IMPACT OF NATIONAL HEALTH INSURANCE POLICY ON OUT-OF-POCKET HEALTH EXPENDITURE FOR SUSTAINABLE DEVELOPMENT IN KANO STATE, NIGERIA

Safiyya Abubakar Abba
Department of Economics,
Sa'adatu Rimi College of Education,
Kumbotso, Kano
+2348054643291
safiyyaabba82@gmail.com

Farida Mohammed Shehu*
Department of Finance,
Bayero University Kano, Nigeria
+2347038233587
fmshehu@yahoo.com

Nasiru Ado Shehu
+2348034969005
Nasiruadoshehu22@gmail.com

Corresponding author:
Farida Mohammed Shehu*
Department of Finance,
Bayero University Kano,
Nigeria
+2347038233587
fmshehu@yahoo.com

ABSTRACT

Globally, a health insurance scheme is set to ensure universal health coverage is accessible and affordable for all to ensure sustainable development. The National Health Insurance Scheme (NHIS) is not an exception. The increased quest for healthcare means an increased demand for healthcare complemented by healthcare utilization which is induced by reduction in catastrophic out of pocket payments on health. Empirical evidence using nonlinear econometric models revealed that demand for healthcare with endogenity of health insurance policy affects catastrophic health expenses. It is in view of this that the study seeks to identify factors responsible in explaining the extent and level of financial protection provided to users in Kano state, Nigeria amidst the NHIS policy since inception. The study collected data from a sample of 391 users and Logistic regression model was used to estimate out of pocket payments or NHIS to measure extent of financial protection provided to users. Findings from the study revealed that; socio-demographic, economic, individual specific and health specific factors determine the extent of financial protection among enrollees; aging population, the female and the severely ill are negatively affected by the policy; the enrollment criteria has left enrollees with healthcare burden that is settled out of pocket, in the same vein accredited public hospitals are ill-equipped which derives enrollees to accredited private hospitals and incur exorbitant healthcare costs. The model fit statistics have shown that the models fit the data set well. The study recommends that special consideration should be given to the old age, there should be a health insurance package for retirees and there should be closed monitoring and evaluation of the accredited centers (public and private) to ensure achievement of the desired goal of accessing healthcare at affordable cost among others.

Keywords*: National Health Insurance Policy, out of pocket health expenditure, sustainable development, Kano State, logistic regression*

1. Introduction

The central goal of health insurance policies worldwide is the provision of universal health coverage at affordable costs. Prior to the introduction of National Health Insurance Scheme (NHIS) in Nigeria, access to healthcare in both public and private healthcare provision is largely determined by patients' ability to meet out of pocket payments at the point of care. While most developed countries have health insurance cover for almost all their

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citizens, insurance policies were virtually non-existent in the third world countries until the turn of the millennium, which saw the replacement of user fees with subsidized health payments schemes. In Nigeria, the scheme was launched in 2005. The scheme provides cover to all federal government employees who are automatically enrolled and private sector employees whose enrollment is left in the hands of their employers. (NHIS, 2005). The health insurance policy cuts across all the 36 states of the federation plus the federal capital territory, Abuja, with accredited public and private healthcare providers. The central goal of every health insurance policy is to ensure access to healthcare for all. However, the introduction of NHIS in Nigeria has failed to make this sustainable development goal a reality due to persistent use of user fees. (Oladigbolu etal,2018), for instance, found that, in Sokoto state, out-of-pocket expenditures (user fees) negatively affect access to healthcare such that generally households that used user fees payment option were about three times more likely to have poor access to healthcare than those that did not use user fees or are covered by either private or social health insurance. Despite the implementation of NHIS, Aregboshola and Khan (2018) found that the healthcare system in the country does not protect the majority of the population from the effect of out-of-pocket health payments such that 40% of total household consumption expenditures is accounted for by health expenditures.

