



Bridging the Knowledge-Practice Gap: Examining Nurses' Preparedness for Infectious Disease Outbreaks at AEFUTHA

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ABSTRACT

Infectious disease outbreaks such as COVID-19, Lassa fever, and Ebola continue to challenge healthcare systems globally, with frontline nurses playing a critical role in both prevention and response. This study examined the preparedness of nurses at Alex Ekwueme Federal University Teaching Hospital Abakaliki (AEFUTHA) by assessing their knowledge of outbreak protocols and the extent to which this knowledge is translated into clinical practice. A descriptive cross-sectional design was employed, involving 245 nurses selected through stratified random sampling. Data were collected using a validated, self-administered questionnaire and analyzed using descriptive statistics, Chi-square tests, Pearson correlation, and logistic regression. Findings revealed that while 70.2% of respondents demonstrated high knowledge of outbreak prevention and management, only 60.4% showed high compliance in practice. Notably, gaps remain between theoretical knowledge and routine implementation, influenced by factors such as workload, access to PPE, institutional support, and frequency of training. The study underscores the need for continuous professional development, improved resource allocation, and systemic reforms to bridge the knowledge-practice gap. Strengthening these areas will enhance outbreak preparedness and promote safer healthcare delivery in tertiary institutions.

Introduction

The transmission of infectious disease outbreaks within healthcare environments has been a tremendous challenge to international public health, and low- and middle-income nations have borne an inordinate share of the burden due to infrastructural shortages and poor preparedness. COVID-19, Ebola, Lassa fever, and Cholera outbreaks have tested the resilience of health systems and attested to the vulnerability of frontline workers (Mareike, 2023). Health facilities become centers of outbreaks within a few minutes, and strict adherence to outbreak prevention and control is thus indispensable. Health care workers, however, and particularly so, are nurses. As the largest and most dynamic health workforce cadre, nurses are at the forefront of patient care—triage, treatment, infection prevention and control, and patient and family education (Agbejule et al., 2021). Their physical proximity to patients and interventions exposes them to risk but places them in the position of being effective chain-breaking points of transmission. Despite guidelines on infection prevention, various international as well as local studies have consistently demonstrated a worrying trend—a dissonance between nurses' knowledge base and the application thereof within real-time outbreak situations.

This study has particular significance to tertiary health institutions like the Alex Ekwueme Federal University Teaching Hospital Abakaliki (AEFUTHA), which, aside from being a care facility, is also an institution of learning for future healthcare practitioners. Despite the existence of policy and training interventions that equip nurses with abilities needed to respond to outbreaks, it is questionable whether the abilities are being applied on a daily basis (Pallavi et al., 2025). The implementation could be hindered by such issues like no routine updates of training, inadequate access to personal protective equipment (PPE), institutional barriers, inadequate supervision, and cultural or behavioral barriers. The primary aim of the study is to evaluate the level of knowledge among nurses regarding guidelines for infectious disease outbreak prevention and management, ascertain the level of adherence to the guidelines in clinical practice, and examine the contextual factors influencing knowledge and practice (Robinson et al., 2020). In this study, specific gaps will be identified and evidence-based recommendations will be proposed to help improve institutional response and safety of healthcare delivery. Research questions will be geared towards establishing the extent of nurses' knowledge, the frequency and correctness with which preventive interventions are being practiced, and the primary determinants that affect adherence to outbreak control policies (Ibrahim et al., 2025). The findings will guide policy development, staff training reforms, and the overall quality of care in AEFUTHA and other hospitals.

