

Knowledge, Attitude and Perception of Social Media in Influencing Malaria Vaccination Uptake in Nigeria

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DOI: <https://doi.org/10.47772/IJRISS.2026.100701052>

Received: 27 July 2026; Accepted: 01 August 2026; Published: 20 August 2026

ABSTRACT

This study is necessitated to investigate role social media plays in influencing malaria vaccination uptake in Nigeria. This study is anchored on two major theoretical frameworks which are: Diffusion of Innovation Theory and Health Belief Model. Using these two theoretical frameworks, the study thoroughly evaluates a body of empirical studies and communication trends on social media with emphasis on how social media influences malaria vaccination uptake in Nigeria. Findings show limited awareness of malaria vaccines with even stakeholders of social media having no prior knowledge of its emergence. Moreover, social media was identified to be a source of misinformation and likewise an enabling agent for relevant health information spread, thereby shaping the attitudes and perceptions of the general public, coupled with their hesitance towards the use of malaria vaccines. Furthermore, findings show that the acceptance of malaria vaccines is largely influenced by the dissemination of credible health information on social media, whereas the spread of misinformation results in negative perception, consequent hesitancy in the use of malaria vaccines and a deepening in the overall trust people have on the vaccine programme. In conclusion, the study suggests that there should be credible and evidence-based information dissemination about malaria vaccines on the social media spaces which would lead to a massive malaria vaccination uptake in Nigeria. The study also recommends an intentional strengthening of digital health-related information dissemination, introduction of massive media literacy on health matters, and enhancing partnerships between social media stakeholders and public health institutions.

Keywords: Malaria, knowledge, attitude, perception, vaccine uptake, social media, health communication.

INTRODUCTION

The Sub-Saharan Africa has been grossly affected by malaria (a major public health challenge), with Nigeria bearing the greatest burden. The greatest rate of malaria spread has been attributed to Nigeria, indicating over 27% of infections across the globe and 30% death rate (World Health Organization, 2023). According to Bhatt et al., (2015), irrespective of the fact that a number of vaccines and insecticide treatments were introduced such as: indoor residual spraying (IRS), and antimalarial therapies, the spread of malaria has remained a recurrent incident, as a result of environmental, behavioral and structural factors. However, the introduction of notable malaria vaccines such as R21 and Matrix-M, indicates drastic effort towards the breakdown of malaria endemic. According to Draper et al., (2018) and WHO (2021), these aforementioned vaccines have the tendency of reducing the incidence of malaria predominantly among children if applied with the right clinical measures. WHO (2021) further recommended a malaria vaccine known as RTS, S vaccine predominantly for children who are resident in areas with high transmission rate of the endemic which is a historical feat achieved across the globe.

It is therefore imperative to note that the effectiveness of the malaria vaccine programme is highly dependent on its acceptance by the general public, which would help to enhance its uptake. According to MacDonald (2015), there has been increased hesitancy towards malaria vaccine uptake despite the availability of the vaccines, which poses a great challenge to immunization of children. Predominantly in Nigeria, this hesitancy towards malaria vaccines uptake has grossly affected public health campaigns in time past as observed during the polio eradication initiative (Ghinai et al., 2013).

Social media has emerged as a potent tool that influences public health attitude, behaviors and perceptions in the digital landscape. These social media platforms includes WhatsApp, Facebook, Instagram and "X", formerly known as Twitter. It is pertinent to note that these social media platforms are major sources of public health information in Nigeria (Olapegba et al., 2020). Moreover, these social media platforms facilitate the spread of misinformation about public health matters in the form of rumors and conspiracies affecting vaccine uptake, thereby lead to negative attitude and perception of the public about malaria vaccines (Cinelli et al., 2020).

Knowledge, attitude and perception of people about malaria uptake and health related matters have been greatly affected by the emergence of social media. Studies by Wilson & Wiysonge (2020) show that exposure to malaria vaccines on social media has led to limited acceptance and usage of this vaccine by the general public. According to Afolabi & Ilesanmi (2021), social media plays a crucial role in shaping the knowledge, behaviour and perception of the general public on malaria vaccine uptake and overall health related issues, predominantly in Nigeria.

