

# Healthcare Seeking Behavior in Nigeria

Noah Olasehinde<sup>1</sup>

## Abstract

*This paper examines the healthcare seeking behavior of household members in Nigeria, specifically focusing on the sources of healthcare services. Traditional and orthodox sources have coexisted in the provision of healthcare services, but this study goes further to show that orthodox services can be accessed through trained healthcare professionals (HCPs) or patent medicine vendors (PMVs); traditional services are mainly offered by herbalists. There are Christians and Muslims who consult faith homes/centers that operate purely on faith and prayer for healing. An estimation model, which involved health-seeking decision, was applied and it was estimated through nested multinomial logit (NML) technique. Data were drawn from the 2010 Harmonised Nigeria Living Standards Survey (HNLSS) conducted by the National Bureau of Statistics. Results demonstrate that individuals tend to consult traditional, PMVs and churches/mosques ahead of HCPs as a result of age and urban/rural locations. The demand for HCP care increases with household income as well as the number of household members.*

## Keywords

*Healthcare seeking behavior; healthcare services; nested multinomial logit; Nigeria*

## Introduction

A healthy populace is paramount towards the achievement of developmental goals of any nation. Health is a function of the overall integrated development of the sociocultural, economic, educational, and political factors that impact people's lives and livelihoods (Sekhar, 2006). Preventive, curative and other healthcare services are provided to maintain good health so as to improve individuals' and households' health status and quality of life. Suhrcke, McKee, Arce, Tsovala & Mortensen (2006) offer the following four ways through which healthy individuals influence the economy:

*"They might be more productive at work and so, earn higher incomes; they may spend more time in the labor force, as less healthy people take sickness absence or retire early; they may invest more in their own education which will increase their productivity; and they may save more in expectation of a longer life (for retirement), increasing the funds available for investment in the economy." (p. 1017)*

Indeed, health is closely interlocked with economic growth and sustainable development of a nation.

It has been further confirmed that investment in health yields huge benefits for economies. The growth rates of selected developing nations from 1965 to 1994 show that each 10%

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<sup>1</sup> Health Policy Training and Research Programme, Department of Economics, University of Ibadan, Ibadan, Nigeria email: lanfaithfulness@hotmail.com

enhancement in life expectancy at birth (LEB) is linked with an increase in economic growth of 0.3 to 0.4 percentage points per year, other things being equal. The difference in annual growth, therefore, accounted for by LEB between a typical high income country and a typical least-developed country is about 1.6 percentage points per year (Commission on Macroeconomics and Health, 2001). Globally, it is the responsibility of governments to provide for the health of citizens (Craigwell, Bynoe & Lowe, 2012), especially poor households, which are not usually financially protected, particularly against substantial costs of ill health (Olasehinde & Olaniyan, 2017). Such costs include both direct expenses, such as out-of-pocket payments (OOP), which refers to the cost borne by beneficiaries at the time of use of a particular healthcare service. For medical treatment, and indirect costs, such as the loss of income from an inability to work or travel to a healthcare facility. These expenses often constitute a large share of a household disposable income and drive many deeper into poverty (Leive & Xu, 2007). Health expenditures can be catastrophic, which happens when a household's health expenditure exceeds 40% of income remaining after subsistence needs have been met (Séne & Cissé 2015; Su, Kouyaté & Flessa, 2006).

Currently in Nigeria, there is a federally funded social health insurance scheme, National Health Insurance Scheme (NHIS). Nonetheless, households contribute over 60% of total healthcare expenditure (Onwujekwe et al., 2010). With lopsided income distribution and widespread high poverty incidence, the health of poor households, who are unfortunately in the majority, is definitely compromised. When people experience illnesses, many often resort to only prayer, engage in self-medication or visit untrained clinicians.

