ASSESSING KNOWLEDGE OF MALARIA RAPID DIAGNOSTIC TEST KITS THROUGH PARTICIPATORY COMMUNICATION IN SELECTED COMMUNITIES OF NASARAWA STATE

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NSU/MA/DVC/0007/17/18

MASTERS OF ARTS (M.A.) IN DEVELOPMENT COMMUNICATION

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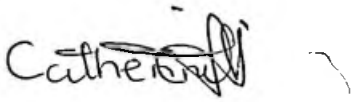
A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, NASARAWA STATE UNIVERSITY, KEFFI, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS OF ARTS (M.A.) IN DEVELOPMENT COMMUNICATION

INSTITUTE OF STRATEGIC AND DEVELOPMENT COMMUNICATION
NASARAWA STATE UNIVERSITY, KEFFI
NIGERIA

DECLARATION

I hereby declare that this dissertation has been written by me and it is a report of my research work. It has not been presented in any previous application for a Master of Arts degree. All quotations are indicated and sources of information specifically acknowledged by means of references.



AGBO, Catherine Hembadoon

NSU/MA/DVC/0007/17/18

CERTIFICATION

This dissertation, "Assessing Knowledge of Malaria Rapid Diagnostic Test Kits through Participatory Communication in Selected Communities of Nasarawa State," meets the regulations governing the award of Masters of Arts degree of the School of Postgraduate Studies, Nasarawa State University, Keffi, Nigeria and is approved for its contribution to knowledge.

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DEDICATION

To my late father, Dennis AsemakahaAgbo.

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My profound gratitude goes to God Almighty, my provider, my personal Lord and Saviour. The completion of this research was made possible, with the guidance, contribution and assistance of many people in different ways. Thanks to all of them.

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ABSTRACT

In Nigeria, people die daily from malaria-related complications and nearly all the deaths, many of which could have been prevented, occur in low-resource settings. West Africa and Nigeria account for the highest mortality rates from malaria in the world.For an effective healthcare sector, the health workers are at the fore of health communication.This study, therefore, assesses knowledge of malaria Rapid Diagnostic Test (RDT) kits using participatory communication in select rural communities of Nasarawa State. The study employs survey research design with questionnaire, focus group discussion and in-depth interviews as instruments for data collection. Findings show that malaria is not just a common health burden of many families in the study area but that the prevalence level is very high, particularly in the rural communities with at least 70 per cent of patients who report to health facilities testing positive to the disease. Further findings indicate that awareness of malaria RDT kits among people in the rural communities of Nasarawa State is very high. Findings also show that there is positive perception of malaria RDT kits among the study population; and that the kits have enhanced the rapid diagnosis and treatment of the ailment due to their simplicity. The study thus recommends, among other things, that there is a compelling need for heightened awareness creation among the rural populace using participatory communication strategies through opinion leaders, religious leaders, traditional and community leaders, as well as community-based organisations on the necessity of living in clean and sanitary environments. There is an urgent need for training and retraining of information officers and community healthcare workers to become more proficient in participatory communication strategies so as to enhance acceptance and uptake of health innovations. This study therefore, concludes that participatory communication was the key element in the knowledge and acceptance of RDT kits in the select rural communities of Nasarawa State.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Malaria is one of the most severe public health problems worldwide, particularly in Africa, with Nigeria recording the greatest burden. The disease is caused by a parasite borne by mosquitoes and those infected with the parasite often get sick and experience fever, chills, and other flu-like symptoms. Untreated malaria could lead to severe complications and death (Liman, 2016). According to Maduka (2013), in at least 97 countries and territories in the tropics and sub-tropics, malaria is regarded as a major public health challenge.

On the global scene, statistics show that at least 214 million cases of malaria occur every year and no fewer than 3.2 billion people are faced the risk of infection (WHO, 2013). According to Dawaki (2016), 438,000 deaths were attributed to malaria in 2015, particularly in sub-Saharan Africa, where approximately 90 per cent of all malaria deaths occur. Data by the WHO (2014:12), shows thatNigeriahasthegreatestmalariaburden in the worldwithan estimated 51million cases and 207,000 deaths reported annually (around 30.per cent of the total malaria burden in Africa); while 97 per cent of the total population (around 173 million) is at risk ofbeing infected with malaria.

Furthermore, malaria accounts for 60 per cent of visits to hospitals by outpatients and accounts for about 11 per cent maternal mortality and 30 per cent child mortality, particularly among children aged five years and below (Ndibuago, 2012). According to the Federal Ministry of Health (2012) the devastating disease negatively impacts Nigeria's economic productivity, and is responsible for an estimated monetary loss of about₦132 billion in

treatment costs, prevention, and other indirect costs. Similarly, Garner (2000) avers that malaria is a grave health issue as over 300 million people are infected annually out of which about a million die. He further quotes WHO, as stating that 85 per cent of the malaria deaths occur in children under the age of five.

McGinn (2002) expresses concern that despite the deaths caused by the dreadful disease, with approximately40percentoftheworld'spopulationatriskofbeing infected, malariahas yet to be accorded the health priority it deserves on the international health scene. Azoma (2017), citing the National Malaria Elimination Programme (NMEP), states that Nigeria holds the record for 29 per cent of the world's malaria burden and also accounts for more number of cases than any other country, hence the need to focus on proper diagnosis, treatment and prevention. He notes further that within the country, statistics on malaria prevalence differ, ranging from 14 per cent in the South-East Zone to 37 per cent in the North-WestZone.

Tom (2002:34) holds that malaria is deadlierthan HIV/AIDS and tuberculosis and that everyday, over 3,000 African children aged less than five, yield to the shaking chills, the raging fevers, the drenching sweats and excruciating aches that accompany malaria infection.Liman (2016) also states that Nasarawa State recorded 228,886 cases of malaria within 12 months out of which 2,437 were severe and life threatening; while 226,449 were not complicated. Moreover, statistics from the District Health Information Services Platform in Nasarawa State indicate that malaria was responsible for 61 per cent of under-five mortality in the statewithin the 12 months period.

Largely, those infected with malaria have symptoms such as fever, chills, headache, sweating, nausea or vomiting, fatigue, impaired consciousness, deep breathing, muscular pains, abnormal bleeding, and vital sign failure. However, these symptoms are non-specific

andcould also be indicative of the presence of some other diseases. This makes the need for a test to ascertain if the symptoms are those of malaria, imperative. That notwithstanding, malaria is clinically suspected when there is fever or some other feverish conditions.

Azoma (2017) observes that the treatment of malaria is dependent on the type a person is infected with, where the infection took place, its drug-resistance status, the clinical status of the patient, drug allergies, and any other ailmentthe patient may be suffering from and in the case where the patient is female, pregnancy needs to be factored in. Treatment can only commence when these factors are properly considered. Malaria Rapid Diagnostic Tests (RDTs) are beneficial in the diagnosis of malaria as they show proof of the presence of malaria parasites in human blood.

Ibekwe et al. (2009) note that while a lot of previous studies have documented a high prevalence of malariathroughoutNigeria,researchonpeople'sknowledge, attitudes and practices (KAP) towards malaria in many parts of the country, particularly in Northern Nigeria, including Nasarawa State is not well documented. Information such as this is important as it will prove useful in the identification and implementation of effective control measures, and planning for the participation of targeted communities in testing, which is one of the fundamental tools for the success and sustainability of disease controlprogrammes.

As Korenromp, Hosseini, Newman, and Cibulskis (2015) note, to successfully diagnose malaria cases, the diagnostic method used must be accurate and available at the point of care. They, therefore, hold that malaria RDTs can help with rapid, accurate diagnosis in circumstances where demonstration of *parasitaemia*has previously been impossible, or where microscopy-based diagnosis may be unreliable. There is, therefore, increasing demand for

countries to advancemalariadiagnosis, considering the wide-scaleintroductionof costlyantimalarial medications and the decreasing malaria trends in a lot of countries. What this means is that guidance is required to ensure that the choice of RDTs for malaria meets superiorstandards.

One of the vital components of malaria control and elimination strategies is rapid, accurate diagnosis and treatment (within 24 hours of onset of illness) of patients with effective medicine. Before diagnosis is started, there has to be suspicion of the presence of malaria based on a defined set of clinical criteria. This may differ, depending on the endemic level of malaria and the types of non- malaria fevers in the area. Diagnosis is confirmed after either of a blood film for microscopy test or an RDT (WHO,2013).

Haruna (2015) posits that RDTs are a substitute to diagnosis based on clinical grounds or microscopy, particularly where good quality microscopy services are not available or cannot be readily provided (as in rural communities of Nasarawa State). However, the level of awareness of RDT kits, particularly among health care providers in the rural communities of Nasarawa State, is not known. This study was, therefore, designed to probe the current level of public knowledge and perception of RDT kits in selected rural communities in Nasarawa State, North-Central Nigeria.

1.2 Statement of the Problem

As malaria indices continue to increase, so have morbidity and mortality rates. Malaria is a prevalent disease in Nigeria and children, especially those under the age of five and pregnant women are among the population at highest risk of infection. Economic loss is one of the effects that occur alongside malarial morbidity and mortality. Social and economic effects are

also directly linked to the severity of malaria's increased morbidity and mortality. Arrese (2001) notes that children spend many days away from school and adults lose workdays as a consequence of malaria.

Against the above background, there is a compelling need to seriously evolve malaria control strategies as the scourge is evidently attacking Africa's most populous country, Nigeria, at a disturbing pace. In Nasarawa State, for instance, malaria is reported to account for 61 per cent of under-five mortality every year (Maduka, 2018). The continued scourge and its effects on the population in the state have been blamed on faulty diagnosis and treatment of the disease, especially in rural communities where good quality microscopy services are not readily available (Dawaki, 2016).

Although, malaria RDT kits are today available to confirm the incidence of malaria parasites in suspected patients, the level of awareness and public perception of these kits, among health care providers, is not known. There is, therefore, a compelling need for all healthcare givers, especially those in the rural areas, involved in caring for patients with feverish symptoms, to have acceptable knowledge and right perception of RDT kits, so as to imbibe the practice of carrying out parasitological testing of all fever cases before prescribing anti-malariamedicine. The question this study seeks to answer is: What is the public knowledge and perception of malaria Rapid Diagnostic Test (RDT) kits in rural communities of NasarawaState?

1.3 ResearchQuestions

The study has the following research questions which it has answered:

i. What is the prevalence level of malaria in the three selected Local Government Areas of Nasarawa State, namely, Akwanga, Lafia and Keffi?

ii. What is the level of public awareness of rapid diagnostic test kits in these three Local

GovernmentAreas?

iii. Are rapid diagnostic test kits used in health facilities in the three selected Local GovernmentAreas?

iv. What is the public perception of rapid diagnostic test kits in the three Local Government Areas of NasarawaState?

1.4 Aim and Objectives of theStudy

This study is aimed at assessing public knowledge and perception of malaria Rapid Diagnostic Test (RDT) kits in selected communities of Nasarawa State with particular emphasis on Akwanga, Lafia and Keffi Local Government Areas. The study aims to contribute to knowledge of the disease, its diagnosis and treatment using the RDT kits with a view to contributing to the transformation of the malaria landscape and reducing cases of misdiagnosis often occasioned by lack of testing facilities, particularly in rural communities. More specifically, the study sought to:

i. Examine the prevalence level of malaria in three selected Local Government Areas in Nasarawa State, namely, Akwanga, Lafia and Keffi.

ii. Ascertain the level of public awareness about rapid diagnostic test kits in the three Local Government Areas of NasarawaState.

iii. Find out if rapid diagnostic test kits are used in health facilities in the three Local GovernmentAreas.

iv. Assess public perception of rapid diagnostic test kits in the three Local Government Areas of NasarawaState.

1.5 Significance of theStudy

This study seeks to assess knowledge of malaria rapid diagnostic test (RDT) kits using participatory communication in select rural communities of Nasarawa State. It will, through the findings, recommend how best development communication strategies, precisely participatory communication, can be used to inform, educate and enlighten the people of the selected local government areas about the usefulness of the kits in stemming the spread of the disease. Malaria is a deadly disease in all of Africa and RDT kits are one of several interventions to diagnose for treatment and control its prevalence. This study, therefore, examines the level of people's awareness of the rapid diagnostic test kits for malaria. It is hoped that the findings will serve as a guide for development organisations working on malaria eradication, public health communicators as well as healthcare providers in the fight against malaria, particularly in rural communities. It should also encourage further studies in the fight against the malaria scourge.

1.6 Scope and Delimitation of theStudy

This study assesses public knowledge and perception of RDT kits in rural areas. The study was conducted in Nasarawa State in North-Central Nigeria. However, it is delimited to three local government areas (one in each of the three senatorial districts) whose residents constitute the population of the study. To be specific, the three selected local government areas are: Akwanga, Lafia and Keffi. The choice for the local government emanates from the fact that primary health care activities have been reported to be prevalent in these local government areas and this study was meant to establish these facts. The communities understudied were Shabu, Kwandare and KeffiWambai for Lafia Local Government Area; KurminTagwaye, Gwanje and Ntsakpe for Akwanga Local Government Area and AngwanJarme, Jigwada and Tilla for Keffi Local Government Area of Nasarawa State.

1.7 Definition of Terms

It is pertinent to define some key words in the research work. These include: participatory communication, public, perception, rapid diagnosis test (RDT) kits and rural communities.

i. Participatory Communication: Participatory communication is a genre of communication conceived around the mid-1970s and gained momentum in the 1980s and 1990s.Participatory communication denotes the theory and practices of communication used to involve people in the decision-making of the development process.It places responsibility on the individual to take the lead in the process of communication, by enunciating their needs and partaking actively in the developmental process of their community and at the same time, taking over the entire process of the engagement. The fundamental principles of participatory communication includedialogue, voice, liberating pedagogy, and action-reflection-action.In the application of participatory communication in the development process,some key questions to answer include what is the development problem to address,what notion of culture is inherent in the proposed approach, whether the catalyst or change agent is understood,what principles guide the understanding of education, are there active stakeholders or audiences toaddress and their roles in the communication process, what messages will be communicated,what is the aim of the change, how will the outcomes be monitored or evaluated,and what is the time frame to achieve the desired change (s)?

ii. Public: A community of people who share a common problem like malaria or other health-related issues. In this study, public is also regarded as persons who utilise a common facility like the primary healthcare unit.

iii. Knowledge:Knowledgemeans to be familiar, aware, or understand people or things and situations and can be acquired in many diverse ways and from many diverse sources, such as perception, reason, memory, testimony, introspection, scientific inquiry, education and practice. Knowledge of the Rapid Diagnostic Test (RDT) kits, which is different from what they were used to, among the public in the study area will enhance acceptability of the development.

iv. Perception: This is the detection, identification and conscious understanding of something. Perception could be positive or negative.Perception plays a key role in communication, hence the need for an approach such asparticipatory communication that ensures that the project and the community do not havedifferent perceptions of the issues or problems to be resolved. Perception is important in this study because the decision to accept the use of Rapid Diagnostic Test (RDT) kits by the people in the study area has a lot to do with their perception of the technology.

v. Rapid Diagnostic Test (RDT) Kits: These are medical equipment deployed to speedily and easily detect the presence of malaria parasites in the blood of suspected patients, who present the symptoms of malaria disease. RDT kits are important in primary healthcare because microscopy tests are not used at this level of healthcare.

vi. Rural Communities: Rural communities are complex to define as they are defined differently, depending on context and the state of development of the society. They are generally defined as non-urban areas that are characterised by the absence of basic amenities such as electricity, good schools, standard hospitals, potable water, modern communication facilities, decent accommodation and good roads.Even though rural areas are difficult to define with precision, the most important economic activities that take place are the production of foodstuffs and raw materials,there is a low ratio of

inhabitants to open land, a high regard for intimacy and traditional values,farming communities are often regulated by kinship customs and ritual, and, in particular, the ownership and care of productive land is strictly guarded by tradition.Inhabitants of rural communities work with people they know well and are accustomed to relationships of great intimacy and small scale. Rural communities and the people that live there are custodians of local knowledge, which is at the heart of participatory communication.

1.8 Area of the Study

The area of this study is Nasarawa State in North-Central Nigeria. Nasarawa State was created on Tuesday, October1, 1996, by the regime of General Sani Abacha. The State, with Lafia as its capital, was a part of Plateau State. It has boundaries with Kaduna State in the north, Abuja, the Federal Capital Territory in the west, Kogi and Benue States in the south and Taraba and Plateau States in the east. Major towns and villages in the state are linked by a connectivity of roads.

Nasarawa State comprises three Senatorial Districts (North, South and West), consisting of thirteen (13) local government areas, namely, Akwanga, NasarawaEggon, and Wamba in Nasarawa North Senatorial District; Awe, Doma, Keana, Lafia and Obi in Nasarawa South Senatorial District; and Karu, Keffi, Kokona, Nasarawa and Toto in Nasarawa West Senatorial District. Based on statistics from the National Population Commission (NPC), the state has a population of one million, eight hundred and sixty-nine thousand, three hundred and seventy-seven (1,869,377) as at 2009 (FGN Official Gazette, 2009). Some indigenous languages spoken in the state are: Agatu, Basa, Eggon, Gade, Gbagyi,

Goemai, Gwandara, Ham, Tiv, Kofyar, Lijili, Mada, Koro, Rindre, Yestwa and Alago. Apart from these, at least 19 other languages are spoken in Nasarawa State, includingHausa.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Preamble

This chapter will be dedicated to reviewing the existing literature related to the study. Consequently, it is designed to review concepts and the review of empirical studies. The chapter also provides a theoretical framework for the study.