Literature Review

The subject of readiness of nurses for infectious disease outbreaks has gained heightened global attention, particularly with recent international public health emergencies such as the COVID-19 pandemic, the Ebola virus epidemic in West Africa, and frequent Lassa fever outbreaks in Nigeria. Nurses, as the most visible category of healthcare professionals, are key players in the prevention and containment of pandemics of infectious diseases since they

are constantly near patients and are primarily involved in the provision of frontline care (Chaves, 2021). Across global health literature, developed countries such as the United States of America, Canada, and the United Kingdom have reported significant investment in infection control training, simulation exercises, and strict adherence to outbreak response protocols. These practices have fostered a culture of preparedness among nurses. In contrast, evidence from low- and middle-income countries (LMICs), particularly in sub-Saharan Africa, has documented concerning deficiencies in nurse readiness, primarily attributable to infrastructural deficits, sporadic access to personal protective equipment (PPE), and limited in-service training opportunities (Harder, 2023). In Nigeria, emerging research suggests a persistent knowledge-practice gap among nurses working in public and tertiary hospitals. For example, although the majority of nurses exhibit sound theoretical understanding of infection control precautions—such as hand hygiene, patient isolation, and environmental disinfection—their practical application remains inconsistent (Gassas & Ahmed, 2022). Some of the causes accountable for this disparity are workload overload, staffing deficiencies, fear of disease transmission, lack of supportive organizational policies, and deficient monitoring mechanisms.

To place this gap in perspective, several theoretical models have been used by researchers, including the Knowledge-Attitude-Practice (KAP) Model and the Health Belief Model (HBM), both of which emphasize that unless accompanied by enabling attitudes, positive perceptions of risk, and enabling environments, knowledge alone cannot affect behavior (Tannor et al., 2024). The KAP model presupposes that knowledge fosters attitudes that influence practice, but disruption along this continuum—i.e., high patient-nurse ratios, psychological distress, poor leadership communication, and limited access to outbreak protocols—can suppress the expected behavioral response. Similarly, HBM explains how perceived barriers (e.g., no PPE or complicated outbreak protocols) and perceived susceptibility (e.g., risk of infection) have a strong impact on the adoption of preventive behaviors by a nurse (Fichet-Calvet & Rogers, 2009). Institutional culture, administrative support, peer influence, and continuous education have also been highlighted in the literature as factors affecting preparedness. For instance, studies show that those hospitals having clearly developed emergency preparedness plans, regular training exercises, and open communication channels experience greater compliance with infection control policy by nurses. Despite these facts, gaps in the literature continue to be present—especially in Nigerian tertiary health facilities—where comprehensive evaluations of knowledge and practice, as well as influencing factors, are scant (Salih et al., 2025). There are limited studies examining intricate interactions between individual, institutional, and environmental factors that shape nurses' behaviors in real outbreak settings. This study seeks to bridge this gap by generating empirical evidence on the knowledge level, daily practice, and contextual factors guiding nurses' outbreak response using the Alex Ekwueme Federal University Teaching Hospital Abakaliki (AEFUTHA) as a case study and, in the process, contributing to the local and international knowledge base on nursing preparedness and response in epidemic-prone settings (Fichet-Calvet & Rogers, 2009).

3. Methodology

This research applied a descriptive cross-sectional survey design, which was appropriate for securing an image of the current level of knowledge and practices of nurses in outbreak prevention and management. The research environment was the Alex Ekwueme Federal University Teaching Hospital Abakaliki (AEFUTHA), a reputable tertiary hospital in Southeast Nigeria that offers a wide range of clinical services and serves as a referral facility across the region (Ugwu et al., 2024). The hospital boasts a multidisciplinary workforce and a structured nursing department that presents a rich environment for exploring professional knowledge and practices. The study population was all the licensed nurses working in AEFUTHA who are actively engaged in clinical care. Stratified random sampling was used to achieve wide representation from different wards and departments like medical, surgical, maternity, pediatric, and intensive care units (Gautam et al., 2025a). A sample size of 245 was selected from a total of approximately 520 clinical nurses, taking into account margin of error and response rate considerations.

