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GOVERNMENT HEALTH FINANCE AND MALARIA MITIGATION IN NIGERIA: EMPIRICAL ANALYSIS

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Abstract

This study examines the effect of government health finance on malaria mitigation in Nigeria. It specifically examines the relationship between government recurrent expenditure on health, per capita income, malaria cases, literacy rate, government regime and malaria death cases. The study employs time series data from 1990 – 2014. Granger causality, Johansson co-integration and the error correction mechanism (ECM) are employed as estimation techniques after the application of the Augmented Dickey Fuller test. Time series data were sourced from Central Bank of Nigeria statistical bulletin, various issues and World Bank Health indicators official record. The findings show that there exists both long and short run relationship between government health finance and malaria mitigation in Nigeria. It was ascertained that government recurrent expenditure on health has not reduced the occurrence of malaria death cases and it is not statistically significant. Literacy rate was observed to contribute towards the occurrence of malaria death case and it is not statistically significant. Malaria case increases malaria death cases and it is not statistically significant; per capita income does not decreases the incidence of malaria death cases in the period observed; and Government regime was ascertained to have impact in terms of reduction of malaria death cases in Nigeria and it is statistically significant.

It is therefore recommended that hospitals and clinics should regularly organize sensitization/orientation performances on the effective use of treated mosquito nets by the citizens in Nigeria with a view to reducing the continual occurrence and outbreak of malaria attack.

Keywords: Malaria death cases, malaria cases, Government expenditure on health, Per capita income, literacy rate.

Introduction

The prevalence of malaria in developing countries such as Nigeria appears to be on the ascendancy unlike in the developed countries of the world. Malaria is common to both young and old persons in developing countries, particularly in Africa. As noted by Nwanosike, Ikpeze and Ugbor (2015), malaria accounts for 60% of out-patients visits and 30% of hospitalization among children under five years of age. This obviously is an indication of a fast declining health outcome and in fact health challenge as far as Nigeria is concerned.

According to the World Health Organization (2012), at least 50% of the population in Nigeria suffers from at least one episode of malaria each year and more reported cases of deaths due to malaria than any other country in the world. The incessant occurrence of death from malaria in Nigeria has continued to put well-meaning individuals, bodies and the government into a worrisome state. Attempt to combat it has led to the production of varying effective drugs of different brands with certification by health agencies like NAFDAC, Ministry of Health, and others. Given the low level of per capita income in Nigeria and precisely the greater percentage of the populace living in poverty, affording the purchase of these malaria drugs that are quite expensive further exacerbate the situation.

In Nigeria, this has grave implication for economic growth, development and attainment of the Millennium Development Goals target as well as the Nigeria's Vision 20: 20: 20. To reduce the menace of malaria and its attendant challenges to both human capital and economic development, the Nigerian governments have increased financial commitments to mitigate the adverse effects. From the point of view of Nwanosike et al (2015), the costs of malaria in terms of under-five mortality, life expectancy and infant mortality and morbidity depict a declining health outcome in Nigeria which is a socio-economic cost to the economy. Despite several efforts being put in place by the government to eradicate malaria with its associated impact on health outcome in Nigeria such as Roll Back Malaria, Free insecticide-treated nets distribution, insecticide spraying, national health insurance scheme among others, several set backs have been encountered which have actually made effective and sustainable control of the disease difficult (FMOH, 2011).

These problems have accelerated malaria effects on the health status particularly on under-5 mortality rate, low life expectancy and cost in Nigerian economy in terms of high government spending on health, reduction in labour supply and efficiency, low productivity and income, high malaria cases and death (Nwanosike et al, 2015). They surmise further that there has not been dramatic reduction in malaria cases and deaths in parallel with the intensified campaign and spending against malaria. Additionally, Black, Consens, Johnson, Lawn, Pudan, Bassani, Jha, Campbell, Walker and Cibulskis (2010) earlier reported that malaria is estimated to account for 732,000 deaths among children aged 5 or less or about 8% of all such deaths.

To what extent government health finance or expenditure significantly reduce the adverse impact of malaria in developing countries like Nigeria especially in the light of global economic hardship remains a subject of investigation on the empirical fronts.