2.1 Conceptual Review

2.1.1 Knowledge

Knowledge is a complex, multi-faceted concept. Knowledge is the primary subject in the field of epistemology which studies what we know, how we come to know it, and what it means to know it. Epistemology is from the Greek words 'Episteme' and 'Logos'. Episteme is translated either as knowledge, understanding or acquaintancewhile logos is translated as account, argument or reason. Defining knowledge is an important aspect of epistemology,because in the field of study, it does not suffice to have a belief;one must also have good reasons for that belief,because otherwise there wouldbe no reason to preferone belief over another.There is on-going debate among epistemologists about the definition of knowledge.One of the popular definitions is by Plato,who specifies that a statement must meet three criteria in order tobe considered knowledge: it must be justified, true, and believed.Knowledge can either be a theoretical or practical understanding of a subject.It can be implicit (as with practical skill or expertise)or explicit (as with the theoretical understanding of a subject); it can be more or less formal or systematic. Knowledge means to be familiar, aware of, or understand someone of a thing, such as, facts, information, descriptions or skills, which is acquired through experience or education by

perceiving, discovering or learning. Knowledge can denote a theoretical or practical understanding of a subject. According to Pardi (2011), the study of knowledge is what philosophers have long been trying to do, with a view to refining it since the time of Plato, the great philosopher of all times. Gladwell (2007) identifies five methods of acquiring knowledge to include: intuition, authority, rationalism, empiricism, and the scientific method. However, he observes that although knowledge can be acquired through any or all of these methods, the most reliable one is the scientific method because it is the most likely to produce validknowledge.

In an effort to increase knowledge about malaria RDT kits and enhance the promotion of the implementation of parasite-based diagnosis of malaria, as indicated in the second objective of the Nigerian Malaria Strategic Plan 2014-2020, health authorities insist that, "all persons with suspected malaria who seek care are tested with RDT or microscopy by 2020" (FMH, 2014). To achieve this objective, Ndibuago (2018) asserts that it is imperative for all healthcare givers to possess the requisite and adequate knowledge about RDT kits, so as to be in a position to encourage the practice of conducting tests for all fever cases before prescribing anti-malaria medicine. This knowledge, according to him, is particularly crucial for healthcare givers, who work in rural communities where microscopy is rarely available. Also, as Ndibuago (2018:12) notes, proper evaluation of the knowledge and perception of malaria rapid diagnostic test kits among healthcare givers in rural communities will help in identifying the loopholes among the healthcare giversin the system and in developing interventions that will be useful in addressing the identified gaps.

2.1.2 Understanding Perception

Robbins and Judge (2013) see perception as a process by which individuals organise and

interpret their sensory impressions in order to give meaning to their environment. It is, however, important to note that our perception of something may sometimes be differ from the actual situation. As different as individuals are, so are their perceptions. This therefore influences every other aspect of theirlives.

Agbato (2001:241) maintains that, "specific knowledge about objects or events can be acquired directly by stimulating the sense at any particular moment. This perception enables one to interpret objects, symbols and people in the light of relevant experiences." People perceive and interpret messages or things differently. We often behave in certain ways due to our perceptions and judgments, which significantly influence our assumptions. It is often rare and unusual to find people agree on almost everything; there certainly will be some elements of disagreement;andthis,toalargeextent,influencesourbehaviours.For Griffin and Moorhead (2007:72),inperceiving, "we receive information in many guises, from spoken words to visual images of movements and forms. Through perceptual processes, the receiver assimilates the varied types of incoming information for the purpose of interpreting it". The authors further discuss two basic perceptual processes: Selective perception and Stereotyping.

i. **Selective Perception:** This is the process by which people screen out information that they are uncomfortable with or that contradicts their beliefs. Since it is impossible for people to assimilate everything, they see but take in only certain stimuli, they are bound to engage in selective perception. Therefore, certain characteristics that make an object, event, or person stand out will increase the chance that we will perceive it. When an audience member has a positive attitude about media contents, selective perception may cause him or her to overlook any negative attribute of the said content and vice versa. This implies that selective perception can only be beneficial if our basic perception is accurate; and it may be detrimental if it causes

us to ignore importantinformation.

As a point of fact, selective perception is influenced by our interest, background, experience and attitudes. Robbins and Judge (2013:204) point out that, "selective perception allows us to speed-read others, but not without the risk of drawing an inaccurate picture. Seeing what we want to see, we can draw unwarranted conclusions from an ambiguoussituation."

ii. **Stereotyping:**This is categorising or labelling people or media messages based on one single attribute. While some forms of stereotyping can be beneficial and effective; others can be harmful and detrimental. It can be deep-seated and potent enough to influence vital decisions. One problem of stereotypes, as noted by Griffin and Moorhead (2007), is that they are widespread and often use generalisations; and may not contain any iota of truth when applied to a particular person or situation. This means that evaluationsanddecisions may sometimes be unfair orinaccuratewhenbased onstereotypes.Stereotypingcan, therefore, influence the perception of an audience member toward media contents, whether positively or negatively.

2.1.3 ParticipatoryCommunication

Participatory communication is a dialogue-based approach that permits the sharing of information, perceptions and opinions among stakeholders,. thereby facilitating their empowerment. It is not just the exchange of information and experiences; but also the exploration and generation of new knowledge that can be used to address situations that need to be improved. According to Tufte and Mefalopulos (2009:21), participatory communication tends to be associated with community-driven development; but it could be used at any level of decision making (local, national, international) no matter the diversity of the groups involved. To Parker and Becker-Benton (2016), sincere participatory communication is rare;

but it can aid the empowerment of marginalised groups and have wider social and political effects. They further note that it requires constant dialogue with the various stakeholders. Proper application of participatory communication methods is, however, not enough to guarantee the success of a project. Wider contextual requirements including a flexible project framework (especially in terms of timelines), a politically conducive environment, and an enabling attitude among keystakeholders, are important in ensuring a project's success.

By actively engaging stakeholders from the beginning and by seeking a broader agreement around development initiatives, participatory communication is now earning its place as an important tool. This is partly due to the realisation that many conflicts and obstacles can be prevented if addressed on time. Genuine participation also increases the sense of ownership by local stakeholders, thereby enhancing project sustainability.To be genuinely participatory and truly effective, communication should occur among all parties involved, ensuring that all have similar opportunities to influence the outcome of the initiative. Ideally, participatory communication should be part of the whole project process.

2.1.4 Rural Communities

Rural communities are complex to define as they are defined differently, depending on context and the state of development of the society. They are generally defined as non-urban areas that are characterised by the absence of basic amenities such as electricity, good schools, standard hospitals, potable water, modern communication facilities, decent accommodation and good roads. Even though rural areas are difficult to define with precision, the most important economic activities that take place in many rural communities are the production of foodstuffs and raw materials, there is a low ratio of

inhabitants to open land, a high regard for intimacy and traditional values, farming communities are often regulated by kinship customs and ritual, and, in particular, the ownership and care of productive land is strictly guarded by tradition. Inhabitants of rural communities work with people they know well and are accustomed to relationships of great intimacy and small scale. Rural communities and the people that live there are custodians of local knowledge, which is at the heart of participatory communication. According to 2019/2020 date from the National Bureau of Statistics (NBS), a larger proportion of Nigerians live in rural areas while slightly above 40 per cent live in urban centres.

Rural communities are largely areas outside of towns or cities and are characterised by the lack of or inadequate basic infrastructure and social amenities such as good schools, electricity supply, potable water, roads, modern communication facilities and standard healthcare systems or hospitals. Moemeka (2000) observes that rural areas, particularly in Nigeria, are inhabited by the majority of the people (80 per cent), who are predominantly illiterate and are usually bound by tradition. The most distinguishing characteristics of rural communities, as identified by Kur and Iwokwagh (2011), are their low commercial activities and subsistence agriculture. To Duke (2012), rural communities are remote, isolated, poverty stricken and primitive communities in rustic areas, which normally become, more and more, a threat to sustainable development.

The point made here is that a rural area is any place located away from the city, with small settlements and low population density. In rural communities, people live far apart from one another. Although access to and affordability of healthcare services are central to healthy living, people in rural areas face a lot of barriers to accessing

healthcare services. George (2014) reports that healthcare services in rural communities are scarce and expensive, so most residents rely on advice from their peers to resolve most of their health issues. The absence of healthcare services in rural communities coupled with the cost present a lot of challenges that limit the ability of residents of those areas to obtain the healthcare they need. For this set of people to have good access to healthcare, necessary and adequate information must be available about the services in a timely manner. In addition to adequate information, George(2014) maintains that rural dwellers must be confident in their ability to communicate with healthcare providers, especially in demanding for the kind of care they will receive.

2.1.5 The MalariaScourge

Malaria is one of the main public health challenges in Nigeria and the country accounts for the highest number of cases and deaths from the disease than any other country in the world. Sadly, about 97 per cent of the country's population are exposed to the risk of malaria disease. The remaining 3 per cent live in the malaria free highlands. Arrese (2001) states there are an estimated 100 million malaria cases with over 300,000 deaths each year in Nigeria.Thisismorethanthecountry's215,000deathsyearlyfromHIV/AIDS.Asrecordsfrom the District Health Information Services Platform in Nasarawa State show, malaria contributes to about 11 per cent of maternal mortality, principally in rural communities. In 2009, malaria constituted a major burden on families, communities, health systems, and the workforce in Nigeria (WHO, 2009).

Commenting on the scourge of the disease, Maduka (2018:30) states that: malaria is currently endemic in 91 countries and territories, a reduction from 108 countries in 2000. Currently,

over half of the world's population is at risk for malaria with prevalence in sub-Saharan Africa remaining the highest in the world. Currently, 43 countries in sub-Saharan Africa are endemic for malaria. However, malaria prevalence rates have dropped in the sub-continent from between 20 to above 40% since 2000.

The World Health Organisation (WHO) approximates that there are over 300 million new cases of malaria annually, resulting in around two to three million deaths. Furthermore, malaria is endemic in tropical Africa, with an estimated 90 per cent of all incidents and deaths occurring there, particularly amongst pregnant women and children. The malaria scourge is also responsible for a plethora of social and economic problems in Nigeria. To underscore how much of a challenge it is, malaria is the only vector borne disease to be placed on the Disability Adjusted Life Years (DALYS) list of World Health Organisation (WHO).

The reasons for malaria's massive expansion are complex. According to David (2000:2):

> ...the breakdown of national malaria control programmes, global climate change, large-scale population displacements in war, crumbling health services in many of the worst affected countries and increasing resistance of the parasite to available treatments are all contributors. A staggering 80 per cent of all fatalities from malaria occur in sub-Saharan Africa. Poor countries such as Mozambique, long debilitated by conflict and international debts, struggle to provide adequate medical facilities. Even where hospitals and clinics do exist, appropriate drugs are often in short supply.

In the light of the foregoing, it is imperative to pay close attention to health problems like malaria that grossly affect the morbidity and mortality rates, as well as the economy of a developing country, such as Nigeria. By current projections, Nigeria has a population of over 200 million and the 2019/2020 Nigerian living standards survey released by the National Bureau of Statistics (NBS), shows that 82.9 million (40.1 per cent) Nigerians are poor.Disaggregating this data further unveils how poverty has burrowedinto the space where

most Nigerians live – the rural area. While the national poverty headcount rate is 40.1 per cent, the rural has 52.1 per cent as against the urban area's18.04 per centheadcount rate.Furthermore, the survey shows that there is a significant geographical inequality in poverty spread.More people are poor in the northern part of Nigeria compared to the southern part. Of these, the north-eastern part of the country returned more poverty indices. The southern part of the country mostly returned percentages of poor people below the national average while the southwest recorded the lowest number of poor people. These rural dwellers hardly have access to social amenities such as potable water and adequate healthcare, which are some of the markers for malaria.

Commenting on the prevalence of malaria in rural communities of Nigeria, Amuta, Houmsou, Wama, and Ameh (2014) argue that malaria infections in these areas are highly inevitable because most of them do not have access to good health care systems, just as there are no accessible roads to the health centres, which are in turn, poorly equipped and do not have the facilities for testing and adequate drugs for malaria treatment. To Amuta, Houmsou, Wama, and Ameh (2014), drug resistant malaria has become common and anti-malarial drugs are increasingly less effective in treatment as the plasmodium parasite develops resistance to the affordable drugs. This, therefore, poses a grave threat to clinical management and treatment of malaria. Azoma (2017) agrees with this, and added that because a lot of people cannot afford anti-malarial drugs, they tend to self-medicate and resort to local herbal medicines. Children are also predisposed to the ailment as they put on little clothing during the day and at night because of the hot and humid weather, thus exposing their bodies to mosquito bites. As a result of poverty in rural areas, mud houses, which are sometimes poorly constructed, are used by the dwellers and these houses are surrounded by bushes that serve as breeding grounds for mosquitoes. This is just as water is collected from streams and wells and stored in open clay

pots since there is no potablewater or proper water storage receptacles.Furthermore, the rural dwellers cannot afford to purchase bed nets.

This is really worrisome when viewed against the background of a study by Maduka (2018:32) which found that:

> Nigeria accounts for 56 per cent of malaria cases in the West African sub-region where microscopy detected malaria prevalence dropped from 42% in 2010 to 27.4% in 2015. However, great variations still exist among regions within the country. The 2015 malaria prevalence (among children 6 to 59 months) ranged from 37.1% in the northwest to 16.6% in the southwest with the highest prevalence of 63.6% in Kebbi (n=157) and lowest prevalence of 0% in Lagos (n=246). A zero prevalence in Lagos state, though noteworthy, does not necessarily indicate the absence of malaria parasites in the state but rather the absence of parasites in the 246 children aged 6 to 59 months sampled across the state.

In a similar vein, Abdulkadir et al. (2015) posit that malaria remains a major cause of under-five morbidity and mortality in Nigeria; and that prompt diagnosis is essential in its management. To them, therefore, malaria rapid diagnostic test (RDT), a non-technical, easy-to-perform test has the potential to meet this need. Also, Ilesanmi et al. (2017) observe that efforts to control malaria using insecticide treated bed nets seem not to be yielding the desired results, probably due tot h e wronguseo f orabuseofthenets,poor distribution strategies, lowrateofownershipandcoverage,poororlowuser compliance, high cost of the nets by middlemen, low economic status of people in the rural areas where malaria is endemic, low literacy levels and commitment to adherence to training received from previous malaria control programmes.

Expressing his fears on the lackadaisical attitude of the citizenry to the prevention and/or treatment of malaria in recent years, Platt (2002:5) avers that:

> the low priority assigned to malaria would be at least easier to understand, though no less mistaken, if the threat were static. Unfortunately, it is not. It is true that the geographic range of the disease has contracted substantially since the mid-20th

century, but over the past couple of decades, malaria has been gathering strength. Virtually all areas where the disease is endemic have seen drug-resistant strains of the parasites emerge, a development that is almost certainly boosting death rates.

2.1.6 Knowledge and Perception of Malaria Rapid Diagnostic Test amongNigerians

Malaria is a disease that has attained public health status in Nigeria because at least 50 per cent of the population have suffered at least one bout of malaria infection, while children aged five years and below record an average of 2-4 incidents of the disease every year(FMH, 2006). WHO (2016) reports that in 2015, Nigeria recorded 26 per cent out of the total global deaths caused by malaria. In spite of the alarming figures of malaria infections, Ndibuagu (2018) observes that people usually start treatment of suspected cases of the disease without prior laboratory confirmation of the diagnosis. According to Amexo, Tolhurst, Barnish and Bates (2004:11), the presumptive approach to management of suspected malaria cases is one of the reasons for over, and irrational use of anti-malaria drugs, which has further resulted in the development of resistance to many of the drugs inuse.

In a bid to correct the above anomaly, the WHO, in its 2010 Treatment Guidelines, states that parasitological diagnosis of malaria should be done prior to commencement of treatment, except in rare situations, particularly where it is not possible. WHO (2011) notes thatNigeria actually keyed into its recommendation and even took steps towards its implementation by inserting it in the country's *National Guidelines for Diagnosis and Treatment of Malaria* (2011) and is actually making efforts towards ensuring that this practice is adopted in all its health facilities.

The Federal Ministry of Health (2011) notes that in spite some research findings showing that RDT kits are not only as reliable as microscopy in doing a diagnosis of malaria, but also cost-effective, Nigeria and most other endemic countries are still low in the use of the device for

testing of malaria before commencing treatment. Against this backdrop, there is a compelling need for all healthcare givers, particularly those in the rural areas, involved in caring for patients with fever and other malaria-related symptoms, to possess proper knowledge and the right perception of RDT kits, in order to adopt the practice of conducting parasitological testing of all fever cases before prescribing anti-malariamedication.

