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**Determinants of Awareness and Usage of Best Available Local Maternal and Child
Health Care Facility by Women in a Selected Rural Area of Nepal***

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I. Introduction

Nepal has one of the highest maternal mortality rates in South Asia; at least 539 mothers die for every 100,000 live births (UNICEF 2006). A primary reason is that 81 percent of births take place in home and only about 13 percent are attended by a doctor, nurse, or someone with appropriate midwifery skills. About 79 percent of the deaths of children under-five occur before they reach their first birthday, and nearly 70 percent of the deaths of under-one babies happen within the first month.

In one sense, buying health care services is like buying a commercial product by making a choice from among a number of competing brands. In rural areas of Nepal there are many alternative “brands” of health care that are available to a woman who is pregnant or recently had an outcome of pregnancy. The range of choice is wide in cost and quality of care. There is an age-old practice of seeking help of traditional birth

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attendants (TBAs) during delivery. TBAs have no formal medical or academic qualifications but are easily available in villages, are familiar to most women in the neighborhood and have acquired some practical midwifery skills from helping women deliver in the past. They prescribe no drugs or medications and cost very little monetary fees and expenses. Many studies have pointed out the importance of physical and financial access for increased usage of a health care facility (Sharma 2008; Morey, Sharma & Mills 2003; McCombie 1996; Ching 1995; Thaddeus & Maine 1994).

Often, there are also private practitioners available. Unlike TBAs they may not be available in every village, but are found in a relatively larger village that serves as the local shopping center for nearby villages. Most of these practitioners have low academic qualifications with one or two years of prior experience helping a medical practitioner; some may have done a year or two of academic courses in auxiliary health works. Only in very few cases they may be medical doctors with formal academic qualifications who work for a local hospital or government health center but also extend private practice. All these types of private practitioners prescribe western medications, charge monetary fees for consultation, and are often located farther away than TBAs for most rural consumers. But, such private practice clinics have no qualified nursing staff or assistants, have no inpatient care facility, and have no outpatient surgical facilities.

Generally speaking, government-run hospitals or health centers tend to be the best equipped of all, in terms of both medically qualified staff and equipment. But, they tend to be located in an urban or semi-urban area, which makes these facilities less accessible to rural folks. The problem of access proves more difficult for women. The generally subordinate status of women in the household and society further deepens the

psychological or socio-cultural distance of health care facilities, which tend to be mostly staffed with male providers and personnel (Matsumura & Gubhaju 2001, Thaddeus and Maine 1994, Reuben 1993, Subedi 1989, Stone 1986). One more factor that may potentially affect a woman's access to health care is the low level of priority generally given to the health care needs of women in the intra-household allocation of family income; see Haddad, Hoddinott and Alderman (1997) for models of intrahousehold resource allocation in developing countries.

Let us keep aside for a moment the male – female divide in access to health care. It is possible that a woman is simply unaware of the existence of a good-quality facility or is unfamiliar with its quality and cost (Matsumura and Gubhaju 2001). A lack of confidence or negative predisposition about the quality of care may overshadow a woman's desire to seek care, especially when it entails a long distance and time to reach the facility (Barnes-Josiah, Myntti & Augustin 1998). Also possible is that a woman unsatisfied with care during a prior visit does not consider a repeat use of the facility. On the contrary, good satisfaction from earlier visits may encourage repeat visits to the facility; studies in consumer behavior have suggested that past visits, past experience and the previous frequency of purchases or visits raise the probability of purchase now (Roy 2004, Biswas 1992, and Telang and Mukhopadhyay 2004). In other words, the demand for a health care facility's services is a function of level of awareness or familiarity with the facility. In this study we intend to empirically examine the determinants of level of awareness of the *best available maternal and child health care facility (BAF)* among women who are residing in the neighboring selected rural areas of Nepal and who are either expecting or had an outcome of pregnancy within the last one year; the BAF shall

be the facility that is most equipped with physical and human resources among all the facilities that exist in the area and provide maternal and child health care services.

II. Methods, Data and Institutional Environment

Women users of BAF, like users of any product or service, may be distributed in a hierarchy of level of awareness. Some may be unaware of the existence of BAF (AWARE = 0), some may be aware or have heard or seen that such a facility exists but have never used its services (AWARE = 1), some may have used its services in the past but not for the current episode of pregnancy or outcome (AWARE = 2), and those that have sought its services for the current episode (AWARE = 3). A higher level of awareness is likely to raise the probability of usage of facility, everything else the same. The objective of this empirical study is to identify factors that influence where a woman lies in the above hierarchy of awareness.

We conducted a survey of 153 women in three Village Development Committees (VDCs), namely Sishahaniya, Sonpur, and Chailahi, that lie in Dang district of Nepal; a VDC is a cluster of adjoining villages that constitute the lowest local administrative unit of the country. These villages lie to the north and south of a 20 kilometer stretch of the East-West Highway and are mostly inhabited by people of Tharu indigenous nationality group, who have mostly lagged behind many other communities in development and health indicators. Along this 20km-stretch, the survey area spanned a width of about 5 kms to the north and 5 kms to the south. Among the 153 respondents, 27 percent came from Sishahaniya, 43 percent from Sonpur, and 30 percent from Chailahi.

