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Demand for Traditional Health Care Services in Rural Ethiopia

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Abstract: In developing countries like Ethiopia, one may attribute the demand for traditional health care providers mainly to the limited geographical access to modern health care providers But it is shown in many studies that traditional health care institutions are attracting a number of patients even in the presence of modern health care institutions at a closer distance. Using a multinomial logit model, the present study analyzes factors that determine the choice of a given health care provider in general and traditional health care in particular. The study uses a cross-sectional data collected primarily by the researcher from rural Ethiopia. It has been found that while (perceived) quality of service is the most important attribute of public institutions, proximity and low waiting time are the features that lead rural patients to private institutions. On the other hand flexible payment system and low service charge are the attractive features of traditional health care institutions. It is concluded policy makers should consider the option of integrating traditional and modern medical practices. Furthermore, it is believed that a more flexible (in kind and time) payment system would improve the utilization of modern health service and health status of rural household.

Key words: Health care demand · Traditional health care · Multinomial-logit model · Rural household · Ethiopia

INTRODUCTION

Human capital plays a decisive role in the economic development of every nation. Central to human capital development is improvement in the health status of the population that can be achieved, among other things, via provision of medical care to those who need it [1]. Beside its contribution to economic development, having primary health care service is becoming a basic human right the issue. As a result, providing medical care service has become the top rating agenda of all governments. The main problem, however, is how to provide health care services to those who need it. In this regard, expansion of health care facilities and increasing the quantity and quality of health personnel is not doubtable. While these had been enjoyed by the western long ago, it is yet far distant to a number of developing countries. As a result traditional medicine played not only an alternative but also an inestimable role in the health care delivery of developing countries. According to World Health Organization (WHO), traditional medicine, also known as *complementary and alternative medicine*, refers to the sum total of all knowledge and practices used in diagnosis, prevention and elimination of physical, mental or social imbalance and relying exclusively on practical experience and observations handed down from generation to generation [2].

Unlike the conventional medicine that focuses only on disease causing pathogens the traditional medicine used holistic nature and culture-based approach. It includes diverse health practices, remedies, approaches, knowledge and beliefs incorporating plant, animal and mineral products, spiritual therapies and charms. Traditional health practitioners use a variety of approaches to diagnose, treat or prevent illness. Problems that can be tackled by traditional health practitioners ranges from ordinary headaches, diarrhea and vomiting to life-threatening diseases such as cancer and diseases associated with HIV/AIDS.

The importance of traditional medicines for human being both now and in the past is enormous. In most cases, traditional medicines are used as "first aid or stop-gap measure" before the patient is referred to modern health facilities. But for a number of African

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countries traditional medicine is the only affordable and accessible health care. According to [2], in some Asian and African countries, 80% of the population depends on traditional medicine for primary health care.

Western medicine came to Ethiopia during the last quarter of the nineteenth century with the arrival of missionary doctors, nurses and midwives [3]. But relative to other developing countries only little success was achieved in coping with the acute and endemic diseases that debilitated large segments of the population. Like all other important sectors, the health sector has suffered from the chronic economic problems the country faced for decades. The quality of health services in Ethiopia suffers from poor infrastructure, lack of critical medical equipments, low number of knowledgeable healthcare human resource and sporadic pharmaceutical supplies. In all measurements, the country has an extremely poor health status even compared to other low-income countries. As of 2004, life expectancy at birth was 54, infant mortality rate was 97%, annual per capita health expenditure was 4.6 USD and pitifully, only 63% of the populations of Ethiopia, Africa's second most populous country, live within 10km radius of health facility[1].