2.1.7 The Role of RDT Kits in Malaria Diagnosis and Treatment in Rural Communities

According to the WHO (2010), Rapid Diagnostic Test (RDT) kits assist in the diagnosis of malaria by providing proof of the presence of malaria parasites in human blood. RDT kits are an alternative to clinical or microscopy-based diagnosis, particularly where good quality microscopy services are not available and cannot be readilyprovided.

As studies by WHO (2013) and Amexo, Tolhurst, Barnish, and Bates (2014) have shown, an indispensable component of malaria control and elimination strategies is prompt, accurate diagnosis and treatment of patients (preferably within the first two days of the onset of illness) with an effective medicine. According to them, this diagnosis must be confirmed by one of a laboratory test: either a blood film for microscopy or a rapid diagnostic test with a view to distinguishing non-malaria fevers from those that are malaria-related. WHO (2013) identifies other reasons parasitological diagnosis of malaria using RDT kits is essential in our rural communities to include:

i. It improves care of parasite-positive patients because of confirmation ofinfection.
ii. It identifies parasite-negative patients in whom another diagnosis must be sought and treatedaccordingly.
iii. It helps in the avoidance of antimalarial medicine use in parasite-negative patients,

which reduces side effects, drug interactions and selection pressure for drug resistance, potentially resulting to financialsavings.

iv. It enhances better public trust in the efficacy of *artemisinin* combination therapy (ACT), when it is used only to treat confirmed malariacases.

v. It leads to better public trust in diagnosis and treatment of non-malaria causes of febrile illness.

In view of the massive introduction of expensive antimalarial medications and the increasing trends of malaria in many endemic countries, WHO (2010:34) suggests that, "guidance is therefore required to ensure the selection of rapid diagnostic test kits for malaria that meet quality standards."

2.1.8 The Role of Participatory Communication in Addressing Health Challenges in Rural Communities

Participatory communication places emphasis on the involvement of the individuals in any community in articulating their problems and communicating same to the appropriate quarters rather than the other way round. According to Cohen (1996:223), participatory communication is a process that is also a measure of how much responsibility individuals in a developing community are taking for themselves with regards to taking control of their ownlives and the environment in a self-reliant effort. To Tri (1986) and Rahim (1994), participatory communication is an important aspect of communication for development that is very crucial to development efforts as it encourages the acceptance and adaptation of innovations that eventually lead to development. According to Thomas (1994:49), participatory communication has brought back the praxis that has emerged from the developing rural community as a mirror of their aspirations and needs, rather than one which has been imposed on them by others. In other words, participatory communication allows

people to become the subjects of their own development and not simply the objects of either technology or processes. To Parker and Becker-Benton (2016), participatory communication provides an alternative to persuasive health communication approaches, particularly in health and social change, that seek efficient information delivery of health knowledge grounded in biomedical constructs and rationale that aligns with theories that integrate cultural perspectives and values into health communication as well as theories that emphasise participation, critical consciousness, and social mobilisation.

In a nutshell, participatory communication provides a systematic and replicable approach that informs the development and implementation of health programmes through critical engagement with the target audience. It is normally employed at the introductory stage of health innovations or programmes and informs both initial communication designs and subsequent implementation of the programmes. A particular value of participatory communication is that it is cost and time-efficient, with results being relevant to immediate communities as well as communication programmes that are carried out at scale.

2.2 Review of EmpiricalStudies

A study by Ndibuagu (2018) was motivated by the fact that malaria infections have attained public heath importance globally, necessitating the confirmation of the disease by conducting parasite-based blood test before commencement of treatment in Nigeria and also that presumptive method to the management of suspected malaria cases has led to over and illogical use of anti-malaria drugs, which further results in the development of resistance to most of the medicines in use. The cross-sectional study employed the survey research design with questionnaire as instrument for data collection. Findings from the reviewed study show that the mean overall percentage score recorded on both knowledge and perception of malaria

rapid tests were above 60 per cent, indicating a favourable disposition of medical doctors in the hospital towards the implementation of the WHO/Federal Government of Nigeria policy of diagnosis of malaria before commencement of treatment, particularly if the enabling environment for this is put in place by the management of the hospital.

Further findings reveal that while respondents from the Internal Medicine Department had the lowest positive perception score, those in the Paediatrics Department recorded scores that were lower than the mean overall score. Based on these findings, the study concludes that being properly informed on the pattern of knowledge and perception of malaria diagnostic test, among different specialities of medical doctors in a particular hospital, were key to improving the practice of ascertaining the presence of malaria by conducting a parasite-based blood test prior to commencement of treatment. Based on the findings and the conclusion, the reviewed study recommends, among other things, that greater efforts and resources should be committed towards creating awareness and training doctors involved in fever case management on RDT kits. This is premised on the fact that it will enhance their competence in treating malaria infection, by encouraging them to imbibe the practice of confirming the diagnosis of malaria prior to beginning treatment.

The reviewed study is similar to the current one in many respects. First, both studies evaluate the level of knowledge about RDT kits among healthcare givers. Secondly, the two studies are evaluative studies, which seek to establish the level of perception of RDT kits of an identified group, healthcare givers. In terms of study design and instrument of data collection, the current study employed the survey design like the reviewed on. Again, the current study will also use the questionnaire as the instrument to elicit the necessary data from the respondents. In terms of geographical location, the two studies centres on Nigeria.

In spite of these similarities, the two studies differ in terms of location and study population. Regarding location, while the reviewed study was conducted in Southeast Nigeria, precisely Enugu State, the current one centres on Nasarawa State, North-central Nigeria. In terms of study population, the reviewed study had medical doctors of different specialisations in a state teaching hospital, but the current one concentrates on primary healthcare givers and takers in selected rural communities in Nasarawa state. This study looked at the rural communities where the scourge of malaria is rampant, the rural communities who do not have medical doctors in their healthcare centres but other health personnel.

An earlier study by Ilesanmi et al. (2017) was driven by the realisation that the development of sound diagnostic test remains an important component of malaria management, prevention and control in Africa. The main objective of the study was to undertake comparative assessment of sensitivity, specificity and efficiency of three popular brands of RDT kits available in the Nigerian market alongside traditional microscopy. To achieve this, 525 samples of patients that presented with acute uncomplicated malaria through clinical diagnosis were evaluated with the various tests.

The researchers of the reviewed study adopted the experimental research design in which 525 participants were recruited and diagnosed for acute uncomplicated malaria during consultation when samples of patients were obtained for RDT and Giemsa-stained microscopic slides from Mount Zion, Fajimi Memorial, Mosolape, Olufunmilayo and Olushola Hospitals, all situated in Ojoo area of Ibadan, Nigeria. Findings from the reviewed study indicate that out of the 525 samples collected and tested, Giemsa microscopy found 300 (57.1%) to be positive. There was a positivity rate of 49.5% for SD Bioline while the

positivity rate for Acon was significantly lower (38.1%) and Paracheck (28.6%). Further findings indicate that the sensitivity, specificity and efficiency of the three RDT kits were: SD Bioline (86.3%, 99.6%, 92%), Paracheck (50%, 97.7%, 70.4%), and Acon (66.7%, 100%, 80.9%), respectively. Findings also show that children aged 6-12 years had the highest mean malaria parasite densities. Significantly, the findings also reveal that the dominant malaria species was *Plasmodium falciparum* with 280 (93.3%) cases. Co-infections of *P. falciparum/vivax*(15; 5.0%) and *P. falciparum/malariae*(5; 1.7%) were detected and confirmed with microscopy. Haematocrit values correlated inversely with parasite density ($r = -0.744$; $p<0.01$). This means that there are different types of RDT kits with different sensitivity and efficiencies in the Nigerianmarket.

Based on the above findings, the study concludes that microscopy is still the reference point for malaria diagnosis inhigh prevalence areas where resources are limited. On the strength of the findings and the conclusion reached, the reviewed study recommends, among other things, that there is need for close and regular monitoring of the quality of RDT products as part of the distribution process to end users acrossNigeria.

As a point of fact, the reviewed study is similar to the current one in two respects. First, both the reviewed study and the current one are concerned with sound diagnostic test as an important component of malaria management, prevention and control. Secondly, the current study will be carried out in one of the states in Nigeria, just like the reviewed one. However, the two studies differ in terms of the research designs employed, location and focus. In terms of the research design, while the reviewed study adopted the experimental research design, the current study employed survey research design. As regards location, while the reviewed study was conducted in Ibadan, the capital of Oyo State in South Western Nigeria, the current one

focuses on Nasarawa State, North Central Nigeria. Also, while the reviewed study focused on assessing the sensitivity, specificity and efficiency of three popular brands of RDT kits available in the Nigerian market and comparing them with traditional microscopy, the current study assesses the level of knowledge and perception of RDT kits in rural communities.

The conclusions and recommendation of the reviewed study are not only apt but also relevant to the current study. The study concludes that microscopy is the reference standard for malaria diagnosis in limited resource settings in endemic areas. It maintains that, as part of the distribution process to end users across Nigeria, there is need for regular monitoring of quality of RDTs.

The goal of the National Malaria Strategic Plan (2014-2020), which is "to reduce malaria burden to pre-elimination levels and bring malaria-related mortality to zero" using strategies under seven strategic objectives, provides a motivation for this study. The objectives of a study by Maduka (2018) were to assess the current strategies in place to control and eliminate malaria; to determine some future novelties available to sub-Saharan Africa, particularly Nigeria; and to find out how to "End Malaria for Good". The researcher of the reviewed work employed survey research design to conduct thestudy.

Findings in the study reveal that malaria is currently endemic in 91 countries and territories in sub-Saharan Africa, with Nigeria accounting for more than half (56%) of the cases in the West African sub-region. Significantly, findings show that the existing strategies in place to control malaria include:

a) To ensure that all persons with suspected malaria who seek care are tested with RDT or microscopy beforetreatment;

b) To ensure that all persons with confirmed malaria seen in private and public health facilities receive prompt treatment with an effective anti-malarial drug;and

c) To ensure the timely availability of appropriate anti-malarial medicines and commodities required for prevention, diagnosis and treatment of malaria in Nigeria by2018.

As for the future novelties available in Nigeria, the reviewed study found that employment of information and communication technologies for implementing web and mobile-based technologies for vector and parasite surveillance, geo-mapping and statistical modelling will also play a key role in the war against malaria. Findings also indicate that technologies that help improve the uptake and use of Long-Lasting Insecticidal Nets (LLINs) through phone and social media reminders and support systems were being piloted.

Furthermore, the researcher submitted that research and development for new chemicals that halt insecticide resistance in its tracks and more effective drug treatments were on-going. Stakeholders in *phytomedicine* need to be on the cutting edge of new formulations that can be viable replacements for ACTs. These novelties, the reviewed study notes, will provide a big fillip to efforts geared towards eliminating malaria. On how to end malaria for good, the reviewed study observes that the agreed targets for malaria eradication could be achieved if examined in line with the principles in the Sustainable Development Goals (SDG) agenda.

It is pertinent to also note that the reviewed study shares some similarities with the current one. First, both studies evaluate the strategies for reducing malaria to near zero. Secondly, both studies employ the same research design survey. Finally, both studies are conducted in Nigeria. The major difference between the two studies is the fact that while the reviewed

study was concerned with how to eliminate malaria for good, the current one assesses the level of knowledge and perception of RDT kits, one of the steps towards treatment of identified cases of malaria in specified rural communities of Nasarawa State. The relevance of the reviewed study to the current one is its finding that the employment of information and communication technologies for vector and parasite surveillance, geo-mapping and statistical modelling will play a key role in the war againstmalaria.

A study conducted by Owoeye, Akinyemi, and Yusuf (2018) examined changes in malaria prevalence amongst under-five children between 2003 and 2013. This study was a retrospective analysis of the 2003 and 2013 Nigeria Demographic Health Survey (NDHS) data. Occurrence of fever was used as a proxy for malaria. Percentage changes in both outcome and explanatory variables between 2003 and 2013 were estimated. A multivariate decomposition technique was used to partition changes in malaria prevalence into two components: contribution of changes in determinants and changes in the effect of determinants.

Findings in the study showed that a total of 5,204 and 28,634 records of children under-five were available in 2003 and 2013, respectively and that malaria prevalence dropped from 31.8 per cent to 13.1 per cent ($p<0.001$) within the period, after the use of Insecticide Treated Nets (ITNs). Changes in determinants contributed 4.7 per cent and changes in the effect of determinants contributed 95.3 per cent to the change in malaria prevalence. Based on the findings, the study concludes that ownership of ITNs and their utilisation is a practical, highly effective, and cost-effective intervention against malaria as they were the most contributing factors to the decline in malaria prevalence. Arising from the findings and the conclusion

reached, the study recommends that there should be continuous efforts in promoting ITNs and their consistent and appropriateuse.

The reviewed study is similar to the current one in that both studies are concerned about the prevalence of malaria that has become a global health challenge. However, the reviewed study differs from the current one in many respects. First, while the reviewed study was conducted to decompose changes in malaria prevalence amongst under-five children between 2003 and 2013, the current study assesses the knowledge and perception of RDT kits for the diagnosis and treatment of malaria. Secondly, while the reviewed study focused on ITNs, as an effective intervention against malaria, the present study concentrates on RDT kits.

The study is also relevant to the current one by its recommendation that efforts should be made to promote intervention products such as Insecticide Treated Nets (ITNs) and RDT kits and their constant and appropriate utilisation in the fight againstmalaria.

In a study on the high incidence of malaria infections, Dawaki (2016) was concerned about the high number of deaths attributed to the disease, particularly in sub-Saharan Africa, where an estimated 90 per cent of all malaria deaths occur. The objectives of the study included amongst others, identification and implementation of effective control measures, and planning for the participation of the targeted communities in the control, which is one of the critical tools for the success and sustainability of disease control programmes. The study, which was carried out in Kano State, Nigeria, was therefore designed to find out the prevalence and risk factors of malaria and to evaluate the people's knowledge, attitude and perception (KAP) regarding the disease.

To achieve the study objective, the researcher employed a cross-sectional, community-based approach among inhabitants between the ages of 1-90 in five rural communities. Primary healthcare personnel and community leaders were some of the stakeholders used in the study. Furthermore, there were talks withtheheadsofhouseholdstoexplainthe rationale and significance of thestudy.

Findings from the reviewed study showed that even though previous studies hadrecorded a high prevalence of malaria throughout Nigeria, research on knowledge, attitudes, and practices (KAP) of people towards malaria in most parts of thefederation, particularly in Northern Nigeria, including Kano State, was low. The findings further revealed that Nigeria's fight against malaria is still far from being won as a high rate of the disease was reported among rural populations in Kano State; also, that although levels of knowledge and attitudes regarding malaria transmission, symptoms and prevention among respondents was good, these did not amount to improved preventive practices. In addition, the study found that in spite the number of owners of Insecticide Treated Nets (ITNs), which was quite high, the level of usage was still below the national target.

Following the findings, the study concluded that to identify and implement effective control measures, and plan for the participation of the targeted communities in the control, which is one of the cardinal tools for the success and sustainability of disease control programmes, there is a compelling need to effectively engage the people through participatory communication to be part of the prevention methods. It, therefore, recommended that innovative and integrated control measuresshould be identified and adopted tosignificantly reduce malaria prevalence in these communities; that more approaches, including community mobilisation and more targeted health education on the importance of using ITNs to control

malaria and save lives are required to increase use and improve current levels of ownership; and that long-term interventions, such as providing job opportunities and improving the level of education to reduce poverty and improve the quality of life of these vulnerable communities should also be considered in order to achieve a breakthrough in the battle against malaria inNigeria.

The reviewed study is similar to the present one in many respects. First, they both employed similar instruments, namely, questionnaire and focus group discussions. Secondly, both studies evaluate malaria prevalence, treatment and prevention strategies. Thirdly, both studies employ the same research designsurvey.

In spite the similarities, the reviewed study differs from the current one in terms of the study area, study time and instruments deployed. By study area, while the reviewed study was conducted in Kano State, the current one is conducted in Nasarawa State. By study time, the current study was conducted in 2013, while the current one is in 2020. Also, the current study used in-depth interview as one of the instruments for data collection, while the reviewed study did not. The finding by the reviewed study on high prevalence rate of malaria disease is relevant to the current one because appropriate strategies have to be adopted to reduce the prevalence level; and since human beings are involved, communication, particularly participatory communication, becomesimperative.

In their study, Yelwa and Diyoke (2014) examined the incidence of malaria on human capital development and its burden on economic growth. The objective of the study was to find the degree to which the prevalence of the disease impacts epidemiological health factors, that is, morbidity and mortality level on human capital. To arrive at the study objective, the researchers carried out estimates of life expectancy, out-of-pocket health expenditure, income

per capita, malaria prevalence (proportion of population at risk), direct government expenditures on malaria control and prevention, and labour supply, using data for the period1986-2011.

The findings of the study include that the disease already impacts severely on private income, especially among low-income earners as seen in their private out-of-pocket health expenditure and in turn, the economic growth in Nigeria through decline in the quality of human capital. Based on the findings, the study pointed out that malaria has serious economic and social effects as it perpetuates poverty and is both a root cause and consequence of poverty, burdening endemic countries and contributing to the cycle of poverty; and that there is an increasing trend of malaria infection and mortality rate in Nigeria.

