



**Original Research Article**

**SOI:** <http://s-o-i.org/1.15/ijcrms-2016-2-5-3>

## **Awareness, Availability, Preference and Usage of malaria rapid diagnostic test among health workers in primary health care facilities in Port Harcourt and Obio/Akpor, Rivers State**

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### **Abstract**

A key to the effective management of malaria is prompt and accurate diagnosis, and use of malaria rapid diagnostic tests (mRDTs) is becoming relevant in the absence of reliable microscopy. This was a quantitative and qualitative cross sectional study that investigated the awareness, availability, perception and usage of malaria rapid diagnostic tests among health workers in seventeen primary health care facilities in Obio/Akpor and Port Harcourt, Rivers State. Results were presented as proportions and chi-squared test. Level of significance was set at 0.05 (2 tailed). Mean age of the 203 respondents was  $36 \pm 0.97$  with a minimum of 1 year and a maximum of 35 years duration of practice. Generally, the awareness of mRDTs among the health workers was high. Laboratory scientists, Pharmacy technicians and Laboratory technicians were all aware of malaria rapid diagnostic. The most common source of information on mRDT was the Government 112 (62.2%) followed by co-workers 40 (22.2%). All the seventeen primary health centers had mRDT which were mainly supplied by the Government 155 (86.1%) and NGO 3 (1.7%). A total of 10 (41.7%) Doctors, 38 (52.1%) Nurses, 14 (56.0%) CHO, 25 (55.6%) CHEW, 11 (68.8%) Laboratory scientists and 13 (92.9%) Laboratory technicians reported been trained on mRDT. Of the 180 (88.7%) health workers that were aware of mRDT, only 143 (79.4%) had actually used mRDT to diagnose malaria. Of which 138 (96.5%) reported that the testing procedure was easy while 100 (69.9%) rated mRDT results to be reliable. Cadre of health workers was found to be statistically significant with usage ( $P < 0.001$ ) in this study. Furthermore, 81 (39.9%) of the health worker acknowledge the use of mRDT almost every day while 91 (50.6%) expressed preference for mRDT to other laboratory test methods. Most of the health workers (62 out of 203 or 30.5%) acknowledged the use of mRDT for all fever cases. Confidence in mRDT result was 50% among the health workers while 122 (67.8%) reported that patients trust mRDT. Major barriers reported by the Lab scientist in the interview guide was mRDT being unreliable and its inability to detect low parasite load.

**Keywords:** *Awareness, Availability, Preference, Barriers, Malaria Rapid Diagnostic Test (mRDT)*

## Introduction

The World Health Organization (WHO) estimated that in the African region, approximately one half of suspected malaria cases received parasitological confirmation (World Health Organization; 2012). The number of courses of artemisinin combination therapy (ACT) still exceeds the total number of malaria diagnostic tests by a factor of 2, indicating that many patients receive ACT without confirmatory diagnosis (World Health Organization; 2012). Early diagnosis and proper treatment are key to addressing morbidity and mortality due to malaria. The introduction of malaria rapid diagnostic tests (RDTs) has become a crucial component of malaria control in Nigeria. This is because of the higher-priced artemisinin-based combination therapy (ACT), which was introduced in Nigeria in 2005 as the first-line anti-malarial drug as a result of extensive resistance to chloroquine and sulphadoxine-pyrimethamine. In addition, WHO has recently recommended that laboratory diagnosis be done before patients are treated with ACT. The RDTs detect malaria parasite antigens from a peripheral blood sample with reasonable sensitivity and specificity and can be used at peripheral health facilities with minimal training (Moody 2002).

WHO recommends prompt parasite-based diagnosis in all patients suspected of malaria before treatment is administered. Malaria rapid diagnostic tests (RDTs) have the potential to greatly improve the quality of management of malaria infections, especially in remote areas with limited access to good quality microscopy services. RDTs are relatively simple to perform and interpret, they rapidly provide results, require limited training, and allow for the diagnosis of malaria at the community level. The availability of malaria rapid diagnostic tests (RDTs) constitutes an opportunity for parasite-based malaria diagnosis in rural African settings beyond the reach of microscopy services (Masanja *et al.*, 2012). In Nigeria, the policy to treat malaria with ACT specifies that treatment should be based on a parasitological test result where testing is available (FMOH 2005).

