



Factors Affecting the Use of Job Aid Posters as a Guide for Malaria Diagnosis among Primary Healthcare Workers in Ibadan, Oyo State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Malaria is the major cause of mortality worldwide. Accurate diagnosis is key for effective management of the disease. Non-adherence to diagnosis guidelines by primary healthcare (PHC) workers affects quality healthcare provisions. Job aid posters help enhance adherence to guidelines for several diseases. Thus, this study determined PHC worker's use of job aid posters and identified factors affecting its use as a guide for malaria diagnosis.

Methods: The study was a hospital-based cross-sectional survey, a multistage sampling technique was used to select 384 PHC workers from seventy-eight PHC facilities in Ibadan Oyo State, Nigeria. A semi-structured, self-administered questionnaire was used to obtain participant's socio-demographic characteristics, knowledge and adherence to malaria diagnosis guidelines, and factors affecting the use of job aid posters as a guide for malaria diagnosis. Data analysis was done using descriptive statistics, chi-square, and logistic regression with *P-Value*=0.05 declared as statistically significant.

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Results: Two hundred and forty-four (63.5%) PHC workers were knowledgeable about malaria diagnosis guidelines whereas only 58.1% of the total respondents adhere to the guidelines. Just less than half (45.3%) of participants uses job aid posters always. Knowledge of malaria diagnosis guidelines (AOR = 0.272, 95% C.I = 0.115-0.643), comprehensiveness of job aid poster (AOR = 0.345, 95% C.I = 0.148-0.807), physical integrity of job aid posters (AOR = 0.219, 95% C.I = 0.092-0.522), and positioning of job aid posters (AOR = 5.704, 95% C.I = 2.375-13.67) were significant predictors of use of job aid posters for malaria diagnosis.

Conclusion: the healthcare worker's adherence to guidelines for malaria diagnosis was inadequate. Provision of comprehensive job aid posters on malaria diagnosis, replacement of damaged ones, and strategic display of the job aid posters is recommended to enhance use and adherence.

Keywords: Job aid posters; malaria diagnosis guidelines; knowledge; adherence.

1. INTRODUCTION

Malaria is the major cause of morbidity and mortality worldwide [1]. In 2015, there were 214 million new malaria cases and an estimated 438,000 malaria death [2,3,4]. Africa bears the highest burden of this number with 90% of malaria cases and 91% of malaria death reported [1,2,3,4]. In Nigeria, an estimated 100 million malaria cases and over 300,000 deaths are reported annually. The disease accounts for 60% outpatient visits, 30% childhood death, and 11% maternal death as well as 132 billion naira financial loss in form of prevention and treatment cost [5,6].

Accurate diagnosis of malaria and prompt treatment with the right antimalarial drugs is key for effective case management and control. The World Health Organization (WHO) recommended parasitological based testing by either use of a light microscopy or rapid diagnostic test (RDT) before treatment [7]. This is important to distinguish non-malaria fever from malaria fever, prevent antimalarial drug resistance, ensure proper treatment, and reduce malaria-associated death [8]. However, proper diagnosis and treatment depend on adherence to malaria diagnosis guidelines, the presence of testing facilities, test kits, and trained health personnel [9].

Job aids improve adherence, effectiveness, and accuracy of health workers especially with those lacking proper supervision and training [10]. They include signs, diagrams, or a summary of instruction which is designed to guide a process and reduce reliance on recall and reference to papers that may not be handy when needed [11]. Examples of job aids for health workers include posters, instruction cards, flow charts, clinical algorithms, and critical pathways. In choosing a

job aid, it is imperative to ensure its suitability to the setting, the performance gaps, constraints on the provider, and other factors that affect its adherence [12].

Primary healthcare workers are vital in the diagnosis and treatment of diseases as they are often the first contact between community members and the health facilities [13]. Their adherence to clinical guidelines is fundamental to achieving good treatment outcomes [14,15]. Job aids and national guidelines were developed to support adherence to malaria diagnosis, however, low compliance with malaria national protocols by healthcare workers remains a problem in many countries in sub-Saharan Africa [16,17]. Thus the study identified factors that influence the use of job aids as a guide for malaria diagnosis.

