

Inequity in Healthcare Utilization: Analysis of the Nigeria Situation

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Abstract

This paper analysis the extent of inequity in the utilization of healthcare services in Nigeria, and the determinants of healthcare utilization inequity. Applying the concept of horizontal inequity, the paper used the Nigeria Living Standard Survey (NLSS) 2010 data set to investigate the disproportionality in healthcare utilization. The result shows that inequity in utilization of healthcare in the country is generally skewed against the poor, as the analysis established evidence about the poor with similar medical needs as the rich having access to lesser healthcare service. The observed inequality in utilization of healthcare is mainly driven by the differences in health expenditure, residence location (rural or urban), and morbidity rate. The utilization rate of healthcare services is found to be positively related to household expenditure. It is recommended that government should intensify greater equity measure to guarantee healthcare to all with minimal discrimination. While the private facilities may not be attracted to rural area, due to weak patronage arising from the poor economic fortune of the people, government will be in better position to argument and fill the deficiency gap in the rural area. Utilization of healthcare services, especially by rural dwellers can be promoted by establishing more health facilities in the rural areas

Keywords: Utilization, healthcare, inequity, health expenditure, horizontal inequity, access, socio-economic status.

1. Introduction

With the close of the Millennium Development Goals (MDGs), and the ushering in of the Sustainable Development Goals (SDGs), sustaining the health gains of the last two decades remains a focus of interest. As a vital element of wellbeing and component of human capital, access to healthcare services stands out as a major interest to any population. Despite the adoption of health policy measures considered to be capable of reducing barriers to healthcare in most developing countries, the issue of equity in utilization still linger in health debate discourse. A large body of evidence confirms that many people in the developing world go without healthcare from which they could benefit greatly. Promoting equity in utilization of healthcare services by bringing more people into the benefit net as well as ensuring fair share of the healthcare services by the economically disadvantaged is daunting.

Accessibility to healthcare services has been shown to be an important determinant of utilization of health services in developing countries (Darmstadt et al., 2005). The impoverishment that characterises most developing countries is often prominently attributed to healthcare and related expenditures of the population. It is commonly acknowledged that the poor in developing countries are less likely than the better off to access effective healthcare. Specifically, studies have suggested the paucity of healthcare services during pregnancy, childbirth and the first month after delivery (Dayaratna et al., 2000; WHO, 2004; Federal Ministry of Health, 2005). For instance, the immediate cause of maternal deaths has been attributed to the absence, inadequacy or underutilization of the healthcare system (WHO, 2007).

Thus there has been general concern on the adoption of appropriate policy measures to increase the utilization of effective healthcare services, particularly for the poor in developing countries, including Nigeria. With an estimated population of over 180 million people, Nigeria has the 7th largest population in world, and most populous country with largest economy in Africa. Both the public and private sectors are involved in the provision and management of healthcare facilities, with more than 65% of facilities privately owned. With some service charges applicable in public facilities, access to healthcare in private facilities is typically based on user charges. Thus out-of-pocket (OOP) payment for healthcare services accounts for about two-third of total health expenditure (THE) in the country (Soyibo et al., 2009). With about three-quarters of the Nigerian population living below poverty line, barrier to accessing healthcare services is further compounded by inability to pay, and possible health shocks and catastrophic spending. The inadequacy of healthcare services in Nigeria and the lopsided distribution across different geographical areas, coupled with high level of poverty has some inherent implication on equity in access to healthcare services utilization. One outstanding consistent goal in the health sector of Nigeria over the years is achieving equity between the poor and the better off. Despite this, inequalities persist, as the poor tend to use less of healthcare services, though they suffer greater mortality and morbidity rate. Evidence shows that there is pro-rich bias in the distribution of benefits even from pro-poor designed programs, such as primary care and child and maternal health interventions (Gwatkin, 2001). The barrier is more pronounced in rural areas where healthcare facilities are sparingly distributed. Using the Nigeria Living Standard Survey (NLSS) 2010, this paper analyzed the extent of inequity in the utilization of healthcare services in Nigeria, and the determinants of healthcare utilization.

