

FARMERS' AWARENESS, KNOWLEDGE AND UTILISATION OF MASS MEDIA –BASED MALARIA PREVENTION INFORMATION IN AKWA IBOM STATE, NIGERIA: RURAL–URBAN DIFFERENCES



ISSN: 2141 – 3290
www.wojast.com

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ABSTRACT

Malaria remains a significant public health concern in Nigeria, especially among rural farming populations with limited access to healthcare. Against this background, this study examined rural–urban differences in awareness, knowledge, and utilisation of anti-malarial messages disseminated through selected mass media channels among farmers in Akwa Ibom State, Nigeria. A multi-stage sampling technique was used to select 300 respondents (150 rural and 150 urban), and data were obtained using a structured questionnaire. Findings revealed that urban farmers had higher awareness (70%) of malaria-prevention messages than rural farmers (56.7%), with radio as the most frequently cited source in both areas. However, knowledge of malaria symptoms and application of preventive measures showed a clear urban advantage. Urban farmers demonstrated higher levels of knowledge (70.0% high knowledge vs. 56.7% rural) and greater utilisation of anti-malarial practices (73.3% vs. 43.3% rural). Urban respondents used insecticides, treated nets, and anti-malarial tablets more consistently, while rural farmers showed lower uptake across all categories and relied more on bed nets. Environmental practices such as bush clearing, drainage maintenance and gutter removal recorded lower utilisation scores relative to pharmacological measures. An independent sample t-test results confirmed a significant rural–urban difference in the utilisation of anti-malarial messages ($t = 2.30$, $p < 0.05$). The study suggests that mass media are associated with higher awareness of pharmacological interventions, although structural and socio-economic gaps in rural settings, limit adoption. This underscores the need for targeted, context-specific communication strategies and community-driven approaches to strengthen malaria control.

KEYWORDS: Anti-malarial messages, Mass media communication, Farmers, Awareness and utilisation, Health care

INTRODUCTION

Malaria remains a major global health concern, especially in tropical and subtropical countries where mosquito vectors thrive due to favourable climatic and environmental conditions. According to the World Health Organisation (WHO), malaria burden remains persistently high, with 229 million cases reported globally in 2019 and continued increases reported through 2021 (WHO, 2021). Sub-Saharan Africa continues to be disproportionately affected, accounting for over 90% of the world's malaria cases and deaths (WHO, 2022). Countries such as Nigeria, despite implementing extensive control measures, experienced an estimated 68 million cases and 194,000 fatalities in 2021 (Adewumi, 2025). The persistence of malaria underscores the need to intensify prevention efforts, particularly through raising awareness, transferring knowledge, and promoting the effective adoption of malaria-prevention practices. Malaria has significant socio-economic effects alongside its health impacts, which can influence productivity, education, and household well-being. Malaria reduces agricultural output, increases healthcare expenses, and causes absenteeism in schools, especially among the most vulnerable groups such as children under five years and pregnant women (Isiko *et al.*, 2021). These long-term effects highlight the importance of interventions that are not only focused on raising awareness but also on behaviour change. The mass media is well known as an effective way to communicate with the public about health. Radio, television,

newspapers, posters, billboards, and, more recently, digital campaigns have focussed on spreading messages about preventing malaria by increasing awareness and promoting preventive measures, including the use of insecticide-treated nets (ITNs), indoor residual spraying (IRS), environmental sanitation, and timely treatment with artemisinin-based combination therapies (ACTs) (Ankomah *et al.*, 2014). Studies show that this type of campaign can boost awareness and knowledge (Talabi and Oko-Epelle, 2024; Nwachukwu *et al.*, 2022). However, knowledge does not always translate into practice, and there are still gaps in transforming knowledge into consistent and lasting preventive behaviours (Nwachukwu *et al.*, 2022). Several factors influence awareness and utilisation, including socio-demographic factors such as education, income, gender, and location; which affect how people obtain, understand, and use information about malaria prevention (Paaijmans and Lobo, 2023; Babalola *et al.*, 2022). Due to infrastructural issues, rural populations tend to depend more on radio, whereas urban populations have greater access to a variety of media (Okeibunor *et al.*, 2011). Perceptions and misconceptions about the causes and management of malaria also influence receptivity to media messages and can sometimes generate resistance when the messages conflict with traditional beliefs (Awasthi *et al.*, 2022). Furthermore, the affordability and accessibility of preventive tools, including ITNs and ACTs, remain significant barriers even in cases of high awareness (Fenta *et al.*, 2024).

