

SOCIO-ECONOMIC IMPLICATIONS OF MALARIA DISEASE IN NIGERIA: A MIX MODE RESEARCH IN GUSAU METROPOLIS, ZAMFARA STATE NIGERIA

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ABSTRACT

Malaria is a major public health problem in Nigeria. Malaria is highly endemic in Nigeria and poses a major challenge impeding human development. It further creates severe social and economic burden in communities round the country. The problem has affected the socio-economic condition of the society involved. This paper examines the socio-economic implications of malaria disease in Nigeria with particular reference to Gusau metropolis in Zamfara state North West Nigeria. The study was structured within political economy of health as theoretical underpinning. The research utilized a triangulation of qualitative and quantitative methods of data collection. Four hundred questionnaires were distributed to household heads out of which 391 were returned and four people were engaged in In-depth Interview. The quantitative Data were analyzed with the use of frequencies and percentage. The qualitative data were transcribed, reported and incorporated to the quantitative findings. The study found that one of the socio-economic implications of malaria is that, household heads spent a lot to treat malaria with their little income. Furthermore, finding from this study reveals that malaria cases cause individual households to spend days off work due to malaria. Based on the findings of the study, the paper recommends among other things that the economic policies of the Nigerian government should be tailored towards equitable distribution of the nation's resources among the citizens. Government needs to give more attention to the economic plights of the masses, especially by guaranteeing them sustainable living income.

Keywords: Malaria disease, Socio-economic implication, Gusau metropolis, Nigeria.

1 Introduction

Malaria is a major public health problem in Nigeria. Malaria is highly endemic in Nigeria and poses a major challenge impeding human development (Amzat 2011). It further creates severe social and economic burden in communities round the country (WHO, 2006). Its impact remains one of the leading causes of morbidity and mortality in the country; the

most vulnerable groups are children below 5 years of age and pregnant women (Amzat & Omololu, 2009). The malaria infection, in Nigeria, during pregnancy poses a substantial risk to the mother and her fetus. It significantly contributes to anemia in pregnancy and increases the occurrence of low birth weights associated with pre-term

deliveries (FMH, 2005). It is moreover responsible for 25% of infant mortality in the country; causes 30% of all the childhood deaths; and is associated with about 11% of maternal deaths (Amzat, 2011; Paediatrics Association of Nigeria, 2004; NMCP, 2005; WHO, 2008 & 2009).

In Nigeria, malaria disease is responsible for 60% outpatient visits to the health facilities (WHO, 2010). The financial loss due to malaria annually is estimated to be 132 billion Naira in form of treatment costs, prevention and loss of man hours (WHO, 2008). Malaria illness, therefore, has huge adverse effects on the physical, mental and social wellbeing of the people. With Africa bearing the huge impact, malaria accounts for at least a million deaths each year (Wellcome, 2002; WHO, UNICEF, 2003; WHO, 2009). More than 90% of the cases occur in Africa. In Nigeria alone, over 50% of outpatient attendance and 60% of hospital admissions, 30% of child mortality, and 11% of maternal mortality are due to malaria (WHO, 2009). Malaria kills over 300, 000 children and over 100 million clinically diagnosed cases are recorded annually (NPC & ICF Macro, 2009). Malaria consistently ranks among the five most common causes of death among children under the age of 5 years and continues to remain a major health problem (WHO & UNICEF, 2005). Thus it is a prime etiologic factor of slower economic growth in Africa as a result of lost productivity or income associated with illness or death which might be expressed in terms of lost work days, absenteeism from employment, discounted future lifetime earnings of those who die, lost school days or permanent neurological and other damages (Amzat 2011). It is on the above background that this paper was set to examine the socio-economic implication of malaria disease in Nigeria with particular reference to Gusau metropolis in Zamfara state North West Nigeria. To achieve this, the paper is divided into six sections. The sections

include introduction, socio-economic implication of malaria, methodology, findings, discussion of findings and conclusion and recommendations respectively.