2. Review of Related Literature

The concept of equity is inherently normative (value based), and simply refers to ‘fair’ distribution of benefits across the population. Equity differs from equality, though it is an objective measure in terms of equal distribution of benefits across the population. Providing operational definition Braveman and Gruskin (2003) define equity in health as minimizing avoidable disparities in health and its determinants -- including but not limited to healthcare -- between groups of people who have different levels of underlying social advantage.

Issues of equity in utilization have often been investigated along the horizontal dimensions. Many researchers use the term “utilization” as synonymous with “access”, signifying that the proof of individual’s access to healthcare services lies in his/her use (utilization) of these services (see Alin, 2008). Whitehead et al., (1997) describe access as the ability to secure a specific range of services, at a specific level of quality, subject to a specific maximum level of personal inconvenience and cost, while in possession of a specific level of information. However, the potential of an individual to use healthcare service and thereby have access is conditional on adequate supply of services (Gulliford, 2002). Discussing equity in access to healthcare, Oliver and Mossialos (2004) identified three principles of equity to include: equal access to healthcare for those in equal need of healthcare; equal utilization of healthcare for those in equal need of healthcare; and equal (equitable) health outcomes. They however, submit that the most appropriate principle should be equal access for those in equal need (termed horizontal equity), because it is specific to healthcare and it respects acceptable reasons for differentials in healthcare utilization by those in equal need.

However, what is commonly measured and analyzed in health equity is equal utilization for equal need. Investigating factors responsible for inequity in healthcare use, the adoption of ‘utilization’, instead of ‘access’ for understanding the equity in healthcare has been noted in the health economics literature to provide superior acumens (Culyer, et al., 1992a, 1992b). Equity in healthcare utilization is often interpreted as persons in equal need of medical care, who receives the equivalent treatment, irrespective of his/her household income or socio-economic status (Ghosh, 2014). The underlying theory is commonly based on the egalitarian approach. According to egalitarian view, a public financed system should offer equal opportunity of access for those in equal need, independent of ability to pay (Williams, 1993). Horizontal equity issue is attributed to egalitarian approach in areas of healthcare utilization. Horizontal equity in healthcare utilization is concerned with the extent to which, on average, persons in equal need of medical treatment receive similar health services regardless of their income, wealth or socio-economic status. The egalitarian base for horizontal equality requires that people in equal need of care are treated equally regardless of socioeconomic factor such as income, level of education, place of residence and so on. The degree of horizontal equity in health care utilization is measured by comparing the observed distribution of medical care by income group with the distribution of need.

Absence of equity is indicated by the disproportionate utilization of healthcare associated with income or other socio characteristics after standardization for healthcare need differential. The norm in empirical literature is to measure Horizontal Inequity (HI) in health care use as the difference between the concentration index of actual use and that of predicted need (e.g. Wagstaff and Van Doorslaer, 1997; Lorant et al., 2001; Jui-fen et al., 2006; James, 2002; and Andres, Janek and Jarno, 2009).

HI measures the extent to which the difference between actual utilisation of health care and the use that would be expected on the basis of need. HI is of two types, which are conventional and conservative. In the conventional HI index, the need variable is systematically related to income and is predicted using regression on need factor while non-need factor are excluded in the regression because such may lead to omitted variable bias in the estimation of the predicted need variable. Teresa, Andrew and Van Doorslaer (2007) consider this approach as somewhat narrow definition of need, since it considers as legitimate health care use only what is shown (by the regression) to be systematically associated with need factors.

The conservative HI index includes the non-need variable in order to treat or reduce unexplained variation. Degife (2010) also made reference to empirical observation that exclusion of non-need variable creates omitted variable. The bias occurs when an omitted variable is correlated at least to one of the regressors and determines the medical care use.

While variety of healthcare access-promoting policies have been adopted by many countries, achievement of equity in healthcare utilization remains unguaranteed. Universal coverage of health care services does not necessarily eliminate inequities, though it represents the first step towards more equitable health care system. (Allin et al., 2007). Apart from the scarce volume of literature on equity issues, there are pockets of studies that have identified examples of countries experiencing decline in inequity, and those lagging behind.