Malaria continues to impose a significant burden in Akwa Ibom State, Nigeria, despite the implementation of various control measures. Children and pregnant women remain particularly vulnerable (Isiko *et al.*, 2024), and although the use of ITNs and anti-malarial drugs is strongly advised, their consistent use remains low (Mehta, 2024). In Nigeria, including Akwa Ibom State, mass media campaigns have been widely deployed to promote malaria prevention (Yaya *et al.*, 2018), but the extent to which these messages have been understood and acted upon remains unclear. While studies highlight the role of media in increasing awareness (Talabi and Oko-Epelle, 2024), not much research has explored whether this awareness translates into the actual use of preventive measures, especially among farming communities that form the backbone of Akwa Ibom's economy.

Significant challenges also remain, with reference to unequal access between rural and urban populations and wholesale reliance on mass media. Rural residents face obstacles such as low literacy and reliance on traditional medicine, while urban dwellers have greater exposure to various forms of communication (Oladipo, 2014). Additionally, economic limitations, distrust of official health messages, and complex medication instructions further widen the gaps in utilisation between rural and urban areas, despite high awareness levels (Shekarau *et al.*, 2024). To address these disparities, this study assesses farmers' level of awareness, knowledge, and utilisation of anti-malarial messages disseminated through the identified mass media platforms in rural and urban areas of Akwa Ibom State. Specifically, the study sought to:

- i. Assess farmers' awareness of anti-malarial messages transmitted through selected mass media channels.
- ii. examine farmers' knowledge of malaria symptoms following exposure to mass media messages; and
- iii. determine the level of utilisation of malaria preventive and curative practices promoted through mass media channels.

RESEARCH HYPOTHESIS

Ho: There is no significant difference in the utilisation of anti-malarial messages disseminated through selected mass media channels between farmers in urban and rural areas of Akwa Ibom State.

METHODOLOGY

The study was conducted in Akwa Ibom State, located in the southern part of Nigeria. This State, covering around 7,081 square kilometres, has diverse topography that includes coastal regions along the Gulf of Guinea, low-lying plains, and inland hilly areas. The area lies between latitudes 4°32' and 5°33' North of the equator and longitudes 7°25' and 8°25' East of the Prime meridian. Recent estimates suggest that Akwa Ibom has a population of about 5 million, making it one of Nigeria's most populous states (Akpabio *et al.*, 2024).

The Questionnaire was validated through expert review and a pilot test, yielding a Cronbach's alpha value of 0.79 (higher

than the standard value of 0.70). This was used to elicit information based on the study objectives from a sample of 300 respondents residing in rural and urban areas of Akwa Ibom State. Arising from the Akwa Ibom State Agricultural Development Programme's (AKADEPs) delineations, sampling involved three agricultural zones from which three blocks were randomly selected, followed by the selection of six cells. Relevant data on socio-demographic indicators focused on respondents' place of residence, sex, age, marital status, number of dependents, religion, level of education, occupation, monthly income, household structure, and access to or ownership of mass media.