Information were gathered using a self-administered, formal questionnaire designed specifically for this research. A closed questionnaire was administered with questions categorized into sections of socio-demographic information, knowledge regarding outbreak prevention and management protocol, observed practices, and perceived determinants of application (Gautam et al., 2025b). The tool underwent a strict validation procedure, such as expert review and pilot testing with 20 nurses at a comparable tertiary organization away from the study area. Construct validity was validated using expert consensus, while internal consistency reliability was demonstrated using Cronbach's alpha, which provided a coefficient of 0.82—showing high reliability. Ethical clearance was granted by the AEFUTHA Health Research Ethics Committee (Ahmed et al., 2023). Informed consent was also secured from all participants after a clear statement of the purpose and intent of the study, anonymity of the responses, voluntariness of response, and the right to withdraw at any time without penalty. No individually identifiable data were collected, and returned questionnaires were stored securely.

Quantitative data were recorded and processed using IBM SPSS version 25. Descriptive statistics such as frequency, percentage, mean, and standard deviation were applied to portray demographic information of participants and their responses to knowledge and practice items. Inferential statistical tests were conducted to determine relationships among variables (Ku et al., 2024). Specifically, Chi-square tests were utilized in an attempt to examine correlations between categorical variables such as department and knowledge level, and Pearson correlation was utilized in an attempt to examine the relationship between continuous variables such as years of experience and knowledge scores. Furthermore, binary logistic regression analysis was utilized in an attempt to establish predictors of high compliance with outbreak management practice, controlling for predictors such as access to PPE, workload, training, and institutional support (Warner & Spitters, 2024). Statistical significance was established as $p < 0.05$, and the results were presented in tables and graphs for easy comprehensibility. This stringent analytical method was employed to ensure that results generated were statistically accurate and applicable to evidence-based interventions.

Results

245 nurses participated in the study. Most of them were women (82%, $n = 201$) while the men were 18% ($n = 44$). The highest percentage of respondents (38%) were aged 31–40 years. Qualification-wise, 61% held a Registered Nurse (RN) diploma and 33% a B.Sc. in Nursing. Median years of experience was 9.4 years ($SD = 3.2$).

Table 1: Demographic Characteristics of Respondents

Variable	Group	Frequency (n=245)	Percentage (%)
Gender	Male	44	18.0
	Female	201	82.0
Age Group (years)	20–30	56	22.9
	31–40	93	38.0
	41–50	66	26.9
	51+	30	12.2
Qualification	RN	150	61.2
	B.Sc. Nursing	81	33.1
	Postgraduate in Nursing	14	5.7
Years of Experience		Mean = 9.4	SD = 3.2

245 nurses constituted the study sample, of which 82.0% were female and 18.0% male. The largest number of respondents were between the ages of 31–40 years (38.0%), followed by 41–50 years (26.9%), 20–30 years (22.9%), and 12.2% aged 51 years and above. Qualification-wise, the majority were with an RN certificate (61.2%), followed by B.Sc. in nursing (33.1%), while very few with postgraduate qualifications in nursing (5.7%) (Ogunlesi, 2024). The respondents' years of work experience had a mean of 9.4 years and a standard deviation of 3.2 years, indicating moderate variation in work experience.

Level of Nurses' Knowledge in Prevention and Outbreak Control

It was measured with 15 items that were worth 30. Nurses with ≥ 21 scores were coded as having high knowledge.

Table 2: Knowledge Level of Respondents

Knowledge Category	Frequency	Percentage (%)
High (≥ 21)	172	70.2
Moderate (15–20)	55	22.4
Low (< 15)	18	7.3

Table 2 illustrates the distribution of nurses' knowledge levels regarding outbreak prevention and management. A significant majority (70.2%) of respondents demonstrated high knowledge, indicating strong understanding of relevant protocols and guidelines. About 22.4% showed moderate knowledge, suggesting a need for further education to strengthen their competence (Warner & Spitters, 2024). Only 7.3% had low knowledge scores, pointing to potential risks in practice due to insufficient awareness. Overall, the results suggest that while most nurses possess adequate knowledge, there remains a notable proportion who could benefit from additional training and capacity-building interventions.

Extent of Implementation of Outbreak-Related Practices

Practice was assessed through 10 routine activities (hand hygiene, PPE usage, isolation adherence, etc.). A practice score ≥ 7 indicated high compliance.