Review of Related Literature

Conceptual Clarification

Malaria is a term commonly used for the four species of malaria plasmodia that infect human beings and they include plasmodium falciparum, plasmodium vivax, plasmodium ovale and plasmodium malariae (Nwanosike et al, 2015). Plasmodium falciparum is the most dangerous form of the disease, accounting for 90 percent of malaria deaths in the world (Benjamin Mangheni&Ringler, 2012). The economic loss to Nigeria due to malaria is estimated at N132 billion annually due to loss of man hours resulting from sickness, absence and cost of treatment; it is a major cause of absenteeism from work and school; it contributes to poverty and results in poor pregnancy outcome (Lagos State Ministry of Health, 2015).

Malaria is a parasitic disease transmitted by anopheles mosquito (Bruce-Chwatt, 1985; Brinkmann&Brinkmann, 1991). The human malaria exposure rate is determined by the fraction of the mosquito population carrying the parasite. According to Bello (2004), a typical bout of malaria lasts from 10 to 14 days, with 4 to 6 days of near complete incapacitation and recuperation periods of 4 to 8 days characterized by fatigues and weakness.

Usually when the infected anopheline mosquito takes a blood meal, sporozoites are inoculated into the bloodstream. Within an hour sporozoites enter hepatocytes and begin to divide into exoerythrocyticmerozoites (tissue schizogony). For P. vivax and P. ovale, dormant forms called hypnozoites. Once merozoites leave the liver, they invade until a later time; P. falciparum does not produce hypnozoites. Once merozoites leave the liver, they invade erythrocytes and develop into early trophozoites, which are ring shaped, vacuolated and uninucleated. Once the parasite begins to divide, the trophooites are called schizonts, consisting of many daughter merozoites (blood schizogony). Eventually, the infected erythrocytes are lysed by the merozoites, which subsequently invade other erythrocytes, starting a new cycle of schizogony. The duration of each cycle in P. falciparum is about 48 hours. In non-immune humans, the infection is amplified about 20-fold each cycle. After several cycles, some of the merozoites develop into gametocytes, the sexual stage of malaria, which causes no symptoms, but are infective for mosquitoes.

In non-immune individuals with P. falciparum infection, the median pre-patent period (time from sporozoite inoculation to detectable parasitemia) is 10 days (range 5-10 days), and the median incubation period (time from sporozoite inoculation to development of symptoms) is 11 days (range 6-14 days). The incubation period may be significantly prolonged by the level of immunity acquired through previous exposures, by antimalarial prophylaxis, or by prior partial treatment, which may mitigate, but not prevent the disease. Most non-immune travelers develop symptoms of falciparum malaria within 1 month of departing from a malaria-endemic area (median 10 days); there have been reports of falciparum malaria presenting up to 4 years later. For non-falciparum malaria the incubation period is usually longer (median 15 – 16 days), and both P. vivax and P. ovale malaria may relapse months or years after exposure due to the presence of hypnozoites in the liver. The longest reported incubation period for P. vivax is 30 years

Empirical Review

A lot of studies have been effectuated to robustly ascertain the significant relationship between government health expenditure and malaria effect mitigation. The results obtained thus far have been mixed; thus necessitating a reexamination of the subject matter. Nwanosikeetal (2015) investigated the relationship between health outcome and malaria prevalence in Nigeria using OLS estimation technique, the result they shows that malaria cases impact on under-five mortality, and the degree of the impact determines the effect of malaria prevalence on health outcomes in Nigeria, which are of course, low life expectancy and reduction in active labour force.

Bello (2005) examines the relationship between deaths from malaria, public health and non -health expenditures in Nigeria using data from 1975 – 2001. The study reveals that there is a negative relationship between deaths from malaria, public health expenditure, per capita income and non-public health, but a positive relationship between deaths from malaria and political instability. He suggests that in addition to the current N14, 000 per capita health expenditure, there should be a transfer of an additional N45, 684 per head from other sectors to the health sector to avert death from malaria.

