Factors Influencing the Choice of Private Health Care Providers in Uganda

Medard Turyamureba[⁑], Bruno L. Yawe[†] and John Bosco Oryema[‡]

Abstract

This paper examines the factors influencing the choice of private health care providers in Uganda. Although studies indicate that patients are price sensitive, many (63%) Ugandans prefer private health facilities to less expensive government health facilities. This is inconsistent with the government policy of abolishing user fees in government health facilities. Using the 2019/20 Uganda National Household Survey data, a probit regression model was estimated. The findings show that ownership of health insurance, household welfare and type of employment positively influenced the choice of private health facilities. Distance to the health facility negatively affected the utilisation of private health care providers. Additionally, the sex of the patient and region of residence were significant determinants. There is, therefore, a need for a national health insurance scheme and coordination between public and private health care providers to enable poor and vulnerable patients to visit modern health facilities.

Keywords: determinants, healthcare provider choice, probit, private healthcare, policy, Uganda

JEL Classification Codes: C25, I11, I12, I18

[⁑] Corresponding author: PhD Student, School of Economics, Makerere University and works with Parliament of Uganda, P.O. Box 7178 Kampala, telephone: +256 783015608, email: tmedard2@gmail.com

[†] Associate Professor, School of Economics, College of Business and Management Sciences, Makerere University, email: byawe2010@gmail.com

[‡] Senior Lecturer, School of Economics, College of Business and Management Sciences, Makerere University, email: jboryema@gmail.com

Introduction

The population's health status and economic growth are crucial determinants of human welfare. On the one hand, it is challenging to generate economic growth without solving health problems; on the other hand, improving the population's health without creating economic growth is not easy. The Agenda 2030 for Sustainable Development with 17 Sustainable Development Goals (SDGs) was adopted by the United Nations Member States, including Uganda, in September 2015 to take care of the critical development goals (Republic of Uganda, 2018b). This agenda was adopted alongside continental and regional development Agendas, The African Agenda 2063, The East African Community Vision 2050, and The Uganda Vision 2040.

In the last three decades, the Government of Uganda has implemented several reforms in the health sector to make essential health services provision more efficient, affordable and accessible to all. These included: the decentralisation of health service delivery, the autonomy of public hospitals as well as the introduction of health financing reforms like community-based health insurance and removal of user fees in public health facilities (Republic of Uganda, 2015b; Republic of Uganda, 2010). In 2001, the government removed user fees in all government health facilities except at the hospital level, where a dual system exists (Nabyonga Orem et al., 2011).

However, health outcomes are still not impressive. Maternal and child mortality rates remain very high at 336 per 1,000 live births and 64 per 1,000 live births, respectively, far above the sustainable development goal targets (Republic of Uganda, 2017). Additionally, many Ugandans still experience very high out-of-pocket expenditure on health, contributing 41% of the total health expenditure (Republic of Uganda, 2018c). This limits access to health care and creates financial risks, especially for the poor, who allocate much of their scarce resources to healthcare.

In Uganda, healthcare services are provided by both public and private healthcare providers. In 2018, Uganda had 6,937 health facilities, of which 45% were government-owned, 15% were private and not-for-profit, and 40% were private-for-profit (Republic of Uganda, 2018a). In 2019/20, 85% of the individuals who fell sick or were injured sought health care, and 15% did not seek health care (Republic of Uganda, 2021). Most individuals who were ill and did not seek care were hindered by the cost of health care, distance to the health facility, and poor quality of health care services.

Although studies such as Qian *et al*. (2009), Sahn *et al.* (2003), and Ssewanyana *et al.* (2004) indicate that patients are price sensitive, many Ugandans prefer private health facilities to less expensive government health facilities (Republic of Uganda, 2018d, 2021). In 2019/20, almost 63% of the individuals who fell sick or were injured sought care from private health facilities, while 37% sought care from public health facilities (Republic of Uganda, 2021). This is inconsistent with the policy of abolishing user fees but also contradictory given that nearly 20%, equivalent to 8.3 million people, live in poverty (Republic of Uganda, 2020, 2021). This has implications for policy reforms on reducing the cost of health care and enhancing economic development. For instance, improved health outcomes are necessary for developing countries

to break the poverty cycle. It is, therefore, vital to understand why many people prefer to use expensive private healthcare providers compared to public healthcare providers that are accessible and affordable. This paper sought to investigate factors influencing the choice of private healthcare in Uganda.

