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SOCIO-CULTURAL FACTORS ASSOCIATED WITH MALARIA TRANSMISSION AND PREVENTION IN NIGERIA

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Abstract

This paper examined the sociocultural factors associated with the transmission and prevention of malaria infection in Nigeria. The specific objectives of the paper include to examine the prevalence of malaria infection in Nigeria, to identify the causes of malaria infection as well a look at the preventive measures of malaria infection in Nigeria. The paper utilizes secondary sources of data while Health Belief Model was adopted to buttress the paper. The findings revealed traditional believes, cultural values, religious believes, social norms, traditional birth practices, poverty, limited access to education, toilets and insecticides, overcrowding, sleeping habits, socioeconomic status among others as some of the sociocultural factors associated with transmission and prevention of malaria in Nigeria. It also revealed that Nigeria is the country with the highest number (26.6%) and the highest number of deaths (31% of global malaria deaths) in 2022. The paper equally revealed that malaria is an infectious disease caused by the plasmodium parasite and spread through bites of an infected female Anopheles mosquito. It finally unveiled that malaria can be prevented through environmental clean-up, sleeping under treated mosquito nets, mosquito screen, Indoor Residual Spraying (IRS), prophylaxis treatment and the use of Mosquito repellents/coils among others. The paper concluded that although a large number of people are aware of the existence of malaria, its clinical impact is somewhat underrated, reasons not farfetched from cultural beliefs, values and practices, poverty and high illiteracy level of people which appear to have constituted a big barrier towards its prevention paving ways for its free transmission. Based on these findings, the paper recommended among others that there should be sensitization programmes organized to create awareness on the need to look at malaria infection beyond cultural values and traditional belief system especially in the rural areas. Monthly sanitation exercise should be re-instituted to provide residents opportunity to keep their surroundings clean as this approach will go a long way to destroying mosquito breeding sites.

KEYWORDS: Malaria, Causes, Transmission, Prevention, Sociocultural Factors, Nigeria.

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Introduction

Malaria infection remains a global public health problem and a leading cause of morbidity worldwide. In Africa, malaria is responsible for about 20%–30% of hospital admissions and about 30%–50% of outpatient consultations (Jemimah, 2019). Previous studies have documented a high prevalence of malaria throughout Nigeria, and this devastating disease affects the country's economic productivity resulting in an estimated monetary loss of approximately 132 billion Naira (approximately US$700 million) in treatment costs, prevention, and other indirect costs (Ibrahim et al., 2022).

The major clinical features of uncomplicated malaria include severe headache, fever, vomiting, loss of appetite, and generalized body weakness, while severe anemia, hypoxia, and cerebral malaria constitute the common complications in severe malaria (Imam & Indabawa, 2021). Some of these clinical features are common in some patients with co-morbidities such as diabetes mellitus, uncontrolled hypertension, malignancies, HIV infection, hemoglobinopathy, and chronic kidney disease (Imam & Indabawa, 2021).

Although studies have shown that clinical immunity to malaria develops after exposure to parasites, at one stage in life, this immunity is only partial and may be influenced by some variations such as endemicity and other disease burdens. Evidence suggests that some co-morbidities exert a reasonable impact on a person's immunity; therefore, factors that result in the development of partial immunity may not be adequate enough to guarantee such immunity against malaria infection (Awosula, 2019).

The major associated factors contributing to malaria transmission in Nigeria may include temperature, humidity, and rainfall (Ibrahim, 2022). Other factors include socio-demographics (such as age, gender, education, occupation, income level, and location), environmental factors (such as presence of bushes and stagnant water channels) which may enhance mosquito breeding, and housing factors (such as bricks or mud houses, absence of window nets, and not sleeping under Long-Lasting Insecticide Nets (LLINs) (Ibrahim et al., 2022).

In Nigeria and other parts of Africa, there are several approaches that have been recommended for the prevention and control of malaria in their localities (Ibrahim et al., 2021). These include the use of LLINs, insecticide sprays, mosquito repellent creams, and window nets. In pregnant women, the use of intermittent preventive treatment and prompt access to effective case management have been included (Ibrahim et al., 2021). Behavioral change campaigns can increase demand among the families to use and hang their nets regularly and can improve malaria prevention and control, especially in rural settings (World Health Organization, 2022).

