)		Men (n=1,205)		Women (n=1,548)	
	Mean	SD	Mean	SD	Mean	SD
Dependent variables						
Contraceptive use attitude (positive=1)	0.53	0.50	0.57	0.50	0.50	0.50
Current use of contraceptives (yes=1)	0.27	0.44	0.41	0.49	0.16	0.36
Independent Variables						
Exposure to mass media						
Visual: Ever read a newspaper (yes=1)	0.46	0.50	0.70	0.46	0.28	0.45
Audio: Ever listened to FPP (yes=1)	0.78	0.44	0.82	0.39	0.76	0.43
Audio-visual:						
Ever watched a movie (yes=1)	0.88	0.33	0.92	0.27	0.84	0.37
Ever watched TV (yes=1)	0.87	0.34	0.92	0.27	0.83	0.38
Ever watched a video (yes=1)	0.48	0.41	0.61	0.49	0.37	0.48
Audio-Visual Index (range 0 to 3)	2.22	0.94	2.45	0.76	2.05	0.87
Individual characteristics						
Gender (female=1)	0.56	0.50	-	-	-	-
Age (years)	32.63	8.79	33.79	8.11	31.72	9.19
Age at marriage (year)	18.11	3.94	20.39	3.81	16.33	3.02
Education (years of schooling)	3.94	4.37	5.85	4.49	2.46	3.62
No. of surviving children	2.82	1.83	2.72	1.78	2.90	1.87
Experience of child mortality (yes=1)	0.22	0.42	0.21	0.41	0.23	0.42
Religiosity (pray at home=1)	0.85	0.35	0.83	0.37	0.87	0.34
Family background						
Mother's fertility	6.03	2.64	5.86	2.50	6.16	2.54
Toilet facility (yes=1)	0.66	0.47	0.65	0.48	0.67	0.47
Ethnicity						
High Caste Hindu	0.47	0.50	0.46	0.50	0.48	0.50
Low Caste Hindu	0.12	0.33	0.13	0.34	0.12	0.32
Hill Tibetoburmese	0.17	0.37	0.16	0.37	0.17	0.38
Newar	0.05	0.22	0.05	0.21	0.05	0.22
Terai Tibetoburmese	0.19	0.39	0.20	0.40	0.18	0.39
Organization of agriculture						
Size of cultivated land (<i>kattha</i>)	27.65	25.41	27.06	25.08	28.10	25.66
Ownership of land						
Full owners	0.64	0.48	0.63	0.48	0.65	0.48
Part owners	0.28	0.45	0.29	0.45	0.28	0.45
Sharecroppers	0.08	0.26	0.08	0.27	0.07	0.26

FPP = Family planning programming on radio

30 *kattha* = 1 hectare

Table 2. Correlation coefficients (r) between major independent variables (N=2,753)

Mass media	Correlation (r) coefficients			
	Newspaper	FP Program	Movie	TV
Visual: Newspaper	1.000	-	-	-
Audio: FPP on radio	0.267***	1.000	-	-
Audio-visual:				
(a) Movie	0.288***	0.222***	1.000	-
(b) TV	0.288***	0.232***	0.277***	1.000
(c) Video	0.414***	0.210***	0.292***	0.275***
(d) a, b and c Index (Audio-visual Index)	0.469***	0.302***	-	-

FPP: Family planning programming on radio

Two-tailed t-statistic *** = $p < .001$; ** = $p < .01$; * = $p < .05$; + = $p < .10$

Table 3. Odds ratio estimates predicting the effects of exposure to mass media on the attitudes toward contraceptive use among currently married individuals of 15-49 years of age (N=2,753)

