The Effects of Health Insurance on Demand for Healthcare Services in Tanzania

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Abstract:

Consistent healthcare financing systems within a particular nation or community have been regarded as vital for making universal healthcare access. This study intended to examine the influence of health insurance on the demand for healthcare services and the influence of socio-economic, demographic and hospital-related factors on demand for health care services in Tanzania context. The study employed secondary data, which were analysed by descriptive statistics and the results were presented in tables and percentages. Econometric analysis was also done using binary probit regression model to determine the factors influencing demand for health care services in Tanzania. The instrumental variable was applied to address the problem of endogeneity of health insurance. The regression results revealed that gender, education level, household size, income, treatment cost, perceived health quality and health insurance type were significant and positively linked with demand for health care services. However, marital status was also significant but negatively associated with the demand for healthcare services. The study concluded that, despite of the efforts made by the government and other stakeholders on emphasis over having health insurance, the enrolment to health insurance schemes is still low although it has been noted to significantly influence the demand for health care services. Lastly, the paper recommends that the government and other stakeholders are required to formulate or strengthen the formulated policy in practice, purposively to improve access, affordability and the quality of health care services. Governmental and non-governmental organizations (NGO`s) and other stakeholders should put more effective strategies to improve coverage but also reduce the financial burden caused by illness. Also, the government needs to subsidize the healthcare sector, especially to the poor and provide subsidies to private healthcare facilities, improvement of insurance type, specifically, the NHIF which needs to increase coverage. Furthermore, health care managers should educate other people and make a clear observation on factors that make individuals demand for health care because they have a great role in the health care sector as well as strategies to improve household`s income to meet the health needs in Tanzania.

Keywords: Health Insurance, Healthcare Services, Demand for Healthcare, Instrumental Variable, Endogeneity& Universal Health Coverage.

1. Introduction:

A healthy individual is a person who is physically, mentally and socially well-balanced. The protection of human health is the priority of human being's needs; this is because humans work to meet expectations when having sound and good health. To a human being, health comes first before anything; individuals who are not healthy cannot do anything associated with social development activities. To perform well in economic activities there is a need to improve the health services. Good health is termed as the background to the workforce and one of the forces of economic expansion. But also, good health is cited as a principal engine of economic growth. Thus, investments in health would accelerate economic development due to increased contribution to production and growth by healthier individuals (Yilmaz Gunduz, 2018).

Globally, various governments and international non-governmental organizations recognized that reasonable health systems are necessary for attainable health-related sustainable development goals. Healthcare financing systems within a particular nation or community are thought vital for making certain universal healthcare accessible. This implies that every community member should have access to desirable healthcare services that are effective and of good quality that no one should risk financial ruin as a result of poor health. The World Health Organization, in the seventy-second (72) World Health Assembly that was held in 2019 called for nations to move their health systems towards universal coverage. Universal health coverage (UHC) with numerous scopes namely: reducing household out-of-pocket spending, access to quality health-related goods and services such as vaccines and medicine (World Health Organization, 2019).

Demand for health care services is an important public health and policy issue in most of countries to ensure sustainable human capital development. It has necessitated the act of moving people from out-of-pocket payments (OOP) to pre-payment (health insurance) as a step towards easy access to and utilization of health services. This has enabled the prevention of financial hardship associated with paying for healthcare services. Therefore, many countries have embraced health insurance as an overall health financing strategy to overcome financial hardship by pooling health risks and funds that take place at the level of the community. Thus, health insurance provides equitable access to health facilities irrespective of income and gender while reducing the financial burden of illness (Demissie &Negeri, 2020).

World Health Organization (2010) pointed out that the progress toward widespread health coverage necessitates the expansion of health-related systems in all nations and requires robust financing structures. This is because, in situations where people utilize health care using their own pocket money, the poor will mostly not be able to obtain the services they need at the right time. On the other hand, a well-off individual may also be at risk of financial hardships when the illness persists in the long term. It is argued that pooling of funds from sources such as health insurance contributions can help spread the financial risk of illness across populations. Universal health coverage does not only focus on the services that are covered but also on how they are financed(Demissie & Gutema Negeri, 2020). It further suggested that achieving Universal Health Coverage (UHC) would require the nations to take into consideration improving both health coverage and health outcomes which depend on the availability, accessibility and capacity of health workers to deliver quality care. Also, investments in quality primary health care act as a foundation for achieving UHC around the world. For instance, investing in the primary healthcare workforce is the most cost-effective way to ensure access to essential healthcare and improved services(World Health Organization, 2010).