Since 2000 when Nigeria adopted some of these measures against malaria, several researchers have reported the low utilization of these strategies. A study in Southwestern Nigeria regarding the practice of malaria control showed that the majority of respondents had household members who failed to use the control method appropriately (WHO, 2022).

Much of the studies by scholars such as Ibrahim, et al., (2022), Ibrahim et al., (2021), Adefemi, et al., (2015), and Godwin, et al., (2010) on malaria related issues have been limited to utilization of measures to curb malaria infection, socio-economic and democratic factors associated with control of malaria infection, efforts toward malaria prevention and management are targeted under five children, pregnant women, and their unborn babies. Those in the older age groups are not adequately considered in most of these programs, amounting to some kind of obvious neglect in those of older age groups. There is paucity of

data on sociocultural factors associated with transmission and prevention of malaria prevalence in Nigeria. Therefore, with the view to bridge this knowlegde gap, this study is aimed to examine the sociocultural factors relating to the transmission and prevention of malaria infection in Nigeria.

Statement of the Problem

The last couple of decades, especially the 1950s onward, have witnessed unprecedented global interest and efforts towards eradication of malaria. Programs such as the Roll Back Malaria Initiative (RBM) and the Multilateral Initiative on Malaria (MIM) have seen international donor organisations (public and private) spend millions of dollars on malaria eradication programs (Adefemi, et al., 2015). Unfortunately, the results have not been completely positive. Today, despite decades of concerted global efforts, malaria related mortality is higher than half a century ago. Malaria has become the most important vector borne disease in Africa (especially south of the Sahara) parts of Asia and Latin America.

There is no denying the fact that malaria portends a serious present and future global concern. It is present in over one hundred countries worldwide, responsible for over 100 million clinical cases and an estimated 1-2 million deaths annually (WHO, 2022). The World Health Organisation (WHO) reckon that Africa bear almost 90% of the global burden of malaria, and Nigeria, due to its population bears the largest share of the burden.

Scholars have continued to argue that the growing malaria epidemic in some African countries rests partly on the social, cultural and environmental factors peculiar to these countries. There is a growing consensus that for interventions to succeed, they must focus on the fundamental causes of malaria by addressing the socio-cultural, behavioural and environmental dimensions of risks driving the malaria epidemic. This paper thus examines the sociocultural drivers associated with malaria transmission in Nigeria.

Aim and Objectives

The general aim of this paper is to examine the sociocultural factors related to the transmission and prevention of malaria infection in Nigeria. The specific objectives are to:

i. Examine the prevalence of malaria infections in Nigeria.

ii. Identify the sociocultural factors associated with malaria transmission in Nigeria.

Research Methods

Different strategies were employed to retrieve articles and publications on the topic from secondary sources. First, an online search was performed using Google Scholar, Web of Knowledge and PubMed to retrieve peer reviewed articles. Twenty journal articles were selected, retrieved and reviewed for this paper. Inclusion criteria included; full text availability, relevance to the topic, English language and peer review. In addition, reports and publications from national and international bodies were accessed. Key reports included World Health Organisation's Malaria reports, Policy documents from the National Population Commission and National Demographic reports from the Federal Ministry of Health. These were retrieved from the relevant websites.

Literature Review

The review of literature for this paper is done under the following subheadings:

Conceptual Clarification

Malaria

Malaria is a life-threatening disease spread to humans by some types of mosquitoes. It is mostly found in tropical countries. It is preventable and curable. The infection is caused by a parasite and does not spread from person to person. Symptoms can be mild or life-threatening. Mild symptoms are fever, chills and headache. Severe symptoms include fatigue, confusion, seizures, and difficulty breathing. Infants, children under 5 years, pregnant women, travellers and people with HIV or AIDS are at higher risk of severe infection (WHO, 2023).

The most common early symptoms of malaria are fever, headache and chills. Symptoms usually start within 10–15 days of getting bitten by an infected mosquito. Symptoms may be mild for some people, especially for those who have had a malaria infection before. Because some malaria symptoms are not specific, getting tested early is important. Some types of malaria can cause severe illness and death (Ibrahim et al., 2021). Infants, children under 5 years, pregnant women, travellers and people with HIV or AIDS are at higher risk. Severe symptoms include: extreme tiredness and fatigue, impaired consciousness, multiple convulsions, difficulty breathing, dark or bloody urine, jaundice (yellowing of the eyes and skin), abnormal bleeding. People with severe symptoms should get emergency care right away. Getting treatment early for mild malaria can stop the infection from becoming severe. Malaria infection during pregnancy can also cause premature delivery or delivery of a baby with low birth weight (WHO, 2023).