Regarding awareness and exposure levels, respondents were asked about their exposure to various anti-malarial messages, which was measured using a three-point scale of; Never (0), once-in-a-while (1), and frequently (2). Knowledge of malaria symptoms was assessed with a similar scale of not familiar (0), somewhat familiar (1), and very familiar (2). The utilisation of anti-malarial messages was evaluated based on how often respondents used the anti-malarial products and advisories they encountered through mass media, including insecticides, anti-malarial tablets, and insecticide-treated nets, using a three-point scale of; never (0), sometimes (1), and regularly (2). Data were analysed using descriptive statistics, including frequency, percentages, mean and composite index scores, while the hypothesis was tested using an independent sample t-test.

RESULTS AND DISCUSSION

Socio-demographic Characteristics of Respondents

The socio-demographic profile reveals notable rural–urban differences among the respondents. Male respondents predominated in both areas, though slightly more in rural (66.7%) than urban (56.7%), while female participation was proportionally higher in urban areas (43.3%). Female participation may have implications for household health decision-making, aligning with Ankomah *et al.* (2014). Age distribution showed that urban respondents were slightly younger, with 56.7% aged 21–40 compared to 50.0% in rural areas, whereas rural areas recorded a higher mean age (42.1 years). Marriage was prevalent in both settings, though marginally higher in rural (76.7%) than urban (75.3%). Household size also varied, with rural families tending to have more dependents (23.3% had 6–10 dependents versus 20.0% urban), reflecting the agrarian family structure noted by Babalola *et al.* (2022). Religious affiliation was similar across both groups, predominantly Christian (over 93%).

Marked disparities were, however, evident in education, occupation, and income. Rural farmers reported higher rates of 'no formal education' (13.3% versus 6.6%), while urban areas had more respondents with tertiary education (26.7% compared to 13.4%). Similar patterns were seen among spouses, with higher levels of tertiary education in urban areas (35.3%). This educational gap, highlighted by Coughlin *et al.* (2020), suggests rural limitations in understanding text-based interventions. Farming was more dominant in rural areas (90.0%), while urban farmers

showed greater diversification into business and civil service. Monthly income levels further reflected these disparities, with rural respondents earning less on average (₦29,500) compared to urban farmers (₦41,000), consistent with Munir *et al.* (2023). Access to media also differed significantly: while radio was nearly universal in both settings (80.0% rural, 83.3% urban), urban farmers had greater access to television (73.3% versus 40.0%) and pamphlets (46.7% versus 30.0%), reflecting infrastructural

gaps. These differences align with Mwebesa *et al.* (2024) who found rural reliance on radio compared to urban diversity in media access. Together, these socio-demographic factors (age, education, income, and media access) influence how farmers in rural and urban settings adopt malaria-prevention messages, particularly since farming exposes them to malaria vectors (Yirsaw *et al.*, 2021).

Table 1: Socio-demographic characteristics of farmers in Urban and Rural Areas (n = 300)

Variables	Rural (n = 150)		Urban (n = 150)	
	F	%	F	%
Sex				
Male	100	66.7	85	56.7
Female	50	33.3	65	43.3
Age (years)				
< 21	10	6.7	5	3.3
21 – 40	75	50.0	85	56.7
41 – 60	50	33.3	45	30.0
> 60	15	10.0	15	10.0
Marital Status				
Single	20	13.3	28	18.7
Married	115	76.7	113	75.3
Divorced	4	2.7	2	1.3
Separated	5	3.3	1	0.7
Widowed	6	4.0	6	4.0
Number of Dependents				
0	10	6.7	15	10.0
1 – 5	90	60.0	95	63.3
6 – 10	35	23.3	30	20.0
> 10	15	10.0	10	6.7
Religion				
Christianity	140	93.3	142	94.7
Islam	3	2.0	3	2.0
Others	7	4.7	5	3.3
Educational Attainment				
No formal education	20	13.3	10	6.6
Primary	50	33.3	40	26.7
Secondary	60	40.0	60	40.0
Tertiary	20	13.4	40	26.7
Spouse's Educational Attainment				
No formal education	15	10.0	9	6.0
Primary	30	20.0	24	16.0
Secondary	65	43.3	64	42.7
Tertiary	40	26.7	53	35.3
Major Occupation				
Farming	135	90.0	120	80.0
Business	8	5.3	16	10.7
Civil Service	4	2.7	8	5.3
Not employed	2	1.3	4	2.7
Others	1	0.7	2	1.3
Monthly Income (₦)				
< ₦10,000	35	23.3	25	16.7
₦10,001 – 30,000	75	50.0	55	36.6
₦30,001 – 50,000	20	13.3	30	20.0
₦50,001 – 70,000	10	6.7	25	16.7
> ₦70,000	10	6.7	15	10.0
Household Structure				