2. Literature Review

Literature is filled with a number of factors that mitigate access to healthcare and its crippled affordability; for instance, Socio-economic status has been in the forefront in determining the effects of health insurance schemes on out-of-pocket expenditures on health in many parts of the world like Kenya, Namibia, Nigeria, Albania, Bangladesh and India. Studies in these countries found that poorer individuals and households have lower absolute out-of-pocket expenditures on health than the wealthier individuals, but the impoverishing effect is higher among the poor than the rich (Chuma and Maina 2012; Gustafsson-Wright, Janssens, and Van der Gaag 2011; Hotchkiss etal 2005; Karan, Selvaraj, and Mahal 2014; Onwujekwe et al. 2014; Rahma etal 2013). In Sokoto state the residential location of the respondents affect healthcare access such that those in lower socio-economic status are more likely to have poor access to healthcare than those in the upper socio-economic status which often lead to delays or abstinence from seeking healthcare services. Those in the rural areas were found to have poor access to healthcare for the only payment option is out of pocket as the national health insurance scheme predominantly covers those in the formal sector (Oladigbolu et al, 2018). Similarly, out of pocket expenditure (user fees) negatively affect access to healthcare such that generally households that used user fees payment option were about three times more likely to have poor access to healthcare than those that did not use user fees or are covered by

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either private or social health insurance. In addition to this, socio-economic status and residential location of the respondents affect healthcare access such that; those in the lower socio-economic status are more likely to have poor access to healthcare than those in the upper socio-economic status which often lead to delays or abstinence from seeking healthcare services. Those in the rural areas were found to have poor access to healthcare access as the only payment option is out of pocket since the national health insurance scheme predominantly covers those in the formal sector (ibid, 2018).

In Uganda the rate of out-of-pocket expenditure on health reduced with the removal of user fees at public hospitals, but due to unavailability of drugs and other medications and the fact that the insured will have to purchase medications privately the rate increased (Devadasan et al, 2007). In a study conducted in Zimbabwe, Zerg et al (2018) found that out-of-pocket expenditure on health drove 1.29% of the Zimbabwen population into poverty and increased the poverty rate from 55.39% to 56.69%. In the same vein out of pocket health payments for malaria among under-five children was found to be positively related to level of education in Uganda (Orem et al, 2013). Accordingly, Aregboshola and Khan (2018) asserted that the public healthcare sector is on the verge of collapse due to insufficiency, poor infrastructure and poor resources. Utilizing 2001/2010 HNLSS data set they found that despite the implementation of NHIS, the healthcare system in the country does not protect the majority of the population from the effect of out-of-pocket health payments. At a threshold of 5% to 40% the study revealed that both total household consumption expenditure and household non-food consumption expenditure incurred catastrophic health payments at 40% of total consumption expenditure and non-food inpatient care more than the poor who rather utilize outpatient care more often or at extreme adapt herbal medication than going to the hospital.

In developed nations several studies showed that health insurance reduces the risk of out-of-pocket expenditure on health; for instance, in Mexico Gakidou et al (2006) and Knaul et al (2006) found that introduction of popular health insurance scheme led to the reduction of high health spending, however in Thailand the introduction of universal health insurance scheme resulted to lower out-of-pocket health expenses since 2001 (Limwattananon, et al,2007). however, high rate of out-of-pocket expenditure on health were recorded among those with insurance in Vietnam due to increase in the utilization of healthcare facilities induced by extension of the insurance coverage to the unemployed poor financed through general revenues (Wagstaff & Pradhan, 2005). Similarly, China's urban insurance scheme was reported to have increased out-of-pocket expenditure on health due to weak regulation of providers plus the fee for service payments and a fee schedule that allows providers to make profits on drugs and on patients receiving intensive care (Wagstaff & Lindelow, 2008). Similarly, China's rural insurance did not reduce out-of-

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pocket spending, this is attributable to exclusions, high deductibles, low reimbursement ceilings and high fee for service charges like those of the urban insurance scheme (Wagstaff et al,2007).

Demographic characteristics of individuals also constitute important determinants of the extent of financial protection provided by health insurance policies, globally. For instance, in Brazil out-of-pocket expenditure is found to be low for children between the age of 1-4 years (da Silva et al. 2015). This finding is similar to the finding in China that out-of-pocket expenditure on health is relatively higher among the elderly who are aged 65 and above when compared to the younger ones and among women whose ages fall between 20 to 34 than men in the same age group (You & Kobayashi, 2011; Gao & Yao, 2006). Educational status is seen to influence higher out-of- pocket expenditure in Brazil (da Silva et al. 2015) and in India higher educational attainment is found to exert positive impact on maternal healthcare spending (Leone, James & Padmadas 2013; Mohanty & Srivastava 2013).

Even though the studies reviewed above have classified the respondents into upper and lower classes but have not clearly shown the criteria by which the classification is based, income should have been used instead of socio-economic status since the NHIS targets the segment of the population in the formal sector. The effect would have been more visible if the respondents constituted registered NHIS beneficiaries or those in the formal sector. Hence this study will fill this gap by extracting information from the registered beneficiaries of the country's pre-payment healthcare policy.

