Social Media Users' Awareness, Knowledge, Attitude and Practice on Monkeypox in South East, Nigeria

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Abstract

The rise of monkeypox has become a global issue and the social media have continued to serve as a veritable platform for the dissemination of information on monkeypox. Despite this, public awareness on the disease seems to be low. To this end, this study sought to find out how social media has been used to create awareness about monkeypox and how it has influenced the knowledge, attitude and practice (KAP) of social media users in Southeast, Nigeria. This study adopted the health belief model. Using the Cochran formula, a sample size of 380 was derived from the estimated population of 6,580, 000 social media users. The multi-stage sampling procedure was used in the selection of respondents. The findings of this study disclosed that social media users in Southeast, Nigeria are highly aware of monkeypox viral infection alongside the awareness campaign on social media. Whatsapp among other social media platform emerged as the major source of information on monkeypox closely followed by Facebook. The respondents thus showed a wide knowledge and positive attitude toward monkeypox however their practice towards its detection, prevention and treatment was relatively low. The researchers thus recommended that health agencies should use all social media platforms to create awareness of monkeypox and other health related matters. Social media users should endeavour to go for monkeypox screening test even when they do not feel sick.

Keywords: Awareness, Campaigns, Influence, Monkeypox and Social Media Users

Introduction

The social media platforms have proven to be a veritable means of disseminating messages and campaigns on health oriented matter. This was supported by Sutton (2010) and Oyebanji et al. (2019) who opined that the media plays a very important role in the dissemination of health related information and enhances the speed at which communication is sent and received during outbreaks. Health agencies and individuals now use websites, blogs, emails and social media, such as Facebook, Twitter, WhatsApp, Instagram, TikTok and LinkedIn among others to share pictures, videos and construct words on health issues, especially campaigns on outbreak or spread.

Monkeyox, according to WHO (2022), is a zoonotic disease caused by monkeypox virus (MPXV). It was first detected in monkeys in 1958 and was later identified in a 9-month-old boy in 1970 at the Democratic Republic of the Congo. It has thus been reported in 17 countries, Nigeria inclusive. *Pulse Nigeria* (2022) on their Facebook page stated that monkeypox is caused by a virus of the same name that is closely related to smallpox, which can be spread to humans through an infected animal bite, direct contact with the body fluids of an infected person and with virus-contaminated objects. The symptoms were noted to be fever, headache, muscle ache, backache, swollen lymph nodes, chills and exhaustion.

As WHO (2022a) described, Nigeria has experienced a large outbreak with over 500 suspected cases, and over 200 confirmed cases and a case fatality ratio of approximately 3%. *The Guardian* (2022) noted that 42 countries across five regions of the world have reported a cumulative total of 3,413 confirmed cases in non-endemic countries. The breakdown of this cumulative indicated that the World Health Organisation European Region topped the infection list with 2,933 cases. This is followed by the Region of the Americas with 381 cases, and the

African Region with 73 cases. In Africa, Nigeria topped the list followed by the Democratic Republic of Congo, the Central African Republic, Ghana, Cameroon, and Congo.

Moving further as disclosed by *Punch* (2022), Nigeria ranked highest in monkeypox death toll and confirmed cases in Africa with 530 suspected cases, 220 confirmed cases and 6 deaths. To *Vanguard* (2022), Nigeria recorded 88 cases of infected persons in 2017, 49 in 2018, 47 in 2019, 8 in 2020 and 34 in 2021. As reported by Nigeria Centre for Disease Control (NCDC) on Facebook, Twitter and Instagram, Nigeria, between January and June 2022 recorded 204 cases out of which 62 cases were confirmed to be positive (NCDC 2022).

Stakeholders such as the WHO, NCDC and other government parastatals have continued to disseminate information and messages on social media about monkeypox virus. These campaigns have also been encouraged by government of nations by supporting different health agencies to inform the public on monkeypox using various media outlets, including social media. To this end, WHO (2022b) noted that Twitter has generated over 100 top tweets containing information regarding epidemiology, forms of transmission, symptoms, diagnostic testing, treatment, and prognosis of monkeypox.

