

## HOUSEHOLDS' CHOICES OF HEALTHCARE SERVICES IN THE NORTH WEST REGION OF CAMEROON

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### ABSTRACT

Efficient healthcare systems in developing economies are significant indicators of development. Health can either be optimised households' choices between preventive and curative healthcare services. In Cameroon like other developing countries, domestic healthcare service is either considered to be a normal or luxury good to households with competing alternative providers such as the public and private providers. To examine the healthcare preferences of households in the North West Region of Cameroon, a purposive sample of 300 households were collected and analysed using a multinomial logistic model. Households' characteristics such as sex and age of household heads, marital status of household heads and monthly income as well as providers' specific characteristics such as the reputation of the healthcare providers are significant determinants households' healthcare choices. Implicitly the reputation of the healthcare provider serves as a signal for households to overcome information asymmetry on the quality of healthcare services offered. This study suggests that standardizing the measure of reputation of healthcare providers would be an efficient signal of quality to healthcare clients. Also, household access to quality healthcare can be improved with efficient healthcare support programs and deferred payment options.

**Keywords:** Healthcare Services; Healthcare Providers; Multinomial Logistic Model; Healthcare Systems; Primary Healthcare

### Résumé

Des systèmes de santé efficaces dans les pays en développement sont d'importants indicateurs du développement. La santé peut être optimisée à travers les choix que les ménages opèrent entre les services de santé préventifs et curatifs. Au Cameroun tout comme dans d'autres pays en développement, les services de santé nationaux sont considérés comme un bien ordinaire ou de luxe pour les ménages avec des prestataires au choix en concurrence tels que les prestataires de soins de santé publics et privés. Afin d'étudier les préférences des ménages en termes de soins de santé dans la région du Nord-ouest du Cameroun, un échantillon de 300 ménages choisi à dessein a été collecté et analysé à l'aide d'un modèle de logistique multinomiale. Les caractéristiques des ménages tels que le sexe et l'âge des chefs de ménages, leur statut matrimonial et revenus mensuels ainsi que les caractéristiques spécifiques des prestataires tels que la réputation des professionnels de la santé, sont des facteurs importants qui déterminent le choix des ménages en matière de soins de santé. De façon implicite, la réputation des prestataires de la santé sert de signal aux ménages et leur permet d'éviter l'asymétrie de l'information sur la qualité des services de santé offerts. La présente étude se fonde sur l'hypothèse selon laquelle, la standardisation de la mesure de la réputation des prestataires de soins de santé serait un signal efficace de la qualité aux clients desdits services. En outre, l'accès des ménages aux soins de qualité peut être amélioré à travers des programmes d'appui à la santé et des options de paiement différés efficaces.

**Mots clés :** services de santé ; prestataires de la santé ; modèle de logistique multinomiale ; système de santé ; soins de santé primaires

## 1. Introduction

Domestic Healthcare Services (DHS) stand out as one of the priority areas in the Cameroon's National Development Agenda since independence. Households' preferences are uniquely defined by the nature of healthcare service as a commodity in relation to households' income, user fees, quality of service and just-in-time service rate. The Micro Economic perspective can be illustrated by a Consumer utility maximisation analysis which provides insight into how households make their choices on alternative bundles of goods that maximise their welfare given their budget and information constraints.

In the Macro Economic perspective, the market mechanism maximises the interaction of both producers and consumers to efficiently compensate the factors of production and maximise welfare at  $MC = P$  thereby shaping the Healthcare market to either an oligopoly, or a monopolistic competition. However, in a free market, the government in her regulatory rule only optimises the operations by creating an enabling business environment or participate as an alternative Healthcare Service Provider.

In this study, the government is seen as a participant in the Healthcare industry. We do not lose sight of the fact that health care services are public goods when supplied by the government and private goods when supplied by the private sector of the economy. With this background the key question that comes to mind is: What factors determine households' choices of healthcare services in the North West Region of Cameroon? This opens up several crucial areas of debate in the healthcare industry in Cameroon such as: What is considered as quality of healthcare service to households and healthcare providers? How exclusive is income in access to healthcare services in Cameroon? How efficient is the

government strategy of building and posting health personnel to enclave localities? These and more are very pertinent questions that govern the household choice of healthcare services in Cameroon in general and the North West Region in particular.

From a more general perspective, the debates on the cost and nature of health care provision have preoccupied the American Congress for over three decades. Its recurrence on the table of the Congress indicates her importance in optimising economic growth. The debate on the economic growth and economic development today has come to include major issues of health and equitable income distribution in a bid to address the healthcare service choice problem. Although, population dynamics reveal a sharp fall in death rates on the average, there still exist huge health problems in developing economies given key risk factors such as access to sanitation, access to clean drinking water, access to healthcare services and facilities, limited size of the healthcare workforce, outdated diagnoses and technologies. In order to better diagnose the problem of healthcare choices in the North West Region of Cameroon, it is necessary to have an over view of the national perspective.

## 1. Problem Statement

Cameroon's achievement on the Millennium Development Goals (MDGs) in the health sector failed to meet up with the targeted objectives by 2015. This failure can be shown through the following performance measures or statistics below.

