

# Permanent, Semi-Permanent, and Temporary: Determinants of Modern Contraceptive Method Preference in Nepal

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## **Extended abstract**

### *Background*

While contraceptive use has long been recognized as an important element in determining fertility rates (Davis and Blake, 1956; Bongaarts, 1978; Stover, 1998), contraception methods are not created equal, and even modern methods have the potential to impact fertility rates differently. Although failure rates of contraceptive use are not widely understood in the context of developing countries, the expectation is that they are at least comparable, if not higher, than those in the United States (Darroch, Sedgh, and Ball, 2011). A report by the Center for Disease Control (CDC,) in 2006 found that almost 50 percent of all pregnancies in the United States were unintended, and 43 percent of those occurred while using some form of contraception (Finer and Zolna, 2011). Similarly, it is estimated that 35 percent of all pregnancies in Nepal are unintended, although there is less known regarding contraceptive use and unintended pregnancies in the country (Adhikari, Soonthorndhada, and Prasatrkul, 2009).

Contraceptive failure is typically due to human error or misuse, which results in higher failure rates for condoms and other temporary methods. Spermicide has the highest rate of failure among the temporary modern methods, at 28 percent, but this not a commonly used form of contraception in Nepal. Of those temporary, modern methods used by men and women in Nepal the average failure rate is 9 percent. Semi-temporary methods have a failure rate that ranges from 0.05 percent for hormonal implants to 0.8 percent for copper inter-uterine devices (IUDs). The method with the lowest failure rate is sterilization, which is around 0.01 percent for both male and female sterilization (Trussell, 2004). For the purposes of this paper, modern contraceptive methods were broken into three categories: permanent methods, including male and female sterilization; semi-permanent methods, which includes IUDs and injections like depo-provera; and temporary methods, including birth control pills, condoms, and other barrier methods.

Despite the obvious importance of understanding the specific contraceptive method choices that women and men make, there is limited research in the literature relating to the uses of particular methods of modern contraception, and that which does exist considers modern methods alongside traditional methods and non-use (Chen and Guilkey, 2003; Dahal, Padmadas, and Hinde, 2008; Gubhaju, 2009; Jayarman, Mishra, and Arnold, 2009; Kamal, 2001). The most commonly cited predictor of contraceptive use is female education (Koc, 2000; Riyami, Afifi, and Mabry, 2004; Satyavade and Adamchak, 2010), although the findings are mixed in relation to women's education and the use of modern methods of contraception (Gereltuya, Falkingham, and Brown, 2007; Alpu and Fidan, 2006). Other

significant indicators of using contraception at all, and modern methods specifically, vary by location and specific research questions but generally include husband's education, husband's approval of family planning practices, number and/or sex of children, household composition, and location or region. The significance of each of these variables is not universal, and results vary quite widely according to the research context.

Research on contraceptive use in Nepal follows the trend of analyzing the adoption of modern methods broadly, or combining multiple forms of modern methods. In her article on the relationship between educational levels of husbands and wives and contraceptive method choice in Nepal, Bina Gubhaju considers several specific forms of contraception in a multivariate analysis (2009). The analysis uses a five-category measure of method use: none, female sterilization, male sterilization, hormonal and other modern methods, and condoms. Gubhaju (2009) provides useful insights into the impact of education variables – including wives' educational level, husbands' educational level, and the difference between the two – on the decision to adopt specific methods of contraception versus not adopting any method of contraception. However, the analysis does not speak to the likelihood of adopting one modern method of contraception over another modern method. Additionally, the contraception variable categorization is not split along lines of effectiveness, but rather separates highly effective methods – male and female sterilization – while agglomerating other more and less effective and moderately effective methods – IUDs, pills, and implants. Similar categorization and analysis was conducted in Susan Chen and David Guilkey's article (2003) examining the contraceptive choice in Tanzania from 1991-1999. In an interesting twist in the contraceptive use literature, Dahal, Padmadas, and Hinde (2008) examine the contraceptive method choices of men in Nepal from the 2001 Nepal Demographic and Health Survey (NDHS). Again, while this analysis does break down modern method use into several categories, these categories are not based on effectiveness levels, and are compared to respondents using no contraception and traditional contraceptive methods, limiting its applicability to the investigation of the specific method choices of modern method users. Findings from these analyses generally reveal expected patterns of association, with female education being the most important variable in determining type of contraception use (Gereltuya, Falkingham, and Brown, 2007; Gubhaju, 2009; Magadi and Curtis, 2003).

#### *Methods and data*

In an exploratory analysis of 2011 NDHS data, I was surprised to find that respondent education was significantly and *negatively* associated with using modern methods of contraception, particularly for secondary and higher education. Clearly this finding contradicts the majority of the literature on contraceptive use and educational attainment. Additional analytic scrutiny suggested this counterintuitive effect was robust. An important implication of this finding is that different methods of modern contraception may have a significantly different relationships with predictor variables, that these differences may be meaningful, and that they are obscured when all modern methods are combined into one outcome variable.

The hypothesis that emerges from this original analysis is that the negative association between respondent's educational attainment and the use of modern contraceptive methods is driven primarily by permanent sterilization. To test this hypothesis, I use logistic regression to model (a) the use of any modern versus traditional contraceptive method, and (b) among uses of modern methods, the use of separate types of modern methods of interest – temporary, semi-permanent, and permanent – versus other forms of modern methods. Control variables included in the analysis fall under six broad categories: demographics, working and occupation, wealth, media exposure, decision-making, and geographic.

