Public Health Services: Cost and Quality Tradeoff

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Abstract
The study investigated cost and quality trade-offs of households' responses to public health services. A structured questionnaire was employed as an instrument for data collection. The study covered selected households in three senatorial districts in Anambra State; from Anambra North senatorial zone, Onitsha was chosen, while Awka and Nnewi were selected from Anambra Central and Anambra South respectively. A total of 120 questionnaires were administered and returned through the help of research assistants. The study made use of multinomial logistic regression as a technique for analysis. The findings of the study show that the coefficient of Cost of Health Care (HC) and Quality of Health Care (QH) are -14.455 and -15.247 respectively. This implies that household choice of public health care compared to the reference group will increase as the cost of health care decrease. On the order hand, if health care cost increases, households' choice of public health care is likely to decrease. Similarly, households' choice of public health care will likely increase as the quality of health service decrease owing to the low cost associated with it. The study also revealed that about 35.6 percent of the respondents put that adequacy of medical equipment is what determined their choice of health care facility. The study recommend that government should uphold the 2001 Abuja declaration of 15% annual health budget allocation in order to ensure adequacy of medical equipment and personnel, to improve the performance of public health care service delivery.
Keywords: *Public Health, Health Cost, Health Quality, Primary health care centre, Secondary health care center, Health Insurance*

Background to the Study

Health is a critical component that forms part of human capital development. Life without health can be termed miserable. Economic literature has emphasized the role of human capital on economic growth and development. It has also been noted that health and education are indispensable in its formation. In a micro analysis, the health condition of the household is a determinant factor of their well-being and social class classification. For this reason Akin (1995) noted that the issue of health has become an extreme problem to the developing nations and thus they are in search of innovative ways to raise funds for the provision of public health services. The major problem been faced in health delivery in these nations are the issues of quality and cost trade-off. Alderman and Lavy (1996) noted that, improvement in the quality of health care services can affect consumer's behaviour, given that such improvement may lead to increase in cost. Health care is understood to be a basic service that is considered essential in fighting poverty. This is because, it is traditionally believed that health is wealth (Castro & Dayton, 2000).

On this premise, Harrod and Victor (1966) emphasized that the effectiveness of government investment in health care depends on the public's response to price and quality as well as if these investment actually translate into improvement in health condition. Following the conventional household behavior on consumption, consumers will always want to spend less and have more goods. But in the case of health demand, consumer even those in low income ladder are willing to pay higher for better health care delivery (Alderman, et al, 1996). Alderman and Lavy (1996) agree to this if only the price or cost translates into quality health care delivery. Collier, Dercon and Mackinnon (2002) emphasized on the dimension of quality as it relates to health care facility, waiting time, trained medical personnel and capacity. In responds to the foregoing, Khurshid and Ajay (2014) argued that even if the quality of health care provided is reliable and accessible and out-of-pocket spending on health services rises, the low income household may not be able to afford it and this will be catastrophic if it is not subsidized. In the light of the above, the cost of public health care service delivery can be related with the multifarious pitiable effect on household's standard of living which greatly threatens their income flow and sufficiency. This however, disrupts their socio- economic ladder in the society and Doorslar (2016) concludes that this scenario deepens the overall inequality and poverty in the society at large.

However in the Nigerian case, public health services are provided in three tier levels; this includes the primary health care centre, the secondary health care centre and the tertiary health care centre. The

management and operation of this health care distribution in the nations follows the three tier pattern of political administration of the country. The Primary Health Care (PHC) centre is the community based health centre and it is under the jurisdiction of the local government. The services of the PHCs are basic and general health promotion and patient counseling. It diagnoses and treats minor conditions. Any case, beyond the capacity of the PHCs they are generally referred to the Secondary Health Care or the Tertiary Health Care centre. Makinde, Sule, Ayankogbe and Boone (2018) pointed out that primary health facilities make up 88% of health facilities in Nigeria. The Secondary Health Care (SHC) centre is the second tier health care institution in the ladder of health care distribution. SHCs are primarily referred to as "General Hospitals". The SHCs provide special medical services to patients such as general medical, surgical, pediatrics, obstetrics gynecology and other community health services. The SHCs are large in capacity this include staff capacity and medical equipment. In Nigeria the SHCs facilities make of 12% health care facilities (Makinde et al, 2018). While the Tertiary Health Care (THCs) centre is the apex among the Cadre of health services institutions in Nigeria. This Cadre consists of teaching hospital, federal medical centers and other specialist hospitals. THCs provide general medical services and handle most complicated medical issue. As the name implies, THCs stands as a research centre for medical research. The medical facilities of the THCs are about 0.25% of the total health care facilities in the nation (Makinde *et al*, 2018).

