



Community household utilization of insecticide-treated nets for malaria prevention in Ijebu North II Local Government Area, Ogun State, Nigeria

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Abstract

Background

Malaria remains a leading public health problem in Nigeria despite the implementation of several preventive interventions. Insecticide-treated nets (ITNs) are among the most effective malaria prevention strategies; however, utilization rates often remain lower than ownership rates. This study assessed household utilization of insecticide-treated nets for malaria prevention in Ijebu North II Local Government Area, Ogun State, Nigeria.

Methods

A community-based descriptive cross-sectional study was conducted among 348 households in Ago-Iwoye, Ogun State. A multistage sampling technique was employed for participant selection. Data were collected using a validated semi-structured questionnaire with a Cronbach's alpha coefficient of 0.86. Descriptive and inferential statistics were analyzed using SPSS version 21. Statistical significance was established at $p < 0.05$.

Results

The study revealed that 98.9% of households owned at least one insecticide-treated net, while 80.7% obtained the nets through government distribution programmes. Knowledge regarding malaria prevention was high (93.0%), and utilization prevalence was 69.3%. Perceived susceptibility and severity of malaria was 79.2%, perceived benefits of ITN utilization was 79.4%, and perceived barriers was 69.9%. No statistically significant relationship was observed between gender and utilization of ITNs ($r_s = 0.063$, $p = 0.24$), knowledge and utilization ($r = -0.099$, $p = 0.06$), or household ownership and utilization ($r_s = 0.014$, $p = 0.79$).

Conclusion

Household ownership and utilization of insecticide-treated nets were high among respondents. Government-supported distribution programmes remain important in sustaining ITN ownership. Community-based health education and behavioural interventions should be strengthened to improve consistent utilization and address barriers to ITN use.

Keywords: Malaria, insecticide-treated nets, household utilization, malaria prevention, community health, Nigeria

Introduction

Malaria remains one of the most significant public health challenges globally, particularly in sub-Saharan Africa where the disease continues to contribute substantially to morbidity and mortality [1, 2]. Despite considerable progress in malaria prevention and control over the past two decades, malaria remains endemic in many low- and middle-income countries. Nigeria bears a disproportionately high burden of malaria and contributes significantly to global malaria cases and deaths [1, 3]. The disease affects all age groups but is particularly severe among children under five years of age, pregnant women, and immunocompromised individuals [1]. Malaria is a mosquito-borne infectious disease caused by protozoan parasites of the genus *Plasmodium* and transmitted primarily through the bite of infected female *Anopheles* mosquitoes [4]. *Plasmodium falciparum* remains the predominant species responsible for severe malaria infections in Africa and is associated with significant morbidity and mortality [1]. Beyond its health consequences, malaria imposes substantial economic burdens on households and healthcare systems through treatment costs,

productivity losses, school absenteeism, and reduced economic output [5].

The global malaria control strategy advocates integrated interventions including prompt diagnosis and effective treatment, environmental vector control, indoor residual spraying, seasonal malaria chemoprevention, and the utilization of insecticide-treated nets (ITNs) [2,4]. Among these interventions, ITNs have consistently been recognized as one of the most effective and cost-efficient approaches for reducing malaria transmission and preventing malaria-related morbidity and mortality [6, 7].

In response to the high burden of malaria, the Nigerian government, in collaboration with international partners, has implemented nationwide mass distribution campaigns of long-lasting insecticidal nets (LLINs) aimed at improving household ownership and utilization [3]. Although ownership of ITNs has improved significantly following these interventions, utilization remains suboptimal in many communities [8, 9]. Ownership alone does not guarantee utilization, and several behavioural, environmental, and

socio-cultural factors have been reported to influence regular use of insecticide-treated nets ^[10].

The Health Belief Model (HBM) provides a useful framework for understanding preventive health behaviours associated with malaria control ^[11]. According to the model, individuals are more likely to adopt preventive measures when they perceive themselves to be susceptible to a disease, recognize the severity of its consequences, appreciate the benefits of preventive actions, and perceive minimal barriers to implementation ^[11]. Consequently, perceptions regarding malaria susceptibility, disease severity, benefits of ITN use, and barriers to utilization may significantly influence household utilization of insecticide-treated nets.