NHMIS (1999) observed robustly that malaria is by far the most important cause of morbidity and mortality in infants (38% and 28%) and young children (41% and 30%). Olufunke and Olumuyiwa (2009) investigated malaria in rural Nigeria to ascertain that an estimate of about 10% of gross domestic output of Oyo State is being lost annually due to malaria attack. The conclusion they drew was that effective control of malaria is needed to combat its attack. Ojewumi and Ojewumi (2012) examined the trends in health outcomes and infant mortality in Nigeria, as a wake-up call for intervention towards achieving the 2015 MDGs target.

They applied data on the trends in infant and child mortality in Nigeria and pointed out that between 1990 and 2008, under five mortality rates in Nigeria only falls from 199 to 157 against the 62 MDGs target in 2015. They suggest an urgent action and greater national priority on child priority on child survival through interventions that will be integrated at community and family levels, targeting pregnant women, under-5 children and accessing the hard-to-reach in order to meet the 2015 MGDs.

Olalekan and Nurudeen (2013) examined the impact of health spending on malaria reduction, using both private direct costs and indirect costs of malaria attack using Asa Local Government Area of Kwara State as a case study. The research findings indicate that 37 percent of the population sampled suffered malaria attack with dependency ratio of 33%. An average of about 3 days are lost by sick adult, about 2 days by the caretaker while on the average a sick student misses about 2 school days. The study suggested that government should expand the provision of free and highly subsidized insecticide treated mosquito nets. Chima and Goodman (2003) through empirical study suggest that malaria reduction may be attained by avoiding malaria areas or by undertaking production in such a way as to avoid exposure to mosquitoes.

Nwanosike (2014) robustly determine the nexus between health spending and malaria reduction in Nigeria. Premised on the findings obtained from the study, he stressed that if greater resources are available for malaria control, a high economic growth and successful malaria reduction will be recorded before the end of 2015 in Nigeria. By and large, the predicted year 2015 has come and gone. The main question that is mind bogging is, did this objective/prediction actually come to limelight? Anyway, this study will shed light to this direction.

Nwagha, Dim, Anyaehie, Egbugara and Onwasigwe (2014) carried out a comparative analysis on the benefit and incidence of government program on malaria in Enugu between urban and rural areas and report that within each socio-economic stratum, the average monthly expenditure in the urban community was higher than that of the rural community except for the least poor. Wahab and Oni (2015) did empirical analysis of economic burden of ill-health on household productivity in Nigeria. The result shows that households incurred an average cost of N300.69 to spiritualists, N330.35 to self-medication and N1, 940 to clinic for malaria treatment.

Using Classification Rule Analysis (CRA), McCarthy (2000), examined the determinants of cross-country differences in malaria morbidity and examined the linkage between malaria and economic growth. It was confirmed that there is a dominant role of climate in accounting for cross-country difference in malaria morbidity. Controlling for climate, the article suggests that access to rural health care and income equality influence malaria morbidity. In addition, the study further shows that there is a significant negative association between higher malaria morbidity and the growth rate of GDP per capita. The study estimated that absolute growth impact of malaria differs sharply across countries; it exceeds a quarter percent per annum in a quarter of the sampled countries. Most of these are located in sub-Saharan Africa (with an estimated annual growth reduction of 0.55%).

Onwujekwe et al (2000) compared the financial and economic costs of malaria attack to that of a combination of other illness episodes on households in five malaria holo-endemic rural communities. The findings show that the cost of treating malaria illness accounted for 49.87% of curative health care costs incurred by the households. Average malaria expenditure was $1.84 per household per month, while it was $2.60 per month for the combination of other illness episodes. The average person-days lost due to malaria and the combination of other illnesses were almost equal. If the financial costs of treating malaria and other illnesses are combined, this cost will deplete 7.03% of the monthly average household income, with treatment of malaria illness alone depleting 2.91%.

