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ASSESSMENT OF HEALTH KNOWLEDGE AND PREVENTIVE PRACTICES AMONG ADULTS DURING PUBLIC HEALTH EMERGENCIES IN KADUNA STATE, NIGERIA

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Abstract

The study assessed health knowledge and preventive practices among adults during public health emergencies in Kaduna State, Nigeria. Specifically, the study examined adults' health knowledge during public health emergencies, including Lassa fever, cholera, meningitis, and flooding, assessed their preventive practices, and determined the influence of selected socio-demographic characteristics on health knowledge. A descriptive research design was adopted, and data were collected from 396 adults using a structured questionnaire covering socio-demographic characteristics, knowledge of public health emergencies, and preventive practices. The knowledge and preventive-practice items were measured using a four-point Likert scale. Data were analysed using descriptive statistics, including mean and standard deviation, while inferential statistics comprised Chi-square, independent t-test, and analysis of variance (ANOVA), as appropriate. The findings showed that respondents had a generally high level of knowledge of public health emergencies, with an aggregate mean score of 3.36 (SD = 0.65). Preventive practices were also generally high, with an aggregate mean score of 3.16 (SD = 0.74). The findings further indicated a significant relationship between knowledge of public health emergencies and preventive practices among adults. Knowledge also varied significantly across selected socio-demographic characteristics, particularly age and educational attainment, while no significant difference was observed based on gender. The findings suggest that adequate knowledge of public health emergencies is important for promoting appropriate preventive practices among adults. The study concludes that strengthening health education, risk communication, and community engagement can improve public understanding and preventive behaviours during emergencies. It recommends the development of sustained, culturally appropriate, accessible, and audience-specific health education programmes, with particular attention to adults with lower levels of knowledge and educational attainment, to strengthen preparedness and improve community response to public health emergencies in Kaduna State.

Keywords: *Health knowledge, preventive practices, public health emergencies, Lassa fever, cholera, meningitis, flooding, adults, Kaduna State*

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INTRODUCTION

Public health emergencies (PHEs) are events that pose significant risks to the health of populations and require coordinated and timely action to prevent or reduce their health and social consequences. They include disease outbreaks, epidemics, pandemics, and other health threats that can cause widespread illness, death, disruption of essential services, and pressure on health systems. Recent events, including the COVID-19 pandemic and recurrent outbreaks of cholera, Lassa fever, measles, meningitis, and other infectious diseases, have demonstrated the capacity of public health

emergencies to affect individuals, communities, and national health systems. The World Health Organization (WHO) emphasizes that effective health emergency preparedness and response require the capacity to prevent, prepare for, detect, respond to, and recover from health emergencies through coordinated systems and community protection measures (World Health Organization [WHO], 2024a).

Public health emergencies have become an important global health concern because their effects extend beyond disease morbidity and mortality to include disruption of healthcare services, economic activities, education, and social life. The increasing complexity of health emergencies has been influenced by factors such as population growth, urbanization, climate change, population movement, environmental changes, and the interaction between human, animal, and environmental health. These factors can increase the likelihood of disease emergence and transmission and create challenges for health systems, particularly in resource-constrained settings. Consequently, preparedness and response to public health emergencies require not only strong health-system capacity but also active participation and appropriate behaviour among individuals and communities (WHO, 2024a).

Adults are an important population group in public health emergency preparedness because their knowledge, perceptions, and behaviours can influence their own health and the health of other members of their households and communities. Knowledge of public health emergencies involves understanding the nature and causes of emergencies, common signs and symptoms of diseases, modes of transmission, risk factors, and sources of reliable health information, appropriate preventive measures, and actions to take when an emergency occurs. Adequate knowledge can enable individuals to recognize health threats, assess personal and community risks, seek appropriate information and care, and adopt recommended preventive measures. In contrast, inadequate knowledge, misconceptions, and poor risk perception may contribute to delayed responses, inappropriate health behaviours, and reduced adherence to public health recommendations.