The Prevalence of Malaria Infections in Nigeria

The prevalence of malaria infection among the country's population varies from place to place, even within the same country, and may be due to differences in sociocultural, economic, socio-demographic, environmental and climatic factors (Yahana et al., 2019). In Nigeria, malaria prevalence of 66.7% in 2021, 64.0% in 2022, and 58.0% in 2023 have been reported by previous studies (WHO, 2023).

According to the 2021 World Malaria Report, Nigeria had the highest number of global malaria cases (26.6 % of global malaria cases) and the highest number of deaths (31% of global malaria deaths) in 2021. In the same year, Nigeria had an estimated 68 million cases and 194,000 deaths due to malaria. The country accounted for an estimated 54% of malaria cases in West Africa in 2021. Case numbers decreased by 2% between 2020 and 2021, from 312.7 to 306 per 1000 of the population at risk. Deaths increased by 3.5%, from 0.91 to 0.94 per 1000 of the population at risk during that same period (World Health Organization, 2023).

The incidence of malaria was significantly higher in the North Central region of Nigeria compared to the rest of the country. The North East region, although having higher incidence than the Southern regions, had lower incidence than the North Central and North West regions (Ibrahim, et al., 2023). Malaria incidence was higher in rural residential areas compared to urban settings in Nigeria. The higher incidence in rural areas could be attributed to prevailing cultural practices that predispose people to malaria infection (Omoya & Ajayi, 2020).

Malaria prevalence was reported to be as high as 70-99% in the Southern regions of Nigeria, which was attributed to higher rainfall, more water bodies, and heavy forest cover that aid malaria transmission (Ibrahim et al., 2023). However, these authors found the incidence of

malaria to be significantly higher in the Northern regions compared to the South. The North East region had higher coverage of insecticide treated nets compared to the North Central and North West regions, which may have contributed to its relatively lower malaria incidence (Awosula, 2021).

Symptoms of Malaria

Malaria is an infectious disease caused by the plasmodium parasite and spread through mosquito bites (Adefemi, et al., 2015). Over the course of history, several strains of the plasmodium parasite have been discovered, each causing varying severity of malaria and sometimes spread by different species of mosquito. However, the female anopheles mosquito is now known to be the most common vector for malaria in Nigeria. While mosquitoes can be found in several parts of the world, the malaria-transmitting Anopheles gambiae mosquito is generally restricted to sub-Sahara Africa and some parts of Asia and Latin America. In fact, the most virulent form of malaria (Plasmodium falciparum) can be found almost exclusively in Nigeria and other sub Saharan countries (WHO, 2022).

Awosolu et al., (2021) asserts that malaria presents with several different signs and symptoms, but the most common symptom is fever (high body temperature). Other symptoms in adults may include headache, aches and pain, weakness (of especially the limbs), bitterness in the mouth and loss of appetite. In children, malaria also presents with prolonged sleeping, nausea and vomiting.

Malaria Transmission

Malaria continues to be a significant global health challenge and a major public health issue in several countries, including Nigeria. The disease is transmitted in humans from one person to another through the bites of infected female mosquitoes of the anopheles (Ibrahim et al., 2023). There are five species of parasites belonging to the genus Plasmodium, that transmit malaria, of which P. falciparum is the most prevalent (WHO, 2023).

Malaria Prevention

Prevention of malaria includes methods to control mosquitoes breeding sites, stop mosquitoes from biting people, kill adult mosquitoes and clear the malaria parasite in the body before it causes malaria (Uushona et al., 2022). Malaria can be prevented by avoiding mosquito bites and by taking medicines. Talk to a doctor about taking medicines such as chemoprophylaxis before travelling to areas where malaria is common.

Important methods for preventing and controlling malaria as highlighted by Uushona et al., (2022) are as follows:

Environmental clean-up

This involves elimination or destroying all mosquito breeding places and conduct general clean-up of bushes and tall grasses where they live. Mosquitos need water to breed and grow. To avoid breeding of mosquitoes, we need to always clean and maintain proper drainage and avoid pools of water. Village Clean-up; Digging Drainage; Cut long grass and clear bushes around houses and in the village; Bury tins, beer cans, bottles and trees.