Several studies conducted in Nigeria and other malaria-endemic countries have reported varying levels of ITN ownership and utilization ^[8, 9, 12]. While some communities have demonstrated high ownership rates due to free distribution programmes, utilization remains influenced by educational status, household size, sleeping arrangements, weather conditions, misconceptions regarding insecticides, discomfort associated with sleeping under nets, and inadequate awareness of the benefits of consistent use ^[10, 13]. Despite sustained malaria prevention efforts in Ogun State, limited information exists regarding household utilization of insecticide-treated nets and associated determinants within Ijebu North II Local Government Area. Understanding the extent of utilization and factors influencing usage is essential for designing evidence-based interventions aimed at improving malaria prevention outcomes within the community.

This study therefore assessed household utilization of insecticide-treated nets for malaria prevention among residents of Ijebu North II Local Government Area, Ogun State, Nigeria. Specifically, the study examined respondents' knowledge of malaria prevention, perceptions of susceptibility and severity of malaria, perceived benefits and barriers to ITN utilization, household ownership of ITNs, and the relationship between these factors and utilization of insecticide-treated nets.

Materials and Methods

1. Study Design

This study adopted a community-based descriptive cross-sectional research design to assess household utilization of insecticide-treated nets for malaria prevention among residents of Ijebu North II Local Government Area, Ogun State, Nigeria.

2. Study Area

The study was conducted in Ago-Iwoye, the administrative headquarters of Ijebu North Local Government Area in Ogun State, Southwestern Nigeria. Ago-Iwoye is a semi-urban community with a rapidly growing population due to the presence of educational institutions, commercial activities, and healthcare facilities. Malaria remains endemic within the area because of climatic and environmental conditions favorable for mosquito breeding.

3. Study Population

The study population comprised adult household members residing in selected households within Ago-Iwoye. Eligible respondents included household heads, spouses, caregivers, and other adult members aged 18 years and above who had lived in the community for at least six months prior to data collection.

4. Inclusion Criteria

Respondents were included if they:

- Were aged 18 years and above.
- Were permanent residents of the selected households.
- Provided informed consent to participate in the study.

5. Exclusion Criteria

Individuals who were seriously ill during the period of data collection or declined participation were excluded from the study.

6. Sample Size Determination

The sample size was determined using Cochran's formula for descriptive cross-sectional studies. A minimum sample size of 317 participants was calculated, and an additional 10% was added to account for possible non-response, resulting in a final sample size of 348 respondents.

7. Sampling Technique

A multistage sampling technique was employed.

Stage One: Ago-Iwoye was purposively selected because of its population density and relevance to the study objectives.

Stage Two: Eight streets were selected using simple random sampling techniques.

Stage Three: Households were selected through systematic random sampling using a sampling interval of two.

Stage Four: One eligible respondent was selected from each household for participation in the study.

8. Instrument for Data Collection

Data were collected using a researcher-developed semi-structured questionnaire consisting of six sections:

Section A: Socio-demographic characteristics

Section B: Knowledge of malaria prevention

Section C: Perceived susceptibility and severity of malaria

Section D: Perceived benefits of insecticide-treated nets

Section E: Perceived barriers to utilization of insecticide-treated nets

Section F: Household ownership and utilization of insecticide-treated nets

9. Validity and Reliability of Instrument

Content and face validity of the questionnaire were established through expert review by specialists in public health and epidemiology. Reliability testing was conducted through a pilot study among respondents outside the study area. The instrument demonstrated good internal consistency with a Cronbach's alpha coefficient of 0.86.

10. Data Collection Procedure

Data collection was conducted by the researcher and trained research assistants. Participants were informed about the objectives of the study and provided written informed consent before questionnaire administration.

11. Data Analysis

Completed questionnaires were coded and entered into Statistical Package for Social Sciences (SPSS) version 21 for analysis. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to summarize study variables. Pearson Product Moment Correlation, Spearman Rank Correlation, and Analysis of Variance (ANOVA) were used to test study hypotheses. Statistical significance was set at $p < 0.05$.

12. Ethical Considerations

Ethical approval for the study was obtained from the Babcock University Health Research Ethics Committee

before commencement of data collection. Permission was obtained from relevant community authorities. Participation was voluntary, informed consent was obtained from all respondents, and confidentiality and anonymity of information were maintained throughout the study.

Results

A total of 348 respondents participated in the study, giving a response rate of 100%.