Variables	Models			
	1	2	3	4
Exposure to mass media				
Visual- Ever read newspaper (yes=1)	1.095	-	-	0.993
Audio- Ever listened to FPP (yes=1)	-	1.474***	-	1.427***
Audio-visual- Index of ever watched a movie, a TV, and/or a video (0 to 3)	-	-	1.130*	1.081
Individual characteristics				
Gender (female=1)	0.940	0.942	0.955	0.958
Age (years)	1.016*	1.019**	1.018**	1.019**
Age at marriage (year)	1.001	1.001	1.001	1.001
Education (years of schooling)	1.040**	1.042***	1.039**	1.038*
No. of surviving children	0.968	0.957	0.972	0.960
Experience of child mortality (yes=1)	1.080	1.091	1.098	1.103
Religiosity (pray at home=1)	0.867	0.841	0.856	0.834
Family background				
Mother's fertility	1.020	1.020	1.021	1.020
Toilet facility (yes=1)	1.029	1.003	1.013	0.994
Ethnicity (Ref=High Caste Hindu)				
Low Caste Hindu	0.997	1.008	1.007	1.016
Hill Tibetoburmese	0.770*	0.796*	0.762*	0.789*
Newar	0.968	0.994	0.943	0.976
Terai Tibetoburmese	0.647***	0.669***	0.630***	0.657***
Organization of agriculture				
Size of cultivated land (<i>kattha</i>)	0.998	0.998	0.998	0.998
Ownership of land (Ref= sharecroppers)				
Full owners	1.162	1.139	1.150	1.135
Part owners	1.200	1.174	1.200	1.175
Intercept	0.618	0.475+	0.475+	0.404*
Model chi-square	75.736***	90.621***	80.399***	92.618***
DF	17	17	17	19
-2LL	3729.601	3714.716	3724.937	3712.719
Pseudo R-square (percent)	2.0	2.4	2.2	2.4

FPP: Family planning programming on radio
30 *kattha* = 1 hectare

*** = p<.001; ** = p<.01; * = p<.05; + = p<.10

Table 4. Odds ratio estimates predicting the effects of exposure to mass media on the current use of contraceptives among currently married individuals of 15-49 years of age (N=2,753)

Variables	Models			
	1	2	3	4
Exposure to mass media				
Visual- Ever read newspaper (yes=1)	1.170	-	-	1.090
Audio- Ever listened to FPP (yes=1)	-	1.143	-	1.077
Audio-visual- Index of ever watched a movie, a TV, and video (0 to 3)	-	-	1.147*	1.128+
Individual characteristics				
Gender (female=1)	0.247***	0.241***	0.246***	0.250***
Age (years)	1.037***	1.037***	1.039***	1.039***
Age at marriage (year)	0.959**	0.959**	0.959**	0.959**
Education (years of schooling)	1.036*	1.045***	1.039**	1.033+
No. of surviving children	1.216***	1.212***	1.221***	1.218***
Experience of child mortality (yes=1)	0.825	0.825	0.837	0.838
Religiosity (pray at home=1)	0.779+	0.778+	0.771*	0.764*
Family background				
Mother's number of children	1.022	1.023	1.023	1.023
Toilet facility (yes=1)	1.277*	1.271*	1.259*	1.253+
Ethnicity (Ref=High Caste Hindu)				
Low Caste Hindu	0.893	0.893	0.899	0.905
Hill Tibetoburmese	1.149	1.166	1.138	1.148
Newar	1.330	1.344	1.290	1.304
Terai Tibetoburmese	0.593***	0.597***	0.571***	0.582***
Organization of agriculture				
Size of cultivated land (kattha)	0.999	0.999	0.999	0.999
Ownership of land (Ref= Sharecroppers)				
Full owners	0.806	0.799	0.793	0.793
Part owners	0.874	0.870	0.870	0.865
Intercept	0.253**	0.243**	0.193***	0.183***
Model chi-square	437.502***	437.520***	440.632***	441.381***
DF	17	17	17	19
-2LL	2759.281	2759.263	2756.151	2755.402
Pseudo R-square (percent)	13.7	13.7	13.8	13.8
FPP: Family planning programming on radio 30 kattha = 1 hectare				
*** = p<.001; ** = p<.01; * = p<.05; + = p<.10				

Table 5. Odds ratio estimates predicting the effects of the exposure to mass media on the attitudes toward contraceptive use among currently married men of 15-49 years of age (N=1,205)