Many countries including Kenya, Uganda, Thailand, Tanzania and Ghana have formulated a variety of health insurance schemes which make accessing health care easy among poor communities (Akazili et al., 2012; Dixon-Woods et al., 2013). Despite the presence of different health insurance schemes, some of them tend to exclude the majority of the poor. Unless subsidized, for

some of the insurance packages, the majority of the poor cannot afford to pay for the services due to high administrative costs(Kihaule, 2014).

In Tanzania, since the country gained independence in 1961 the nation has been striving to make available quality and reasonably priced health care by distributing resources through taxation and out-of-pocket. As a result of the increasing population and the world economic crisis, in 1993, the Government of Tanzania introduced a cost-sharing system to mobilize additional resources for health care due to the fact that the Government of Tanzania insufficiently financed health care services. The donors became reluctant to provide grants to most of the developing nations. Later on, the government of Tanzania started to implement health sector reform (HSR) to overcome the impact of the crisis. The HSR strategy puts much effort into the mobilization of funds to finance healthcare services. The financing options being introduced by the government included the user fees (cost-sharing), community health fund (CHF), drug revolving fund (DRF), national health insurance fund (NHIF) as well as the re-enactment of private for-profit health facilities (Jung & Streeter, n.d.; Lee et al., n.d.). The primary objective was to ensure that quality health care is affordable and easily attainable to every one according to the third health sector strategic plan (Mtei et al., n.d.).

There have been numerous achievements in health financing in Tanzania. Firstly, is the increasing number of community population covered in the prepayment scheme from 8 per cent in 2008 to 22.8 per cent in 2015. Also, evidence shows that the NHIF's average yearly growth rate in its membership was around 14 per cent from 2001/2002 to 2011/12 (NHIF, 2013). As of December 2019, NHIF's membership coverage was increasing due to government emphasis on more coverage to improve health care in Tanzania.

Despite the increase in scheme membership, lack of evidence on whether or not health insurance has led to improvement in healthcare services but also the demand for healthcare is still low. While the effect of health insurance on the utilization of healthcare services has been widely discussed globally(Aryeetey *et al.,* 2016; Bakar, 2016; Chomi *et al.,* 2014; Gakii, 2013; Kihaule, 2014; Owusu-Sekyere & Chiaraah, 2014)still empirical evidence of the effects of health insurance on demand for health care in Tanzania is missing. Therefore, this study proposed to fill this gap by examining the effects of health insurance on the demand for health care services using demographic health survey data (DHS).

2. Conceptual Framework:

This framework was conceptualized for the factors or variables grounded on the objectives of examining the influence of health insurance on the demand for healthcare, the influence of socioeconomic and demographic factors on the demand for health care and the influence of hospital-related factors on the demand for health care in Tanzanian context. The main key factors are assumed to have relationships among them.