The remainder of this study is organized as follows. Section 2 reviews the literature. Section 3 describes the methodology of this study. Section 4 reports and discusses the estimated results. Section 5 concludes.

Literature review

2.1 Theoretical review

Theoretically, demand for health and health care follows consumer utility theory. According to Grossman (1972), demand for health care is derived from the demand for health, i.e. health care is demanded as an input into the production of health. Health care is both a consumer good that yields direct satisfaction and an investment good that yields satisfaction indirectly through increased productivity, fewer sick days, and higher wages (Grossman, 1972). Health is therefore demanded because it is a source of utility and also affects production or income; for instance, ill health reduces one's ability to earn and be happy. When an individual invests in health care, human productivity is improved, and the number of health days increases for other productive activities. Healthier people are happier since their welfare is improved and also enhances the quality of human capital (Grossman, 1999; Takudzwa *et al.*, 2020).

According to the human capital theory, an individual applies health inputs as an investment in health capital. The level of health of an individual is not exogenous but depends at least in part on the resources allocated to its production, such as medical care, exercise, diet, education, smoking, and alcohol consumption, among others. Medical care is considered the most important; health is a function of medical care.

2.2 Empirical review

Several empirical studies have investigated the demand for health care by individuals or households when faced with an illness or injury in many countries. These include Wellay *et al.* (2018) and Asteraye (2002) in Ethiopia; Mwami and Oleche (2017); Awiti (2014) and Muriithi (2013) in Kenya; Qian, Pong, Yin, Nagarajan, and Meng (2009) in China; Halasa and Nandakumar (2009) in Jordan; Awoke *et al.* (2017) and Osei *et al.* (2014) in Ghana; Lepine and Le Nestour (2013) in Senegal; Borah (2006) in India; and Sahn *et al.* (2003) in Tanzania among others.

Household income or welfare is also a significant predictor of the choice of a healthcare provider. Ruhara and Urbanus (2016b), in their study to investigate the role of economic factors on the selection of a medical provider in Rwanda, found that household income was a significant factor in the choice of medical providers. A study by Awiti (2014) in Kenya found that poverty reduces the probability of visiting modern health care providers. Other studies, such as Ali and Noman (2013) in Bangladesh and Awoke *et al.* (2017) in Ghana, found that household income positively and significantly affected health care demand. Additionally, previous studies by Wellay *et al.* (2018) in Northern Ghana and Ali and Noman (2013) in

Bangladesh found that quality of care or treatment was positively and significantly associated with demand for health care. As the quality of services increases, demand for health care increases and vice versa.

The level of education also plays a significant role in influencing the choice of a health care provider. Many empirical studies have found a strong positive relationship between high levels of education and the choice of public and private health care providers (Ali & Noman, 2013; Asteraye, 2002; Osei *et al.,* 2014; Wellay *et al.,* 2018). Preference for modern private and public care compared to traditional care increased with an increase in the level of education. Health insurance is also a significant determinant in patients' choice of health care provider. In Rwanda, Ruhara and Urbanus (2016) found that health insurance positively and significantly affected the demand for outpatient medical care. In their study in China, Qian *et al.* (2009) found that individuals enrolled in National Cooperative Medical Scheme were more likely to seek treatment from public clinics relative to self-treatment. Additionally, Halasa and Nandakumar (2009) found that health insurance was important in choosing private health facilities in Jordan.

Additionally, the cost of health care is a significant factor in influencing the choice of a health care provider. A study by Halasa and Nandakumar (2009) found that patients using public sector providers were price sensitive. An increase in out-of-pocket expenditure was negatively associated with choosing public sector health facilities compared to private health facilities. In their study conducted in rural Tanzania, Sahn et al. (2003) found that prices influenced the demand for health care from public clinics and hospitals. They noted that as the costs of public health services rose, there was a substantial substitution for private health services. Another study by Qian *et al.* (2009) found that price played a significant role in choosing a health care provider in Gansu Province in China. They further noted that price elasticity was higher for low-income groups than for higher-income groups.