Variables	Models			
	1	2	3	4
Exposure to mass media				
Visual: Ever read newspaper (yes=1)	1.216	-	-	1.111
Audio: Ever listened to FPP (yes=1)	-	2.229***	-	2.278***
Audio-visual: Index of ever watched a movie, a TV, and/or a video (0 to 3)	-	-	0.980	0.887
Individual characteristics				
Age (years)	0.998	1.001	0.996	0.999
Age at marriage (year)	1.007	1.006	1.006	1.006
Education (years of schooling)	1.041*	1.043*	1.055**	1.044*
No. of surviving children	1.022	0.988	1.024	0.987
Experience of child mortality (yes=1)	0.921	0.913	0.916	0.911
Religiosity (pray at home=1)	0.726*	0.679*	0.736+	0.682*
Family background				
Mother's number of children	1.037	1.041+	1.038	1.039
Toilet facility (yes=1)	0.998	0.958	1.004	0.966
Ethnicity (Ref=High Caste Hindu)				
Low Caste Hindu	1.112	1.150	1.094	1.153
Hill Tibetoburmese	0.921	0.999	0.930	1.010
Newar	1.117	1.204	1.123	1.241
Terai Tibetoburmese	0.695+	0.739	0.683*	0.769
Organization of agriculture				
Size of cultivated land (kattha)	0.996	0.996+	0.996+	0.996+
Ownership of land (Ref= Sharecroppers)				
Full owners	1.224	1.144	1.215	1.150
Part owners	1.335	1.239	1.340	1.246
Intercept	0.841	0.543	0.984	0.713
Model chi-square	42.058***	65.208***	40.813***	66.831***
DF	16	16	16	18
-2LL	1606.310	1583.160	1607.555	1581.537
Pseudo R-square (percent)	2.6	4.0	2.5	4.0
FPP: Family planning programming on radio				
30 kattha = 1 hectare				
*** = p<.001; ** = p<.01; * = p<.05; + = p<.10				

Table 6. Odds ratio estimates predicting the effects of the exposure to mass media on the attitudes toward contraceptive use among currently married women of 15-49 years of age (N=1,548)

Variables	Models			
	1	2	3	4
Exposure to mass media				
Visual: Ever read newspaper (yes=1)	0.968	-	-	0.897
Audio: Ever listened to FPP (yes=1)	-	1.173	-	1.085
Audio-visual: Index of ever watched a movie, a TV, and/or a video (0 to 3)	-	-	1.199**	1.193*
Individual characteristics				
Age (years)	1.027**	1.028***	1.028***	1.028***
Age at marriage (year)	1.007	1.007	1.007	1.008
Education (years of schooling)	1.043+	1.038*	1.028	1.037
No. of surviving children	0.933+	0.931+	0.942	0.940
Experience of child mortality (yes=1)	1.219	1.230	1.271+	1.272+
Religiosity (pray at home=1)	1.046	1.028	1.013	1.013
Family background				
Mother's number of children	1.009	1.008	1.007	1.007
Toilet facility (yes=1)	1.051	1.034	1.014	1.011
Ethnicity (Ref=High Caste Hindu)				
Low caste Hindu	0.963	0.968	0.995	0.992
Hill Tibetoburmese	0.673**	0.683*	0.664**	0.667**
Newar	0.853	0.864	0.830	0.832
Terai Tibetoburmese	0.634**	0.642**	0.610**	0.615**
Organization of agriculture				
Size of cultivated land (kattha)	1.000	1.000	0.999	0.999
Ownership of land (Ref= Sharecroppers)				
Full owners	1.052	1.048	1.034	1.033
Part owners	1.068	1.062	1.069	1.069
Intercept	0.414+	0.365*	0.298*	0.283**
Model chi-square	40.810***	42.364***	47.959***	48.655***
DF	16	16	16	18
-2LL	2105.080	2103.526	2097.932	2097.235
Pseudo R-square (percent)	1.9	1.9	2.2	2.3

FPP: Family planning programming on radio
30 kattha = 1 hectare

*** = p<.001; ** = p<.01; * = p<.05; + = p<.10

Table 7. Odds ratio estimates predicting the effects of the exposure to mass media on the current use of contraceptives among currently married men of 15-49 years of age (N=1,205)