The Federal Government of Nigeria has committed itself to the health sector through budget allocation to the sector annually. The essence is to leverage and improve the sector and ensure that the health care system is accessible and reliable. In the last five years the Federal government allocation to the health sector are thus; in 2014 the budgetary allocation for recurrent expenditure in the health sector is about ₦214.94bn and ₦49.52bn for capital expenditure. However the percentage of health care allocation for the year stands at about 2.75% of the budget. In 2015, the allocation for capital expenditure to the health sector reduced to ₦22.68bn and the recurrent expenditure allocation increased to ₦237.08bn. In 2016, the budget allocation is not totally different from what it has been as the total allocation stand at ₦250.06bn and this is about 4.23% of the budget. In 2017, the budgetary allocation to the health sector increased slightly to ₦308.44b but the percentage is only 4.66% of the total budget allocation. The situation is not totally different from what the FGN allocated to the sector in 2018. About ₦340.45b was allocated and but the percentage reduced to about 3.9% of the total budget. In 2020 and 2021 only 3.83% and 4.75% of the total budget were allocated to health

respectively (BudgiT, 2022). Makinde et al (2018) has noted that the Federal government allocation has fallen short of the expectation of the Abuja declaration 2001 where the government appends its signature to agree that 15% of its annual budget will be allocated to the health sector.

This situation is not only peculiar to Nigeria. Prekeret (2002) emphasized that health care financing is one of the major problems facing the third world countries. This is because over 90% of the global burden of disease is borne by over 80% of the world's poor, only about 11% of global health spending is targeted at the poor. The world health organization has set a benchmark for public health spending in low income countries at $34 per capita (WHO, 2002). However UNDP, (2000) reported that government spending in low income economies is less than 0.2% of the total GDP.

This implies that the households spend more of their income on health care services. This triggers the impulse to investigate household's response to public health care services while taking cognizance of the cost and quality trade-off relationship.

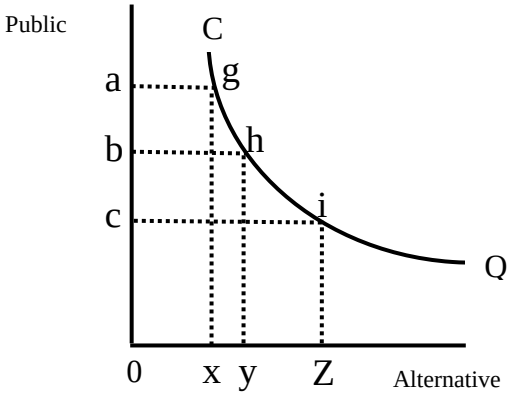
Review of Related Literature

Public Health Care Service Cost-Quality Tradeoff

The individual choice of public health care service is dependent on varieties of factors but the cost and quality of service are major determinants. Therefore, households are faced with trade-offs situation which involve choosing the service delivery of public health facilities based on its quality or cost of delivery. It is necessary to point out that while high cost of service delivery may accompany high quality; low cost of service delivery may attribute low quality services.

In this regards, the cost of public health facility may be traded for an alternative health service on the basis of quality. On the other hand, quality of public health service may be given up for the relative cost of other alternative health service. This situation can be presented and analyzed using the indifference curve.

Fig 1. Public Health Care Cost-Quality Tradeoff



The vertical axis represents public health care facility while the horizontal axis represents the alternative health facility. The line labeled CQ represents the point of trade-off of cost and quality. Point g, h and i represent the slope between cost

and quality choice of households. Therefore, the point (a) indicate a high cost of service delivery of the public health facility, households may relatively trade-off this cost for a lower quality utilizing an alternative health care facility which is labeled (x). If the cost for public health service decline to point (b), individual household may chose health care facility alternative whose quality is better compared to public health facility as result of decline in cost. In the same vein, further decline in the cost of public health service, will trigger the household to trade-off the low cost for a better quality in an alternative health care facility.