The study,therefore, recommended that government should formulate policies that will close the unproductive income gap between the rich and the poor. It also recommended improvement in access to medical facilities and other means of income support targeted at the lower group in the society. Furthermore, that life expectancy, that is, income development of human capital and quality of labour supply, should attract due attention from the government through the right policies and programmes.

The reviewed study and the present one are similar as they are both on the subject of malaria. The two studies are dissimilar in terms of the design, study area and objectives. For design, while the reviewed study employed a 2-Stage Least Squares (2SLS) estimator procedure, the survey method is employed in the current study. By study area, the reviewed study covered the whole Nigeria, while the current study is delimited to Nasarawa State. The objective of the reviewed study, which was to assess the incidence of malaria on human capital development and its burden on the growth of the economy, is markedly different from that of the current

study, which is to assess prevalence level of malaria and evaluate public knowledge and perception of malaria Rapid Diagnosis Test (RDT) kits in select communities of Nasarawa State. The finding of the reviewed study that malaria impacts negatively on the economy of the people is not only apt, but also relevant to the current study, which aims at establishing that malaria is a development issue, impacting negatively on the productivity and economy of those affected byit.

In a study conducted on Knowledge, Attitude and Practices (KAP) on malaria among the rural communities in Aliero, Kebbi State, Nigeria, Singh et al. (2014) observed that malaria is distinct from other diseases as it is deeply rooted in human communities; and that beliefs and practices concerning the disease are often associated with culture and can impact the effectiveness of control strategies. This, they maintained, was why local knowledge and practice related to malaria was important for the implementation of culturally appropriate, sustainable, and effective interventions, and that the failure to consider communities' knowledge, attitude, and practice (KAP) about malaria is partly responsible for the failure of programmes to achieve sustainable control.

The objective of the reviewed study was to understand families' perceptions, beliefs, and attitudes about causes of malaria, identification of symptoms, treatment and prevention and how they are often overlooked in malaria control efforts; and how these issues can be relevant in developing strategies aimed at managing the disease. To achieve the study objective, the researchers used a community-based cross-sectional study wherein copies of questionnaire were administered and heads of households wereinterviewed.

Findings from the study showed that KAP of malaria and its control were low among the study population and that even though majority of them had heard about the disease, there

were still knowledge gaps and misconceptions about its mode of transmission. The study also revealed that the respondents well-informed of the signs and symptoms of the disease as well as environmental preventive measures but were however very poor in deployment of this knowledge for the preventive measures. While majority of respondents advocated use of hospital for malaria treatment, in practice, majority of them attested to use of home treatment due to inability to afford hospital treatment, just as the information aboutthe right way of administering antimalarial medications was alsolimited.

The study thus recommended, amongst others, that malaria control policies should take into cognisance the place of home treatment in the management of malaria and provide trainings for the proper and adequate use of antimalarial medications. Also, malaria care can be improved by sensitising local shopkeepers on the symptoms, appropriate treatment, and dosages of antimalarial medications as such interventions have been shown to change malaria treatment seeking behaviour in other malaria endemic areas. It further recommended that because a significant population in the study area received initial treatment for suspected malaria from local shops with uncertain knowledge and capacity for curative treatment, government should ensure that shopkeepers are educated and understand the right drug regimen for treating any malaria infection as this could help protect against the development of drug resistance by limiting overuse and under dosing. The study also recommended that culturally sensitive messages on the disease and capitalisation on the positive beliefs and behaviour in the communities should be used to increase the knowledge about malaria transmission and benefits of using available effective preventive and control measures by individual households and the community in order to contribute to the overall reduction of the diseaseburden.

The relevance of the reviewed study to the current one lies in its recommendation of the use of culturally sensitive messages about the disease and capitalisation on the positive beliefs and behaviour in the communities in sensitising the people about the disease. The reviewed study and the current one are also similar in some respects. First, both studies employed the use of the same instrument for data collection, which is the questionnaire. Secondly, both studies have the same objective of assessing the knowledge and perception of the people of the study area on the subject matter. However, the two studies differ in study area and time of research. While the reviewed study was carried out in Aliero, Kebbi State in 2014, the current study is carried out in 2020, in selected communities of Keffi, Akwanga and Lafia Local Government Areas of Nasarawa State.

A similar study by Oladimeji et al. (2019) expressed concern that malaria is still prevalent in Nigeria, where the disease affects children under the age of five and pregnant women disproportionately, compared to the rest of the population groups, pointing out that in pregnant women, the parasitic disease increases the risk of maternal anaemia, spontaneous abortions, stillbirths, premature deliveries, intra-uterine growth retardation and low birth weight babies, all of which often lead to infant mortality. The objective of the study was to ascertain how informed pregnant women and non-pregnant mothers of under five children seeking health care at one of the main secondary maternity hospitals in Ibadan, Nigeria, were about malaria prevention and management. The study considered the fact that children aged under-5 and pregnant women are the most vulnerable to the disease and that only few studies have assessed knowledge on malaria prevention among mothers in hospital-based settings. The study, therefore, sought to plug this loophole and provide new insights on the depth of the knowledgegaps.

To achieve the objective, the researchers adopted the use of a cross-sectional study design, while the recruitment site was the Adeoyo Maternity Hospital located in Ibadan North East, Oyo State, Nigeria. Findings of the study brought to the fore impediments to effective malaria control despite the high level of awareness of malaria as an illness as well as the knowledge gaps on breeding sites for the vectors that transmit malaria, symptoms of malaria and prevention measures. It also found that there were misconceptions about the causes of malaria; that the level of knowledge about malaria was associated with socio-demographic factors, such as, marital status, education and clinical factors like gravidity and HIV status of the mothers. Good knowledge of malaria was also linked with higher level of educational status of the women; that pregnant women and mothers of children under 5 years had knowledge of malaria, but still didn't have good enough knowledge of the disease and a lot of mothers know some vital symptoms of malaria such as, fever, cold and headache.

The study concluded that pregnant women and mothers of children under 5 years were aware of malaria, but still lacked comprehensive knowledge about the disease. The study recommended that to eradicate misconceptions about malaria, education should be intensified among mothers who are either pregnant and or caring for young ones who are more susceptible to the disease; government policies should be targeted towards improving citizens' educational statuses so asto reduce the burden of the disease in the country, particularly among the most vulnerable population; mothers should be sensitisedon the importance of better health-seeking behaviour and awareness about their health status; and that Nigeria's malaria strategic plan should ensurethat the knowledge dearth on prevention and treatment of the disease is addressed, as such, insight will aid policy makers to implement continuous strategic intervention policies, including health awareness and educational programmes, to attain the 2030 malaria goals.

The reviewed study and the current one share some similarities. First, they are both on the subject of malaria. Secondly, both studies evaluate the prevalence, treatment and prevention strategies of malaria. Thirdly, both studies employ the same research design survey. In spite of the similarities, the reviewed study differs from the current one in terms of the research design employed. By study area, while the reviewed study was conducted in Ibadan, Oyo State, the current one is in Nasarawa State. By study time, the reviewed study was conducted in 2019, while the current one was done in 2020. Also, the current study used in-depth interview as one of the instruments for data collection, while the reviewed study did not. The finding by the reviewed study that there was high prevalence ate of malaria disease is relevant to the current one because appropriate strategies have to be adopted to reduce the prevalence level, including sensitisation by means of participatory communication.

In their study on malaria knowledge and treatment practices in Enugu State, Nigeria, Uzochukwu et al. (2018) observed that malaria is responsible for at least 60 per cent of outpatient hospital visits in Nigeria; that unavailability and inaccessibility of healthcare facilities, especially in rural areas in Nigeria, were limiting the provision of suitable and effective malaria treatment services and that malaria also had a deteriorating effect on the economy as an estimated ₦132billion ($700million) is lost due to treatment costs, prevention and other indirect costs.

The broad objective of the study was to assess the knowledge of malaria and its treatment practices in Enugu State. To achieve the objective, qualitative data was collected through the use of focus group discussions (FGDs) from six villages: three each from urban and rural areas of Enugu State, Nigeria. A total of 18 FGDs involving 189 participants were conducted and data on place of treatment for malaria and drug of choice for malaria treatment were

collected.

Findings of the reviewed study indicated that although a lot of the respondents had good knowledge of signs and symptoms of malaria, they usually did not show up early for treatment. Further findings showed that the patients preferred patent medicine dealers and pharmacies for treatment of the disease. More significantly, findings showed that treatment of the disease, in most cases, was without proper diagnosis. Based on these findings, the reviewed study concluded that improving the knowledge of the public on the need for malaria diagnosis before treatment and that use of artemisinin-based combination therapy will improve the control of malaria. Arising from this conclusion, the study recommended, among others, that the populace should be sensitised to seek treatment early while also discouraging the use of herbal drugs for treatment of malaria.

The reviewed study is similar to the current one in terms of focus, instruments, objective and research design. In terms of focus, the two studies have malaria prevention and treatment as their main motivation. In terms of objective, both studies assessed the knowledge of malaria and its treatment practices. The two studies also deployed the same research instrument, Focus Group Discussion (FGD). By research design, both studies employed survey as the method for data collection.

In spite all these similarities, the two studies differ in some respects. First, while the reviewed study was conducted in Enugu State, the current one is conducted in Nasarawa State. Secondly, while the reviewed study aimed at assessing malaria knowledge and treatment practices, the present study was designed to assess knowledge of rapid diagnostic test (RDT) kits for rapid diagnosis and treatment of the disease. Also, the recommendation by the reviewed study that the populace need to be sensitised to seek early treatment of the disease is

not only apt but also relevant to the current study.

A study conducted by Mokuolo et al. (2018) on provider and patient percept rapid diagnostic test (RDT) use in Nigeria established that RDT kits have be useful in the diagnosis of malaria and that their use has reduced indiscriminate of malarial medicines and facilitated early diagnosis of other non-malarial reducing cost of treatment, morbidity and mortality. The objective of the ascertain the perception of health care providers and patients to RDT use at the care level in Nigeria with their implications for improving up take and complia

To achieve the study objective, the researchers used a cross-sectional multi sampling survey with questionnaire, interviews and Focus Group Discussions instruments for data collection.

Findings of the reviewed study indicated that health care providers were con resultsoftestsconductedwithRDTkitsbecauseoftheaccuracylevel,whichwasestim cent, and its reduction in indiscriminate use of artemisinin-based combination Based on its findings, the study concluded that there was positive perceptio RDT for malaria diagnosis among health care providers and community impressive compliance rate among the primary health care workers. The resea among others, that the positive perception to the use of RDT should be explore the current low level of malaria testing in the country through strengthening systems and other operational constraints.

The reviewed study and the current one are similar in terms of the subject, th instruments of data collection as well as the research design employed and find

the current study, the reviewed study focused on malaria prevalence; while both studies aim at ascertaining the perception of health care providers and patients to the RDT kits. Secondly, both studies also made use of the same instruments, questionnaire, interviews and focus group discussions as well as the same research design and survey for data collection. The findings of the reviewed research about positive perception of health care workers and patients to the RDTs were consistent with those of the currentstudy.

However, the reviewed study and the present one are different in terms of the study area. While the current study is limited to Nasarawa State, the reviewed study covered the whole country.

Also, the conclusion of the reviewed study that the positive perception to the RDT should be explored for massive testing and treatment of malaria disease is in line with the current research.

In their study on over-diagnosis and overtreatment of malaria in children that presented with fever in Lagos, Oladosu and Oyibo (2012) were concerned with the likely implication of over-diagnosis of malaria when the diagnosis is done solely on the basis of associated symptoms, leading to presumptive treatment. The objective of the study was therefore to show proof that malaria is usually over-diagnosed and over-treated when the diagnosis is done clinically; using symptoms presented by the patients, in this case, children that presented with fever in Lagos State, and presumptively managed.

To achieve the research objective, the researchers carried out a descriptive study among children less than 12 years old that presented with history of fever. Malaria microscopy test was carried out on children who had been presumptively diagnosed and antimalarial medicine prescribed, in line with Integrated Management of Childhood Illness (IMCI) guidelines.

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Findings of the reviewed study showed first that presumptively treating children who present with malaria-associated symptoms for the disease results in over-diagnosis. Secondly, the findings showed that other causes of febrile illnesses, such as, pneumonia and meningitis, are often missed at initial presentation at health facilities until a much later time when the child's condition deteriorates or does not improve. Thirdly, over-diagnosis of malaria contributes to increasing ill health, death, loss of productivity, and a vicious cycle of deepening poverty in the most vulnerable sections of society. Fourthly, treating all childhood malaria-associated presentations on the basis of clinical suspicion as malaria meant that poor people were wasting valuable resources on malaria drugs and failing to be treated for other potentiallylife-threatening illnesses, just as the indiscriminate use of ACTs potentially increases the risk of resistance. Based on the findings, the reviewed study concluded that there is high prevalence rate of malaria over-diagnosis and overtreatment and that malaria medication should only be prescribed after parasitological confirmation of all suspected cases.

The reviewed study shares some similarities with the current one. First, both studies have the same focus which is on malaria diagnosis and treatment. Secondly, the two studies adopted descriptive method in arriving at the findings. Thirdly, both studies employed interview as one of the research instruments.

In spite the similarities, the present study differs from the reviewed one in terms of the stress area. While the reviewed study was concerned with over-diagnosis and overtreatment of malaria in children, the current study is more concerned with public knowledge, perception and use of RDT kits in the diagnosis of malaria prior to commencement of treatment. The reviewed study in addition to interviews also carried out parasitological tests to determine presence of malaria parasite in the study population; while the current study used only

interviews to elicit the necessary data from the respondents. The recommendation of the reviewed study that availability of quality-assured malaria RDT kits is a useful tool to confirm malaria cases, while the cause of the non-malaria fevers should be properlyinvestigated and treated appropriately, is in tandem with and relevant to the currentresearch.

In their research, Falade et al. (2016) were concerned with the unacceptable high toll malaria exerts on children in Africa, where 80 per cent of established cases and 90 per cent of deaths occur, particularly in Nigeria and that most cases of malaria in Africa are still diagnosed presumptively, leading to over-diagnosis of the disease because the symptoms and signs of malaria are largely nonspecific.

The objectives of the study were among others, to evaluate the performance of Histidine-rich protein II (HRP2)-based RDT carried out by community health workers in Nigeria, Burkina Faso and Uganda and determine the level of agreement between RDT readings by community health workers and experienced clinical research staff. To fulfil these objectives, the researchers employed experimental design and carried out tests on the study population using RDTs and microscopic diagnosis.

Findings from the reviewed study revealed that malaria parasitological diagnosis definitively defines malaria burden and changes in prevalence, targets treatment, supports characterisation of treatment response, and enables early identification, investigation and management of non-malaria febrile illnesses. Further findings showed that when performed by trained community health workers in Nigeria, RDTs are useful tools for the diagnosis and management of malaria at the point of care in the community.

The research therefore concluded that malaria RDTs are more practical at the point of care in

communities where community health workers (CHWs) can be trained on their use, as they do not require electricity or special equipment. Based on the findings and the conclusion reached, the reviewed study recommended amongst others that high-quality RDTs should be the preferred option for programmatic deployment by national malaria control programmes, especially in Nigeria, because of their simplicity and speed in yielding reliableresults.

The reviewed study and the current one share some similarities. First, both studies evaluate the efficacy of RDT kits in the diagnosis and treatment of malaria, especially in rural areas.

Secondly, both studies assess health workers knowledge, perception and use of RDT kits in the diagnosis and treatment of malaria.

The reviewed study is, however, different from the current one as it was carried out in three African countries, namely, Nigeria, Uganda and Burkina Faso; but the current one centres on rural communities in Nasarawa State, Nigeria. While the reviewed study was concerned with malaria in children, the current one is concerned with malaria infections among the study population, including children and adults. In terms of study design, while the reviewed study employed experimental design, the current one used survey. Also, the recommendation by the reviewed study that high-quality RDTs should be the preferred option for programmatic deployment by national malaria control programmes, especially in Nigeria because of their simplicity and speed in yielding reliable results, tallies with the present one.

A study conducted by Abdulkadir et al. (2015) expressed concern that malaria remains a major cause of under-five morbidity and mortality in Nigeria. The objective of the study was to ascertain the incidence of malaria and assess the diagnostic performance of malaria RDT kits in febrile under-five children presenting to a Tertiary Health Facility in Gusau, Zamfara

State, North-Western Nigeria. To achieve the study objective, the researchers employed experimental design and carried out tests on the study population using RDTs and microscopic diagnosis.

Findings from the reviewed study showed that there was high prevalence of malaria among children under-five in the study area. It found that majority of community treatment of malaria continues to be suboptimal and inappropriate with the use of non-recommended medicines for treatment, including in children. This was despite the publicised national guideline for its treatment, which included the use of RDT kits for diagnosis and the use of artemisinin-based combination therapy (ACT) for treatment.

Therefore, it was the conclusion of the reviewed study that the incidence of malaria is high among febrile under-five children in Zamfara State. Furthermore, it concluded that majority of the pre-hospital/community treatment of malaria is still suboptimal with the use of non-recommended anti-malarial drugs. Finally, that the overall sensitivity of RDT was low, but high in children with high *Plasmodium* parasite density.