Healthcare system is comprised of all personal healthcare services including prevention, diagnosis, treatment of diseases, illnesses, injuries and other physical and mental impairments in humans and rehabilitation towards a holistic restoration of health. It also includes institutions and the workforce that provide these services as well as individuals, government, private organizations and other agencies that finance different services. Summarily, a healthcare system is made up of all the sources from which an individual seeks healthcare and upon which payments are usually made accordingly (Olasehinde & Olaniyan, 2017).

The extent of healthcare spending, as observed in many developing countries, depends not only on accessibility factors (proximity and cost), but also on patterns of health seeking behavior, defined as a constellation of activities and beliefs exhibited by individuals and their social circle in response to bodily indications perceived as symptoms (Jegede & Odumosu, 2003). The decision as to whether and where to consult starts well before arrival in a healthcare facility and in the face of numerous and potentially confusing sources, making an instant choice becomes inevitable.

In the face of inadequate healthcare facilities and decreasing quantity and quality of healthcare professionals, a big dilemma still facing a number of developing countries today is how to ensure that those who need healthcare services are able to access it. However, efforts to overcome this barrier had ensured the coexistence of the two major sources of healthcare services, which are the traditional and orthodox sources (Agyare, Mensah & Osei-Asante, 2006; Bello, 2005; Dalal, 2005). Although, several authors agreed that traditional medicine existed long before the arrival of orthodox medicine.

In Nigeria, orthodox healthcare services can be accessed through healthcare professionals (HCPs), who have received formal training, or informal drug sellers, popularly known as patent medicine vendors (PMVs). These are different from pharmacists because they typically run outlets for over the counter (OTC) drugs. In other words, they sell medicines directly to a consumer without a prescription from any healthcare professional, while pharmacists run outlets for all drugs (both prescribed and non-prescribed). This is so because PMV licensure

neither requires formal pharmacy training nor any level of education, which makes their knowledge and stocking of recommended treatments for illnesses not well understood (Treleaven, Liu, Prach & Isiguzo, 2015). On the other hand, those offering traditional healthcare services include herbalists, divine healers, soothsayers, midwives, spiritualists, bone-setters, mental health therapists and traditional surgeons (Malu, 2010).

Some Christians and Muslims believe that healing occurs supernaturally as a result of prayer or divine intervention, rather than through the use of medicine or the involvement of physicians. As such, there are churches and mosques that run faith homes/centers where people of different races and creeds converge whenever they are ill or injured (Oosthuizen, 1992). The healing offered in these centers are purely prayer and faith. Regrettably, while this route was initially promised to be a free alternative to orthodox healthcare, it is at present being paid for (Owoeye, 2012). Sources of healthcare in Nigeria, therefore, can be divided into HCPs, traditional, PMVs and church or mosque. These sources can either be consulted concurrently or consecutively based on the constraints and opportunities at different stages of illness. The superiority or potency of each of the sources is not only subjective but dependent mainly on individuals' value-systems.

However, only healthcare services offered through healthcare facilities (a vital component of HCP care) are currently being subsidized by the government and private firms through health insurance. Those who utilize other sources still grapple with huge OOPs. In light of the present healthcare system—and bearing in mind that a healthy populace is beneficial to developing countries like Nigeria—it is essential to ask Nigerians where they seek healthcare and what influences how much they pay. This paper examines the sources of Nigerian healthcare services.

## Literature Review

Health seeking behavior is a dynamic concept because it depends on life cycle patterns as well as the physical and psychological needs of individuals that determine the demand for health. The existence of certain conditions and scenarios that usually dominate health care consumption decisions across the world makes the demand for health a derived demand. More so, health is not only demanded on its own, but also to minimize time lost to ill-health. Hence, healthcare demand analysis is premised on the neoclassical theory of rational consumer and constrained utility maximization (Damrongplasit & Wangdi, 2016).

During ill-health, the choice of a healthcare provider for consultation is a discrete decision of an individual that is consistent with qualitative choice models. Within this context, individuals are assumed to drive utility directly from the health obtained from the consumption of medical services, as being derived from other consumption goods. The model is based on the idea that an individual chooses the outcome that maximizes the utility gained from the choice (Lemma, 2013).