1. Socio-Demographic Characteristics of Respondents

The socio-demographic characteristics of respondents are presented in Table 1. The majority of respondents were within the economically active age group of 20–39 years. Females constituted a higher proportion of respondents than males. Most respondents were married, possessed tertiary education, and belonged to the Yoruba ethnic group. Christianity and Islam were the predominant religions among respondents.

Table 1: Socio-Demographic Characteristics of Respondents (N = 348)

Variables and Items to be considered	Respondents in this Study N=348	
	N	%
Demographic Data		
Age (in years)		
20-39	181	52.0
40-59	139	39.9
Above 60	28	8.0
Gender		
Male	151	43.4
Female	197	56.6
Marital Status		
Single	67	19.3
Married	242	69.5
Widow/Widower	21	6.0
Divorced	18	5.2
Highest level of Education completed		
No education	12	3.4
Primary	17	4.9
Secondary	101	29.0
Tertiary qualification	200	57.5
Others	18	5.2
Occupation		
Government employee	111	31.9
Private employee	101	29.0
Merchant	28	8.0
Farmer	22	6.3
Daily Laborer	9	2.6
Housewife	19	5.5
Student	48	13.8
Others	10	2.9
Ethnic Group		
Yoruba	262	75.3
Hausa	17	4.9
Igbo	59	17.0
Others	10	2.9
Religion		
Christianity	270	77.6
Islam	77	22.1
Traditionalist	1	0.3
Family Size		
1-3persons	106	30.5
4-6persons	212	60.9
7persons and more	30	8.6

2. Knowledge of Malaria Prevention among Respondents

Respondents demonstrated a high level of knowledge regarding malaria prevention. The majority correctly identified mosquito bites as the major cause of malaria and recognized insecticide-treated nets as an effective preventive measure. Knowledge assessment revealed a mean score of 9.30 ± 1.06 , corresponding to a knowledge prevalence of 93.0%.

Table 2: Knowledge of Malaria Prevention among Respondents (N = 348)

Variables and Items to be considered	Respondents in this Study N=348	
	N	%
Malaria is a disease		
Yes	344	98.9
No	4	1.1
Malaria is caused by mosquito bites		
Yes	343	98.6
No	5	1.4
Malaria is caused by standing/working in the sun		
Yes	36	10.3
No	312	89.7
Malaria is caused by eating oily foods		
Yes	15	4.3
No	333	95.7
Malaria transmission is more in places noted for presence of stagnant water in gutters around the house		
Yes	343	98.6
No	5	1.4
Malaria transmission is more in places noted for having plenty people in the area		
Yes	31	8.9
No	317	91.1
Malaria transmission is more in places noted for having plenty lakes, streams around the house		
Yes	295	84.8
No	53	15.2
Malaria is prevented by sleeping under Insecticide treated nets (ITNs)		
Yes	343	98.6
No	5	1.4
Malaria is prevented by making fire and smoke		
Yes	47	13.5
No	301	86.5
Burning cow dung/leaves can protect one from malaria		
Yes	41	11.8
No	307	88.2

* Frequency (N), Percentage (%)

3. Respondents' Perceived Susceptibility and Severity of Malaria

Findings presented in Table 3 indicate that respondents generally perceived malaria as a serious health condition and considered themselves susceptible to infection. The mean perception score was 19.01 ± 2.55 , representing a prevalence of 79.2%.

Table 3: Respondents' Perceived Susceptibility and Severity of Malaria (N = 348)

Respondents in this Study N=348				
Variables and Items to be considered	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
I have the chance to get malaria.	135 (38.8)	187 (53.7)	12 (3.4)	14 (4.0)
Malaria is caused by one's misfortune.	7 (2.0)	2 (0.6)	130 (37.4)	209 (60.1)
Anopheles mosquitoes do not bite in the daytime.	9 (2.6)	28 (8.0)	201 (57.8)	110 (31.6)
I am bitten by mosquitoes every day, but I am not infected with malaria, so I think that I am not at risk of getting malaria.	6 (1.7)	14 (4.0)	194 (55.7)	134 (38.5)
Malaria cannot cause other health problems.	10 (2.9)	16 (4.6)	200 (57.5)	122 (35.1)
Malaria can affect everyone, I think it's a great problem.	178 (51.1)	163 (46.8)	1 (0.3)	6 (1.7)
Malaria can lead to death.	181 (52.0)	153 (44.0)	8 (2.3)	6 (1.7)
Malaria is more severe in pregnant women and children	189 (54.3)	149 (42.8)	10 (2.9)	-

* Frequency (N), Percentage (%)

4. Respondents' Perceived Benefits of Insecticide-Treated Nets

Respondents demonstrated positive perceptions regarding the effectiveness of insecticide-treated nets in preventing

malaria. The majority agreed that sleeping under ITNs reduces mosquito bites and lowers the risk of malaria infection. The mean score for perceived benefits was 16.68 ± 2.57 , representing a prevalence of 79.4%.