The social media impact on health knowledge, behaviour and outcomes, according to Korda & Itani (2013), can be effective in meeting individual and population health needs. For instance, one can source for information concerning monkeypox either from the websites, blogs, Facebook, Twitter, WhatsApp, Instagram, TikTok and LinkedIn among others. Most times, post on Facebook and tweets are uploaded to keep people informed and knowledgeable about the existence of health related issues such as monkeypox.

The level of awareness and knowledge among social media users on monkeypox is necessary to ensure a change in attitude and practice. Social media users seem to be in a hurry to gain entertainment and as such may not predispose themselves to health related information. This is very worrisome. The researchers, therefore, sought to examine the awareness and knowledge level of social media users and to ascertain the attitude and practice of social media users towards monkeypox. The following research questions were designed to guide the study:

1. What is the level of awareness about monkeypox among social media users in Southeast, Nigeria?
2. What is the knowledge level of social media users in Southeast Nigeria on monkeypox?
3. What is the attitude of social media users in Southeast Nigeria towards monkeypox?
4. What is the practice of social media users in Southeast Nigeria towards the monkeypox?

Social Media and Monkeypox Awareness Campaign

As established by Al-Dmour et al. (2020) social media are used to create and publish information about health. WHO (2022b) noted that Twitter has generated over 100 top tweets about monkeypox. The tweets contained information regarding epidemiology, forms of transmission, symptoms, diagnostic testing, treatment, and prognosis of monkeypox. On their Facebook page, Pulse Nigeria stated on May 24 2022 that the virus is spread through direct contact of an infected, animal bite and contaminated objects like towel, bedsheets and other belongings. It often comes with fever, headache, muscle ache, backache, swollen lymph nodes, chills and exhaustion. The result of the virus is rashes on the face, hands, feet and other part of the body (*Pulse Nigeria* 2022).

Similarly, the World Health Organisation of Nigeria in their Instagram @whonigeria on 27th May 2022 disclosed that the virus is found in rodents like rats, squirrels and non-human

primates, and can be spread by contact with the blood, body fluids, secretion and skin leisons of the infected animal. *Punch* (2022) on their Facebook platform disclosed that although monkeypox vaccine has been administered to any high-risk group in any of the African countries reporting cases, WHO has provided 39,000 test kits to countries. Individuals like @abati1990, @ElsTimmy, @kozVerite, @julianataiwo and @jeepeg274 among others on their Twitter pages have shared their experiences and update concerning monkeypox with the aim of informing media audience on the latest trend. The campaign on monkeypox has been coming in from both the government, corporate and non-governmental bodies.

Studies on Awareness of Various Diseases

Various studies have been conducted within and outside Nigeria on the awareness and knowledge level of monkeypox endemicity, transmission and its vaccination among people. One of such studies was carried out by Okoli *et al*. (2019) who sought to investigate the outbreak of monkeypox in Akwa Ibom State, Nigeria. The researchers carried out a case study to ascertain the knowledge, attitude and practice of health workers and community members at Ikot Enin in Mkpat Enin LGA. Result of the study disclosed that though the level of awareness and knowledge of clinical at Ikot Enin was high; the health seeking behavior was found to be poor.

Also Sallam *et al*. (2022) in a study conducted an evaluation of the level of monkeypox knowledge, conspiracy beliefs regarding emerging virus infections, as well as their associated determinants among university medical students in Jordanian health students. Using the survey method, the researchers revealed that the students lacked essential awareness and knowledge about the emerging of monkeypox and vaccination to prevent monkeypox in Jordan. Wogu *et al*. (2020) assessed the Southern Nigerians' knowledge based on their consumption of media campaign on monkeypox outbreak. The researchers using a cross-sectional survey affirmed that there was little

knowledge of monkeypox as media campaign had little effect on people's health behavior because the source of information was from friends and social institutions.

Similarly, Riccò *et al*. (2022) conducting a pilot study on the knowledge, attitudes, and practices of Italian medical professionals and their attitude on the use of variola vaccine in order to prevent MPX infection employed the use of cross-sectional online survey to obtain data through the questionnaire. The study revealed that the knowledge status among Italian medical professionals was quite unsatisfying however people who have been previously vaccinated against seasonal influenza were willing to receive variola vaccine to prevent monykeypox. Similar result was found by Harapan *et al*. (2020) on the knowledge of monkeypox among general practitioners in Indonesia equally used a cross-sectional online survey for the study and found out the knowledge of human monkeypox was uniformly low in Indonesia.