Single	25	16.7	35	23.3
Nuclear	105	70.0	90	60.0
Extended	20	13.3	25	16.7
Access to mass media Channels				
Radio	120	80.0	125	83.3
TV	60	40.0	110	73.3
Pamphlets/Fliers	45	30.0	70	46.7
Others	12	8.0	20	13.3

Note: Multiple responses recorded under ownership/access to mass media.

Levels of the Respondents' Awareness (Status of Exposure) to Anti-Malarial Messages Transmitted Through Selected Mass Media Channels in Urban and Rural Areas of Akwa Ibom State

The findings in Table 2 reveal distinct differences in rural and urban farmers with regard to exposure to malaria-prevention messages in Akwa Ibom State. Rural respondents recorded a cluster mean of 1.21, with 56.7% showing high awareness, while urban respondents had a higher cluster mean of 1.44, with 70% high awareness. In both settings, preventive messages such as sleeping under insecticide-treated nets ($\bar{X}$ =1.63 rural; 1.73 urban), malaria prevention ($\bar{X}$ =1.60 rural; 1.74 urban), and malaria cases ($\bar{X}$ =1.50 rural; 1.67 urban) ranked highest. These findings suggest that media campaigns are strongly skewed towards prevention-focused messages, consistent with Batwala et al. (2012), who reported that awareness efforts tend to prioritise preventive measures, such as the use of insecticide-treated nets, over other malaria control interventions. Both groups however reported relatively low exposure to messages on drug dosage, cost, and side effects, with rural farmers ranking these items lowest ($\bar{X}$ =1.03–1.13) compared to slightly higher but still limited exposure among urban farmers ($\bar{X}$ =1.20–1.40). Environmental sanitation themes, including drainage desilting and weed clearing, were also less emphasised, further reinforcing the communication imbalance highlighted by Ezeaka and Bartholomew (2025). Urban farmers benefited from better access to electricity, diverse media outlets, and higher literacy, which enhanced information flow. Conversely, rural farmers faced barriers such as poor infrastructure, low literacy, and unreliable communication systems, limiting their exposure—similar to challenges noted by Dako-Gyeke et al. (2023). The higher repetition and reach of urban media also align with Wakefield et al. (2010), who emphasised that message frequency improves health behaviour change.

To determine the overall status of exposure, these individual theme scores were aggregated into the awareness level categories shown in Table 3. With thirteen themes worth up to 2 points each, the total awareness score ranged from 0 to 26, where 0–13 represents low awareness and 14–26 represents high awareness. The results show that while 70% of urban farmers achieved high awareness, only 56.7% of rural respondents reached this level, with nearly half (43.3%) still recording low awareness. This urban advantage, as noted by Zerdo et al. (2022), underscores the role of connectivity and structured health education initiatives. The rural shortfall suggests that uneven communication

outcomes may hinder broader malaria control, highlighting the need for messages that move beyond simple prevention to include comprehensive education on curative and environmental management.