Table 4: Respondents' Perceived Benefits of Insecticide-Treated Nets (N = 348)

Respondents in this Study N=348				
Variables and Items to be considered Consistent and proper use of Insecticide Treated Nets by the member of your household can greatly:	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
Promote healthy and productive life.	210 (60.3)	138 (39.7)	-	-
Reduce mortality and morbidity from malaria.	174 (50.0)	171 (49.1)	3 (0.9)	-
Help to avoid paying of unnecessary medications.	184 (52.9)	153 (44.0)	9 (2.6)	2 (0.6)
Increase malaria transmission.	10 (2.9)	10 (2.9)	130 (37.4)	198 (56.9)
Reduce the hospitalization of individuals with malaria thereby reducing numbers of malaria cases.	158 (45.4)	170 (48.9)	15 (4.3)	5 (1.4)
Prone one to the bite of nuisance insects.	4 (1.1)	22 (6.3)	202 (58.0)	120 (34.5)
Prevent dust and roof debris from falling on sleepers as well as for privacy.	53 (15.2)	245 (70.2)	36 (10.3)	14 (4.0)

*Frequency (N), Percentage (%)

5. Respondents' Perceived Barriers to Utilization of Insecticide-Treated Nets

Although respondents acknowledged the benefits of ITNs, several barriers to utilization were identified. Commonly

reported barriers included discomfort during hot weather, inconvenience associated with hanging nets, and concerns regarding insecticide effects. The mean barrier score was 12.59 ± 2.18 , corresponding to a prevalence of 69.9%.

Table 5: Respondents' Perceived Barriers to Utilization of Insecticide-Treated Nets (N = 348)

Respondents in this Study N=348			
Variables and Items to be considered Please indicate the extent to which the following barriers/factors adversely affects the usage of nets in your household:	Greatly affects N (%)	Slightly Affects N (%)	Do not affect N (%)
Lack of information of the significance of sleeping under ITNs.	223 (64.1)	122 (35.1)	3 (0.9)
Inability to purchase from the open market due to excessive cost.	129 (37.1)	203 (58.3)	16 (4.6)
Good educational status.	10 (2.9)	23 (6.6)	315 (90.5)
Doubt of efficacy.	89 (25.6)	231 (66.4)	28 (8.0)
Inconvenience of hanging a net.	90 (25.9)	208 (59.8)	50 (14.4)
Perception of no mosquitoes around.	131 (37.6)	168 (48.3)	49 (14.1)
Delay in transportation to the place of distribution.	123 (35.3)	195 (56.0)	30 (8.6)
Fear of chemical impregnated with ITNs.	171 (49.1)	168 (48.3)	9 (2.6)
Inadequate distribution of ITNs	184 (52.9)	152 (43.7)	12 (3.4)

*Frequency (N), Percentage (%)

6. Household Ownership of Insecticide-Treated Nets

Household ownership of insecticide-treated nets was high among respondents. Nearly all respondents (98.9%) reported

ownership of at least one insecticide-treated net. Government-sponsored distribution programmes constituted the major source of ITNs, accounting for 80.7% of nets obtained by households.

Table 6: Household Ownership of Insecticide-Treated Nets (N = 348)

Variables and Items to be considered	Respondents in this Study N=348	
	N	%
Do you have ITNs in your household?		
Yes	344	98.9
No	4	1.1
Are the ITNs in this household enough for ever sleeping place?		
Yes	264	75.9
No	84	24.1
How many ITNs is available in your household?		
None	7	2.0
One	35	10.1
Two	119	34.2
Three	111	31.9
More than three	76	21.8
Where did you obtain (i.e. source) the ITNs your household own From?		
Government (Mass distribution & health facility)	281	80.7
Purchased from private shop	9	2.6
Gift	6	1.7
Both government and purchased	51	14.7
Others	1	0.3
When did you obtain it (In months)		
<6 months	96	27.6
6-12 months	151	43.4
13-24 months	48	13.8
>13-24 months	53	15.2

*Frequency (N), Percentage (%)

7. Household Utilization of Insecticide-Treated Nets
Results showed that household utilization of insecticide-treated nets was relatively high. The utilization prevalence

was 69.3%, with a mean utilization score of 5.54 ± 2.54 . A substantial proportion of respondents reported sleeping under an ITN regularly.