Theoretical Review

Grossman's Model of Demand for Health

This model was first constructed by Michael Grossman in 1972. The model is used to study the demand for health care service. The model considers health as a desirable capital which can depreciate over time. Since health is investment, good health investment take the form of health care purchases. The rate of return from investment in health as a capital must be equal to the opportunity cost of such investment.

Practically, the model tends to show that old people spend more on health care than younger people this because old age encompass series of health concerns. Since demand for health is considered to be an investment, cost and quality trade-off is of paramount important in this model. Geldman and Grossman (1978) rightly pointed out that when the quality of health care increases the quantity of delivery will reduce this is because increase in quality will lead to increase in the cost of service.

Contingent Valuation Theory

This theory builds on the neo-classical theory of welfare. This theory uses the willingness to accept or willingness to pay approach to obtain the monetary values for any variation in welfare due to the availability of specified good. This model was successfully used by Ataguba, Ichoku and Fonta (2008). However, in the case of health the theory was first utilized by Hanemann, (1991) and Smith, Olsen and Harris (1999). The contingent Valuation theory is closely related to the theory of consumer demand. The maximum price an individual is willing to pay for health care service gives the value of a health intervention with the aim of improving the state of health of the individual (Scally and Donaldson 1993).

This amount is assured to be addictive across individuals within a certain house hold and community. If individuals are risk averse with the respect to income in demand for health care and employing utility income mapping with the assumption that the utility or the well-being of every individual is dependent upon income and health. The amount that an individual will be willing to pay for an improvement in health will be the

amount of income the household will be willing to do away with while maintain the same level of utility and well-being as before payment.

The Neoclassical Welfare Economic Model

The neoclassical approach in literature can be traced to the development of Edgeworth (1881), Marshall (1890), Sidwick (1874) and Pigou (1877) their contribution to welfare economics shows their concern for the improvement in the social well-being of the household in particular. The neoclassical welfare economic model pays attention to efficient outcomes of the household.

However, in this case of health, an individual or household is efficient given the maximum amount that individual is willing to pay and the maximum quality of health care service received. The amount an individual is willing to pay is assured to be additive across individual within a certain household and community.

An Insurance Theoretical Framework

This theory is based on a simplified version of a health insurance theoretical framework. The theory was successfully used by Ataguba (2008). The theory consist of two blocks, the insurer and the insured. For the insurer there are various factors to put into consideration before structuring the nature of the insurance plan. The factors among others include the profit for a health plan. However, one thing the insurer is concerned about is the cost of insurance if the cost of health insurance is high this will exclude a large portion of low-income earners.

To the insured (consumer), the decision about the choice of the health plan is based on that which maximizes the utility function of the consumers. The utility function of the consumer is a function of the net wealth level of the consumer after insurance costs are deducted. The choice of the consumer on insurance is determined by the attractiveness of the health insurance benefit, health status and other socio-economic factors. This theory is linked to the basic theory of demand and supply. This is because most insurers take into account the preferences of the insured which are the net benefit of health insurance plan and other socio-economic factors.

Empirical Review

The related study will be reviewed based on domestic studies and foreign studies.

Foreign Studies

Stabile, Laporte and Colte (2006) examined household decision-making with respect to care-giving, time allocation and the use of publicly and privately financed home care services for Canada. Canadian Inter-provincial survey data on home care and funding for the period of 1992-1998 was utilized. The study shows that increased availability of publicly financed home care is associated with an increase in its utilization.

Schreyogg et al (2010) investigates the relationship between hospital cost and the quality of health outcome for patients with acute Myocardial infection in Veterans Health Administration Hospital. The data for the study was sourced from the administrative file for the fiscal years 2000-2006. The principal findings of the study shows that cost were negatively associated with mortality and readmissions. Every $100 less spent is associated with a 0.63% increase in the hazard of dying and a 1.24% increase in the hazard to be readmitted conditional on not dying. In conclusion, the study shows that there is a trade-off between cost and quality outcome of health care services.