Problem Statement

Malaria vaccines uptake in Nigeria has remained significantly low and uncertain despite its availability and efficacy. It is therefore pertinent to note that the main rationale for this challenge is the limited knowledge people have about the vaccine. According to Adebisi et al., (2023), empirical studies show that policy makers and the general public lack requisite information that borders on the use of malaria vaccines which negatively influence their behaviors and perception on malaria vaccines uptake. It is noteworthy that this negative perception and behaviour towards malaria vaccines uptake are greatly influenced by social media engagement. According to Tasnim et al., (2020), although social media engagement enhances public health information dissemination to a wide range of people, it's usage is also met with dissemination of misinformation which raises a high sense of skepticism, uninterested behaviors, negative perceptions towards it's uptake, and consequent low usage. According to Loomba et al., (2021) a typical example is the spread of misinformation during the COVID-19 pandemic which negatively affected the vaccine's uptake in Nigeria.

Predominantly in Nigeria, misinformation and rumour concerning vaccines use usually spread rapidly through a popular social media platform known as Whatsapp, because messages are often forwarded easily by users to people on their respective contact lists without first scrutinizing the messages to verify their authenticity (Olapegba et al., 2020). Among these messages are claims that are falsely exaggerated about the side effects of malaria vaccines, theories of conspiracy, and lack of trust which people have concerning government initiatives. However, these false and misleading narratives often result to a negative perception about the uptake of malaria vaccines among the general public.

According to Cinelli et al., (2020), the social media algorithm is set in a way that users are often exposed to contents that they view or watch often and aligns to their belief systems and perceptions. This therefore create a deep-seated feeling of skepticism and lack of trust on the acceptance of malaria vaccines. Moreover, this dynamic makes the efforts of public health communication abortive, this is because most users tend to engage only content that aligns to their own belief systems and perception, thereby skipping content that has something to do with malaria vaccines.

Irrespective of the growing impact social media has globally, there is little or no comprehensive research that borders on how knowledge, attitudes, and perceptions of the people are shaped through these platforms with respect to malaria vaccine uptake in Nigeria. However, the few existing studies only center on the emergence of COVID -19 pandemic and general hesitance to vaccine uptake, with no emphasis on the influence of social media on the attitude, knowledge and perception of people towards malaria vaccine uptake, which is what this present study is necessitated to address. This present study therefore hopes to fill this gap in knowledge by investigating the knowledge, attitudes, and perceptions of social media in influencing malaria vaccination uptake in Nigeria within the framework of mass communication.

Objectives of the Study

The major objective of this study is to investigate knowledge, attitude and perception of social media in influencing malaria vaccination uptake in Nigeria.

- investigate the knowledge level of social media users about malaria vaccines uptake in Nigeria.
- evaluate social media users' attitudes toward malaria vaccination uptake in Nigeria.
- analyze the perceptions shaped by social media narratives on malaria vaccines uptake.
- examine the role social media play in influencing vaccine acceptance.
- identify social media communication strategies to improve malaria vaccine uptake in Nigeria.

LITERATURE REVIEW

In the context of public health, knowledge can be seen as the extent of understanding and awareness of individuals about health intervention with respect to its objective, advantages, disadvantages and level of accessibility (Nutbeam, 2000). Moreover, knowledge can be regarded as a major factor that determines human health behaviors, often influenced by both attitude, perception and subsequent uptake (Betsch et al., 2018).

It is imperative to note that knowledge about malaria vaccines has remained very low in Nigeria, despite the fact that the country has a lot of disease challenges. According to Adebisi et al., (2023), empirical studies have recorded a wave of awareness about the emergence of RTS, S malaria vaccine. However, there is a high level of inconsistencies among different sociocultural ethnic groups in Nigeria. Similarly, according to Adisa et al., (2021), there is often a lower level of knowledge about malaria vaccination among individuals in rural communities, coupled with lower educational qualifications which affect decision making process regarding the malaria vaccination.

Furthermore, the emergence of social media as an agent of mass communication has become a medium through which knowledge about malaria vaccination is gained. According to Cinelli et al., (2020), even though it offers a medium of dissemination of accurate information concerning malaria vaccination, it also gives way for the dissemination of misinformation and controversial information among users. According to Vraga & Bode (2017), the issue of misinformation and adulterated information is dependent on the credibility and level of knowledge of digital literacy.

Attitude Toward Malaria Vaccination

Attitude refers to an individual's evaluative disposition toward an object, behavior, or concept, which may be positive, negative, or ambivalent (Ajzen, 1991). In the context of vaccination, attitudes are shaped by beliefs about vaccine safety, effectiveness, and necessity (MacDonald, 2015).