Winters *et al*. (2022) evaluated the knowledge, attitudes, practices and monkeypox vaccination intentions among U.S. adult population. With the adoption of an online cross-sectional survey in June 2022; the researchers disclosed that though people in U.S intend to get vaccinated against monkeypox, their knowledge was poor and their most trusted sources of information about the outbreak were healthcare professionals. On their part, Jairouna et al. (2022) sought to find out the knowledge about human monkeypox among Al Ain university students in the United Arab Emirate (UAE). The descriptive cross-sectional study was employed for the study and the result showed that the students in UAE had a poor knowledge as regards to the epidemiology, symptoms and treatments of monkeypox.

Alshahrani *et al*. (2022) in their study assessed the knowledge and attitudes towards monkeypox infection among physicians in Saudi Arabia using cross-sectional, online survey. The study disclosed that though the physicians received information about monkeypox through medical

education, they lacked knowledge and attitude regarding the endemicity, transmission and clinical differences with smallpox, chickenpox and influenza. On the general population in Saudi Arabia, Alshahrani *et al*. (2022) conducted a study to evaluate their knowledge of monkeypox. The researchers adopted a web-based cross-sectional survey which was conducted from 25 May 2022 to 15 July 2022. Result disclosed that though the general public obtained monkeypox-related information mostly on social media their knowledge was found to be slightly poor.

Nath *et al*. (2022) on the assessment of knowledge on human monkeypox virus employed the survey research method to gather information from among the general population in Bangladesh. The study found out that the public are aware of monkeypox and also lacked sufficient knowledge on the source and transmission of monkeypox. Ezegwu *et al*. (2018) in their study examined newspaper framing of monkeypox outbreak in Nigeria and its influence on southeast media audience. The study adopted the mixed methods whereby both content analysis and survey research method was used to elicit information for the study. The findings disclosed that newspaper has not engaged in in-depth report on monkeypox outbreak though they elaborated on the transmission and causes of the virus in their coverage.

In the genealogy of the sickness that can be traced back to animal to human transmission, Farrokh-Eslamlou & Maheri (2021) aimed to investigate the knowledge, attitude and practice of healthcare providers regarding Zika virus. The cross-sectional study was conducted on 354 staffs of comprehensive health service centres affiliated with Tehran University of Medical Sciences. The study revealed about the poor knowledge, good attitude and poor practice of Zika virus transmission and prevention among the respondents. Ukwenya *et al*. (2021) on the knowledge, attitude and practices of healthcare workers at the Federal Medical Centre, Owo towards Lassa fever employed the use of semi-structured interviewer-administered questionnaire to elicit

information. It was discovered that healthcare workers in Owo had appropriate knowledge, positive attitude and demonstrated adequate preventive practices towards Lassa fever infection prevention and control. Kargbo *et al*. (2021) on the knowledge, attitude, and practices towards COVID-19 in Gambia adopted a cross-sectional study and thereafter distributed an online questionnaire through "WhatsApp". The study found out that Gambians had sufficient knowledge, positive attitude and adequate practice towards coronavirus. The gap in literature is the fact that there are no known empirical studies on social media and monkeypox, hence this study.

Theoretical Framework

This study was anchored on the Health Belief Model (HBM) which was developed by a social psychologist in U.S Public Health Service, Godfrey Hochbaum in 1958 and later modified by other social psychologists; Irwin Rosenstock and Becker in 1966 and 1974 respectively. Sharma and Romas (2012) opined that the tents of the model hold that the more an individual believes that a particular situation or behaviour would affect his or her health; they would likely adjust their subsequent action for the purpose of their wellbeing.

Wogu *et al*. (2019) noted that creating media awareness and providing people with programs that will educate them about the nature and consequences of health issues could determine how they are able to react and contain the breakout of any disease. Thus, the media can serve as a vital tool for changing people's health behavior to engage in practices that will prevent and curb the growing incidences of any disease. Odoh, Onwukwalonye & Onyebuchi (2018) noted that an individual's perception of media health messages contributes to the attitude and practice towards health related issues. This means that they are likely going to adjust their lifestyle and take precautionary measures if they find out how dangerous the disease or virus is to their health.