Distance to a health facility is a significant factor associated with decreases in the choice of private health care providers, although evidence on its effect is mixed. A negative impact of distance on the utilisation of health services was found by Mwami and Oleche (2017) in Kenya; and Wellay *et al.* (2018) in Ethiopia. This suggests that the likelihood of seeking health care would increase significantly if accessibility were easier. On the other hand, the study by Qian *et al.* (2009) in rural China indicated that some people preferred health care providers further away if that provider had a better reputation or skills.

Also age and gender of the patients or household are significant in influencing the choice of a private health care provider (Lepine & Le Nestour, 2013; Qian *et al.,* 2009; Wellay *et al.,* 2018). In a study by Qian *et al.* (2009), the elderly were more likely to visit a lower-level provider. This finding was also supported by other studies, such as Awoke *et al.* (2017) in Ghana. Likewise, women have a significantly lower probability of seeking health care than men. In some cases, women need their husband's permission to seek healthcare in addition to them not having easy access to household resources. The time constraint and opportunity costs faced by women are higher than for men, thus deterring them from accessing healthcare services to a large extent (Awiti, 2014; Sahn *et al.,* 2003; Wellay *et al.,* 2018).

Studies addressing the factors influencing the choice of a health care provider in Uganda are still scanty, and those available did not pay attention to the demand for private health care providers. Ssewanyana *et al.* (2004) examined the nature and determinants of individuals' decisions to seek care in Uganda, using the 2002/03 UNHS data. The authors found that cost of care, income, education, and quality of services were significant determinants. The cost of care was regressive and remained a barrier to utilising public facilities. A study by Ridde and Morestin (2011) indicated that abolition of user fees in health care positively affected the utilisation of services in African countries. Likewise, in their study, Nabyonga Orem et al. (2011) found that the abolition of cost-sharing by the government increased access to health services at the clinic and health centre level and benefited the poor in Uganda. The authors found that user fees and drug availability negatively influenced the demand for government health care services. An increase in medical charges led to a fall in demand for government health facilities.

The few empirical studies conducted in Uganda have also not considered crucial variables such as health insurance which this study examines. Ssewanyana *et al.* (2004) and Nabyonga Orem *et al.* (2011) indicate that cost of health care negatively influences access and utilisation of health services in Uganda. However, nearly 63 per cent of Ugandans sought care from private health facilities compared to the 37 per cent who sought care from government health facilities in the year 2019/20 (Republic of Uganda, 2018d, 2021). Therefore, the central question is why Ugandans prefer expensive private healthcare providers to government healthcare providers whose services are free for health centres and considered affordable in public hospitals.

Methodology

3.1 Theoretical model

The study was guided by Michael Grossman's model of demand for health and health care. According to Grossman's model (1972), what consumers demand when they buy medical care is good health and not the services per se. Health is viewed as a durable capital stock that produces the output of healthy life. Therefore, demand for health care is best studied by first constructing a model of demand for health itself. In this study, the demand variable modelled is the patient's choice of a health care provider in the event of illness or injury. This is a discrete choice variable estimated as the probability that one selects a given option based on the utility-maximising behaviour (Qian *et al.*, 2009; Sahn *et al.*, 2003; Ssewanyana *et al.*, 2004).

Following Borah (2006); Grossman (1972, 1999); Qian *et al.* (2009); Ruhara and Urbanus (2016b); and Sahn *et al.* (2003), the individual maximises utility defined as:

$$U_{ij} = U(C_{ij}, H_{ij}) \qquad (1)$$

where H_{ij} is the expected level of improvement in health by individual i after receiving treatment from a provider j, and C_{ij} is consumption of composite goods other than health care after paying for the cost of a provider.

