

## **Quality 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 “good-quality family-planning services”(3). To date, the differential impact of service quality 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 local service supply factors 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 who have less participation in nonfamily activities, and those carrying greater natural resource responsibilities. Poor women may not be able 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 less nonfamily experience and restricted freedom of movement 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 outside of the family context 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 quality in contraceptive adoption and discontinuation, and understanding disparities that exist in the significance of that role, will be invaluable in understanding the value of high quality 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 quality 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 quality 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 an index of natural resource responsibility that the individual women in each household share. The Household Agriculture and Consumption Survey also gathered information on household income, assets, and durable goods that are used to create a socioeconomic index used to assign relative poverty status to women in different households.

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 index measuring participation in nonfamily activities. 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 2002.

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 reproductive health service quality.

## **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 quality in addition to individual characteristics such as natural resource responsibility, participation in nonfamily activities, and poverty, a multilevel hazard model is the most appropriate type of model to use(14-16).

Models 1 and 2 examine the effect of service quality on contraceptive adoption and discontinuation, respectively, by all women and among women with high natural resource responsibility, low participation in nonfamily activities, and high poverty, all groups with potentially low mobility. Any variables that are not significant both individually and as interaction terms are eliminated in further reduced form models and results of both full and reduced models are presented.

Service quality will be measured by using an array of variables representing four of the six dimensions of family planning service quality as defined by Judith Bruce(17). The first of these dimensions is choice of methods measured by the availability of different methods at each health post. The second dimension measured is interpersonal relations as measured by the availability of staff and private exam rooms at each health post. The third dimension of quality, mechanisms to encourage continuity, is measured via the presence or absence of mobile sterilization units and family planning motivation programs. The final dimension of service quality that is addressed is that of an appropriate constellation of services as measured by service hours, service costs, and the availability of related MCH services including vaccinations, nutritional services, prenatal and postnatal care, and diarrhea services.

Poverty is measured in quintiles using an index comprised of income, asset, and household consumer durable variables such as housing materials, and ownership of items such as televisions, radios, and bicycles. Natural resource responsibility index variables include time

commitment and participation variables related to gathering fuelwood, water, and fodder, tending livestock, and working in agriculture. Participation in nonfamily activities is defined and measured using the family mode of organization framework as outlined by William G. Axinn(4). This construct includes measures of past travel, and participation in local groups and activities, formal schooling, work outside the home, family relationships, and distance between parent-child households.

The control variables have been chosen for their repeatedly demonstrated independent effects on contraceptive use. Interaction terms are included because these interaction terms capture the modifying effect of low mobility that is proposed between local service factors and contraceptive adoption and continuation in the conceptual model.

## Discussion and Expected Results

In many circumstances, there is variation in the ability of individual women to seek services away from her local community. Quality of local healthcare services may be extremely important for those women who are less empowered to seek services outside of their local community. This research expects to determine how service quality at the nearest available clinic providing contraception affects contraceptive adoption and discontinuation in this study setting and to evaluate whether this effect differs on the basis of poverty, natural resource responsibility, and participation in nonfamily activities. The goal of this evaluation is to present suggestions for family planning programs seeking to improve quality of care and the reproductive health outcomes of these potentially at-risk groups of women in their service area.

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