



Evaluation of the Efficacy of Mosquito Treated net in the prevalence of Malaria in Giri Village Federal Capital Territory, Abuja, Nigeria.

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Abstract

Background: *The study is to look at an evaluation of efficacy of mosquito treated net in the prevalence of malaria in Giri village. 60 respondents were selected for the study through the simple use of sampling random techniques. In the analysis of data collected from the field of study, the following findings were discovered: that 28 respondents (46.7%) reported that they use treated bed nets while 32 respondents (53.3%) said they did not use treated bed nets. The study therefore, recommended that the government should involve member of the community especially leaders in all the process of prevention that are built on net-use. Government and Non-Governmental Organizations should make sure more people use the bed nets as access to nets alone does not translate into effective net use. Community members are better positioned to dispel misconceptions about bed nets, assist in net installation, and monitor usage. This is in line with the community-directed intervention (CDI) strategy, widely acknowledged as useful in the delivery of health care in African countries.*

Keywords: *Evaluation, Efficacy, Insecticide Mosquito treated net Giri Community.*

Introduction

Malaria as a mosquito-borne disease has been part of human history for as long as anyone can remember. It is estimated by the World Health Organisation (WHO, 2015) that every year, up to 500 million people worldwide suffer malaria attacks, 90% of this are Africans and that they are globally over 2 million death yearly-again 90% of these are Africans. In addition, malaria is said to kill one African (whether child or adult) every 15 seconds and roughly 300,000 Nigerian children annually (Baird, 2013). Furthermore, as a major cause of illness in Africa, malaria is responsible for over 10% of overall African disease burden. People who live below the poverty line, children under five years of age (22% of population) and pregnant women (20% of population) are the most vulnerable to malaria disease (Bartoloni and Zammarchi 2012), even where some degree of acquired immunity in areas of intense transmission (stable malaria) for most adult population is offered. However, children are the main victims of malaria particularly in Africa (McGready and Singh 2012)

Children (<6 months to 5 years) are especially regarded as non-immune, when they have lost the immunity (maternal antibody) transferred by their mother in highly endemic areas (Caraballo, 2014). Even when surviving children develop their own immunity between the age of 3-5 years (Caraballo, 2014), opined that they will still be particularly vulnerable because they have not developed the partial immunity conferred upon surviving repeated infections.

Current WHO initiatives in malaria control such as Roll Back Malaria (RBM) emphasized the use of Insecticide Treated Net as one of the key strategies for malaria prevention and control in sub-Saharan Africa (Worrall, Basu and Hanson, 2015). It has been suggested however, that ordinary net provides only partial protection because the net allows mosquito to enter and feed, especially, if the net is partially torn or not tucked in properly (Collins, 2012). On the other hand, treating a net with insecticides makes it very effective at repelling and killing anopheles mosquitoes (Caraballo, 2014). Even when there are holes in the treated nets, (Gollin and Zimmermann, 2015). indicated that the insecticides can affect the mosquito as they work their way into through. So far, the use of mosquito treated nets has led to reduction in child mortality ranging from 14-72% in some African trials (Gollin and Zimmermann, 2015).

Of great concern therefore, is the huge success recorded elsewhere in Africa, only a few has been conducted and documented in Nigeria in general and South East in particular where

limited health interventions exist. It is against, the background of malaria disease prevention and health promotion among these most vulnerable groups in the rural endemic that the researchers were motivated towards ascertaining the effectiveness of mosquito treated net as a malaria prevention strategy among children aged six months to five years in Giri village, Gwagwalada Area Council.

The lives of our preprimary school age children (about 22% of our population) are in serious danger from mortality and severe morbidity from malaria attacks (WHO, 2015), if inefficient and ineffective control measures are not put in place mostly at the rural areas. This most vulnerable group, lack the necessary immunity that helps adult develop upon repeated malaria infections so their chances of survival are four times less than that of the adults (Nadjm and Behrens, 2012). Probably, the greatest concern here is that the use of traditional nets has not produced effective results (McGready and Singh, 2012). Moreover, besides the huge success recorded with ITN trials (WHO, 2015), many of such studies are outside Nigeria, especially the Southeast Asia. Consequently, a lot of people in the area of the present study have not known about nets or mosquito treated net, hence this present study.

