

Accessibility of Family Planning Services and Contraceptive Use Dynamics among Limited Mobility Populations in the Western Chitwan Valley of Nepal

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Introduction

The 1994 International Conference on Population and Development in Cairo, Egypt (Cairo) was a watershed moment for the field of international family planning (1, 2). One of the key messages from Cairo is that family planning programs should move away from a “population crisis” mentality focused on fertility reduction at any cost, to a more human rights centered approach aimed at helping all women, despite their background or status, to meet their individual fertility preferences by providing access to good-quality family-planning services(3). To date, the differential impact of service accessibility factors on the contraceptive use dynamics of vulnerable subgroups of women has not been well evaluated.

The aim of this study is to examine the role of family planning service accessibility in determining the probability of adoption and discontinuation of contraception and to examine disparities among groups that are potentially more dependent upon local services due to a constrained ability to travel. These groups include poor women, those with lower status, and those carrying greater natural resource responsibilities. Poor women may be unable to afford to travel away from their communities to seek health care services; women who are engaged in more natural resource activities may not have time to seek services outside of their immediate area; and women with lower status may not be empowered to seek services away from their local area(4-6).

Nepal is an especially interesting place to pursue this research for several reasons. The rugged terrain and poor infrastructure in the country have produced a lot of interest in the viability of district level facilities as opposed to a heavy focus on local health services(7). Furthermore, fertility rates in the country exceed an average of 5 children per woman while wanted fertility is closer to 2 to 3 children per woman and overall contraceptive use remains low(8). Nepal’s Ministry of Health has a stated goal to better meet the demand for contraception in the country(7). Women’s participation in activities not organized by the family varies considerably in Nepal, but, like many regions in South Asia, is low by global standards(9). Greater participation in nonfamily activities has been found to be significantly predictive of fertility limitation behavior in the Western Chitwan Valley of Nepal(4). Women’s natural resource responsibilities in the region are high. Previous studies have found that Nepali women can spend up to 9 hours a day engaged in natural resource activities such as the collection of fuelwood, water, and fodder, and engaging in agricultural activities(10). One qualitative study of family planning use in the Chitwan Valley of Nepal, found that many women cited the time commitment required by these natural resource activities as a barrier to contraceptive use(11).

Understanding the role of local service accessibility in contraceptive adoption and discontinuation, and understanding the disparities that exist in the significance of that role, will be invaluable in understanding the value of accessible local health services among vulnerable populations. For this reason, this study is particularly significant and timely.

Conceptual Framework and Theory

The overall conceptual framework for this study is drawn largely from two sources: Arundh Jain's hypothesis regarding local service factors and adoption and continuation of contraception(12) and Andersen's health behavior model as modified for vulnerable populations(13).

Jain's 1989 framework is the basis for the idea that the local health care service environment can affect contraceptive use in two major ways(12). First, access to quality services can encourage women to adopt contraception, but also, access to quality services can prevent women who adopt contraception from discontinuing a method once contraceptive use has started.

Dr. Andersen's classic model explaining health care utilization as adapted for vulnerable populations asserts that the utilization of health services is partially a result of certain so called enabling factors, which includes accessibility of services(13). These enabling factors may interact with vulnerability to affect health care utilization. This model defines several domains of vulnerability, including mobility and transportation. It is this limited mobility that this study uses to identify potentially vulnerable populations.

Data

Data were collected in the Western Chitwan Valley of south-central Nepal between 1996 and 2002. The Western Chitwan Valley covers an area of 100 square kilometers and is bordered to the south by Royal Chitwan National Park and to the east by Barandabar Forest. A stratified, systematic probability sample of all communities within the Western Chitwan Valley was taken, with oversampling to ensure representation by each of the five major ethnic groups inhabiting the area: high caste Hindus, hill Tibeto-Burmese (such as Gurung, Tamang, and Magar), indigenous terai Tibeto-Burmese (such as Tharu, Darai, and Kumal), Newar, and other caste Hindus. A total of 171 communities were included in the sample. Within the 171 sample neighborhoods, every resident between the ages of 15 and 59 and their spouses were asked to participate in the research. The response rate was over 97% with a total sample size of 5,272, including 2,663 women.

The Chitwan Valley Family Study involves more than 10 different data collection instruments. For the purposes of the analyses conducted here, data from five different instruments are used. The first of these is a household level survey called the 1996 Agriculture and Consumption Survey. This survey includes information on different household natural resource activities such as the collection of fuelwood, water, and fodder, and different livestock and cultivation activities. This survey also collects information on who in the household participates in each activity and the time spent each day on these various activities. This information will be used in the proposed study to create measures of natural resource responsibility that the individual women in each household share.

A second source of data is the 1996 Individual Baseline Survey which was administered to every individual survey participant. The baseline survey includes information on family relationships, living arrangements, educational attainment, parity, and marriage. The information from the Individual Baseline Survey is used to create the measures of women's status. A third instrument, the personal Life History Calendar, collects the dates related to all major life events, including education, marriage, childbirth, and use of family planning. The Life History Calendar is used to calculate the time from marriage to adoption of a contraceptive method, as well as the duration of each episode of contraceptive use occurring prior to the baseline survey conducted in

1996. A fourth instrument, the monthly Family Planning Data Sheet, has been administered to each woman in the sample on a monthly basis since the 1996 baseline sample. This monthly update gives us contraceptive adoption and continuation information from 1996 up to 2003.

The fifth instrument from the Chitwan Valley Family Study that will be used in this analysis is the Health Services Calendar. This is a clinic based survey which records information for each source of contraception in the Western Chitwan Valley. This information is used to measure the accessibility of local family planning services.