Based on the findings and conclusions, the study recommended that RDT usage should be encouraged for screening and diagnosis using a protocol such that febrile children with positive RDT results are confirmed as having malaria; while those with negative results are further evaluated using microscopy. It further recommended that urgent, robust, and targeted efforts should be directed towards education on the national guidelines for the treatment of malaria and its implementation to ensure optimal treatment of the disease.

There are similarities and dissimilarities between the reviewed study and the current one. On similarities, first, they have the same interest: malaria. Secondly, both studies are interested in

the efficacy of RDT kits as a tool for malaria diagnosis and were both conducted in Nigeria. They are however dissimilar because while the reviewed study was carried out in Zamfara State, the current one is in Nasarawa State. Secondly, the reviewed study was concerned about malaria in children under the age of five; while the current one is concerned with malaria among the people of the study area. Nonetheless, the recommendation of the reviewed study that RDT kits should be used for screening and diagnosis of malaria before commencement of treatment is relevant to the currentstudy.

A study on sensitivity and specificity of malaria RDT compared with microscopy amongst under-five children, in Southern Nigeria by Ogunfowokan et al. (2020) observed that malaria is one of the leading causes of morbidity and mortality worldwide, especially in under 5-year-old children and pregnant women in sub-Saharan Africa, where over 80 per cent of cases and at least 90 per cent of malaria deaths occur. The study pointed out that the basic elements of malaria case control or management include early diagnosis and prompt treatment.

The objective of the study was therefore to determine the sensitivity and specificity of malaria RDT and factors that affect these parameters using microscopy as the gold standard, to calculate the positive and negative predictive values of malaria RDT in the study population. It was also to determine the association between parasite density and malaria RDT with the hypothesis malaria RDT has sensitivity and specificity similar to microscopy. To achieve the study objective, the researchers employed cross-sectional study design wherein a comparison of diagnostic accuracy of malaria using RDT kit and microscopy was conducted. Questionnaire was also used to collect data for the study.

Findings from the reviewed study showed a malaria prevalence level of 53 per cent using microscopy as a reference diagnostic test; while the species of malaria parasite identified in

all study participants was *P. falciparum.* Further findings showed that majority of the children who tested positive to malaria using microscopy, tested negative with the RDT kit and that the RDT kit may not yield correct result where the parasite density is low and likely to escape detection. The reviewed study, therefore, concluded that there was high disparity in sensitivity and specificity of malaria RDT compared with microscopy diagnosis and that there was a significant correlation between parasite count and parasite density.

Based on the findings and conclusions of the study, it recommended the production and availability of more sensitive RDT kits that can detect the malaria parasite even at low density for future use, especially to improve the sensitivity of the RDT kits in malaria management, where trained microscopists for malaria diagnosis are notavailable.

The reviewed study and the present one share some similarities. First, they are both focused on malaria prevalence and how the disease can be diagnosed for treatment. Secondly, both studies are conducted in states in Nigeria.

Despite the similarities, the reviewed study and the current one are dissimilar in some respects. Firstly, while the reviewed study was carried out in Delta State, South-South region of Nigeria, the current one is in Nasarawa State, North-Central region of Nigeria. Secondly, while the reviewed study was concerned about malaria in children, the current study is concerned about malaria in the entire population of the study area, including children. Thirdly, the reviewed study is a comparison of sensitivity and specificity of malaria RDT with microscopy, the current study assesses knowledge and perception of RDT kits.

One recommendation by the reviewed study is instructive. It is that more sensitive RDT kits should be made available for the diagnosis of malaria, especially in areas where there are no trained microscopists or microscopy facilities, is relevant to the current study. This is more so,

as it focuses on rural areas and primary health care centres, where RDT kits are mostly deployed for diagnosis of the disease.

In their study on the status of the use and compliance with malaria rapid diagnostic tests in formal private health facilities in Nigeria, Mokuolu et al. (2018) expressed concern about malaria being a major public health challenge with approximately.
3.2billionoftheworld'spopulationatrisk,of which over 1.2 billion people are at high risk. The study was aimed at establishing why despite concerted efforts, through global partnerships, to rally resources for the deployment of cost-effective tools towards a significant reduction in malaria morbidity and mortality rates, there was dearth of knowledge on the status of RDT use in the formal private health sector in Nigeria.

The objective of the study was, therefore, to identify practices related to the use of RDT in private health facilities. It was in the expectation that the findings will complete the loop of understanding needed to guide continued deployment and use of RDTs in the country. To achieve the study objective, the researchers employed the use of cross-sectional study to assess RDT use and its associated challenges in formal private health facilities in Nigeria. Three sets of tools were designed to address the study objectives: health facility records, interviews with health care workers and exit interview of febrilepatients.

Findings from the reviewed study revealed high level of testing before treatment of febrile patients in formal private hospitals in Nigeria. It also established low malaria prevalence rates compared to other studies and that testing with RDT kits was not as common as microscopy. Further findings showed that workers in private health facilities have a positive perception of the usefulness of RDT for malaria diagnosis and treatment.

Following the findings of the reviewed study, the researchers concluded that there was a high rate of malaria testing for febrile patients, high level of compliance with test results but relatively low level of RDT utilisation in formal private health facilities in Nigeria. Consequently, the reviewed study recommended the need for more concerted outreach to formal private health facilities in order to improve their uptake of RDTs, especially given the challenges on quality assurance with malaria microscopy, engagement of the formal private health sector. This was with a view to achieving universal coverage targets on malaria testing and the need for National Malaria Eradication Programme (NMEP) and Roll Back Malaria (RBM) partners to strengthen quality assurance in malaria diagnosis in the private sector by ensuring compliance with the provision of implementation guide for parasite-based diagnosis of malaria in Nigeria.

2.3 TheoreticalFramework

Two theories and a model, namely, Knowledge Gap Theory, Perception Theory, and Health Believe Model (HBM), provided the framework for this study. However, the study was anchored on the tenets of the Knowledge Gap Theory.

2.3.1 Knowledge GapTheory

Propounded by Tichenor, Donohue and Olien (1970), the knowledge gap theory holds that increased media output, instead of evening out differences between the information-rich and the information-poor, actually accentuates these differences since those at higher socio-economic levels acquire information much faster and much more easily than those at the lower levels (Anaeto, Onabajo, &Osifeso, 2008). The two principal concerns of the knowledge gap theory as identified by Tichenor, Donohue and Olien (1970) are: how knowledge is distributed in society; and how the media influences that distribution. According

to the theorists, "the basic assumption of the theory is that as media output grows in a given society, so will the knowledge gap between the privileged and underprivileged social groups contrary to what would be the normal expectation" (Anaeto, Onabajo & Osifeso, 2008:28). This is in some respects the converse of mainstreaming. The theorists therefore present the following five possible reasons for knowledge gap:

i. There is a difference in communication skills between those high and low insociety.
ii. There is a difference in the amount of stored information or previously acquired backgroundknowledge.
iii. People of high socioeconomic status might have more relevant socialcontact.
iv. The mechanisms of selective exposure, acceptance and retention might beoperating.
v. The nature of the mass media itself is geared towards persons of higher socioeconomic status (Tichenor, Donohue, &Olien, 1970:12).

However, Ojobor (2002:13) states that the theory assumes that there is a ceiling at which the gaps may even out, as the information-rich become satiated, while the information-poor continue to search till they catch up with the former; and that with a diversity of mass media, concentration on onein orderto strengthenone'sviews may notnecessarilybeof much use.This suggests that a plethora of media outlets should be employed in dissemination of health information to people in rural communities. Ojobor (2002) further describes the information-rich as those that have the means of modern mass communication and use it to good advantage but sees the information-poor as those in the lower socio-economic class whose education is poor and their resources are limited and consequently, they are not knowledgeable enough in the areas that might lift them intosuccess.

The knowledge gap theory has been criticised for being based on the traditional source-sending-message-to-receiver paradigm of communication. Severin and Tankard (2001), in particular, argue that though this paradigm has been pervasive in American communication research, it emphasises attainment of source goals and tries to manipulate receivers to that end. Dervin (1980) criticises the theory not only for ignoring the vast majority in the society who are information poor but also for hiding certain assumptions. Evatt (1998) agrees with Dervin's view but argues that researchers conducting knowledge-gap studies should be sure the information they are testing with surveys is useful and relevant for the audience being studied. The knowledge gap that exists between rural and urban communities could be due to the differences in the availability of facilities and resources that are at the disposal of the community. There are information differences between the urban and rural communities because of these resources. Consequently, people in the urban centres may be better informedon the use of RDT kits than those in the rural communities because of their encounter with the media, which is the major medium of communication. Most health-related information is churned through the media and people in the urban areas have an advantage over those in the rural areas in accessing the media. This already creates a knowledge gap for those in the rural areas.

2.3.2 PerceptionTheory

Perception theory was initiated by Berelson and Steiner in 1964. According to the theory, perception is the process by which individuals select, organise, and interpret inputs to create a meaningful picture of the world. Anaeto, Onabajo, and Osifeso (2008), however, note that perception theory is dramatically opposed to the misconceived assumption of the Magic Bullet Theory propounded by De Fleur and Ball-Rokeach in 1975, which holds that:

> for a persuasive message to be considered effective, it must succeed in altering the psychological functioning of the recipient(s) in such a way that he or she or they will respond overtly with models of behaviour desired or suggested by the communicator. (Anaeto, Onabajo, &Osifeso, 2008:23)

On its part, perception theory has four related selective ideas: selective exposure, selective attention, selective perception, and selective retention(Folarin, 1998).

According to Iwokwagh (2006), the basic premise of perception theory is that the attitudes, beliefs, culture, values, needs and motivations of audience members have a way of affecting their perceptions and responses to media messages. If the situation orients them, they choose to receive only messages that will be beneficial or helpful to them. In other words, they selectively expose, attend and restrict themselves to only information that will be useful to them. However, Folarin(1998) sees perception theory as the tendency for people to avail themselves to information in their interest that is consistent with their preposition. Baran(2004) concurs with the concept noting that it is the process by which people expose themselves to and retain only messages consistent with their pre-existing attitudes and beliefs.

On the other hand, Margo (1999) maintains that individuals prefer exposure, attention and retention to arguments supporting their position over those supporting other positions. As media consumers have more choices to expose themselves to selected media contents with which they agree, they tend to the select content that confirms their own ideas and avoid information that argues against their opinion. People do not want to be told that they are wrong; and they do not want their ideas to be challenged either. Therefore, they select different media contents that agree with their opinions so they do not come in contact with this form of dissonance. Furthermore, these people will select the media sources that agree with their opinions and attitudes on different subjects and then only follow those programmes.

Consequently, perception theory designates behaviour that is deliberately performed to attain and sustain perceptual control of particular stimulus events (Zillmann & Bryant, 1985).

Kotler and Keller (2009) explain that in marketing, especially advertising, perceptions are more important than the reality, because it is perception that affects the actual behaviour of consumers. They add that people's perception about any object or subject is dependent not only on the physical stimuli but also on the stimuli relationship to the surrounding field and conditions within such persons. This means that the public perception, exposure, attention and retention of information about RDT kits is based on the world view of the people; thus, the relevance of this theory to this study. The perception of the people is modelled by their cultural practices which is an accumulation of attitude over a period of time. If health information like the use of RDT is communicated to the people of a community but their basic perception is not in tune with the tenets of RDT, it will take a longer duration to convince the people to accept such information. It is against this backdrop that this theory is relevant to this study, as the perception of the people whom this study focuses on was reviewed.

2.3.3 The Health Belief Model(HBM)

Developed in the 1950s by a group of social scientists, this model attempts to explain and predict the health behaviour of people by concentrating on the attitudes and beliefs of individuals. The aim of the model is to explain the widespread failure of people to engage with preventative programmes (Rosenstock, Strecher, & Becker, 1994). The HBM consists of a range of components that help predict and shape health behaviour. The core focus of this model is that individuals will take action regarding any health issue if they:

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a) view themselves as being susceptible to the condition (perceivedsusceptibility);

b) believe that the condition has potentially serious consequences (perceivedseverity);

c) believe that something can be done in order to reduce either their susceptibility or the severity of the condition (perceived benefits);and

d) believe that the barriers to (or costs of) taking action are outweighed by the benefits (Porche, 2004:43).

The HBM is relevant to the present study because it predicts the action people are likely to take regarding health issues if they consider themselves as being susceptible to the health condition and if they believe in the equipment to be applied in remedying that health condition. Health communication is the central social process in the provision of health care delivery and the promotion of public health, thus the centrality of the process of communication is centred upon the critical role communication plays in creating, gathering and sharing health information. While communication is no doubt a powerful process in healthcare, the dynamics of communication in health contexts are also very complex, the communication channels used are numerous, and the influences of communication on health outcomes are powerful. Such inquiry is carried out to increase knowledge about the influences of communication on health outcomes and direct the knowledge gained towards helping participants in the modern health care systems use communication strategically to accomplish their health goals.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Preamble

This chapter outlines the methods that were employed in carrying out this study. Specifically, it deals with research design, population of the study, sample size, sampling techniques, instrument for data collection, administration of instruments, validity and reliability and method of data analysis.

3.1 Research Design

Research design refers to the plan, structure or strategy an investigator adopts to collect the necessary data for a scientific enquiry. Tejumaiye (2003) defines research design as a framework, roadmap or plan used in collecting and analysing data in a scientific study. This research therefore adopted the survey method in conducting thisstudy. The quantitative and qualitative approaches to researching were adopted for this study.

3.2 Population of the Study

The population of this study comprises the entire population of the study area, Nasarawa State, which by statistics from the National Population Commission, is 1,869,377. This figure forms the population of thisstudy.

3.3 SampleSize

The sample size for the study was statistically determined using Taro Yamane's formula for sample size determination, as well as, Bourley's formula for sample size allocation to determine the actual sample size for the study. From the application of Taro Yamane's formula, a sample size of 400 respondents was arrived at as shown below:

Where: **n**	=	Sample size
N	=	Population
1	=	Constant
E	=	Level of significance
	=	399.91
	=	400

Therefore, the theoretical sample size for this study is 400 respondents. However, the actual sample size for the study was calculated using sampling techniques and procedure including Bourley's formula for sample size allocation.

3.4 Sampling Techniques and Procedure

To draw a sample size from the study population, a multi-stage sampling procedure involving a combination of the cluster, purposive and judgmental techniques was used to provide a relatively equal opportunity for all respondents.

The multi-stage procedure was adopted because, as Askia (1997:47) states, "a researcher who may be interested in precision and thoroughness may find that none of the methods of probability or non-probability can alone, give the exact sample size required." Having found that the population of the study area is so complex that more than one sampling technique is required, the researcher resorted to sampling in stages.

Using the cluster sampling technique, the population was divided into 13 units of clusters, based on the local government areas in the study area. These clusters are: Akwanga, NasarawaEggon, Wamba, Awe, Doma, Keana, Lafia, Obi, Karu, Keffi, Kokona, Nasarawa and Toto.

Using the purposive sampling technique, the researcher selected three local government areas, one in each of the three senatorial districts. The selected three local governments are: Akwanga from Nasarawa North Senatorial district with a population of 111,902; Lafia from Nasarawa South Senatorial district with a population of 329,922; and Keffi from Nasarawa West Senatorial district with a population of 92,550. The selection of the three local government areas was based on their status as the headquarters of the three Senatorial districts in thestate.

Also, using the judgmental technique, Bourley's formula for sample size allocation was used to determine the number of respondents in each selected local government area.

Bourley's Formula for Sample Size Allocation

Where:

Nh	Sample size per stratum
N	Total sample size
N	Population of stratum

Total Sample size= 375 respondents

To select individual respondents for this study, the researcher visited three primary healthcare (PHC) facilities in each of the selected local government areas and conducted on-the-spot administration of the instruments on both patients and personnel of the health facility. This process was repeated until the sample size allocated to the selected local government area was completed.

3.5 Instruments for Data Collection

The research instruments used in this study were the questionnaire, focus group discussions

and in-depth interview.

3.5.1 The Questionnaire

The questionnaire which was designed to gather data for the study was structured in the close-ended format which required the respondents to choose the appropriate option from an array of alternatives. The questionnaire was used because it goes with survey research as it is descriptive. Moreover, Obasi (1999:45) describes the questionnaire as, "a data collection instrument whereby, respondents are given standardised or uniform questions to complete in written form." Thus, the questionnaire was seen as an appropriate instrument for thisstudy.

The instrument (questionnaire) was administered on healthcare givers on a face-to-face contact with them in the selected health facilities. The researcher allowed a time frame of about two hours to give the respondents enough time to carefully attend to the instrument and to avoid high level of misunderstanding.

3.5.2 Focus Group Discussions (FGD)

Three (3) focus group discussions were held one in each of the three (3) selected local government areas with seven (7) respondents comprising four females and three males per group in the Primary Healthcare Centres. The recruitment criteria for the discussants ensured that all respondents were adults who are resident in the area for at least six months. The respondents were identified with alphabets so as to adhere to the ethics of researching in keeping their identity out of the study.

3.5.3 In-depth Interview (IDI)

In-depth interviews were used to support the focus group discussions. The interview questions, which were carefully designed to help in generating data that was used to answer

the research questions, were administered on public health officers in the Health Departments of each of the three selected local government areas in their offices. Specifically, the interviews sought information on the core mandate of the health department, prevalence of malaria in the local council, their knowledge and perception of RDT kits, availability of RDT kits in health facilities in the council, deployment of RDT kits in testing for malaria parasites prior to commencement of treatment, and challenges confronting the use of RDT kits in the council.