Donfouet, Makaude, Mahieve and Malin (2011) studied the determinants of the willingness-to-pay for community-based prepayment scheme in rural Cameroon. Data was gathered through questionnaire administration. The findings of the study indicates age, religion, profession, knowledge of community-based health insurance, awareness of used practice in rural areas, involvement in association and disposable income are the key determinant of the willingness to pay for a prepayment health scheme. On the average, the willingness to pay for the scheme by rural household is about $2.15. the implication of the finding is that there is a substantial demand for prepayment health scheme by the poor rural households in Cameroon.

Terwiesch (2011) studied the effect of focus in health care looking at the types of care on the length of stay and mortality and the study finds that hospitals that are focused at the hospital level have lower length of stay and mortality rate. Nilson and Bergh (2012) investigated income inequality and individual health in Zambia and the finding of the study confirmed a non-linear direct relationship between economic resource and individual health and the study suggested further that the relationship between inequality and health in developing countries might be very different from the predominant view in the existing studies based on developed countries. Hussy, Wertheimer and Mehrotra (2012) examined the associations between health care quality and cost using U.S database studies published between 1990 and 2012. The study concludes that the direction of association between health care and quality is inconsistent as most studies examine revealed negative influence or positive influence between cost and quality of health care services.

Venkataraman (2015) investigated the effect of cost and average length of stay on experiential quality of health care. The study utilized 245 acute care hospitals operating in the state of California. The ordinary least squares technique was used to test the hypothesis and the result shows that hospitals do have a trade-off between cost efficiency and experiential quality. To study further shows that hospitals with a higher

average length of stay rate have on an average a lower experiential quality.

Wagstaff (2016) studied the demand for health theory and application. The study developed a conceptual apparatus for analyzing the socio-economic determinants of health demands. The study concludes that the demand for health approach has been seen to yield a whole range of testable prediction which shed light on a variety of health related issues.

The study further shows that the prediction of an increase in price of health inputs will lead to the deterioration in health status.

Cheno, Tchabo & Tchamy (2021) examined the willingness to join and pay for community-based health insurance and associated determinants among urban households of Cameroon: case of Douala and Yaounde. The study used cluster random sampling design in selecting data from the two largest urban areas of Cameroon (Doula and Yaounde). The findings revealed that 47% of the respondents were willing to join the Compulsory Community-based health insurance (CCHI0 and 41% for voluntary community-based health insurance (VCHI). Furthermore, the researchers found out that some variables such as household income, working sector, chronic disease, health priority and family size were mostly associated with the willingness to get either the CCHI OR VCHI

Wang, *et al.* (2022) studied the trade-off between efficiency and quality in allocating resource to public healthcare system.

Domestic Studies

There are handfuls of domestic studies relating to this study in Nigeria. Among the few are:

Onwujekwe *et al* (2010) investigates the determinants of out-of-pocket spending and strategies for coping with payments for health care in Southeast Nigeria. The study used cross-sectional survey between three rural and three urban areas from Ebonyi and Enugu state. The Socioeconomic Statues (SES) index was developed using principle component analysis technique. The finding shows that the SES groups equally sort heath care when they need to. The poorest households were most likely to use low level and informal provider such as traditional healers and medicine peddler while the least poor household were more likely to use the services of higher level and formal health care provider.

Uzochukwu (2010) estimates both ex-antes and ex-post of willingness to pay for rapid diagnostic test for the diagnosis and treatment of malaria in southeast Nigeria. Ex-ante willingness to pay was assessed by means of households and interview of 1020 households with a prior history of malaria while the assessment of ex-post of willingness to pay was conducted at health centers on 618 patients immediately following diagnosis of malaria with rapid diagnostic test. Using the bidding

game elicitation format, the study found that ex-ante willingness-to-pay, 51% of respondents in urban areas and 24% of those in rural areas were willing-to-pay for rapid diagnostic test with an average amount of #235.49 and #182.05 respectively. However, for ex-post willingness-to-pay, 89% and 90.7% of respondents are rural and urban respectively are willing to pay for the services.

Onah and Govender (2014) studied out-of-pocket (OOP) payment and health care access utilization in Southeast Nigeria, while looking at gender perspective. To achieve the objective of the study the study adopted both qualitative and quantitative technique. 411 households were surveyed and Six-Single-Sex (SSS) focus group discussion was utilized. The study confirmed the socio economic and demographic vulnerability of female headed households (FHHs) which contributed to gender-base inter-household differences in health care access; cost burden, choice of healthcare and coping strategies. The study recommends the removal of user fees, introduction of prepayment scheme may improve access to health care service and protect against debt for female-headed-households and male-headed-households.