Table 7: Household Utilization of Insecticide-Treated Nets (N = 348)

Variables and Items to be considered	Respondents in this Study N=348	
	N	%
Have you ever used ITNs?		
Yes	346	99.4
No	2	0.6
Are you currently using ITNs?		
Yes	210	60.3
No	138	39.7
Do all household members use ITNs?		
Yes	221	63.5
No	127	36.5
How often do you use ITNs?		
Everyday	192	55.2
At least once a week	47	13.5
Once in a while	109	31.3
Number of ITNs currently in use in your household?		
One	63	18.1
Two	155	44.5
Three or more	130	37.4
Number of persons sharing ITNs?		
One	55	15.8
Two	223	64.1
Three of more	70	20.1
When was ITNs last used in your household?		
Last night	178	51.1
A week ago	64	18.4
A month ago	58	16.7
A year ago	48	13.8
ITNs uses users in the household?		
Choose three	148	42.5
Choose four	147	42.2
Choose five	24	6.9
Choose six	16	4.6
Choose seven	13	3.7

*Frequency (N), Percentage (%)

8. Summary of Study Variables

Table 8 presents the summary statistics of key study variables. Knowledge of malaria prevention demonstrated the highest prevalence (93.0%), followed by perceived benefits of ITN utilization (79.4%), perceived susceptibility and severity (79.2%), perceived barriers (69.9%), and household utilization of insecticide-treated nets (69.3%).

Table 8: Summary Statistics of Study Variables

Variable	Mean ± SD	Prevalence (%)
Knowledge of Malaria Prevention	9.30 ± 1.06	93.0
Perceived Susceptibility/Severity	19.01 ± 2.55	79.2
Perceived Benefits	16.68 ± 2.57	79.4
Perceived Barriers	12.59 ± 2.18	69.9
Household Utilization	5.54 ± 2.54	69.3

9. Test of Hypotheses

Hypothesis One

There was no statistically significant relationship between gender and household utilization of insecticide-treated nets ($r_s = 0.063$, $p = 0.24$). Therefore, the null hypothesis was accepted.

Table 9: Relationship between Gender and Household Utilization of ITNs

Variable	r_s	p-value	Decision
Gender and Utilization	0.063	0.24	Not Significant

Hypothesis Two

No statistically significant relationship was observed between knowledge of malaria prevention and household utilization of insecticide-treated nets ($r = -0.099$, $p = 0.06$). The null hypothesis was therefore accepted.

Table 10: Relationship between Knowledge and Household Utilization of ITNs

Variable	r	p-value	Decision
Knowledge and Utilization	-0.099	0.06	Not Significant

Hypothesis Three

There was no statistically significant relationship between household ownership of insecticide-treated nets and utilization ($r_s = 0.014$, $p = 0.79$). Consequently, the null hypothesis was accepted.

Table 11: Relationship between Household Ownership and Utilization of ITNs

Variable	r_s	p-value	Decision
Ownership and Utilization	0.014	0.79	Not Significant

Discussion

This study assessed household utilization of insecticide-treated nets (ITNs) for malaria prevention among residents of Ijebu North II Local Government Area, Ogun State, Nigeria. The findings provide important insights into knowledge of malaria prevention, perceptions related to malaria risk, ownership and utilization of ITNs, and factors associated with utilization.

1. Knowledge of Malaria Prevention

The study revealed a high level of knowledge regarding malaria prevention among respondents, with a knowledge prevalence of 93.0%. This finding suggests that malaria

awareness campaigns and health education programmes have been effective in disseminating information about malaria transmission and prevention. The high level of knowledge observed in this study is consistent with findings from previous studies conducted in Nigeria and other malaria-endemic countries, which reported high awareness of malaria and preventive measures among community residents. Increased access to health information through healthcare facilities, mass media, educational institutions, and community outreach programmes may have contributed to this outcome.