The health production function for provider j can be expressed as follows:

$$H_{ij} = H_0 + H_{ij}(M, X, Z) \qquad (2)$$

where M is medical care received, X is a set of individual and household characteristics, and Z is a set of provider-specific features. The production function is a function of medical care that an individual receives from a provider j, i.e., $H_{ij} = f(M_{ij})$ where $M_{ij} > 0$ is medical care an individual i after receiving treatment from a provider j, with $H_m > 0 \; and \; H_{mm} < 0$, implying that the production function exhibits diminishing marginal product with respect to medical care.

The budget constraint of an individual is defined as:

$$Y_i = P_j + C_{ij} \qquad j \in J = \{1, 2, \dots J\}$$
$$\text{Thus,} \qquad C_{ij} = f(Y_i - P_j) \qquad (3)$$

Equation (3) means that the disposable income held by the individual i after consulting a health care provider j is a function of his income Y_i, and the price P_j he pays at the health care provider j representing both direct costs such as user fees and indirect costs such as transport costs and waiting time.

Substituting equations (2) and (3) into equation (1) gives the conditional utility function of provider j, defined as:

$$U_{ij} = H_{ij}(M, X, Z) + f(Y_i - P_j) \qquad (4)$$

Equation (4) states that the maximum utility of individual i is obtained by choosing a health care provider, taking into consideration the individual's health production function and the budget (income) that includes direct costs such as user fees and indirect costs such as transaction costs and waiting time. The other variables are explained in equations (2) and (3). The individual chooses an alternative that maximises the welfare utility, reflecting his future health state. Thus, individual i selects a health care provider alternative j if and only if

$$U_{ij} > U_{im} \quad \forall \; j \neq m \; and \; m \in J \qquad (5)$$

3.2 Empirical model

Following the theoretical model in equation (5), an individual chooses either a government or private health care provider. The response is binary in nature, with values one and zero. Since the dependent variable is binary, the ordinary least squares estimation method cannot be used. This is because the assumption of continuity of linear equations does not hold, and heteroscedasticity exists in binary models (Greene, 2012; Verbek, 2008). For this reason, a probit regression model was preferred and estimated since it uses the maximum likelihood estimation procedure and is extensively used in many studies (Mwami & Oleche, 2017; Osei et al., 2014).

The probability of an individual choosing a private health care provider is defined by:

$$y_i = \begin{cases} 1 & if\ U_i^* > 0 \\ 0 & if\ U_i^* \leq 0 \end{cases} \quad (4)$$

In equation (4) above, U_i^* is the latent variable for the expected utility determined by the underlying response variable expressed in equation (5):

$$U_i^* = X_i\beta + \varepsilon \quad (5)$$

Where X_i is a vector of independent variables, including health insurance ownership, age, sex, level of education, residence, marital status, and wealth index, among others; β is a vector of the parameters to be estimated, and ε is the error term.

Since the probit model was applied, the error term is assumed to be distributed with a normal distribution with zero mean and variance of one. The probability that an individual has health insurance is thus defined as:

$$P(y_i = 1|X) = \Phi(X'\beta) \quad (6)$$

Where $P =$ the probability, $\Phi =$cumulative distribution function of a logistic distribution, $X =$ Vector of known repressors, and $\beta =$ vector of unknown parameters. This means that the probability that $y_i = 1$ given X is given by the standard logistic cumulative distribution function described in equation (7) as follows:

$$Prob\ (y_i = 1|X) = \mathrm{z}(0,1) = \frac{1}{\sqrt{2\pi}}\exp({}^{-1}/_{2}\ z^2) \quad (7)$$

The maximum likelihood method estimates the parameters since the relationships are non-linear. The optimal solution is a set of parameter estimates for the likelihood function and its log-likelihood function indicated by equations (8) and (9), respectively:

$$\mathcal{L} = \prod_i^n [\Phi(X'\beta)^{y_i}][1 - \Phi(X'\beta)]^{1-y_i} \quad (8)$$

$$ln\mathcal{L}(\beta) = \sum_i^n [y_i\ ln\Phi(X'\beta) + (1 - y_i)\ \ln(1 - \Phi(X'\beta))] \quad (9)$$

The marginal effect gives the effect of a predictor on the likelihood that an outcome will occur (Greene, 2012; Verbek, 2008).