At the micro level, Olalekan and Nurudeen (2012) traced the impact of health spending on malaria reduction, using private direct cost (PDC) and private indirect cost (PIC) of malaria attack per episode approach to examine the trend of malaria burden and the effectiveness of malaria control measures using Asa Local Government Area of Kwara State as a case study. The research findings indicate that 37 percent of the population of the studied sample suffered malaria attack with a dependency ratio of 33 percentage. An average of about 3 days are lost by sick adult, about 2 days by the caretaker while on the average a sick student misses about 2 school days. The total private direct cost of treatment is ₦375, 480 billion, total private direct protection cost is ₦446, 070 billion and total private indirect cost is ₦1.409, 790 billion.

The total cost of malaria illness in Nigeria was estimated to be about ₦2,231.34 billion representing 7.3 percent of the GDP in 2011. This is in line with Uguru, Onwujekwe, Uzochukwu, Igiliegbe and Eze (2009) observation that the average expenditure to treat an episode of malaria ranged from as low as ₦131 ($1.09) to as high as ₦348 ($2.9). The study recommended that government should expand the provision of free and highly subsidized insecticide treated mosquito nets.

Methodology

This study employs time series data from 1990– 2014. Granger causality, Johansson co-integration and the error correction mechanism (ECM) are employed as estimation techniques after the application of the Augmented Dickey Fuller test. The model of Nwanosikeetal (2015) on investigation of malaria prevalence and health outcome is used but modified in order to suit the direction of this study. The mathematical form of our model is expressed as:

Deathfrom Malaria Cases=F(GREXH, Literacy Rate, malaria cases, Per Capita Income, Government regime).This is further specified in econometric form as:

$$\text{Mdeatht} = \beta_0 + \beta_1 \text{GREXH}_t + \beta_2 \text{LITR}_t + \beta_3 \text{MCASES}_t + \beta_4 \text{PC}_t + \beta_5 \text{GR}_t + \mu_t \ldots\ldots (1)$$

$\beta_1 - \beta_5$ are coefficients of parameters to be estimated.

Where
Mdeath represents death from malaria cases,
GREXP represents government recurrent health expenditure on malaria,
PC represents per capita income,
LTR represents literacy rate,
GR government regime while
Mcases represents malaria cases.
$\mu_t$is the stochastic disturbance term,
$\beta_o$is the intercept.

Thus, the apriori expectation based in line with theory is $\beta_1 - \beta_4$. This connotes that all the explanatory variables are expected to be positively signed towards the endogenous variable in the construct.

Empirical Analysis

This section begins with the application of the conventional method of Augmented Dickey Fuller (ADF) methodology to ascertain the stationarity of all the variables employed in the construct. The result of this test is presented in the table below:

Table A: Augmented Dickey Fuller (ADF) test for stationarity

Variables	ADF	Critical values at 5%	Order of integration
MDEATH	-4.448893	-3.673616	1(0)
GREXH	-3.706252	-3.673616	1(0)
LITR	-6.967406	-3.632896	1(1)
MCASE	-8.021407	-3.622033	1(1)
PC	-5.530237	-3.690814	1(2)
GR	-7.558375	-3.632898	1(2)

Source: E-view 7.0 output.

The table above clearly shows malaria death cases and government recurrent expenditure on health are stationary at levels. Similarly, both literacy rate and malaria cases are stationary at first difference while the other variables, per capita income (PC) and government regime (GR) are stationary at second difference.

From the above table, it can be observed that there is causality between malaria death cases and government recurrent expenditure on health unidirectional basis - implying that the lower malaria death case, the higher is government recurrent expenditure on malaria. There is a granger causality relationship between malaria death cases and literacy rate uni-directionally. This portends that the more the people are given health education, orientation and sensitization about the harmful effects and/or implication of living in mosquito infested environments, they are able to take preventive measure. Consequently, the vulnerability to malaria attack and malaria death cases reduces drastically.

Literacy rate granger causes government recurrent expenditure while government recurrent expenditure granger causes literacy rate. This is a bi-directional relationship. The result suggests that peoples' orientation/education about the various programmes of the government at meeting health problems goes a long way towards reducing the health burden and vice versa. Malaria cases granger causes government recurrent expenditure on health uni-directionally suggesting that the lower the malaria cases, the lower government financial commitment on malaria mitigation. There is a bi-directional relationship between per capita income and government recurrent expenditure on health improvement. Government recurrent expenditure on health should lead to income redistribution among the citizens. All things being equal, this affords the people the opportunity to reduce over dependence on the government to meet all the health care needs.