Additionally, the political ideology that had been followed for about two decades had further retarded the development of modern health care system. During the military (Derg) regime, the ruling philosophy was socialism where the participation of the private sector had been totally castrated in all sectors including the health sector. As a result, the government had been the sole provider of almost all of the modern medical service. But due to the government's limited economic capacity, the health service coverage was narrow and the quality was shallow. This limited coverage coupled by the unsatisfactory quality in the modern health care services provided by the socialist government had given a better room for the practice of traditional health care especially in the rural part of the country. But after the fall of that military junta, the private sector began flourishing in the national health sector. Although they were a good alternative in modern medical service, the cost of treatment in the private sector was too expensive than that of the government facilities. The high cost of medical care coupled with its limited coverage made the private HCIs less attractive. The traditional medicine, once again, remained active participant in health service market of the country especially in rural areas. Thus the use of traditional medicine is intensified by the limited coverage of public health institutions and unaffordable cost of treatment at modern Private HCIs. Thus, even in modern Ethiopia, especially in rural areas, the choice between health care providers in rural Ethiopia is not limited to those in the modern medical services. The rural community has developed indigenous knowledge for almost all problems historically observed in their environment.

In spite of the significant role that Traditional HCIs play in national health sector, only few studies have been conducted on households' demand for HCIs. Even those studies undertaken so far are solely concerned with urban populations that accounts only to 15% of the population. Consequently, only little is known about the health care demand of rural households, especially about how they make choice of health care providers. More importantly, there is a wide gap in economic literature regarding the demand of traditional health care. This paper is, therefore, devoted to the analysis of traditional health care demand in rural households restricting the analysis to the first stage of patient initiated contacts. The general objective of this study is to analyze the socioeconomic determinants of rural households' choice of Traditional HCIs. The specific objectives are:

- To figure out the role of different HCI especially those of traditional health care providers;
- Identify the desirable quality of each HCIs (as perceived by the patients),
- To identify the socioeconomic determinants of demand for traditional health care provider in rural Ethiopia; and
- To provide policy recommendation that would help improving the national health care system

Methodology (Or Materials and Methods)

Theoretical and Empirical Framework: A brief review of the literature in the field of health economics shows that the neoclassical theory of rational consumer and constrained utility maximization is the cornerstone of modern health care demand analysis. In this paradigm people are assumed to drive utility directly from the health obtained from medical services, just as they would from other consumption goods. The model is based on the idea that 'an individual choose the outcome that maximizes the utility gained from the choice' [4]. This implies that given two alternatives A and B and assuming there is no ties in utilities, a rational individual chooses alternative A if and only if $U_A > U_B$ and vice versa [4]. In the event of illness, the individual *i* is assumed to maximize utility (U)

[1] Italian Contribution to the Health Sector Development Programme in Ethiopia (HSDP) 2003-04 Report.

conditional on the consumption of health provided by provider j, subject to the budget constraint and health production function [5-7]. Mathematically this may be represented as:

$$\max U_{ij} = U(H_{ij}, C_{ij}) + e_{ij}, \quad (1)$$

$$\text{Subject to: } m_i = P_{ij} + Pc\ C_{ij} \text{ (budget constraint)} \quad (2)$$

$$H_{ij} = H_o + Q_j(X, Z) \text{ (Health Production)}, \quad (3)$$

Where:

- H_{ij} Is the post- treatment health status of the individual treated by provider *j*
- C_{ij} Is the consumption level composite goods after choosing provider *j*
- e_{ij} Is the random error term that captures the notion that efficacy of medical care is not perfect
- m_i Is the total income of the household
- P_{ij} Is the price of medical treatment from provider *j*. It includes both money and time costs.
- P_c Is the price of the composite consumption goods.
- H_o Is the initial health status of the individual
- Q_j Is the improvement in health status of the individual after the treatment by provider *j*