Concerning this study, the model will help social media users to understand the dangers associated with monkeypox and through the awareness campaign created on social media platforms. They will be educated and enlighten more on the mode of transmission, signs/symptoms, preventive and treatment of monkeypox through this campaign. The adequate knowledge of monkeypox will help them to take health-related actions serious if he or she discovers that a negative health condition can endanger his or her life.

Methods

The researchers adopted the survey method, using questionnaire as a tool for data collection. According to Statista (2022), the Southeastern Nigeria region has an estimated population of 6,580,000 social media users. Using the Cochran formula $n_o = \frac{Z^2pq}{e^2}$ the researchers arrived at 380 as sample size for the study since the exact population is unknown. The multi-stage sampling procedure was used in the selection of respondents from five states that make up the Southeast Nigeria namely: Abia, Anambra, Ebonyi, Enugu and Imo States. The multi-stage sampling provided room for the division of the study areas into various stages for manageability of the selection of respondents.

In stage one, the state capitals were selected from each of the five states in Southeast Nigeria. In stage two, the researchers selected one LGA from the state capitals through randomization (Enugu-North, Awka South, Abakaliki, Abia South and Owerri municipal).

Thereafter, in stage three, one community was purposively selected from each of the LGAs which include Enugu-North (GRA), Awka South (Ifite), Abakaliki (Nkaliki), Aba South (Ariaria) and Owerri Municpal (Owerri Nchi Ise) due to their proximity of internet services. In stage four, the selected five communities were used to divide the sample size (380) in order to ascertain the

number of persons that were selected from each of the communities. (380/5=76). This means that 76 respondents were selected from each community. Stage five, here, the researchers used purposive sampling to select respondents who have access to social media through their gadgets, and who have social media handles.

The Cronbach alpha was used to test the reliability of the measuring instrument which gave 0.8 as the internal consistency. The method of data analysis employed was mean analysis. The data was presented in tables with the use of numbers.

Result

The questionnaire was administered to 380 social media users in Southeast, Nigeria who formed the respondents for the study. However, 370 copies of the questionnaire were retrieved and analysed. The analysis was done using mean analysis for clearer understanding. The mean provided decision rule. The data gathered is presented according to research questions.

Research Question One: What is the level of awareness about monkeypox among social media users in Southeast Nigeria?

The cluster table format was used to provide answers to the question.

Table 1: Respondent's level of awareness on monkeypox

Option	SA	A	D	SD	Total	Mean	Decision
I am aware of monkeypox viral infection	146	189	23	12	370	3.2	Accepted
I am aware of monkeypox awareness campaign on social media	73	150	120	27	370	2.7	Accepted
I first came across monkeypox awareness campaign on WhatsApp	30	141	164	38	370	2.9	Accepted

I came to know about monkeypox on Twitter	63	90	142	75	370	2.3	Rejected
I have seen several update about monkeypox on Facebook	95	128	114	33	370	2.7	Accepted
I obtained information about monkeypox on Instagram	44	79	155	92	370	2.2	Rejected
Average Mean						2.7	Accepted

Decision Rule: *If the calculated mean is equal or greater than the criterion mean (2.5), then the decision is accepted but if the calculated mean is lower than the criterion mean (2.5), the decision is rejected. Also, let 1-1.6 (very low), 1.7-2.4 (low), 2.5-3.2 (high) and 3.3-4.0 (very high).*

From the data presented in the table above, it can be observed that at an average mean of 2.7, the respondent's level of awareness on monkeypox viral infection is high. Data presentation revealed that WhatsApp (2.9) and Facebook (2.7) were the prominent social media platforms that were used to create awareness on the monkeypox virus.

Research Question Two: What is the knowledge level of social media users in Southeast Nigeria on monkeypox?

The cluster table format was used to provide answers to the question.