Research suggests that attitudes toward vaccines in Nigeria are influenced by a combination of cultural beliefs, trust in health institutions, and exposure to information (Ghinai et al., 2013). Positive attitudes are associated with higher levels of trust in medical authorities and greater exposure to credible health information, while negative attitudes often stem from misinformation and distrust (Wilson & Wiysonge, 2020).

Social media plays a critical role in shaping attitudes by framing health narratives and influencing emotional responses. Studies have shown that exposure to pro-vaccine content on social media can enhance positive attitudes, whereas exposure to anti-vaccine narratives can significantly increase hesitancy (Loomba et al., 2021). The interactive nature of social media further amplifies attitudinal shifts through peer influence and social validation mechanisms such as likes, shares, and comments (Betsch et al., 2012).

Perception of Malaria Vaccination

Perception, according to Rosenstock (1974), refers to the way individuals make meaning of sense out of the kind information or content they consume. This is often determined by existing background knowledge, belief systems, context and experiences of these individuals. However, in the context of malaria vaccination

which this study is about, perception refers to the way in which individuals perceive or view the associated risks and benefits that come with vaccination.

In the context Nigeria, according to Ghinai et al., (2013), the perception of Nigerians about malaria vaccination is often derived from individual historical backgrounds and past experiences which shape their belief systems and perceptions. Among this perception is that which has to do with the idea surrounding immunization programme such as the polio vaccine boycott in the northern part of Nigeria. As a result of these experiences, there has been a recorded lingered skepticism and lack of trust on the efficacy of malaria vaccination in local communities.

It is imperative to note that social media influences the perception of people regarding the safety of vaccination and its effectiveness. According to Cinelli et al., (2020), there is an emergence of a new phenomenon which is known as "Infodemics" which refers to the quick dissemination of both accurate and inaccurate information on happenings. However, this phenomenon has posed a major challenge in the domain of public health communication. Similarly, according to Vosoughi et al., (2018), emotionally inclined misinformation tend to be disseminated more quickly and tend to create negative perceptions in the minds of people concerning vaccination uptake.

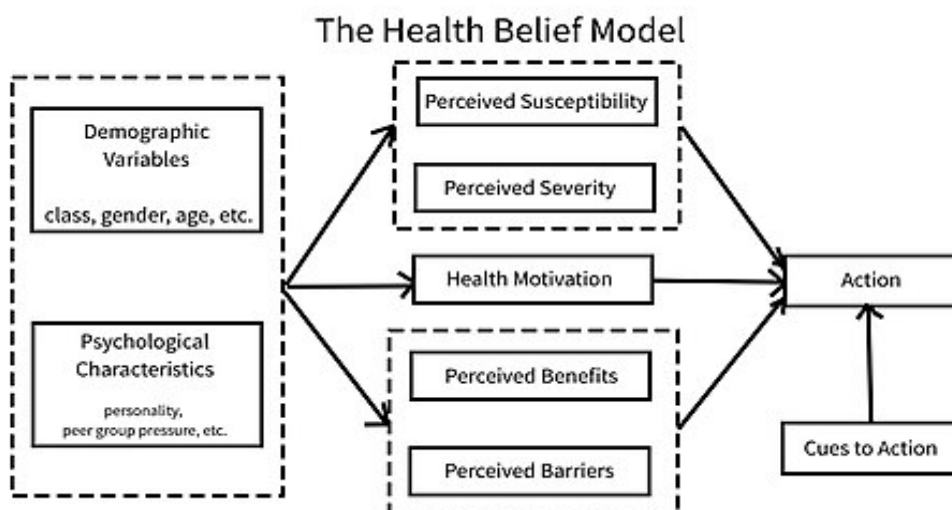
Social Media Use in Health Communication

Social media, according to Kaplan & Haenlein (2010) can be seen as a digital space which helps individuals to not only create, but also share and communicate with content in any given period of time. Moreover, in the field of mass communication, social media use has significantly changed the way information are disseminated to a larger audience, changing the narrative from mere top-down system to a more participatory system of communication.

In the context of Nigeria, social media use has significantly penetrated different social media platforms such as Whatsapp, Facebook and Instagram which serve major forms of communication and information dissemination (Olapegba et al., 2020). Moreover, public health communication has been significantly influenced by the emergence of social media as a medium of communication.

On the contrary, the fact that information on social media are widely democratized poses a major public health issue and challenges. According to Allcott & Wiysonge (2020), this issue of democratization of social media causes a proliferation of misinformation unlike the traditional medium of communication. However, this causes major hindrances to information assimilation about vaccine communication because misinformation undermines the trust the general public have about malaria vaccine uptake (Wilson & Wiysonge, 2020).