The improvement in health status of an individual (Q_j) is a function of a vector of individual characteristics (**Z**) provider characteristics (**X**) [5]. It follows that individual *i* will maximize the unconditional utility function (U*) which is given by

$$U_j^* = \max (U_{i1}, U_{i2}, - - -, U_{ij+1}) \quad (4)$$

Where

- U_{ij} Is the utility function of care from provider j = 1, 2, - - -, j + 1

Solution to equation (4) provides the health care alternative that yield the highest utility and to be chosen by an individual [5], [8]. Normalizing P_c to one and substituting equations (2) & (3) into equation (1), we will get *conditional utility function* of provider *j* that can be written as

$$U_{ij} = U(H_o + Q_{ij}(X, Z), \mathbf{m}_i - P_{ij}) + e_{ij} \quad (5)$$

When the above utility function is quasi linear in H_{ij} and C_{ij} and these components are greater than zero, the indirect utility function is given by:

$$V_{ij} = V(P_{ij}, H_o, Q_o(X, Z), \mathbf{m}_i) + e_{ij} \quad (6)$$

Equation (6) is the reduced form of the indirect utility function of alternative *j* and in most of the literature it forms the basis of estimating health care demand functions. It conveys the message that the demand for health care depends on price, health status, the improvement in health status and individual and providers' characteristics [5].

The indirect utility obtained by a patient from a given clinic, according to [9], can be derived from a multiplicative indirect utility specification and is given as:

$$\ln V_{ij} = V_{ij}^* + e_{ij} \quad (7)$$

Where V_{ij} denotes the indirect utility gained by the individual i (i= 1,2, - - -) from choosing j^{th} clinic type (j = 1,2, - - -, J) and e_{ij} is the random error term.

Furthermore, V_{ij} can be decomposed into

$$V_{ij} = X_{ij}\beta + Z_i\alpha_i \quad (8)$$

where: $X_{ij}(=\ln X_{ij}1, \ln X_{ij}2, - - -, \ln X_{ij}k)$, the X_{ij} k's (k = 1, 2, - - -, k) are alternative (provider type) specific observable exogenous variables;

β is a K x 1 vector of unknown parameters to be estimated;

$Z_i = (\ln Z_{i1}, \ln Z_{i2}, ---, \ln Z_{iG})$, the Z_{iG}'s (g = 1,2, ----, G) are individual (patient) specific observable exogenous variables;

α_i is a Gx1 vector for unknown parameters to be estimated [9].

Assuming IID (independently identically distributed) log-Weibull distribution for the disturbances e_{ij}, the P_{ij}, the probability that individual *i* will choose clinic type j, according to [8], is

$$P_{ij} = \frac{\exp(v_{ij}^*)}{\sum_{j=1}^{j} \exp(v_{ij}^*)} \quad (9)$$

Substituting equation (8) in to equation (9), the probability that individual *i* will choose clinic type *j* is rewritten as

Table 1: List and description of explanatory variables and their expected signs

Variable Name	Description
Age (Age)	A continuous variable for the age of the patient
Sex (Sex)	A dummy variable for the sex of the patient (1= male; 0= female)
Education (Eds)	A dummy variable for the education status of the patient (1=completion of primary education; 0= otherwise)
Distance (Dis)*	A continuous variable for the distance of the institution chosen from the home of the patient
Waiting time(wtm)*	A continuous variable for the time that the patient stays at the health institution before getting treatment
Monetary cost (mcs)*	A continuous variable for the total monetary cost that the patient pays for the treatment
Perceived severity of illness (pse)	A dummy variable for the value that the patient attaches for the severity of their illness as they perceive it (1= for serious; 0= otherwise)
Wealth (wlth)	A continuous variable for the summation of the total wealth /income of the patient and the household (in case they are different)
Household size (hhs)	A continuous variable for the total number of the member of the household

*refers to the provider specific variables.

$$P_{ij} = \frac{\exp(X_{ij}\beta + Z_i\alpha_i)}{\sum_{j=1}^{j}\exp(X_{ij}\beta^* + Z_i\alpha_i)} \quad (10)$$

Assuming Y_i be a random variable indicating the choice made, the probability of choosing provider j, according to [10] and [11], is:

$$P_{ij} = \text{prob}(Y_i = j) = \frac{\exp(X_{ij}\beta + Z_i\alpha_i)}{1 + \sum_{j=1}^{j}\exp(X_{ij}\beta^* + Z_i\alpha_i)} \quad (11)$$

Furthermore the likelihood for this problem is $\ln L_i = D_{ij}\ln \mathbf{p}r(Y_i=j)$, where D_{ij} is a dichotomous variable that takes on the value 1 if individual *i* chooses alternative *j* (i.e., if $Y_i=j$) and 0 if he/she do not choose it [8], [10] and [11].