3.3 Data source

The study used secondary data from the 2019/20 Uganda National Household Survey conducted by the Uganda Bureau of Statistics. The survey employed a two-stage stratified

sampling procedure. In the first stage, enumeration areas were grouped by district and rural-urban location. The enumeration areas were then selected using probability proportional to size. In the second stage, households were selected using systematic sampling. A total of 1651 enumeration areas were selected and targeted to interview ten households per enumeration area, giving a total sample of 16,510 households. The data collection was then done in two phases between September 2019 and November 2020 and covered 13,732 households giving a response rate of 83%. Of the 13,732 individuals who sought care, 36% used a government facility, 60% used a private facility, and 4% had self-care/treatment.

3.4 Variable description

The dependent variable was healthcare providers used by patients, grouped into two categories: (1) public /government; and (2) private. The independent variables included different attributes of the individual patient, family, community and health care provider. Anderson's behavioural model of health care utilisation and literature review guided the selection of explanatory variables. According to Anderson's behavioural model, the factors that influence health care utilisation can be classified into three categories: predisposing factors, enabling factors and need factors, i.e. severity of illness or incapacity (Andersen, 1995).

Predisposing factors included were age, gender, education, marital status, and occupation. Age is the number of completed years considered as a continuous variable. Sex was taken as a binary variable with male as the base category. Education was considered in terms of the highest level attained. Education level was recorded as a categorical variable with no formal education, primary, secondary and post-secondary education categories. Education level of the household head was used as a proxy for a child's education level (all members below 15 years of age) because a child's decision to visit a health care provider is mainly made by his/her mother or father (Borah, 2006; Sahn *et al.*, 2003).

Enabling factors included price or cost of care, income, distance, health insurance, residence, region, and religion. Out-of-pocket health expenditure was used as a proxy for the cost of health care. The indirect costs like transportation and waiting time were missing or unavailable in many cases and therefore were not part of the cost of care. Log of household welfare was used as a proxy for household income. Distance to the health care provider was measured as a dummy variable, with a distance of less than three kilometres used as the base category. Health insurance status was a dummy with having no health insurance cover as the base category. Region variable was also included to capture the geographic effects of central, eastern, northern, and western regions.

Need factors considered were bed-days[1] during the 30 days preceding the survey date and the type of illness. Table 1 presents the variable definition and the expected effect of the variables used in the study.

[1] Bed-days mean the number of days an individual had to stop doing his/her usual activities due to illness or injury.

Table 1: Variable description

Variable	Description	Expected sign
Cost of care	Cost of care for provider j measured by out-of-pocket health expenditure, net of any insurance reimbursements.	-
Lnconsumption	Natural log of household consumption	+
lnconsumption squared	Natural log of household consumption squared	+/-
Insurance	=1 if the individual had health insurance cover; =0 otherwise	+
Age	Age in years of the injured/ill person	+/-
Gender	=1 if female; =0 otherwise	+/-
Marital Status	=1 if married; =0 otherwise	+/-
Education level Not educated* Primary Secondary	The highest level of education of the patient; =1 if no formal education; =2 if primary school; and =3 if secondary school	+
Bed-days	Number of days the individual is confined to bed due to illness	+
Distance 0 to <3kms* 3kms or more	The distance to the health care provider in kilometres =0 if the distance is 0 to < 3kms; =1 if the distance is 3kms or more;	-/+
Residence	=1 if the individual lives in a rural household; =0 otherwise	-/+
Region Central* Eastern Northern Western	 =1 if the individual is from the central region; =2 if the individual is from the eastern region; =3 if the individual is from the northern region; and =4 if the individual is from the western region.	-/+
Employment status Subsistence Farmer* Salaried Self-employed	 =1 if substance farmer or unemployed; = 2 if salaried worker; and = 3 if owns a business.	+
Types of illness Minor/Fever* Severe/Chronic Injury	 =1 if the individual suffered from fever or minor illness; =2 if the individual suffered from severe or chronic illness; and =3 if the individual suffered from injury.	+
Household size	Household size	+/-
Sex of hh head	Sex of the household head. =1 if male and 0 otherwise	+/-
Age of hh head	Age in years of the household head	+/-