THEORETICAL FRAMEWORK



The Health Belief Model (HBM) is one of the theoretical frameworks for the study, which provides a yardstick for understanding individual behaviors, attitudes and perception towards vaccination uptake. According to Rosenstock, (1974) and Becker (1974), HBM stipulates that individuals have tendency of engaging in a given health behaviour when they perceive themselves to be vulnerable to a particular disease, have an understanding of the consequences of such illness, perceive there are benefits associated with taking action, and identify little or no hindrances to action.

In the context of this study on malaria vaccination, social media has a significant influence on each component of the HBM. According to Betsch et al., (2018), notable among them is the level of exposure of individual's information that has to do with malaria vaccination which may invariably boost their perception on vulnerability to malaria spread. However, misinformation on the side effects of malaria vaccination can increase perceived barriers (Janz & Becker, 1984). In the Nigerian context, the use of social media can either enhance or deter the above constructs, which thereby influences vaccine uptake.

Major Tenets of the Health Belief Model

Rosenstock (1974) and Becker (1974) identified six major tenets of the Health Belief Model which includes:

- Perceived Susceptibility: This tenet indicates an individual's belief regarding the likelihood of contracting a disease.
- Perceived Severity: This tenet shows the belief regarding the seriousness of the disease and its consequences.
- Perceived Benefits: This tenet shows belief that a particular action will reduce disease risk.
- Perceived Barriers: This tenet shows obstacles that may prevent individuals from taking action.
- Cues to Action: This tenet shows triggers that motivate individuals to engage in health behavior.
- Self-Efficacy: This tenet shows confidence in one's ability to perform the behavior.

Relevance to the Study

The Health Belief Model is relevant because social media has a profound influence in all six constructs. This is because, an exposure to information on social media can increase perceived susceptibility to malaria, improve awareness of the severity of malaria infection, highlight the benefits of vaccination, and provide cues to action encouraging vaccine uptake. However, when there is misinformation on social media, there is the tendency of increased barriers which may discourage vaccination; hence, the theory provides a useful framework for understanding how social media influences knowledge, attitudes, perceptions, and ultimately malaria vaccination uptake in Nigeria.

Diffusion of Innovations Theory

The diffusion of innovations which is the second theoretical framework for this study stipulates how new ideologies and technologies emerge and spread across a given society (Rogers, 2003). Moreover, the factors that influence this theory include: relative advantage, compatibility, complexity, and observability. However, diffusion of innovation theory is a complex construct that is rarely linear or accurate. According to Cinelli et al., (2020), the dissemination of misinformation often hinders effective communication about malaria vaccination, thereby creating negative perceptions of the innovation. In essence, an understanding the dynamics of information diffusion on social media is critical for promoting vaccine uptake which makes the diffusion of innovations a most suitable theoretical framework for the study.

Major Tenets of Diffusion of Innovations Theory

Rogers (2003) identifies five major characteristics influencing innovation adoption: Relative Advantage, Compatibility, Complexity, Trialability and Observability. The theory also categorizes adopters into: Innovators, Early Adopters, Early Majority, Late Majority and Laggards.

Relevance to the Study

The idea of malaria vaccination is a relatively new public health innovation in Nigeria. Moreover, social media serves as a major diffusion channel through which information about the vaccine is disseminated. It is through social media that individuals become aware of the vaccine, have access to its advantages and further evaluate its compatibility with their beliefs, by observing others' experiences respectively. Therefore, the theory is applicable to the study because it helps explain how information shared through social media contributes to the acceptance or rejection of malaria vaccination uptake among Nigerians.

Social Media and Vaccine Knowledge

According to several empirical evidences, social media plays a significant role in shaping knowledge of health-related issues such as malaria vaccination. According to Vraga & Bode, (2017), previous empirical studies show that most individuals who use social media frequently for health-related information have a high tendency of gaining awareness which may not necessarily be an accurate knowledge.

According to Adebisi et al. (2023), in the Nigerian context, there is limited knowledge of malaria vaccines uptake among stakeholders, which highlights the need for targeted communication strategies. Similarly, according to Olapegba et al. (2020), the widespread use of social media has significantly increased awareness of COVID-19 virus during its emergence, also leading to the spread of misinformation in social media.

Furthermore, several studies established a powerful link existing between social media exposure and attitudes toward vaccination. According to Wilson & Wiysonge (2020), social media use has significantly influenced hesitancy towards vaccine use in public discourse; hence, and amplifying negative sentiments among people.