Estimation Techniques & Variable Specification: As reiterated, the analysis for demand of traditional health care provider choice in rural Ethiopia was carried out using the multinomial logit model. Estimation of the multinomial logit model specified in equation (11) above is undertaken using a statistical package called STATA.

The *dependent variable* is choice of specific HCI. The alternative health care providers (or the HCIs to be chosen) are *Government /Public, Private and Traditional HCIs*. The first two alternatives are modern health care providers whereas the last one is just as its name. The traditional institutions refer to all traditional treatments provided by traditional health practitioner. It also includes the use of herbs, holly men and holy water (or *tsebel* in Amharic). The basic and important assumption here is that each individual patient seek treatment and knows the available health institutions with their respective expected cost, waiting time and distance [10]. Our response variable, HCI, is going to be treated as categorical under the assumption that the choice of HCI has *no* natural ordering.

The *independent variables* include different attributes of both the individual and the health care providers. The following table summarizes the definition of each independent (or explanatory) variables used in the analysis.

Data Source: The study had used a special cross-sectional stet of data collected for this purpose primarily by the researcher from East Abaya district. The district is located in Gamo-Gofa Zone, SNNP state of Ethiopia. It has a total land size of 827.7sqkm and almost all (93%) of the population live in rural areas.

A two stage stratified sampling technique was used to select households. In the first stage, 10 villages were selected using systematic probability proportional to size; size being the number of households from the 2000/01 populations and housing census. The second stage involves selection of sample households from a given sample villages. This stage has two phases: the *first* phase is identification of households in which illness is experienced in at least one member of the household in the past two months-these are the target population of this study; the *second* phase is selection of 220 household from the target population using simple random technique.

RESULTS AND DISCUSSIONS

Descriptive Analysis

Demographic Profile: The average household size was closer to seven and roughly three out of seven household members are children of 15 years or less. It was also known that male-to-female ratio is almost closer to one. About half of the patients interviewed was married and close to 40% of them were single. While the average age

Table 2: Statistical summary of the observation

Variable name		Mean	Standard deviation	Max. Value	Min. value
Age of the patient		29.52	18.383	120	0
Age of the household head		43.3	13.98	120	0
Sex of the patient		0.49	-	-	-
Sex of the household head		0.84	-	-	-
Marital status	single	0.415	-	-	-
	married	0.495	-	-	-
	widowed/divorced	0.10	-	-	-
Education of the patient	Only able to read and write	0.126	-	-	-
	Primary school complete	0.283	-	-	-
	Above primary School	0.146	-	-	-
Education of the household head		0.52	-	-	-
Religion of the patient		0.753		-	-
Distance from the institution chosen		9.745	23.555	300	0
Waiting time of the HCI chosen		4.719	28.02	360	0
Monetary cost of treatment at chosen HCI		31.782	48.6	270	0
Perceived quality of the chosen HCI		0.676	-	-	-
Perceived severity of illness		0.849	-	-	-
Wealth of the household		4263.3	6875.43	52018	0
Household size		6.7	2.96	2	20
No. of children less than 15 years old		2.62	1.84	0	10

Source: survey finding, 2004

of the patient was 30 years, the elders (>65) and the children (<5 years) constitute more than a third of the total patients implying that this group of the community is more vulnerable to disease than the younger. Furthermore, it was found that most of the household head were male and the average age of the household head was 43.3 years. Christian Protestantism and Orthodox Christianity are the two most dominant religion of the study area but the former alone accounts for three quarter of the target population.

Socio-Economic Profile: The main economic activity of the district is farming followed by animal husbandry. The production of cash crops especially fruits such as banana, mango, lemon, avocado, papaya, coffee and *chat* is the base of almost all households livelihood. But a wide disparity is observed in economic status patients. The household wealth in the study area ranges from 0 to 52,018 Birr but the average figure was only 4,204 Birr. Furthermore, only few (3.2%) of them earn a monthly income, usually in the form of remittance.