RDTs are important because, while presumptive treatment of fever with malarial treatments has led to a decline of malaria in many areas in African countries, misdiagnosis of fever can prove extremely harmful. According to Mukanga *et al.* (2010), “With policies that recommend presumptive treatment of fever, health workers and caretakers are less likely to look for other causes of fever, leading to delay in appropriate treatment and higher case fatality rates among non-malaria fevers than in malaria fevers.” Moreover, presumptive diagnosis may lead to the unnecessary, excessive use of expensive drugs and the development of drug resistance. As a result, RDTs are being used as an alternative to microscopy testing to improve diagnosis of febrile children in areas where malaria is prevalent. There has been a global call for parasitological confirmation by microscopy or with a rapid diagnostic test (RDT) for patients of all ages with suspected malaria (WHO 2010). The Roll Back Malaria partnership also set new targets of universal access to malaria diagnostic testing in public and private sectors as well as at the community level (WHO 2011). This study aims at investigating the awareness, availability, acceptability and usage of malaria rapid diagnostic tests among health workers in the primary health care facilities in.

## Materials and Methods

### Study Area

The study coverage was targeted at primary health workers from seventeen health care facilities. The health workers included clinical officers, nurses, laboratory technicians, laboratory scientist and micro-biologists. Rivers State was one of 36 states of the federation, created in 1967 from the former Eastern Region of Nigeria. Its capital is Port Harcourt. It is also an integral part of the six states that constitute the Niger Delta region. It has the second largest commercial and agricultural economy in Nigeria with an international airport and two seaports. Rivers State’s ecological attributes and climatic characteristics favour high malaria transmission all year round. It rains all

year round with annual rainfall averaging 1500mm, and relative humidity over 80% (Deekae *et.al.*, 2010) . It's expanse of fresh water swamps, dense rain forest and intricate network of creeks and coastal ridges promote malaria vector breeding. Geopolitically, Rivers State is divided into 23 Local Government Areas (LGAs), which are zoned into three senatorial constituencies or districts. The State has a population of 5.6 million people with an annual growth rate of 3% from the result of the National population census conducted in 2006. Over 70% of the inhabitants reside in rural areas and are engaged in subsistence fishing and farming, with the involvement of some in petty trading.

A multi-tiered, functional referral system is also an essential part of any health care system. Rivers State presently has 360 primary health facilities linked to the 36 general hospitals spread across the 23 LGAs. The Civil Servants Clinic, the Government House Clinic, Kelsey Harrison Hospital, Braithwaite Memorial Specialist Hospital, the Dental and Maxillo-Facial Clinic also serve as Secondary referral centers, while the University of Port-Harcourt Teaching Hospital (UPTH), a tertiary institution is the last tier of the referral system. These linkages ensure referrals and continuum of care for all residents.

### Study Design

The study was a descriptive cross sectional study, which utilized self administered questionnaire to survey the awareness, availability, acceptability and usage of malaria rapid diagnostic tests as well as individual in depths interview guide on mRDT focal persons to better understand and identify the perceived barriers to use of malaria rapid diagnostic tests in the primary health care facilities in Port Harcourt?

### Study Population

The population for this study was health workers in the primary health care facilities in Port Harcourt and Obio/ Akpor Local Governments in Rivers State.

### Sample Size Determination

The sample size was calculated using the formula for calculation of sample size for descriptive cross-sectional studies. Minimum sample size of 170 staff for the study was estimated based on a report that 72% of the health workers had confidence in RDTs (Marcycelina *et al.*, 2013) at a confidence limit of 95% and sampling error of 0.1%, with adjustments made for a Design Effect (DEFT) of 2 and non-response rate of 10%.

### Sampling technique

Seventeen Primary health care centres in Obio/Akpor and Port Harcourt, Rivers State that met the inclusion criteria were visited using a cluster sample. Twelve (12) health workers from each facility were selected for the study. A total of two hundred and three (203) health workers, comprising the doctors, nurses, laboratory scientists, community health workers and community extension workers were selected for this study. Purposeful non randomized samplings were used to identify seventeen (17) malaria rapid diagnostic test focal persons for in depth interview within each of health facility selected.

### Data Collection

Data was sourced through quantitative and qualitative means. Quantitative data was collected using self administered questionnaire while qualitative data was conducted using an in- depths interviews (IDIs) which was performed on malaria rapid diagnostic test focal persons in each of the health facility selected. Each questionnaire was made up of three sections:

Socio-demographic characterization of the respondents, Awareness and availability of MRDTs; Perception and usage of MRDTs

### Data Analysis

The data was analysed using SPSS 20 software packages. Chi-square was used for tests of significance for proportions of categorical variables. The level of significance was set at  $P < 0.05$ .