3.6 Method of DataAnalysis

For the purpose of this study, the information gathered from the field wasanalysed using the framework of analysis which states that analysis should be done using responses that are in tandem with the aim of the research work and discarding other information not relevant to the aim of the topic under study. The Statistical Package for Social Sciences (SPSS) version 20 was used to represent data generated from the quantitative tool in percentages, frequencies and tables, from which presentations and analysis were made. The descriptive thematic method was applied to transcribe the qualitative data and back up findings from the qualitative data.

3.7 Validity andReliability

To validate the instruments that were used in this study, the researcher used content validity test, which Adler and Clark (2011) see as a test for validity that involves the judgment of experts in a field. The instruments were also validated by research experts and the supervisory team.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Preamble

This chapter presents the analysis of data gathered through questionnaire, focused-group discussionsand in-depth interviews. The study adopted a mixed method of data gathering and analysis, which is the quantitative and qualitative method of data collection. The quantitative data gathered through questionnaire was analysed using the statistical package for social sciences (SPSS) software, while the qualitative data was interpreted and used to support the data from the questionnaire. In order to achieve the objectives of this research, a sample of four hundred (400) copies of the questionnaire was administered to respondents in the three selected communities in the three Local Government Areas of Nasarawa State. A total of three hundred and seventy copies (370) of the questionnaire were retrieved and served as data for the study.

4.1 Presentation of Data

The questionnaire was divided into five sections, which sought information on the demographics of respondents, the prevalence level of malaria in the three selected local government areas in Nasarawa State, the level of public awareness of RDT kits in the selected communities of Nasarawa State, the usage of RDT kits in health facilities in the selected communities of Nasarawa State and public perception of RDT kits in the three communities in the selected LGAs of Nasarawa State. The findings of the research are furthered presented and analysed as follows:

SECTION A: Demographical Data of Respondents in three communities of three selected Local Government Areas of Nasarawa State.

Table 4.1: Demographic Data of Respondents.

Variable	Frequency	Percentage
Sex		
Male	200	54
Female	170	46
Age Range (Years)		
18-20	50	14
21-30	200	54
31-40	100	27
41-50	20	05
Educational Attainment		
Primary	120	32
Secondary	200	54
Tertiary	50	14
Occupation		
Teacher	100	27
Trader	200	54
Health Care Giver	70	19

Source: Field Survey, 2020

Table 4.1 contains information on the demographic characteristics of the respondents. The Table indicates that by sex, majority of the respondents were 54% male while a significant figure, 46%, was female. This implies that both sexes were actively involved in this study. By age bracket, the table shows that majority of the respondents were aged between 21-30 years (54%) and 31- 40 years (27%) this means that majority of the respondents were old enough to understand the issues at stake in this study. By educational qualification, the table shows that 14% of the respondents had tertiary education, 54%, a clear majority, had secondary education and 32% had primary education. This indicates that all the respondents were educated enough to appreciate the issues under study. In terms of occupation, the table shows that 54% of the respondents were traders, 27% were teachers and the remaining 19% were healthcare providers. This means that the respondents were either healthcare providers or receivers who had a stake in the subject of this study.

SECTION B: To examine the prevalence level of malaria in three selected Local Government Areas in Nasarawa State, namely, Akwanga, Lafia and Keffi.

Table 4.2: Duration of residence in the community

Option	Frequency	Percentage
1-6 Months	-	-
7-12 Months	20	05
13-18 Months	100	27
19 months and above	250	68
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.2 contains information on the length of time respondents have resided in their respective communities. It shows clearly that all the respondents have lived in their respective

communities for up to 12 months. This is because 68% representing a clear majority have been residing in their communities for at least 19 months and above, a significant number, representing 27% have lived in the communities for between 7 and12 months while the remaining number of respondents, representing 5% have been residing in their communities for at least seven months. This implies that the respondents have lived in their respective communities long enough to understand the nature of their environments with regards to the subject of this study. This was further corroborated by participants at the focused-group discussion who said that, "I have lived in Shabu community right from birth and I am now 30 years old" (Respondent A, FGD, 2020). Substantiating the above, a participant said, "I have lived in this community from birth with my family." (Respondent K, FGD, 2020). Furthermore, another participant said, "this is my origin, I was born here, grew here and I am married here" (Respondent H, FGD, 2020).

In a similar light, another participant said that, "this community is my ancestral home, and I have lived here for some decades now with little interaction with other communities" (Respondent B, FGD, 2020). Furthermore, a participant gave a historical track of his people and their arrival to their present community when he said that, "farm work brought my parents to Keffi Wambai and this is where I was born" (Respondent C, FGD, 2020). Furthermore, a participant was of the opinion that, "I was married into this community and I have lived here for more than ten years now" (Respondent O, FGD, 2020). It can, therefore, be deduced from the above data that most of the participants of the study have lived in their respective communities for upwards of 19 months.

Table 4.3: Number of times respondents have suffered malaria infections within the duration of their residence in a community

Variables	Frequency	Percentages
Once	-	-
More than twice	370	100
Not more than four times	-	-
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.3 indicates that all the respondents (100%) have suffered at least two incidents of malaria infection within the time of their residence in their respective communities. Corroborating the data, a participant from the focused-group discussion said that, "malaria fever is an illness that affects every household in my community. In fact, there is never a day that goes by without us having one or more cases of malaria in my community." (Respondent G, FGD, 2020). Citing reasons as to the prevalence of malaria, a participant stated that, "our environment is where the issue lies, malaria lives, eats and breathes with us, as it is one of the highest health-related issues presented in our primary healthcare centre (Respondent E, FGD, 2020). Substantiating the above with specific data, Respondent L (FGD, 2020) said that,

> Yes, everyday, people visit the primary healthcare centre because of malaria-related issues. Every pregnant woman who visits the healthcare centre for antenatal is usually screened for malaria and this is because it is a common illness in this area.

Furthermore, a participant said that, "there are cases of malaria in my community and it cuts across all ages" (Respondent U, FGD, 2020). It therefore implies that the participants of this study have requisite experience regarding the issue.

Table 4.4: Number of other family members, close relations or neighbours that have been afflicted by malaria within the same period

Variables	Frequency	Percentage
Many	370	100
Not very many	-	-
Few	-	-
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.4 reveals that 370 (100%) of the respondents have suffered more than two incidents of malaria infection within the time of residence in their respective communities and have other family members, close relations or neighbours that have also been infected by the malaria parasite. Participants at the FGD session further said, "Giving a definite number of people affected will not be feasible but the number of persons affected by malaria is high" (Respondent D, FGD, 2020). Furthermore, another participant was of the view that, "The number of persons in my community who are either relatives or neighbours who have been affected by malaria will be up to 100, this is based on estimation, it can be more than that" (Respondent F, FGD, 2020). In another vein, a participant said that,

> The number is high; every woman who goes to the primary healthcare centre receives malaria screening and the first test a person receives on getting to the healthcare centre as a result of an illness is malaria, so let's just say the whole community (Respondent I, FGD, 2020)

Inferring from the above respondent, malaria testing is a basic health check for all who present at the healthcare centres with related symptoms. Another participant said, "I don't work in the hospital so I cannot give an accurate number but in a year, the number of people infected should not be less than 100." (Respondent M, FGD, 2020). Substantiating the above view, a participant said, "the number of people that visit the primary healthcare centre daily

are much and many of them have malaria symptoms." (Respondent P, FGD, 2020).

The implication here is that malaria affects many people in the communities.

Table 4.5: Respondents' opinion about the prevalence of malaria in the community

Variables	Frequency	Percentage
Very prevalent	370	100
Not prevalent	-	-
Undecided	-	-
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.5 above contains information on respondents' perception of the prevalence rate ofmalaria in their communities. The table shows that 100% of the respondents asserted that malaria is prevalent in their respective communities. Corroborating the data, a participant said that, "the rate of malaria in my community is high as the number of persons who go to the primary healthcare centre on a daily basis is high." (Respondent A, FGD, 2020). Another participant gave reasons for the high prevalence of malaria in their community, saying, "our community is a rural area and the environmental factors make it easy for mosquitoes to thrive, leading to high malaria cases." (Respondent C, FGD, 2020). Another participant said, "the number of persons that visit the healthcare centre on a daily basis is high and most of them test positive for malaria." (Respondent N, FGD, 2020). Deducing from Respondent N, malaria is a common illness and its testing is done on a daily basis. Furthermore, a participant stated that, "malaria rate is very high in our community, both women, children and men suffer from it. It mostly makes one look helpless." (Respondent J, FGD, 2020). Malaria as a common illness does not spare anybody as it afflicts people of all ages and gender. In another perspective, a participant said that,

> The number of people that visit the primary healthcare facility and test positive for malaria already shows that malaria is a serious illness within our community. There is hardly any day that goes by without two, three or more persons visiting the primary healthcare centre with malaria-related issues (Respondent S, FGD, 2020).

Roll Back Malaria (RBM) focal persons in the three selected local government areas of the study, affirmed that the mandate of the RBM project is to halve malaria the burden particularly among pregnant women and under-5 children because they are the most vulnerable groups. They also confirmed the high prevalence rate of malaria in the study area, pointing out that it is one of the most common ailments. In Keffi Local Government Area, in particular, the RBM focal person asserted that, "for every 10 patients that come to the health centre, at least nine (90%) test positive for malaria though this percentage is not static," (IDI, 2020). In Lafia Local Government Area, the RBM focal person stated that there are different localities:

> So, it may be common in some but not common in others. We have 13 wards in the local government and in these 13 wards, there are some wards where you record more cases than others but generally, malaria is a common problem here. Out of every 10 patients that visit the facility, at least seven test positive for malaria (IDI, 2020).

The same prevalence level obtains in Akwanga Local Government Area, where the RBM focal person affirmed that malaria is quite common. In his words: "If 10 patients visit the facility, at least seven will test positive for malaria," (IDI, 2020). From the above data, it can, therefore, be inferred that there is high prevalence of malaria infections across the communities in the studyarea.

SECTION C: To ascertain the level of public awareness about RDT kits in the selected communities of Nasarawa State.

Table 4.6: Respondents' opinion on the best method of treating malaria infections

Variables	Frequency	Percentage
Taking herbs and traditional medicines	50	14
By buying anti-malaria medicine from patent medicine stores	120	32
Comprehensive treatment in medical facilities	200	54

Source: Field Survey, 2020

Table 4.6 above, which probed respondents' opinions on the best method for treating malaria infections reveal that a clear majority representing 54% hold the opinion that comprehensive treatment in medical facilities presents the best option for treating malaria infections. Similarly, a significant figure, representing 32% of respondents opined that buying anti-malaria medicine from patent medicine stores offers the best option for handling malaria infections. 14% were of the opinion that taking herbs and traditional medicines is the best method of treating malaria infections. According to one of the participants of the focused-group discussions, Respondent G, "there are instances when we make use of herbs for treatment but because of the presence of a primary healthcare centre in our community, it has become the most appropriate medium for treating malaria and other illnesses in the community. Substantiating the above data, a participant from the FGD session was of the view that, "prior to the establishment of a primary healthcare centre here, we either self-medicated with herbs or any antimalarial medicationwe could lay our hands on in the chemist," (Respondent B, FGD, 2020). This, therefore, shows that self-medication was the method of treating malaria before the healthcare centre was situated in the community.

Similarly, Respondent L said that, "we visit the primary healthcare centre to get tested and treated because it has proven to be the best method so far," (FGD, 2020). Substantiating the above, a participant stated that, "Herbs are at times used in my community for treatment but most people prefer to use the primary healthcare centre because of the procedure that it follows, from testing to treatment," (Respondent N, FGD, 2020). Furthermore, another participant was of the view that, "Herbs are good but using the primary healthcare centre has become a better choice. In the primary healthcare centre, a patient will be tested before treatment is administered, using the appropriate dose of medication," (Respondent Q, FGD, 2020). It can therefore be inferred from the above data that the respondents have come to the realisation that comprehensive treatment of malaria in medicalfacilities is the best approach to combatting the surge of malaria disease.

Table 4.7: Regularity of running test to confirm malaria parasites prior to commencement of treatment

Variables	Frequency	Percentage
All the times	300	81
Very often	50	14
Never	20	05
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.7 reveals that a clear majority of 300 respondents representing 81% run tests all the time to confirm the presence of malaria parasites prior to the commencement of treatment for the disease. 50 (14%) of the respondents said that they very often run tests to confirm malaria parasites prior to commencement of treatment and 20 (05%) of the respondents never run tests to confirm malaria parasites prior to commencement of treatment. It can therefore be inferred from the table above that

majority of the respondents run tests before the commencement of treatment of malaria. This is further supported by participants at the focus group session. Respondent E (FGD, 2020) was of the view that:

> I have seen where the kits were used in the testing of my neighbour who was infected with malaria. I was also tested with the kit last year when I fell sick before medication was given to me by the healthcare provider in the healthcare centre.

Deducing from the above submission of Respondent E, it is evident that RDT kits are used prior to the commencement of the treatment of malaria and this can be seen from his experience and that of his neighbour. This implies that when people present with malaria-related symptoms, efforts are made to confirm that it is actually malaria infection before treatment is initiated.

Table 4.8: Awareness of malaria rapid diagnostic test (RDT) kits

Variables	Frequency	Percentage
Yes	300	81
NO	70	19
Total	**370**	**100**

Source: Field Survey, 2019

Table 4.8 above contains information on individual respondents' awareness of malaria Rapid Diagnostic Test kits. It reveals that 81% of the respondents are aware of RDT kits and 19% are not aware of RDT kits. This indicates that majority of the respondents are aware of the role the kits play in the confirmation of malaria parasites before treatment is started. Supporting the above data, a participant at the FGD session was of the view that, "A high number of people in our community are aware of the kit that is used to test for malaria before treatment," (Respondent D, FGD, 2020). Corroborating the above point, Respondent K said

majority of the respondents run tests before the commencement of treatment of malaria. This is further supported by participants at the focus group session. Respondent E (FGD, 2020) was of the view that:

> I have seen where the kits were used in the testing of my neighbour who was infected with malaria. I was also tested with the kit last year when I fell sick before medication was given to me by the healthcare provider in the healthcare centre.

Deducing from the above submission of Respondent E, it is evident that RDT kits are used prior to the commencement of the treatment of malaria and this can be seen from his experience and that of his neighbour. This implies that when people present with malaria-related symptoms, efforts are made to confirm that it is actually malaria infection before treatment is initiated.

Table 4.8: Awareness of malaria rapid diagnostic test (RDT) kits

Variables	Frequency	Percentage
Yes	300	81
NO	70	19
Total	**370**	**100**

Source: Field Survey, 2019

Table 4.8 above contains information on individual respondents' awareness of malaria Rapid Diagnostic Test kits. It reveals that 81% of the respondents are aware of RDT kits and 19% are not aware of RDT kits. This indicates that majority of the respondents are aware of the role the kits play in the confirmation of malaria parasites before treatment is started. Supporting the above data, a participant at the FGD session was of the view that, "A high number of people in our community are aware of the kit that is used to test for malaria before treatment," (Respondent D, FGD, 2020). Corroborating the above point, Respondent K said

that "A high percentage of people in my community are aware of RDT kits and many people have used it," (FGD, 2020). Stating a fact for the non-awareness of the RDT kits, a participant stated that, "the number of persons that may not have knowledge of the kits will be few and it is possible that they don't visit the healthcare centre for treatment," (Respondent H, FGD, 2020). A participant said that:

> As women, when we go for antenatal, we are educated on different topics and malaria testing using RDT kits was discussed there. I will say all women who attend antenatal are aware of RDT kits and its usage in the healthcare centre (Respondent O, FGD, 2020).

Inferring from the above, there is knowledge of RDT kits among women who have attended antenatal clinic in the study area. Respondent S (FGD, 2020) was of the view that "most people are aware and conversant with RDT kits usage in the primary healthcare centres. They have not always been there, but since they were introduced, there has been awareness." It can, therefore, be deduced form the above that since malaria is a common illness with the communities, RDT kits, which are the primary diagnostic tools in the healthcare centres, are known to them as well as its usage.

Table 4.9: Public awareness of malaria rapid diagnostic test kits in the community

Variables	Frequency	Percentage
There is high level of awareness of the kits	300	81
There is very low level of awareness of the kits	30	8
Undecided	40	11
Total	**370**	**100**

Source: Field Survey, 2020

Data in table 4.9 indicates that there is very high awareness of malaria Rapid Diagnostic Test

kits in rural communities of Nasarawa State. This is because 300 respondents representing 81% attested to that fact, 8% of the respondents said there is low level of awareness of the kits in the communities and 11% of the respondents are indecisive of public awareness of malaria rapid diagnostic test kits in their communities. It can therefore be inferred that there is a very high-level awareness of the kits in the communities understudied. This is further substantiated by participants of the focus group discussion. Respondent A (FGD, 2020) was of the view that:

> We are aware of the kits and they are available for testing but compared to the number of persons that visit the primary healthcare centre on a daily basis, the kits are usually inadequate for the testing of infected people in the community.