Table 2: Respondent's level of knowledge on monkeypox

Option	SA	A	D	SD	Total	Mean	Decision
Monkeypox was first discovered in a monkey	105	161	64	40	370	2.8	Accepted
Human-to-human transmission can result from close contact of an infected person	138	207	20	5	370	3.2	Accepted
It can also be spread through an infected animal bite and contaminated objects	121	140	63	46	370	2.9	Accepted
The symptoms are fever, headache, muscle ache, backache, swollen lymph nodes, chills and exhaustion	128	136	57	49	370	2.9	Accepted

Rashes appears on the face, hands and feet before it spread to other part of the body	133	152	48	37	370	3.0	Accepted
Nigeria has the highest death toll from monkeypox disease in Africa	48	126	142	54	370	2.4	Rejected
Average Mean						2.8	Accepted

Source: Field Survey 2022

Decision Rule: *If the calculated mean is equal or greater than the criterion mean (2.5), then the decision is accepted but if the calculated mean is lower than the criterion mean (2.5), the decision is rejected. Also, let 1-1.6 (very low), 1.7-2.4 (low), 2.5-3.2 (high) and 3.3-4.0 (very high).*

The table above revealed that, at an average mean of 2.8, respondents had a high knowledge of monkey pox infectious disease.

Question Three: What is the attitude of social media users in Southeast Nigeria towards monkeypox?

Again, the cluster table format was used to provide answers to the question.

Table 3: Respondent's perspective on whether social media campaigns on monkeypox have changed their attitude

Option	SA	A	D	SD	Total	Mean	Decision
Thorough cooking of foods that contain animal meat and fish can help prevent the spread of monkeypox	161	180	22	7	370	3.3	Accepted
Constant washing of hands with soap and water is a way of preventing the virus	157	143	41	29	370	3.1	Accepted
Avoiding people infected with the virus helps with the prevention	111	162	59	38	370	2.9	Accepted
Visiting the clinic to check oneself against early signs of monkeypox can help in its prevention	200	153	12	5	370	3.4	Accepted
Average Mean						3.1	Accepted

Source: *Field Survey 2022*

Decision Rule: *If the calculated mean is equal or greater than the criterion mean (2.5), then the decision is accepted but if the calculated mean is lower than the criterion mean (2.5), the decision is rejected. Also, let 1-1.6 (very low), 1.7-2.4 (low), 2.5-3.2 (high) and 3.3-4.0 (very high).*

From the result in the above table, it could be seen that, at an average mean of 3.1, respondents' attitude towards the prevention and treatment of monkey pox has changed positively.

Question Four: What is the practice of social media users in Southeast Nigeria towards the prevention and treatment of monkeypox?

The presentation of data was don using the cluster table format was used to provide answers to the question.

Table 4: Respondent's perception on whether social media campaigns on monkeypox have influenced their behaviour

Option	SA	A	D	SD	Total	Mean	Decision
I wash meat and fish thoroughly before using it to cook	138	200	25	7	370	3.3	Accepted
I wash my hands with soap and water regularly	55	122	130	63	370	2.4	Rejected
I avoid coming in contact with people infected with the virus	100	173	61	36	370	2.9	Accepted
I visit the clinic even when I do not feel sick	19	34	202	115	370	1.8	Rejected
I visit the clinic to check myself against early signs of monkeypox	65	108	143	54	370	2.4	Rejected
Average Mean						2.4	Rejected

Source: Field Survey 2022

Decision Rule: *If the calculated mean is equal or greater than the criterion mean (2.5), then the decision is accepted but if the calculated mean is lower than the criterion mean (2.5), the decision is rejected. Also, let 1-1.6 (very low), 1.7-2.4 (low), 2.5-3.2 (high) and 3.3-4.0 (very high).*

The table above indicated that, at a mean value of 2.4, respondents in Southeast Nigeria practice towards the detection, prevention and treatment of monkey pox infectious disease were low.

Discussion

A. The level of awareness on monkeypox among social media users in Southeast, Nigeria

Communicating result from data analysis, in the table above, it was revealed that at an average mean of 2.7, the respondents' awareness of monkeypox viral infection was high. It was also revealed that WhatsApp among Facebook were the major platforms used to create the awareness. This collaborates with the findings of Okoli *et al.* (2019) and Nath *et al*. (2022) who disclosed that the health workers and community members in Ikot Enin and Bangladesh are aware of monkey pox viral infection. Alshahrani *et al.* (2022) and Jairouna *et al*. (2022) affirmed that social media was the most used channel of communication for creating awareness on health related matters.