Methods

Data are analyzed using STATA 8.0 S.E. statistical computing software. All model variables are summarized using univariate statistics and crude bivariate relationships are examined. In order to more fully address the research question, however, two statistical models are estimated. The outcome variable in the first model is contraceptive adoption whereas the second model's outcome variable is contraceptive discontinuation. Both models will include the same independent variables and both models will be estimated using multilevel hazard models.

Hazard models, also called survival or duration models, or event history analyses, are appropriate for use in this context because both contraceptive adoption and contraceptive discontinuation represent transitions in state(14-16). Because there will be women who have not changed state during the length of data collection, observations are censored, making traditional regression analyses biased and inefficient. Because theory and previous evidence suggests that contraceptive adoption and discontinuation are influenced by contextual factors such as service accessibility in addition to individual characteristics such as natural resource responsibility, women's status, and socioeconomic status (SES), a multilevel hazard model is the most appropriate type of model to use(14-16).

One model will examine the effect of service accessibility on contraceptive adoption and a second model will examine contraceptive discontinuation. Independent variables will be the same in these two models and both will examine differences in outcomes among women with high natural resource responsibility, low status, and low SES (all groups with potentially limited mobility).

Service accessibility will be measured by using an array of variables representing the five dimensions of family planning service accessibility as defined by Bertrand et al.(17) The first of these dimensions is physical accessibility measured as distance and travel time to the nearest family planning facility. The second dimension measured is economic accessibility measured as cost of available contraceptive methods at the nearest family planning facility. The third dimension of accessibility, administrative accessibility, includes measures of clinic hours and method choice. The fourth dimension of service accessibility that is addressed is that of cognitive accessibility as measured by individuals' awareness of service availability. The final dimension of accessibility, psychosocial accessibility, is measured by attitudes regarding the acceptability and desirability of the use of contraception.

The limited mobility groups considered in this study are poor women, women with lower status, and women with high natural resource responsibilities. Land ownership is used to proxy SES and has proven to be a highly effective measure in previous studies using this data (18). Natural resource responsibility variables include time commitment and participation variables related to gathering fuelwood, water, and fodder, tending livestock, and working in agriculture. Women's status is measured in several domains including travel, participation in voluntary social groups, and economic independence. Interaction terms are included because these types of

variables capture the differential effect of accessibility on contraceptive adoption and continuation among limited mobility groups. Control variables have been chosen for their repeatedly demonstrated independent effects on contraceptive use and include such measures as parity and fertility intentions.

Discussion and Expected Results

In many circumstances, there is variation in the ability of individual women to seek family planning services away from their local community. Accessibility of local healthcare services may be extremely important for those women who are less empowered to seek services outside of their community. This research expects to determine how service accessibility at the nearest clinic providing contraception affects contraceptive adoption and discontinuation in this study setting and to provide suggestions for programs seeking to improve these outcomes in vulnerable populations.

References

1. Sinding SW. The great population debates: How relevant are they for the 21st century? *American Journal of Public Health* 2000;90(12):1841-1845.
2. McIntosh CA, Finkle JL. The Cairo Conference on Population and Development - a New Paradigm. *Population and Development Review* 1995;21(2):223-260.
3. UN. Programme of Action of the International Conference on Population and Development. New York; 1994.
4. Axinn WG. Family organization and fertility limitation in Nepal. *Demography* 1992;29(4):503-521.
5. Bloom SS, Wypij D, Gupta MD. Dimensions of women's autonomy and the influence on maternal health care utilization in a North Indian city. *Demography* 2001;38:67-78.
6. Doodoo FNA, Tempenis M. Gender, power, and reproduction: Rural-urban differences in the relationship between fertility goals and contraceptive use in Kenya. *Rural Sociology* 2002;67(1):46-70.
7. Schuler SR, McIntosh EN, Goldstein MC, Pande BR. Barriers to effective family planning in Nepal. *Studies in Family Planning* 1985;16:260-270.
8. MEASUREDHS+. Nepal Demographic and Health Survey: ORC Macro; 2001.
9. Morgan SP, Niraula BB. Gender inequality and fertility in two Nepali villages. *Population and Development Review* 1995;21:541-561.
10. Brown S. Spatial analysis of socioeconomic issues: Gender and GIS in Nepal. *Mountain Research and Development* 2003;23:338-344.
11. Stash S. Explanations of unmet need for contraception in Chitwan, Nepal. *Studies in Family Planning* 1999;30:267-287.
12. Jain AK. Fertility reduction and the quality of family planning services. *Studies in Family Planning* 1989;20:1-16.
13. Gelberg L, Andersen RM, Leake BD. The behavioral model for vulnerable populations: Application to medical care use and outcomes for homeless people. *Health Services Research* 2000;34:1273-1302.
14. Barber JS, Murphy SA, Axinn WG, Maples J. Discrete-time multilevel hazard analysis. *Sociological Methodology* 2000;30:201-235.
15. Zhang F, Tsui AO, Suchindran CM. The determinants of contraceptive discontinuation in Northern India: A multilevel analysis of calendar data. Chapel Hill, NC: MEASURE Evaluation; 1999.

16. Steele F, Curtis SL, Choe M. The impact of family planning service provision on contraceptive use dynamics in Morocco. *Studies in Family Planning* 1999;30:28-42.
17. Bertrand JT, Hardee K, Magnani RJ, Angle MA. Access, quality of care, and medical barriers in family planning programs. *International Family Planning Perspectives* 1995;21:64-69+74.
18. Axinn WG, Ghimire DJ. Population and Environment: The Impact of Fertility on Land Use in an Agricultural Society. In: 2002 Annual Meeting of the Population Association of America; 2002 May 9-11; Atlanta, GA; 2002.