



Original Research Article

Awareness of Infection Prevention and Control among Nurses in a Tertiary Hospital in Southern Nigeria

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Abstract: Background: Healthcare-associated infections (HAIs) remain a major public health challenge worldwide, contributing significantly to patient morbidity, mortality, prolonged hospitalization, and increased healthcare costs. Nurses play a central role in the implementation of Infection Prevention and Control (IPC) measures; therefore, adequate awareness of IPC principles is essential for ensuring patient safety and reducing infection transmission within healthcare facilities. **Objective:** This study assessed the level of awareness of Infection Prevention and Control among nurses at a tertiary healthcare institution in Southern Nigeria and identified existing knowledge gaps that may hinder effective IPC implementation. **Materials and Methods:** A descriptive cross-sectional survey was conducted among 197 registered nurses at the Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria. Participants were selected using a simple random sampling technique. Data were collected using a structured self-administered questionnaire comprising socio-demographic variables and ten awareness-related items. Responses were measured on a five-point Likert scale. Data were analyzed using descriptive statistics, including frequencies, percentages, means, and standard deviations. A mean score of 3.0 and above was considered indicative of good awareness. **Results:** The overall awareness of IPC among nurses was high, with a global mean score of 3.76 ± 1.05 . The highest awareness was recorded for the importance of hand hygiene in preventing infections (4.32 ± 0.78), familiarity with the proper use of personal protective equipment (4.09 ± 0.93), and understanding the rationale behind regular IPC training (4.04 ± 0.92). However, lower awareness scores were observed regarding adequacy of IPC training received (3.43 ± 1.14), being up-to-date with current IPC guidelines (3.43 ± 1.18), and regular review of IPC protocols (3.43 ± 1.18). Overall, 148 (75.2%) nurses demonstrated good awareness, while 49 (24.8%) had poor awareness. **Conclusion:** Nurses demonstrated good overall awareness of Infection Prevention and Control measures. Nevertheless, important gaps exist in continuous professional development, access to updated IPC guidelines, and routine review of institutional protocols. Strengthening regular training and dissemination of current IPC information may further improve awareness and support effective infection prevention practices.

Keywords: Infection Prevention and Control, Awareness, Nurses, Healthcare-Associated Infections, Hand Hygiene, Nigeria.

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INTRODUCTION

Healthcare-associated infections (HAIs) remain one of the most significant threats to patient safety and healthcare quality worldwide [1–3]. These infections, which occur during the process of receiving healthcare and were neither present nor incubating at the time of admission, continue to contribute substantially to morbidity, mortality, prolonged hospitalization, antimicrobial resistance, and escalating healthcare expenditures [1-4]. According to the World Health Organization (WHO), hundreds of millions of patients are affected by HAIs annually, making them among the most frequent adverse events associated with healthcare delivery [1, 2]. The burden of HAIs is particularly pronounced in low- and middle-income countries, where limited healthcare resources, overcrowding, inadequate infrastructure, and insufficient infection control systems increase the risk of infection transmission within healthcare facilities [1-5].

Infection Prevention and Control (IPC) encompasses a range of evidence-based measures designed to prevent and reduce the transmission of infectious agents in healthcare settings [2-6]. These measures include hand hygiene, environmental cleaning, appropriate use of personal protective equipment (PPE), sterilization and disinfection of medical equipment, waste management, respiratory hygiene, and implementation of isolation precautions [2-7]. Effective IPC programs are fundamental components of healthcare quality improvement initiatives and are recognized globally as cost-effective strategies for reducing the burden of HAIs and improving patient outcomes [2-7]. The WHO and other international health organizations have consistently emphasized that adherence to IPC protocols is essential for ensuring patient safety, protecting healthcare workers, and strengthening health system resilience [2-6].

The emergence of the Coronavirus Disease 2019 (COVID-19) pandemic further underscored the critical importance of IPC in healthcare delivery [8, 9]. During the pandemic, healthcare facilities worldwide experienced unprecedented challenges related to infection transmission, highlighting vulnerabilities in existing infection control systems [8, 9]. Consequently, many healthcare institutions intensified IPC training, improved surveillance mechanisms, and strengthened compliance monitoring [8-10]. Although the pandemic increased awareness of infection prevention practices among healthcare workers, evidence suggests that sustaining these improvements beyond emergency situations remains a challenge, particularly in resource-constrained settings [9, 10]. Continuous reinforcement of IPC knowledge and practices is

therefore necessary to maintain long-term compliance and preparedness for future infectious disease outbreaks [10, 11].

Nurses constitute the largest group of healthcare professionals and play a pivotal role in implementing IPC measures at the point of care [12, 13]. Their responsibilities involve direct and continuous interaction with patients, placing them at the forefront of efforts to prevent the transmission of infectious agents within healthcare environments [12]. Nurses are responsible for performing hand hygiene, administering medications, managing invasive devices, handling biological materials, maintaining environmental cleanliness, and educating patients and caregivers on infection prevention measures [12, 13]. Consequently, the effectiveness of IPC programs is largely dependent on nurses' knowledge, awareness, attitudes, and adherence to established protocols [12–14].

