INFLUENCE OF ADULT LITERACY ON COMMUNITY PARTICIPATION IN
MALARIA CONTROL IN OGUN STATE, NIGERIA

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ABSTRACT
Malaria remains one of the most serious health challenges in Nigeria as it contributes significantly to the death of infants, pregnant women, young children and adults. This study was therefore designed to assess the influence of adult literacy on community participation in malaria control in Ogun State, Nigeria. Descriptive survey research design was adopted. Primary data used for the study were collected with the aid of validated questionnaire, multi-stage sampling technique were used to select the sample for the study. The population consisted of all adults in the study area. A total of 1800 adults were sampled for the study using stratified, purposive and simple random sampling techniques at different stages. The reliability index (r) of the instrument used was 0.86. Data collected were analysed using descriptive statistics and correlation analysis. The mean age of the respondents was 37.5 years and some of the respondents (32%) had secondary education. The result revealed a positive correlation between adult literacy and their participation in malaria control programme (r=0.076). Also, the rate of awareness on malaria control among adults was high (60.5%). The study concludes that there is a high rate of awareness on malaria control among adults. Therefore, the study recommends the promotion of adult literacy level through training and education for effective malaria control. It also recommends health education session on malaria prevention and control for community members on media and GSM for enhanced learning in communities.

Keywords: Literacy level, Malaria control, Community participation

INTRODUCTION
Malaria is one of the oldest diseases known to man in tropical countries. It is transmitted by the bite of anopheles mosquitoes which transmit parasites known as plasmodium into the red blood cells of their victims (Bledsoe, 2005; WHO, 2012). Each Anopheles species
of the mosquito finds breeding places in the community such as shallow collection of water, puddles, gutters, rice fields, stagnant water and drainage. Malaria, a disease closely associated with unhygienic community; a major hindrance to economic growth, is a mosquito-borne infectious disease of humans and animals caused by Eukaryotic protists of the genius plasmodium (Prothero, 1999; World Malaria Report, 2014).

Symptoms of malaria include: fever, shivering, arthralgia (joint pain), vomiting, anemia (caused by hemolysis), hemoglobinuria, retinal damage, and convulsions. The classic symptom of malaria is cyclical occurrence of sudden coldness followed by rigor and then fever and sweating lasting four to six hours, occurring every two days in *P. vivax* and *P. ovale* infections, while every three days for *P. malariae* (Beare, Taylor, Harding, Lewallen & Molyneux, 2006). Researchers explained further that other symptoms of malaria include, muscle aches, and headache that revolve round the body every 1-3 days, malaria victims may also develop coughing, vomiting, and diarrhea as well as jaundice and eventual liver or kidney failure, while those with the cerebral malaria affecting the brain and nervous system suffer from seizures as well as coma leading to death

Malaria, after treatment for three reasons (Beare, et al, 2006) recrudescence occurs when parasites are not cleared by treatment, whereas re-infection indicates complete clearance with new infection established from a separate infective mosquito bite; both can occur with any malaria parasite species. Relapse is specific to *P. vivax* and *P. ovale* and involves re-emergence of blood-stage parasites from latent parasites (hypnozoites) in the liver. Describing a case of malaria as cured by observing the disappearance of parasites from the bloodstream can, therefore, be deceptive. Current statistics on the malaria scourge has revealed the great danger that it poses to the community members. Every 30 seconds, a child dies from malaria (Astrid, 2010).

In Africa, the disease causes about one in six childhood deaths, taking the lives of more than 750,000 children a year and placing an unacceptable burden on health and economic development (Astrid, 2010). Malaria burden presently in Africa varies from country to country. In Rwanda, malaria was found to account for 48.6% of the 551 suspected admissions in a district hospital while the absolute number of malaria decreased following intervention (Sievers, Lewey, Musafiri, Franke, Bueyiboruta, Stulacen, Rich, Karema & Daily, 2008). Malaria was also found to account for 87.4% of the total 7,621 patients treated for various ailments in Burkina Faso (Tiono, Kabore, Traore, Convelbo, Pagnoni & Sirima, 2008). Findings from Tanzania showed a malaria prevalence of 21.0% among children who were not sleeping under insecticide treated bed nets (ITNs) (Mboera, Kamugisha, Rumisha, Kisianza, Senkoro & Kitua, 2008). From the Makamba district of Burundi, malaria was found to account
for fever in 47.2% of the 195 children surveyed and 31.4% among children who had a positive history of recent fever (Gerstl, Cohuet, Edoh, Brasher, Lesage, Guthmani & Checchi, 2009), and from Maiduguri Nigeria the prevalence of malaria from among pregnant women was found to be 22.1% (Kagu, Kauwa & Gadzama, 2007). Findings about malaria burden from populations in Uganda, Cameroon and Malawi are generally high and much similar, (Nkuo-Akenji, Ntonifor, Ching, Kimbi, Ndamukong, Anong, Boyo & Titanji, 2005; Mbonye et al.; 2006, Chibwana, Mathanga, Chinkhumba & Campbell, 2009).