Adeyanju, Tubeuf, & Ensor, (2017) examined the socio-economic inquaities in access to maternal and child healthcare in Nigeria. They used data from Nigerian Demographic and Health Survey (NDHS) conducted in 1990 and 2008 to study for the change in the inequality over time using decomposition analysis. The result revealed that the inequality between poor and rich parents have declined in child care but the inequality is still high in maternal care, that is, access to skilled assistance during delivery.

Iboringbe, *et al* (2022) studied healthcare financing and financial hardship among rural and urban households in Ekiti State, Nigeria. They did a comparative study between rural and urban households in Ekiti, Nigeria. A multi-stage sampling technique was used to select 420 households each in the rural and urban areas. Data were collected using pre-tested, structured interviewer-administered questionnaire. The results revealed that 42.6% of households in the rural are and 37.1% of the urban households experienced difficulty in paying for health bills. 97.6% of rural households always use out-of-pocket expenses while 95.2% of the urban households always use out-of-pocket expenses. This means that there is high dependence on out of pocket financing for both rural and urban households in Ekiti state, Nigeria.

Therefore, as stated earlier, few related studies exist in Nigeria, therefore this study tends to add to the few stock of literature in existence as a domestic study in order to enrich health care stakeholders and the general public.

Research Methodology

Research Design

In order to ascertain household's responses on public health services in the study area, the study will utilize questionnaire as a technique of data collection to collect relevant data for analysis. The choice of the use of questionnaire is that, if well structured it will yield a robust outcome and may be less susceptible to observers bias.

The study will obtain responses from selected households in three towns in Anambra State. These towns includes Onitsha, Awka and Nnewi. The choice of these three towns in the state is based on the three senatorial districts, that is, Anambra Central, North and South. Secondly, these towns are densely populated and the information collected from the study area will be robust to make generalization.

Three stage stratified random sampling technique was adopted in this study to select 120 respondents for the study, stage one include purposive selection of 2 areas in each of the towns, stage two involves a random selection of 20 families in each of the two area selected from each town and stage three involves a purposive sampling of 1 respondent from each of the selected households to give a total of 120 respondents for this study.

Model Specification: The model specified for this study will follow the assumption and the prediction of the contingent valuation theory. This theory uses the willingness to accept or willingness to pay approach to obtain monetary values for any variation in welfare. The study will also adopt the model of Akin *et al* (1995) on their study of "Quality of Service and Demand for Health Care in Nigeria. The model is stated as thus;

To present the multinomial logit model in a general form we have

Y_{ij} which denote the three alternative sources of treatment where (j= 0,1,2). Further let

$\pi_{ij} = Pr\ (Y_{ij} = 1)$

where Pr represent probability

Therefore π_{i0}, π_{i1}, and π_{i2} represent the probability that household (i) chooses the alternative sources of health care treatment self treatment, public health facility and public health facility (j= 0,1,2) . Hence, to obtain the probability of each outcome the model is thus;

Note that, one category of household choice will be chosen for the basis of comparison and the value is set to zero (0).

$$\pi_{i0} = \frac{1}{1+e^{\alpha_1}+\beta_1 Xi+e^{\alpha_2}+\beta_2 Xi+e^{\alpha_3}+\beta_3 Xi}$$

..... equ(1)

$$\pi_{i1} = \frac{e^{\alpha_1}+\beta_1 Xi}{1+e^{\alpha_1}+\beta_1 Xi+e^{\alpha_2}+\beta_2 Xi+e^{\alpha_3}+\beta_3 Xi}$$

.....equ(2)

$$\pi_{i2} = \frac{e^{\alpha_2}+\beta_2 Xi}{1+e^{\alpha_1}+\beta_1 Xi+e^{\alpha_2}+\beta_2 Xi+e^{\alpha_3}+\beta_3 Xi}$$

.....equ(3)

where Xi denote the independent variables that has been stated above, e is exponential while α_i and β_i represent parameters. Explicitly the multinomial logit model can be given as thus;

$$L_i = \ln\left(\frac{P_i}{1-P_i}\right) = \alpha_1 + \beta_1 PC + \beta_2 QC + \beta_3 HI + \beta_4 G + \beta_5 ED + \beta_6 FM + \mu \ldots\ldots \text{equ(4)}$$

The idependent variables are price of health care (PC), the quality of the health care (QC), Income of the

household (HC) Gender (G) Education level of household (ED) Family size (FM).