Ascribed to the increase in insurance coverage and primary healthcare, Zhou et al (2013) found significant decline in inequity in utilization of outpatients and inpatients in China. Limwattananon et al. (2007), reported reduction in the incidence of catastrophic health expenditure during the period 2000-2004, with increased utilization over time among the rural population. Examining the equity effect of health insurance in Nigeria and Ghana, Odeyemi and Nixon (2013) concluded that both countries exhibit improvement in equity, though membership is pro-rich and pro-urban bias. Due to raising of immunization coverage in Egypt and Nepal, Sen et al, (2002) found a significant reduction in inequalities between the rich and the poor, of which full immunization in Egypt and Nepal among the poorest quintile increased by 26 and 22 percentage points, respectively. They also found professionally attended deliveries among the poorest quintile in Nicaragua to more than doubled from 33% to 78% within a space of only 3 years. Also by embracing universal Health Coverage (UHC), Thailand experienced remarkable reduction in inequity in the use of outpatient care (Yiengprugsawan et al., 2011), while following the adoption of receiving healthcare as a right, under the "health guarantee" policy in Chile, health system became more equitable (Frenz et al., 2013). Glied (2008) found the redistributive effect of universal, publicly funded health insurance to be modest across OECD countries. Using data from Demographic and Health Surveys of 45 developing countries, disaggregated by wealth quintile, Margaret et al. (2008) found increased equitable utilization of skilled birth attendant services with higher health expenditures, conditional on existence of redistributive education policies.

On the other hand, it has been shown that, while low-income people shoulders greater burden of illness in countries like South Africa, Ghana, and Tanzania, the rich in these countries appears to be better favoured by the distribution of healthcare services (Mills et al., 2012). Despite the near universal health insurance coverage in Philippines, experience has shown a rise in inequity in utilization of healthcare services (Son, 2009). Investigating equity issue within the health system of India, Baru et al. (2010) and Balrajan et al. (2011) affirmed the persistence of inequity in access to healthcare, and pro-rich utilization of maternal and child health services, respectively. Similarly, Ghosh (2014) found existence of absolute inequalities for both inpatient and outpatient cares, with the magnitude of inequity being pro-rich across rural and urban areas of India.

In a study of 42 countries, Gwatkin and Devishwar-Bahl (2001) found full immunization coverage rate to be 66% in the richest quintile of households compared to only 38.5% in the poorest quintile. In a similar study of 55 countries by Sen et al, (2002), they found women in the richest quintile to be 5.2 times more likely to give birth under the supervision of a doctor, nurse, or midwife than the poorest fifth of women. They further established inequalities in the use of contraceptives, in which on the average a woman in the richest 20% of households is 4.6 times more likely to use contraceptives than a woman in the poorest 20%, generally, while the coverage rate for

medically supervised births actually fell for the poorest fifth in Peru, Cameroon, Ghana, Malawi, and Mali, the coverage rate (Sen et al. 2002).

3. Methodology

3.1. Data sources and Variables

This study employed secondary data analyses of the 2010 Nigerian Living Standard Survey (NLSS), which is a nationally representative cross-sectional household survey on expenditure (including on health), income, and socio-economic status. To test and explain the direction of usage of healthcare in Nigeria, we extracted data from the survey for medical utilisation measured by physician consultation or visits, health status (ill, injured or both), demographic factors (age and gender) and socioeconomic factors, such as income (proxy by household expenditure) and residence area (urban or rural).

In order to identify different income groups, this paper divides household expenditure into quintiles from first quintile (poorest group) to fifth quintile (richest group), with adjustment of the household data for household size to allow for proper analysis.

3.2. Theoretical framework and Estimation Techniques

The model under this framework is adapted from the work of Degife (2010). The concept of horizontal inequity applies to the delivery of health care services in such a manner that persons with equal needs be treated equally, irrespective of their income or socioeconomic status. As proposed by Wagstaff and van Doorslaer (2000), horizontal inequity index derives from Gini index framework. The extent of horizontal inequity in utilization of health care is measured as the difference between each income group's share of need and share of medical care. Ranking individuals in the population by a socioeconomic variable, usually income, HI is based on concentration curve for medical care (C_M) and for need (C_N).

Adopting the conservative index, we inculcated non-need variables in the regression.