There is a granger causality relationship between government regime and government recurrent expenditure on health unidirectionally. This presupposes that every regime of government is expected to encourage budgetary allocation towards meeting recurrent health expenditure. Even if this is made and it does not translate to positive action, it is a clear indication of mismanagement, weak corporate governance and exercitation of corruption. Malaria case granger causes literacy rate unidirectionally. At least, the incessant occurrence i.e of malaria cases should drive people to learn how to avoid it, and properly apply the right medication.

Moreover, per capita income granger causes literacy rate and literacy rate in turn grange causes per capita income. This conforms to existing theories in literatures. Similarly, bidirectional relationship is observed from the table above to exist between per capita income and malaria case. Per capita income should enhance out – of – pocket expenses towards avoiding and/or treating malaria cases.

Table C: Johansen co-integration test results

Date: 01/25/16 Time: 05:47
Sample (adjusted): 1992 2014
Included observations: 23 after adjustments
Trend assumption: Linear deterministic trend
Series: MDEATH GREXH LITR MCASE PC GR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.934426	174.8339	95.75366	0.0000
At most 1 *	0.883207	112.1687	69.81889	0.0000
At most 2 *	0.784172	62.77954	47.85613	0.0011
At most 3	0.638604	27.51427	29.79707	0.0897
At most 4	0.163336	4.105340	15.49471	0.8949
At most 5	0.000161	0.003694	3.841466	0.9504

Trace test indicates 3 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.934426	62.66521	40.07757	0.0000
At most 1 *	0.883207	49.38918	33.87687	0.0004
At most 2 *	0.784172	35.26527	27.58434	0.0043
At most 3 *	0.638604	23.40893	21.13162	0.0235
At most 4	0.163336	4.101646	14.26460	0.8485
At most 5	0.000161	0.003694	3.841466	0.9504

Max-eigenvalue test indicates 4 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

An examination of the table above indicates that the trace test has 3 cointegrating equations while maximum eigen value statistics shows there are four co-integrating variables. This therefore suggests that there is a long – run relationship between government health finance and malaria mitigation in Nigeria.

Table D: Parsimonious Error Correction Mechanism Result

Dependent Variable: DMDEATH
Method: Least Squares
Date: 01/25/16 Time: 06:03
Sample (adjusted): 1992 2014
Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-828.4848	491.1574	-1.686801	0.1123
DMDEATH(-1)	1.336289	0.304130	4.393806	0.0005
DGREXH	0.000278	0.014615	0.019002	0.9851
DLITR	-164.8448	125.3263	-1.315325	0.2082
DMCASE	0.000490	0.000916	0.534940	0.6005
DPC	7.378553	2.180942	3.383196	0.0041
DGR	-570.4570	1800.545	-0.316825	0.7557
ECM(-1)	-0.876653	0.243690	-3.597414	0.0026

R-squared	0.649943	Mean dependent var	173.3913
Adjusted R-squared	0.486584	S.D. dependent var	2165.885
S.E. of regression	1551.923	Akaike info criterion	17.80059
Sum squared resid	36126986	Schwarz criterion	18.19554
Log likelihood	-196.7067	Hannan-Quinn criter.	17.89992
F-statistic	3.978603	Durbin-Watson stat	1.818972
Prob(F-statistic)	0.011837		

Source: E-VIEW 7.0

The adjusted R-squared from the above table is 0.486584, suggesting that approximately 50% systematic variation in malaria death case in the period examined is explained by the explanatory variables in the model, leaving 50% unexplained due to the presence of stochastic error term. The F-statisticwhich shows the overall goodness of fit of the model has a value of 3.978603 and is statistically significant at 5% level. The Durbin-Watson value of 1.81 is approximately 2, and is an indication that the model is free from serial autocorrelation problem.