Considering under-five mortality rate, between 1990 and 2013 Cameroon achieved only 30% reduction which was 37% points away from the targeted 67 percent. With regards to reduction maternal mortality rate between 1990 and 2013, Cameroon could only achieve 18%, falling short

of her 75% target. In the same light considering the proportional of population without access to improved sanitation, between 1990 and 2013, Cameroon could only achieve 8% falling short of her 50% target, (World Health Statistics, 2015).

Some other important measures of the poor performance of the health sector include the life expectancy at birth of 57 years and healthy life expectancy at birth of 49 years, adult mortality rate of 340/1000 (probability of dying between 15 and 60 years of age per 1000 population), density of health workforce per 1000 population with ratios such as 0.8/1,000 Physicians; 4.4/1,000 Nursing and midwifery personnel; slightly over 0.05/10,000 Pharmaceutical personnel; 1.3 beds/1000. And above all between 1990 and 2015 Cameroon only had an average of 5.0% of total expenditure on health as percentage of Gross Domestic Product, (World Health Statistics, 2015).

Assessing access to healthcare services, the following indicators paint a picture on private healthcare expenditures by households on healthcare services. Households spend on average 68% of their private expenditures on healthcare. For payments for healthcare services, households make a 94% out-of-pocket expenditure with a zero private prepaid plan as well as limited social expenditure on health of 2.6% on general government expenditures for healthcare. This paints a worrying picture of the healthcare sector and reaffirms the research questions. This further justifies why Cameroon's crude death rate is still high at 10.8/1000 of population

To better understand the crude death rate in Cameroon, this considers Communicable Diseases (CDs) and Non-Communicable Diseases (NCDs). In Cameroon, 61% of deaths are accounted for by Communicable Diseases while 31% are accounted for by Non-Communicable

Diseases and the other 8% accounted for by other causes. The probability of dying from the 4 main NCDs between the ages of 30 and 70 is just 20 percent.

The top 10 killer diseases in Cameroon include Malaria, Cancer, Ischemic Heart Disease, Meningitis and Sepsis, Lower Respiratory infections, HIV/AIDS, Diarrheal Diseases, Stroke, Road injuries and the North West Region is one of the regions highly affected with these diseases. (Centre for Disease Control, (2013), UNAIDS (2013)). This justifies why healthcare services are crucial in improving the lives of Cameroonians. This is because communication diseases are the major causes of deaths in Cameroon which can be greatly reduced through quality healthcare services which include skilled healthcare personnel and the appropriate healthcare facilities.

Also, there exist profound inequities in health within this region (Haines and Cassels, 2004, World Bank 2004 and Sanders et al, 2005); and as a result of geographical, physical, financial or socio-cultural barriers, the use of effective health services and interventions is a challenge (Hanson et al., 2003). With this, the importance of a functional and effective healthcare system in Cameroon in general and particularly in the North West Region provides cost effective healthcare services to Cameroonians to improve on the quality of life by curing or effectively managing ill health conditions cannot be over emphasized.

This general background necessitates retrospection on the evolution of the healthcare system and policies in Cameroon before narrowing down to the North West Region which in this study is the area of concern. In order to scope the evolution within the Millennium Development Goals period, between 1990 and 2015 there has been three major healthcare system development and policy changes which include the re-orientation of the primary healthcare (PHC)

system from 1991 to 2000, the health sector strategy from 2001 to 2015 and revision of the health sector strategy (2010), (Primary Healthcare, 2010), both policy changes have been geared towards maximising the healthcare resources in Cameroon for efficient healthcare service. Looking at the number and the anticipated targets one can categorically assert that the healthcare system improvement strategies and policies has failed to produce the right healthcare outcome of improving the quality of life in Cameroon. With this assertion, this study dares to investment households' choices of healthcare services amidst the low quality and poor performance of healthcare choices in the North West Region of Cameroon.

According to the 2012 report of Performance Based Financing (PBF) of healthcare in the North West Region of Cameroon, the health system of the North West Region is fraught with a certain number of difficulties linked to health care delivery. These include: Underuse of health centers and services for curative and promotional care; low coverage for preventive care; Insufficient continuous care (referrals) and usually of poor quality; high staff absences and acute shortages in the hard to reach areas; and inequitable health service distribution with limited access to health care by the poor and vulnerable and the hard to reach. The same report reveals the following diseases as major causes of morbidity and mortality in the region: Malaria, Acute Respiratory Infections, Diarrheal diseases, Malnutrition, HIV/AIDS, Tuberculosis and injuries. The major problem is that with the availability of many though insufficient health care providers found in Cameroon and in the North West Region in particular, many people still die of preventable and curable diseases and even with these diseases, some of them hardly resort to health care services.