2 Socio-Economics Implications of Malaria

Several epidemiological studies have linked malaria with socio-economic conditions in many African countries (Worrall et al. 2005; Howard et al. 2003; Kamal and Das 2001; Koram et al. 1995). For example malaria burden in Gambia has been associated with poor housing quality, overcrowding, and the inability of many households to afford malaria preventive measures (Koram et al. 1995). In northern Cote d'Ivoire, socio-economic transformations and gender repositioning induced, or facilitated, by the intensification of inland valley irrigated rice cultivation lead to a reduction of the capacity of women to manage disease episodes, contributing to increased malaria incidence among the poor farming populations (De Plaen et al. 2003). In forest-fringed villages and a Tea Estate in Sonitpur, Assam, it was found that high vector density, poor socio-economic conditions, poor sanitation and congenial atmosphere for mosquito proliferation are aggravating the malaria situation (Das et al. 2004). According to Biritwum et al (2000) treatment of malaria in young children is likely to be less effective in the poorer community, where a lack of economic access to health services was demonstrated (Biritwum et al. 2000). Other studies (Worrall et al. 2005; Howard et al. 2003; Kamal and Das 2000; Koram et al. 1995) have shown that perennial transmission of malaria was attributed to low socio-economic conditions, poor surveillance and inadequate intervention measures (Kamal and Das 2001). A recent literature (Maigemu et al. 2016; Maigemu et al. 2015) link socio-economic situation with malaria and revealed varied evidence between malaria incidence and

socio-economic status in some cases showing strong linkages and other showing weak linkages (Worrall et al. 2005). It has readily been stated and accepted that malaria is a disease of poverty, with several studies exploring the relationship between socio-economic situation and malaria and how these parameters interact. Some of the relationships that have been studied, but not limited to, include preventative measures, treatment seeking behaviors, and human behavior. Preventative measures taken for malaria prevention is heavily influenced by socioeconomic factors. A recent study showed that though a significant minority of people from lower socio-economic status (SES) did prioritize and buy insecticide-treated nets (ITN), the richest SES were 4.5 times more likely to purchase ITN, and upper-middle quartiles were 2.3 times more likely to be purchase ITN than lower SES (Howard et al. 2003).

Other studies (Worrall et al. 2005; Howard et al. 2003; Kamal and Das 2000; Koram et al. 1995) have found similar findings, though the poorest segments of society were doing many things to protect themselves from being bitten by mosquitoes, which included purchasing bed nets, mosquito coils, and repellent and insecticidal sprays, their economic status still prevented them from doing as much as their richer neighbours (Macintyre et al. 2002). Taking personal preventive measures to reduce mosquito vector contact has been demonstrated to reduce malaria transmission by reducing vector-human contact. Treatment seeking behavior for malaria has been linked with SES. In one study, it was found that self-diagnosis was practiced more by the poorer households, while the least poor used the patent medicine healers and community health workers less often for diagnosis of malaria. The least poor also used the patent medicine dealers and community health workers less often for the treatment of

malaria (Uzochukwu and Onwujekwe 2004). In another study, it was shown that the least-poor were significantly more likely to rely on laboratory tests for diagnosis and to visit hospitals when seeking treatment for presumptive malaria, while the most-poor, in contrast, were significantly more likely to seek treatment from traditional healers or community-based health workers (Onwujekwe et al. 2005). These studies show how SES can influence the seeking of diagnosis and treatment of malaria. This clearly indicates that lack of financial resources prevents the poor from accessing malaria laboratory diagnosis and forces them to rely on self-diagnosis and traditional healer.

Socio-economic factors have detrimental effects on malaria pathogen transmission. In irrigated areas of Sri Lanka, it has been demonstrated that land- and water-use patterns, as well as socio-economic features, influence malaria incidence rates. Areas that used slash and burn cultivation as a predominant agricultural activity, and had poor socio-economic status were found to be high-risk malaria areas (Klinkenberg et al. 2004). Several studies have reported that there are significant effects of land use and land cover change on the population dynamics of mosquitoes and malaria epidemiology within a given area (Lindblade et al. 2000, Patz et al. 2000, Jacob et al. 2003, Brooker et al. 2004, Jacob et al. 2005, Minakawa et al. 2005, Tuno et al. 2005, Munga et al. 2006).