Examination of the individual coefficients reveals that one period lag of malaria death case positively impact on the current level with 1.336289 units and it is statistically significant at 5% level. 0.000490 unit change in malaria cases does not reduce malaria death case and it is not statistically significant at 5% level. It is a suggestion that adequate government health policy programmes and funding have not contributed significantly at reducing the incessant occurrence of malaria death cases.

Government recurrent expenditure on health does not reduce malaria death cases by 0.000278 units and it is statistically not significant at 5% level. Literacy rate is observed to reduce the occurrence of malaria death cases with -164.8448 units, though it is not statistically significant at 5% level. A unit change in per capita income contributes towards the reduction of the occurrence of malaria death cases and is statistically significant at 5% level. Government regime either military or democratic regime of government contributed to the reduction of malaria death cases in the period observed and it is not statistically significant at 5% level. The error correction mechanism (ECM) coefficient has a negative value of-0.876653 and it is statistically significant at 5% (P = 0.0028). The value thus serves as error equilibrium connoting that any temporary deviation from the long-run equilibrium between malaria and the regressors can be restored at the rate of 26.92%.

Discussion of Findings

The prevalence of malaria cases and deaths in Nigeria calls for concern. Hence, this study was undertaken to examine the nexus between government health finance and malaria mitigation in Nigeria. The empirical findings made indicate that there exists both long and short run relationship between government health finance and malaria mitigation in Nigeria. The result of the individual coefficients for instance reveals that government recurrent expenditure on health has not reduced the occurrence of malaria death cases. This underscores the fact that despite several attempts by the government to mitigate the high prevalence of malaria in Nigeria through financial commitment, it has not drastically reduced malaria attacks and consequently, malaria death cases in Nigeria.

Besides government recurrent expenditure on health, the government also has taken various numbers of steps such as roll back malaria programme, distribution of treated mosquito nets, and ensuring drugs for the treatment of malaria attacks are subsidized and much more affordable by the low income earners. A positive answer is yet to be obtained in this direction. Obviously this is worrisome. This finding is not in tandem with Nwanosike et al (2015).

Literacy rate was observed to contribute towards the occurrence of malaria death cases and it is not statistically significant. This points out that as the populace are continually being educated as regards the danger of living in mosquito infested environment, proper use of treated mosquito nets, prompt and regular medical check in the event of malaria symptom is noticed, malaria death case is minimized. Malaria case has no significant effect at reducing malaria death cases as revealed by the empirical estimation. It appears the number of malaria cases nowadays compared to before, is on the increase and has not reduced drastically as expected. This may be due to poorusage of vaccines, slow follow up on the malaria symptom and accessibility to cheap or free malaria drugs. The finding is consistent with Nwanosike et al (2015). It was ascertained that per capita income does not decrease the incidence of malaria death cases in the period observed.

Obviously income redistribution has influence on the amount of income at the disposal of persons. It greatly assists in meeting out – of – pocket expenses perhaps for malaria treatment and occurrence of certain chronic diseases. The consequence of this is reduction of malaria death cases. The finding quite deviates from the a-priori expectation of this study. The finding made here is somewhat not in tandem with China and Goodman (2003); Nwagha, Dim, Angaehie; Egbugara and Onwasigwe (2014); Nahab and Oni (2015); and contrary to Nwanosike et al (2015).

Government regime was ascertained to have impact in terms of reduction of malaria death cases in Nigeria and it is statistically significant. This is expected of government especially the democratic regime in that it is supposed to be more concerned about providing dividend of democracy to the citizens through adequate medical health care facilities and the likes. The non-significance of the variables observed in this context points out clearly that the various regime of governments have to an extent failed in their responsibilities in the area of health care provisions as supposed when evaluated from international communities perspective.

Conclusion and Recommendations

This study has examined the significant effect of government health finance on malaria mitigation in Nigeria. Attempt to empirically investigate this led to the use of certain explanatory variables such as malaria cases, literacy rate, per capita income; government recurrent expenditure on health and government regimes at mitigating the incessant occurrence of malaria death cases. The findings indicate that each of these variables has its unique and significant effect towards malaria mitigation in Nigeria. Based on the findings, it is suggested that hospitals and clinics should regularly organize sensitization/orientation performances on the effective use of treated mosquito nets by the citizens in Nigeria with a view to reducing the continual occurrence and outbreak of malaria attack.