In order to determine the impact of NHIS on out-of-pocket expenditure on health for sustainable development in Kano state, Nigeria, the study will go a long way to find the following objectives:

(i) The impact of NHIS on reducing catastrophic health expenditure among enrollees;

(ii) The extent to which NHIS has reduced cost of huge medical expenses;

(iii) The extent to which NHIS has reduced access to good quality healthcare.

To achieve these goals, the study is set to test the following hypotheses:

H_0 - National Health Insurance Scheme has not provided financial protection to enrollees;

H_0 - National Health Insurance Scheme has not reduced the cost of medical for patients that require huge medical expenses.

H_0 - National Health Insurance Scheme has not reduced access to good quality healthcare

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3. Methodology

The population for the study constitutes all federal government civil servants in Kano state, Nigeria. The sampling frame therefore comprises of all the staff (academic and non-academic) of all the federal tertiary education institutions located in Kano state which stood at 5142.

The study used simple random sampling technique and adopted Yamane's formula (n = $\frac{N}{1+N(e)^2}$) to compute the sample size of 371. However, in order to cater for non-response bias the study computed the degree of non-response bias using $n_2 = \frac{n}{Rr}$ and the new sample size determined is 391. The sample is then distributed pro-rata using: $\frac{Ni}{N}(n_2)$ such that the number of respondents from Bayero University, Kano with a population of 2778 is 211, 51 respondents from Federal College of Education Technical Bichi with a population of 664, Nigerian Police Academy has 45 respondents from a population of 594, 66 respondents from Federal College of Education Kano with a population of 871, 5 respondents will be drawn from National Open University, Kano study center with 65 staff capacity and 13 respondents will represent Federal College of Agricultural Produce Technology, Kano with a population of 170.

The study employs logistic regression and assessed the impact of national health insurance policy on financial protection by measuring out-of-pocket expenditure on health as a function of three demographic factors: age, gender and population composition of dependents, three insurance determinants: type of insurance policy enrolled, amount payable at the point of service delivery with insurance policy and number of dependents enrolled, three individual specific health characteristics: type of healthcare provider, severity of sickness and peculiarity of sickness.

Logistic regression model was employed to model level of financial protection; this is because the discreteness of the dependent variable is ignored by the ordinary least squares married with its inability to constrain predicted probabilities to be between zero and one.

The relationship is modeled with binary logistic equations as follows:

$$\text{Log} \frac{oop}{1-oop} = \beta 0 + \beta 1AGRi + \beta 2GERi + \beta 3TIPi + \beta 4NODi + \beta 5SSi + \beta 6PECSi + \beta 7PCDi + \beta 8\,THP + \beta 9APPD + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

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The model is adapted from the works of (Hidayat & Pokhrel, 2010; Kimami, Mugo & Kioko, 2016) who modeled out-of-pocket expenditure on health with respect to socio-demographic characteristics and insurance determinants.

Fi=Yzi+Xiβ+μ2i. . . . . (2)

Fi = out of pocket expenditure on health

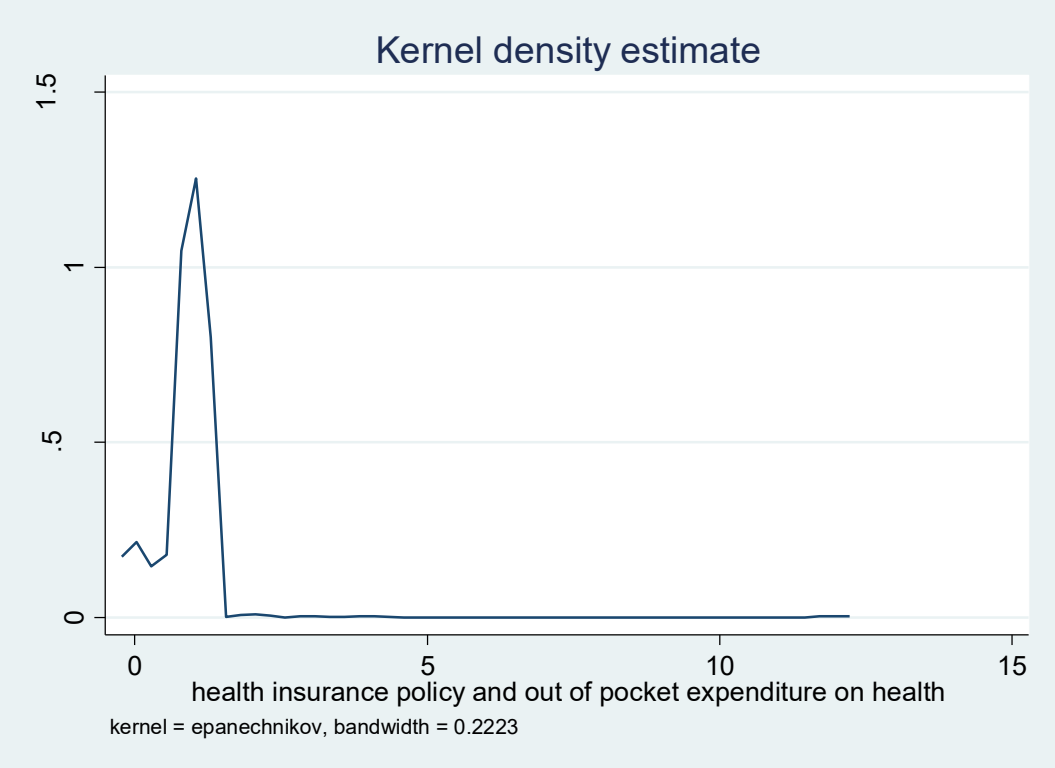
Z = is a raw vector of observable determinants that influence insurance status