There is profound choice disparity among households as there exist different healthcare providers in the region. This choice disparity is evident from; a survey conducted by OCEAC in 1997 which revealed that during episodes of illnesses, households resort first to public health care (47%), then to private health care (44%), to self care (8%) and to traditional (1%). Also, Ntangsi (1998) found out that in 1995 in the North West Region, 154,396 people consulted at the public health services, 92,274 people consulted at the mission health services while 16,327 people consulted at the lay private health services. Choice disparity is also seen in the findings of Kamgnia (2001) on malaria in Yaoundé where households resort to public (41%), private (44%), self care (8%) and traditional (1%). Also, ECAM II (2001) reveals households choice disparity of public, private and traditional health care providers as 49.6%, 32.4% and 18.0% respectively while Kamgnia (2008) also showed that 50% of households visit public health services during sickness while 15%, 17% and 18% visit Lay-private, Mission and traditional health care services in that order. Based on the above counts, it is clearly noticeable that different households prefer different health care providers than others and this affect their recovery rate to good health during episodes of illness.

To test this assertion, the North West Region of Cameroon was chosen to underscore the factors that influence the households' health care choices. To this effect this study aims at providing answers to the question "To what extent does sex, age, marital status, income, user fee, severity of illness, proximity, reputation of healthcare service and waiting time influence households' choices of health care service providers in the North West Region of Cameroon?"

The study is limited to the health sector of the North West Region of Cameroon which is one of

the two English Speaking Regions in Cameroon. The Regional Headquarter of the North West Region is Bamenda. It is geographically sited with coordinates 6°20'North and 10°30' East with a surface area of 17,300km square (6,680 square miles). Bamenda is the metropolitan city of the North West Region with an urban growth rate of 7.95 percent. It is characterised by a youthful population with 65 % of her residents being less than 20 years of age. Given that she has a population of over 1.9 million inhabitants spread across 7 Divisions: Boyo, Bui, Donga-Mantung, Menchum, Mezam, Momo and Ngo-ketunjia of a surface area of 17, 300km square which gives her a density of 98.41 inhabitants/km sq. Economically the inhabitants of this region are predominantly employed by agriculture with a very significant livestock sector (NWR strategic plan, 2013).

The health personnel statistics for the North West Region, observed that 1890 staff with 73 physicians, 900 nurses, 223 paramedics, 127 community pharmacist agents, 47 social assistant agents. The North West Health area like every other part of Cameroon had to experience the reorientation of the Primary Health Care System from 1990 to improve on the quality and quantity of Health Care services rendered to Cameroonians. Despite the implementation of the reorientation of the Primary Health Care (PHC) in Cameroon a series of healthcare problems led to the adoption of the health Sector Strategy (HSS) by 2001 which had to run till 2015. To the health care expert these are healthcare policies that bring quality and quantity healthcare to the Cameroonian population. However, health policy makers claim that these policies when analysed have been providing new health market dynamics which influence the choice of household on healthcare services both by private and public providers. In this light the reorientation of the Primary Health Care System was rationalised in

the Minimum Package Activities (MPA) which included 8 components of Primary Health Care among which are: Health education, promotion of good food and nutrition, provision of safe water and basic sanitation, maternal and child health including child spacing, immunization against infectious diseases, treatment of common ailments, prevention and control of local endemic diseases and supply of essential drugs. The rationalisation of the PHC by the MPA was not just aimed at providing a bundle of commodity or service to households but also to ensure that the healthcare market operates efficiently with full information on quality since appropriate signalling could be used to overcome information gaps especially in the face of desperation caused by sickness. At this point it is relevant to highlight that the major constraints to households maximising their utility or satisfaction of health care services are monthly income, sex and age of household head. Given the applicability of the Agency Principle in the healthcare market, the reputation of healthcare providers is expected to enable households to overcome the information asymmetry on the quality of the healthcare service (Gertler et. al., 1990). It is important to emphasize at this point that this study is limited to the formal healthcare system or market and with exclusion of the informal or traditional healthcare system.

Glewwe *et al* (1998) asserted that the rapid economic growth of an annual growth rate of 8% averagely since 1988 due to the market reforms adopted in 1986, households across the country's seven regions both in urban and rural areas have been enabled to purchase what was formerly subsidized by the state such as Health care Services. This explains the fact that household income is very central in the access to health care service. Also, it is interesting to see that as household income increases, household demand for Curative Healthcare Service increases making it a luxury for most users. Tipping *et al* (1994)

revealed a negative or inverse relationship between the average cost of a range of healthcare services and the frequency of usage. This study suggests that the higher the price of Healthcare Services the lower the frequency of usage of particular Healthcare services by households given their income. Gertler and Litvack (1998) revealed from the Analysis of Vietnam Living Standards Survey data that 70 % of the poorest quintile households used more of cheaper self-medication options while 54 % of the wealthy used the healthcare option.

Baru *et al* (2000) studied the efficiency of the private sector in Healthcare providers and suggested that they provide more efficient and better quality health services to the Households. They added that since Private Sector Healthcare Providers are profit led, they tend to cutting on costs, which directly impacts on the quality of care and the practice of discharging patients early in order to ensure quick turnover and increased intervention. The study concludes that it was imperative for these hospitals to ensure certain minimum working conditions expected in all industries for the employees. On these findings they recommend that the state should have effective administrative mechanisms that will ensure that these private hospitals comply with conditionalities for receiving subsidies like quality and equity in the provision of services. In addition, a regulatory framework for medical care would certainly help in improving the performance of medical industry in health service delivery.