There are traditional birth attendants (TBAs) available in most villages. Under a special program of the government some of them have received a preliminary training of three weeks to improve midwifery skills so as to reduce risks associated with delivery that they assist. There are private practitioners available in Sishahaniya, Pipari, Keroniya, and Lamahi; one of them is a qualified male medical doctor who works for a government-run health post in Sonpur, but also runs a private clinic. Other private practitioners are apprentices, technicians, or auxiliary health workers that previously worked in government or private clinic or medical school. The PHC at Lamahi is the best of all the facilities that are available in the survey area for maternal, prenatal, neonatal, and post-natal care, and hence it has been taken as the Best Available Facility or BAF for the purpose of this awareness research. There is a government-run health post (HP) at Sishahaniya, which is less equipped than PHC. There is also a public sub-health post (SHP) at Sonpur, which is even less equipped than HP. The distance along the highway from the eastern-most village of Sishahaniya to Sonpur is about 8 kms and from Sonpur to Lamahi is another 8 kms. There is a bus service that runs along the highway, but people living deep to the north or south of highway have to walk to the highway for catching bus, which may take up to one and half hours. Especially for expectant women and those with complications traveling this distance could be an arduous task. It is not unusual that they are made to lie down on a cot and carried on the shoulders of men. The services at SHP, HP, or PHC are not only free (except for an admission fee of Rs. 5 in general ward and Rs. 10 for emergencies in PHC), women are given a monetary incentive of Rs. 500 by the government for choosing to have their babies delivered at these facilities. However, there were complaints that a significant number of women were not

given the incentive, either because they sought services during non-regular hours or weekends or because the staff that handled the money was absent at the time of service. Also, the incentive is given to a mother only for the first two babies delivered.

The survey began with visits to the above-mentioned three government-run health care facilities – PHC, HP, and SHP – to find information on their cost and quality of care. Three women consumers of services were then identified in each facility on the day of our visit to that facility; these women then became a subject of detailed interview, who then led to the identification of other women in her village who were pregnant or had an outcome in the last one year. This snowball technique of sampling led to a total of 153 women being surveyed, after excluding a few cases of missing observations.

We intend to use an ordered-response probit model to estimate the awareness model. A woman's level of awareness about BAF – the PHC located at Lamahi – is assumed a function of socio-economic characteristics of the woman and the cost and quality characteristics of the care of BAF, relative to the cost and quality characteristics of the competing health care facilities in that area. In our sample, about 4 percent of women were found unaware of the BAF, about 27 percent were aware but had not used its services, 17 percent used it in earlier episodes of pregnancy, and the remaining 52 percent had used the services for the current episode.

Level of education is often cited as one of the most important variables that influence the level of awareness. Schnell-Anzola, Rowe & LeVine (2005) have discussed the divergent views in the literature on the importance of woman's schooling for health-related literacy and thus for her reproductive behavior. The views range from the belief that health literacy is generally acquired only after a minimum of five years of schooling

to the belief that literacy skill is a continuous variable that improves with every year of schooling. In their own research they find a strong relationship between years of schooling and health literacy and communication skills; but, they did not explore the relationship of such skills to the utilization of health care services. According to Matsumura and Gubhaju (2001), even primary-level education may significantly increase the chances of receiving care from a modern health care facility, by raising the status of woman and her household decision making power. On the other hand, Rogers (1999) and Robinson-Pant (2000) provide examples of women in developing countries who could not read or write but yet took leadership roles in community and developmental activities and were engaged in literacy activities through help of others. Their observations raise a possibility that schooling is not a prerequisite for literacy skills in the context of utilization of health care facilities. We intend to test the importance of formal schooling and also the importance of informal education that women may acquire from the environment through their individual exposure to print, audio or visual media, especially for those women who have less than five years of schooling. Also, we plan to include for the latter group of women, whether schooling of a higher-educated family member affects their level of awareness.

As discussed in the earlier section, travel distances to the BAF and competing facilities, waiting times, and monetary costs (including any monetary rewards) are likely to be important. Travel distances besides using up time raise the level of discomfort or pain of an expectant woman. The importance of cost to a woman is a function of her household income, reliable data on which is difficult to obtain, especially in rural areas where the bulk of income could be in the form of grains and commodities. For this

reason, researchers have used proxies for income. For example, Akin et al. (1995) had used ownership of assets, type of house construction, ownership of vehicle, type of toilet in the household, and such other variables as proxies in their study on Nigeria. Similarly, Mesko et al. (2003) used an appliance score as a proxy, which accounted for the type and number of possessions like clock, radio, bicycle, iron, sewing machine, camera, television, motor vehicle, etc. We have collected data on the type of house construction, number of rooms in the house, availability of toilet, piped water, electricity, phone, and other utilities, also possessions of radio, televisions, autos, etc. Since there are families that rent places and may or may not have homes in other parts of the country, we are likely to choose the number of appliances and amenities owned by the household as a common proxy for representing income levels of both homeowners and renters.