This is thus, contrary to the findings of Sallam *et al.* (2022) who disclosed that respondents lacked essential awareness of monkeypox alongside its vaccine. Alshahrani *et al*. (2022) and Winters et al. (2022) indicated that information about monkeypox was received through medical education and healthcare professionals in Saudi Arabia and United State of America (USA). Wogu *et al.* (2020) agreed that interpersonal communication is a major source of health information while Ezeugwu *et al.* (2018) revealed that newspaper served as a means of health communication for the audience.

B. The knowledge level of social media users in Southeast on monkeypox

The result on the knowledge level of respondents revealed that at an average mean of 2.8, the respondents had a high knowledge of monkeypox infectious disease. This is shown as the respondents have an extensive idea of what monkey pox is all about.

These findings are related to the study of Okoli *et al*. (2019), Kargbo *et al*. (2021) and Ukwenya et al (2021) about the sufficient knowledge of monkeypox, corona virus and Lassa fever among people.

Contrary to the above, Jairouna *et al*. (2022), Harapan *et al*. (2020), Alshahrani *et al*. (2022), Nath *et al.* (2022), Alshahrani *et al.* (2022), Winters *et al.* (2022), Sallam *et al.* (2022) and Riccò *et al.* (2022) disclosed that there was an inadequate knowledge of what monkeypox infection is all about in United Arab Emirate, Indonesia, Saudi Arabia, USA, Jordan and Italy. To Farrokh-Eslamlou & Maheri (2021) the knowledge about zika viruse was relatively poor in Southern Nigeria.

C. Attitude of social media users in Southeast towards monkeypox viral infection

Further analysis from the study revealed that, at an average mean of 3.1 respondents' attitude towards the prevention and treatment of monkeypox has changed positively. This finding is similar to the study of Kargbo *et al*. (2021), who explained that there is an existence of sufficient and positive attitude towards the detection, prevention, treatment and control of COVID-19. Farrokh-Eslamlou & Maheri (2021) and Ukwenya *et al*. (2021) pointed out that the attitude exhibited towards Zika virus and Lassa fever infection, prevention and control by people was equally positive.

D. Practice of social media users in Southeast towards the prevention and treatment of monkeypox

Further analysis indicated that, at a mean value of 2.4, respondents in Southeast practices towards monkeypox detection, prevention and treatment were low. This implies that the respondents do not exhibit the tenant of the message on monkeypox transmission so as to avoid being infected. Similarly, Okoli *et al*. (2019) and Farrokh-Eslamlou & Maheri (2021) revealed that

the health behavior of people towards transmission, prevention and treatment of health matters was not encouraging. Wogu *et al*. (2020) further explained that media campaign on monkeypox had little or no effect on health behavior of the people.

Contrary to the findings, Kargbo *et al*. (2021) and Ukwenya *et al*. (2021) disclosed that respondents demonstrated a positive and adequate practice towards the prevention and control of health related matters. This is as people who have previously been vaccinated against seasonal influenza were ready to receive variola vaccine (Riccò, *et al*., 2022).

Conclusion and Recommendations

The rise of monkeypox has become a global issue as countries of the world experience the epidemic. Be that as it may, the social media has continued to serve as a veritable platform for the dissemination of health information and campaigns. The way in which social media users consume health messages will help form a sufficient knowledge, positive attitude and adequate practice towards the detection, transmission, prevention and treatment of monkeypox.

To this end, the study concludes that social media users are sufficiently aware and knowledgeable about monkeypox and has demonstrated positive attitude towards monkeypox campaigns. However, their practice towards the viral infection detection, prevention and treatment was found to be low, indicating that their knowledge has not transmitted to a health practice in kicking against monkeypox.

Based on the findings of the study, the following recommendations were made:

1. Health agencies and non-governmental organisations should adopt the use of all social media platforms while creating monkeypox awareness campaigns.

2. Social media platforms should be used more to inform and educate people more on the prevention of monkeypox.
3. Social media users should endeavour to go for monkeypox screening test even when they do not feel sick.

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