2. METHODS

2.1 Study Area

This study was done in Ibadan, Oyo State, Nigeria. Ibadan is the most populous city in the state with an estimated population of over three million people as at 2011. It is the third most populous city in Nigeria and the country's largest city by geographical area [18]. Ibadan metropolis has 273 public health facilities and 752 private health facilities consisting of maternity homes, primary, secondary, and tertiary health facilities [19]. Ibadan metropolis has 11 local government areas (LGA) comprising of five urban LGAs and six semi-urban LGAs [18].

2.2 Study Design

A hospital-based cross-sectional study design was used in this survey.

2.3 Study Population

The study population comprised primary healthcare (PHC) workers including doctors, laboratory technicians or scientist, nurses, midwives, community health officers (CHOs), community health extension workers (CHEWs), and health assistance managing malaria patients in primary healthcare facilities in Ibadan. Health workers who were not directly involved in daily malaria case handling were excluded from the study.

2.4 Sample Size Determination

The minimum sample size for this study was determined by using the formula for a single population. This was done with the assumption of a 95% level of confidence, 5% precision, and 50% expected proportion of job aid poster utilization among healthcare workers. The sample size was 384 primary healthcare workers.

2.5 Sampling Technique

Giving that primary healthcare workers are widely spread across various PHCs in all the 11 LGAs in Oyo state, a multistage sampling technique was used to select respondents into the study to ensure good representation of the study population. Stage one involved selecting three urban and three sub-urban LGAs from the five urban and six semi-urban LGAs in Ibadan metropolis using lottery method. Stage two involved selecting 13 PHC facilities from each of the selected LGAs by lottery method. Stage three involves selecting five eligible healthcare workers from the selected facilities. The selection was done using lottery method.

2.6 Data Collection Tool and Procedure

A semi-structured, self-administered questionnaire was used to elicit information from the respondents. The reliability of the instrument was determined by pre-testing among 40 primary healthcare workers at Oyo LGA of the state in September 2018. Oyo LGA is a different location from the study area although shares similar characteristics with primary healthcare workers in Ibadan. Following the pretest evaluation, the questionnaire was divided into five sections: respondents socio-demographic characteristics; knowledge of malaria diagnosis guidelines; adherence to malaria diagnosis guidelines; availability and use of job aid posters in the

health facilities; and factors affecting the use of job aid posters as a guide for malaria diagnosis.

2.7 Period

A total of 384 participants participated in the study. The data collection was carried out between November and December 2018. The questionnaires were administered to the health workers at their respective health facilities during their working hours. Completed questionnaires were scrutinized immediately and at the end of daily field sessions for correction of errors.

2.8 Study Variables

The dependent variables for this study is use of job aid posters as a guide for malaria diagnosis. The independent variables included respondent's socio-demographic variables such as sex, category of health worker, income, level of education, logistics factors such as training of health workers, availability of test kits in health facilities, comprehensiveness of job aid posters present, the display position of the job aid posters, knowledge of malaria diagnosis guidelines, and adherence to malaria diagnosis guidelines.

2.9 Data Management

The data was entered and analyzed using IBM SPSS software version 21. Continuous variables were summarized by mean and standard deviation while categorical variables by frequencies and proportions.

To assess the knowledge of malaria diagnosis guidelines 12 questions were included in the questionnaire. Each correct response was scored two marks while incorrect responses were awarded zero mark, thereby resulting in a range of zero to 24 possible scores. The mean score of the respondents was used to dichotomize the knowledge score into good and poor knowledge. Accordingly, health workers who scored 15 marks and above were regarded as knowledgeable while those who scored below 15 marks were classified to have poor knowledge of malaria diagnosis guidelines.

For adherence to malaria diagnosis guidelines among healthcare workers, a combination of closed and open-ended questions was asked and scored for each respondent. Each correct closed-ended question was scored two marks, while correct open-ended questions were scored

one mark. Incorrect questions or those who answered “I don’t know” were scored zero mark. The total possible score for adherence was 63 marks. The mean score of respondents was used to categorize the respondents as having good adherence and poor adherence to malaria diagnosis guidelines. The mean adherence score was approximated to 44, hence respondents who scored 44 and above were classified to have good adherence while those below 44 were classified as having poor adherence to malaria diagnosis guidelines.

Availability and use of job aid posters were determined by asking respondents if they have and sighting the type present as well as asking how often they use it. Chi-square and logistic regression analysis were done to identify factors that are affected the use of job aid posters as a guide for malaria diagnosis.