Household demand for Healthcare is aimed at a larger stock of "health capital". This demand for health is unlike other goods since individuals allocate resources in order to both consume and produce health. Grossman (1972) model of health production has been extremely influential in this area of study and has several specific

predictions that are worth noting. Grossman's model assumes that each individual is both a producer and a consumer of health. The model considers that healthcare is both a consumption good that yields direct satisfaction (utility), and an investment good, which yields satisfaction to consumers indirectly through increased productivity, fewer sick days, and higher wages. Investment in health is costly as consumers must trade off time and resources devoted to health, such as exercising at a local gymnasium, against other goals. These factors are used to determine the optimal level of health that an individual will demand. The model makes predictions over the effects of changes in prices of healthcare and other goods, labour market outcomes such as employment and wages, and technological changes. Given the predictions on the outcomes of technologies, prices of Healthcare, these variables are considered in our model. The variables also help explain the nature of Household Healthcare demand from an economic perspective.

In Grossman's model, the optimal level of investment in health occurs where the marginal cost of health capital is equal to the marginal benefit. This implies that, households are very willing to commit huge sums of household income to curative healthcare till that point where the benefit in terms of Health is restored (benefits). With the passing of time, health depreciates at some rate  $\delta$ . The interest rate faced by the consumer is denoted by  $r$ . The marginal cost of health capital can be found by adding these variables. The marginal benefit of health capital is the rate of return from this capital in both market and non-market sectors. In this model, the optimal health stock can be impacted by factors like age, wages and education. This therefore suggests that, it becomes more and more costly to attain the same level of health capital or health stock as one ages.



It is necessary to emphasise that  $h$  on the choice space is not the quantity of healthcare demanded but the level of health. Given that we intend to factor in quality of healthcare service, traditional economic and healthcare theories of value associate quality with price. It is on this basis that the quantity of healthcare demanded is associated with quality. This is a little cloudy, to traditional economic and healthcare practitioners' thinking because market efficiency is associated with the least possible price that maximises consumers (the patient) and producers (healthcare providers) welfare. That is,  $(P = Min MC)$ . In healthcare service, the most efficient healthcare is not the least expensive but the best healthcare approach that restores the optimum state of health to the household. This implies there is a great deal of information asymmetry between the healthcare experts (agent) and the patient (Principal). That is knowledge on the quality of the different healthcare services. Consequently, technology and reputations of success rate of healthcare service serve as signals to the information asymmetry between the healthcare experts and the patients (Phelps, 1994).

Generally, in Cameroon above average quality is not much of a priority in terms of the Reorientation of the Primary Health Care System Approach and the Health Sector Strategy 1990 – 2015. (Ghogomu *et al*, 2010). The Healthcare Strategy in Cameroon perceives healthcare services as a merit good and considers healthcare facilities and output in numbers of hospitals, medical doctors, beds and nurses with little concentration on the quality of healthcare such as healthcare products and service numbers of repeated visits, or even the effectiveness of healthcare services delivered to households. To a greater extent this is why formal healthcare is more like a lender of last resort or when households expect mortality and curative healthcare is expected to make some magic to restore the deteriorate health level. It is for this reason that in analysing the Pivoting of the

Budget constraint ( $\mathcal{I}$ ) in maximise health by households in North West Region, 2 major signalling factors play key role: reputation of the healthcare experts and technology of healthcare procedures. These 2 factors captured by ( $\mathcal{I}$ ) determine how much households will spend on healthcare service. Health choices are not made in a vacuum. When faced with ill health events, households follow the treatment advice of friends and family.

(McKinsey's Healthcare Systems and Services Practice, 2012) asserts from its survey that households' choice to use a particular healthcare service 86 % of the time resulted from the referrals by friends and families.

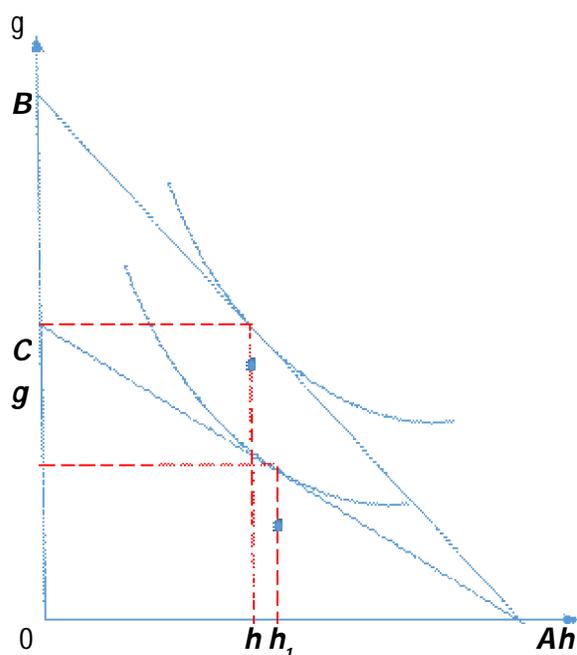


Figure 1: Patient Behaviour in Healthcare Choices  
Source (Author, 2017)