As seen in Figure 1, the dependent variable is demand for healthcare services (determinants of healthcare services) which are influenced by demographics, socio-economic and insurance coverage.
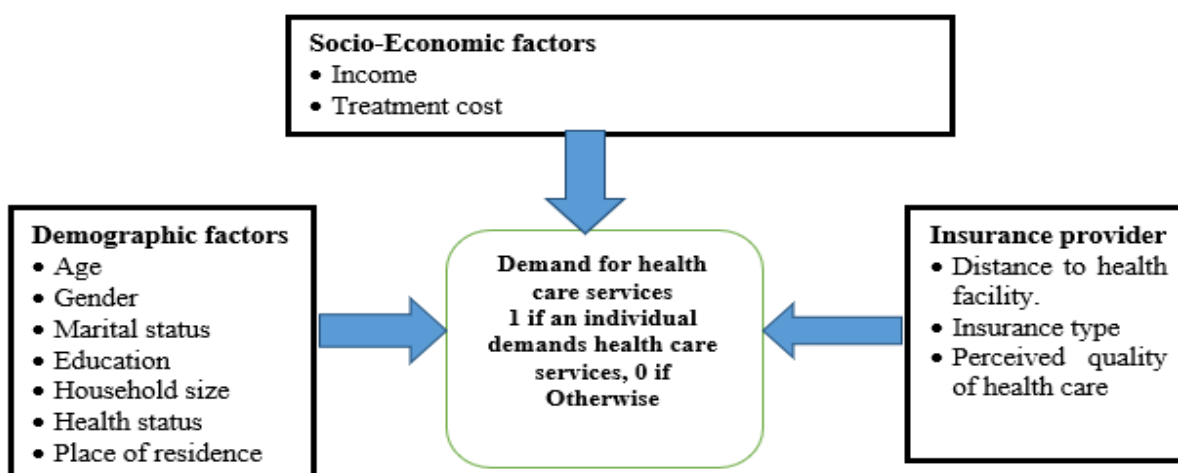

Figure 1: The Conceptual Framework for the Study
Source: Researcher`s construct (2024).

3. Materials and Methods:

3.1 Research Design & Data collection

This paper employed quantitative methods as the major design to estimate the effects of health insurance on demand for health care services. The data for this study were drawn from the Tanzania Demographic Health Survey and Malaria Indicator Survey (DHS-VII) which were gathered by NBS in 2015-2016 that represented the total country`s population of 44,928,923 people, basing on the National Bureau of Statistics estimates of 2012. The demographic and health survey is nationally representative of all population attributes like family planning, infant mortality rate, maternal vaccination for children and diseases. Moreover, the paper examined the effects of health insurance on demand for healthcare services in Tanzania because health insurance helps households to get excellent healthcare services, and avoid treatment problems during financial distress (Kutzin, 2013). The validity of using secondary data collected by NBS is because they contain relevant information in accomplishing the current study such as demographic factors, health indicators and out of pocket expenditures. The study used a sample size of 10,089 households from Tanzania Mainland.

3.2 Data Analysis and Model Specification

Econometric model (Binary Probit Model)

The study examined the effects of health insurance on demand for health care services. The dependent variable was a binary outcome (1 = utilize health care, 0 if otherwise). Thus, the study had two options in the usage of the econometric model which were a binary logistic and binary probit model. Generally, the current study employed the binary probit model over the binary logistic model because it tends to overcome the challenges of Linear Probability Models (LPM), whereby the predicted probabilities lie between 0 and 1. It also incorporates the non-linear effects of independent variables.

The probability of households demanding health care is assumed to be determined by a predictor variable among demographic, socio-economic and health insurance factors that explains the demographic, socio-economic characteristics and hospital-related factors, thus can be illustrated as:

$$D_i^* = x_i'\beta + \varepsilon_i \quad \dots\dots\dots\dots\dots (2.1)$$

Where D_i^* is a latent variable that shows whether an individual utilizes health care or otherwise, β denotes the vector of unobserved served parameters to be estimated, x_i' denotes the vector of observed independent covariates explaining the event, lastly, ε_i denotes an unobserved error term capturing other factors and is assumed to be independent and normally distributed. That is μ_i

N~ (0, 1), and $D_i = 1 \; if \; D_i^* > 0$

$D_i = 1 \; if \; D_i^* \leq 0$

The variable D_i represents the value of 1 if an individual utilizes health care and zero (0) if otherwise. However, the marginal utility of utilizing health care is greater than not utilizing the care. The binary variable of demand for health care D_i is assumed to be a probit model and is specified as:

$$Pr(D_i = 1/x_i)' = \phi(x\beta) + \varepsilon_i \dots\dots\dots (2.2)$$

Where Pr represents the probability of an individual demanding health care; D_i is the binary variable of demand for health care; ϕ denotes the cumulative normal distribution; x is the vector of individuals' demographic, socioeconomic and hospital-related factors denoting the coefficient to be estimated; and ε_i denotes the random error term distributed normally with a zero mean and a constant variance (Achandi & Mujawamariya, 2016).