Including the five Private HCIs (all in rural), a total of 10 modern HCIs (of which four are in rural areas) are available in the district. Depending on the size and proximity of each village, a common health centers are found (mostly one for three villages). A public rural hospital is also functioning in the capital of the district.

During illness, vehicle is the most commonly used means of transportation to the chosen HCIs. Vehicle accounts for 40.4% of patients' means of transportation to the chosen health institutions followed by walk (34.7%) and 'qareza' (21.8%). The latter two signifies the importance of nearby health institutions. Use of horse/mule back was very common in most rural areas. However, none of the sampled patients have reported to use animals back for transportation. It may be due to their proximity to the main road and limited availability of equines in low land areas like the one under study. The following table shows a brief statistical summary of the observation.

When we come to literacy, a substantial number (45%) of patients were unable to read and write and the figure is even higher for patient's household heads in that about 48% of them are found to be illiterate. This may retard the choice of modern HCIs as an illiterate person lacks knowledge of dealing with modern treatment and hence resists modern medical institutions. The average distance traveled by the patients to reach the institution chosen is 9.7km while the maximum is 300km.

Health Care Provider Choice: In the sampled villages, about 15% of the population reported an illness within a two months period preceding the survey. One of the common mistakes in describing the health institution consulted was reporting "*no treatment"* while they have taken some homemade treatments that can be categorized under traditional treatment. To overcome such misspecification an intensive orientation is given to the data collectors and patients on how to categorize the type of institution the patient have chosen. Finally, it was

found that only 7.3% of the sampled and targeted population have neither sought outside medical treatment nor attempt self care. This group of patient was excluded from the analysis of this study because they don't add any value to the subject under consideration.

Excluding the 'untreated' group, it is observed that as many as 94.6% of the patients have have visited the nearest HCI. It implies that rural people do not simply bypass the available institutions in their first contact and may use the nearest health institution available, regardless of the ownership of the institutions. However, when asked why and how they have selected the first visited institution, only 23.2% of the patients explicitly expressed *'proximity'* to their home as a reason of choosing their respective institutions.

Although the target population can be considered as poor on average (earning only 11.7 birr/day), they don't complain for the service charge of the health institutions implying that the cost of treatment is not a prohibitive factor in choosing the HCIs. It is found that only 6.4% of the sampled patients state *low service charge* as a reason for choosing their respective health institutions. Ease in liquidity of the assets owned by the patients has been expected to have an important role in choosing between HCIs. Unless the institution accepts non liquid assets (i.e., payment in kind) for the service it provides, or allow the parents to have some days to liquidate its asset, an individual who runs with non liquid assets (which is the common situation in rural areas) is less likely to be treated by that institution. This study slightly supports the above argument in that about 10% of the patients chose their institution because of *flexibility in payment system*.

Now let's see how the patients are distributed across the three HCIs. The survey data shows that public institutions (such as government owned hospital, clinics and health centers) capture 56.8% of the total patients who opt for any form of treatment and 65.5% of those who

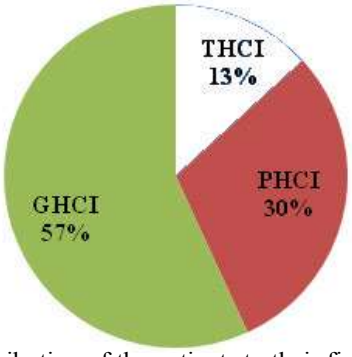

Fig. 1: Distribution of the patients to their first choice of HCIs

opt for modern medical treatment. It is commonly believed that Government HCIs are widely distributed, serve with lower service charge and poor in service quality. Contrary to these presumptions, a substantially high number of patients (69.8% of those) who chose these institutions cited its good service quality as a reason for their choice. Only 13.8% of this group of patients prefers the institutions for its proximity. This is a convincing in that the average distance to the nearby public institution is about 9.6km while it is only 6km for private institutions. Furthermore, only 6% of this group of patients chose these public institutions for its low service charge. On the other hand, many patients (79% those who choose public institutions) rated the quality as "good or even better than as other institutions.