*These variables are reference groups in the model

3.5 Statistical analysis

All analyses were performed using STATA version 14.0. Distribution of each explanatory variable by healthcare provider done. A probit regression model was then estimated using "public health care providers" as the reference category to investigate factors associated with the utilisation of private healthcare. Three models, model 1, model 2, and model 3, were estimated. In model 1, all independent variables were used, while in model 2, ln-welfare squared was dropped due to multicollinearity and the insignificant attributes for household head dropped. In model 3, the type of employment was dropped due to its high correlation with welfare.

The Variance Inflation Factor (VIF) and correlation analysis were used to detect the problem of multicollinearity. As a rule of thumb, the VIF of 10 or greater (equivalently tolerance of 0.1 or less) is a cause for concern. In the presence of high multicollinearity, the coefficients are biased, and standard errors tend to be inflated, giving small values of the t-statistic and very wide confidence intervals of coefficients. This may lead to invalid statistical inferences and misleading conclusions. The mean VIF was 22.09, 1.16, and 1.16 for models 1, 2, and 3, respectively. This is far lower than the acceptable maximum of 10, except for model 2 and model 3. All variables had a VIF of less than two and therefore passed the test. This means there was no concern for multicollinearity in models 2 and 3 and are therefore preferred.

Results and Discussion

4.1 Descriptive analysis

The average out-of-pocket health expenditure was 26,340/= and 54,000/= for government and private health care providers, respectively. This means that out-of-pocket health expenditure was highest for private health facilities. This indicates that some health care services are subsidised or free in government health facilities. The minimum amount paid is zero and the maximum amount paid is 10,000,000/=. The average age of the patients was 22years, with a minimum value of 0 and a maximum value of 108 years. In addition, the average household size for patients who visited public and private health care providers was 5.7. The minimum household size was one, and the maximum size was 20. The proportion of male-headed households was 40% and 45% for public and private health care providers, respectively. This means that most male-headed households sought care from private health care providers. The average age of the household head in completed years was 44years for private health care providers.

With regard to categorical variables, 5.8% of the patients who visited private health care providers had health insurance, and only 0.6% of the patients who visited government health facilities had health insurance. This means that the proportion of patients with private health insurance was about ten times that of those in government health facilities. Regarding the level of education of the patients that consulted government healthcare providers, 49%, 12% and 2% had primary, secondary and post-secondary education, respectively. For patients that consulted private health care providers, 48%, 16% and 5% had primary, secondary, and post-secondary education, respectively.

The results from the correlation analysis show that the cost of health care positively correlates with log welfare, age, bed days, and level of education. Although most correlation coefficients were significant, they were all low and moderate, not exceeding a magnitude of 0.30.

4.2 Regression analysis

The link and goodness of fit tests were used to test for misspecification, and the results are presented in table 2. In all the three models, _hatsq is insignificant, meaning that there was no specification error and the models were well specified. For the goodness of fit, both the chi-square and Hosmer-Lemeshow goodness of fit tests were performed to test how well the model fits the data. Both tests were insignificant for model 3, with a p-value greater than 50% for Hosmer-lemesho. This means the predicted probabilities do not significantly deviate from the observed probabilities, so the model fits the data well.