## Ethical Approval

Ethical approval for the study was provided by the ethics committees of the University of Port Harcourt and permission was also obtained from the primary health care facilities clinic heads as well. Verbal informed consent was obtained from health workers involved in the study.

## Results

### Characteristics of respondents

More than half of the Primary health facilities were in Obio/ Akpor 134 (66.0%). At the various

health facilities, 203 health workers of whom 73 (36.0%) were nursing staff, Doctors 24(11.8%), laboratory scientist /technicians 30 (14.8%) and others as shown in table 1. Seven questionnaires were rejected due to errors and incompleteness. Of the 203 questionnaires analysed, 190 (92.6%) of the participants were females and 13(6.4%) males. The age of study participants ranged between 60-20 years with a mean age of  $36\pm 0.97$  years. All the participants were literate and the highest level of education was tertiary.

**Table 1: Demographics of health care workers**

Socio Demographics	N (%)
<b>Age (Years) Distribution</b>	
19 – 30	71(35 %)
31 – 40	72(35.5 %)
41 – 50	40(19.7 %)
51 – 60	20(9.9 %)
<b>Sex Distribution</b>	
Female	190 (92.6%)
Male	13 (6.4 %)
<b>Marital Status</b>	
Married	148 (72.2 %)
Separated	1(.5 %)
Single	54(26.3 %)
<b>Cadre of Health Workers</b>	
CHEW	45 (22.2%)
CHO	25(12.3%)
Doctor	24 (11.8%)
Laboratory/scientist	16(7.9%)
Lab tech	14(6.9%)
Nurse	73(36.0%)
Pharm tech	6 (3.0%)
<b>Total</b>	<b>203 (100%)</b>
<b>Duration of Practice (Years)</b>	
1 – 5	104 (51.5%)
6 – 10	43 (21.8%)
11-15	20 (9.9%)
16-20	12 (5.9%)
21-25	8 (4.0%)
26-30	3 (1.5%)
31-35	13(6.4%)
<b>Total</b>	<b>203(100%)</b>

## Awareness and Availability of mRDT among the respondents

As shown in table 2, a total of 180 (88.7%) health workers responded to have heard of mRDT. Doctors and laboratory scientists/ technicians were all aware of malaria rapid diagnostic. Most of the health workers 112 (62.2%) got their information about mRDT from the government. However, other sources of information about mRDT were journal 12(6.7%), media 13(7.2%), co- workers 40(22.3%) and conferences 3(1.7%).

All respondents who had heard of mRDT reported to have had it in their facility in the past three months. Malaria rapid diagnostic test in most facilities was provided by government 155(86.1%). 117(65.0%) of respondents who have heard of mRDT have been trained on how to use it. 103 (57.2%) of respondents, responded to have been trained by the government, 43 (23.9%) were trained by colleagues, 25 (13.9%) learnt it on their own while 6 (3.3%) were trained by nongovernmental organization like Shell.

**Table: 2** Awareness and Availability of mRDT in Primary Health Care Facilities

Variables	N (%)
<b>Have you heard of mRDT</b>	
Yes	180 (88.7)
No	23 (11.3)
Total	203 (100.0)
<b>Source of information on mRDT</b>	
Journal	12 (6.7)
Conference	3(1.7)
Media	13(7.2)
Government training	112(62.2)
Co-workers	40 (22.3)
Total	180 (100)
<b>Where you trained on mRDT use</b>	
Yes	117(65.0)
No	63 (35.0)
Total	180 (100)
<b>Who sponsored your training</b>	
Government	103 (57.2)
NGO	6 (3.3)
Self	25 (13.9)
Colleague	43(23.9)
Others	3 (1.7)
Total	180 (100)

**Have you had mRDT for the past 3 months in your health facility**

Yes	180(100)
No	0(0.0)
Total	180 (100)

**How do you get the mRDT in your health facility**

Government	155 (86.1)
NGO	3 (1.7)
Bought from pharmacy	0
Not sure	22 (12.2)
Total	180

**Usage of mRDT in Primary Health Care Facilities**

Table 3 shows that of the one hundred and eighty that were aware of RDTs 143 (79.4%) of respondents have used mRDT to diagnose malaria. All the Laboratory scientists, Laboratory technicians and Doctors in the primary health centres in this study had used mRDT to diagnose malaria. Furthermore, 81(39.9%) of those who use mRDT, use it almost every day, 15 (10.5) use

it at least once in a week while 45(32.9%) reported using it at least once a month. The Laboratory scientists recorded using mRDT almost every day while 18 (75.0%) doctors reported using it almost every day. In addition, 62 (43.4%) of the health workers reported using mRDT for all fever cases because they are accurate 24 (38.7%) acknowledged while 30 (48.8%) reported that mRDT is same with other diagnostic methods.