HI is defined as the difference between medical concentration index, C_M and need concentration index C_N :

$$HI = C_M - C_N \dots\dots\dots(4)$$

Which is the same as twice the surface area between the need and utilization concentration curves:

$$HI = 2 \int_0^1 [L_N(p) - L_M(p)] \cdot dp \dots\dots\dots(5)$$

where $C_N = 1 - 2 \int_0^1 L_N(p) \cdot dp$; and $C_M = 1 - 2 \int_0^1 L_M(p) \cdot dp$

The medical care concentration curve $L_M(p)$ captures the distribution of medical care by income, while the concentration index, C_M , captures the degree of inequality in the distribution of health care utilization. The medical care concentration is graphed as the cumulative proportions of the population (ranked by income, beginning with the poorest) against the proportions of total amount of medical care received. The distribution of need is captured by the need concentration curve $L_N(p)$, plotted as the cumulative proportions of the population (ranked by income, beginning with the poorest) against the proportion of persons reporting an illness. The corresponding need concentration index, C_N captures the degree disproportionate in need distribution.

Estimating actual medical care used m_i , on the vector of need X_j and non-need Y_k factors; the linear regression is defined as:

$$m_i = \alpha + \sum_j \lambda_j X_{ji} + \sum_k \delta_k Y_{ki} + \epsilon_i \dots\dots\dots(4)$$

The above regression model solves the need for medical care for each individual, and the predicted value is from this regression when non-need variables are replaced by their mean values. This need is the predicted value of m_i given the determinant factors obtained by storing the predicted values.

$$m_i^* = \hat{\alpha} + \sum_j \hat{\lambda}_j X_{ji} + \sum_k \hat{\delta}_k Y_{ki} \dots\dots\dots(5)$$

The above m_i^* measures the expected amount of medical care that individuals with the same need characteristics would have received if the system had treated them equally on the average.

Regression and geometric analysis were used to explain horizontal inequity. The prediction of need factors is done using regression technique based on Logit and linear specification while other techniques are manual formation with the use of excel.

HI can assume a positive or negative value. A positive (negative) value of HI indicates horizontal inequity favouring the better off (worse off) while a zero value indicates that the factor of proportionality (between medical care and need) is the same irrespective of income. Graphically, when the need concentration curve (p) coincides with the actual use concentration curve (p), then the share of medical care use of each group equals the share of its need and there is no horizontal inequity. For example, the share of need and the share of actual use of the poorest $k\%$ of the population are equal. And the share of need and the share of actual use of the remaining richer $100\% - k\%$ of the population are also equal. When the lower income groups obtain lower share of actual medical care than their share of need, it is termed horizontal inequity favouring the better off.

4. Results Presentation

4.1. Regression Results

In order to validate the horizontal inequity result, this paper presents two regression results in table 1 on logit and linear regressions. While the linear regression estimated continuous values of the number of time an individual consulted health centre during the survey, proxy by night spent in the health centre and physician consultation, the logit regression result estimated categorical values of the dependent variable, proxy by physician consultation. The logit regression result statistic shows that the overall model is significant at both 1 percent and 5 percent and the Fadden R-squared shows that the dependent variables can explain 51 percent of variation in the independent variable. The logit results indicate that age has a negative relationship with physician consultation, implying that the older an individual is, the lesser the consultation. Morbidity has a positive relationship with consultation as such an individual affected need to visit or consult physician at least five times during the affected period. Both the sex orientation and place of residence were found to be insignificant in influencing physician consultation decision of the households.

Table 1: Logit and Linear Regressions of Healthcare Utilization by Household

Variable	Logit Regression			Linear Regression		
	Coefficient	Std. Error	Z-stat.	Coefficient	Std. Error	Z-stat.
Constant	-4.2178	0.0560	-75.3027	0.0100	0.0074	1.3588
Age	-0.0004	0.0009	-0.4414	0.0009	0.0002	4.8099
Morbidity	4.6918	0.0510	91.9240	0.7414	0.0096	77.3726
Sex*	-0.0183	0.0422	-0.4333	-0.0030	0.0073	-0.4051
Sector**	0.1031	0.0536	1.9241	-0.0088	-0.9859	-0.9859
Health Expenditure	1.4723	2.3451	6.2783	7.22E-08	0.0074	9.3497
McFadden R-Square	0.512679					
LR Statistics	15901.47					
Adjusted R-Square				0.131345		
Durbin Watson				1.821733		
F-Statistics				1248.868		
Dependent Variable	Consulted or Not			No of times consulted		