Table 2: Model specification tests

	Model 1		Model 2		Model 3	
Test	**Coef.**	**P-vale**	**Coef.**	**P-vale**	**Coef.**	**P-vale**
Link test						
_hat	1.1068	0.000	1.1092	0.000	1.0882	0.000
	(0.1310)		(0.1322)		(0.3564)	
_hatsq	-0.1191	0.243	-0.1057	0.326	-0.1003	0.361
	(0.1019)		(0.1076)		(0.1098)	
Goodness of fit (gof) test						
Pearson	984	0.050	986	0.057	993	0.071
Hosmer-Lemesho	1.69	0.989	2.54	0.960	4.05	0.853

Standard errors in parentheses

The study also employed proxies to address the endogeneity[2] concerns that may exist. Moreover, the probit regression model uses the maximum likelihood estimation procedure, which handles endogeneity arising from omitted unobserved variables (Antolín *et al.,* 2014; Guevara, 2015; Koemle & Yu, 2020; Louviere *et al.,* 2005). Further, the area under Receiver Operating Characteristics (ROC) curve was used to check for classification and model performance. In all the three models, the area under the ROC curve was 0.73, which means the model is good at distinguishing between individuals with health insurance and those without health insurance. From the above diagnostic tests, model 3 was preferred.

Table 3 presents logistic regression results. The likelihood ratio test was significant at a 1% significance level, implying that the regression variables fit the model well. The probability that an individual chose a private health care provider was 69.8%. The results further indicate that ownership of health insurance, household welfare, distance to the health facility, gender of the patient, region of residence and household size were significant and therefore influenced the choice of private health care providers.

[2] Endogeneity includes all effects that are not exogenous and is therefore the same as model specification (Louviere et al., 2005).

Table 3: Factors influencing the choice of private health care providers: Marginal effects from a probit regression model

Variables	Model 1	Model 2	Model 3
Cost of care	0.00003**	0.00003**	0.00003*
	(0.00001)	(0.00001)	(0.00001)
Health insurance			
Yes	0.18741**	0.19242***	0.19889***
	(0.07389)	(0.07229)	(0.07030)
Ln-welfare	-0.15578	0.15075***	0.16107***
	(0.31786)	(0.02782)	(0.02768)
Ln-welfare squared	0.01320		
	(0.01389)		
Age	-0.00096	-0.00009	-0.00013
	(0.00148)	(0.00099)	(0.00102)
Distance: Less than 3kms (ref)			
3kms or more	-0.21437***	-0.21726***	-0.20263***
	(0.04291)	(0.04258)	(0.04205)
Education: None (ref)			
Primary	0.03881	0.03255	0.02621
	(0.06860)	(0.06825)	(0.06818)
Secondary	0.02708	0.02833	0.02517
	(0.07080)	(0.07025)	(0.07000)
Sex: Male (ref)			
Female	0.09971***	0.10044***	0.12172***
	(0.03479)	(0.03283)	(0.03203)
Bed-days	-0.00197	-0.00188	-0.00238
	(0.00295)	(0.00295)	(0.00294)
Marital status: Single (ref)			
Married	0.00972		0.01706
	(0.04349)		(0.03420)
Residence: Rural (Ref)			
Urban	0.01833		0.01186
	(0.03674)		(0.03643)
Type of illness: Minor/fever (ref)			
Severe/chronic	-0.05187	-0.05220	-0.04839
	(0.04200)	(0.04194)	(0.04158)
Injury	0.02203	0.02398	0.01501
	(0.03742)	(0.03739)	(0.03720)
Type of employment: Subsistence farmer or unemployed (ref)			
Salaried	0.09330**	0.08667**	
	(0.04000)	(0.03949)	
Self-employed	0.09989***	0.09187**	

	(0.03793)	(0.03692)	
Region: Central (ref)			
Eastern	-0.15356***	-0.15448***	-0.16616***
	(0.04436)	(0.04341)	(0.04341)
Northern	-0.15575***	-0.15519***	-0.17165***
	(0.05718)	(0.05657)	(0.05641)
Western	-0.04695	-0.04875	-0.05916
	(0.05783)	(0.05665)	(0.05743)
Household size	0.01753***	0.01928***	0.01796***
	(0.00666)	(0.00634)	(0.00624)
Sex of household head			
Male	0.00432		
	(0.04379)		
Age of household head	0.00146		
	(0.00161)		
Observations	936	936	947
LR chi2(22, 17, 17)	146.4	144.6	139.1
P-value	0	0	0
Pseudo R-squared	0.124	0.122	0.116

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regression results show that health insurance ownership positively influenced the choice of private health care providers. Health insurance ownership increased the probability of choosing a private health care provider by 20%, holding other factors constant. Also, household welfare as a measure of household income positively influenced the use of private health facilities. A unit percentage increase in welfare increased the probability of utilising private health care providers by 17%.