Farmers' knowledge of malaria symptoms as a result of exposure to selected mass media messages in Urban and Rural Areas of Akwa Ibom State

The results in Table 4 reveal that farmers in Akwa Ibom State demonstrated a good level of knowledge of malaria symptoms, with an overall cluster mean of 1.22, exceeding the cut-off mean of 1.0. The most recognised symptoms were fever ($\bar{X}$ = 1.50), headache ($\bar{X}$ = 1.42), and joint pains ($\bar{X}$ = 1.37). This reflects the effectiveness of mass media campaigns in emphasising common and easily identifiable symptoms, consistent with Effah et al. (2022) who observed that public health programmes highlight such indicators to promote early diagnosis and timely treatment. Urban farmers recorded stronger recognition than rural farmers, reflecting differences in media access and literacy. On the contrary, Awareness of less emphasised symptoms, such as cough ($\bar{X}$ = 1.31), nose congestion ($\bar{X}$ = 1.28), and inability to see ($\bar{X}$ = 1.27), was comparatively weaker, with rural respondents reporting especially lower familiarity (cluster mean = 1.10) compared to urban counterparts (cluster mean = 1.34). This finding supports Stead et al.'s (2019) assertion that campaigns often overlook secondary or atypical symptoms, thereby limiting holistic understanding. The disparity suggests that rural residents may be disadvantaged by inadequate exposure to health information. To strengthen malaria control, messages should extend beyond classical symptoms and incorporate less recognised ones, using rural-accessible channels such as radio and community health workers.

To provide a broader classification, these individual scores were aggregated into the Knowledge Level categories shown in Table 5. With ten symptoms worth up to 2 points each, the total knowledge scale ranged from 0 to 20, where 0–10 represents Low Knowledge and 11–20 represents High Knowledge. The categorisation highlights a clear urban advantage, with 70.0% of urban respondents achieving High Knowledge compared to 56.7% of rural farmers. This disparity, as emphasised by Dako-Gyeke et al. (2023), is likely driven by higher literacy rates and better media access in urban centres. Consequently, addressing this gap requires tailored interventions that leverage rural-accessible channels like radio and community health workers to ensure more equitable knowledge dissemination.

Level of utilisation of anti-malarial messages (products and advisories) transmitted through selected mass media channels in Rural and Urban Areas of Akwa Ibom State

Results in Tables 6 and 7 are consistent in showing that there exists a rural-urban difference in the usage of anti-malarial messages. The initially measured performance of this utilisation was first with eight particular preventive and curative behaviours in Table 6, the items were rated on a 3-point Likert scale of Never (0), Sometimes (1) and Regularly (2). With the information, it is revealed that the urban dwellers had a better cluster mean ($\bar{X}$ = 1.25) than rural dwellers ($\bar{X}$ = 1.15). The use of regular insecticides showed strong positive adoption by the urban respondents ($\bar{X}$ = 1.60) and anti-malarial tablets ($\bar{X}$ = 1.50): rural respondents were significantly lower in almost all the recommended practices, whether it is clearing bush or draining stagnant water. In order to classify these practices, the individual scores of

Table 6 were put into the following Utilisation Level of Table 7. The maximum scores of 0-16 were obtained with eight measures of up to 2 points each, with a score of 0-8 representing Low Utilisation and a score of 9-16 indicating High Utilisation. The results showed that urban occupants controlled the High Utilisation group (73.3%), compared to the rural farmers, who consisted of more than half (56.7%) of men in the Low Utilisation group, as shown in Table 7. According to Ankomah et al. (2014) and Dako-Gyeke et al. (2023), these findings are consistent with the rural limitations related to the levels of literacy, infrastructure and access, which restrict their effectiveness in rural settings relative to urban ones. In general, the factual evidence suggests that there is a long-term structural gap in message adoption, which is catalysed by the disparities related to access, affordability, and outreach in communication.