METHODOLOGY

The research design selected for this study is survey. According to (Collins, 2012), survey involves the collection of data by sampling individuals with relevant experience of what is of interest or asked relevant questions from cross section of population. This survey method was used because there is the need to use the research targeted asking opinion of community members of efficacy of insecticide treated net on the prevalence of malaria episodes in Giri Village.

A group prospective cohort intervention community trial (Nadjm and Behrens, 2012) of the effectiveness of Mosquito treated net as a malaria prevention and control strategy among children aged six months to five years was adopted for the study. Giri village is one of the large autonomous communities in Gwagwalada Area Council, Federal Capital Territory, Nigeria.

RESULTS

The researchers administered sixty (60) questionnaires to the respondents in Giri village. All the questionnaires were completely filled and returned.

Table1 Gender of the Respondents

Gender	Frequency	Percentages (%)
Male	27	45
Female	33	55
Total	60	100

Table1 indicated the age of the respondents. The table revealed that 27 respondents representing 45% were male while 33 respondents representing 55% were female.

Table2 Age of the Respondents

Age Range	Frequency	Percentages (%)
15-20 Years	5	8.3
21-30 Years	31	51.7
31-40 Years	19	31.7
41 Years and Above	5	8.3
Total	60	100

Table2 indicated the responses of respondents according to their age range.

The table revealed that 5 respondents representing 8.3% were between the ages of 15 and 20 years, 31 respondents representing 51.7% were between the ages of 21 and 30 years, 19 respondents representing 31.7% were between the ages of 31 and 40 years while 5 respondents representing 8.3% were between the ages of 41 years and above.

Table 3 Ages of Children in Months

Months of Child	Frequency	Percentages (%)
05-10 Months	27	45
11-20 Months	25	41.7
21-30 Months	3	5
31 Months and Above	5	8.3
Total	60	100

Table 3 presented respondents in month of the children. The table revealed that 27 respondents representing 45% were between the ages of 05 and 10 months, 25 respondents representing 41.7% were the months of 11 and 20 years, 3 respondents representing 5% were between the months of 21 and 30 years while 5 respondents representing 8.3% were between the months of 31 months and above. This indicated that most the children were 05 – 20 months.

Table 4 Qualification of the Respondents

Qualification	Frequency	Percentages (%)
Primary	7	11.7
SSCE	18	30
NCE/ND	15	25
HND/Degree	12	20
Masters/PhD	2	3.3
NIL	6	10
Total	60	100

Table 4 presented qualification of the respondents. The table revealed that 7 respondents representing 11.7% were primary school certificate holder, 18 respondents representing 30% were senior secondary certificate examination holders, 15 respondents representing 25% were NCE/ND holders, 12 respondents representing 20% were HND/Degree holders, 2 respondents representing 3.3% were Masters/PhD holders while 6 respondents representing 10% do not have any qualification. This indicated that most of the respondents were educated.

Table 5 Distribution of Respondent by number of children

Number of Children	Frequency	Percentage (%)
1-2 children	7	11.7
3-4 children	24	40
5 children and above	17	28.3
Nil	12	20
Total	60	100

Table 5 showed the distribution of respondents by number of children. The table revealed that 7 respondents representing 11.7% had between 1-2 children, 24 respondents representing 40% had between 3-4 children, 15 respondents representing 25% had 5 children and above, while 12 respondents representing 20% did not have any child. This indicated that most the respondents between 3 to 5 children.

Table 6: Distribution of respondent by social Status

Social Status	Frequency	Percentages (%)
Employed	29	48.3
Under-employed	10	16.7
Unemployed	21	35
Total	60	100

The above table displayed the no. of respondents distribution according to social status. The table revealed that 29 respondents representing 48.3% were employed, 10 respondent representing 16.7% were underemployed while 21 respondents representing 35% are unemployed. This shown that most of the respondents Were not employed.

Table 7: Causes of Malaria

Causes of Malaria	Frequency	Percentages (%)
Mosquito	48	80
Germ	-	-
Bush	-	-
Dirty environment	6	10
Do not know	6	10
Total	60	100

Table 7 depicts the causes of malaria in the area. 48 respondents representing 80% reported that mosquito is sole agent that causes malaria, 6 respondents representing 10% said dirty environment while 6 respondents representing 10% said they do not know the actual cause of malaria.

Table 8: Malaria can affect children

Effect of Malaria	Frequency	Percentages (%)
Yes	53	88.3
No	7	11.7
Do not know	-	-
Total	60	100

Table 8 shows the effect of malaria on children in Giri Village. 53 respondents representing 88.3% were aware that malaria can have negative effects on children while respondents representing 11.7% were not aware.