Distance to the health facility significantly influenced the utilisation of private health facilities. Holding other factors constant, a health care provider located 3km and above reduced the probability of utilising private health care providers by 20%.

The sex of the patient significantly influenced the utilisation of private health care providers. Female patients increased the likelihood of utilising private healthcare providers by 12%. A similar trend was observed with the type of employment where salaried and self-employed individuals were more likely to use private healthcare providers.

Region of residence also significantly influenced the choice of private health care providers. Residence in the eastern and northern regions reduced the probability of utilising private health care providers by 16.6% and 17.2%, respectively. In contrast, residence in the western region increased the probability of using private health facilities by 2%.

4.3 Discussion

Household welfare was positively associated with the choice of private healthcare providers. This might be because patients from well-off households can pay for expensive healthcare services provided in private facilities. Self-employed individuals were more likely to choose private healthcare providers. These findings were consistent with findings of previous studies in Ghana (Awoke *et al.,* 2017; Osei *et al.,* 2014), Uganda (Ssewanyana *et al.,* 2004), Tanzania (Sahn *et al.,* 2003), and Rwanda (Ruhara & Urbanus, 2016b).

Ownership of health insurance positively influenced the choice of private health facilities. This might be due to free health care in government facilities and low health insurance coverage. Only 5% of the individuals aged 15 years and above were covered under health insurance (Republic of Uganda, 2018d). This result was consistent with studies in Ghana (Awoke *et al.,* 2017; Osei *et al.,* 2014), Rwanda (Ruhara & Urbanus, 2016a), Jordan (Halasa & Nandakumar, 2009), and Togo (Atake, 2020) who found that health insurance positively influenced utilisation of healthcare services but inconsistent with findings of a study in Jordan (Halasa & Nandakumar, 2009).

Patients were less likely to visit private health care providers far from them. This result is consistent with the findings in Bangladesh (Ali & Noman, 2013), Ethiopia (Asteraye, 2002; Wellay *et al.,* 2018), and Uganda (Ssewanyana *et al.*, 2004). However, the result is inconsistent with the study in rural China that found that some patients may prefer to visit a more distant provider if that provider has a better reputation or the patient's health status is such that only that provider can treat their illness (Qian *et al.,* 2009). Hence, for people with particular concerns and whose health status is poor, distance tends to matter less, and they can travel longer distances.

Controlling for all other factors, residents in the eastern and northern regions were less likely to use private health care providers, while residents in the western region were more likely to choose private health care providers compared to residents in the central region. These findings were supported by studies in Uganda (Ssewanyana *et al.,* 2004), Kenya (Muriithi, 2013), and Jordan (Halasa & Nandakumar, 2009), who found that geographical location significantly influenced healthcare utilisation.

Contrary to what was expected, level of education and need factors, namely type of illness and illness days were insignificant. These results were inconsistent with studies conducted in rural China (Qian *et al.,* 2009) and Uganda (Ssewanyana *et al.,* 2004).

Conclusion

This study investigated factors influencing patients' choice of private healthcare providers in Uganda. Findings show that ownership of health insurance, household welfare and type of employment positively influenced the choice of private health facilities. In contrast, the distance to the health facility negatively affected the use of private health care providers. Additionally, the sex of the patient and region of residence were significant factors. Uganda lacks a national health insurance scheme to encourage poor and vulnerable individuals to visit health facilities and cushion them against catastrophic expenditures. Therefore, measures need

to be taken by the government to decrease out-of-pocket health care payments and enable the poor to utilise modern health facilities.

Furthermore, distance to the health facility negatively influenced the use of private health care facilities. This has notable implications for the healthcare system through increased burden on the public healthcare system and patients' ability to pay for services received. Given the broad use of private healthcare providers, there is a need for enhanced coordination between the government and private sector if health policies and programs are to be successful.

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Competing Interest
There is no competing interest declared.

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