Insecticide-treated mosquito nets and house screening – prevent adult mosquito biting in the house. Indoor residual spraying – killing of adult mosquitoes in the house (Uushona et al., 2022).

Presumptive treatment – killing of malaria parasite in the blood before they cause malaria. Mosquito repellents – mosquito coils and local remedies. Individual protection – wearing long sleeve and trousers. Early diagnosis, timely and adequate treatment of all malaria cases (Uushona et al., 2022).

Sleep under treated mosquito nets

Using long-lasting insecticide treated nets (LLINs) is the common and effective way of malaria prevention because mosquitos are active at night time. In the use of mosquito nets, pay attention to the following points:

Sleep in a mosquito net- Check the mosquito net for holes or tears every time; Make sure there is no gap between net and floor; Wash your net every six months; Sleep in the mosquito net every night; Replace your mosquito net after using for 3 years; Use old mosquito nets to cover gaps or openings from windows or doors in your house; Do not use your mosquito net for fishing and covering of melon fruits in the garden (Boka, 2021).

Mosquito screen

Mosquito screen must be fixed on all the windows and doorways leaving no gaps or cracks for mosquitoes to go into the house. Mosquito screen installed on your windows becomes extremely important to prevent mosquitoes, flies and other harmful insects from entering your house (WHO, 2023).

Indoor Residual Spraying (IRS)

Indoor residual spraying (IRS) is a method to apply insecticide on the walls of houses in the target area to kill the mosquitoes. After the mosquito bites you in the house, it either flies out or rests on a dark wall of your house. IRS is a powerful way to rapidly reduce the adult mosquito population and malaria transmission (Boka, 2021).

Indoor spraying is effective for 3 – 6 months and which requires special equipment, insecticides and well trained and supervised personnel. In many developed societies this activity is conducted by the Vector-Borne Diseases Control Program (VBDCP)/Provincial Health Office (PHO). People in the communities are encouraged to allow their houses to be sprayed (Boka, 2021).

Prophylaxis treatment

Prophylaxis treatment kills the malaria parasite in the body, before it kills the person. Pregnant mothers are recommended to take malaria medicine once a week during pregnancy to prevent herself and foetus from getting malaria. Travelers from non-malaria endemic countries can also take prophylaxis treatment to prevent malaria (Boka, 2021).

Mosquito repellents - coils

Mosquito coils are not meant to kill mosquitoes. They are meant to repel mosquitoes using the strong smell of incense. It is considered to be safe for humans when used outside. A mosquito coil is a mosquito-repelling incense, made into a spiral and dried paste of pyrethrum (poison) powder. Mosquito coil is probably the most common mosquito repellent used, because it is cheap and easy to use. The smoke is harmful to infants in particular and advised to be used at night outside the house (Boka, 2021).

Local methods of Preventing Malaria

Boka (2021) submitted that for generations, people have used local ways to keep mosquitoes away from the villages. It is important that such traditional methods are taught and practiced in the villages. Common methods used to keep mosquitoes away includes burning of lemon leaves, coconut scraps and wet rubbish, which produce thick smoke and smell that chase the mosquitoes away.

Long sleeve shirt and trousers: Long sleeves and pants cover a lot of skin and prevent the mosquito bite. Mosquitoes are not attracted to clothes with light colours like white. Wearing long sleeves and trousers with light colours reduces the chance of a mosquito bite. Mosquitoes can bite through clothes if the fabric is thin and tight fitting. Always try and wear long sleeve or clothes to cover your arms and legs (Boka, 2021).

Sociocultural Factors Associated with Malaria Transmission and Prevention in Nigeria

The constancy of endemic malaria in certain parts of the world, and the resurgence of the disease in areas where eradication efforts were undertaken, are in large measure due to the interplay of broad social, cultural, and economic factors. Three such factors—agricultural development, population movement, and urbanization—are particularly important determinants of patterns of malaria transmission (WHO, 2023). Consequently, scholars such as Ibrahim, et al., (2022) have examined the following sociocultural factors associated with malaria transmission in Nigeria to include:

Traditional practices: Many people in Nigeria use traditional medicine for malaria treatment, which can delay seeking professional medical advice and contribute to the spread of the disease.