* Female used as the reference category in the logit model; ** Rural area used as reference category in the logit model. The linear regressions results indicate that age, morbidity, household expenditure are positively related to number of time an individual consulted physician. The F- statistic shows that the overall model is significant at both 1 percent and 5 percent. The value of Durbin Watson is approximately 2, which imply that there is no serial or auto correlation. Sex and sector are not significant on number of times visit was made to physician, that is, whether an individual is a male or female does not significantly influence consultation. Whether an individual also live in an urban area or rural area does not determine physician consultation. The regression result shows that some socio-economic and demographic variables would determine number of time that an individual would visit health centres.

Concentration index is analogous to Gini index. The use of concentration (C_m) is the cumulative proportion of excess of care use when population is ranked by increasing socioeconomic status while the needs concentration

(C_n) represents the cumulative percentage of excess of needs when population is ranked by increasing socio-economic status. C_m and C_n range from -1 (use or need that favours the rich) to 1 (favouring the poor). Because the inequity index is the difference between C_m and C_n , it has a minimum value of -1 in the case of inequity favouring the poor (all health services are used only by the poorer, for equal need) and a maximum value of +1 for inequity favouring the rich (all the health services are used only by the rich, for equal need).

Table 2: Estimated result of Horizontal Inequity

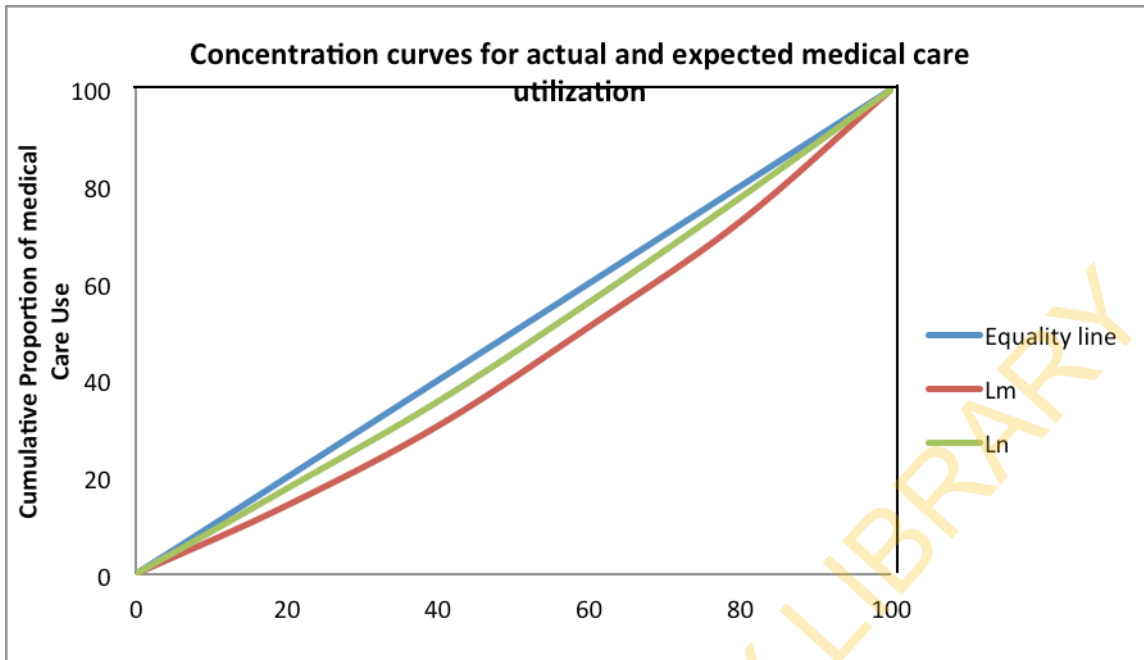
Group	Estimated logit regression		Estimated linear regression	
	Actual	Expected	Actual	Expected
Q ₁	729	908.1	841	1247.1
Q ₂	843	923.4	973	1268.9
Q ₃	1050	1050.5	1261	1446.7
Q ₄	1115	1107.5	1414	1550.4
Q ₅	1401	1148.5	2755	1730.8
	C_m	C_n	C_m	C_n
	0.13	0.05	0.24	0.07
Horizontal index	0.07		0.17	

Note: C_m : concentration index of medical used and C_n : concentration index of medical need.