2.1 Theoretical Framework

There are so many theories in sociology that attempt to explain health issues; one of such theories is political economy of health or social production of health. In every research, a theory is needed, because "theory helps us structure our ideas, so as to explain causal connections between specified phenomena within and across specified domains by using interrelated sets of ideas whose plausibility

can be tested by human action and thought” (Krieger 2001, p. 670).

Political economists of health traditionally begin their analysis with a focus on social class. Following the 19th century political theorists, Karl Marx and Friedrich Engels argued that ill-health is often determined by one’s relationship to the means of production, with a fundamental division between workers and owners. They pointed out that the logic of capitalist accumulation provides little incentive for owners to invest in healthy environment, safe workplaces, affordable houses and proper sanitation (Waitzkin H., 1978).

Capitalism fosters disease by exploiting workers, minimizing health, promoting investments, maximizing short-term profits and ignoring the long-term consequences on health and environment. Rudolf Virchow (1821-1902) studied public hygiene, sewage disposal, housing conditions and proper sanitations and it prompted him to encourage the government intervention to prevent disease and improve living conditions, (cited in Waitzkin H., 1978). His classic study of a *typhus* outbreak in Upper Silesia, Prussia, in 1848 concluded that poor social conditions were responsible for the epidemic.

Friedrich Engels (1820-1895) wrote on the condition of the working class in England in 1845, (cited in Waitzkin H., 1978). Focusing on the links between the industrial revolution, the capitalist mode of production and ill-health, Engels contended that disease was caused by the rapid growth of an alienated, urban-dwelling proletariat that lived in impoverished conditions characterized by a lack of sanitation, harrowing and hazardous working conditions, poor housing stock, overcrowding, inadequate nutrition and poverty. Analyzing the condition of working class in England, Engels notes that certain diseases are common among the working class. Such diseases common among the proletariat include tuberculosis, typhoid and

malnutrition. Typhoid and malnutrition among the working class were convincingly linked to inadequate housing, contaminated water supplies and overcrowding (ibid.).

Political economy of health explicitly addresses social determinants of health and disease, including the structural barrier to people living healthy lives. This theory is relevant to this study because of its specific public health policies; for example, the theory argued that ill-health is often determined by one’s relationship to the means of production, with a fundamental division between workers and owners. (Waitzkin, 1978; Krieger, 2001). Buttressing the links between political economy of health and this paper Rudolf Virchow in Ityavyar and Gusau (1990) studied public hygiene, sewage disposal, housing conditions and proper sanitations, and improved living conditions, and concluded that poor social conditions were responsible for the prevalence of *typhus*. Political economy, as outlined in this study, is a substantive theoretical approach in social epidemiology. Relating socio-economic factors with incidence of malaria disease, its argument is simply that poor socio-economic conditions increase the prevalence of malaria. Therefore, political economy of health is suitable for this study.

3 Methodology

Combined methods or triangulation of quantitative and qualitative methods were employed in the data generation of this current study.

3.1 Instruments

The research instruments used include structured questionnaires and In-depth Interview (IDI) guide. Questionnaires were administered to household heads in the areas under study to examine the socio-economic implications of malaria. In addition, the research made use of direct observation;

socio-economic conditions of the people in the study area are observed. This was coupled with community transect walk, grand and mini-tour to observe the areas under study. The study was carried out among the household heads in Gusau metropolis, Zamfara state Nigeria. The group was selected because household heads suffer most socio-economic consequences of malaria in the study area.

3.2 Sample

A systematic sampling technique was also used in administering the questionnaires to the selected household heads. Where there were more than one household's heads free hand was given to the respondents to select among themselves on who will represent them. For the In-Depth Interview (IDI) a purposive sampling method was used in selecting four persons in the study area for IDI. A guide was provided for an interview. The systematic sampling procedure allowed the study population in Gusau metropolis an equal chance of being included in the sample. It similarly eliminated potential personal bias in the researcher's sampling.

3.3 Data Analysis

In this paper, Statistical Package of Social Sciences (SPSS) were used to analyzed the

data using frequencies, percentages, cross-tabulation and chi-square. The qualitative data were analyzed after transcribing the recorded information obtained during the interview.