3. RESULTS

3.1 Socio-demographic Characteristics

A total of 384 health workers participated in the study. The majority, (87.8%) of the healthcare workers were females, married (67.4%), and Christians (72.1%). Almost all (91.5%) were from the Yoruba ethnic group. Thirty-seven percent (37.2%) were community health extension workers and 62.0% earn below 50 thousand naira monthly (Table 1).

3.2 Knowledge of Malaria Diagnosis Guidelines

As shown in Table 2, 244 (63.5%) of the primary healthcare workers had good knowledge of malaria diagnosis guidelines.

The majority, (49.7%) of the respondents correctly knew microscopy as the gold standard for malaria diagnosis, while almost half (47.9%) of the PHC workers thought malaria rapid diagnostic test (mRDT) was the gold standard.

For the required time to wait before the mRDT test result is read, only 51.1% of the health workers knew 15-20 minutes as the standard waiting time. Whereas, 20.3% and 17.4% reported 5-9 minutes and less than 5 minutes respectively as the required waiting time for reading mRDT kits.

Less than half (46.6%) of the participants knew 40 degrees Celsius as the right temperature for the storage of mRDT kits while 32.3% answered “I don’t know” to the required storage temperature for the test kits.

A high proportion of the respondents, (90.6%) give a positive result when both control and test lines develop on the mRDT kit. However, six percent (6.0%) reported that they give a positive result if only the test line develops.

Table 1. Socio-demographic characteristics of respondents (N = 384)

Variables	Frequency n (%)
Sex	
Male	47(12.2)
Female	227(87.8)
Marital status	
Single	121(31.5)
Married	259(67.4)
Divorced	3(0.8)
Widowed	1(0.3)
Religion	
Christianity	277(72.1)
Islam	107(27.9)
Ethnic Group	
Yoruba	351(72.1)
Hausa	2(0.5)
Igbo	4(1.0)
Other tribes	27(7.0)
Monthly income (in naira)	
< 50,000	238(62.0)
50 – 100,000	94(24.5)
> 100,000	52(13.5)

Variables	Frequency n (%)
Level of Education	
Secondary	36(9.4)
OND	104(27.1)
HND	110(28.6)
University Degree	86(22.4)
Postgraduate	18(4.7)
Non-response/missing	30(7.8)
Qualification Obtained	
MBBS	14(3.6)
Nurse/midwife	35(9.1)
Lab Tech/Scientist	56(14.6)
CHEW	143(37.2)
JCHEW	32(8.3)
Others	104(27.1)

Others= Voluntary health workers, Health Assistants, Pharmacists, Health educators, and Community Health Officers; CHEW = Community Health Extension Workers; JCHEW = Junior Community Health Extension workers; OND = Ordinary National Diploma; HND = Higher National Diploma.

3.3 Adherence to Malaria Diagnosis Guidelines

Table 3 shows that 58.1% of respondents had good adherence to malaria diagnosis guidelines.

The majority, (86.7%) of the participants reported that they would discard an mRDT kit if it has expired. Less than one-quarter (21.3%) of the health workers said when the seal has been tampered with and 20.3% reported when it is exposed to excess heat. However, five percent (5.0%) claimed they do not discard test kits irrespective of the condition.

A large proportion of the respondents, (86.2%) claimed they prescribe malaria drugs

immediately when the mRDT test result is positive while 7.3% and 6.5% of the workers said they would refer to a secondary facility or a pharmacy respectively.

For test kits storage, most of the respondents (38.4%) store their test kits in cupboards, 34.0% in shelves, 14.2% in desk drawers, and 10.9% in iron cabinets.

When asked their next action when a client is malaria presumptive but mRDT is negative, forty-four percent (44.2%) said they would perform a microscopy test, 22.6% reported they would repeat the test and 18.6% said they would go ahead to administer malaria drug to the client.