Model Specification:

In this model, the estimation was:

$$P(y = 1/x) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_{12} X_{12} + \varepsilon_i \quad \dots\dots\dots\dots. 2.3$$

Where:

Y_i is an indicator of the utilization or choice of modern health care by an individual; X_1 is Age; X_2 is Gender; X_3 is Marital status; X_4 is Education level; X_5 is Household size; X_6 is Health status; X_7

is Place of residence; X_8 is Income; X_9 is Treatment cost; X_{10} is Distance to health facilities; X_{11} is Insurance type; and X_{12} is Perceived quality of health care.

In this equation of demand for health care, health insurance is an independent variable and endogenous which the study had to address as suggested from various previous studies. Endogeneity is a result of the `contrary causative between health insurance and demand for healthcare. The instrumental of the endogenous variables aims to attain fairness between the demand for healthcare services and the provision of health insurance. There should be a correlation between the instrumental variable and the endogenous regressor which is separate from the dependent variable (Ajakaiye & Mwabu, 2007).

Health insurance in equation (2.3) is endogenous to the dependent variable of demand for health care. Thus, approximating the equations may face difficult simultaneity caused by the contrary causality of the demand for healthcare services and health insurance. Usually, endogeneity in health insurance occurs due to the decision to buy health insurance and the use of healthcare services being entangled. Firstly, health insurance cuts medical care costs or prices, which enables insured individuals to utilize more healthcare services (Rashad & Markowitz, n.d.). Secondly, despite the fact that people cannot foretell their future healthcare needs, still they have relevant knowledge about their health situation and anticipate them to purchase health insurance for effective healthcare utilization in the future.

The decision to utilize healthcare services does not only rely on health insurance but also health insurance coverage depending on the level of demand for healthcare services, when health insurance is treated as exogenous in the demand for healthcare models, it gives unfair results. This happens because individuals who believe that utilizing more healthcare services have motives to get health insurance coverage either by choosing an employer with the best health insurance plan or buying a good private health insurance scheme (Kihaule, 2014; Lee *et al.,* n.d.)

Moreover, from previous study gives a remark on the appropriate techniques for handling endogeneity problems. Various studies used a Two-Stage Residual Inclusion (2SRI) regression and two–stage Probit model (IVPROBIT) method suitable for non-linear models. The process was employed to explain the problem related to the measurement of errors, simultaneity and omitted variables. These techniques need to identify the observable or instrumental variables that are interrelated with the endogenous variable but unrelated to the error term. However, the challenge is to recognize an observable variable Z_i that meets two conditions. Firstly, the chosen variable is unrelated to the error term. It implies that $Cov(Z_i, \varepsilon) = 0$ that is, Z_i is exogenous in estimating the endogenous equation(Honore & Lewbel, 2002).

The relationship that exists between the demand for healthcare services and the identified instrumental variable Z_i, is the second requirement. It implies that the identified variable should not affect health insurance. At this point, it requires regressing health insurance against all exogenous factors, comprising the instrumental variable (Bascle, 2008; Honore & Lewbel, 2002). For the first regression, the variable should have a significant coefficient when the selected variable is regressed on the recognizing variable, including all exogenous factors. In the second regression, the demand for healthcare services is regressed against all independent factors plus health insurance and insurance residuals acquired from the first stage regression (Terza *et al*., 2008).

Thus, we can formulate the demand for healthcare services in the form of the simultaneous equations as follows:

$$D = \delta_d Z_1 + \beta_j I_j + \varepsilon_i \quad j = 1 \,.....2 \quad ………. 2.4$$

$$I = \delta_j Z + \varepsilon_i \quad …………...…… 2.5$$

Where D and I denote the demand for healthcare services and health insurance correspondingly. Z

stands as a vector of independent variables which consist of Z_1 covariates that belong to the demand for healthcare services function and a vector of instrumental variable which influences health insurance but are noted to have no direct effects on demand for healthcare services. δ and are the parameters to be estimated, and is a disturbance term. Since the dependent variable (demand for health care) in the fundamental equation is binary, the health insurance is expected to be an endogenous variable, the two-stage Probit model (IVPROBIT) was proposed which can be used to test endogeneity but also to correct the problem of endogeneity. This model had two equations which are structural and reduced jointly, and the procedure involves the following steps, run the normal Probit regression, test the endogeneity then correct the problem if found (Honore & Lewbel, 2002).