Awareness and usage of a health care facility may be conditioned by the culture and tradition of a community, as they may form a basis for belief or predisposition about a type of health care or about a certain type of provider. Malhotra and Mather (1997) have argued that the relationship between education, work, and women's control of household decisions is conditioned by the larger social context or structural variables like ethnic identity, age, married status, and number of children given birth to. In a study of choice of family physicians by Chinese immigrants in Canada, Wang, Rosenberg & Lo (2008) find that language, culture and ethnicity influence the choice of health care providers in a complex way. We have collected data on ethnicity, primary language of women respondents, and the number of their successful or unsuccessful pregnancies, which we intend to test as potential determinants of level of awareness.

Table 1 presents the descriptive statistics. Among women surveyed, 65 percent belonged to Tharu community, 15 percent Khas Brahmin, Chhetri, and Giri, 10 percent belonged to occupational castes like Kami, Biswokarma, Kumal, and Dhobi, and the remaining were either Madhesis or hill-based indigenous nationalities like Magar and Gurung. The average age of respondents varied between 17 and 41 years with 23 as an average. Level of education varied between 0 to 12 years of school completed, but the average is very low, less than 4 years. Respondents could read or watch print, audio and/or visual media like newspapers, radio and televisions, in total 5 sources of media; the average respondent used less than 3 media. Over 88 percent of respondents could speak Nepali and over 73 percent spoke Tharu language. Twenty-nine percent of respondent women worked full time or part time in farm, household occupation, or an outside job. The household size of respondents was generally large, between 1 and 27, the average being almost 8. Of all the household members, on average 4 members were engaged in income-generating activities. On average a household enjoyed or possessed 4.6 amenities that included electrical or gobar gas lights, phones, piped water or own hand-pump, toilet in the premises, radio, television, and camera. The surveyed respondents had one to 8 episodes of pregnancies, the average being 2.17; a little less than one-fourth of them had experienced some kind of complications during earlier episodes of pregnancy. The average travel distance to the best available health care facility was a little over 8 kms.

III. Analysis and Results

Survey results were only received on the second week of September; hence, there was no sufficient time to compile and enter all data. For demonstration purpose only, the results based on incomplete data are presented in Table 2. Please do not quote or cite the results.

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Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent variable</i>					
Level of awareness	153	2.176471	.960521	0	3
<i>Age/Education/Residence</i>					
VDC of residence	153	2.019608	.7562945	1	3
Age, years	153	22.85621	4.008902	17	41
Years of school	153	3.800654	3.579892	0	12
No. of media watched	153	2.803922	1.432971	0	5
<i>Cultural Group (yes 1, no 0)</i>					
Khas	153	.1503268	.3585652	0	1
Tharu	153	.6470588	.479454	0	1
Hill Ind. Nationality	153	.0653595	.2479708	0	1
Occupational castes	153	.0980392	.2983442	0	1
Madhesis	153	.0392157	.1947452	0	1
<i>Spoken language (yes 1, no 0)</i>					
Nepali	153	.8823529	.3232478	0	1
Tharu	153	.7385621	.440861	0	1
<i>Income proxies</i>					
Works (yes 1, no 0)	153	.2941176	.4571415	0	1
Numer of earners	153	4.098039	3.196965	0	20
No. of possessions	153	4.686275	2.266665	0	10
Household size	153	7.928105	4.078352	1	27
<i>Pregnancy and complications</i>					
No. of time pregnant	153	2.176471	1.298368	1	8
Prior complications (yes 1, no 0)	153	.2418301	.4295981	0	1
<i>BAF variables</i>					
Average distance, km	153	8.137255	5.672021	1	16

Table 2: Ordered Probit Estimates

		Number of obs	= 153		
		LR chi2(5)	= 67.21		
		Prob > chi2	= 0.0000		
		Pseudo R2	= 0.1961		
Log likelihood = -137.77118					
Aware	Coefficient	Std. Err.	z	P z	[95% Conf. Interval]
Yrs of school	.0746	.0354	2.10	0.035	.0051 .1441
Media (school<5)	.1176	.0750	1.57	0.117	-.0295 .2646
Distance to BAF	-.1461	.0207	-7.07	0.000	-.1866 -.1056
Household size	-.0310	.0242	-1.28	0.201	-.0785 -.0165
Respondent works	.1927	.2254	0.86	0.393	-.2490 .6345
_cut1	-3.2084	.3975	(Ancillary parameters)		
_cut2	-1.6975	.3454			
_cut3	-1.0592	.3299			

Aware	Probability	Observed
0	Pr(xb+u<_cut1)	0.0392
1	Pr(_cut1<xb+u<_cut2)	0.2680
2	Pr(_cut2<xb+u<_cut3)	0.1699
3	Pr(_cut3<xb+u)	0.5229