Variables	Models			
	1	2	3	4
Exposure to mass media				
Visual: Ever read newspaper (yes=1)	1.100	-	-	0.947
Audio: Ever listened to FPP (yes=1)	-	1.146	-	1.062
Audio-visual: Index of ever watched a movie, a TV, and/or a video (0 to 3)	-	-	1.291**	1.293*
Individual characteristics				
Age (years)	1.043***	1.043***	1.050***	1.050***
Age at marriage (year)	0.939***	0.939***	0.938***	0.938***
Education (years of schooling)	1.049*	1.053**	1.039*	1.042+
No. of surviving children	1.304***	1.298***	1.307***	1.304***
Experience of child mortality (yes=1)	0.799	0.796	0.806	0.805
Religiosity (pray at home=1)	0.730+	0.725+	0.714*	0.712*
Family background				
Mother's number of children	1.033	1.034	1.037	1.037
Toilet facility (yes=1)	1.479*	1.471*	1.452*	1.449*
Ethnicity (Ref=High Caste Hindu)				
Low Caste Hindu	0.650+	0.651+	0.653+	0.653+
Hill Tibetoburmese	1.093	1.110	1.067	1.075
Newar	0.666	0.674	0.629	0.632
Terai Tibetoburmese	0.506***	0.509***	0.471***	0.471***
Organization of agriculture				
Size of cultivated land (kattha)	0.997	0.997	0.997	0.997
Ownership of land (Ref= Sharecroppers)				
Full owners	0.657+	0.649+	0.648+	0.644+
Part owners	0.850	0.841	0.836	0.832
Intercept	0.311+	0.298*	0.159**	0.157**
Model chi-square	188.228***	188.559***	194.723***	194.884***
DF	16	16	16	18
-2LL	1444.408	1444.077	1437.913	1437.752
Pseudo R-square (percent)	11.5	11.5	11.9	11.9
FPP: Family planning programming on radio 30 kattha = 1 hectare				
*** = p<.001; ** = p<.01; * = p<.05; + = p<.10				

Table 8. Odds ratio estimates predicting the effects of the exposure to mass media on the current use of contraceptives among currently married women of 15-49 years of age (N=1,548)

Variables	Models			
	1	2	3	4
Exposure to mass media				
Visual: Ever read newspaper (yes=1)	1.299	-	-	1.266
Audio: Ever listened to FPP (yes=1)	-	1.085	-	1.040
Audio-visual: Index of ever watched a movie, a TV, and/or a video (0 to 3)	-	-	1.075	1.057
Individual characteristics				
Age (years)	1.027*	1.027*	1.027*	1.027*
Age at marriage (year)	0.993	0.994	0.994	0.993
Education (years of schooling)	0.979	1.001	0.997	0.977
No. of surviving children	1.132*	1.129*	1.134*	1.134*
Experience of child mortality (yes=1)	0.849	0.850	0.859	0.862
Religiosity (pray at home=1)	0.865	0.868	0.863	0.854
Family background				
Mother's number of children	0.999	1.000	0.999	0.999
Toilet facility (yes=1)	1.102	1.104	1.096	1.087
Ethnicity (Ref=High Caste Hindu)				
Low Caste Hindu	1.256	1.248	1.261	1.269
Hill Tibetoburmese	1.152	1.153	1.140	1.153
Newar	2.326**	2.318**	2.276**	2.312**
Terai Tibetoburmese	0.635+	0.641+	0.626+	0.632+
Organization of agriculture				
Size of cultivated land (kattha)	1.001	1.001	1.001	1.001
Ownership of land (Ref= Sharecroppers)				
Full owners	0.971	0.972	0.965	0.963
Part owners	0.809	0.814	0.814	0.808
Intercept	0.063***	0.060***	0.057***	0.056***
Model chi-square	56.407***	55.540***	55.913***	56.857***
DF	16	16	16	18
-2LL	1279.055	1279.921	1279.549	1278.604
Pseudo R-square (percent)	4.2	4.2	4.2	4.3
FPP: Family planning programming on radio 30 kattha = 1 hectare				
*** = p<.001; ** = p<.01; * = p<.05; + = p<.10				