Xi = are a vector of health socio-economic and demographic characteristics.

μ_2i = Random error term capturing unobservable insurance determinants.

4. Results and Discussion

Figure 3.1 Kernel Density Plot showing the Distribution Pattern of Financial Protection Provided by NHIS to the Respondents Owing to their Enrollment or Otherwise



Source: Researchers Analysis of Findings using Stata 14

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The Kernel density graph above simply describes the dependent variable; out-of-pocket expenditure on health; it shows that the distribution is not normally distributed and explains a pre-condition that necessitates the employment of non-linear regression model (logistic regression to be precise) to analyze the impact of national health insurance policy on financial protection (expressed as out of pocket expenditure on health) in Kano state.

The following Table 3.1 shows the estimates of the impact of National Health Insurance policy on financial protection.

Table 3.1: Estimates of the impact of National Health Insurance Policy on Financial Protection among Federal Civil Servants in Kano State, Nigeria

Variables	Coefficient	Odds ratio
	Age of the respondents	
35-49	4.267422*	71.33747
	(.2702982)	(158.6316)
50-64	2.817269*	16.7311
	(.2533691)	(25.36572)
	Gender of the respondents	
Female	-1.281	.2777593
	(-.0446944)	(.3107915)
Population composition of	1.793847	6.012541
dependents	(.0451207)	(7.878821)
No. of dependents enrolled	-.577432	.561338
	(-.0145242)	(.2290764)
	Type of health insurance policy	
Private health insurance	5.052341	156.3881
	(.5678679)	(531.726)
Community based health	2.159792	8.669331
insurance	(.4407864)	(20.52803)
NHIS	4.318356*	75.06508
	(.4407864)	(191.6165)

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	Type of hospital	
Public hospital	-.6084125	.5442141
	(-.0143304)	(.6703431)
Amount payable at the point	1.436166	4.204543
of service delivery	(.0361239)	(5.890616)
Peculiarity of sickness	2.682063	14.61521
	(.067462)	(29.83255)
Severity of sickness	-.8042207	.4474365
	(-.0202286)	(.5851242)
Constant	-3.573532	0280566
		(.0857277)
Pseudo R^2	0.3242	0.3242

Source: Researchers Estimates Using Stata, 14

Values in parenthesis represent marginal effects and standard errors, respectively.

*p<0.1, **p<0.05, ***p<0.01.

Age of the respondent is categorized into three: 35-49, 50-64 and reference group above 65years. The first two categories are statistically significant at 10% level. The log of odds of securing financial protection with health insurance policy increases with every unit change in the age of the respondents by 4.267 and 2.817 respectively, and the probability that the national health insurance policy provides financial protection to the respondents within the working age is 71.33 and 16.73; whereas the predicted probability is 0.27 and 0.25 in comparison with respondents above 65years. Impliedly the results show that the older a person is the less likely the national health insurance policy provides financial protection to him, since healthcare demand is higher among the elderly than the middle-aged and the aged are faced out of the policy due to retirement. Gender of the respondents on the other hand negatively relates to financial protection, in essence the log of odds of the NHIS providing financial protection to the female folk of the society reduces by -1.281 and the probability that N HIS provides financial protection to the female folk is 0.278, impliedly the female segment of the population receive low financial protection with the insurance policy irrespective of their higher demand for healthcare.