Table 2: Frequency of Exposure to Anti-Malarial Messages in Urban and Rural Areas of Akwa Ibom State (n = 300)

Messages	Rural (n = 150)		Urban (n = 150)	
	$\bar{X}$	R	$\bar{X}$	R
Cases of malaria	1.50	3rd	1.67	2nd
Prevention of malaria	1.60	2nd	1.74	1st
Sleeping under insecticide-treated nets	1.63	1st	1.73	3rd
Effectiveness of anti-malarial products	1.30	5th	1.53	4th
When to see health personnel	1.47	4th	1.63	6th
Use of insecticides	1.27	6th	1.50	5th
Appropriate dosage	1.13	7th	1.40	7th
Cost of anti-malarial drugs	1.03	9th	1.40	7th
Clearing of weeds	1.07	8th	1.33	8th
Drainage of stagnant water	1.07	8th	1.33	8th
De-silting of drains	0.97	10th	1.27	9th
Side effects of drugs	0.93	11th	1.20	10th
Cluster Mean	1.21		1.44	
Cut-off Mean	1.0		1.0	

Rating was based on a 3-Point Likert scale: Never (0); Once-in-a-while (1); Frequently (2)

R = Rank

Table 3: Categorisation of Level of Awareness (Status of Exposure) to Anti-Malarial Messages Transmitted Through Mass Media in Urban and Rural Areas of Akwa Ibom State

Level of Awareness	Awareness Score	Rural (n = 150)		Urban (n = 150)	
		F	%	F	%
Low	0 – 13	65	43.3	45	30.0
High	14 – 26	85	56.7	105	70.0
Total		150	100	150	100

Table 4: Respondents' Knowledge of Malaria Symptoms Acquired Through Exposure to Selected Mass Media Messages in Urban and Rural Areas of Akwa Ibom State (n = 300)

Malaria Symptoms	Rural (n = 150)		Urban (n = 150)	
	$\bar{X}$	R	$\bar{X}$	R
Fever	1.40	1	1.60	1
Headache	1.30	2	1.54	2
Pain in the joints	1.20	3	1.43	3
Poor appetite	1.13	4	1.41	4
Vomiting	1.17	5	1.37	5
Convulsion	1.07	6	1.30	6

Cough	1.00	7	1.27	7
Nose discharge/congestion	0.97	8	1.21	8
Inability to see	0.90	9	1.17	9
Others (running nose, tiredness)	0.87	10	1.15	10
Cluster Mean	1.10		1.34	
Cut-off Mean	1.0		1.0	

Rating was based on a 3-point Likert scale: Not Familiar (0); Somewhat Familiar (1); Very Familiar (2)

Table 5: Categorisation of Knowledge of Malaria Symptoms Acquired Through Exposure to Selected Mass Media Messages Channels in Rural and Urban Areas of Akwa Ibom State

Level of Knowledge	Knowledge Scale Score	Rural (n = 150)		Urban (n = 150)	
		F	%	F	%
Low	0 – 10	65	43.3	45	30.0
High	11 – 20	85	56.7	105	70.0
Total		150	100	150	100

Table 6: Utilisation of Malaria Preventive and Curative Measures Broadcast Through Mass Media Channels in Rural and Urban Areas of Akwa Ibom State (n = 300)

Malaria Preventive/Curative Measures	Rural (n = 150)		Urban (n = 150)	
	$\bar{X}$	R	$\bar{X}$	R
Use of insecticides	1.27	3	1.60	1
Use of anti-malarial tablets	1.30	2	1.50	2
Sleeping under treated nets	1.40	1	1.40	3
Clearing the bush around the house	1.13	4	1.30	4
Removal of drainage/gutters	1.03	6	1.20	5
Drainage of stagnant water	1.00	7	1.10	6
Visit health personnel before drugs	1.10	5	1.00	7
Visit health personnel after drugs	1.00	7	0.90	8
Cluster Mean	1.15		1.25	

Rating was based on a 3-Point Likert scale: **Never (0); Sometimes (1); Regularly (2)**

Table 7: Level of Utilisation of Anti-Malarial Messages Channels in Rural and Urban Areas of Akwa Ibom State

Utilization Level	Score Range	Rural (n = 150)		Urban (n = 150)	
		F	%	F	%
Low	0 – 8	85	56.7	40	26.7
High	9 – 16	65	43.3	110	73.3