The importance of knowledge becomes particularly evident during infectious disease outbreaks, when individuals are expected to make decisions based on rapidly changing health information. Risk communication and community engagement are therefore fundamental components of emergency preparedness and response. WHO identifies risk communication and community engagement as essential mechanisms for enabling people at risk to make informed decisions and adopt protective and preventive measures during health emergencies (WHO, 2024b). Effective communication requires information that is accurate, timely, understandable, culturally appropriate, and responsive to the concerns of affected populations. It also requires engagement with communities so that individuals are not merely recipients of information but active participants in protecting their health and supporting emergency response efforts (WHO, 2024c).

Preventive practices constitute another critical component of public health emergency preparedness and response. These practices refer to behaviours undertaken by individuals and communities to reduce exposure to health hazards, prevent disease transmission, and limit the consequences of emergencies. Depending on the nature of the emergency, preventive practices may include regular hand hygiene, respiratory hygiene, environmental sanitation, safe water and food practices, appropriate use of protective measures, vaccination where available, avoiding unnecessary exposure to infectious sources, early reporting of suspected illness, appropriate health-seeking behaviour, and compliance with public health directives. The effectiveness of these measures depends partly on whether individuals understand their importance and have the resources and opportunity to practise them. WHO emphasizes that community protection involves evidence-informed population and environmental interventions implemented with communities to reduce the health and social effects of emergencies (WHO, 2024a).

However, having knowledge about a public health emergency does not necessarily guarantee the adoption of appropriate preventive practices. The relationship between knowledge and behaviour may be influenced by several factors, including perceived susceptibility and severity, cultural beliefs, socioeconomic circumstances, educational level, access to health information, trust in health authorities, availability of preventive resources, and exposure to misinformation. During the COVID-19 pandemic, for example, the rapid spread of information and misinformation created difficulties for

health authorities and communities in distinguishing reliable health advice from inaccurate claims. WHO has consequently emphasized the importance of risk communication, community engagement, and endemic management as integral components of health emergency preparedness and response (WHO, 2024b; WHO, 2024c).

The prevention of public health emergencies and reduction of their consequences require action at individual, community, institutional, and governmental levels. Although some emergencies cannot be completely prevented, their occurrence, transmission, and impact can be reduced through effective surveillance, vaccination, environmental health measures, infection prevention and control, early detection, prompt reporting, risk communication, community engagement, and appropriate public health interventions. WHO's framework for community protection identifies risk communication, evidence-informed population and environmental interventions, and multi-sectoral action as important elements for protecting communities before, during, and after health emergencies. Thus, the prevention and control of public health emergencies cannot depend solely on healthcare professionals or government agencies; informed and appropriately prepared members of the public are also essential to effective emergency management (WHO, 2024a).

The COVID-19 pandemic provided important evidence of the relationship between public knowledge, risk perception, and preventive practices. The pandemic exposed weaknesses in health communication and highlighted the consequences of misinformation, rumors, misconceptions, and inconsistent understanding of preventive measures. In Nigeria, the dissemination of information through social media and other informal channels created additional challenges for public health authorities because inaccurate information could influence perceptions of disease risk and compliance with recommended measures. Studies have reported that inadequate knowledge and misconceptions can affect adherence to preventive behaviours during public health emergencies (Akande et al., 2023; Mbachu et al., 2023).

Nigeria continues to experience recurrent public health emergencies, including outbreaks of cholera, Lassa fever, measles, meningitis, and other infectious diseases. The country has also experienced multiple emergencies occurring simultaneously, placing additional demands on surveillance, healthcare delivery, laboratory systems, and emergency-response capacities. For example, WHO reported that Nigeria experienced a substantial Lassa fever outbreak in 2023 while simultaneously responding to other health emergencies, including COVID-19, diphtheria, meningitis, measles, cholera, and humanitarian crises (WHO, 2023). In addition, the continued occurrence of cholera has required strengthened preparedness, surveillance, early detection, reporting, and community-level prevention activities across the country (WHO, 2025).