Table 2. Knowledge distribution of respondents on malaria diagnosis guidelines (N= 384)

Knowledge variables	Frequency n (%)
Overall Knowledge	
Good knowledge	244 (63.5)
Poor Knowledge	140 (36.5)
Gold standard for malaria diagnosis	
*Microscopy	184 (47.9)
mRDT	191 (49.7)
I don't know	9 (2.3)
Duration of time you wait before mRDT is read (mins.)	
<5	67 (17.4)
5-9	78 (20.3)
10-14	26 (6.8)
*15-20	196 (51.1)
>20	17 (4.4)
Storage temperature for mRDT Kits (degree Celsius)	
0	10 (2.6)
15	36 (9.4)
28	9 (2.3)

Knowledge variables	Frequency n (%)
36	26 (6.8)
*40	179 (46.6)
I don't know	124 (32.3)
Positive RDT result interpretation	
Only control band line develops	12 (3.1)
Only test band line develops	23 (6.0)
*Both control and test band line develops	348 (90.6)
Neither the control nor test line develops	1 (0.3)
Negative RDT result interpretation	
*Only control band line develops	274 (71.4)
Only test band line develops	55 (14.3)
Both control and test band line develops	27 (7.0)
Neither the control nor test line develops	28 (7.3)
I give a negative result when the test is invalid	
*Yes	72 (18.8)
No	312 (81.3)

MRDT = Malaria Rapid Diagnostic Test; Mean = 15.09, SD = 3.01; *=Correct knowledge on guidelines

Table 3. Respondents adherence to malaria diagnosis guidelines (N= 384)

Knowledge variables	Frequency n (%)
Overall Adherence	
Good adherence	223 (58.1)
Poor adherence	161 (41.9)
I discard mRDT kit when**	
*Expired	333 (86.7)
The kits have stayed too long	74 (9.7)
*Exposed to excess temperature fluctuation	155 (20.3)
*The seal is tempered	162 (21.3)
I do not discard any kit	38 (5.0)
What do you do when the malaria test is positive	
Refer to Secondary facility	28 (7.3)
Refer to pharmacy	25 (6.5)
*Prescribe drugs	331 (86.2)
mRDT stored under the standard storage temperature in your facility	
*Yes	206 (53.6)
No	37 (9.6)
I don't know	141 (36.7)
Action when a client is malaria presumptive but test result shows negative**	
Repeat the test	135 (22.6)
*Perform Microscopy	264 (44.2)
*Administer Malaria drugs	111 (18.6)
Refer to pharmacy	3 (0.5)
Refer to a secondary facility	59 (9.9)
*Just give a negative result	25 (4.2)
Where do you store test kits in your facility**	
Cupboard	235 (38.4)
Desk Drawer	87 (14.2)
Iron cabinet	67 (10.9)
Freezers	5 (0.8)
*Shelves	208 (34.0)
Cooler boxes	10 (1.6)

** = Multiple response questions; Mean = 44.21, SD = 4.58; *=Correct adherence

Table 4a. Chi-square test to identify factors associated with the use of job aid posters for malaria diagnosis

Variables	Use of job aid posters		χ^2	P-value
	Ever used n (%)	Never used n (%)		
Job aid poster is not comprehensive on how to diagnose malaria				
Yes	63 (16.4)	15 (3.9)	10.350	0.001*
No	284 (74.0)	22 (5.7)		
Using Job aid posters for malaria requires training				
Yes	262 (68.2)	26 (6.8)	0.489	0.485
No	85 (22.1)	11 (2.9)		
Job aid posters for malaria is always displayed				
Yes	297 (77.3)	20 (5.2)	299.331	<0.001*
No	15 (3.9)	17 (4.4)		
Job aid posters for malaria are torn or damaged				
Yes	97 (25.3)	26 (6.8)	27.500	<0.001*
No	250 (65.1)	11 (2.9)		
During renovation of the health facility, the job aid posters for malaria were removed and not returned				
Yes	171 (44.5)	17 (4.4)	0.149	0.732
No	177(46.9)	20 (5.2)		
Knowledge of malaria diagnosis				
Yes	119 (31.0)	21 (5.5)	7.282	0.007*
No	228 (59.4)	16 (4.2)		
Highest level of education				
Secondary school education	29 (7.6)	7 (1.8)	17.267	0.002*
OND	97 (25.3)	7 (1.8)		
HND	107 (27.9)	3 (0.8)		
BSc	72 (18.8)	14 (3.7)		
Postgraduate	15 (3.9)	3 (0.8)		
Qualification obtained				
MBBS	11 (2.9)	3 (0.8)	10.895	0.04*
Nurse/midwife	31 (8.1)	4 (1.0)		
Lab tech	49 (12.8)	7 (1.8)		
CHEW	134 (34.9)	9 (2.3)		
JCHEW	25 (6.5)	7 (1.8)		
Ethnic group				
Yoruba	317 (82.6)	35 (9.1)	0.460	0.498
Others	30 (7.8)	2 (0.5)		
Income level				
Less than 50 thousand	217 (56.5)	21 (5.5)	0.474	0.491
Above 50 thousand	130 (33.9)	16 (4.2)		