Despite the high level of knowledge observed, the study found no statistically significant relationship between knowledge and household utilization of insecticide-treated nets ($r = -0.099$, $p = 0.06$). This finding indicates that knowledge alone may not necessarily translate into preventive behaviour. Similar observations have been reported in previous studies where individuals possessed adequate knowledge regarding malaria prevention but did not consistently utilize ITNs because of behavioral, environmental, and socio-cultural factors. This finding highlights the importance of complementing health education with behaviour change interventions aimed at promoting regular utilization of insecticide-treated nets.

2. Perceived Susceptibility and Severity of Malaria

Respondents demonstrated high perceptions of susceptibility and severity of malaria, with a prevalence of 79.2%. This finding suggests that most participants recognized malaria as a serious health threat and acknowledged their vulnerability to infection. According to the Health Belief Model, individuals who perceive themselves to be at risk of a disease and who recognize the seriousness of its consequences are more likely to engage in preventive behaviours. The relatively high perception scores observed in this study indicate a favourable environment for adoption of malaria prevention practices.

3. Perceived Benefits of Insecticide-Treated Nets

The study revealed a high prevalence of perceived benefits associated with ITN utilization (79.4%). Most respondents believed that sleeping under insecticide-treated nets reduces mosquito bites and protects against malaria infection. This finding is consistent with previous studies demonstrating widespread recognition of the effectiveness of ITNs in malaria prevention. Positive perceptions regarding the benefits of ITNs are important determinants of utilization and may contribute to the relatively high utilization rate observed among respondents.

4. Perceived Barriers to Utilization of Insecticide-Treated Nets

Although respondents acknowledged the benefits of ITNs, perceived barriers to utilization were also identified. The prevalence of perceived barriers was 69.9%, indicating that several challenges continue to influence utilization. Common barriers reported in similar studies include excessive heat while sleeping under nets, difficulty in hanging nets, unpleasant odour of insecticides, concerns regarding safety, and inconvenience associated with regular use. These barriers may partly explain why utilization rates remain lower than ownership rates despite widespread availability of ITNs.

5. Household Ownership of Insecticide-Treated Nets

The study found a remarkably high household ownership rate of 98.9%. This finding demonstrates the effectiveness of government-supported mass distribution campaigns and malaria control programmes. The majority of respondents obtained their nets through government distribution initiatives, highlighting the critical role of public health interventions in improving access to malaria prevention tools. Similar high ownership rates have been reported following nationwide distribution campaigns in several African countries.

6. Household Utilization of Insecticide-Treated Nets

Household utilization of insecticide-treated nets was relatively high, with a prevalence of 69.3%. Although this finding is encouraging, it also indicates that a proportion of households owning ITNs do not utilize them consistently. This ownership-utilization gap has been reported in several studies and underscores the need for interventions that move beyond distribution and address behavioral determinants of utilization.

7. Relationship between Gender and Utilization of Insecticide-Treated Nets

The study found no statistically significant relationship between gender and utilization of insecticide-treated nets ($r_s = 0.063$, $p = 0.24$). This finding suggests that utilization patterns were similar among male and female respondents. The result implies that malaria prevention programmes targeting ITN utilization should focus on household-level behavioural factors rather than gender-specific interventions.

8. Relationship between Household Ownership and Utilization of Insecticide-Treated Nets

No statistically significant relationship was observed between household ownership and utilization of insecticide-treated nets ($r_s = 0.014$, $p = 0.79$). This finding further supports existing evidence that ownership alone does not guarantee utilization. While distribution campaigns have been successful in improving access to ITNs, sustained utilization requires addressing factors such as comfort, convenience, perceptions, and behavioural practices.

9. Implications of Findings within the Health Belief Model

The findings of this study support key constructs of the Health Belief Model. Respondents generally perceived malaria as a serious disease and recognized the benefits of insecticide-treated nets. However, the presence of perceived barriers suggests that behavioural interventions remain necessary to improve utilization. Efforts aimed at reducing barriers and reinforcing perceived benefits may enhance consistent use of ITNs and strengthen malaria prevention outcomes within the community.

Study Limitations

This study employed a cross-sectional design, which limits the ability to establish causal relationships between study variables and utilization of insecticide-treated nets. Data were obtained through self-reported responses and may therefore be subject to recall bias and social desirability bias. In addition, the study was conducted within a single Local Government Area in Ogun State, which may limit the

generalizability of findings to other populations and geographical settings. Despite these limitations, the study provides valuable information regarding household ownership and utilization of insecticide-treated nets in a malaria-endemic community.