Furthermore, it is found that public institutions attracted more educated patients: more than 66% of the patients who went to the government institution were literate but only 28% of those who went to the government institution were secondary school complete and above. The figure below shows the distribution of targeted and sampled patients across the HCIs.

It is also presumed that private institutions are sparsely distributed (rarely available especially in rural areas), but provide better quality of service than public

Table 3: Distribution of patients to their respective reasons of choosing a health institution

	Reasons for opting a given health institution					
Institution chosen	Proximity	Low waiting time	High quality	Flexible payment system	Low service charge	Total
Public	*16*	*4*	*81*	*8*	*7*	*116*
Private	*32*	*14*	*10*	*3*	*2*	*61*
Traditional	*3*	*1*	*10*	*9*	*4*	*27*
Total	*51*	*19*	*101*	*20*	*13*	204*

*Those who did not seek any treatment were excluded.

Source: Survey Result, 2004

institutions. However, only 16.4% of the patients explicitly mention "quality" as the reason of choosing the Private HCIs. This is a very low figure as compared to that of public institutions mentioned above. The basic feature of private institutions that attract most of the patients (as high as 52.5%) is its proximity followed by low waiting time (23%). The average waiting time in public institutions is about 6 hrs while in private institutions is only an hour.

Despite the government attempt to discourage traditional treatments, they were found serving about 13.2% of the targeted sampled population. High service quality and flexibility of payment system are the features that attract patients to this mode of treatment. This category of treatment attracts patients with all kinds of problems including the less serious disease like common cold, fever, cough, diarrhea, rheumation and the serious one such as cancer, heart disease, skin diseases, TB and hypertension. Although about three quarters of these group of patients feel their problem as serious or very serious, almost all (98%) of them have reported that they have completely recovered from their illness after having the treatment with the traditional healers. Moreover, patients argued that traditional healers understand ones problem easily and have a strong healing power. Even some of them are believed to understand the patients' problem without any confession and diagnosis.

Although the average distance from the patients' home to the traditional healers is about 11km, patients can travel as far as to 300km to get treatments from these healers. Accordingly, only 11% of the patients have declared proximity to chose traditional healers. The 14.5 hrs waiting time at traditional healers is by far longer than the similar figures for public and private institutions-it is at least twice that of public institutions. Surprisingly, it was found that about 45% of the patients who opt for traditional healers were literate. Moreover, 37.5% of the patients and 25% of the household head of the patients who went to these traditional healers were females. The former figure is by far less than the overall sexual distribution of female patients while the latter figure is by far higher than the overall sexual distribution of female household head in that the overall figures were 50.2% and 16% respectively. It implies that female headed households tend to send the members of the household more to the traditional healers' treatment than their male counterparts.

To wind up, many interesting findings were presented in the preceding descriptive analysis section. The reasons patients mentioned for visiting a given HCI contradicts what an ordinary person might think. For instance, one may expect public institutions are widely available but provide service of low quality than private institutions. But it was found that the customers of public institutions perceive that it provides better service quality than the private institutions. Furthermore, it is not the customers of public institutions but those of private institutions that attribute proximity as a reason of choosing their preferred HCI. How strong the effect of each variable in influencing the patients' choice of HCI will be seen in the next section.

Econometric Analysis: As mentioned and specified in the methodology section of this paper, multinomial logit model was employed to analyze the determinants of relative demand for HCIs. There are two common approaches for interpreting regression results of such categorical models: the log-odds approach and the relative risk approach. Since the latter is only the natural exponent of the former, both approaches lead top the same conclusion and hence the choice of the approaches depends on the taste and preference of the researcher. In this study, the log-odds ratio will be used to interpret the results. The regression result of the model is given in Table 4. To make the output more convenient for the discussion, Traditional HCI was set as base outcome. Therefore, the result of each outcome will be interpreted in relative to the base outcome. At the end, the impact of each variables on intra modern HCIs is evaluated.