Hypothesis Result

Table 8 shows a statistically significant difference in the utilisation of anti-malaria messages delivered via selected mass media channels between rural and urban farmers in Akwa Ibom State, Nigeria ($t = 2.30$, $p < 0.05$). Based on calculated mean values, urban farmers had higher utilisation levels ($\bar{X} = 10.0$) than rural farmers ($\bar{X} = 9.2$), suggesting that geographic location is an important determinant of farmers' engagement with health communication interventions, and highlights ongoing inequities in access, exposure, and responsiveness to public health campaigns across rural-urban gradients. These results are in line with those reported by Ibinaiye *et al.* (2024), who revealed wide urban-rural divergence in seasonal malaria chemoprevention coverage in several States of Nigeria. Health interventions benefited more urban dwellers because of better access to mass media channels and superior infrastructure, which is also analogous to the findings in the present study. Similarly, Nwachukwu

et al. (2022) reported that urban populations in Southeast Nigeria had higher access to long-lasting insecticide-treated nets and ACTs and noted that infrastructural development and literacy levels increase the utilisation of health messages in urban settings. On a consequent note, Singh *et al.* (2014) reported that some rural communities in Northern Nigeria showed relatively high levels of knowledge and use of malaria-prevention measures. This finding was attributed to good community-based interventions. This gap further reinforces the importance of contextual considerations and points to the potential for rural uptake to be much higher with a well-implemented outreach and localised communication approach. Also, the results of Agyemang-Badu *et al.* (2023) support the present results, as they showed that urban dwellers in Ghana had higher access to malaria-preventive measures mainly due to the increased exposure to media campaigns.

Table 8:Independent Sample t-test analysis result of the difference in levels of utilisation of anti-malarial messages transmitted through selected mass media channels between rural and urban respondents

Groups	N	Mean	t-value	Critical value	Decision
Rural	150	9.2	2.30	±1.96	Reject the null hypothesis.
Urban	150	10.0			

Note: Degree of freedom = 298, Level of significance = 0.05; Normality and homogeneity assumptions were assessed prior to t-test analysis.

CONCLUSION

The present study assessed the awareness, knowledge, and practical use of anti-malarial messages that are circulated through mass media channels among rural and urban farmers in Akwa Ibom State, Nigeria. Findings showed marked differences along the rural-urban continuum; and although awareness levels were generally good in both cohorts, urban farmers consistently had higher exposure, better knowledge of malaria symptoms and higher use of recommended preventive and curative interventions. Preventive measures (i.e. use of insecticide-treated nets and anti-malarial drugs) recorded higher utilisation scores relative to environmental control measures, which were found to be less widely adopted because of perceptions of inconvenience and lack of efficacy. Socio-demographic factors (education, income, literacy, and access to a variety of media) were found to be key determinants of utilisation, and they provided a competitive advantage that favoured urban dwellers. Statistical hypothesis testing established a significant difference in utilisation between rural and urban farmers, and, in fact, highlights structural inequities in health communication outcomes. The results highlight that while mass media is still an effective platform for malaria prevention, bridging the rural-urban divide requires context-specific approaches, strengthening of rural infrastructure and community-based strategies for equitable adoption of anti-malarial practices.

RECOMMENDATIONS

- Since the awareness, knowledge, and use of anti-malarial messages are low for rural farmers, the government and health sector need to strengthen outreach in rural areas through any convenient platforms (e.g., radio, town criers, faith-based institutions and community health workers) to fill the rural-urban communication gap.
- Campaigns should integrate preventive messages with curative and environmental management information.
- Tailored interventions consisting of pictorial messages, local-language broadcasting, and the distribution of low-cost preventive products need to be considered to offset low literacy, low income, and the lack of infrastructure that make message adoption difficult among rural farmers.

- Building on evidence on the urban advantage as related to better infrastructure and media access, there is a need to extend this advantage to rural communities through locally-led, culturally-sensitive programs that encourage households to adopt malaria preventive practices.

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