Cultural beliefs and values: Cultural beliefs and values can influence people's responses to malaria, such as not considering mosquito bites harmful or not using bed nets. According to Ibrahim et al., (2021), Cultural beliefs and values in Nigeria can affect malaria transmission in several ways:

Misconceptions about malaria: Some communities believe malaria is caused by evil spirits or curses, leading to delayed seeking of medical care.

Traditional remedies: Many people rely on traditional remedies, such as herbal medicines, rather than seeking conventional medical treatment.

Fatalism: Some believe malaria is fate or destiny, reducing the motivation to take preventive measures.

Social norms: In some communities, sleeping under insecticide-treated nets is seen as unmanly or uncomfortable.

Religious beliefs: Some religious groups oppose conventional medicine but believe in divine healing, leading to delayed treatment.

Cultural practices: Certain practices, like sharing cups or utensils, can increase the risk of malaria transmission.

Limited education: Cultural beliefs and values can limit access to education, particularly for women, reducing awareness about malaria prevention and treatment.

Traditional birth practices: In some cultures, traditional birth attendants may not follow proper hygiene practices, increasing the risk of malaria transmission to newborns.

Funerals and mourning: In some cultures, mourners may sleep outdoors, increasing exposure to mosquitoes.

Poverty: Poverty is a significant factor in the persistence of malaria in Nigeria, as it affects access to preventive measures, treatment, and adherence to treatment. Ibor and Okonkwo (2017) asserts that indeed, a strong relationship exists between poverty and malaria. This relationship is evident in the fact that most malaria endemic countries are also among the poorest countries of the world. Poverty contributes to the malaria burden as it has the ability to affect integral aspects of malaria treatment-seeking behaviours, including access to preventive measures and treatment—in relation to affordability, acceptability and availability and adherence to treatment.

Low household income: Many families in Nigeria struggle to afford the necessary medication and equipment to prevent and treat malaria. Consequently, the transmission rates of malaria are known to be higher in poor socioeconomic households than the rich. The reason is the poor live in houses that offer little protection against mosquitoes and are less able to afford effective prevention. As a result, they are less likely to be able to afford preventive measures or pay for effective malaria treatment (Ibor& Okonkwo, 2017).

Limited education: Many people in Nigeria do not understand the transmission of malaria and how to prevent it.

Limited access to toilets: Without access to proper sanitation, many people in Nigeria are more likely to be exposed to the mosquitoes that carry malaria.

Limited use of insecticide treated nets: While many people in Nigeria have access to insecticide treated nets, many do not use them regularly, which can increase the risk of malaria.

Occupation and Migration: Farmers and others who work outdoors are more likely to contract malaria because they are more likely to be bitten by mosquitoes. The importance of human population movements to malaria control cannot be overemphasized. In fact, such shifts may contribute to the spread of chloroquine-resistant P. falciparum. In many African countries, for example, people move from permanent settlements to rural farms during the early months of the wet season, when cultivation, planting, and weeding are carried out (Prothero, 1961). A variation on this pattern is the seasonal movement of pastoralists tending their livestock between mountain and lowland pastures. Religious pilgrimage, need for employment, drought, famine, war, resettlement, and tourism all contribute to the ebb and flow of populations and the spread of malaria.

Population movement increases malaria transmission in four principal ways. First, such movement often introduces non immune people into endemic areas or infected people into malaria-free regions.

Second, the living conditions of migrants differ markedly from those of settled populations, resulting in greater exposure to infected mosquitoes. Housing, if available, is crowded, of poor quality, and often located adjacent to Anopheles breeding sites.

Third, the type of work performed by migrants and the conditions under which they work often result in greater exposure to malaria-infected mosquitoes. Much of the work, especially if it is illegal (for example, gem mining, gold prospecting, and drug smuggling), is performed at night, when Anopheles mosquitoes are most likely to be biting. In addition, since employment for migrants is usually seasonal or temporary, there are periods when no funds are available for malaria treatment.