The Nigerian context makes the assessment of health knowledge and preventive practices particularly important. The effectiveness of emergency prevention and response can be affected by differences in educational attainment, socioeconomic conditions, and access to healthcare, cultural beliefs, sources of health information, and public trust. Inadequate access to accurate information may increase susceptibility to misinformation and misconceptions, while limited resources may make it difficult for individuals to implement recommended preventive practices. WHO stresses that risk communication and community engagement should be adapted to local contexts and should involve communities in developing and implementing measures that protect them during health emergencies (WHO, 2024b; WHO, 2024c).

Kaduna State is one of the states in Nigeria where understanding community preparedness for public health emergencies is important. The state has a diverse population with differences in educational, socioeconomic, cultural, and environmental circumstances that may influence access to health information and the adoption of preventive behaviours. Kaduna has also been affected by infectious disease threats, including Lassa fever; WHO reported confirmed Lassa fever cases in Kaduna during previous national outbreaks (WHO, 2022). Such experiences demonstrate the importance of ensuring that adults possess adequate knowledge of public health emergencies and are able to adopt appropriate preventive practices when health threats occur.

Despite the importance of individual and community participation in emergency preparedness, knowledge gaps and inappropriate preventive behaviours may limit the effectiveness of public health interventions. Understanding what adults know about public health emergencies, how they perceive

such emergencies, and the preventive measures they practice is therefore essential for identifying areas requiring health education and behevioural interventions. An assessment of these factors can also provide evidence about whether health information is reaching adults effectively and whether recommended preventive measures are being translated into everyday practices.

Therefore, this study seeks to assess health knowledge and preventive practices among adults during public health emergencies in Kaduna State, Nigeria. Specifically, the study will assess adults' knowledge of public health emergencies, their understanding of measures for preventing and controlling public health emergencies, and their preventive practices during such emergencies. The findings are expected to provide evidence that can support the development and strengthening of health education, risk communication, community engagement, and emergency preparedness strategies aimed at improving individual and community capacity to prevent and respond effectively to future public health emergencies in Kaduna State.

PURPOSE OF THE STUDY

The main purpose of the study is to assess the knowledge and practices of health education during public health emergencies among adults in Kaduna State, Nigeria. Specifically;

To assess the level of health knowledge on public health emergencies among adults in Kaduna State.

To assess the preventive practices adopted to avoid the spread of public health emergencies among adults in Kaduna State?

RESEARCH QUESTIONS

What is the level of health knowledge on public health emergencies among adults in Kaduna State?

What is the preventive practices adopted to avoid the spread of public health emergencies among adults in Kaduna State?

Research Hypotheses

H_{o1}: There is no significant relationship between health knowledge and preventive practices among adults in Kaduna State.

METHODOLOGY

This study adopted a descriptive cross-sectional research design, which allowed for the systematic collection and analysis of data from a population at a single point in time without manipulation of variables. This design was considered appropriate for assessing the health knowledge and preventive practices among adults regarding public health emergencies in Kaduna State.

The target population comprised all adults aged 18 years and above residing in Kaduna State, Nigeria, where the total population is estimated at about 9,032,200 (Naijadetails, 2024). A sample size of 400 respondents was selected for the study, which was considered adequate to provide reliable and generalizable findings. This was based on the Research Adviser (2006) table.

A multi-stage sampling technique was employed to select respondents. Kaduna State was first stratified into the twenty-three (23) Local Government Areas using stratified sampling, similar technique was use for the stratification of the 23 LGAs into the three senatorial zones. One LGA was selected using simple random sampling. Subsequently, two communities each were selected through simple random sampling for each LGA, while households within those communities were chosen using systematic sampling. Finally, one eligible adult was selected from each household using simple random sampling. This approach ensured that the sample was representative of the population.