Population composition of respondents' dependents increases the financial protection the respondents enjoy. This is because the log of odds of the NHIS policy increases by 1.793 and the probability that NHIS

provides financial protection irrespective of the size, sex and age of the respondents' dependents is 6.014, whereas the predicted probability is 0.045. However, the number of dependents enrolled posits a negative outcome as, for every unit increase in the number of dependents enrolled, the log of odds of the NHIS policy providing financial protection reduces by -0.577 and the probability that the NHIS provides financial protection irrespective of the number of dependents enrolled is 0.561, while the predicted probability is -0.015.

The type of health insurance policy a respondent is enrolled in is categorized into three: private health insurance policy, community-based health insurance and NHIS. The log of odds of providing financial protection to respondents with private health insurance in addition to NHIS increases by 5.052 and the probability that they will gain better financial protection is 156.388, whereas the predicted probability is 0.568. The log of odds of providing financial protection among respondents with community-based health insurance plus NHIS increases by 2.159 while the probability that community-based health insurance policy provides financial protection is 8.669 and the predicted probability is 0.441. In the same vein the log of odds of providing financial protection among respondents enrolled with NHIS only is 4.318 and the probability that they gain financial protection by the policy is 75.065 while the predicted probability is 0.441. This category is statistically significant at 10%.

The type of hospital a respondent visits reduces the likelihood of having financial protection by the health insurance policy. This is because the log of odds of gaining financial protection reduces by -0.6084125 if the respondent visits public hospital in comparison with private hospital and the probability that the respondents will be financially protected if they visit public hospital is 0.544 whereas the predicted probability is -0.014.

The national health insurance policy is viewed to provide financial protection with respect to the amount payable at the point of service delivery as the log of odds of providing financial protection increases with the charges made when NHIS clinics are utilized rather than user fees by 1.436 and the probability that the NHIS provides financial protection with the 10% charges is 4.205 whereas the predicted probability is 0.036.

The log of odds of providing financial protection among respondents with peculiar ailments is 2.682 and the probability of providing financial protection among respondents with peculiar sickness is 14.615 while the predicted probability is 0.067. Severity of sickness on the other hand suffers financial protection by the policy as the log of odds of providing financial protection among respondents that are severely sick reduces

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by -0.804 and the probability that severely ill respondents get financial protection from the policy is 0.447 and the predicted probability is -0.020.

4. Discussions of Findings

The model relates to the national health insurance policy and financial protection measured by out-of-pocket expenditure on health. For the purpose of this study, out-of-pocket expenditure on health was conceived for two reasons: payment of medical bills of enrollees and their biological dependents and costs of healthcare of their non-biological dependents. This is because with NHIS every citizen has the right to be insured. However, primary enrollees (employees of the federal government) are entitled to one spouse and four under eighteen children, whereas extra dependents are sub categorized into two: biological dependents including non-schooling children above eighteen years, parents, grandchildren and siblings and non-biological dependents like maids, neighbors and friends. The enrollee pays annual premium of ₦9000 and ₦5000 for his extra biological dependents and non- biological dependents respectively. Logistic regression was employed to estimate the probability of an individual incurring a positive health expenditure or otherwise with insurance policy given a set of explanatory variables.

People between the ages of 35-64 are likely to enjoy financial protection by the policy whereas the older people incur out of pocket payments. This is because the former category is part of the working population and premiums are paid directly from their earnings, whereas the elderly who are mainly retirees are not affected by the policy so that they have to resort to out-of-pocket payments. This finding conforms to those of Zerg, et al, (2018), Gender is positively related with the likelihood of incurring out-of-pocket expenditure on health. This is because women have higher demands for healthcare especially during pregnancy and childbirth and owing to the insufficient infrastructure in the hospitals where they are enrolled, they are made to make payments out of pocket. This conforms to the studies carried out in China that out-of-pocket expenditure on health is relatively higher among the elderly who are aged 65 and above when compared to the younger ones and among women whose ages fall between 20 to 34 than men in the same age group (You & Kobayashi, 2011; Gao & Yao, 2006).