Wald test was run to test endogeneity, to see whether the two error terms are correlated. According to this test, if the chi-squared statistics are not significant with a p-value larger than 0.10, then the suspected endogenous explanatory variable is exogenous. This means that there is no problem of endogenous; hence probit model will work, but if the p-value is not larger than 0.10, the explanatory variable is endogenous which must be corrected.

4. Empirical Results and Discussions

4.1 Description of the study participants: The findings draw conclusions from 10089 households, the results show that out of 10089 heads of households interviewed (5686; 56.36%) were females while (4403; 43.64%) were males. Their mean age was 45 years, with most of the households (8441) being married. The majority (80.5%) of respondents had formal education. The average household size was 2, the majority of respondents (7279; 72.15%) resided in towns compared to (2810; 27.85%) in rural areas. Majority of the study`s participants (8433; 83.59%) were employed, the reported income distributed as households belonging to low-income quantile (4948; 49.04%), followed by high-income quantile (3250; 32.21%) and middle income 1891; 18.74%).

Table 1: Basic Information for Categorical Variables

Variable	Category	Frequency (N=10089)	Per cent (%)
Gender	Female	5686	56.36
	Male	4403	43.64
Marital status	Married	8441	83.67
	Unmarried	1648	16.33
Education	Not attained any level	1967	19.50
	Primary level	6587	65.29
	Secondary level	1285	12.74
	University level	250	2.48
Occupation	Unemployed	1656	16.41
	Employed	8433	83.59
Residence	Rural	2810	27.85
	Urban	7279	72.15
Health insurance type	NHIF	3856	38.22
	Otherwise	6233	61.78
Income (wealth index)	Low Income	4948	49.04
	Middle Income	1891	18.74
	Higher Income	3250	32.21
Perceived quality of health care	Poor	6688	66.29
	Good	3401	33.71

Source: (Author Computation Based on DHS Data, 2024)

For treatment cost, the findings revealed that the cost averaged at 173770.6 Tanzania shillings, but noted to have 0 treatments cost which might present the aged population with subsidized

services. The average distance by the households were 4.91 kilometres, while the majority study`s population (6233; 61.78%) were not enrolled on the National Health Insurance Fund (NHIF) scheme and the remained (3856; 38.22%) had NHIF membership. Moreover, the majority (6688; 66.29%) perceived the healthcare services as poor, while the rest (3401; 33.71%) perceived services provided are of good quality.

Table 2: Descriptive Statistics for Continuous Variables

Variable	Observation	Mean	Std. Dev.	Min	Max
Household size (number of family members)	10,089	2.534443	1.441782	1	9
Distance (kilometres)	10,089	3.333432	4.918833	0	95
Cost of treatment (Tsh)	10,089	173770.6	996616.5	0	100000000
Age (Years)	10,089	45.47943	15.79455	12	95

Source: Author Computation Based on DHS Data (2023)

4.2 Multivariate Results

The current subsection of multivariate presents all three of the specific objectives of the study as presented in the research methodology, the three specific objectives were analysed using the probit model as indicated in table 3. However, the analysis used natural logarithm for various reasons such as reducing the outliers in either dependent or independent variables, but also no assumption restricts dependent or independent variables to be normal.