**Table 3** showing mRDT usage among the health workers

Variables	N (%)
<b>Have you ever used mRDT to diagnose malaria?</b>	
Yes	143 (79.4)
No	37(20.6)
Total	180 (100.0)
<b>How often do you use mRDT?</b>	
Almost every day	81(56.6)
At least once a week	15(10.5)
At least once a month	47(32.9)
Total	143 (100)
<b>Do you use mRDT for all fever cases?</b>	
Yes	62(43.4)
No	81(56.6)
Total	143 (100)



**If yes, why?**

mRDT are accurate	24 (38.7)
mRDT are better than other diagnostic method	1 ( 1.6)
Saves time	1 (1.6)
mRDT is same with other diagnostic methods	30(48.4)
Others	6 (9.7)
Total	62 (100)

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**Perception of the respondents on Mrdt**

Table 4 shows respondents preference to mRDT usage. 91(50.6%) of those who use mRDT prefer the procedure to other laboratory methods. Most of the respondents 69 (75.8%) preferred the procedure because it saves time. However, 15(16.5%) preferred the procedure because it gives better diagnostic test while 7 (7.7%) preferred it because it gives a better result.

Among the one hundred and forty three health workers 138 (96.5%) expressed that mRDT testing procedure was easy. For health workers who do not prefer the mRDT to other laboratory test methods 68 (81.0%) responded that the procedure was not reliable while 9 (10.7%) reported non quantification of parasite loads. Nevertheless, 107 (59.4%) reported their confidence on mRDT result while 122 (67.8%) acknowledged that patients trust mRDT results.

**Table: 4** Perception of mRDT among the respondents

Variables	N (%)
<b>How do you rate mRDT testing procedure?</b>	
Easy	138 (96.5)
Difficult	5(3.5)
I don't know	
Total	143 (100.0)
<b>If yes, how do you rate mRDT results?</b>	
Reliable	100(69.9)
Not reliable	43(30.1)
I don't know	
Total	143 (100)
<b>Do you prefer mRDT to other laboratory test methods?</b>	
Yes	91(50.6.)
No	84(46.7)
Non response	5 (2.7)
Total	180 (100)

**If yes, why?**

Saves time	69 (75.8)
mRDT gives better result	7 ( 7.7)
It is a better diagnostic test	15(16.5)
Total	91(100)

**If No, why?**

Procedure is difficult	6 (7.1)
Not reliable	68 (81.0)
Can't quantify	9 (10.7)
Others	1 (1.2)
Total	84(100)

**Do you have confidence in mRDT result?**

Yes	107 (59.4)
No	73 (40.6)
Total	180 (100.0)

**Do you think patients trust mRDT result?**

Yes	122 (67.8)
No	58 (32.2)
Total	180 (100)

**Results of Interview Guide**

For better understanding of the perceived barriers to use of malaria rapid diagnostic tests in the primary health care facilities in Port Harcourt. Seventeen focal persons were interviewed and audio record obtained from the interview was analysed. Overarching themes surfaced from IDIs on mRDT focal persons (Laboratory scientists and Laboratory technicians) relating to general knowledge, availability, perception, usage and barriers of mRDT.

**Knowledge and preference on mRDT**

The Laboratory scientists and Laboratory technician's participants in the primary health centers were all aware of mRDT, and the majority of participants preferred microscopy.

*"mRDT which is the simpler and easier one; within 5mins the result is out and the microscopy"* (Female)

*"Both are preferable; one only detects malaria and the other is specific even if it's one parasite it will tell you. Most a time mRDT hardly picks malaria parasites. I prefer microscopy"* (Female).