This was undeniably validated by 2011 World Malaria Report which shows that there were about 216 million cases of malaria and an estimated 655,000 deaths in 2010, with 90 per cent of these deaths occurring in sub-Sahara Africa alone where the disease is endemic. In Nigeria, it is estimated that malaria contributes to 25 per cent of infant mortality, 11 per cent of maternal mortality and 30 per cent of under-5 mortality. On several occasion, pregnant women, because of low immunity, and young children under the age of five are usually affected. Other countries that are also affected apart from Africa include countries of Asia, Latin America and the Middle East, (World Malaria report 2011). Malaria is so deadly that it can kill within hours but it is curable and preventable, through the consistent use of bed nets.

The treatment of malaria depends on the severity of the illness. According to World Health Organisation (2014) the use of the Arthemism Combination Therapy (ACT) that is the combination of Artesunate with other malaria drugs is recommended. When treated with an oral artemisinim (Artesunate) alone, as monotherapy, patients may discontinue the treatment prematurely following the rapid disappearance of malaria symptoms. This result in incomplete treatment and such people still have persistent parasites in their blood. Therefore, without a second drug given as part of a combination (ACT), these resistant parasites survive and can be passed on to a mosquito and then to another human being. Among pregnant women, Intermittent Preventive Therapy (IPT), which consists of at least two doses of sulfadoxine-pyrimethamine received during the second and third trimesters of pregnancy is highly effective in reducing the prevalence of anaemia and placental malaria infection among women at delivery. It is, thus, a vital intervention for pregnant women in endemic areas (RBM, 2011; Bakare, 2012).

Therefore, this study aims at investigating the influence of adult literacy on community participation in malaria control in Ogun State.

Specifically, the objectives of the study are to:

1. examine the rate of awareness on rollback malaria programme among adults;
2. identify the educational status of adults in the study area and
3. assess the influence of literacy on community participation in malaria control programme.

RESEARCH QUESTIONS
1. What is the rate of awareness on roll back malaria programme among adults?
2. What is the educational status of adults in the study area?
3. What is the influence of adult literacy on community participation in malaria control programme?

HYPOTHESIS

$$H_0$$: There is no significant relationship between adult literacy and community participation in malaria control.

METHODOLOGY

The study was carried out in Ogun state Nigeria. It adopted descriptive survey research design. The population consisted of all adults that are above 18 years of age. Multi-stage sampling technique was used to select samples for the study. One thousand nine hundred (1900) sample participated in the study as respondents. Data was collected using researcher-constructed questionnaire. The qualitative data were also collected through Focus Group Discussion (FGD) and structured interview. In the first stage, the state was stratified in to three strata along its senatorial districts (Ogun Central, Ogun West and Ogun East). In the second stage, purposive sampling was employed to select two local government areas from each senatorial district. One representing rural and the other representing urban, making a total of six LGAs.

In the third stage, cluster sampling and simple random sampling were used to select respondents from each local government area. Cluster sampling was used to select women and men during their Community Development Associations (CDAs) meetings while random sampling was used to select other adults from age eighteen and above who are willing to voluntarily participate in the study. The questionnaire was developed and validated by the researcher and other experts in the field of adult education, health education and measurement and evaluation to elicit information from over one thousand nine hundred adults. The instrument had two sections. Section A collected information on the demographic characteristics of the respondents, while section B was a 4-point likert scale where the respondents were asked to tick their level of agreement on items which reflected their rate of awareness on roll back malaria, their literacy level and their participation in malaria control programme. The instrument was subjected to trial -testing. The reliability of the instrument was conducted using test-retest method at two weeks’ interval. The reliability index (r) of the instrument used was 0.86. The instrument was validated by experts in Adult Education and
Community Development to ensure that it measures what it is supposed to measure. The pilot study was conducted among respondents which are not to be included in the selected sample for the study.