The study found that Population composition of dependents increases financial protection since premiums and reliefs (payments at the point of service delivery) enrollees pay does not solely depend on the sex of the dependents. The number of dependents enrolled increases out-of-pocket payments as there is limit to the number and age of dependents to enroll. Results suggest that all the three categories of health insurance packages lead to a reduction in out-of-pocket expenditure on health and this further suggests that

individuals that utilize both NHIS and private health insurance, community-based insurance and NHIS only have higher likelihood of enjoying financial protection from the health insurance policy. This finding is in harmony with the findings of Deb & Trivedi (1997) who discovered that in the United States of America citizens have the right to choose either Medicaid or Medicare or a hybrid of the two plus private health insurance as the case may be.

Utilization of public hospitals and choice of health insurance plan increases the likelihood of respondents to incur out-of-pocket payments. This is because about 80% denied enjoying financial protection if they utilize public hospitals since most medications or medical examinations are either substandard, require long queues, expensive or not readily available in the hospital. This has made healthcare access costly and not affordable, especially among those living in rural areas.

The variable economic amount payable at the point of service delivery and peculiarity of sickness relieves people from out-of-pocket payments. This is because enrollees are required to pay only 10% of the total costs for all medications and 30% for radio logical and laboratory investigations that require huge expenses. But there is a limit however as severe sicknesses that require huge medical expenses are exempted and therefore people with severe illness have higher likelihood of incurring out-of-pocket payments. This indicates that people with severe illnesses or medications requiring huge expenditure are poorly funded. This conforms to the findings of Aregboshola and Khan (2018) that despite the implementation of NHIS, the healthcare system in the country does not protect the majority of the population from the effect of out-of-pocket health payments. On the contrary, in the developed countries, chronic ailments that require huge medical expenditure are taken care of by the government. Examples of this can be found in Mexico (Gakidou et al, 2006, Knaul et al, 2006), in Thailand (Limwattananon, et al,2007), and in America where Medicaid provides 100% insurance to adults and children with chronic diseases. (Medicaid fact sheet, 2013)

5. Conclusion

Healthcare provision at affordable costs is the concern for all economies and is rated 5th in sustainable development goals. The increasing healthcare demand married with uneven distribution of healthcare facilities necessitated the call for increased government expenditure outlay on health globally. In a view to take a leap from postpaid mechanism to a prepaid system, the Nigerian government in 2005 introduced a mandatory health insurance scheme named National Health Insurance Scheme (NHIS) to cater for the increasing demand for health care with a view to reduce out-of pocket expenses on health of the citizens

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and ensure universal healthcare access and utilization. It is therefore in line with these objectives that this study was conducted and found that, to a large extent, the policy has significantly achieved the stated goals. However, the extent of coverage is of great concern as a lot of restrictions with regards to age, size and cost of healthcare are imposed. In the same vein, the policy has failed to provide financial protection to the teaming population with higher demand for healthcare as well as limitation to those with huge medical expenses. This has generally reduced healthcare access and utilization. Access to healthcare is made costly since not every prescribed medication is found in the NHIS pharmacy and sometimes when found they tend to be substandard and forced enrollees to resort to out of pocket. However, in the rural areas where alternative medical care is rarely found, patients find access more costly contrary to the intent of the program.

6. Recommendations

Based on the findings on the key objectives, the following recommendations are made in order to have a leveled playing ground for smooth application of the policy so that the trickledown effect is felt by all and sundry.

(i) Special consideration should be given to the old-age, there should be a health insurance package for retirees and the old as the study has confirmed that the elderly have higher healthcare demand, but are disadvantaged in terms of utilization of healthcare and financial protection; the government can mimic the Medicaid of the United States which provides cover to the retirees at zero cost.

(ii) Infrastructure in terms of laboratory equipment, pharmacies, medications, diagnostic machines and manpower should be made readily available at the accredited centers since inadequacy of the required facilities served as hindrance to attaining the sustainable development goal of access to healthcare for all. This can be done by pooling resources from the premiums and government contribution in a separate account to be used for equipping NHIS accredited heath facilities and registering more facilities in remote areas to mitigate high access costs.

(iii) There should be closed monitoring and evaluation of the accredited centers (public and private) to ensure the achievement of the desired goal of accessing healthcare at an affordable cost. This will pave way for utilization of public hospitals and reduce exorbitant charges by accredited private hospitals.

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(iv) The health insurance scheme should be generous to cater for the needs of those in chronic health conditions since they have both higher demand for healthcare and utilization and not financially secure.

(v) There should be more awareness campaign concerning the policy's extent of coverage since enrollment is not limited to federal government employees. All citizens have the right to register themselves and their kinfolks at rates affordable for sustainable development.

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