All data for this research come from the 2011 NDHS, which has a total sample size of 12,674 women. Due to a lack of variability in contraceptive use by unmarried women, the analysis was restricted to married women. This restriction also impacted the age range of respondents included in the analysis. Although the DHS includes girls as young as 15, the youngest married woman in the 2011 NDHS was 17. Given these restrictions, married women aged 17-49, the final N is 9607 for the full model, 4,694 for the model of combined modern method use, and 4,085 for the permanent, semi-permanent, and temporary models. All the data were weighted using the individual weight provided with the data.

### *Results*

Preliminary results indicate that the common practice of looking at modern versus traditional methods of contraception use fails to capture important variation in the explanatory variables across different types of modern contraception. Looking exclusively at an analysis of modern contraceptive use could, for example, lead to the erroneous conclusion that educational attainment is significantly, negatively associated with modern contraceptive use. This level of analysis misses the variation in educational attainment, which is negatively associated with permanent methods of contraception, but positively associated with semi-permanent and temporary methods. Similarly, analysis modern versus traditional methods smooths out much the variation in the spatial variables, which is particularly important to understand for the development of family planning policies, and it completely misses the significance of respondent's age and number of living children. These findings are consistent with the original hypothesis that because permanent methods of contraception are so prevalent in Nepal the combined model of modern methods versus traditional methods largely reflects the relationship of permanent methods to explanatory variables – a relationship that is fundamentally different than that of semi-permanent and temporary methods. This analysis, which separated modern methods of contraception based largely on their failure rates, highlighted some of those differences, and may act as a starting point to developing more comprehensive family planning policy based on the fertility outcomes most desired in Nepal.

### *Works Cited*

Adhikari, Ramesh, Kusol Soonthorndhada, and Pramote Prasartkul. 2009. "Correlates of unintended pregnancy among currently pregnant married women in Nepal." *BMC International Health and Human Rights*, 9: 17-27.

- Alpu, Özlem, and Hatice Fidan. 2006. "On the use of contraceptive methods among married women in Turkey." *The European Journal of Contraception and Reproductive Health Care*, 11(3): 228-236.
- Bongaarts, John. 1978. "A framework for analyzing the proximate determinants of fertility." *Population and Development Review*, 4(1): 105-132
- Chen, Susan, and David K. Guilkey. 2003. "Determinants of contraceptive method choice in rural Tanzania between 1991-1999." *Studies in Family Planning*, 34(4): 263-276.
- Dahal, Govinda P., Sabu S. Padmadas, and P. R. Andrew Hinde. 2008. "Fertility-limiting behavior and contraceptive choice among men in Nepal." *International Family Planning Perspectives*, 34(1): 6-14.
- Darroch, Jacqueline E., Gilda Sedgh, and Haley Ball. 2011. "Contraceptive technologies: Responding to women's needs." New York, NY: Guttmacher Institute.
- Davis, Kingsley, and Judith Blake. 1956. "Social structures and fertility: An analytical framework." *Economic Development and Cultural Change*, 4(3): 211-235.
- Finer, Lawrence B., and Mia R. Zolna. 2011. "Unintended pregnancy in the United States: Incidence and disparities, 2006." *Contraception*, 84(5): 48-485.
- Gereltuya, Altankhuyagiin, Jane Falkingham, and James Brown. 2007. "Determinants of current contraceptive use and method choice in Mongolia." *Journal of Biosocial Science*, 39(6): 801-817.
- Gubhaju, Bina. 2009. "The influence of wives' and husbands' education levels on contraceptive method choice in Nepal, 1996-2006." *International Perspectives on Sexual and Reproductive Health*, 35(4): 176-185.
- Jayarman, Anuja, Vinod Mishra, and Fred Arnold. 2009. "The relationship of family size and composition on fertility desires, contraceptive adoption, and method choice in South Asia." *International Perspectives on Sexual and Reproductive Health*, 35(1): 29-38.
- Kamal, Nashid. 2000. "The influence of husbands on contraceptive use by Bangladeshi women." *Health Policy and Planning*, 15(1): 43-51.
- Koc, Ismet. 2000. "Determinants of contraceptive use and method choice in Turkey." *Journal of Biosocial Science*, 32(3): 329-342.
- Magadi, Monica A., and Siân L. Curtis. 2003. "Trends in determinants of contraceptive method choice in Kenya." *Studies in Family Planning*, 34(3): 149-159.
- Riyami, Asya Al, and Mustafa Afifi, and Ruth M. Mabry. 2004. "Women's autonomy, education and employment in Oman and their influence on contraceptive use." *Reproductive Health Matters*, 12(23): 144-154.
- Satyavada, Aravinda, and Donald J. Adamchak. 2000. "Determinants of current use of contraception and children ever born in Nepal." *Biodemography and Social Biology*, 47(1): 51-60.
- Stover, John. 1989. "Revising the proximate determinants of fertility framework: What have we learned in the past 20 years?" *Studies in Family Planning*, 29(3): 255-267.
- Trussell, James. 2004. "Contraceptive failure in the United States." *Contraception*, 70(2); 89-96.