Descriptive statistics, frequency distribution and percentages were used to analyse the data obtained. The correlation analysis was used to test the hypothesis at P <0.05 level of significance to capture the correlation between literacy level and community participation in malaria control. The adult literacy was assessed using the academic qualification of respondents’ vis-a-vis the years spent to attain each level of education. On the other hand, the participation level was determined through the numbers of malaria control methods such as long lasting insecticidal net (LLIN), intermittent preventive therapy (IPT), insecticides, outdoor spraying, and ateminism combination therapy adopted by adults in the study area. Pearson Product Moment Correlation (PPMC) was used to test the relationship between adult literacy and community participation in malaria control.

RESULTS AND DISCUSSION

This section analysed data collected and discussed the results. The analysis of demographic characteristics of the respondents is very germane to this study as it provides necessary background information to capture the objectives.

Table 1: Distribution of Respondents by Age

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Cumulative (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 20</td>
<td>125</td>
<td>6.9</td>
<td>6.9</td>
</tr>
<tr>
<td>21-30</td>
<td>497</td>
<td>27.6</td>
<td>34.5</td>
</tr>
<tr>
<td>31-40</td>
<td>545</td>
<td>30.3</td>
<td>64.5</td>
</tr>
<tr>
<td>41-50</td>
<td>323</td>
<td>17.9</td>
<td>82.7</td>
</tr>
<tr>
<td>51-60</td>
<td>226</td>
<td>12.6</td>
<td>95.3</td>
</tr>
<tr>
<td>61-70</td>
<td>57</td>
<td>3.2</td>
<td>98.5</td>
</tr>
<tr>
<td>≥70</td>
<td>27</td>
<td>1.5</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1800</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Field Survey Data, 2016

From the table, the respondents who participated in this study were matured and capable of providing valid responses to the questions raised in the research instrument. The mean age of the respondents was 37 years showing that majority of the adults were in their active reproductive age. The dominance of the active and productive respondents shows the valid state of the expected responses for the study.

What is the educational status of adults in the study area?
Table 2 Distribution of Respondents by Educational Status

<table>
<thead>
<tr>
<th>Literacy level</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Cumulative (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary 1-3</td>
<td>103</td>
<td>5.7</td>
<td>5.7</td>
</tr>
<tr>
<td>Primary 4-6</td>
<td>223</td>
<td>12.4</td>
<td>18.1</td>
</tr>
<tr>
<td>Secondary</td>
<td>586</td>
<td>32.3</td>
<td>50.4</td>
</tr>
<tr>
<td>NCE/OND</td>
<td>326</td>
<td>18.1</td>
<td>68.6</td>
</tr>
<tr>
<td>Technical College</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HND/BSc.</td>
<td>425</td>
<td>23.6</td>
<td>92.2</td>
</tr>
<tr>
<td>MSc/Ph.D.</td>
<td>64</td>
<td>3.4</td>
<td>95.7</td>
</tr>
<tr>
<td>No formal education</td>
<td>77</td>
<td>4.3</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1800</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Field Survey Data, 2016*

Table 2 shows the educational status of the respondents and the data indicate high level of literacy. The literacy level made it possible for most of the respondents to read posters and leaflets in respect of malaria prevention and control.

However, those who did not have any formal education accounted for 77 (4.3%), Also, 223 (12.4%) of the total respondents had primary education while 103 (5.7%) did not complete their primary education. The implication of this is that these set of respondents needed health information through the electronic media so as to constantly remind them of the benefits of participating in malaria control programme since they may not be able to read from leaflet or posters due to their low literacy level.

What is the rate of awareness on roll back malaria programme among adults?