Table 3: Probit regression results

						No. of Obs	= 10089
Probit regression						LR Chi2 (18)	= 2743.57
						Prob> chi2	= 0.0000
Log likelihood = -4316.668						Pseudo R2	= 0.2412
Demand for_HealthCare	Coef.	Std. Err.	Z	P>IzI	[95% Conf.	Interval]	Mfx
Ln_Age	-0.021	0.047	-0.45	0.654	-0.114	0.071	-0.004
Gender (Female)	0.051	0.033	1.54	0.122	-0.013	0.116	0.01
Mstatus (Married)	-0.666	0.049	-13.42	0.000	-0.763	-0.568	-0.167
Education (Primary_Edu)	-0.046	0.042	-1.08	0.280	-0.129	0.037	-0.009
Secondary_Edu	0.034	0.061	0.56	0.575	-0.085	0.154	0.006
Tertiary/Uni_Edu	0.248	0.109	2.26	0.024	0.033	0.463	0.056
Household_size	0.083	0.01	7.85	0.000	0.062	0.104	0.016
H_Status	0.106	0.035	2.99	0.003	0.036	0.175	0.021
Residence	-0.008	0.035	-0.24	0.808	-0.077	0.06	-0.001
Income (wealth index) Middle_Income	0.542	0.046	11.57	0.000	0.45	0.634	0.129
High_Income	0.295	0.04	7.37	0.000	0.216	0.374	0.062
Treatment cost (ln_cost)	0.013	0.008	1.60	0.110	-0.003	0.03	0.002
Distance (ln_Distance)	-0.0001	0.018	-0.01	0.995	-0.036	0.036	-0.000

Health_insurance type	0.104	0.033	3.07	0.002	0.037	0.17	0.02
Perceived H_Quality	2.547	0.108	23.43	0.000	2.334	2.76	0.37
Cons	-2.898	0.248	-11.66	0.000	-3.385	-2.411	

Source: STATA Output (2024).

Test of Endogeneity

After the probit regression model, the endogeneity of health insurance was tested to check whether the health insurance is either exogenous or endogenous. if it is endogenous, the researcher will introduce the instrumental variable to solve the problem and vice versa.

In this equation of demand for health care as suggested from recent literature, one of the independent variables, health insurance is endogenous, and the estimation has to address this problem(Ajakaiye & Mwabu, 2007). Thus, the current study used the Wald Chi test to verify if the probit model was associated with the endogeneity problem.

Various literature suggests useful methods for dealing with the endogeneity problem is the use ivprobit regression method which is appropriate for non-linear models. In the first stage, the instrumental variable regress means reporting the result from the first stage estimation whereby the dependent variable was the demand for health care regressed on all the exogenous variables including the variable used as the instrument (current study chooses social security income ratio and occupation status of household head). And the second column, there were the predicted values obtained during the first stage.

Table 4: Wald Tests of Exogeneity

Test	Test value	P-value
Wald test of exogeneity (cor =0)	Chi2 (1)= 39.91	0.0000

Source: Author Computation Based on DHS Data (2024).

The exogeneity of the variable health insurance was tested by using the Wald chi test of exogeneity. The null hypothesis for the test states that if the p-value is less than 0.005, the null hypothesis will be rejected, and the variable tested was considered endogenous. The P-value from the study result was highly significant with a p-value of 0.000, and therefore the null hypothesis was rejected. So the results indicate that there was an endogeneity problem, therefore the ivprobit model was used to solve the problem of endogeneity.

Table 5: Tests for strength, relevance and validity of instruments

Tests	Full sample
F test of exogeneous variables (strength)	60.11
F test of excluded variables (relevance)	89.02
Sargan test of over-identification (valid)	0.9713

Source: Author Computation Based on DHS Data (2024).

The F test for the strength of the instrument

According to Bascle (2008), the F-test rule indicates that when the value of F is greater than 10 (F>10) the null hypothesis is rejected, which means that the instrument used is strong. Therefore, the results showed that the at first stage of regression, the F was found to be 60.11 for the sample social security ratio, since it was obtained that F>10, the instrument was strong and hence the IV probit was the appropriate model.

Test for relevance of the instrument

The study used the standard F test of excluded instruments, which was indicated to be a good test for the relevance of instruments (Bascle, 2008).

The study findings revealed that the F test of excluded instrument was 89.02 which shows that F>10, which indicates that the model was relevant.

Tests for the validity of instruments

The invalidity of the instruments was the one that correlated with the regression errors, and this correlation means the strength of endogeneity with a high correlation denoting more endogeneity(Guo et al., n.d.). Therefore, to check whether the instruments used were exogenous, the over-identification test of all instruments Sargan Statistics test was employed. The test examines the null hypothesis that over-identification restrictions were valid. The failure to reject the null hypothesis means that the used instruments were exogenous. From the empirical findings, the p-value was 0.9713, therefore was greater than 0.05, then it rejects the null hypothesis that was the instrument used was exogenous which means that the instrument was valid.