However, given the alternatives available to an individual, the preference for a particular provider depends, among other things, on geographical factors, in terms of the distance to provider and the population distribution of providers. Socioeconomic factors also play a very important role. For instance, a provider may be located at a far distance, but when an individual's willingness (considering all the other mentioned factors constant) to secure good health as a commodity is backed by factors—like personal status, means of payment, level of education, religious beliefs—the distance may not be a deterring factor. The interrelationship between these assumed variables work together (marginally) to influence the decisions of

individuals in the demand for healthcare as a commodity (Gotsadze, Bennett, Ranson & Gzirishvili, 2005).

In this study, an individual can choose among the four alternatives stated earlier (HCPs, traditional, PMVs and church/mosque). The choice among the four depends on features of the alternative sources, such as proximity and quality, and characteristics of the patients themselves, such as insurance coverage, income, health status, education, age and gender as previously affirmed for Rural China by Yip, Wang and Liu (1998).

Several researchers have conducted empirical investigations into household health seeking behavior expenditure allocation with emphasis on the sources of healthcare services as well as the determinants of the health expenditure. Studying health seeking behavior for common health problems among older adults, and where they go for medical care when sick and who is financially responsible for their medical needs, Odaman and Ibiezugbe (2014) found that majority of the older people (73.7%) visited hospital/health centers when they felt sick while the remaining percentage either use local herbs or orthodox medicine, visit traditional healers, religion/worship centers and chemist shops respectively. Specifically, more older men displayed poor health seeking behavior and low health literacy.

Tegegne & Legese (2014) identified the treatment alternatives sought by the poorest of the poor (PoP) in Addis Ababa, Ethiopia to manage ill health, also in relation to various demographic and behavioral variables. The PoP used various healthcare options, including modern healthcare that they can use for free in immediate response to their sicknesses. It is when the symptoms reach the critical stage that they seek help from trained allopathic physicians, and sociodemographic factors are believed to have an effect on healthcare seeking behavior. Other factors that influenced household healthcare seeking behavior in Ethiopia include residence location, marital status, monthly income, perceived severity and acute duration of disease, as well as distance from facilities. Overall health seeking behavior was satisfactory, but urban households seek health care more often than rural households (Begashaw & Tesfaye, 2016).

Lastly, there seems to be consensus in empirical literature on other determinants that characterize healthcare seeking behavior. These include household headship and level of education (Musah & Kayode, 2014), as well as household size, distance, healthcare total cost and quality of access route (Awoyemi, Obayelu & Opaluwa, 2011).

## **Methodology**

### **Data and Sources**

This paper utilizes the Harmonized Nigeria Living Standards Survey (HNLSS), a cross-sectional data set collected by National Bureau of Statistics (NBS) in 2010. HNLSS is the most recent national household living standards survey conducted in Nigeria, it is the latest in a series of poverty survey instruments developed by NBS and its development partners for regular monitoring of welfare and social trends for different population groups of the society especially the poor. It is an abridged survey that serves as a follow up to both the Core Welfare Indicator Questionnaire Survey (CWIQ 2006) and the Nigeria Living Standard Survey (NLSS 2004). The survey employed a 2-stage cluster sampling design in which enumeration areas (EAs) constitutes the 1<sup>st</sup> stage sample while the Households from the EAs make up the 2<sup>nd</sup> stage sample. Specifically, HNLSS covers the entire Nigeria population, systematically sampling 10 Households in another sample of 10 EAs per Local Government Areas (LGA) (as demarcated by the National Population Commission for the 2006 population census). Each

EA has equal probability of selection. This generated 100 households per LGA and 77,400 households nationally including the Federal Capital Territory (FCT) Abuja. The eventual data were collected from 332,938 individuals spread across 73,329 households covering the whole country. The study made use of both household roster and health components sections of the HNLSS. The health components were meant for individuals who consumed health care service 2 weeks preceding the survey and the result shows a substantial increase in the percentage of Nigeria population who sought for health care service from different sources during illness compared to the NLSS 2004. In all, 23,774 individuals from 6,774 households spend on healthcare services, while only 12,310 individuals stated the source of their healthcare services. These constituted the sample of the study.