The result in table 2 indicates that both C_m and C_n for the estimated logit and linear regressions are positive which indicate that both the use of medical care and the need for medical care favoured the poor. The opposite applies to HI, a positive value indicates an inequity favouring the better off strata, i.e. the rich. Furthermore, the estimated linear result shows that income is an important determinant of health care usage. Age, and health status are significant factors determining healthcare visit as well. In addition, the two concentration indices favour the rich, signifying a pro-rich system in which persons in equal need of treatment received dissimilar treatment as a result of income difference. Generally, the value of HI from this study is positive which also implies that the system favours the rich than the poor.

Geometrically, the horizontal inequity is based on the concentration curve for medical care use (L_m) and for need (L_n), ranking individuals by a socioeconomic variable, e.g. income (from the worst-off to the most well-off) as shown in figure 1. If both utilization and need are equally distributed across the socioeconomic groups, the two curves coincide with the diagonal. If, on the contrary, they lie above (below) the diagonal, the utilization of medical care and the need distribution is to the advantage the worse-off (better-off). Whenever the curve for need is located above both the diagonal and the medical care use curve, the pro-poor availability of medical care is not enough to cover the need of the most disadvantaged individuals. Therefore, the horizontal inequity index compares the level of need with the amount of medical care received by ranking each individual by income level.

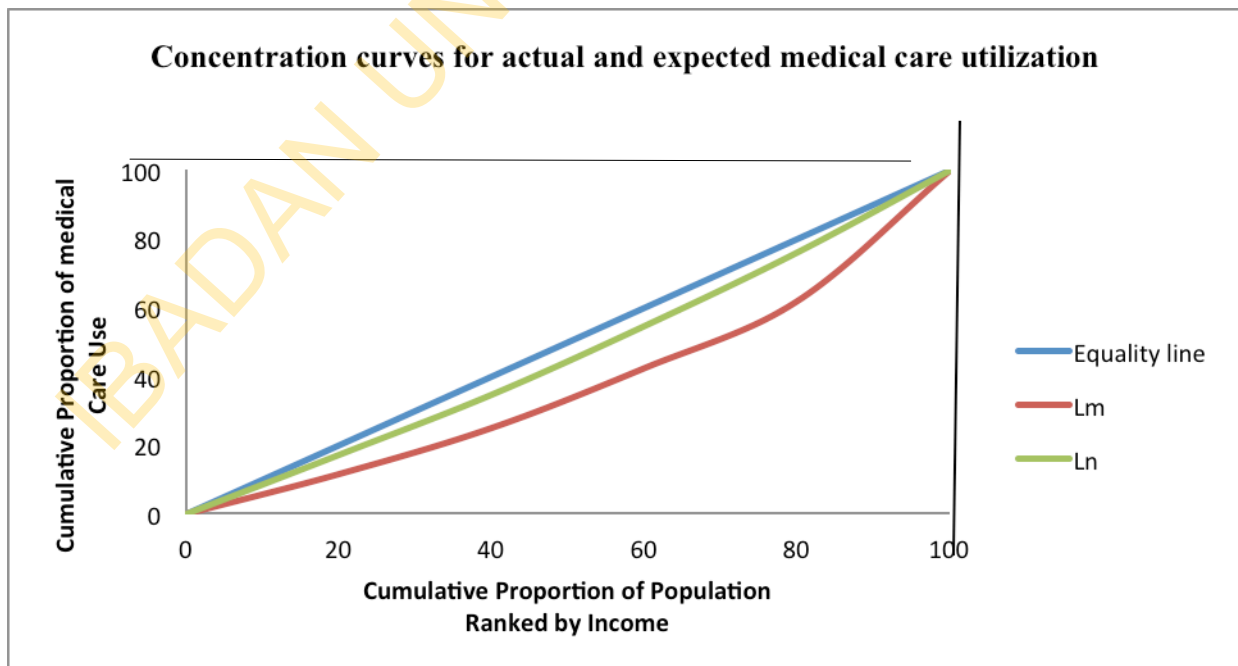
Figure 1: Concentration curves using logit



The level of inequity using estimated logit model can be interpreted more intuitively in the above geometric. The figure shows that both actual and need concentration curves lie below the equality line. The figure shows that the need concentration curve lies above the actual concentration curve, which implies that the higher income groups received a higher share of medical care than the poor groups. Thus, in this situation medical utilization favours the rich. The fact that, need concentration curve lies above actual concentration curve indicates that there is horizontal inequity. Consistent with the positive value of HI, is the positive area between the two curves.