Figure 1 explains how individual households make healthcare choices. When households invest in preventive healthcare, they will efficiently allocate at point  $u(g, h)$  on budget set  $AB$  and tangential to Indifference curve  $IC_w$  where they will demand monotonic combination of goods and healthcare. Given that household rather demand curative healthcare, they demand more of goods at the opportunity costs of healthy living which results in household later spending

more on the demand of healthcare ( $h$ ) which produces an efficient allocation at  $u_1(g, h_1)$  on budget set  $AC$  and tangential to indifference curve  $IC_1$ . Households have to sacrifice  $(Og - Og_1)$  of goods and services to have an increase in Health by  $(Oh_1 - Oh)$ . This illustrates the effect of expensive Public Healthcare Service on the healthcare demand of households. This also reveals the fact that investing in Preventive healthcare is considered a luxury to households in the North West Region.

Phelps (1992) summarises the arguments of the effect of quality healthcare service on the demand of healthcare by concluding that high quality healthcare shifts the demand for healthcare outward. That is, quality healthcare will reduce the number of visits and reduce the demand for healthcare. Whatever the measure adopted to measure the quality of healthcare service, be it in the quality of healthcare delivery or effective quality of curative healthcare, quality curative healthcare only aims at improving the optimum Health  $u(g, h)$ . Thus, quality healthcare only reduces the movement from  $u_1(g, h_1) - u(g, h)$ .

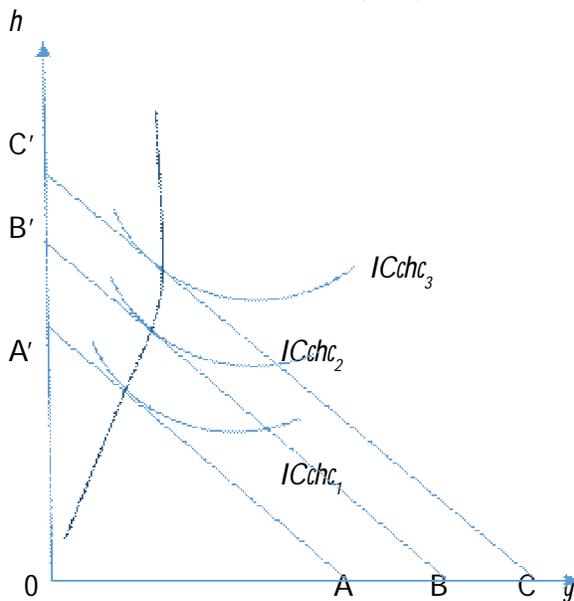


Figure 2: Analysis of Household Income for Curative Healthcare as a Luxury  
Source: (Author, 2017)

As illustrated in figure 2, curative healthcare is a luxury good to households in the North West Region of Cameroon. This is simply for the rational reasoning that as household incomes increase, there is a corresponding increase in budget allocation for curative healthcare for  $(ICchc_1 - ICcphc_3)$ . This analysis becomes interesting when we try to establish a correlation between wealth and expensive illness to manage such as Cancer, cardiac diseases, Kidney problems, diabetes. It will be seen that there exists an over 70 % correlation between wealth and the occurrence of these expensive ill health status. Most of the risk factors responsibility for this health problem comes as a result of changing health habits with wealth. Tanya *et al* (2011) revealed that most people in Cameroon within the North West Region perceive obesity as a sign of wealth, peace of mind, good living, good health, happiness and authority while, small body size is a sign of illness e.g. HIV/AIDS, poverty, stress, misery, misfortune, malnutrition among others. From their survey of the metropolises of Yaoundé, Bamenda and Garoua, Bamenda the Regional headquarters of the North West Region had the highest % of 33.61 overweight persons and 23.33 % obese persons using the Body Mass Index Metrics. Furthermore because of changing behaviours and health habits in Cameroonian most often than not the causes especially cancer or the epidemiology of cancer is relatively unknown. (Enow Orock, et al, 2012). It was estimated that cancer will cause 84 million deaths in Africa from 2005 – 2015 with the prediction that 70 % of these deaths will occur in low and middle income countries (WHO, 2010).