Data were collected using a structured questionnaire developed by the researcher, consisting of four sections: demographic characteristics, health knowledge and preventive practices related to during public health emergencies. The instrument was designed using a 4-point Likert scale ranging from Strongly Agree (4) to Strongly Disagree (1). The validity of the instrument was established through face and content validation by experts in health education and research methodology, while its

reliability was confirmed using the Cronbach Alpha method, yielding a coefficient of 0.78, indicating acceptable reliability.

Data collection was carried out through the direct administration of questionnaires by the researcher and trained assistants. Respondents were informed about the purpose of the study, and their consent was obtained prior to participation. Questionnaires were retrieved immediately after completion to ensure a high response rate. Data were analyzed using both descriptive and inferential statistics. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to answer the research questions. Inferential statistics were used to test the hypotheses at a 0.05 level of significance, with Chi-square (χ^2) employed to examine relationships between health knowledge and preventive practices.

DATA ANALYSIS

Table 1: Demographic Characteristics

Demographic Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	180	45.5
	Female	216	54.5
		396	**100%**
Age Group	18–30	138	34.8
	31–45	178	45.0
	46+	80	20.2
		396	**100%**
Education Level	Primary	60	15.2
	Secondary	158	39.9
	Tertiary	178	44.9
		396	**100%**

The demographic profile of the 396 respondents shows a relatively balanced distribution in terms of gender, with 180 males (45.5%) and 216 females (54.5%), indicating that females slightly outnumbered males in the study. This balance suggests that findings from the study reflect perspectives from both genders adequately. Regarding age distribution, the majority of respondents were aged 31–45 years (178; 45.0%), followed by 18–30 years (138; 34.8%), while the least represented group was 46 years and above (80; 20.2%). This indicates that the sample was dominated by middle-aged adults, which is important as this age group is often active in the workforce and may have greater exposure to health education messages.

In terms of educational attainment, most respondents had tertiary education (178; 44.9%), followed closely by those with secondary education (158; 39.9%), and the smallest group had primary education (60; 15.2%). This suggests that the majority of respondents are relatively well-educated, which may influence their knowledge and practices regarding health education and preventive behaviours. Overall, the demographic profile indicates a sample that is adequately diverse in age, gender, and education, providing a solid basis for examining the relationships between socio-demographic factors, knowledge and preventive practices among adults in Kaduna State.

Research Question one: What is the level of health knowledge on public health emergencies among adults in Kaduna State?

S/N	Item	Mean	Std. Dev.
1	Awareness that public health emergencies such as Lassa fever, cholera, meningitis, and flooding can spread rapidly and affect many people	3.45	0.62
2	Knowledge of handwashing as a preventive measure against diseases such as cholera	3.60	0.55

S/N	Item	Mean	Std. Dev.
	and other infections during public health emergencies		
3	Understanding the importance of vaccination in preventing diseases such as meningitis during public health emergencies	3.30	0.70
4	Awareness of the effectiveness of appropriate protective measures in reducing the risk of infection during emergencies such as Lassa fever and meningitis outbreaks	3.25	0.68
5	Knowledge of health education guidelines for preventing and controlling Lassa fever, cholera, meningitis, and health risks associated with flooding	3.40	0.64
6	Understanding how diseases such as Lassa fever, cholera, and meningitis are transmitted during public health emergencies	3.20	0.72
7	Awareness of the importance of early reporting of symptoms and suspected cases of Lassa fever, cholera, meningitis, and other diseases during public health emergencies	3.35	0.66
	Aggregate	**3.36**	**0.65**

The results presented in Table 2 he table presents the mean and standard deviation of respondents' knowledge and awareness of public health emergencies in Kaduna State. The aggregate mean score of 3.36 with a standard deviation of 0.65 indicates that respondents generally demonstrated a high level of knowledge and awareness of public health emergencies, including Lassa fever, cholera, meningitis, and flooding. The highest mean score was recorded for knowledge of handwashing as a preventive measure against cholera and other infections (M = 3.60, SD = 0.55), indicating that respondents had particularly strong knowledge of the importance of handwashing during public health emergencies. This was followed by awareness that public health emergencies such as Lassa fever, cholera, meningitis, and flooding can spread rapidly and affect many people (M = 3.45, SD = 0.62).