*"The two methods are preferred; but I prefer mRDT, it is easier and you can give patients result within 5mins"* (Male)

*"Preferable is thick blood, you see the morphology of the parasite very clear while the mRDT is not that confirmatory"* (Male)

*"RDT is quite fast because if the malaria is high it detects it but for a low stage or early stage of malaria, it hardly picks it"* (Female)

*"I prefer microscopy; I also use mRDT in terms of no electricity. Preferable, microscopy because you tend to diagnose, view and see the parasite itself and can be able to tell you how many you can see per field in the microscopy"* (Female)



*“I prefer mRDT; for fast method mRDT is preferred expect you want to go through a long process then you can use microscopy. We’re are not ruling out microscopy entirely because most time mRDT will be negative and when you use microscopy it will show positive, probably the person has taken drug before coming to the health centre. (Male)*

### **Availability of mRDT in the health centers**

mRDT was widely reported to be available in the health facilities. Only few participants noted lack of consistent supplies of mRDT.

*“Always available though, when the one we have is exhausted we submit i.e statistics then they will supply us (government)” (Female)*

*“Yes, they are available for now though not always; for past two months we don’t have mRDT. They just brought it last week for us, during the maternal and child care week” (Female)*

*“Yes, we have it. It’s always available” (Male)*

### **Usage of mRDT among the participants**

*“After testing most patients with mRDT , some patients still come back to report that they went to a private laboratory and it was reported they had malaria. It is not reliable unless in the case of emergency, even if emergency we use mRDT as well as microscopy before we can give out result . So far now, the mRDT we have is not reliable but that is the one we’re being provided with” (Female)*

*“mRDT is safe, it is easy, there is no difficulty in using it” (Female)*

*“They are not reliable. Sometimes mRDT strip will pick patient’s blood, sometime the temperature of the patient will be very hot, still mRDT will be negative. **When negative don’t you think something else might be the cause?** No! Malaria but malaria must be present because with microscopy you will surly detect malaria even if it’s one plus” (Male)*

*“ Since it is an easy method of diagnosing malaria we like using it because, patients when they come to the health centre, they want to go immediately and for you to use microscopy it means most time they will come*

*“It’s quite fast only that it does not pick early stage of malaria” (Female)*

*“It gives a fast and accurate result especially when the parasites are more in number but when the parasite is few, it is not detected. The clinician comes to work to use other parameters such as temperature increase to treat for malaria.” (Male)*

### **Perception of mRDT among the participants**

Participants had varying perception about mRDT. mRDT was noted for its ease and swiftness of use as well as its negative test results and unreliability.

*“I wish they can keep that mRDT aside, let’s face the microscopy, so that we know when a patient is having malaria and when a patient is not having malaria. mRDT shows nothing, so the usefulness of mRDT; I doubt if it so useful. It is useful but not all that useful” (Female)*

*“mRDT it is very easy and easy to detect malaria at any time ” (Female)*

*“ It helps the Scientists, it helps the Doctors to treat the patient fast, some children will come with high fever that will even lead to convulsion but if with mRDT as soon as it’s used, it will give result but if microscopy with the staining process, the child will enter into convulsing, so I think mRDT is good for quick malaria testing ” (male)*

*“In terms of time saving and power failure it is good but in terms of really diagnosing malaria properly, I don’t think I will like to use it. It is not good” (Male)*

*“It is good and reliable when properly used with instructions on the manual strictly adhered” ((Female)*

*“It is a very simple one, it saves time, and it saves energy. There is nothing to worry about when using mRDT”* (Female)

### **Barriers in using mRDT**

Majority reported not experiencing any problem during usage. However, few mentioned technical problems

*“If you’re not careful enough to read the result immediately, you will not get an accurate result. You read 2-3 min, anything more than that nothing will show again”* (Male)

*“My major challenge is that fewer parasites will not be detected as well as cases of some species of plasmodium. Sensitivity in P.falciparum is almost 100% and lesser percent for vivax while the reagents themselves are propagated towards diagnosing P.falciparum. Other species are not easily detected”* (Male)

*“A lot of false positive or negative result”* (Female)

*“It’s just that quantification of malaria parasite when the parasite load is low but only when high. If you’re not experience you give a false negative result meanwhile, the person have malaria”* (Female)

*“Not readily available”* (Female)

*“I don’t really have any challenge only that mRDTs are not reliable”* (Female)