## **Variables**

In examining the healthcare seeking behavior of household members in Nigeria with specific focus on the sources of healthcare services, the dependent variable is the probability of an individual consulting each of the four sources of healthcare. For the analysis, the study identified four options which includes HCPs, traditional, PMVs and church/mosque. The explanatory variables are categorised into individual and household characteristics. Individual variables are gender, age, religion, education and employment status. Education (highest qualification obtained from Western education) indicates an individual's market value, while employment status captures the opportunity cost of time to be taken into account for different decision stages. Employment was measured as wage-employed, self-employed, unemployed and those not available for work. Broad definition of unemployment was applied, this includes all those in working age group (15-60 year olds) who claim to want work, actively seeking employment, but not currently employed. Those younger than 15 and older than 60 are categorized as non-working age group (those not available for work).

Additionally, the household variables included are location of the households, household per capita expenditure, household size and household headship which are meant to capture a household's current spending level and spending capability, as well as its consumption preferences. Household headship is included in the analysis because their decision is assumed to influence the choice of other members of the household, especially disadvantaged members who cannot decide on their own. Also, the education and gender of the head play vital roles, because a household with an educated head tends to be more aware of its members' health status.

The individual and household variables are complemented by four control variables which are the proportion of households occupying a whole building, the proportion of households with an installed flushing toilet, proportion of households with safe drinking water and time to closest clinic (in minutes). The first, second and third reflect the household sanitary conditions; enhanced sanitary conditions will likely reduce an individual's chances of getting sick, which consequently tends to reduce the medical bill. The last variable determines the possibility of getting treatment as soon as the need arises with those living far away from the health institution having a lower chance of getting treatment. Hence, all the analyses will be conducted by controlling for these household effects.

## **Model and Estimation Technique**

The empirical model adopted for this study examines the decision stage available to individual members of household who are ill or injured regarding where to seek treatment and consultation. The assumption is that different factors affect the decision of the individual at different levels of health seeking activities. The model examined the effects of household

and individual variables on healthcare seeking behavior taking into consideration, explicitly, the decision on the source of healthcare services consulted. Again, the available options are HCPs, traditional, PMVs and church/mosque.

The model, which is examined through probabilities, is presented as follows:

$$S_j = \alpha + \beta \cdot w + \rho \ln\left(\frac{x_i}{n_i}\right) + \tau \ln n_i + \eta z_i + u$$

where

- $S_j$  is the four sources of healthcare - HCPs, traditional, PMVs and church/mosque;
- $w$  is a vector of individual regressors that include location, religion, gender, age, education and employment status;
- $x_i$  is total expenditure of household  $i$ ;
- $n_i$  is household size;
- $\ln(x_i / n_i)$  is natural logarithm of household per capita expenditure;
- $z_i$  is gender of the household head;
- $u_i$  is the error term; and
- $\alpha, \beta, \rho, \tau$  and  $\eta$  are the parameters to be estimated.

This study adopts multinomial model as the estimation techniques. In the field of health economics, there used to be application of multinomial models to the healthcare provider choice. They are relevant to discrete dependent variables that could take unordered multinomial outcomes, for example,  $y = 0, 1, 2, 3, \dots$ , that correspond to a set of mutually exclusive choices. The numerical values of  $y$  are arbitrary and do not involve any natural ordering of the outcomes.

The outcomes are the four sources of healthcare, and the individual has to choose one from the mutually exclusive treatment modes. The choice often depends on features of the available alternatives: quality of service, convenience, price and so on, as well as the features of individuals, such as age, gender, education level, income level and others. However, some of the characteristics of the alternatives may vary across individuals as well, and this could not be a natural ordering of the choices applicable to all individuals in all circumstances. Nevertheless, the specification is restrictive and the implication of this is that the error terms are completely independently distributed, which is also known as independence of irrelevant alternatives (IIA) property.