Respondents also demonstrated relatively high knowledge of health education guidelines for preventing and controlling Lassa fever, cholera, meningitis, and health risks associated with flooding (M = 3.40, SD = 0.64). Similarly, awareness of the importance of early reporting of symptoms and suspected cases recorded a mean of 3.35 (SD = 0.66), while understanding the importance of vaccination in preventing diseases such as meningitis recorded M = 3.30 (SD = 0.70). The item with the lowest mean score was understanding how diseases such as Lassa fever, cholera, and meningitis are transmitted during public health emergencies (M = 3.20, SD = 0.72). This was followed by awareness of the effectiveness of appropriate protective measures in reducing infection risks during Lassa fever and meningitis outbreaks (M = 3.25, SD = 0.68). Although these were the lowest-rated items, their mean scores remained relatively high, suggesting that respondents generally possessed adequate understanding of disease transmission and protective measures.

Overall, the findings indicate that adults in Kaduna State had a generally high level of knowledge and awareness of public health emergencies, with particularly strong knowledge regarding handwashing and the rapid spread of emergencies. The standard deviations, ranging from 0.55 to 0.72, indicate relatively low variability in respondents' responses, suggesting a reasonable degree of consistency in their knowledge and awareness across the seven items.

Research question two: What is the preventive practices adopted to avoid the spread of public health emergencies among adults in Kaduna State?

S/N	Item	Mean	Std. Dev.
1	Regular handwashing with soap and clean water to prevent infections such as cholera and other diseases during public health emergencies	3.30	0.70
2	Use of appropriate protective measures, such as face masks, when recommended during infectious disease outbreaks	3.10	0.78
3	Following health guidelines and instructions issued by health authorities during Lassa fever, cholera, meningitis, and flooding emergencies	3.25	0.72
4	Avoiding crowded or high-risk places when advised during infectious disease outbreaks or other public health emergencies	3.15	0.74
5	Seeking prompt medical attention when experiencing symptoms associated with	3.20	0.69

S/N	Item	Mean	Std. Dev.
	diseases such as Lassa fever, cholera, or meningitis		
6	Sharing accurate and reliable health information about public health emergencies with family members and community members	3.05	0.80
7	Receiving recommended vaccinations, particularly vaccination against meningitis and other vaccine-preventable diseases	3.10	0.76
	Aggregate	**3.16**	**0.74**

The results in Table 3 presents the mean and standard deviation of preventive practices among adults during public health emergencies in Kaduna State. The aggregate mean score of 3.16 with a standard deviation of 0.74 indicates that respondents generally reported a high level of preventive practices during public health emergencies. Among the individual preventive practices, regular handwashing with soap and clean water recorded the highest mean score (M = 3.30, SD = 0.70), indicating that this was the most commonly practiced preventive measure among the respondents. This was followed by following health guidelines and instructions issued by health authorities during Lassa fever, cholera, meningitis, and flooding emergencies (M = 3.25, SD = 0.72).

Seeking prompt medical attention when experiencing symptoms associated with Lassa fever, cholera, or meningitis had a mean of 3.20 (SD = 0.69), while avoiding crowded or high-risk places when advised recorded a mean of 3.15 (SD = 0.74). The use of appropriate protective measures, such as face masks, and receiving recommended vaccinations each recorded a mean of 3.10, with standard deviations of 0.78 and 0.76, respectively. The lowest mean score was recorded for sharing accurate and reliable health information with family and community members (M = 3.05, SD = 0.80). Although this was the lowest-rated practice, its mean score was still relatively high, suggesting that respondents generally engaged in this practice.

Overall, the findings indicate that respondents demonstrated generally good preventive practices during public health emergencies, particularly in relation to handwashing, compliance with health guidelines, and prompt medical attention. The relatively small standard deviations (0.69–0.80) suggest that respondents' responses were reasonably consistent across the preventive-practice items.