4 Result/Findings

The data presented and analyzed in this paper came from the study carried out in Gusau metropolis of Zamfara State, in the North Western part of Nigeria to determine the socio-economic implication of malaria in the study area.

4.1.A Respondents demographic information

On the respondent's sex, the study shows that 61.1% of the respondents were male and 38.9% of the respondents were female. Furthermore, the majority of the respondents, 71.6%, were married, while 20.2% were single. And while 4.1% of the respondents were divorced and 3.6% were widowed, 0.5% of the respondent's household heads provided no response in their questionnaires. On the level of education, the study shows that majority of the respondents, 31.2%, had secondary education and 29.2% of the respondents have Quranic education. 28.4% had post-secondary education and 2.6% had no formal education. (see Table 1).

Table 1 Socio-economic and demographic characteristics of respondents

Sex	Frequency	Percentage
Male	239	61.1
Female	152	38.9
Total	391	100
Marital Status		
Single	79	20.2
Married	280	71.6
Widowed	14	3.6
Divorced	16	4.1
No Response	2	.5
Total	391	100

Monthly Income (Naira)	Frequency	Percentage
1,000-10,000	93	23.8
11,000-20,000	64	16.4
21,000-30,000	95	24.3
31,000-40,000	82	21.0
41,000-50,000	34	8.7
51,000 and above	23	5.9
Total	391	100

Source: Field Survey, 2011

The majority of the respondents that participated in this study have the monthly income between 1,000-50,000 naira (see Table 1). Finding from this study reveal that the minimum of household spending per each malaria case was between 1-10 thousand Naira. This household spending due to malaria prevalence has a lot of socio-economic implication to the family and community

affected. The result shows that majority 77.5% of the respondents spent 1 to 10 thousand Naira. 14.6% spend 11 to 20 thousand naira. Another 3.6% responded spend 21 thousand Naira and above. Furthermore, 4.3% respondents provided no response on how much they spend on malaria treatment. Table 2 show the distribution of respondents on how much they spend on malaria prevention.

Table 2 Views of the respondents on the amount they spend they spent on malaria prevention

Spending (Naira)	Frequency	Percentage
1,000–10,000	303	77.5
11,000–20,000	57	14.6
21,000 and above	14	3.6
No Response	17	4.3
Total	391	100

Source: Field Survey, 2011

Due to the number of frequent spending on malaria treatment and prevention many of the households lack resources to provide for control and management of malaria as depicted in Table 3. Table 3 shows the distribution of respondents based on affordability to treat malaria illness. The results show that 50.9% of the respondents lack resources to treat malaria. The finding also indicates that 43.2% respondents do not lack resources to treat malaria. Furthermore, 5.9% respondents provided no response. This also demonstrates how malaria imposes negatively to the socio-economic situation of the society affected because resources mean

to provide basic social requirement are transfer to the services of malaria management. This poses a serious danger especially to families facing different sort of economic hardship. This was indicated clear during interview with poor household head. The responded stated that

My income is not enough for me to provide basic requirement such as food for my family. With this situation also if there is anything unusual like sickness it means we have to suffer most. This suffering also affects the whole family because they totally rely on me to provide everything to them. If I have

additional burden unexpected it will affect the entire family system including their school and other social being. Some time some of my children have to stay off

for school to look after for those that are sick because nobody in the house to look for those that are sick (*Household Respondent*).

Table 3 Affordability to Treat Malaria

Response	Frequency	Percentage
Lack Resources to treatment	199	50.9
Have resources to treatment	169	43.2
No Response	23	5.9
Total	391	100

Source: Field Survey, 2011

In Table 3, majority of the respondents (50.9%) expressed that they lack resources for malaria treatment. Even though a significant percentage of the respondents (43.2%) revealed that they have resources to treat malaria; many of them during the interview that said they are facing serious challenges before they meet up for malaria control demand. Interview with household respondent confirmed their lack of means to treat and prevent malaria. The interviewee reported during this study that in most cases due to his poor economic background he fails as a household head to take care of the responsibility lied on his shoulder. The respondent stated that:

I as a household head, supposed to provide all necessary care and protection of my family. But as you see me now many times malaria attacks my children when I am facing serious financial problem which did not allow me to provide any assistance. When I was told somebody is sick at that time of this serious economic situation I just pray by saying I am seeking God's protection. So you see this affects us socially, morally and psychologically. Because as you know nobody will feel fine at a time that he is in need to provide what he is supposed to but he cannot do it due to one reason or the other (*Household Respondent*).