The governments still need to enhance the financial commitment towards the mitigation of malaria in Nigeria. As more financial or health expenditure implies adequate redistribution of income. This would further assist the people to reduce over dependence on the government in that they are to meet certain treatment of malaria through out –of- pocket expense. Both private sector and non- governmental organizations have to collaborate to find the most effective way of reducing the adverse impact of malaria in the immediate communities.

Most importantly, government should come up with a workable policy that could consider organizations like the World Health Organization (WHO) to partner with Nigerian government towards ensuring adequate distribution of treatment mosquito nets and free malaria drugs/treatment throughout the federation. Its polio and tuberculosis treatment could be made free to patients in government owned hospitals, then malaria treatments should not also be an exemption judging by the harmful effects it causes.

References

AyodeleJimoh, OluyemiSofola, Amos Petu and Tuoyo Okorosobo, (2007)."Quantifying the economic burden of malaria using the Willingness to Pay Approach.http://www.resource-allocation.com/content/5/1/6.

Chima, R.I., Goodman C.A. & Mills A. (2003). "The economic impact of malaria in Africa: a critical review of the evixdence", Health Policy, 63, 17-36.

Desmond McCarthy, Edmund A. Walsh and Yi Wu (1999). "The Growth cost of malaria". Geneva World Bank.

Onwujekwe, O., Chima R., Okonkwo, P. (2000). Economic Burden of Malaria illness on Households versus that of all other Illness Episodes: A study in Five Malaria Holo-Endemic Nigerian Communities". Amsterdam Netherlands.

WHO/RBM (2002)."Documentation of the socio-economic impact of Malaria epidemics in Africa. Geneva.

World Health Organization (2000)."Severe and complicated malaria". Geneva.

Alaba, O.A. & Alaba O.B. (2011). Malaria in Rural Nigeria: Implications for the Millennium Development Goals. Department of Economics, University of Pretoria, Pretoria, South Africa.

Bello, R.A. (2004). Costing the socio-economic effects of malaria in Nigeria: Indian development review, An International Journal of Development Economics, 2(2), 131-140.

Benjamin W., Mangheni, M., Daniel T., & Claudia R. (2012). IFPRI Discussion Paper 01232 December 2012. Environment and Production Technology Division.

Black, r.E., Cousens S., Johnson, H.L., Lawn J.E., Rudan I., Bassani D.G., Jha P., Camp-bell H., Walker C.F., & Cibulskis R., (2010). Global, regional, and national causes of child mortality: a systematic analysis". European Journal of Health, 5(3), 14-25.

Chima, R.I. & Goodman, C.A. (2003). "The economic impact of malaria in Africa: a critical review of the evidence". Health Policy, 63(1): 17-36.

NHYMIS (1999). National Health Management Information Systems NHMIS.

Nwagha T.U., Nwagha U.I., Dim C.C., Anyachie U.B., Egbugara M. &Onwasigwe, C. (2014). Benefit incidence analysis of free insecticide treated nets distribution in urban and rural communities of Enugu State, South East Nigeria.

Nwanosike D.U. (2014). Economic investigation of health spending malaria reduction and economic growth in Nigeria. Contemporary Journal of Educational Research, Nigeria (COJRE), 4 (1) 288-298

Ojewumi T.K. & Ojewumi J.S. (2012). Trends in infant and child mortality in Nigeria. A Wake-Up Call Assessment for intervention Towards achieving the 2015 MDGs. Science Journal of Sociology & Anthropology, 1(2), 20-45

Olalekan, M.S. &Nurudeen, A.S. (2013). Malaria Burden and the effectiveness of malaria control measures in Nigeria: A case study of Asa Local Government Area of Kwara State. Journal of Economics and Sustainable Development.,4(3),3-23.