Table 9: Distribution of transmission of Malaria

transmission of Malaria	Frequency	Percentages (%)
Yes	53	88.3
No	6	10
Do not know	1	1.7
Total	60	100

Table 9 is to find out if mosquito can transmit malaria in Giri Village. The table shown that 53 respondents representing 88.3% reported mosquito can transmit malaria, 6 respondents representing 10% did not accept that mosquito can transmit malaria while 1 respondent representing 1.7% said they do not know. This shown that, most of the respondents accepted that malaria is transmitted by mosquito.

Table 10: Knowledge of Malaria prevention among respondents

Prevention of Malaria	Frequency	Percentages (%)
Yes	58	96.6
No	1	1.7
Do not know	1	1.7
Total	60	100

Table 10 shows that malaria can be prevented. The table shows that 58 respondents representing 96.6% reported that malaria can be prevented while 1 respondent (1.7%) was not aware. This shown that, most of the respondents accepted that malaria can be prevented.

Table 11: Knowledge of the potential of malaria to kill children and adults

Prevention of Malaria	Frequency	Percentages (%)
Yes	53	88.3
No	4	6.7
Do not know	3	5
Total	60	100

Table 11 revealed that malaria could kill children and adults in Giri Village. The table shown that 53 respondents (88.3%) accepted malaria could kill children and adults, 4 respondents

(6.7%) reported that malaria can be prevented while 3 respondents (53%) were not aware. This shows that, most of the respondents were aware that malaria could kill children and adults.

Table 12. Fever is the major sign/symptom of malaria

prevention of Malaria	Frequency	Percentages (%)
Yes	59	98.3
No	1	1.7
Do not know	-	-
Total	60	100

The above table 12 is to find out if fever is the major sign/symptom of malaria in Giri Village. The table shown that 59 respondents (98.3%) reported that malaria could kill children and adults, while 1 respondent (1.7%) was not aware that fever are the major sign/symptom of malaria.

Table 13: There is treatment for malaria

prevention of Malaria	Frequency	Percentages (%)
Yes	58	96.6
No	1	1.7
Do not know	1	1.7
Total	60	100

Table 13 depicted the treatment for malaria in Giri Village. The table shown that 58 respondents (96.6%) knows that there is treatment for malaria, 1 respondent(1.7%) was not aware that there is treatment for malaria while 1 respondent (1.7%) said they do not know. This shown that, most of the respondents were aware that there is treatment for malaria.

Table 14: Knowledge of possibility of multiple malaria fever attacks in children

Prevention of Malaria	Frequency	Percentages (%)
Yes	51	85
Not possible	4	6.7
Do not know	5	8.3
Total	60	100

Table 14 shows a child could have multiple malaria fever attacks in a year in Giri Village. The table shown that 51 respondents (84%) reported that a child could have malaria fever attacks many times in a year, 4 respondents (6.7%) reported that a child could have multiple malaria fever attacks in a year, while 5 respondents (8.3%) did not know. This shown that, most of the respondents reported that a child could have malaria fever attacks in a year.

Major Findings

After presentation and analysis of data collected from the field of study, the following findings were discovered:

- Study findings revealed that most of the respondents were female and educated.
- That most of the respondents accepted that malaria is transmitted by mosquito, however, it can be prevented.
- The research findings also showed that most of the respondents were aware that malaria could kill children and adults and most of the respondents were aware that fever is the major sign/symptom of malaria and that there is treatment for malaria.

Nevertheless, mosquito treated nets are adequately distributed among residents of Giri.

Also, the result indicated that there is connection between mosquitoes treated net usage and drops in malaria cases in Giri Village. Unfortunately, the research showed that most respondents do not use treated bed nets.

Discussion

The study was conducted on evaluation of efficacy of mosquito treated net in the prevalence of malaria in Giri Village. Relevant scholarly views on the mosquito treated net in preventing malaria in Nigeria. Malaria is a major health problem in the three states investigated. The magnitude of malaria is reflected in the sentiments, through which the people expressed their concerns about malaria. To prevent, treat, and/or manage malaria, the people resort to all sorts or practices, like taking local herbs and roots while a few use orthodox medication. This is akin to the argument of the health belief model. The perceived severity of any problem as well as the perceived effectiveness of available solutions influences the adoption of intervention.