The next very simplistic analogy is that of HIV/AIDS. It ranks the highest killer disease in Cameroon in 2015. It is a communicable disease from mother to child and also transmitted sexually. Unsafe sex is the second highest burden of disease leading risk factors, 2013 expressed as a

percentage of Cameroon Disability-Adjusted Life Years (DALYs). That is sum of years of healthy life lost to premature death and years lived with disability (Global Burden of Disease (GBD) study 2013). Preventive healthcare requires that sexual parties screen themselves and ensure they are HIV/AIDS free before getting into unsafe sex or better still purchase condoms for an average of 200XAF H+ 0.340 USD. Instead of purchasing condoms for safe sex, unsafe sex will be preferred in the short run to spend more on HIV/AIDS management in the long run. It is interesting to note that of the 10 burden of disease of attributable leading risk factors in 2013, 5 of them are behavioural, 3 metabolic and 2 environmental. The top 5 are both behavioural and environmental (malnutrition, unsafe sex, unsafe water; sanitation and hand washing, air pollution as well as alcohol & drug use) and accounts for over 43 % of the potential leading health risks factors (Global Burden of Disease (GBD), 2013). This implies that if households can invest intentionally, on combating malnutrition, unsafe sex, unsafe water; sanitation and hand washing, air pollution as well as alcohol & drug use, then there will be about a 43 % improvement in DALYs which measure health status in our analysis above. Consequently, if households resultantly have an increase demand for curative healthcare service as a result of behavioural choices, a behavioural analysis on households demand for curative healthcare reveals curative healthcare as a necessity as illustrated below.

Reading from the income expansion path of household in the North West Region of Cameroon, if curative healthcare service is necessity, then it requires that households should invest in preventive healthcare services. This income expansion path shows that households in the North West Region of Cameroon will move to higher consumption level as income increases households. That is  $ICchc_1$  to  $ICchc_3$  demand less additional quantity of curative healthcare service as they move from a lower budget set of  $AA'$  to  $CC'$ . Now, this implicitly means, increase in household income gives them the possibility to obtain higher levels of satisfaction for higher quality goods that keep them healthy and reduce the demand for curative health care services. Furthermore, if households increase investment in preventive healthcare as income increases they will allocate resources to get more good nutrition, safe sex, safe water; more sanitation and hand washing, less air pollution as well as great reduction in the use of alcohol & drug. This will result in curative healthcare demand not being more than a normal good.

Curative healthcare in the North West Region ranges from self care, traditional, private, and faith based healthcare as well as public healthcare services. For this study the curative healthcare options are limited to the private and faith based healthcare providers. While controlling for the public healthcare providers, they fall within the formal healthcare sector and have a wide coverage in healthcare services. Borrowing from Gertler and Van der Gaag (1990), McFadden (1981) and looking at the alternative healthcare providers and their rational realism of the income situation, the multinomial logit model is adopted. The reason for choosing this method of analysis is because it is easy to implement although it imposes restriction on the interpretation of the estimate of the cross-elasticities of demand between the alternative choices. Furthermore, the multinomial

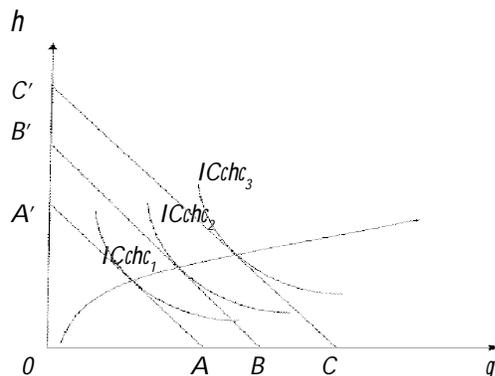


Figure 3: Analysis of Household Income for Curative Health Care as a Necessity

Source (Author, 2017)

nested model entails a two-step procedure, in which groups of relatively substitutable alternatives are distinguished, allowing the within-group cross-price elasticities to vary across groups as presented by the model. To Gertler and van der Gaag (1990), the options are separated as calculating satisfaction indices for each alternative,  $k$  for each individual household,  $i$ , as  $U_k^i$  with dichotomous choice, estimating the probability of individual  $i$  opting for Public healthcare (0) as;

$$\pi_{0i} = \frac{\exp(u_0^i)}{\exp(u_0^i) + [\sum_{k=1}^n \exp(u_k^i/\sigma)]^\sigma} \dots\dots\dots 1.3$$

and opting for alternatives: private healthcare and faith based healthcare service denoted  $k$  is

$$\pi_k = (1 - \pi_{0i}) \left[ \frac{\exp(u_k^i)}{\sum_{k=1}^n \exp(u_k^i/\sigma)} \right] \dots\dots\dots 1.4$$

With this modelling, the Maximum Likelihood (ML) techniques is employed to estimate the parameters  $\delta_0, \delta_1, \delta_2 \dots \delta_9$  in equation (1.5) presented thus:

$$HHC = \delta_0 + \delta_1 SexHH + \delta_2 AgeHH + \delta_3 MS + \delta_4 YH + \delta_5 REP + \delta_6 REP + \delta_7 Sev + \delta_8 ProxH + \delta_9 CF + \delta_{10} WT + \varepsilon \dots\dots\dots 1.5$$

Where:  $HCC$  is households choice of healthcare provider,  $Sex HH$  is gender of household head,  $Age HH$  is age of household head in years,  $MS$  is marital status,  $YH$  is monthly per capita Income of household XAF,  $REP$  is reputation of hospital,  $SEV$  is number of days of illness,  $ProxH$  is proximity to the nearest hospital in kilometres,  $CF$  is fees or price for healthcare service in XAF,  $WT$  is waiting time before receiving the healthcare service in hours,  $\varepsilon$  is the stochastic error term