The IIA states that for any individual, the ratio of probabilities of choosing two alternatives is independent of the presence or attributes of any other alternative. The premise is that other alternatives are irrelevant to the decision of choosing between the two alternatives in the pair. It further ensures that the model can be estimated and applied to cases where different members of the population face different sets of alternatives (Hensher & Greene, 2002). This implies addition or removal of an alternative from the choice set without affecting the structure or parameters of the model.

Since the error terms in the choices are not independently distributed, the multinomial logit model (MLM) becomes inappropriate and to this extent, this study specifically adopts the use of the nested multinomial logit model (NMLM) estimation technique. NMLM allows groups of alternatives to be similar to each other in an unobserved way. Structure that partitions the alternatives into groups (nests) is thereafter specified. This can be generalized to various nesting levels by grouping the alternatives within such a nest in sub-nests and so on while the correlation between the stochastic terms in the independent choices is assumed to be zero, the error terms within the choices are allowed to be non-zero (Hoffman & Duncan, 1998). For identification of the nested multinomial logit model coefficients, one of the outcomes must be

fixed as a reference category and the results would then be interpreted in relation to this reference category (Gujarati, 2004). All estimations were undertaken using STATA 11 software.

## Results

Table 1 provides the detailed description of the variables by selected characteristics and emanated information shows that orthodox consultation dominates other sources. With regards to the source of healthcare, from the 12,310 who were eligible for the present study, most of them (57.1%) consulted healthcare professionals, this was followed by those who consulted patient medicine vendors (22.5%). 11.9% of the respondents visited church/mosque while 8.6% consulted traditional practitioners. Most (52.3%) respondents female, living in rural areas (77.5%), were in monogamous union (46.7%). More than half of the respondents declared to be Christian (58.4%), did not have formal education (50.4%), are mostly self employed (41.3%) and headed in majority (71.3%) by men.

**Table 1:** Variable Description by selected characteristics (n=12,310)

Variable	Description	Observation (%)	A-priori
<i>Dependent</i>			
HCP	Those who consult healthcare professionals	7,023 (57.1)	
Traditional	Those who consult traditional practitioners	1,063 (8.6)	
PVM	Those who consult patient medicine vendors	2,763 (22.5)	
Church / mosque	Those who consult church/mosque	1,461 (11.9)	
<i>Independent (Categorical)</i>			
<i>Sex</i>			
Male	=1 if male, 0 otherwise	5,876 (47.7)	±
Female	=1 if female, 0 otherwise	6,434 (52.3)	±
<i>Place of residence</i>			
Urban	=1 if urban resident, 0 otherwise	2,774 (22.5)	±
Rural	=1 if rural resident, 0 otherwise	9,536 (77.5)	
<i>Marital status</i>			
Never married	=1 if never married, 0 otherwise	5,224 (42.4)	±
Monogamous	=1 if monogamous, 0 otherwise	5,754 (46.7)	±
Polygamous	=1 if polygamous, 0 otherwise	39 (0.3)	-
Divorced / separated / widowed	=1 if divorced, separated or widowed, 0 otherwise	1,217 (9.9)	±
Informal / Loose Union	=1 if in informal or loose union, 0 otherwise	76 (0.6)	±
<i>Religion</i>			
Christianity	=1 if Christians, 0 otherwise	7,183 (58.4)	±
Muslim	=1 if Muslim, 0 otherwise	4,937 (40.1)	±
Traditional	=1 if traditional worshipers, 0 otherwise	135 (1.1)	±
Other religion	=1 if other religion, 0 otherwise	55 (0.5)	±
<i>Education</i>			
Non-formal	=1 if non-formal education, 0 otherwise	6,191 (50.4)	+
Primary education	=1 if primary education, 0 otherwise	3,767 (30.6)	±
Secondary education	=1 if secondary education, 0 otherwise	1,683 (13.7)	±
Post-secondary education	=1 if post-secondary education, 0 otherwise	644 (5.2)	±
<i>Employment</i>			
Paid job	=1 if wage employment, 0 otherwise	700 (5.8)	±
Self-employed	=1 if self-employment, 0 otherwise	3,511 (28.9)	-
Unemployed	=1 if unemployed, 0 otherwise	3,256 (27.2)	+
Not available	=1 if not available for employment, 0 otherwise	3,275 (26.9)	+
<i>Household headship</i>			
Male household head	=1 if household head is male, 0 otherwise	2,786 (71.3)	±
Female household head	=1 if household head is female, 0 otherwise	1,123 (28.7)	±
Age	Age expressed in years Mean (S.D)	30 (24.0)	±
PcExp	Per capita household expenditure Mean (S.D)	432387.6 (19300000)	±
HHS	Number of household members (size) Mean (S.D)	5.3 (2.6)	+