Table 3: Distribution of Respondents by Rate of Awareness

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cumulative (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aware</td>
<td>1089</td>
<td>60.5</td>
<td>60.5</td>
</tr>
<tr>
<td>Not aware</td>
<td>711</td>
<td>39.5</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1800</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Field Survey Data, 2016*

The rate of awareness as contained in table 3 reveals that most of the respondents 1089 (60.5%) affirmed that they were aware of roll back malaria programme while 711 (39.5%) were not aware of the programme. The high rate of awareness may be informed by the growing sensitization and health education messages on radio and television so as to update people’s knowledge through information management and health education on media. Both literate and illiterate adults availed themselves opportunity to learn through these media especially the health education messages on media centres on symptoms of malaria, dangers of self-medication, adopting preventive measures such as sleeping under treated net and use of intermittent preventive therapy (IPT) by pregnant women. Consequently, the high rate of awareness is expected to have positive influence on adults’ participation in malaria control.
**Test of hypothesis**

Correlation analysis was used to test the hypothesis and the result is presented in table 4 below. 

\(H_0\) There is no significant relationship between literacy and participation in malaria control.

**Table 4: Correlation Analysis showing relationship between literacy of adults and participation in Malaria Control Program**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>(\bar{X})</th>
<th>SD</th>
<th>R</th>
<th>P</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy level</td>
<td>1800</td>
<td>11.9650</td>
<td>4.73458</td>
<td>0.042</td>
<td>0.076*</td>
<td>Significant</td>
</tr>
<tr>
<td>Community participation in malaria control programme</td>
<td>1800</td>
<td>11.3544</td>
<td>7.11971</td>
<td></td>
<td></td>
<td>p &lt; 0.10</td>
</tr>
</tbody>
</table>

* Variable significant at 10%

Table 4 reveals that a significant relationship exists between adults’ participation in malaria control programme and their literacy level \((r = 0.042; \ p < 0.10)\) and as a result, the null hypothesis one which says there is no significant relationship between literacy of adults and their participation in malaria control programme is hereby rejected and it is concluded that there is a significant relationship between adult literacy and malaria control. The positive relationship shows that as the literacy level of adults increases their level of participation in malaria control programme also increase. The possible reason for this is that increase in literacy level enables people to acquire, process and effectively utilize relevant information that will assist them to combat malaria infestation. Education plays significant roles in malaria control as a literate person has access to written knowledge about his health.

Education helps adults to combat the ills suffered in the area of health, interpretation of instruction on anti-malaria drugs, usage of treated bed nets among others. It is also an avenue through which knowledge is imparted. Education also helps people in objective analysis of health problems and provides the opportunity for logical reasoning to adopt preventive measures. This is corroborated by the result of Focus Group Discussion (FGD) where most of the respondents affirmed that they were aware of being susceptible to malaria infection and this has increased their level of participation in malaria control programme. Content analysis revealed that more than 68% of the respondents had used at least three different methods of malaria control in the recent time.

This is not unconnected with the high level of literacy and awareness on malaria programme reported earlier in this study. This is consistent with the findings of Olomukoro (2012) who reported that educated women who participated in literacy education programmes in Edo and Delta States were more receptive to family planning programmes, immunization and other preventive care measures than uneducated ones. Similarly, education enhances citizens’ knowledge of modern health care facility. This increases the value they place on good
health which results in high demand for preventive health care services. Furthermore, studies have also shown that modification of women’s beliefs about causes of diseases and cure is a function of the type of health education received as well as their literacy level (Adewuyi & Adelore, 2014).

Educated mothers may have access to health magazines and can easily read and comprehend health information through posters and handbills posted around the community. One can therefore deduce from the above result that with increase in the literacy level of respondents the level of participation in malaria control will increase. This may be due to increase in the rate of awareness on the importance of roll back malaria programme.

CONCLUSION
From the analysis of the data, the study concludes that there is a positive correlation that exists between adult literacy and community participation in malaria control in the Ogun State, Nigeria.

RECOMMENDATIONS
1. Adults should be given adequate education by all stakeholders such as community leaders, educational administrators, NGOs, to boost their literacy level as a way of controlling malaria in the study area.
2. Adult literacy centres should be established and monitored by both government and non-governmental organizations so as to give ample opportunity to semi-literate and non-literate members of the community to be educated and empowered.
3. Health education messages on malaria control should be disseminated with higher frequency on radio, television, internet, mobile phones, posters among others for effective malaria control in order to achieve malaria free communities.

REFERENCES


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World Health Organization (2011). *Roll back malaria report*