Before going to the demand analysis of each HCI, it would be good to evaluate how significant the fitted model is. The model summary presented in Table-4 shows that the null hypothesis of all regression coefficients are equal to zero can be rejected at 1 percent significance level. In the following sections, we will look at the demand of HCIs relative to one another.

Demand of Traditional HCIs relative to Private HCIs: The regression output shown in Table 4 has two parts, labeled with the categories of the outcome variable HCI. They correspond to two equations:

$$\log(P(PHCI)/P(THCI)) = \beta_0 + \beta_1 age + \beta_2 sex + \beta_3 Educ + \beta_4 Dist + \beta_5 mcost + \beta_6 wtime + \beta_7 psv + \beta_8 wlth + \beta_9 hhs$$

$$\log(P(GHCI)/P(THCI)) = \beta_0 + \beta_1 age + \beta_2 sex + \beta_3 Educ + \beta_4 Dist + \beta_5 mcost + \beta_6 wtime + \beta_7 psv + \beta_8 wlth + \beta_9 hhs$$

with PHCI is Private HCIs; THCI is Traditional HCI; GHCI is Government HCIs; β 's being the raw regression coefficients from the output.

Table 4: The log-odds for Private and Government HCIs relative to Traditional HCIs Multinomial Logistic Regression Results

Number of obs	=	204	LR chi2(36)	=	73.37
Log likelihood	=	-156.19978	Prob > chi2	=	0.0000
			Pseudo R2	=	0.2902
HCI	Variables	Coef.	Std. Err.	z	P>z
Private HCI	age	-0.007	0.011	-0.656	0.2559
	sex	1.033	0.355	2.913	0.0018
	edu	-1.154	0.384	-3.005	0.0013
	dis	-0.053	0.020	-2.650	0.0040
	mcs	-0.052	0.013	-3.900	0.0000
	wtm	-0.391	0.089	-4.377	0.0000
	psv	0.229	0.455	0.504	0.3071
	wlth	0.000	0.001	1.000	0.1587
	hhs	0.074	0.061	1.207	0.1137
	cons	-0.211	0.631	-0.335	0.0004
Government HCI	age	-0.015	0.009	-1.607	0.0540
	sex	-0.491	0.315	-1.560	0.0594
	edu	0.557	0.328	1.698	0.0448
	dis	-0.017	0.015	-1.159	0.1232
	mcs	-0.040	0.013	-3.000	0.0013
	wtm	0.004	0.024	0.167	0.4337
	psv	0.651	0.416	1.565	0.0588
	wlth	0.000	0.001	1.000	0.1587
	hhs	-0.036	0.053	-0.675	0.2498
	cons	0.747	0.577	1.294	0.0978

(Traditional HCI is the base outcome)
Source: Stata output

In this framework, it can be seen from the regression result that age of the patient, education of the patient, distance to the HCI and waiting time at the HCI are expected to reduce the multinomial odds of Private HCI relative to Traditional HCI. More specifically, if the patient's age increase by one unit (year), the log of the ratio of the two probabilities, P(PHCI)/P(THCI), will be decreased by 0.007 unit while holding all other variables in the model constant. Put differently, holding all other variables in the model constant, the multinomial log-odds for Traditional HCI relative to privet HCI would be expected to increase by 0.007 units for a unit increase in age of the patient. But the coefficient of age is not statistically significant.

In the same talk, we can see that the multinomial logit of educated patients relative to less educated patients is 1.1544 units lower for the choice of Private HCI to Traditional HCI, given all other predictor variables in the model are held constant. Similarly, citrus paribus, a unit increase in distance, monetary cost of treatment and waiting time related to Private HCI would be expected to decrease the multinomial log-odds of Private HCIs by 0.053, 0.052 and 0.391 units, respectively, in favor of Traditional HCI. This implies that the further the Private HCI or the longer the waiting time or the higher the cost of treatment at Private HCIs, the higher the preference to Traditional HCIs. Interestingly, the estimated coefficients of these three variables are statistically significant at 1 percent level.