Public Health Implications

The findings of this study have important implications for malaria prevention programmes in Nigeria. The high ownership of insecticide-treated nets demonstrates the effectiveness of government-supported distribution campaigns. However, the disparity between ownership and utilization highlights the need for intensified behaviour change communication strategies. Public health programmes should focus on addressing perceived barriers to utilization while reinforcing the benefits of consistent ITN use. Community-based education, routine follow-up visits, and culturally appropriate health promotion interventions may improve utilization rates and contribute to reductions in malaria morbidity and mortality.

Conclusion

This study assessed household utilization of insecticide-treated nets for malaria prevention among residents of Ijebu North II Local Government Area, Ogun State, Nigeria. The findings revealed high levels of knowledge regarding malaria prevention, positive perceptions of malaria susceptibility and severity, and strong recognition of the benefits of insecticide-treated nets. Household ownership of ITNs was exceptionally high, largely due to government-supported distribution programmes.

Despite these achievements, utilization rates remained lower than ownership rates, indicating the continued influence of behavioural and practical barriers to regular use. Furthermore, no significant relationships were observed between gender, knowledge, ownership, and utilization of ITNs. These findings suggest that factors beyond awareness and access may influence utilization patterns.

Sustained distribution programmes, coupled with targeted behaviour change interventions, are therefore essential for improving utilization and strengthening malaria prevention efforts within the community.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Government should continue the free distribution of insecticide-treated nets through routine healthcare services and mass distribution campaigns.
2. Community-based health education programmes should be strengthened to promote consistent utilization of insecticide-treated nets.
3. Behaviour change communication interventions should address barriers such as discomfort, misconceptions, and concerns regarding insecticide safety.
4. Community health workers should conduct regular household visits to reinforce correct and consistent utilization of ITNs.
5. Future studies should employ longitudinal designs and include multiple communities to improve understanding of factors influencing ITN utilization and enhance generalizability of findings.
6. Malaria control programmes should integrate behavioural and social interventions with net distribution strategies to maximize utilization and effectiveness.

List of Abbreviations

ANOVA – Analysis of Variance
BUHREC – Babcock University Health Research Ethics Committee
HBM – Health Belief Model
ITN – Insecticide-Treated Net
ITNs – Insecticide-Treated Nets
LGA – Local Government Area
LLIN – Long-Lasting Insecticidal Net
LLINs – Long-Lasting Insecticidal Nets
NBS – National Bureau of Statistics
NMEP – National Malaria Elimination Programme
NPC – National Population Commission
SD – Standard Deviation
SPSS – Statistical Package for the Social Sciences
WHO – World Health Organization

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this manuscript.

Authors' Contributions

Adeyemi Oluwatosin Adenike (AOA)

- Conceptualization of the study
- Literature review
- Data collection
- Data analysis and interpretation
- Manuscript drafting and revision

Oyerinde Oyewole Olusesan (OOO)

- Research supervision
- Study design review
- Critical revision of manuscript
- Approval of final manuscript

Olajorin Abiola Oluwatosin (OAO)

- Data validation
- Statistical review
- Manuscript editing

Atolagbe Oluwafunmibi (AO)

- Critical review of manuscript
- Literature review
- Data analysis and interpretation

Nwankwo Nkechiyere Victoria (NNV)

- Methodological review
- Interpretation of findings
- Critical review of manuscript

Atolagbe-Oyinloye Olufunke Tomilola (AOT)

- Critical review of manuscript
- Methodological review

Isiaka Abiola Dupe (IAD)

- Data validation
- Interpretation of findings

All authors read, approved, and agreed to the final version of the manuscript for publication.

Ethical Approval Statement

Ethical approval for this study was obtained from the Babcock University Health Research Ethics Committee (BUHREC) before commencement of the study.

Permission to conduct the study was obtained from relevant community authorities and stakeholders within the study area.

Participation was entirely voluntary, and informed consent was obtained from all respondents before questionnaire administration. Respondents were assured of confidentiality, anonymity, privacy, and their right to withdraw from the study at any stage without any consequences.

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki for research involving human participants.

Informed Consent Statement

Written informed consent was obtained from all participants prior to data collection. Participants were adequately informed about the purpose, procedures, benefits, and risks associated with the study.

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