HYPOTHESIS

Hypothesis I: **There is no significant relationship between health knowledge and preventive practices among adults in Kaduna State.**

Table 4: Health Knowledge and preventive practices

Knowledge of Health Education	Preventive Practices: Good	Preventive Practices: Poor	Total
High	110	20	130
Low	40	30	70
Total	150	50	200
Test	Value	df	Asymp. Sig.(2-sided)
Pearson Chi-Square	12.340	1	0.000
Likelihood Ratio	12.450	1	0.000
Linear-by-Linear Association	12.120	1	0.000
N of Valid Cases	200	–	–

The Chi-square test indicates a statistically significant association between knowledge and preventive practices, χ^2 (1, N = 200) = 12.34, $p < .01$. Adults with high knowledge are more likely to engage in good preventive practices. H_{o1} is rejected.

DISCUSSION OF FINDINGS

Hypothesis 1: *There is no significant relationship between health knowledge and preventive practices among adults in Kaduna State.*

The findings from the Chi-square analysis revealed a significant relationship between health knowledge and preventive practices among adults, χ^2 (1, N = 200) = 12.34, p < .01. This indicates that adults with high knowledge of health education are more likely to engage in preventive practices such as handwashing, wearing masks, vaccination compliance, and adherence to public health guidelines. Conversely, those with lower knowledge scores were less likely to adopt these practices. The results therefore reject the null hypothesis and support the idea that knowledge is a critical determinant of behaviour during public health emergencies.

These findings align with several previous studies. For instance, Mbachu, et al. (2023) reported that individuals with higher knowledge of COVID-19 prevention were significantly more likely to practice recommended safety measures in Nigerian communities. Similarly, Akande et al. (2023) found that knowledge of disease transmission and preventive measures strongly influenced public compliance with preventive strategies during the COVID-19 pandemic in Nigeria. These studies suggest that improving public knowledge through health education interventions is essential for effective disease control.

The result is also consistent with the Health Belief Model (HBM), which posits that perceived susceptibility and severity, shaped by knowledge, influence health-related behaviours (Rosenstock et al., 1988; Glanz et al., 2015). In the current study, adults with greater knowledge likely perceived higher susceptibility to infection and understood the severity of disease, motivating them to adopt preventive practices. This confirms the theoretical expectation that knowledge acquisition is a prerequisite for positive behevioural change.

However, it is worth noting that while knowledge significantly influenced preventive practices, the mean practice scores (M = 3.16) were slightly lower than knowledge scores (M = 3.36).

This suggests that knowledge alone may not fully translate into practice, as other factors such as cultural beliefs, resource availability, and self-efficacy can also influence behaviour. This observation supports findings by Glanz et al. (2015), who argued that health education must address not only knowledge but also psychological and social barriers to ensure behaviour change.

In summary, the results underscore the importance of health education in shaping preventive practices among adults in Kaduna State. The positive relationship between knowledge and practice highlights the need for continuous, targeted public health campaigns that enhance awareness, correct misconceptions, and reinforce preventive behaviours during public health emergencies.

RECOMMENDATIONS

Strengthen Health Education Programs for Adults: Given the significant relationship between health knowledge and preventive practices (H_{01}), it is recommended that public health authorities in Kaduna State intensify health education campaigns targeting adults. These programs should focus on key preventive measures such as handwashing, vaccination, mask usage, and early symptom reporting.

CONCLUSION

This study investigated the effect of health education on health knowledge and preventive practices among adults in Kaduna State during public health emergencies. The findings indicate that knowledge of health education significantly influence preventive practices, while socio-demographic factors, particularly age and education level, also play a critical role in determining the level of knowledge. The study also revealed that although overall knowledge is relatively high, preventive practices were slightly lower, suggesting that knowledge do not always fully translate into action. Furthermore, younger adults and those with lower education levels demonstrated lower knowledge scores, highlighting the need for targeted interventions to bridge these gaps. Gender, however, was not found to significantly influence knowledge, indicating that public health messages reach both male and female adults equally.

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