The respondent further stated that:

What disturbs me most in some cases was the inability of my ward to attend school. My child spends more than one month without going to school suffering from malaria fever. In this case, this affects his conduct as his friends have already gone far. So these are the challenges, sometimes not only spending to provide medicine or drugs but remember this issue of school days has to do with time and you know if times went nobody can rewind it back. (*Household Respondent*).

This study observed that many of the household head's had to go out daily to struggle for the means of survival on that particular day. The result from the finding of this study indicates that as result of malaria, household affected spend many days off work. As a result of this, it may cause a serious hardship on the family who rely heavily on him to provide for their basic needs and necessity. Table 4 shows the distribution of respondents on days they spend off work due to malaria. Majority of the respondents 58.8% spend one week off work due to malaria. It is also indicate that 20.7% of the respondents spend one month off work due to the malaria illness. While 12.2% spend other lengths of time off work due to the illness. Lastly 8.4% respondents indicated no response.

Table 4 Days spent off work due to malaria

Days Spent Off Work	Frequency	Percentage
One week	230	58.8
One month	81	20.7
Others	47	12.2
No Response	33	8.4
Total	391	100

Source: *Field Survey, 2011*

An interviewee from the household members supported this quantitative finding. One of the respondents during the interview reported that when he was attacked by malaria he has to stop doing anything including going to his working place. The respondent in a very short and precise way mentioned that:

When I have malaria I have to spend at least one week before doing anything. Even my working place I have to stop going. I remain in one place due to the fact that illness poses a great challenge to me and those depend on me provide for them (*Household Respondent*).

The respondent further stated that:

Even my younger children do not go to school when they are sick. Sometimes I have to go and report to the headmaster that my child is not feeling fine in case of if there is any assistance that they can provide while he is away treating malaria. And you see the truth is that they have nothing to do because they will not mark him present they can only mark him sick because they have been informed. The most important thing I want to tell you

are that they will not follow him at home and teach him what was done in the school. So this means what? He lost the lesson that was been taught while he is not around.

In a similar way, another respondent from the central area of Gusau metropolis reported a bad experience of malaria case due to his inability to provide for treatment and prevention. The respondent reported during the interview that he has no words to express his worries and fear as a result of the situation he usually finds himself. The respondent explained that:

I don't know how to explain the burden of malaria because I have to work every day before I get something to feed my family. When I am affected by malaria only God knows the condition I find myself. Even you, yourself can understand what I want to explain to you. But I am unable to express myself on that matter I leave it for you judge. Therefore, no comment for that.

5 Cross tabulation

Table 5 Household economic status and income

Status	Monthly Income						Total
	1000-10000	1100-20000	21000-30000	31000-40000	41000-50000	50000 & above	
PES	83 30.6%	54 19.9%	51 18.8%	48 17.7%	21 7.7%	14 5.2%	271 100.0%
GES	10 8.3%	10 8.3%	44 36.7%	34 28.3%	13 10.8%	9 7.5%	120 100.0%
Total	93 23.8%	64 16.4%	95 24.3%	82 21.0%	34 8.7%	23 5.9%	391 100.0%
Chi-square	.000						

Source: Field Survey, 2011

Table 5 is a cross-tabulation showing respondent's status and their monthly income. The Pearson chi-square of .000 shows that there is relationship between the respondent's status and their income. This clearly indicate that household with lower income as shown in this table does not have enough on malaria prevention services. Therefore, the Pearson chi-square result of .000 revealed the socio-economic burden and hardship that respondent's are facing on malaria treatment and prevention due to their income. This is because of the little income of the household and they need to spend a lot to treat malaria. This had a consequence to those that are largely poor; they have recorded deaths resulting from malaria attacks because they are unable to afford treatment cost due to their economic status. In this study, the incidence of malaria is higher among the poor due to their income status. This is as a result of their inability to access first-line treatment of malaria. First-line drugs for malaria treatment, upon the perception of the symptoms, are hardly available or do not reach the people who are poor because of their failure to afford the cost of those drugs.