Also, it is very instructive that the average age of the respondents was 30 years; the per capita expenditure is 432,387.60 Naira on average, and there is an average of five persons per households.

To address the objective set for this study, which seeks to examine the sources of Nigerian healthcare services, multinomial logistic regression was applied. This is due to the nature of maximum likelihood analysis where the dependent variable is dichotomous.

The starting point was to construct the dependent variable into four categories of available health care sources: HCPs, traditional, PMVs or church/mosque. The odds ratios for multinomial logistic regression compare outcomes across the different categories of healthcare sources, indicating how the probability of an individual seeking healthcare in particular source – such as in traditional, PMVs or church/mosque – are determined by the explanatory variables, relative to being in the base category of HCPs source.

Table 2 gives the outcomes of the multinomial logistic regression analysis that estimates the odds that respondents consulted traditional, PMVs or church/mosque, in comparison to the odds that they consulted HCPs (reference category); hence the results have to be interpreted relative to the reference outcome. The reference categories for the categorical variables are those with highest observations among the relevant categories. These are rural, male, monogamous marital status, Christianity religion, non-formal education, self-employed and male household head.

**Table 2:** Odds ratios of the multinomial logistic regression analysis of the health care sources

	Traditional	PMVs	Church/Mosque
Age	1.04 (1.03-1.05)**	1.01 (1.00-1.02)**	1.05 (1.04-1.06)**
Age squared	1.00 (1.00-1.00)**	1.00 (1.00-1.00)**	1.00 (1.00-1.00)**
Sex			
Female	0.84 (0.72-0.97)*	0.98 (0.88-1.08)	1.19 (1.04-1.36)*
Place of residence			
Urban	0.71 (0.58-0.86)**	1.05 (0.93-1.19)	0.64 (0.53-0.77)**
Marital status			
Never Married	1.10 (0.79-1.54)	1.19 (0.95-1.49)	0.76 (0.57-1.01)*
Polygamous	0.64 (0.15-2.78)	1.10 (0.50-2.43)	0.69 (0.15-3.15)
Divorced / separated / widowed	1.60 (1.15-2.24)**	1.27 (1.01-1.59)*	1.64 (1.18-2.28)**
Informal / loose Union	1.73 (0.82-3.64)	1.09 (0.60-1.97)	0.72 (0.31-1.67)
Religion			
Muslim	1.01 (0.86-1.18)	0.44 (0.40-0.50)**	0.17 (0.14-0.2)**
Traditional	2.61 (1.61-4.24)**	1.36 (0.90-2.05)	0.00 (0.00-0.00)
Other religion	2.02 (0.80-5.07)	1.23 (0.64-2.38)	0.57 (0.19-1.69)
Education			
Primary education	0.73 (0.61-0.87)**	1.05 (0.93-1.18)	1.10 (0.94-1.29)
Secondary education	0.55 (0.42-0.71)**	0.99 (0.84-1.17)	0.92 (0.75-1.14)
Post-secondary education	0.42 (0.28-0.65)**	0.62 (0.48-0.79)**	0.68 (0.49-0.93)*
Employment status			
Paid job	0.52 (0.34-0.79)**	0.98 (0.79-1.21)	1.13 (0.87-1.47)
Unemployed	1.01 (0.80-1.28)	0.98 (0.82-1.16)	1.19 (0.95-1.48)
Not available	1.15 (0.91-1.45)	1.00 (0.84-1.18)	0.78 (0.62-0.98)*
Household headship			
Female household head	0.47 (0.32-0.69)**	0.75 (0.59-0.95)*	0.37 (0.26-0.53)**
lnHHS	0.69 (0.59-0.8)**	0.50 (0.45-0.56)**	0.50 (0.44-0.58)**
LnPcExp	0.67 (0.61-0.75)**	0.58 (0.54-0.63)**	0.41 (0.37-0.45)**
<b>Observation</b>	11570	<b>LR chi<sup>2</sup>(69)</b>	1754.73**
<b>Log likelihood</b>	-12012.995	<b>Pseudo R<sup>2</sup></b>	0.0681