However, the other remaining variables such as sex of the patient, perceived severity of illness, wealth of the household and household size are expected to increase the multinomial odds for Private HCI relative to Traditional HCI. But the coefficients of all these variables are insignificant except that of sex which is significant at 1 percent level.

Demand of Traditional HCIs relative to Government HCIs: The regression output for demand of Government HCI relative to Traditional HCIs is shown in the second part of Table 4. The same approach/technique of interpretation will be used as we did in the preceding section. As can be seen from Table 4, the three demographic variables (age and sex of the patient as well as household size) are expected to reduce the multinomial log-odds of Government HCI in favor of Traditional HCI. Furthermore, it can be seen from the table that, citrus paribus, a unit increase in distance to Government HCI or monetary cost of treatment at Government HCIs would be expected to decrease its multinomial logit by 0.016 and

0.04 units, in favor of Traditional HCI. This implies that the higher the age of the patients or the higher the household size, the more attractive the Traditional HCIs be. Likewise, the female the patient, the more likely the Traditional HCIs are chosen. However, the coefficients of all these variables are insignificant except that of monetary cost of treatment which is significant at 1 percent level.

On the other hand, all other variables such as education status of the patient and waiting time at Government HCIs, perceived severity of illness and household wealth, however, are expected to increase the multinomial logits of Government HCI relative to Traditional HCI; i.e., the higher the value of these variables, the lower the preference to Traditional HCIs. Again, the coefficients of all these variables are insignificant except that of patients' education which is significant at 5 percent level.

To sum up, the multinomial logit estimation result predicted that 1) the older the patient gets, the more he/she will prefer Traditional HCI to both the modern HCIs; 2) the dearer the cost of treatment at modern institutions, the higher the preference for Traditional health care services; 3) the further the modern health care providers, the more attractive the Traditional HCIs are 4) the wealthier the household, the more they prefer modern HCIs; and 5) the higher the perceived severity of illness, the more preference for modern HCIs.

CONCLUSIONS AND RECOMMENDATIONS

The study has examined the relative demand of three health care provider institutions: Traditional, Private and Government HCIs. While the last two refers to modern health care providers, the first one includes all types of non-modern health care providers. Although the modern health care providers attract majority of the patients under study, the Traditional health care providers serve a number of rural community. The types of diseases treated at Traditional health care providers ranges from a simple headache to TB. Most patients treated at Government institutions confess that its high service quality and low monetary cost are the main reason for preferring the institution. Proximity and low waiting times are the most desirable characteristics of the Private institutions. Flexible payment system and low service charge are the attractive features of Traditional HCIs.

It has been observed from the multinomial regression output that a number of socioeconomic variables contributed for the demand of Traditional HCIs. Age of the patient, monetary cost of treatment and distance to the modern HCIs, are the most important variables that increase the probability of patient's choice of Traditional HCI. Household wealth and severity of the illness would be expected to reduce the demand for Traditional HCIs.

The descriptive and econometric analysis shows that the mere existence of HCIs, which by itself is insufficiently available in the study area, does not automatically guarantee the improvement of the societies health status. The health status of the society will be improved only if the society has developed interest/preference to utilize the resource. To improve rural people's utilization of modern health services, investment on quality of the service being offered should be the point of concern. Traditional health care providers are serving all groups of the community-poor, rich, young, elder, male, female, etc. But marginalizing and denying recognition leads them operate behind the vial that could be more risky. Therefore, instead hampering Traditional health care providers, governors and policy makers are advised integrate modern and Traditional health care provision. The other painstaking fact reflected in the study was the role of monetary cost of treatment and payment system in demand of HCIs. More often than not, rural households, even if wealthy, face serious difficulty in liquidating their assets. The challenge is more severe when a household member gets sick. Hence a more flexible (in kind and time) payment would improve the utilization of modern health service and health status of rural household.

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