Another participant was of the view that "RDT kits are available most of the time but run out fast due to the number of people that visit the healthcare centres and the number of tests carried out" (Respondent N, FGD, 2020). Furthermore, a participant stated that "RDT kits are available but it will be better if the number of the kits is increased to avoid issues of shortage," (Respondent T, FGD, 2020). This was attested to by the RBM focal person in Lafia Local Government Area when hesaid:

> Almost all the people are aware that there should be test before treatment to the extent that in some communities now, if you administer ACT or any other malaria treatment without first carrying out a test, they protest and insist on test before treatment and this goes to show that the level of awareness ishigh (IDI, 2015).

SECTION D: RDT kits are used in health facilities in the selected communities of Nasarawa State.

Table 4.10: Availability of malaria rapid diagnostic test (RDT) kits in health facilities in rural communities of NasarawaState

Variables	Frequency	Percentage
They are available in all primary health facilities	300	86
They are available in few primary health facilities	50	14
They are not available in any of the health facilities	-	-
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.10 elicited information on the availability of the malaria Rapid Diagnostic Test kits in health facilities of the communities. The Table shows that there is availability of the kits in these health facilities. This is because 86% of the respondents affirmed that the kits are available in all primary health facilities, while 14% said that they are available few primary health centres. It can be seen that majority of the respondents are of the view that RDT is available their healthcare facilities. Substantiating the above data, a participant at the focused-group discussion was of the view that, "RDT kits are used most of the time for testing of malaria before treatment commences but the main challenge is its shortage. We experience shortage of RDT kits in my community very often" (Respondent G, FGD, 2020). Furthermore, Respondent U (FGD, 2020) averred that:

> RDT kits are used to ascertain the malaria parasite in an individual before treatment is made in my community. The rate of its usage before treatment is high when it is available but we experience shortage at times and we will need to buy with our money.

Explaining why patients sometimes have to buy RDT kits, the RBM focal person in Keffi Local Government Area stated that:

> We test every person that comes with symptoms of malaria before we give medication. In the event that we run out of the commodity, the facility will buy it from the pharmacy and give to patients for a token but it is free when it is available. The primary health care centres do not do laboratory test for parasites, it is only done at the secondary and tertiary level where they have laboratory scientists who can carry out the microscopytest (IDI, 2020).

In Lafia Local Government Area, the RBM focal person agreed that the kits have been in use in primary health centres in the local government for years. According to him,

> we have been using it for over five years now and it has been made compulsory that before any of the primary health care facility administers anti-malaria drugs to a patient, they should conduct a test using the RDT kit to confirm the presence of the parasite. All our facilities are conversant with it and have been usingit (IDI, 2020).

In Akwanga Local Government Area, the RBM focal person asserted that the kits are used in all the primary health facilities. In his words:

> that is what we use in our primary health care facilities. Healthcare providers have been mandated to use RDT kit to carry out the test and when confirmed positive, ACT should be administered according to the age of the person. In the primary health care centre, we don't do microscopy test (IDI, 2020).

As to the efficacy of the kits for test and diagnosis of malaria, data from the interviews indicate that the RDT is very effective in quick diagnosis of malaria before commencement of treatment. The RBM focal person in Keffi stated categorically that, "the RDT is 100 per cent effective in getting the result within fifteen minutes provided you follow the protocol" (IDI, 2020). This means that the kits are available in most of the health facilities in the rural communities and have proven to be effective in quick diagnosis of malaria. The only challenge is that they run out of stock often and this is a serious constraint for the diagnosis of

malaria parasites in the affected communities.

Table 4.11: Regularity of using RDT kits to test for malaria parasites prior to the commencement oftreatment

Variables	Frequency	Percentage
They are used regularly	350	95
They are seldom used	20	5
They are not used at all	-	-
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.11 contains information on the regularity at which RDT kits are used to confirm the presence of malaria parasites prior to the commencement of treatment. The Table indicates that the kits are regularly used to test for malaria parasites before treatment is administered. This is because 95% of the respondents (a clear majority) affirmed that the kits are used and only 5% asserted that they are not used sometimes. Supporting the above, Respondent O (FGD, 2020) stated that, "RDT kits are used by healthcare providers regularly for the testing of malaria before the commencement of treatment". The implication is that the use of RDT kits to confirm malaria parasites prior to treatment is the rule rather than the exception in most of the health facilities in the study area.

Table 4.12: Effectiveness of RDT kits in testing for malaria parasites

Variables	Frequency	Percentage
They are very effective	30	8
Their effectiveness is marginal	40	11
Their effectiveness is as high as microscopy	300	81
The kits are completely ineffective	-	-
Total	**370**	**100**

Source: Field Survey, 2020

Data in Table 4.12 contains information on the effectiveness of Rapid Diagnostic Test (RDT) kits for the confirmation of malaria parasites in the blood of patients. An analysis of the data shows that 30 (8%) of the respondents are of the view that RDTs are very effective, 40 (11%) are of the view that effectiveness of RDT kits is marginal and 300 (81%) of the respondents are of the view that effectiveness of RDT kits is as high as that of microscopy. It can, therefore, be concluded that effectiveness of RDT kits is as high as that of microscopy. Substantiating the above, Respondent B (FGD, 2020) posited that:

> I am a living witness to the effectiveness of the kits. When I felt had symptoms of malaria, I went to the primary healthcare centre, I was tested with the RDT kits and the result came out as expected.

Furthermore, Respondent L (FGD, 2020) said, "the number of people who get tested and treated every day at the primary healthcare centre is enough proof. If it is not efficient, people will not visit the healthcare centre frequently." In another light, a participant was of the view that, "the treatment level of people in the community is good enough and we can use that as a basis for its effectiveness" (Respondent Q, FGD, 2020). This means that RDT kits can actually be used in rural communities where microscopy is rarely available to test for malaria parasites prior to the

commencement of treatment of the disease.

SECTION E: Public perception of RDT kits in the selected communities of Nasarawa State.

Table 4.13: Public perception of rapid diagnostic test (RDT) kits

Variables	Frequency	Percentage
Public perception of the kits is positive	310	84
Public perception of the kits is negative	10	3
Some respondents are undecided	50	13
Total	**370**	**100**

Source: Field Survey, 2020

Data in Table 4.13 shows that public perception of Rapid Diagnostic Test (RDT) kits is positive. The Table shows that a majority, 310 respondents (84%) are of the view that public perception of the RDT kits is positive, 10 (3%) of the respondents are of the view that public perception of the kits is negative and 50 (13%) of the respondents are indecisive. Supporting the above data, Respondent F (FGD, 2020) was of the view that:

> The kit is a good development that my community people welcomed. There was a time an aged man in the community went to the primary healthcare centre and the RDT kits were finished. He insisted that a test must be carried out before he will accept the medication he was given and the healthcare provider had to go to the next community to get the kit and test him. This happened because my people are aware of and have accepted the usage of the kits.

Supporting the above point of view, another participant said, "In my community, people are comfortable with the RDT kits and that is why we always go to the healthcare centre when we feel sick" (Respondent M, FGD, 2020). Furthermore, a participant was of the view that: "people in my community see RDT kits as a better way of testing malaria before treatment,

rather than treating based on the symptoms presented, which could be for another ailment" (Respondent R, FGD, 2020). Empirical evidence from the interviews also indicated that there is positive perception of RDT kits in the rural communities of the study area to the extent that those who visit the hospital with symptoms of malaria now insist on being tested with the kits before treatment can be administered on them. This was confirmed by the RBM focal person in Akwanga local government area when he said:

> the people appreciate and accept the RDT kits to the extent that in some communities, when women bring their children to the facility and the health worker for whatever reason attempts to administer drugs without the test, they complain. We no longer have cases of people rejecting the test; they accept it 100 percent (IDI, 2020).

This suggests that if the kits are widely promoted and applied, they will be accepted as tools for testing for malaria parasites before commencement of treatment in health facilities in the study area.

Table 4.14: Rapid diagnostic test (RDT) kits give accurate results for treatment

Variables	Frequency	Percentage
Yes	370	100
NO	0	0
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.14 above has it that 370 (100%) of the respondents are of the view that the rapid diagnostic test kits give accurate results for treatment. This further gives credence to the effectiveness of the kits in the diagnosis of malaria parasites. This was corroborated by Respondent O when she said, "whenever I am tested for malaria in our primary healthcare centre, the result is immediate and accurate because the medication given to me always heals

rather than treating based on the symptoms presented, which could be for another ailment" (Respondent R, FGD, 2020). Empirical evidence from the interviews also indicated that there is positive perception of RDT kits in the rural communities of the study area to the extent that those who visit the hospital with symptoms of malaria now insist on being tested with the kits before treatment can be administered on them. This was confirmed by the RBM focal person in Akwanga local government area when he said:

> the people appreciate and accept the RDT kits to the extent that in some communities, when women bring their children to the facility and the health worker for whatever reason attempts to administer drugs without the test, they complain. We no longer have cases of people rejecting the test; they accept it 100 percent (IDI, 2020).

This suggests that if the kits are widely promoted and applied, they will be accepted as tools for testing for malaria parasites before commencement of treatment in health facilities in the study area.

Table 4.14: Rapid diagnostic test (RDT) kits give accurate results for treatment

Variables	Frequency	Percentage
Yes	370	100
NO	0	0
Total	**370**	**100**

Source: Field Survey, 2020

Table 4.14 above has it that 370 (100%) of the respondents are of the view that the rapid diagnostic test kits give accurate results for treatment. This further gives credence to the effectiveness of the kits in the diagnosis of malaria parasites. This was corroborated by Respondent O when she said, "whenever I am tested for malaria in our primary healthcare centre, the result is immediate and accurate because the medication given to me always heals

me and with that in mind, I am convinced that the kit gives accurate results for treatment" (FGD, 2020). It can therefore be deduced from the above, that RDT kits give accurate results for treatment within minutes.

Table 4.15: Rapid diagnostic test (RDT) kits is seen as a money-making venture for healthcare providers

Variables	Frequency	Percentage
Yes	60	16
NO	310	84
Total	**370**	**100**

Source: Field Survey, 2020

As seen in table 4.15, 60 (16%) of the respondents are in agreement that the rapid diagnostic test kits are seen as a money-making venture for healthcare providers while 310 (84%) of the respondents disagreed that the healthcare providers regard the RDT kits as a money-making venture. This was further corroborated by Respondent E (FGD, 2020), who said that "Healthcare providers in my community have not and do not use the kits as a money-making machine." This was supported by Respondent O (FGD, 2020) when she said that, "I have been visiting the primary healthcare centre in my community and there has not been any time a healthcare provider exchanged RDT kits for money." In contrast to the above, Respondent J said that, "healthcare providers may not use it for money-making directly but we are made to pay to buy under the guise that the kits are finished" (FGD, 2020).

4.2 Answering ResearchQuestions

Research Question 1: What is the prevalence level of malaria in the three selected Local Government Areas of Nasarawa State, namely, Akwanga, Lafia and Keffi?

This research question sought to examine the prevalence level of malaria in the three selected Local Government Areas of Nasarawa State. To answer it, data in Tables 4.1, 4.2, 4.3, 4.4 and 4.5 as well as focused-group discussions and in-depth interviews with Roll Back Malaria (RBM) focal persons in the selected areas councils were relied upon.

Data in Table 4.1 indicate that both sexes were actively involved in this study with 54 percent being males and 46 percent females. Data in the Table also show that the respondents were educated enough to appreciate the issues at stake in the study. This is because all of them were educated up to primary level. Similarly, data in Table 4.2 indicate that the respondents were in a vantage position to understand the nature of their communities because all of them had lived in their respective communities for upwards of seven months prior to this study. Data in Table 4.3 show that all the respondents (100%) had suffered at least two attacks of malaria infections within the time of residence in their communities. More significantly, data in Table 4.4 show clearly that malaria affects many people in the communities because apart from individual respondent suffering personal infections, many other family members, close relatives and neighbours have also been affected. Data in Table 4.5 show clearly that there is high prevalence of malaria in the study areas because 100 percent of the respondents asserted that the disease is very prevalent in their communities.

Data from Focused Group Discussions with respondents in the three Primary Health Care Centres in the study area reveal that malaria is a common health issue among families primarily because of the environment they live i. Data from in-depth interviews with Roll Back Malaria (RBM) focal persons in the three selected local councils also indicate that

malaria is not just one of the most common ailments in the study area but the prevalence level is very high with at least 70 per cent of the patients that come to every health centre testing positive to the disease.

Research Question 2: What is the level of awareness of RDT kits in these three Local GovernmentAreas?

This research question sought to ascertain the level of public awareness about RDT kits in the study area. Consequently, Tables 1, 8, and 9 which contain the necessary information as well as Focus Group Discussions and in-depth interviews were used to answer it. Data in Table 1 indicate that all the respondents were old enough to understand the issues examined in this study. Data in Table 8 show that majority of the respondents have high levels of awareness about RDT kits. This is because 81 percent actually acknowledged that. Data in Table 9 reveal that there is very high-level awareness of the kits even at community level. This is because 81 percent of the respondents attested to thatfact.

Data from FGDs indicate that the respondents were not only aware of the RDT kits but many actually asserted that they (RDTs) have enhanced the rapid diagnosis and treatment of malaria due to their simplicity, little amount of blood required to run the tests but more specifically, the short time it takes to confirm the presence of malaria parasites in the blood of the patients for treatment to commence. Data from in-depth interviews also confirm that there is high awareness of the kits among the study population to the extent that most patients insist on being tested before any malaria drug is administered on them and they protest if tests are not carried out.

What this implies is that there is high level of awareness about the kits among the study population.

Research Question 3: Are RDT kits used in health facilities in the three selected Local Government Areas?

This research question sought to find out if RDT kits are deployed in primary health facilities in the three selected Local Government Areas. Consequently, data from Tables 4.7, 4.10, 4.11, which contain the necessary information and in-depth interviews, were used to answer it.

Data in Table 4.7 show that 81 percent of the respondents attested to the fact that at all times, the kits are used to confirm the presence of malaria parasites in the blood of suspected malaria patients before commencement of treatment. Data in Table 4.10 show clearly that kits are available in most of the health facilities in rural communities of the study area. This was attested to by 86 percent of the respondents. Indeed, the respondents averred that the use of RDT kits to confirm malaria parasites prior to treatment is the rule rather than the exception in all the health facilities in the study area. Data from in-depth interviews indicate that RDT kits are not only widely deployed in primary health facilities in the study area but are also used to test every person that presents symptoms of malaria before medication is administered. In Lafia Local Government Area in particular, the use of the kits to confirm the presence of malaria parasites in the blood stream of patients prior to the commencement of treatment is compulsory.

Research Question 4: What is the public perception of RDT kits in the three Local Government Areas of Nasarawa State?

This research question evaluated public perception of RDT kits in the study area. Consequently, Tables 4.12 and 4.13 as well as FGD and In-depth interviews that contain the necessary data were relied upon to answer it.

Data in Table 4.12 reveals that 81 percent of the respondents perceived the kits as being very effective in the detection and confirmation of malaria in the blood of patients particularly in the rural areas where microscopy is rarely available. Data in Table 4.13 shows that majority of the respondents (84%) had a positive perception of the kits. This explains why they (respondents) accepted the kits as tools for testing for malaria parasites prior to commencement of treatment.

Data from FGDs show that there was positive perception of the kits with many of the discussants asserting that the kits are valuable in distinguishing patients with malaria from others with ailments that present the same symptoms as malaria. More significantly, data from in-depth interviews reveal that there is positive perception of the RDT kits in the rural communities of the study area to the extent that malaria patients now insist on being tested with the kits to confirm malaria parasites before any malaria treatment can be administered on them.

4.3 Discussion of Findings

Findings in this study show that malaria is very common among the people living in rural communities of the study area, accounting for over 70 per cent of patients that report to health care facilities. Further findings reveal that malaria infections are highly inevitable, principally due to the environment where the people live. This was corroborated by findings from the FGD sessions where participants listed their environment as a key factor for the high prevalence of malaria in their communities.

These findings are in tandem with those of Maduka (2018) who found that malaria is not just endemic in Nigeria, but also a major health challenge for many families. The findings also agree with those of David (2000), who cited large-scale population displacements in war,

crumbling health services in many of the worst affected countries and increasing resistance of the parasite to available treatments as contributors to the high prevalence of the disease. However, these findings contrast sharply with those of Owoeye, Akinyemi and Yusuf (2018), who asserted that malaria prevalence declined from 38.1 per cent to 13.1 per cent between 2003 and2013. The reported decline may be in the urban centres because the findings of this study, which was carried out in rural communities of Nasarawa State, indicate that malaria is on the high side in rural areas and this has been attributed to environmental, among other factors.

Based on this information, there is a compelling need for more awareness creation among the rural populace using participatory communication strategies through opinion leaders, religious leaders, traditional and community leaders as well as community and faith-based organisations on the necessity of living in clean and sanitary environments. Moreover, government should reintroduce monthly sanitation days and strictly enforce itsobservance.