### **Discussion**

This study is one of the few studies in Port Harcourt, to assess the awareness, availability, perception, usage and barriers of MRDT in the primary health centres in the State. The level of awareness of MRDT by the health workers in primary health centres in Port Harcourt is high compare to the report of Benjamin *et.al* (2010). The reason for this may be that more awareness had been created in the primary health centres in the city and more attention had been paid to the primary health centres by government and non

governmental agencies in recent time to improve the case management of malaria in the state as their most source of information on MRDT is the government. The laboratory scientists and laboratory technicians are all aware of the MRDT, this is not unusual since their main job is to conduct tests. However, the level of awareness of MRDT by the nurses, CHO and CHEW calls for the employment of means of creating more awareness about MRDT among these cadres of health workers. Majority of the health workers acknowledged that their source of information on MRDT was the government followed by their co-workers. This finding is in contrast to other research efforts done in Oyo (Benjamin *et.al.* 2010) who reported that the government was the source of MRDT for only 3 facilities. Confirming the fact that source of information on MRDT was through formal training sessions. Only three doctors in this study reported that conference was their source of information. Health workers should be encouraged and supported to attend conferences. Media campaign and journals should be made readily available to the health workers to increase their awareness and proficiency. Surprisingly, MRDT were available in all the health centres during this study. This finding is different from the finding of Olusimbo and Ayansipo (2014) who reported a marked difference in the supply and availability of ACTs in the facilities pre-RDT and post-RDT. Also, Albertini *et al.*, (2012) in a study on Preliminary enquiry into the availability, price and quality of malaria rapid diagnostic tests in the private health sector of six malaria-endemic countries reported that of the private health facilities across the six countries. The majority of RDTs were found in facilities operated by private clinical care providers. Of the diagnostic laboratories visited (all in Lagos), only one had RDTs available. Benjamin *et al.*, (2010) in a study in south east Nigeria reported that only few of the health facilities used RDTs to diagnose malaria. The majority used the syndromic approach. The availability by the government who were the major source of supply in this study could be as a result of maternal and child health care week held during the survey in the state and it was reported that the NGOs donates little or no MRDT to the health centers. It is presumed that, increased in

the availability of MRDT might partly increase ACT prescriptions and drug utilization. However, the stock out of MRDT for some periods before the next supply was also mentioned in some health centers, which could be due to overuse of MRDT in diagnosing the parasites. Furthermore, the use of microscopy to diagnose malaria among the health centers was observed to be very low and NGOs in the state should aid to promote MRDT availability. Moreover, this calls for intervention which will ensure that health centers stock adequate doses of MRDT and subsequently use them. One quarter of health workers had been trained on MRDT use and the major sponsors of their training was the government. However, laboratory scientists, laboratory technicians and doctors are likely to be the main users of MRDT and they use it almost every day. This is not unusual hence their main job is to conduct tests. Only six of the health workers were trained by NGO. This finding is different from the finding in a study done in Tanzania (Marycelina *et al.*, 2013) where the majority of health workers were trained on MRDT. There is need for integrated and case management training for primary health care staff. Health workers need to be trained and prepared for comprehensive case management, as well as given specific guidance for managing febrile patients with negative test outcomes, alongside providing RDTs. Evidence indicates occasional human errors leading to false positive or negative results from RDTs. These errors could be reduced with periodic performance appraisals for the workers involved. Proportion of the health workers rated MRDT procedure as easy and gave unreliability of MRDT result as a reason for not utilizing it. This suggests they do not trust the results despite the fact that MRDT have been found to have a sensitivity of 90.6% and a specificity of 95.9 in Nigeria (Ochola *et.al.* 2006). Additionally, in this study the health workers mostly preferred MRDT to other laboratory method because they perceived it to be time saving, gives better result and better diagnosis. Diggle *et.al.* (2014) also recorded that respondents preferred on general perception of MRDT was noted for its ease and swiftness of use, portability and non-reliance on electricity. The fact, that most health workers do not prefer MRDT to other laboratory test

methods, reasons were mainly that MRDT can't quantify, prefer other methods, detects only *P.falciparum* and not always reliable. Surprisingly, majority of these health workers reported not using MRDT for all fever cases as well acknowledging their confidence on MRDT. The use of confirmatory malaria diagnosis with MRDT is expected to reduce the overuse of antimalarial drugs by ensuring that treatment is targeted to patients suffering from malaria infection as opposed to treating all patients with fever. Also, this is contrary to the recommendations by WHO, which require universal testing of all patients suspected to have malaria and treatment with anti-malarial drugs be confined to parasitological confirmed cases. (WHO 2010; 2011). Also, training of health worker in malaria diagnosis using MRDT should include training on identification of other causes of fever. Finally, the health workers as well acknowledged the fact that most patients have confidence on MRDT results. This finding is in contrast with Marycelina (2013) who reported that health workers do not trust MRDT and gave reasons, such as patients assuming that any fever is due to malaria and suspecting they are tested for HIV. In this study it could be as a result of the patient's compliance to carry out MRDT and treatment procedures. On the other hand, the health workers could be bias as the patients were not within reach to speak for themselves. This study did not determine directly on the patient's confidence on MRDT with the patients, neither did it explore the patient's attitude, perception and usage on MRDT