Table 3: Implementation of Preventive Practices

Practice Level	Frequency	Percentage (%)
High Compliance	148	60.4
Moderate Compliance	61	24.9
Low Compliance	36	14.7

Table 3 shows the extent to which nurses implemented outbreak prevention practices. The results show that the majority of respondents (60.4%) practiced high compliance with prevention measures, which reflects strong adherence to practice in clinical practice. Lower percentages (24.9%) practiced moderate compliance, which reflects gaps or inconsistencies in practice on occasion. Conversely, 14.7% reported low compliance, perhaps reflecting barriers such as lack of resources, low knowledge, or high workload (Arteaga et al., 2024). These findings highlight that while most nurses are practicing effective prevention, a significant minority still require targeted intervention to improve adherence.

Identified Factors Influencing Knowledge and Practice

Influences were ranked by the respondents. The responses were on a 5-point Likert scale and were collapsed into 3 categories for the analysis.

Table 4: Determinants of Knowledge and Practice

Influencing Factor	Strong Influence (%)	Moderate (%)	Weak/None (%)
Institutional Training	68.1	23.6	8.3
Availability of PPE	64.9	20.8	14.3
Workload	58.0	25.7	16.3
Managerial Support	50.2	31.4	18.4
Peer Influence	42.0	38.0	20.0

The result in Table 4 indicates that institutional training had the greatest impact on practice and knowledge in nursing, where 68.1% of the respondents indicated it as having a high impact. This was followed very closely by the distribution of personal protective equipment (PPE), with 64.9% of the respondents also indicating it as a high impact (Arteaga et al., 2024). Workload was also a prominent factor, with 58.0% of the respondents stating that it had a significant impact on practice and knowledge.

Alternatively, peer influence and managerial support were considered to be fairly less influential. Managerial support was seen to have important influence only by 50.2% of the participants, while 42.0% recognized peer influence as influencing their practice and knowledge, respectively (Sagar et al., 2020). However, these two factors existed at moderate levels of influence (31.4% and 38.0%, respectively), implying their suitability although less influential.

Statistical Findings

For analyzing the correlations of nurses' outcome knowledge with their adoption of outbreak prevention and control practices, various inferential statistical tests were performed, i.e., Pearson correlation, Chi-square test, and logistic regression (Shahzad et al., 2021). These tests were performed to confirm the study's aims, especially Objectives 5 and 6, that were intended to determine influencing factors.

Table 4.5.1 – Statistical Findings Summary

Test	Variables	Statistic	p-value	Interpretation
Pearson Correlation	Knowledge vs Practice	$r = 0.61$	< 0.001	Strong positive correlation between knowledge and practice
Chi-square Test	Qualification Knowledge Level	vs $\chi^2 (4, n=245) = 11.27$	0.024	Significant association between education level and knowledge
Logistic Regression (Predictors)	Access to PPE	OR = 2.81	0.006	Significantly increases likelihood of high practice

Test	Variables	Statistic	p-value	Interpretation
Logistic Regression (Predictors)	Regular Training	OR = 2.46	0.012	Significantly increases likelihood of high practice
Logistic Regression (Predictors)	High Workload	OR = 0.57	0.041	Significantly decreases likelihood of high practice

The findings revealed a strong positive correlation between nurses' knowledge of outbreak prevention protocols and their implementation in clinical settings, supporting the Knowledge-Attitude-Practice (KAP) model. Educational qualification was significantly associated with knowledge level, emphasizing the importance of professional development. Logistic regression further showed that access to PPE and regular training significantly increased the likelihood of proper practice, while high workload reduced it (Shahzad et al., 2021). Overall, these results underscore the critical role of knowledge, training, and institutional support in enhancing nurses' adherence to outbreak prevention and management practices.