Findings from this study show that high populations of the residents in the study area, as confirmed by 81 per cent of the respondents, have knowledge of the malaria RDT kits. Further findings show that the malaria RDT kits have proven to be very useful in the diagnosis and treatment of the ailment due to the ease of use and rapidity of diagnosis as well as the method of specimen collection. Furthermore, findings indicate that the use of malaria RDT kits to confirm the presence of malaria parasites in the blood of patients in some rural communities is the rule rather than the exception.

These findings are in line with the assertion by WHO (2010) that malaria RDT kits provide evidence of malaria parasites in the human blood thus assisting in its diagnosis and treatment. The findings also agree with those of Amexo, Tolhurst, Barnish and Bates (2014), who hold

that prompt, accurate diagnosis of patients with an effective machine are essential components of control and elimination strategies. The findings also agree with theoretical postulations that individuals will take more informed decisions concerning their health if they regard themselves as being susceptible to the health condition, if they believe that the condition has potential serious health consequences, or believe that something can be done to either reduce their susceptibility or the severity of the condition (Health BeliefModel).

On the strength of this information, it is imperative for malaria RDT kits to be deployed in all health care facilities in Nasarawa State, especially those in the rural communities, and made available at all times, so as to properly diagnose and treat the disease in order to half its infection if not eradicate it completely, in line with the national objective.

Empirical evidence from this study reveals that over 80 per cent of the respondents have a positive perception of malaria RDT kits. Further findings indicate that the kits are valuable in distinguishing malaria patients from others with different ailments that present the same symptoms as malaria. Findings from the study also reveal that malaria RDT kits are a veritable health consumable with the capacity to enhance the rapid diagnosis, treatment and eventual elimination of the disease in the study area.

These findings conform to WHO (2010) Treatment Guidelines that parasitological diagnosis of malaria should be made before commencement of malaria treatment. In the same vein, the findings are in and with Nigeria's(2011) National Guidelines for Diagnosis and Treatment of Malariawhichhavenotonlykeyedinto WHO`srecommendations.butalsotakenstepstoensure that the practice is actually adopted in all its health facilities. The findings also agree with those of Ndibuagu (2018), which indicate that the mean overall percentage score recorded on both knowledge and perception of malaria rapid tests were above 60 percent, showing a favourable

disposition of both medical doctors and patients towards the implementation of the WHO/Federal Government of Nigeria policy of confirming the diagnosis of malaria before initiating treatment. Likewise, the findings agree with Ilesanmi et al. (2017), who holds that the development of sound diagnostic test remains a crucial component of malaria management, prevention and control in Africa. More importantly, the findings confirm theoretical postulations that for any persuasive message to be considered effective, it must succeed in altering the psychological functioning of the recipients in such a way that they will act overtly with models of behaviour desired or suggested by the communicator (PerceptionTheory).

Arising from these findings, there is a compelling need for Nasarawa State government to commission the design and dissemination of behaviour change messages with stronger persuasive components in order to maintain the high perception and utilisation of malaria RDT kits in the studyarea.

Findings from the study reveal that due to the positive perception of the kits by the inhabitants, people in the rural communities of Nasarawa State now insist on being tested with the kits to confirm the presence of malaria parasites prior to the commencement of treatment. Findings also indicate that though the kits are almost always available in primary healthcare facilities in the state, there are times when they are out of stock and at such times, patients are made to pay for these kits before they are tested, which often encounters some level of reluctance from the patients. These findings tally with those of David (2000) who observed that, even where hospitals and clinics do exist, appropriate drugs and other necessary equipment for the diagnosis and treatment of malaria are often in short supply.

Based on these findings, the Nasarawa State government needs to ensure the availability of

malaria RDT kits in all her health care facilities at all times and to provide a system for the quick replenishment if and whenever they are out of stock.

4.4 Ethical Declaration

This is to affirm that in carrying out this research, ethical approval for the study protocol was obtained from the Health Research Ethics Committee (HREC) of the Nasarawa State Government, Nasarawa State Ministry of Health, Nasarawa State Primary Health Care Development Board, Heads of Departments of Health in the Local Government Areas, and the respective officers in charge of the Primary Health Care Centres. In seeking the consent of the respondents of the questionnaire, only those who demonstrated understanding of the issues, after clear explanation, filled the questionnaire; while Focus Group Discussions were held in English and Pidgin English languages and translated in one of the local languages, Hausa. All procedures were approved by the Ethics Committee in line with the provisions of the National Health Research Ethics Committee of Nigeria, upon completion of the *Nigerian National Code For Health Research Ethics* (Course Learner Group) 1 – Stage 1 with certificate of completion.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study set out to assess knowledge and usage of malaria Rapid Diagnostic Test kits in selected rural communities of Nasarawa State. The survey research design was employed with questionnaire, focus group discussions and in-depth interviews used to elicit the necessary data from the respondents. The population of the study involved the entire population of the state. Taro Yamane's formula was used to statistically determine the sample size of the study while a multi-stage sampling procedure involving a combination of the cluster, purposive as well as Bourley'sformulaforsamplesizeallocationwereusedtodrawasamplesizeof375respondent s from the study population. Data collected were collated and analysed using descriptive statistics such as simple percentages, tables of summary and explanation building methods to enhance the comprehension of the observed variables.

From the analysis of the data gathered from the respondents, the following major findings were arrived at:

1) Findings from this study indicate that malaria is not just a common health burden of many families in the study area but that the prevalence level is very high particularly in the rural communities with at least 70 percent of patients who report to health facilities testing positive to thedisease.

2) Further findings show that malaria infections are highly inevitable in the rural communities of the study area due mainly to the environments in which the peoplelive.

3) Findings of this study reveal that though malaria patients in the state were initially sceptical of RDT kits, persistent persuasion and advocacy through their religious and traditional leaders led to the up-scaling of the awareness of the kits among people in the rural communities of Nasarawa State to very high levels. This is because 81 percent of the respondents attested tothat.

4) Findings also show that malaria RDT kits have enhanced the rapid diagnosis and treatment of the ailment due to their simplicity, little amount of blood required to run the test and the short time it takes to confirm the presence of malaria parasites in the blood of suspectedpatients.

5) This study found that malaria RDT kits are not only widely deployed in primary health care facilities of the study area but also that their use to confirm the presence of malaria parasites before commencement of treatment is the rule rather theexception.

6) Empirical evidence from this study indicates that there is positive perception of the kits among the study population. This is because 84 percent of the respondents had very positive perception of thekits.

7) Findings from this study indicate that malaria RDT kits are valuable in distinguishing patients with malaria infections from others with ailments that present the same symptoms asmalaria.

8) Findings also indicate that people in the rural communities of the study area now insist on being tested with the kits to confirm the presence of malaria parasites before any malaria treatment can be administered onthem.

9) Findings from this study reveal that malaria RDT kits are a veritable health

consumable capable of enhancing the rapid diagnosis, treatment and eventual eradication of malaria in rural communities of Nasarawa State.

10) This study found that although malaria RDT kits are almost always available in most of the primary health care facilities in the rural communities of the study area, whenever they are out of supply, patients are made to pay for theprocurement.

5.2 Conclusion

Although many communication scholars in Nigeria have conducted researches on the causes, symptoms, and effects of malaria on the population, very few of such studies were concerned with rapid diagnosis as a way of confirming the presence of malaria parasites in the blood of suspected patients prior to the commencement of treatment. Given that malaria, one of the biggest health challenges of rural dwellers and a major cause of maternal and child mortality, presents the same symptoms as other diseases, there is a compelling need to properly diagnose it before administering treatment. The Rapid Diagnostic Test (RDT) kits were, therefore, designed to enhance the testing for malaria parasites prior to commencement of treatment. This study was designed to assess knowledge of and acceptance of the kits in select rural communities of Nasarawa State.

Findings from the study indicate that although there was initial scepticism about the kits as is normal with all innovations, persistent persuasion through participatory communication led to a positive perception of the kits and their acceptance by the populace. It is, therefore, the conclusion of this study that participatory communication is the key to the knowledge of malaria Rapid Diagnostic Test kits in select rural communities of Nasarawa State.

5.3 Recommendations

Based on the findings and conclusions reached, this study makes the following recommendations:

i. There is a compelling need for heightened awareness creation among the rural populace using participatory communication strategies through opinion leaders, religious leaders, traditional and community leaders as well as community and faith-based organisations on the necessity of living in clean and sanitary environments. Moreover, government should reintroduce monthly sanitation days and strictly enforce itsobservance.

ii. It is imperative for malaria RDT kits to be deployed in all health care facilities in Nasarawa State especially those in the rural communities so as to properly diagnose and treat the disease in order to half its infection if not eradicate itcompletely.

iii. Nasarawa State government should, as a matter of urgency, commission the design and dissemination of behaviour change messages with stronger persuasive components in order to maintain the high perception and utilisation of malaria RDT kits in the study area.

iv. Nasarawa State government needs to ensure the availability of malaria RDT kits in all her health care facilities at all times and to provide a system for quick replenishment if and whenever they are out ofstock.

v. Public spirited individuals and non-governmental organisations should urgently procure and distribute malaria RDT kits to all the health centres to aid prompt and adequate diagnosis of malaria in the studyarea.

vi. There is an urgent need for training and retraining of information officers to become proficient in participatory communication strategies so as to enhance acceptance and uptake of healthinnovations.

vii. There should be training and retraining of health care givers in the rural communities to optimise the benefits of the malaria RDTkits.

5.4 Limitations of theStudy

The researcher envisaged certain challenges that could present some limitations to the study. First, the study was designed to cover the entire state; and with 13 local governments areas involved, it required selecting a few of them to be representative of the whole state. Secondly, the survey research design employed had its own draw backs, one of which was the number of elements involved that necessitated sampling. Equally, the reluctance of some of the respondents to attend to the instruments for data collection had limitation to thisstudy.

The study covered three local government areas of the state and used 375 respondents as the sample size for the study, though this sample size is a representation of the entire population, it cannot be said to be representative of the entire population of the state. This limitation may not easily allow the findings of the study to be generalised to the entire population of the study area. The reluctance of the respondents to attend to the instruments; questionnaire, In-depth interviews and focus group discussions also posed a limitation to the study. However, these limitations did not adversely affect the outcome of the study. On the whole, the study provides a basis for detailed understanding of the role of participatory communication in enhancing the uptake of health innovations.

5.5 Suggestions for FurtherStudies

This study is neither perfect nor exhaustive enough to preclude further research in this area. Therefore, there is need for:

i Similar studies to be carried out in other geopolitical regions using the same research design and instruments. This is with a view to comparing the findings to know whether there are geography specific differences that should be considered before utilising participatory communication to promote uptake of healthinnovations.

ii. Similar studies to be conducted using the electronic media such as radio and television to assess the influence of radio and television on the health information needs of the audiencemembers.

iii. More local government areas of the state should be considered for similar research so as to have data that can be generalised.

iv. A comparative study could be carried out between urban and rural settlements so as to compare and contrast the knowledge gap that exists.

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APPENDICES
APPENDIX I

Institute of Strategic and DevelopmentCommunication
School of Postgraduate StudiesNasarawa State University,Keffi
November 12, 2018

Dear Respondent,

I am a postgraduate student of the Institute of the Strategic and Development Communication, Nasarawa State University. I am currently undertaking a research on the topic: ***Assessing Knowledge of Malaria Rapid Diagnostic Test Kits through Participatory Communication in Selected Communities of Nasarawa State***, as a requirement for the award of Master of Arts (MA) degree in DevelopmentCommunication.

I humbly request your opinion on the questions below, which bother on issues relating to the problem under study. I guarantee to treat all information given in absolute confidence.

Thank you for your co-operation and understanding. Yours Faithfully,

AGBO, Catherine Hembadoon
(NSU/MA/DVC/0007/17/18)

QUESTIONNAIRE

ıstruction: Kindly provide answers to the following questions by simply ticking (√) in the ɔpropriate box of your choice. Please, be truthful in your answers, they are strictly for :search purposes.

ECTION A: Social Demographics of Respondents

. Sex

. Male ( )
- Female ( )

- **Age Range(Years)**

.18-20 ( )
›.21-30 ( )
.31-40 ( )
l.41-50 ( )
:. 50 and above ()

ȷ. Level of Education

ı. Primary ()
›. Secondary ()
:. Tertiary ( )

l. Occupation

ı. Teacher ( )
›. Trader ( )
:. Primary Health Care Giver ()

SECTION B: Perceptions, opinions and attitudes of the respondents towards the subject ɔf the Study

5. How long have you lived in thiscommunity?

a. 1-6months ( )
b. 7-12months ( )
c. 13-18months ( )
d. 19-24months ( )

6. Within the time you have lived in the community, how many times have you been afflicted bymalaria?

a. Once ( )
b. Morethan twice ( )
c. Not more thanfour times ( )

7. **Within the same period, how many other members of your family, close relationsor neighbours have been afflicted bymalaria?**

a. Many ( )
b. Notverymany ( )
c. Few ( ).

8. **What can you say about the prevalence of malaria in thecommunity?**

a. Veryprevalent ( )
b. Notprevalent ( )
c. Undecided ( )

9. **What, in your opinion is the best method for treating malariainfections?**

a. Taking herbs andtraditionalmedicines ( )
b. By buying anti-malaria medicine from patentmedicinestores ( )
c. Comprehensive treatment inmedicalfacilities ( )

10. **How often do you run test to confirm malaria parasites prior to the commencement of treatment?**

a. All thetimes ( )
b. Veryoften ( )
c. Never ( )

11. **Are you aware of malaria Rapid Diagnostic Test (RDT)kits?**

a. Yes ( )
b. No ( )

12. **What is the level of public awareness of malaria Rapid Diagnostic Test (RDT) kits in thecommunity?**

a. There is high level of awareness of the kits ()
b. There is very low level ofthekits ( )
c. Undecided ( )

13. **What can you say about the availability of Rapid Diagnostic Test (RDT) kits in health facilities of thecommunity?**

a. They are available in allhealth facilities ( )
b. They are available in fewhealthfacilities ( )
c. They are not available in any of the health facilities ()

14. **To what level has Rapid Diagnostic Test (RDT) kits been used to test for malaria parasites prior to the commencement of treatment?**

a. They areusedregularly ( )
b. They areseldom used ( )
c. They are not usedatall ( )

15. How effective are Rapid Diagnostic Test (RDT) kits in the testing for malariaparasites?

a. They areveryeffective ( )

b. Their effectivenessismarginal ( )

c. Their effectiveness as high as microscopy ()

d. The Kits are completelyin effective ( )

16. Evaluate public opinion of Rapid Diagnostic Test (RDT)kits

a. Public perception of the kits is positive as majority of the people like them ()

b. Public perception of the kits is low because most people do not like them ()

c. Some peopleprefermicroscopy ( )

17. RDT kits give accurate results for treatment. A. Yes ( ) B. No ( )

18. RDT kits are seen as money making ventures for healthcare providers? . A. Yes ( ) B. No ( )

APPENDIX II

INSTITUTE OFSTRATEGIC AND DEVELOPMENT COMMUNICATION

NASARAWA STATE UNIVER SITY, KEFFI

Dear respondent

I am a postgraduate student of Development Communication, Institute of Strategic and Development Communication, Nasarawa State University Keffi. I am conducting a study on the topic: ***Assessing Knowledge of Malaria Rapid Diagnostic test kits through Participatory Communication in Selected Communities of Nasarawa State.*** Kindly respond to the set of questions below as it applies to you. All information shall be treated confidentially and strictly for academic purpose.

Thank you.

Agbo Catherine Hembadoon.

Question Guide for Focus Group Discussion (FGD)

Please kindly introduce yourself

1. How long have you lived in your community?
2. Have there been cases of malaria in your community?
3. Can you estimate the number of persons who are either neighbours or relatives who had malaria before?
4. Generally, what is the prevalence level of malaria in your community?
5. What are the best methods for treating malaria in your community?
6. Have you come across rapid diagnostic test (RDT) kits in your community's primary healthcare centre?
7. What can you say about your community people's awareness of RDT kits?
8. What can you say about the availability of RDT kits in your community's healthcare facility?
9. How will you rate the usage of RDT kits in your community before commencements of treatment?
10. In what way (s) have RDT kits proven effective in the detection of malaria parasites?
11. What is the perception of your community people towards the usage of RDT kits?
12. Do healthcare providers in your community utilise RDT kits for monetary gain?

APPENDIX III

INSTITUTE OFSTRATEGIC AND DEVELOPMENT COMMUNICATION

NASARAWA STATE UNIVER SITY, KEFFI

Dear respondent

I am a postgraduate student of Development Communication, Institute of Strategic and Development Communication, Nasarawa State University Keffi. I am conducting a study on the topic: ***Assessing Knowledge of Malaria Rapid Diagnostic test kits through Participatory Communication in Selected Communities of Nasarawa State.*** Kindly respond to the set of questions below as it applies to you. All information shall be treated confidentially and strictly for academic purpose.

Thank you.

Agbo Catherine Hembadoon.

Interview Guide

1. What is your designation in this department?
2. What is the mandate of the department?
3. What is the prevalence level of malaria in the council?
4. Are Rapid Diagnostic Test kits available in the council's health facilities?
5. What can you say about malaria Rapid Diagnostic Testkits?
6. Are Rapid Diagnostic Test kits deployed in the test for malaria parasites prior to commencement of treatment of the disease?
7. What is the public perception of the ekits?