*Significant level P <0.05, *= significant P-value*

Table 4b. Factors associated with the use of Job aid posters as guidelines for malaria diagnosis

Variables	Use of job aid posters		Adjusted OR (95% CI)	P-Value
	Ever used n (%)	Never used n (%)		
knowledge of malaria diagnosis guidelines				
Yes	119 (31.0)	21 (5.5)	0.272 (0.115 – 0.643)	0.003*
No	228 (59.4)	16 (4.2)		
Job aid poster is not comprehensive on malaria diagnosis				
Yes	63 (16.4)	15 (3.9)	0.345 (0.148 – 0.807)	0.014*
No	284 (74.0)	22 (5.7)		
Job aid poster is always displayed				
Yes	297 (77.3)	20 (5.2)	5.704 (2.375 – 13.699)	<0.001*
No	15 (3.9)	17 (4.4)		
Job aid posters are torn or damaged				
Yes	97 (25.3)	26 (6.8)	0.219 (0.092 – 0.522)	0.001*
No	250 (65.1)	11 (2.9)		
Level of education				
Secondary School			0.692 (0.108 – 4.429)	0.70
OND	29 (7.6)	7 (1.8)	3.671 (0.590 – 22.823)	0.16
HND	97 (25.3)	7 (1.8)	3.356 (0.455 – 24.738)	0.24
University degree	107 (27.9)	3 (0.8)	0.923 (0.167 – 5.084)	0.93
Postgraduate	72 (18.8)	14 (3.7)	0.310 (0.038 – 2.523)	0.27
15 (3.9)	3 (0.8)			
Qualification Obtained				
MBBS			0.220 (0.036 – 1.338)	0.10
Nurse/midwife			0.450 (0.091 – 2.238)	0.33
Lab Technicians	11 (2.9)	3 (0.8)	0.256 (0.065 – 1.001)	0.05*
CHEW	31 (8.1)	4 (1.0)	1.148 (0.334 – 3.949)	0.83
JCHEW	49 (12.8)	7 (1.8)	0.183 (0.041 – 0.815)	0.03*
134 (34.9)	9 (2.3)			
25 (6.5)	7 (1.8)			

Significant level $P < 0.05$, *= P -value for significant Adjusted odds ratio

3.4 Availability and Usage of Job Aid Posters for Malaria Diagnosis

Almost all, (95.8%) of the respondents had job aid posters in their facility. Fifty-seven percent (57.3%) had theirs placed on the wall in the injection room, 22.0% were placed beside where the mRDT kits were stored, 14.0% on the workbench while 6.6% had theirs folded and kept in a drawer.

Less than half (45.3%) of the health workers interviewed claimed they use the job aid during diagnosis always. Also, less than half (45.1%) reported they only use it occasionally while 9.6% answered they never use it.

3.5 Factors Affecting the Use of the Job Aid Posters as a Guide for Malaria

347 (90.4%) respondents reported they had ever used job aid posters for malaria diagnosis. For a

test of significance to identify factors associated with the use of job aid posters for malaria diagnosis, the Chi-square test was used at $P=0.05$ (Table 4a). Only the significant variable was included in the final model for multivariate analysis. Among the variables, knowledge of malaria diagnosis guidelines was significantly associated with the use of job aid posters. Healthcare workers with good knowledge of malaria diagnosis guidelines are 70% less likely to use job aid posters as a guide for malaria diagnosis (AOR= 0.27, 95% C.I = 0.115- 0.643) compared to those with poor knowledge of malaria diagnosis guidelines. PHC workers who did not have a comprehensive job aid poster on how to conduct malaria diagnosis are 70% times less likely to use it (AOR=0.345, CI, 95% C.I = 0.148- 0.807) compared to their counterparts with a comprehensive job aid. Additionally, health workers who had their job aid posters always displayed are 6 times more likely to use the job aid posters (AOR=5.7, 95% C.I = 2.375 – 13.399) than those who do not have theirs displayed. Physical integrity of the job aid posters was also found to be significant. Health care workers with torn or damaged job aid poster are 80% times less likely to use the job aids (AOR=0.2, 95% C.I = 0.092 – 0.522) than their colleagues without (Table 4b).