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- The research findings also showed that most of the respondents were aware that malaria could kill children and adults and most of the respondents were aware that fever is the major sign/symptom of malaria and that there is treatment for malaria.
- Nevertheless, mosquito treated nets are adequately distributed among residents of Giri.
 - » Also, the result indicated that there is connection between mosquitoes treated net usage and drops in malaria cases in Giri Village. Unfortunately, shows that most respondents do not use treated bed nets.

People are beginning to appreciate the effectiveness of insecticide-treated nets in the prevention of mosquito bites and malaria transmission. Some even attest to the fact that, with the nets, malaria has now a downward trend. They endeavour to collect their free nets for this purpose. Those who succeeded in collecting the nets which were given free of charge under the World Bank Malaria Booster programme, put those into usage. Some, in appreciation of the efficacy of the nets, reserved those for their grandchildren yet unborn, others used those as door and window blinds in the hope that all in the household would be protected since only two nets were given to a household that may have twelve or more persons. Some even discouraged the use of net and recommended reliance on Kai-kai (local gin) instead. For this category of persons Kai-kai will put one to sleep and make the person oblivious of the biting menace of mosquito, implying that the only problem with mosquito is the disturbing 'ringtone'.

These rumours and misconceptions about the nets could be attributed to poor health education and sensitization on the nets. The health workers are often in a hurry to share the nets without taking time to educate the people on appropriate net-usage. The people are left to speculate on the nets. These findings largely corroborate results from similar studies conducted in other African countries (16-18)

The involvement of community leadership structure and local organizations, Mechurcites, cumrrrarrdyncViukam¹j'vmrj; was oStotfgty ^xcmtEJ 10 promote acceptance and compliance. The community resource persons can also educate the people on proper use, monitor, and encourage ITNs.

Following the conclusion of the study, the following recommendations were and if implemented would solve the problems of malaria which is caused by mosquito:

1. Government should involve communities people especially the leaders in all the processes of prevention that are built on net-use.
2. Government and Non-Governmental Organizations should make sure people use the bed nets to all though proper monitory, as access to nets alone does not translate into effective net-use.
3. Community members are better positioned to dispel misconceptions about bed nets, assist in net installation, and monitor usage. This is in line with the community-directed intervention (CDI) strategy, widely acknowledged as successful in the delivery of health interventions in African countries

REFERENCES

- Baird JK (2013). "Evidence and implications of mortality associated with acute *Plasmodium vivax* malaria". *Clinical Microbiology Reviews*. 26 (1): 36- 57. doi: 10.1128/CMR.00074-12. PMC 3553673 .PMID 23297258.
- Bartoloni A, Zammarchi L (2012). "Clinical aspects of uncomplicated and severe malaria".*Mediterranean Journal of Hematology and Infectious Diseases*. 4 (1): e2012026. doi:10.4084/MJHID.2012.026. PMC 3375727 .PMID 22708041.
- Caraballo H (2014). "Emergency department management of mosquito-borne illness: Malaria, dengue, and west nile virus". *Emergency Medicine Practice*.16 (5).
- Collins WE (2012). "*Plasmodium knowlesi*: A malaria parasite of monkeys and humans". *Annual Review of Entomology*. 57: 107-21. doi: 10.1146/annurev-ento-121510-133540. PMID 22149265.
- Gollin D, Zimmermann C (August 2015). *Malaria: Disease Impacts and Long- Run Income Differences (PDF) (Report)*. Institute for the Study of Labor.

McGready R, and Singh N, (2012). "Malaria in pregnancy in the Asia-Pacific region". *Lancet Infectious Diseases*. 12 (1): 75-88. doi: 10.1016/S1473- 3099(11)70315-2. PMID 22192132.

Nadjm B, Behrens RH (2012). "Malaria: An update for physicians". *Infectious Disease Clinics of North America*. 26 (2): 243-59. doi:10.1016/j.idc.2012.03.010. PMID 22632637.

WHO (2015). World Malaria Report 2014. Geneva, Switzerland: World Health Organization. Pp.32-42. ISBN 978-92-4156483-0.

Worrall E, Basu S, Hanson K (2015). "Is malaria a disease of poverty? A review of the literature". *Tropical Health and Medicine*. 10 (10): 1047-59. doi: 10.1111/j. 1365-3156.2005.01476.x. PMID16185240.