Table 6: Ivprobit and ivprobit average marginal effects estimates

							No. of Obs	=10089
Two step probit with endogeneous regressors							**Wald Chi2 (15)**	**=781.93**
							Prob> chi2	**=0.0000**
Demandfor_Health	Coef.	Std. Err.	Z	P>IzI	[95% Conf.	Interval]	dy/dx
Health_Insurance	1.797	0.331	5.42	0.000	1.146	2.447	1.797
Ln_Age	-0.058	0.053	-1.08	0.279	-0.164	0.047	-0.058
Gender (Female)	0.263	0.055	4.74	0.000	0.154	0.373	0.263
Mstatus (Married)	-0.253	0.097	-2.60	0.009	-0.445	-0.062	-0.253
(Education) Primary_Edu	-0.044	0.047	-0.94	0.349	-0.138	0.048	-0.447
Secondary_Edu	0.026	0.068	0.38	0.704	-0.108	0.16	0.026
Tertiary/Uni_Edu	0.239	0.122	1.95	0.051	-0.000	0.48	0.239
Household_Size	0.093	0.012	7.67	0.000	0.069	0.117	0.093
H_Status	-0.039	0.048	-0.81	0.420	-0.135	0.056	-0.039
Residence	0.019	0.039	0.50	0.617	-0.058	0.097	0.019
Income (wealth index Middle_Income)	0.185	0.087	2.13	0.033	0.014	0.356	0.185
High_Income	0.149	0.053	2.82	0.005	0.045	0.253	0.149
Treatment cost (ln_cost)	0.022	0.009	2.31	0.021	0.003	0.041	0.022
Distance (ln_Distance)	-0.02	0.021	-0.94	0.349	-0.061	0.021	-0.02
PerceivedH_Quality	2.559	0.11	23.14	0.000	2.342	2.775	2.559
Cons	-4.259	0.382	-11.1	0.000	-5.009	-3.509	

Source: (STATA Output, 2024).

Regarding gender, the regression results indicated the variable was highly statistically significant at 1% level (p=0.000) and positively related to demand for health care services. Meaning that, being a female household increases the probability of demanding healthcare services compared to being in a male household. However, the marginal effects of gender increase with an increase in the demand for healthcare services by 0.263, holding other factors constant. The results align with Ruhara's investigation of the factors influencing the demand for medical care in Rwanda. This result might suggest that females are more vulnerable to diseases.

Respondent's marital status was found statistically significant at 5% and positively related to demand for health care services. The marginal effects established that being married decreases a household head's probability to demand health care services by 0.253 units, ceteris paribus. This implies that being a married household head demands less health care than unmarried household head. The study findings did not conform with Terza *et al.* (2008) from Tanzania indicated that, compared to unmarried respondents, married respondents had a trend toward a higher likelihood of having a recent outpatient visit. The results suggest that the married population rate is quite low.

In this study, the household`s education level indicated only tertiary or university education was significant in influencing the demand for healthcare services with a p-value (p = 0.051) and was positively related to the demand for healthcare services. The results indicate that being with tertiary or university education increased households' probability to demand health care services. However, the results of the marginal effects indicated that being with tertiary or university education increased the likelihood of household demand for health care by 0.239 compared to households with no formal education category, keeping other factors constant. Wellay *et al.* (2018)portrayed that households with education influenced the demand for healthcare services compared to other categories. The results suggest

that people with higher education levels consider health more important than those who didn't attend school.

However, the household size was positively related to the demand for healthcare services and statistically significant at a 1% level with a p-value (p=0.000). The marginal effects indicated that the increase in family members increased the demand for health care by 0.093, ceteris paribus. The result implies that any increase in the number of households tends to increase the probability of household heads to demand health care services. Little attention has been given to the outcomes of purchasing health insurance plans as the determinants of membership in the schemes. The regression results were consistent withAkazili *et al.* (2012). However, the results suggest that the increase in household size influences the family head to enrol in the health insurance scheme hence influencing the demand for health care services.