The literature reviewed explored the complicated link that exists between knowledge, attitudes, perceptions, and social media in influencing vaccine uptake in Nigeria. It is therefore noteworthy that, while social media use has the tendency of enhancing health-related communication, it however, also poses significant challenges and problem as a result of the spread of misinformation. While most studies reviewed in this study focused on general vaccine hesitancy such as COVID-19 vaccination, limited attention was paid to malaria vaccination in Nigeria. Therefore, this present research is necessitated to fill his gap in literature by providing a specific comprehensive analysis of knowledge, attitude and perception of social media in influencing malaria vaccination uptake in Nigeria.

METHODOLOGY

A cross-sectional survey design coupled with a quantitative analytical approach is adopted as the most suitable design for this study, in a bid to examine the influence social media has on knowledge, attitudes, and perceptions regarding malaria vaccination uptake in Nigeria. The rationale for adopting a cross-sectional design is because it allows for the collection of data from a population at a particular time-frame, thereby, enabling a critical assessment of relationships that exist among variables without any form of manipulation (Creswell, 2014). Moreover, a positivist research paradigm is adopted as the most suitable approach which according to Bryman, (2016) emphasizes objective measurement and statistical analysis of observable phenomena on the topic under study. Therefore, this approach is used to examine how social media exposure influence vaccine-related knowledge, attitudes, and perceptions.

The population of the study comprise Nigerian adults within age 18 and above who are active users of at least one social media platform such including: WhatsApp, Facebook, Instagram, and X, formerly known as Twitter. The study adopts a multi-stage sampling technique, comprising a sample size of 400 respondents determined using Cochran's (1977) formula for sample size calculation in large populations. This is a most suitable sample size to achieve statistical reliability and generalizability in social science research (Krejcie & Morgan, 1970).

The analysis was done using descriptive statistics which includes Frequencies, percentages, means, and standard deviations to summarize data.

Findings

According to the research, a total number of 400 questionnaires were distributed, 372 out of the 400 questionnaires were valid. The response rate was therefore 93.0%, which is considered appropriate for research execution in social sciences (Bryman, 2016).

Demographic Data

Demographic Data	Variables
Male	52.1%
Female	47.9%

According to the in Table 4.1, male respondents constituted 52.1% of the study population while female respondents were 47.9% in number. This underscores a level of balance in the population of both genders and distribution among participants. This balance in population with respect to gender thereby reduces the tendency of any form of gender bias. The almost-equal representation of male and female genders above also reveals that the ideas and perceptions by respondents regarding social media and malaria vaccination uptake reflect perspectives from both male and female social media users in Nigeria.

Patterns of Social Media Usage

Patterns of Social Media Usage	Variables
Whatsapp	89.5%
Facebook	76.2%
Instagram	64.8%

Knowledge of Malaria Vaccination

Knowledge of Malaria Vaccination	Variables
Heard about malaria vaccines	67.2%
Unsure about the safety of malaria vaccines	45.3%

Interpretation

From the findings of the study on knowledge of malaria vaccination, whatsapp is the most frequently used social media platform among respondents, with 89.5% usage, followed by Facebook (76.2%) and Instagram (64.8%). This result shows that WhatsApp constitutes the primary channel through which health-related information are disseminated, this also shows that information on malaria vaccination has the likelihood of reaching many Nigerian audiences through WhatsApp channel compared to other social media platforms. The finding is in tandem with the assertion of Olapegba et al., (2020) which stated that previous studies have identified WhatsApp as the dominant communication platform in Nigeria due to its affordability and accessibility.

Attitudes Toward Malaria Vaccination

Attitudes Toward Malaria Vaccination	Variables
Expressed willingness to receive or recommend the vaccine	54.8%
Hesitant	28.6%
Outright resistance	16.6%

Interpretation

According to the findings of the study, although a majority (67.2%) of respondents have heard about malaria vaccines, a huge percentage of the population (45.3%) remain unsure about vaccine safety. What this reveals is that creating awareness is not enough to translate into adequate knowledge. Therefore, a huge information gap is identified according to the findings of the study; hence, the need for strategic communication capable of addressing misconceptions and improving public understanding of malaria vaccination.