Olufunke, A.A. &Olumuyiwa, B.A. (2011). Malaria in rural Nigeria: Implications for the Millennium Development Goals. Department of Economics, University of Pretoria, Pretoria, South Africa.

World Health Organization (2012). World Malaria Report 2012, FACT SHEET. Embargoed until 14:00CET, 17 December 2012.

APPENDIX

Data Used for Regression Analysis

YEARS	MDEATH	GREXH	LITR	MCASE	PC	GR
1990	2284	500.7	52.2	1116992	359	0
1991	1947	618.2	54	898230	332	0
1992	1337	150.16	54	1219348	313	0
1993	1046	3871.6	55	981943	309	0
1994	1686	2093.98	55	1154728	277	0
1995	3268	3320.7	55	1133926	275	0
1996	4773	3023.71	56.8	1423533	287	0
1997	4603	3891.1	56.8	1176363	294	0
1998	6197	4742.27	57	2122663	298	0
1999	5465	16638.77	57	1958026	297	1
2000	4207	15218.08	57	2388096	375	1
2001	3616	24522.27	57	2220348	348	1
2002	4057	40621.42	57	2535430	455	1
2003	6052	33267.98	57	2631696	508	1
2004	6495	34198.48	62	3109166	644	1
2005	6586	55663	62	3183072	803	1
2006	10843	62253.62	53	3547830	1015	1
2007	13491	81909.37	56	5387290	1133	1
2008	12096	98219.32	64	5317764	1381	1
2009	4308	90202.6	53	6757961	1090.75	1
2010	5087	99119.92	60.1	4569804	2310.86	1
2011	5702	231803.5	68	5661802	2507.68	1
2012	6012	197900	68	6115308	2742.22	1
2013	5857	180000	70	5910827	3005.51	1
2014	5935	180000	70	6013068	3005.51	1

SOURCE: Extracted from Cbn Bulletin and National Bureau of Statistics, Various Issues

Table B: Granger Causality Test Result

Pairwise Granger Causality Tests
Date: 01/24/16 Time: 07:41
Sample: 1990 2014
Lags: 6

Null Hypothesis:	Obs	F-Statistic	Prob.
GREXH does not Granger Cause MDEATH	19	0.58736	0.7330
MDEATH does not Granger Cause GREXH		21.7764	0.0008
LITR does not Granger Cause MDEATH	19	1.44380	0.3335
MDEATH does not Granger Cause LITR		8.48878	0.0099
MCASE does not Granger Cause MDEATH	19	0.88274	0.5582
MDEATH does not Granger Cause MCASE		9.17733	0.0081
PC does not Granger Cause MDEATH	19	0.74228	0.6367
MDEATH does not Granger Cause PC		0.64498	0.6961
GR does not Granger Cause MDEATH	19	0.97827	0.5103
MDEATH does not Granger Cause GR		0.15447	0.9806
LITR does not Granger Cause GREXH	19	5.90955	0.0241
GREXH does not Granger Cause LITR		7.30225	0.0145
MCASE does not Granger Cause GREXH	19	31.9118	0.0003
GREXH does not Granger Cause MCASE		2.23205	0.1757
PC does not Granger Cause GREXH	19	5.89472	0.0243
GREXH does not Granger Cause PC		23.8679	0.0006
GR does not Granger Cause GREXH	19	11.5023	0.0045
GREXH does not Granger Cause GR		0.02916	0.9998
MCASE does not Granger Cause LITR	19	5.12116	0.0336
LITR does not Granger Cause MCASE		2.76360	0.1208
PC does not Granger Cause LITR	19	6.27342	0.0209
LITR does not Granger Cause PC		3.97612	0.0587
GR does not Granger Cause LITR	19	0.12134	0.9893
LITR does not Granger Cause GR		0.06648	0.9978
PC does not Granger Cause MCASE	19	10.3545	0.0060
MCASE does not Granger Cause PC		3.99225	0.0582
GR does not Granger Cause MCASE	19	0.65562	0.6895
MCASE does not Granger Cause GR		0.12237	0.9891
GR does not Granger Cause PC	19	1.29341	0.3814
PC does not Granger Cause GR		0.04266	0.9994