The regression results indicate that the household`s income level head found statistically significant at 5% and 1% respectively. The middle-income category was significant with a p-value (p=0.033) while for high-income level was statistically with a p-value (p=0.005). The marginal effects results indicated that household heads belonging to middle-income levels increased the probability of demand for health care services by 0.185 compared to poor income levels. Furthermore, the household head belonging to high income increased the probability of demand for health care services by 0.149 units, ceteris paribus. The result aligns with Shin *et al.* (2015) from Korea and Osei Asibey & Agyemang (2017) from Ghana as well as Mbwile (2024). Furthermore, the result of income was consistent with Wellay *et al.* (2018)study which showed that rich individuals relatively have a high chance of getting medical care when fall sick. The study results suggest that wealthier families have more chances to enjoy high-quality healthcare services because are able to buy or get the services at any cost, while poor households may encounter stressful conditions that deteriorate their health because they cannot cover treatment costs.

For the case of treatment cost, **it** was revealed that treatment cost was statistically significant at 5% level and positively related to demand for health care. The marginal effects result postulates that the increase in treatment cost increased the probability for health care services demand by 0.022, ceteris paribus. The results conform to Shin *et al.* (2015)where their findings show the cost was positively related to the demand for health care. Further, the results were consistent with Wellay *et al.* (2018)which showed that rich individuals relatively had a high chance of getting medical care when falling sick. The results suggest that wealthier people tend to opt for private healthcare providers instead of public healthcare providers due to the high-quality healthcare services offered. Since the cost of the drug is positively related to the demand for health care. This may be because patients believe that the marginal benefit of drug cost increases with healthcare demand.

Also, health insurance type found that being a member of NHIF was statistically significant at 1 per cent (p = 0.000) and was positively related to demand for health care services. The marginal effect results indicate that being a member of the National Health Insurance Fund (NHIF) increased the probability of the household to demand health care services compared to non-members by 1.797 units, *ceteris paribus*. The result was consistent withRuhara (2016) studied the factors that influence medical care demand in Rwanda. Moreover, similar results were reported by(Aryeetey et al., 2016; Bakar, 2016; Gakii, 2013; Ujunwa et al., 2014). These studies were conducted to determine the effect of health insurance on the demand for medical care. Also, similar results were reported in China by Sohn & Jung (2016) and Wang *et al*. (2013) who found that the likelihood of demand for health care increased as individuals were covered with health insurance. The results suggest that individuals with health insurance had a higher probability of demanding and receiving medical care than those who were not covered by health insurance.

Furthermore, the results revealed that the perceived good health quality positively influenced the demand for health care services and was statistically significant at 1% level with a p-value (p = 0.000). However, the marginal effect results showed that household perceived good increased the probability of households demanding health care services by 2.559 units, compared to those which perceived poor, *ceteris paribus*. This result conforms with results byAggrey & Appiah, (2014) which indicated that perceived quality of health services positively influenced the demand for health care services and that the influence was statistically significant. The findings suggest that a household`s perception towards quality might influence the demand to grow.

5. Conclusion and Recommendations:

Despite the efforts made by the government and other stakeholders to emphasise having health insurance, the enrolment in health insurance schemes is still low although it has been noted to significantly influence the demand for health care services. The study revealed that the sex of the respondents, respondent`s marital status (married), education level (tertiary or university education), household size, household belonging to middle and high-income categories, cost of treatment, health insurance type (NIF member), perceived quality of health care services.

Lastly, the paper recommends that the Government and other stakeholders are required to formulate or strengthen the formulated policy in practice, purposively to improve access, affordability and the quality of health services. Governmental and non-governmental organizations (NGOs) and other stakeholders should put in more effective strategies to improve coverage but also reduce the financial burden caused by illness. Also, the government needs to subsidize the healthcare sector, especially for the poor and provide subsidies to private healthcare facilities. Furthermore, healthcare managers dealing with healthcare facilities should educate other people and make a clear observation on factors that make individuals demand healthcare because they have a great role in the healthcare sector as well as strategies to improve household income to meet the health needs in Tanzania.

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