Perceptions of Malaria Vaccination

Perceptions of Malaria Vaccination	Variables
Perceived malaria vaccines as beneficial	49.2%
Expressed skepticism	34.7%
Undecided	16.1%

Interpretation

The findings of the study in respect to perceptions of malaria vaccination show that 54.8% of respondents expressed willingness to receive or recommend malaria vaccination. This indicates a moderate level of acceptance among social media users in different social media platforms. However, it is imperative to also note that the proportion also shows that there is a level of hesitance among a significant segment of the population which has a drastic influence on the level of misinformation, safety concerns, and distrust in health interventions.

DISCUSSION OF FINDINGS

From the findings of this study, social media plays a complex role in influencing malaria vaccination uptake in Nigeria. Findings show that, even though social media is a tool that enhances access to information, it is also associated with challenges which are related to misinformation and lack of trust among users.

Firstly, the findings of the study reveals that there remains limited knowledge about malaria vaccination despite the fact that there is a high level of its usage predominantly among Nigerians. This is to say that exposure to information on social media is not sufficient, therefore, there is also the need for an effective health communication, especially when the information environment is filled with controversial and misleading messages (Vraga & Bode, 2017).

Secondly, with respect to attitudes of social media users toward malaria vaccination, the attitudes of individuals have greatly shaped the social media narratives. While positive exposure enhances hug acceptance rate, negative exposure, on the other hand, results in hesitancy among users. It is pertinent to note that, this very finding is in tandem with previous studies by Wilson & Wiysonge (2020), highlighting the influence of digital media on health behavior.

Thirdly, findings show a high level of vulnerability to misinformation on the social media space which leads a negative perception about malaria vaccination uptake in Nigeria. Moreover, the wide exposure of individual to misinformation and fake news have a way of misleading the general public, thereby leading to a deep-rooted skepticism and lack of trust among users which ends up undermining the malaria vaccination efforts (Vosoughi et al., 2018).

In essence, findings show that attitudes and perceptions serve as stronger determinants of vaccine uptake than knowledge. There is therefore an urgent need for effective health communication strategies to be put in place, in order to address emotional and perceptual factors affecting malaria vaccination uptake in Nigeria (Betsch et al., 2018).

However, from a theoretical standpoint, the findings of the study is in consonance with the Health Belief Model because it demonstrates the importance perceived benefits and barriers have in influencing health behavior (Rosenstock, 1974). Similarly, the Diffusion of Innovations Theory which is the second theoretical framework for the study, is validated by the role social media play in enhancing the spread of both accurate and inaccurate information (Rogers, 2003).

CONCLUSION

This study thoroughly investigated the influence social media has on knowledge, attitudes, and perceptions with respect to malaria vaccination uptake in Nigeria. According to the findings of the study, while social media has significantly increased access to health-related information, the influence it has on vaccination behavior remains complicated, multifaceted, and in some cases contradictory in nature. In conclusion, social media is a major predictor in the effort of malaria vaccination in Nigeria. In as much as it holds great for the improvement, awareness and promotion of positive health behaviors, its susceptibility to misinformation present significant challenges to malaria vaccine uptake in Nigeria.

RECOMMENDATIONS

According to the findings of this study, the researcher recommends an urgent need for an effective health communication among health stake holders which would enable them to adopt strategies that would help to improve malaria vaccination uptake in Nigeria. Considering the fact that the social media space has a tremendous impact on not only, public knowledge, but also attitudes and perceptions of citizens, it is ideal for the Federal Ministry of Health in collaboration with the Nigeria Centre for Disease Control to amplify health campaigns which are evidence based across different social media platform such as WhatsApp, Facebook, Instagram etc. This is because, majority of respondents reported gaining health information through different digital media channels.

Another profound recommendation of this study is to agencies in the public health sector who should collaborate with social media companies, fact-checking organizations, healthcare professionals, and community leaders in order to put heads together and synergies effective ways of combating misinformation rampaging malaria vaccines. Through these collaborations, there would be a significant improvement in the credibility of health information being consumed by the general public and; hence, reduce vaccine hesitancy among the citizens.

Furthermore, the study also underscores the pertinent need for media literacy programmes which are sustainable. This has the capacity of equipping citizens with the necessary skills needed in order to critically evaluate health-related information faced in different social media platforms; hence, strengthening digital literacy and improving the ability of the general public to distinguish health information that are credible from misinformation, thereby enhancing informed health decisions.

Finally, there should be effective prioritization of trust building initiatives of by government agencies and healthcare institutions. When there is transparent communication with regards to vaccine development, safety, efficacy, and possible side effects, there is bound to be significant improvement in the confidence of the public and an enhancement of malaria vaccine uptake in Nigeria.

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