Considering that the data observed for this study are not in the form of probabilities but that it reports that an individual may use either public, private or faith based healthcare in the North West Region, the most apt technique of estimation is the Maximum Likelihood Techniques. This technique used to estimate parameters  $\delta_0, \delta_1, \delta_2 \dots \delta_9$  of the model. For a given set of parameters, the probability of choosing a public healthcare is  $q_i = q^i (\delta_0, \delta_1, \delta_2 \dots \delta_9)$ . Thus,

on the one hand, if an individual  $i$  is observed to have chosen a public healthcare service, then the probability of this occurring is  $q^i$ . On the other hand, if that individual is observed to have chosen either private or faith based healthcare, then the probability of this having occurred would have been  $(1-q^i)$ . Hence, to estimate these probabilities given the existing data set, the parameters  $(\delta_0, \delta_1, \delta_2 \dots, \delta_9)$  the likelihood function presented as:

$$l(\delta_0, \delta_1, \delta_2 \dots \delta_9) = \prod_{i \in C} q^i(\delta_0, \delta_1, \delta_2 \dots \delta_9) \prod_{i \notin C} (1 - q^i(\delta_0, \delta_1, \delta_2 \dots \delta_9)) \dots\dots\dots 1.6$$

Where,  $C$  is the set of individuals who choose to use public healthcare service in the North West Region. Given that this study has two alternatives to public healthcare service a multinomial logit model is employed as presented in equation (1.3) and (1.4).

Healthcare demand Data are a little complex to collect given that sometimes the price data may result in endogeneity. However, to feed this apt model and estimation technique with quality data, a cross sectional survey was carried out with a purposive sample of 60 households in each of 5 randomly selected households that make up the 7 Divisions of the North West Region. In spite of the population differential of the 7 Divisions, the same number of questionnaires was administered due to the nature of the study. The sampling was purposive given that questionnaires were administered at the healthcare points. Hence, only households that demanded healthcare service at that time were included and secondly some concrete information could be given on the reputation of the healthcare service offered them as well as waiting time and the actual consultation fees and not what policy documents spelled out. This method was also cost effective given that it was privately sponsored yet with some creditable and reliable data.

### 1.4 Presentation and Discussion of Results

Table 1.4.1: Multinomial logistic Results based on the Gertler and van der Gaag (1990) Approach

Variables	Private Healthcare Service	Faith-Based Healthcare Service
<i>SexHH</i>	0.78 (0.820)	1.86*** (0.593)
<i>AgeHH</i>	-3.18** (1.332)	-0.50 (0.423)
<i>MS</i>	-4.59*** (1.330)	-3.14*** (0.653)
<i>REP</i>	-1.02*** (0.362)	-0.23 (0.258)
<i>YH</i>	0.67** (0.335)	0.94*** (0.184)
<i>SEV</i>	-0.53 (0.628)	0.31 (0.336)
<i>CF</i>	-0.07 (0.697)	-0.07 (0.422)
<i>ProxH</i>	-0.50 (0.366)	-0.09 (0.201)
<i>WT</i>	0.02 (0.436)	0.12 (0.255)
Constant	12.45** (5.848)	-1.20 (2.838)
Number of obs	300	
LR chi2(18)	127.42	
Prob > chi2	0.0000	
Pseudo R2	0.3241	

**Note** \*\*\* statistically significant at 1 %  $\alpha$  – Level  
 \*\* Statistically Significant at 5 %  $\alpha$  – Level  
 \* Statistically significant at 10 %  $\alpha$  – Level  
 (...) Standard Deviation

Controlling for the benchmark choice of public healthcare services, households with female household head, have a greater likelihood (1.86) that they will demand more faith based healthcare services over public and demand more of private healthcare with a likelihood of 0.78 over public healthcare services. However, the preference for faith-based over public is more than the preference for private over public. One of the major reasons why female household head have more likelihood for faith based healthcare is because of factors such as quality of delivery of healthcare service and most especially the professional value of respect for patient. This is in conformity with the works of Gertler and Hammer (1997). This finding is statistically significant with a 99 % confidence interval for its prediction.

For households with ageing household heads (age above 50 years) have the likelihood to demand less of private healthcare service (-3.18) in favour of public healthcare services. The finding is in conformity with the marginal efficiency of investment in healthcare analysis as observed by Grossman (1972). This although was conceived from the perspectives of the rate of returns on investment in healthcare considering the average age of household heads within the North West Region, it can be seen that household demand for healthcare service depends on the age of the household head . Hence, aged household head demands less of private healthcare but slightly less of faith based healthcare services in favour of the public facilities. One reason that can explain this is the fact that the ageing households want to efficiently allocate their limited income in either public healthcare or to some extent faith based healthcare service given the stock of health which can be obtained and the depreciation rate. This estimate is statistically significant at the 5 % error margin within a 95 % confidence interval.

Households with the parental status of married have the likelihood to demand less of private healthcare Service with a likelihood of -4.59 and faith based healthcare service with a likelihood of -3.14 in favour of the public healthcare services.