Data Presentation, Analysis and Discussion of Findings

This study employed both descriptive statistics and multinomial logit. While the descriptive statistics helps to determine the household's preference using frequency and percentages, the multinomial logit helps to analyze the probability of households chosen the variety of options available to them regarding health care facilities.

Presentation, Analysis and Discussion of Findings

In this section, the results on the analysis of data will be presented and discussed in line with the methodology adopted for the study.

Demographic and socio-economic characteristics of the households

Table 4.1: Demographic attributes of the respondents

	Frequency		Percentage
		Age	
25-34	29		24.2
35-44	41		34.2
45-54	36		30.0
55 and above	14		11.7
		Gender	
Male	60		50.0
Female	60		50.0
		Education	
None	9		7.5
FSLC	6		5.0
SSCE	46		38.3
BSC	42		35.0
Others	17		14.2

Source: Survey 2022

Table 4.1 shows that about 24.2% of the respondents are within the age range of 25- 34years, 34.2% of the respondents falls under the category of 35-44years and this category of age has the highest frequency. 30.0% represent 45-54years of age while respondents from 55 years and above account for about 11.7% of the respondents. Halve of the respondents representing 50.0% are male households while the other halve 50.0% of the respondents are female household. This was deliberately done to ensure equal spread in the responses. On the educational level of the respondents, 7.5% have no formal education, 5.0% have first leaving school certificate, 38.3% have senior secondary certificate examination, 35.0% have first degree while 14.2% have other category of education qualification. The category of respondents with senior school certificate examination has the highest frequency (46). This is not unconnected to the fact that the study area is a business environ where merchandise is prioritize after secondary school education.

Table 4.2: Demographic attributes of the respondents (continuation)

	Frequency		Percentage
		Family Size	
0-2	25		20.8
3-5	54		45.0
6-8	39		32.5
9 and above	2		1.7
		Occupation	
Farmer	7		5.8

Trader	56		46.7
Civil Servant	30		25.0
Others	27		22.5
		Income	
100,000-149,000	3		2.5
150,000-199,000	8		6.7
200,000-249,000	29		14.2
250,000 and above	80		66.7

Source: Survey 2022

From table 4.2, Households with the family size of 0-2 constitute about 20.8% of the respondents, 3-5 family size represent 45.0% of the respondents, 6-8 family size constitute 32.5% of the respondents while 1.7% of the respondents has the family size of 9 and above. Based on occupation distribution of the respondents 5.8% are farmers, 46.7 are traders, 25.0% are civil servants and 22.5% belong to other occupation such as artisan. In the same regards, the estimated annual income of the respondents varies. About 2.5% earned N100,000-N149,000, 6.7% earned N150,000-N199,000, 14.2% earned 200,000-249,000 and about 66.7% earned 250,000 and above.

Multinomial Logistic Regression

The summary of multinomial regression output is summarized and presented in table 4.5 below;

Table 4.5 Summary of Multinomial Logistic Regression Output

Explanatory Variables	Public Health Care	Private Health Care
Intercept (C)	89.247 (3049.273)	87.715 (3049.273)
Health Care Cost	-14.455 (2213.987)	-14.568 (2213.987)
Health Care Quality	-15.247 (1578.640)	-12.402 (1578.640)
Household Income	-14.421*** (0.395)	-13.951*** (0.000)
Gender	-14.697 (1379.937)	-14.876 (1379.937)
Education	-0.276 (1.029)	-0.829 (1.026)
Family Size	0.364 (1.267)	-0.015 (1.257)

Source: Survey Analysis 2022

Categorical Variable: Self Treatment
Log Likelihood: 86.170***
LR Chi-Square: 44.150***
Psuedo R^2: 0.439
*** indicate 1% level of significance

From table 4.5, the Log Likelihood Ratio of the multinomial Logit is 86.17 and it is significant at 1% level. This denotes that all slope of the estimated coefficients are non zero. The value of Psuedo R-squared is 0.439. It also confirm that the estimated coefficient is not equal to zero and the explanatory variables are collectively significant in explaining household choice of health care facilities. In Literature, Hill (1983) obtained pseudo R-squared values between 0.3226 and 0.3484. Therefore, the pseudo R-squared value of 0.439 in this study is implies that the model is a good fit.