4. DISCUSSION

Health worker's adherence to guidelines and accurate diagnosis is the foundation for prompt and effective treatment for malaria control. Job aids and national guidelines were developed to assist health personnel's adherence and correctly use malaria testing procedures for malaria intervention in Nigeria. However, there have been deviations from the use of these job aids and guidelines for malaria case management. Assessing provider's knowledge on diagnosis guidelines and identifying factors that influence the use of job aids as a guide for diagnosis are vital for policy enactment to improve malaria case management in Nigeria.

The overall knowledge of malaria diagnosis from our study was inadequate. This is a concern because it suggests that accurate diagnosis of many malaria cases will be missed and invariably its treatment. Similar findings of inadequate knowledge were reported among healthcare providers and drug outlet dispensers in Western Kenya and among private healthcare workers in Ethiopia [20,21]. The inadequate knowledge was attributed to a lack of comprehensive training and

supportive supervision for health workers [20,21]. Almost half of the health workers in our study thought that mRDT is the gold standard for malaria diagnosis, this may be because most of the primary healthcare facilities in the country only have mRDT kits for malaria diagnosis and just a few have a functional capacity for microscopy examination in their facilities. This is worrisome because giving the specific nature of mRDT to plasmodium infections identification and treatment of some other species may be missed. The rapid expansion of diagnostic testing kits is recommended.

Adherence to clinical guidelines has been fundamental to achieving good treatment outcomes [14,15]. However, low compliance with malaria national protocol continues to persist in many sub-Saharan countries in Africa [16,17]. It is alarming to know that a large number of the PHC workers in our study showed poor adherence to malaria diagnosis guidelines. This highlights the need for intensive continuous supportive supervision of the health workers on this disease. Poor level of adherence to diagnosis guidelines reported in our study is corroborated by a study in Uganda among public healthcare workers on factors affecting adherence to national malaria treatment guidelines in the management of malaria. This was also reported in a study on poor adherence to national protocols for malaria treatment among public health facilities in Mozambique [22,8]. Poor adherence has also been attributed to the level of the facility, presence of functional laboratories, presence of job aids, the cadre of health workers, and training on malaria [22].

The presence of job aid posters reduces training time and reliance on recall [23]. It also improves adherence to standard guidelines for health workers [24]. Unfortunately, less than half of our respondents claimed they always use job aid while conducting a malaria diagnosis test. Knowledge of malaria diagnosis guidelines and the display of job aid posters were found to significantly influence the use among healthcare workers. Accordingly, this is very important in resource constrained settings with limited training activities for healthcare providers. Job aids readily and strategically displayed in the health facilities, provides an opportunity for health workers to constantly learn on the job and invariably impact on their knowledge. More so, physical state (damaged/torn) and comprehensiveness of the job aid posters significantly predicted its use by primary

healthcare workers. Therefore, it is important to address these barriers by providing an all-encompassing job aid poster and building the capacity of the health workers on its usage. This will help reduce errors and uncertainties, variability in performance, and allow delegation to lower cadre workers to reduce workload without significantly reducing the quality of performance.

Certain limitations are to be put into consideration when interpreting the result from this study. The study was cross-sectional in design. Therefore, causal relation of the result cannot be established; only association. The majority of the responses were self-reported hence subject to information bias. Despite this, findings from this study are useful for decision-making to improve malaria case management. It will also provide useful information for a more in-depth study on adherence to malaria diagnosis guidelines using job aid posters.

5. CONCLUSION

This study showed that knowledge and adherence to malaria diagnosis guidelines among primary healthcare workers were inadequate. They showed some certain misconceptions which can pose a threat to the success of malaria control programs in Nigeria. Continuous training and capacity building for healthcare workers is imperative. Intensive supportive supervision, provision, and strategic placing of comprehensive job aids posters are urgently needed.

CONSENT

Participation was voluntary and written informed consent was obtained from the respondents after an adequate explanation of the study procedure. All personal identifiers were removed from the questionnaire and confidentiality was ensured through the protection of data collected from the participants.

ETHICAL APPROVAL

The study was approved by the Oyo State Ministry of Health Research Ethical Review Committee (Ref. No. AD 13/479/1074). Permission was obtained from each of the participating LGA Medical Officer of Health (MOH).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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