Meaning married household heads compared to singles have the tendency to prefer less of private healthcare services with a choice probability of - 3.14 and less of faith-based with a choice probability of -4.59 at the favour of public facilities and comparatively, such households have the likelihood of demanding faith based healthcare service over private healthcare service. Thus, these Households depend heavily on the public healthcare services. This explains why the Public health services are dominated with young coupled households.

Based on the reputation of healthcare services which plays central role in the demand for this service in the North West Region, households have the likelihood to demand less of private healthcare service by (-1.02) over public as against faith based healthcare service by (-0.23) over public facilities. The reputation of private healthcare is more significant than that of faith based healthcare Providers. Thus as reputation increases most household have the tendency to prefer more of public health care over private and faith based and faith based over private. This is simply because private healthcare services depend heavily on referral from either public healthcare or from former patients (McKinsey's Healthcare Systems and Services Practice, 2012). Hence, a positive reputation increases the likelihood of households in the North West Region demanding less of private healthcare services.

Household's demand for goods and healthcare depends heavily on household income especially in Cameroon where there is low demand for health insurance by households. Therefore, households' healthcare choice depends directly on the household's monthly income. Thus, while controlling for the demand of public healthcare, households given their monthly income have the likelihood to demand more faith based healthcare services by (0.94) over public healthcare services and more of private healthcare services by (0.67) over the public. Thus wealthier household resort mostly to faith based services, then private healthcare services and then public healthcare services in that order. However, the reasons for such preference are the fact that faith, based healthcare services offer a composite of services beside the healthcare including advisory/ counselling services follow-ups and prompt services and the methods of delivery of services are mostly client friendly which is sum augment the quality of the healthcare services delivery (rate of return on health investment). Households may

not be too interested in the quantity of healthcare service but the quality (rate of return on health investment). Some of the analogies of Phelps (1992) give an insightful explanation for such healthcare demand possibilities by households. Thus all households prefer such services but most are limited by their income since their services are hardly as cheap as that provided by the public.

It is interesting to note that of the 9 explanatory variables 5 key variables are statistically significant in explanation of the likelihood of households' healthcare choices in the North West Region. These 5 key variables are gender of household head, age of household head, marital status of household, reputation of the healthcare service provider and the monthly income of households. Other quality variables such as severity of illness, healthcare fees, proximity to hospital and waiting time seem to play little or no role on the household preference list for the demand for healthcare. It is necessary that we recall that this analysis is in a Region with limited Healthcare facilities and Personnel as well as low household income with more than 60% from agriculture.

### 1.5 Recommendation and Conclusion

To develop rational policy to provide efficient, acceptable, cost-effective, affordable and accessible services, we need to understand the drivers of health seeking behaviour of the population in an increasingly pluralistic health care system. This relates both to public as well as private sectors.

Gender sensitive strategies and programmes need to be developed. Health providers also need to be sensitized more towards the needs of the clients especially the women to improve interpersonal communication. Also, Married household heads prefer the services of Public healthcare providers over the Private and the Faith-Based. This is because healthcare choices are outcomes of household concerted decisions especially on healthcare facilities and personnel.

Since reputation of healthcare providers significantly affects households' choice probability of healthcare providers in the North West Region, it therefore implies that information is central in healthcare choices of households in the North West Region. Firstly, It is necessary for the Regional Delegation to establish a quarterly rating system of healthcare providers in the North West Region. This will serve as a major reliable referral base for households when demanding for particular healthcare services especially from the public, private and faith based healthcare providers. This will be very objective when the goal of the Regional Delegation of Public Health in the North West Region has as priority to improve on the health of the inhabitants of the North West Region of Cameroon and effectively play her supervisory role of the healthcare system in her jurisdiction. Secondly, public healthcare providers can improve on their reputations through preventive healthcare services such as nutritional and dietary services, physiotherapeutic service and many other preventive healthcare programs. This is because preventive healthcare has a significant reduction in the DALYs and significantly increases the healthy life expectancy at birth to be more like above 49 years.

With the consideration of households' income, they will prefer both Faith-Based and Private healthcare services over public services. This is guided by the economic thinking of paying a price commensurate to the additional quality in healthcare services. This additional quality could include counselling/advisory services, just-in-time services and follow-ups on a one-to-one base between clients and health workers. One thing that makes Faith-Based healthcare service quite often preferred is the reduced pressure from out-of-pocket payment for health services through small health support schemes and deferred payment possibilities. This is due to the fact that most healthcare clients are current income active

parents and/or pensions aged parents who rely on these sources to finance their demand for healthcare services in the North West Region. Even in organisations there are little or no provisions for healthcare except for few workers registered with the Social and National Insurance Fund. It is necessary that there is an effective healthcare insurance system that enables households to demand quality healthcare services in the North West Region. Although, some faith based healthcare providers run private health insurance scheme such as BEPHA, they are not good enough as coverage is limited in terms of illnesses insured. It is thus recommended that Public healthcare provider should run healthcare support schemes such as insurance and other options that reduce pressure on out-of-pocket payments.

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