Notes: 95% CI of OR are in parentheses. \* and \*\* represent  $p < 0.05$  and  $p < 0.01$  respectively.

Reference categories (regressors): Sex = male; Place of residence = rural; Marital status = monogamous; Religion = Christianity; Education = non-formal; Employment status = self-employed; Household headship = male household head



Out of 18 variables included in modelling the multinomial regression, 12 were found to be important for traditional source, 8 for PMVs and 11 for church/mosque. However, some variables that were found to be vital for all the sources include age, single-spouse household (separated, divorced and widowed), post-secondary education, household size, household expenditure and household headship. Among these, only two covariates, age and single-spouse household revealed odds that were greater the three sources relative to HCP, but the reverse was the case for post-secondary education, household size, household expenditure and household headship as their respective odds were lower comparing the sources relatively to HCP.

In specific terms, it was revealed that as people get older, odds of consulting traditional PMVs and church/mosque are 1.04 (95% CI 1.03–1.05), 1.01 (95% CI 1.0–1.02) and 1.05 (95% CI 1.04–1.06) times respectively higher than HCP consultation. In the same vein, the odds of being in a single-spouse households relative to monogamous household are 1.60 (95% CI 1.15–2.24), 1.27 (95% CI 1.01–1.59) and 1.64 (95% CI 1.18–2.28) times higher for traditional, PMVs and church/mosque respectively than orthodox sources. Conversely, the odds of having formal education in relation to non-formal education are 0.42 (95% CI 0.28–0.65), 0.62 (95% CI 0.48–0.79) and 0.68 (95% CI 0.49–0.93) times lower for traditional, PMVs and church/mosque respectively than orthodox sources. This same trend is observable for the three selected household characteristics – household size, household expenditure and household headship. For household size, the odds of having additional household member are 0.69 (95% CI 0.59–0.80), 0.5 (95% CI 0.45–0.56), 0.5 (95% CI 0.44–0.58) times smaller for traditional, PMVs and church/mosque respectively than HCP.

Also, the odds shows that the increasing household expenses reduces traditional, PMVs and church/mosque consultation by 0.67 (95% CI 0.61–0.75), 0.58 (95% CI 0.54–0.63), 0.41 (95% CI 0.37–0.45) times relative to HCP consultation. The odds of being in a female-headed household relative to a male-headed household are 0.47 (95% CI 0.32–0.69), 0.75 (95% CI 0.59–0.95), 0.37 (95% CI 0.26–0.53) times lower for traditional, PMVs and church/mosque consultations than for HCP consultation.

Some of the covariates are specifically important to each of the sources of health care. The OR are 0.84 (95% CI 0.72–0.97) times lesser for females than for males for consulting traditional source in relation to HCP while they are 1.19 (95% CI 1.04–1.36) times greater for females than for males in visiting church/mosque than HCP. Traditional consultation in relation to HCP are 0.71 times lower for those living in urban centers than those in rural area. Similarly, visit to church/mosque in relation to HCP are 0.64 times also lower for those living in urban centers than those in rural area.