Discussion

During the conduct of this research, it emerged that while the majority of the nurses in AEFUTHA had high levels of knowledge in outbreak prevention and control, there is a wide gap in translating the knowledge into standard clinical practice. This is consistent with results from previous research in Nigeria and other low- and middle-income countries. For example, Lagos-focused research by Arteaga et al., (2024) sought to confirm that despite over 75% of nurses possessing the correct theoretical knowledge about infectious disease protocols, fewer than 60% of them applied them on a day-to-day basis. Likewise, global research (e.g., Ahmed et al., 2023; Ku et al., 2024; Ogunlesi, 2024) indicates this persistent knowledge-practice gap as being the cause of both organizational- and individual-level issues. Its objectives—those of measurement of the extent of knowledge and of implementation—were met and knowledge in itself was found to be incapable of guaranteeing behavioral compliance in the response to an outbreak.

Institutional training and provision of personal protective equipment (PPE) were correlated by the study as the most significant enablers in shaping knowledge acquisition and practice. These findings are further consistent with both the Health Belief Model and the Knowledge-Attitude-Practice (KAP) model, which suggest that an individual's behavior is not just driven by awareness but also by environmental cues and perceived support (Ahmed et al., 2023). Management support and workload also emerged as significant hindrances, according to Adeniran et al. (2020), who found that extended staffing and administrative failure to follow through negatively impacted infection control compliance. These factors justify Objective 5 and 6 of this study, which aimed to determine which factors drive nurses' outbreak knowledge and usage of preventive measures (Ugwu et al., 2024). The statistical associations discovered—i.e., the positive correlation between knowledge and practice, and PPE access as a predictor—suggest areas of increasing outbreak readiness.

Policy and practice implications are crucial. Expansion of regular institutional training, regular PPE availability, and reduction of workload through proper human resource planning can potentially close the knowledge-practice gap to a larger extent. For AEFUTHA policymakers and other similar tertiary hospital healthcare administrators, policymakers should implement policy reforms toward effective infection control systems with progressive efforts (Salih et al., 2025).

Although the cross-sectional nature of the study renders it unable to make causality, and reliance on self-reported data can risk introducing response bias, its value lies in its evidence-based, focused look into reality-ground conditions. Longitudinal designs or observational audits would be an important contribution in future research (Tannor et al., 2024). This research does, however, present hard evidence in optimizing outbreak response in Nigerian health facilities, most significantly by empowering the nursing staff through focused, system-level interventions.

Conclusion

The study reveals an inverse relationship between nurses' knowledge level and their performance of outbreak prevention and management activities, supporting that enhanced awareness indeed enhances clinical response. Educational level, availability of personal protective equipment (PPE), and frequent training were presented as influential drivers for knowledge and practice (Harder, 2023). Heavy workload was revealed to be an important barrier to frequent application. These findings suggest that while nurses in AEFUTHA and other similar institutions have foundational knowledge, they are short on some degree of conversion of the knowledge to practice—largely due to systemic and institutional barriers.

Generally, nurses' preparedness for dealing with infectious disease outbreaks is encouraging but differential, with broad variations in compliance to application. It requires systematic training programs, uninterrupted supply of PPE, and workload adjustment (Agbejule et al., 2021). For health managers and policymakers, the findings need specific investment in institutional support systems as well as staff training to ensure nurses not just possess the knowledge but are also fully empowered and equipped to be able to react speedily and effectively during public health emergencies.

Recommendations

Based on the outcome of this study, some practical measures are suggested to improve nurses' practice and knowledge in outbreak management and prevention. These suggestions seek to improve institutional preparedness, enhance the capacity of frontline health workers, and bridge the knowledge-practice gap revealed by the study:

- Conduct recurrent and compulsory training sessions for outbreak prevention and management procedures.
- Offer timely refresher courses to nurses regarding emerging infectious diseases guidelines and response measures.
- Improve resource allocation, particularly the even availability of PPE and fundamental infection control supplies.
- Recruit additional nurses to reduce overloading of staff and enable adequate coverage of shifts.
- Improve institution-wide policy implementation for outbreak readiness and emergency response.
- Encourage regular professional education through workshops, refresher training, and certification.
- Encourage further study using larger, multiple-center sample bases to validate findings and explore long-term outcomes.

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