Finally, migrant populations rarely are served by government malaria control programs. Even if they are served, most control methods, such as residual application of insecticides to walls of houses, chloroquine prophylaxis for pregnant women, and screening of houses, may be difficult or impossible to implement. For example, gold miners who work across Atorin-Ijesha region in Southwestern Nigeria live in temporary shelters without walls. The absence of walls makes insecticide spraying impractical and allows mosquitoes to enter freely at night.

Lack of universal and equitable access to primary healthcare: The Nigerian healthcare system's lack of universal access to primary healthcare contributes to the persistence of malaria.

Sleeping habits: Sleeping habits, such as not using mosquito nets or sleeping outdoors, contribute to the spread of malaria.

Socioeconomic Determinants of Malaria Transmission

Socioeconomic determinants, such as income, education, and environmental conditions, influence malaria treatment-seeking behaviours and drug use practices (Ibor & Okonkwo, 2017). These socioeconomic factors are crucial to understanding the complex dynamics of malaria transmission and prevention in Nigeria, and addressing them is essential for effective malaria control strategies. Without doubt, cultural beliefs and practices significantly influence malaria transmission and prevention in Nigeria. These beliefs can either promote or inhibit the implementation of preventive measures like perennial malaria chemoprevention (PMC). Understanding these socio-cultural drivers is crucial for developing effective malaria control strategies that bridge the gap between efficacy and effectiveness. For instance, traditional medicine use delays seeking professional medical advice, impacting disease spread. Even cultural norms, beliefs, and practices shape community responses to malaria, affecting the uptake of preventive strategies and treatment-seeking behaviours.

Empirical Review

Ibor and Okonkwo (2017) examined the demographic and socioeconomic factors of malaria incidence in Calabar, Cross River State. A set of 300 copies of questionnaire designed for the study were administered on household heads. Principal Component Analysis (PCA) was performed on a set of socioeconomic data to identify significant and major demographic/socioeconomic variables that predispose people to malaria. The PCA results identified type of accommodation (0.816), number of children (0.745), marital status (0.761) and occupation (0.883) as the main socioeconomic variables that predispose people to malaria in the study area. These components accounted for 68.2% of total variance in the original data set. The study recommended that Insecticide Treated Nets (ITNs) and malaria vaccines should be made easily accessible to members of households alongside with environmental hygiene in order to reduce the incidence of malaria in the area.

Uushona et al., (2022) examined sociocultural factors that influence the prevention of malaria in Ohangwena region using a cross-sectional study and a mixed methods, convergent parallel design was employed. The major theme revealed that traditional prevention methods of malaria are widely available in rural communities. The best accepted traditional prevention methods include tumbleweed, bitter bush and animal dung. Quantitative findings indicated that 67.0% of participants felt that nets are expensive. Key barriers included the long distance to access health facilities (29.1%), long waiting times (25.8%) and the lack of money to pay for services and transport (22.5%). The study concluded that limited access to and cost of Western prevention methods minimise protection because of priority and resource

allocations, but it could be mitigated with the use of locally available traditional prevention practices used for many years in curbing malaria. There is a need to create awareness about socioculturally congruent malaria care.

Theoretical Framework

This paper is anchored on the Health Belief Model (HBM). The model was developed by Godfrey Hochbaum and Irwin Rosenstock in the 1960s in their carrier work in the US Public Health Services in response to the various incidences and prevalence of diseases emerging in the society to which various efforts were made to address by stakeholders in Public Health in the United States. The model was presented with four key assumptions: perceived susceptibility, perceived severity, perceived benefits and perceived barriers;

Perceived severity refers to the subjective assessment of the severity of a health problem and its potential consequences. Perceived susceptibility refers to subjective assessment of risk of developing a health problem (Janz & Marshall, 1984; Rosenstock, 1974 and Glanz, et al., 2008). The health belief model predicts that higher perceived threat leads to higher likelihood of engagement in health-promoting behaviours (Vincent, 2024).

Perceived benefits refer to an individual's assessment of the value or efficacy of engaging in a health-promoting behavior to decrease risk of disease (Janz & Marshall, 1984). If an individual believes that a particular action will reduce susceptibility to a health problem or decrease its seriousness, then he or she is likely to engage in that behavior regardless of objective facts regarding the effectiveness of the action (Rosenstock, cited in Vincent et al., 2024).