## References

- Albertini A, Djalle D, Faye B, Gamboa D, Luchavez J, Mationg ML, Mwangoka G, Oyibo W, Bennett J, Incardona S, Lee E (2012): Preliminary enquiry into the availability, price and quality of malaria rapid diagnostic tests in the private health sector of six malaria-endemic countries. *Trop Med Int Health.* 17(2):147-52. doi: 10.1111/j.1365-3156.2011

- Deekae S.N, Abowei J.N, Chindah A.C (2010): Some Physical and Chemical Parameters of Luubara Creek, Ogoni Land, Niger Delta, Nigeria. *Research Journal of Environmental and Earth Sciences*; 2(4): 199-207.
- Diggle E, Ramin A, Georgia G, Erupe N, James M, Rebecca H, *et.al.*, (2014): Perceptions of malaria and acceptance of rapid diagnostic tests and related treatment practises among community members and health care providers in Greater Garissa, North Eastern Province, Kenya. *Malaria Journal* 2014, 13:502 doi:10.1186/1475-2875-13-502
- Federal Republic of Nigeria: national antimalarial treatment policy Abuja. Nigeria: FMOH; 2005
- Marycelina M, Deodatus K, Billy N, Zulu P, Stefan P, Aders J and Adreas M (2013): Malaria Diagnosis and treatment practices following introduction of rapid diagnostic test in Kibaha District, Cost Region, Tanzan. *Malaria Journal* 12-293. Doi.10.1186/1475-12-293
- Masanja Irene M' Majige Seleman, Baraka Amur, Dan Kajungu, Rashid Khatib' S Patrick Kachur and Jacek Skarbinsk (2012) Increased use of malaria rapid diagnostic tests improves targeting of anti-malarial treatment in rural Tanzania: implications for nationwide rollout of malaria rapid diagnostic tests. *Malaria Journal* 2012, 11:221. doi:10.1186/1475-2875-11-221
- Moody A. (2002): Rapid diagnostic tests for malaria parasites. *Clin Microbiol Rev* 15:66-78
- Mukanga, D, James T, Juliet K, George P, Peter W, Francis B, Brian M, Helen C, Godfrey O, and Karin K. (2010): "Community acceptability of use of rapid diagnostic tests for malaria by community health workers in Uganda." *Malaria Journal*, 9203
- Ochola L.B., Vounatsou P., Smith T., Mabaso M.L., Newton C.R. The reliability of diagnostic techniques in the diagnosis and management of malaria in the absence of a gold standard. *Lancet Infect. Dis.* 2006;6:582–588. [PubMed]
- Olusimbo I and Ayansipo, E (2014): Impact of malaria rapid diagnostic tests on prescription patterns of artemisinin- based combination therapy in Oyo State, Nigeria. *Malaria World Journal*, Vol.5, No. 2 www.malariaworld.org. ISSN 2214-437.
- WHO | World Malaria Report 2011 [www.who.int/malaria/world\_malaria\_report\_2011/en/]
- WHO Global Malaria Programme. *World Malaria Report 2011*. Geneva: World Health Organization; 2011. 42 p.
- World Health Organization: Guidelines for treatment of malaria. Second edition. Geneva; Swizerland; WHO 2010.
- World Health Organization: WHO guidelines for the treatment of malaria 2006. [http://www.who.int/malaria/docs/treatment\_guidelines\_2006.pdf] webcite (Accessed 10 March 2015)
- World Health organization; Universal access to malaria diagnostic testing, An operational manual; 2011, http://www.who.int/malaria/publication/atoz/a789241502092

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**How to cite this article:**

Eze, Chinwe N and Maduka Omosivie. (2016). Awareness, Availability, Preference and Usage of malaria rapid diagnostic test among health workers in primary health care facilities in Port Harcourt and Obio/Akpor, Rivers State. *Int. J. Curr. Res. Med. Sci.* 2(5): 12-23.