Figure 2, based on the estimated linear regression model shows that both actual and need concentration curves lie below the equality line, which is similar to the estimated logit result. The need concentration curve lies above the actual concentration curve which implies that the higher income groups received a higher share of medical than the poor groups. Thus, the utilization of medical care favours the rich.

Figure 2: Concentration curves using linear regression



5. Discussion and Conclusion

Understanding the effect of difficulty in accessing healthcare is very crucial in the presence of growing inequalities in utilization of healthcare services in Nigeria. This study's results established that inequity in utilization of healthcare in the country is generally skewed against the poor. Evidence about the poor with similar medical needs as the rich having access to lesser healthcare is well established in our analysis. The HI result in the system for both estimated logit and linear regressions are not close to 0.5 in magnitude, implying that it is not a severe HI but a moderate value favouring the rich strata. The implication of HI results is that some healthcare services are used more by the rich strata than the poor strata.

Intuitively, the high income group are more likely to visit or consult health centres than the poor counterpart. This implies that the socioeconomic status of the household plays a significant role in being able to access healthcare services in the country. This is explained by the significance of household expenditure as a proxy for income in influencing the variation in utilization of healthcare. The utilization rate of healthcare services is found to be positively related to household expenditure. The issue of affordability by the poor groups to pay for private sector provided healthcare services become relevant. In such instance, the direct health care financing may lead to the exclusion of the majority of the people from the use of healthcare facilities, given that in such a system a household's decision to use healthcare service implies the decision to finance healthcare. Therefore, it is possible that the Nigerian health care system is excluding high proportion of the population from the use of healthcare services on the ground that they cannot afford the cost of the treatment.

Thus the disproportionality that characterises household expenditure is reflected in the differential in their ability to utilize healthcare services. This calls for greater intensity on equity measures that will guarantee healthcare to all with minimal discrimination.

While age also plays a significant influence on healthcare utilization, the coefficient is negative, signifying that increase in age tends to impact healthcare utilization negatively. In a society where self-medication is rife, experience from past consultation with medical professionals tend to build confidence to embark on self-help (self-medication) rather than consult. Thus self-medication habit tends to take pre-eminence over physician consultation as individual ages.

In a country where more than 75% of healthcare facilities are located in the urban areas, the extent of utilization possible is already biased against the rural people. This explains the positive coefficient of sector categorical variable, which implies that urban dwellers utilize healthcare services more than their rural counterparts. The uneven distributions of healthcare facilities across the country in itself constitute a barrier to access, and calls for deliberate policy measures to increase establishment of healthcare facilities in the rural disadvantaged areas. While the private facilities may not be attracted to rural area, due to weak patronage arising from the poor economic fortune of the people, government will be in better position to argue and fill the deficient gap in the rural area.

Sex and morbidity also influence utilization of healthcare. There are indications that women utilize healthcare more than men. This is consistent with expectation, given that there has been increasing promotion of reproductive healthcare services, which focuses more on women and children health in recent years. The pursuance of the MDGs in the last one decade in the country has stimulated access of women to healthcare services. It is expected and recommended that the pursuit of the recently unveiled SDGs should be accorded even greater attention to sustain the achievement in access to healthcare services.

Morbidity has a positive relationship with consultation as such an individual affected need to visit or consult physician at least five times during the affected period. However, the extent to which the health condition of individual affects his functionality often turned out to be a compelling factor to consult. The severity of the health condition of morbidity does influence decision to consult positively. The implication of this habit is that household often delay presentation of health condition. While self-medication might be favoured as initial option in seeking medical care, further deterioration of health condition and limitation on functionality eventually forces decision for physician consultation. Such physician consultation and prescribed treatment are often done at extra cost to the individual.

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