Factors that determines household demand on health care services.

The result of the multinomial logit presented in table 4.5 above will help us to ascertain the factors that determine households demand on health care service. The result will be discussed based on the obtained signed and significance in relation to the reference category. The estimated parameter of the health care cost, quality, income, gender, education and family size for both categories of public health care and private health are thus (-14.455, -14.568), (-15.247, -12.402), (-14.421***, -13.951***), (-14.697, -14.876), (-0.276, -0.829), (0.364, -0.015) respectively. The estimated parameters of the likely determinants of household's health care service are negatively related to the categories of health care services (Public health care and Private health care) in relation to the reference group. The negative signs implies that the probability of choosing public health care or private health care in relation to the reference group will decrease as those determinant factors increases. However, all the determinant variables are not significant aside the household income that is significant at 5% significance level. The significant status of the household income indicates that it is a major determinant of household demand for health care service.

In the same vein, While all the parameters of the determinant factors are negative only house size in relation to public health is positive as thus (0.364). The positive sign denote that the probability of choosing public health care in relation to the reference category will increase as the family size increases. Although it is not significant.

Households' views on public health services

Table 4.6 Description of the services rendered by public health service Performance of Public Health Care Facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	12	10.0	18.8	18.8
	Very poor	3	2.5	4.7	23.4
	Good	26	21.7	40.6	64.1
	Very Good	22	18.3	34.4	98.4
	Indecisive	1	.8	1.6	100.0
	Total	64	53.3	100.0	
Missing	System	56	46.7		
	Total	120	100.0		

Source: Survey 2022

From table 4.5 in describing the performance of public health care facilities, about 10.0% representing 12 respondents indicate that public health care facilities performs poorly, 2.5% representing 3 respondents affirm that public health care facilities performs very poorly. In the same vein, about 21.7% representing 26 respondents and 18.3% representing 22 respondents pointed that public health facilities perform good and very good respectively while only 0.8% were indecisive.

Cost and Quality Trade-off

From table 4.5, the estimated coefficient of health care cost and quality for public health care category are -14.455 and -15.247 respectively. This means that household choice of public health care compared to the reference group will increase as the cost of health care decreases. Similarly if the health care cost increases, household choice of public health care is likely to decrease compared to the reference category. This denotes that variation in the cost of health causes the household to trade-off the utilization of public health care service for alternative health care service.

Since the sign of the health care quality parameter is negative (-15.247), it also implies that household choice of public health care compared to the reference group will increase as the quality of health care decreases. This quality trade-off maybe as a result of the low cost of service delivery in public health care facilities.

Conclusion

In a bid to ascertain whether the objectives of the study are upheld, the following conclusions are drawn from the findings of the study

a. Household income level is a significant determinant of household choice of health care facilities.
b. A greater percentage of the respondents indicate that public health care performs well but however needs improvement in quality of service delivery.
c. Household choice of public health care is inversely related to the cost of service. This means that households are health care price conscious and thus prefer cost over quality in the event that as quality rises and cost also rises.

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Appendix:

Definition of the Independent Variables

Variable	Definition of Variable
Price of health care (PC)	This is the monetary cost of health care services received from the alternative choice of health care facilities. Household response. Shall be coded as thus j = 1,2 ...n
Quality of health care (QC)	This is the quality of health care received by household in alternative health care facilities based of equipment and personnel, household response shall be judge based on, very poor, poor, good, very good, indecisive and will be coded j = 1,2 ...n respectively
The income of the household (HI)	This is the income level that household actually received and it will b ranked as j= 1,2...n
Gender (G)	This is the sex of the respondent or the patient, it will be categorized as male = 1 and female =0
Educational level (ED)	This is the education level attained by the household respondent. it will be categorized as j= 1, 2,... n
Family size (FM)	This is the total number of people that constitute a/the household and it will be categorized as j = 1, 2,...n based on responses