The effect of religion is mixed, the odds are 0.44 (95% CI 0.4–0.5) times lower for PMVs consultation in relation to HCP for Muslims than for Christians while the odds are 0.17 (95% CI 0.14–0.2) times lower for church/mosque consultation in relation to HCP for Muslims than for Christians. It is very instructive to note that all levels of formal education reduces the odds of consulting traditional than HCP and the more respondents acquire further education the less the OR becomes. traditional consultation in relation to HCP are 0.52 (95% CI 0.34–0.79) times lower for those in paid employment than those who are self-employed, whereas the odds of visiting church/mosque in relation to HCP consultation are 0.78 (95% CI 0.62–0.98) times lower for those who are not available for employment than those who are self-employed.

## Discussion and Conclusion

This study empirically analyzes the sources of healthcare services in Nigeria. The identified sources are healthcare professionals (HCPs), traditional, patient medicine vendors (PMVs) and church/mosque, and the results indicate that it is not possible to assume preference to one source over others, at least, based on their patronage. Among the variables that determines the patronage of the sources, age, marital status, religion, household income and size were significant for HCP care; age, religion, secondary education, household income and size determine traditional care; age, location, religion, primary education, household income and size were the drivers for PMVs; and age, gender, religion, primary and secondary education, household income and size influenced care sought in church/mosque.

The results suggest that individuals have the tendency to seek care from traditional, PMVs and churches/mosques ahead of HCPs as a result of age. Higher educational attainment is associated with a lower likelihood of seeking healthcare. More noticeable, however, is the significantly increasing demand for healthcare facilities (hospital, pharmacy and health post) at increasing education level of secondary school and post-secondary school level relative to traditional care. For geographical locations, the outcome is not surprising since urban dwellers are more educated, have higher incomes and more physical access to HCP care than their counterparts do in rural locations. Su et al. (2006) and Hjortsberg (2003) had similar findings for Burkina Faso and Zambia, respectively, where people in urban areas were found to be more likely to utilize HCPs and less likely to utilize traditional health care practitioners or self-medication.

The existence of either or both spouses in the household influences the choice of where to seek healthcare in Nigeria. Though, the demand for healthcare from PMVs and churches/mosques for education levels lower than post-secondary was not significantly different from that of individuals with no formal education, the demand for HCP care increases with household income as well the number of household members. All of these confirmed that the nature and characteristics of a household greatly impact the health and survival of each individual.

However, this study reveals the existence of health seeking behavior that can be influenced in the long run. For example, demand for the various healthcare alternatives depend on education and income (consumption expenditure) among other factors. This supports that of Hjortsberg (2003), who reported greater likelihood of utilizing HCPs among the more educated in Zambia. It is possible to alter these aspects of health seeking behavior through policies that are long-term in nature. Specifically, investments in health infrastructure could increase availability and reduce cost of utilizing HCPs. Also, efforts should be made to increase the availability and affordability of formal education since increasing levels of formal education significantly reduces healthcare expenses.

Certain number of weaknesses identified in the course of this research are traced to the data challenges of the HNLSS. The dataset is static in nature therefore preventing an examination of the dynamics of healthcare seeking behavior over time. It is also noted that cultural beliefs likely have strong influences on healthcare expenditure, and this relationship is difficult to measure because race/ethnicity is not captured in the survey. Additionally, the survey is only limited to those who were sick or injured in the last two weeks preceding the survey, leaving out those whose sickness occurred before the two weeks and those who fell sick or got injured after the survey. Finally, the scope of health expenditure is limited to curative care, excluding expenses on preventive care and rehabilitative care, as well as other cost-saving services. Since Nigeria is divided into six geopolitical zones, future research could also consider zonal disparities in household health seeking behavior.

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