Perceived barriers on the other hand refer to an individual's assessment of the obstacles to behavior change (Janz & Marshall, 1984). Even if an individual perceives a health condition as threatening and believes that a particular action will effectively reduce the threat, barriers may prevent engagement in the health-promoting behavior. In other words, the perceived benefits must outweigh the perceived barriers in order for behavior change to occur (Janz, & Marshall, 1984, Glanz, et al., as cited in Vincent et al., 2024).

The model has been criticized for not taking into account behaviours that are habitual, performed for non-health related reasons such as social acceptability. It does not account for environmental or economic factors that may prohibit or promote the recommended actions (Vincent, et al., 2024).

Relevance and Applicability of HBM

These HBM constructs influence health-related decision-making and behaviour engagement, which are crucial in malaria prevention and control. For example, if individuals do not perceive themselves as susceptible to malaria or do not believe in the benefits of preventive measures like bed nets, they are less likely to adopt these behaviours. Moreover, sociocultural factors such as perceptions of illness, refusal to use protective measures, and traditional practices can hinder malaria prevention efforts. The HBM provides a framework to understand these cultural beliefs and values that impact malaria transmission. In summary, the Health Belief Model is the most relevant theory to explain how cultural beliefs and values affect malaria transmission and prevention in Nigeria and other endemic regions.

Discussion of Findings

This paper examined the sociocultural factors associated with the transmission and prevention of malaria infection in Nigeria. The paper has revealed traditional practices,

cultural beliefs and values, religious beliefs, social norms, traditional birth practices, poverty, limited access to education, toilets and insecticides, overcrowding, sleeping habits, socioeconomic status as some of the sociocultural factors associated with transmission and prevention of malaria in Nigeria. These cultural practices, beliefs and value system among the aforementioned socioeconomic factors can hinder or influence efforts to control malaria transmission in Nigeria.

The paper has equally revealed that the rates of malaria infection vary from place to place due to differences in sociocultural, economic, socio-demographic, environmental and climatic factors.

The paper further revealed in tandem with the views of the World Health Organiation (2022) and scholars like Adefemi, et al., (2015) that Malaria is an infectious disease caused by the plasmodium parasite and spread through bites of an infected female Anopheles mosquito. This means that Mosquito bites cause malaria when an infected female Anopheles mosquito transmits the Plasmodium parasite to a human host through its saliva. I.e the female Anopheles mosquito bites someone who has malaria, ingesting the parasites along with their blood. Then Plasmodium parasites reproduce inside the mosquito's body, eventually reaching its salivary glands and when the infected mosquito bites someone else, it injects the parasites into their bloodstream through its saliva. Then the Plasmodium parasites travel to the liver, where they multiply and mature and the parasites enter the bloodstream, infecting red blood cells and causing them to rupture, leading to the symptoms of malaria.

The paper thus agrees with Uushona et al. (2022), Boka (2021) and World Health Organization (2023) that malaria can be prevented by environmental clean-up, sleeping under treated mosquito nets, mosquito screen, Indoor Residual Spraying (IRS), prophylaxis treatment and the use of Mosquito repellents/coils among others. The paper unveiled other local preventive measures to include wearing of long sleeve and long trousers / lemon leaves can also prevent the contraction of malaria infection.

Conclusion

The paper has shown that although a large number of people are aware of the existence of malaria, its clinical impact is somewhat underrated, reasons not farfetched from cultural beliefs, values and practices, poverty and high illiteracy level of people which appear to have constituted a big barrier towards freely accepting the scientifically proven facts about the disease towards its effective control and therefore presenting a breeding ground for an uncontrolled transmission of the infection.

Recommendations

Based on the findings of this study, it is suggested that:

i. Sensitization programmes should be organized to create necessary awareness on the need to look at malaria infection beyond cultural values and traditional belief system especially in the rural areas.

ii. The monthly sanitation exercise should be re-instituted to provide residents opportunity to keep their surroundings clean. This approach will go a long way in destroying mosquito breeding sites.

iii. More malaria intervention kits (such as ITNs) should be made readily available to people in high-risk places, especially women who may not have the money to access medical care, while malaria intervention plans should be carried out during the onset

of the rainy and dry season. These periods are responsible for the increasing trend in malaria.

iv. In order to avoid breeding of mosquitos, we need to always clean and maintain proper drainage and avoid pools of water, cutting of long grasses and clearing bushes around houses and bury tins, beer cans, bottles and trees always.

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