6 Discussions

This study revealed that malaria constitutes a socio-economic challenge to humans. Findings from this study is consistent with that of Amzat (2009), which revealed that malaria creates enormous financial burden especially on poor households; the poor households may spend up to 25% of their annual income on malaria treatment alone. The frightening implication of this is that the poor is made to become poorer, especially in a developing country like Nigeria. Malaria, to be sure, has therefore slowed economic and social development in Africa (Amzat, 2009). Similar to the finding of this study also was that of Kamal and Das (2001) which shows that perennial transmission of malaria was attributed to low socio-economic conditions, poor surveillance and inadequate intervention measures.

The findings are in line with the findings of earlier literature Worrall et al. (2005) who attempted to link socio-economic status with malaria. The study revealed varied evidence between malaria incidence and socio-economic status with some articles showing strong linkages and other showing weak linkages (Worrall et al. 2005). It has readily been stated and accepted that malaria is a

disease of poverty, with several studies exploring the relationship between socio-economic and malaria and how these parameters interact. Some of the relationships that have been studied, but not limited to, include preventative measures, treatment seeking behaviors, and human behavior. Preventative measures taken for malaria is heavily influenced by socioeconomics. A recent study showed that though a significant minority of people from lower socio-economic status (SES) did prioritize and buy insecticide-treated nets (ITN), the richest SES were 4.5 times more likely to purchase ITN, and upper-middle quartiles were 2.3 times more likely to be purchase ITN than lower SES (Howard et al. 2003) which is in good agreement with the result of the present study.

Findings of this study add value to political economy of health. The political economy of health explicitly addresses social determinants of health and disease, including the structural barrier to people living healthy lives which is consistence to the result of this study as many people do not afford malaria treatment cost due to their little monthly income. This serve as a barrier to protect themselves from malaria.

7 Conclusion/Recommendation

Malaria imposes substantial costs to individuals and family. Costs to individuals and their families include the purchase of drugs for treating malaria at home; expenses for travel to, and treatment at, dispensaries and clinics; lost days of work; absence from school; expenses for preventive measures; expenses for burial in case of deaths. One of the socio-economic implications of malaria is that household heads spend a lot to treat malaria with their little income and amid their poor socio-economic background. The malaria cases also cause Individual households and young people spend days off work due to malaria. This makes the poor to become poorer and

introduces a lot of suffering to those affected. The study recommended that policies toward making malaria control and prevention measures shall be put in place to reduce hardship to those that are unable to provide such treatment to their selves. Furthermore, policies and programs need to be introduced to engage people on the different job that provided an income that at least sustained household members with resources to take care of their dependants during and after service. Finally, there is a need for a law that will create the minimum of fees to workers that will sustain them for long. This is also in addition to social service provision to those that are in need or in difficulty for them to cater for their basic need and necessities including social health care scheme to less privileged people.

In addition, it is recommended that the new style of malaria control adopted by Rivers State government should be adopted in the nation's larger anti-malaria crusade. In 2009 the Rivers State Government got involved in multilateral talks with the Republic of Cuba, alongside the federal government and the Economic Community of West African States (ECOWAS). The aim of the talks was eradicating the mosquitoes that transmit malaria – anopheles – through the application of biological *larvicides*. The outcome of the talks is the signing of two major agreements with Cuba for the purchase and application of the *biolarvicides* throughout Rivers State and the building of a factory that will produce six million litres of the insecticides per year.

To compel government's affirmative action on these above highlighted recommendations, the general public has to stay conscious, vigilant and responsive to government's initiatives or otherwise. The poor masses can march out campaigning for their rights to good health and for the implementation of sound health policies by concerned health authorities. Particular issues

to agitate on should include adequate procurement and distribution of insecticide-treated nets (ITN); good provision of local sewage disposal system that involves sufficient and broadly available sewage disposal vans; provision of adequate and affordable anti-malaria medicines, herbal and

non herbal, or even *biolarvicide*, and especially the first-line medicines to treating anti-malaria; and the mass movement should campaign against malaria-related morbidity and mortality; and other individual and group health grievances.

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