Awareness of IPC refers to the extent to which healthcare workers understand infection prevention principles, recognize the importance of IPC measures, and remain informed about current guidelines and recommendations [6-14]. High levels of awareness are associated with improved compliance with standard precautions, better clinical decision-making, and reduced incidence of healthcare-associated infections [14, 15]. Conversely, inadequate awareness may result in poor adherence to infection control practices, increased occupational exposure, and heightened risk of disease transmission among patients and healthcare workers [14-16]. Therefore, assessing awareness levels among nurses is crucial for identifying educational needs and developing interventions that promote evidence-based practice [15, 16].

Despite global efforts to strengthen IPC programs, studies conducted across different countries have reported varying levels of awareness among healthcare workers [14-17]. Research from both developed and developing countries indicates that while many nurses possess adequate knowledge of basic IPC principles such as hand hygiene and PPE use, deficiencies often exist regarding emerging guidelines, advanced infection control procedures, and routine review of institutional protocols [14-18]. Furthermore, disparities in awareness have been linked to differences in educational background, years of professional experience, access to training opportunities, and availability of institutional support systems [17, 18].

In Nigeria, healthcare-associated infections continue to pose substantial challenges to healthcare delivery [19, 20]. Several studies have demonstrated

moderate to high levels of IPC awareness among nurses and other healthcare professionals; however, significant gaps persist in the translation of knowledge into practice [19–21]. Factors such as inadequate continuing professional education, irregular training programs, limited access to updated IPC guidelines, resource constraints, and weak institutional enforcement mechanisms have been identified as barriers to effective infection prevention efforts [20–22]. These challenges are particularly evident in many tertiary healthcare institutions where increasing patient loads and limited resources place additional pressure on healthcare workers [20–22].

The South-South region of Nigeria, including Bayelsa State, faces unique healthcare challenges related to resource availability, workforce distribution, and healthcare infrastructure [21, 22]. As a major referral institution in the region, the Federal Medical Centre (FMC), Yenagoa provides specialized healthcare services to a large and diverse patient population. Given the critical role of nurses in ensuring effective implementation of IPC measures within the facility, understanding their level of awareness is essential for strengthening infection prevention programs and improving healthcare quality [12–21].

Although previous studies have explored knowledge and practices of IPC among healthcare workers in various parts of Nigeria, limited evidence exists regarding the current level of awareness among nurses in tertiary healthcare institutions within Bayelsa State [20–22]. Identifying existing knowledge strengths and gaps among this critical workforce is necessary for informing policy decisions, designing targeted educational interventions, and enhancing institutional IPC strategies [15–20]. Therefore, this study assessed the level of awareness of Infection Prevention and Control among nurses working at the Federal Medical Centre, Yenagoa, Southern Nigeria, and identified specific areas where knowledge gaps exist that may hinder effective implementation of infection prevention measures.

MATERIALS AND METHODS

Study Design

This study adopted a descriptive cross-sectional survey design to assess the level of awareness of Infection Prevention and Control (IPC) among nurses at the Federal Medical Centre (FMC), Yenagoa, Bayelsa State, Nigeria. The design enabled the collection of data from participants at a single point in time and was appropriate for evaluating their awareness of IPC practices.

Study Area

The study was conducted at the Federal Medical Centre (FMC), Yenagoa, Bayelsa State, Nigeria. FMC Yenagoa is a tertiary healthcare institution that provides specialized healthcare services to residents of Bayelsa State and neighboring states. The hospital serves as a referral center and comprises various clinical units, including medical, surgical, pediatric, emergency, and outpatient departments.

Study Population

The study population consisted of registered and practicing nurses employed at FMC Yenagoa who were directly involved in patient care and implementation of infection prevention and control measures. The total population of nurses in the institution was approximately 400.

Sample Size and Sampling Technique

A sample size of 200 nurses was determined using the Taro Yamane formula for finite populations. However, 197 completed questionnaires were retrieved and found suitable for analysis, giving a response rate of 98.5%. Participants were selected using a simple random sampling technique from different clinical departments within the hospital.

Instrument for Data Collection

Data were collected using a structured self-administered questionnaire adapted from relevant literature and IPC assessment tools. The questionnaire consisted of two sections. Section A obtained information on respondents' socio-demographic characteristics, while Section B assessed awareness of IPC using ten items covering knowledge of IPC protocols, hand hygiene, personal protective equipment (PPE), sterilization and disinfection procedures, isolation precautions, and guideline updates. Responses were measured using a five-point Likert scale ranging from Strongly Disagree to Strongly Agree.

Validity and Reliability of the Instrument

The questionnaire was reviewed by experts in nursing and infection prevention and control to ensure content and face validity. A pilot study involving 20 nurses from a similar healthcare facility was conducted to assess the reliability and clarity of the instrument. Necessary modifications were made before administration of the final questionnaire.

Data Collection Procedure

Following ethical approval and permission from the hospital management, questionnaires were distributed to eligible nurses during duty breaks and less busy periods. The purpose of the study was explained to participants, and informed consent was

obtained before data collection. Completed questionnaires were retrieved immediately or within an agreed period.

Data Analysis

Data were coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 30. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. A mean score of 3.0 and above was considered indicative of good awareness of IPC.

Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee of Federal Medical Centre, Yenagoa. Participation was voluntary, and informed consent was obtained from all respondents. Confidentiality and anonymity were maintained throughout the study, and participants were assured of their right to withdraw from the study at any time without any consequences.

RESULTS

Table 1: Socio-Demographic Characteristics of Respondents

Characteristic	Frequency (n)	Percentage (%)
Age 20–26 years	20	10.2
Age 27–33 years	85	43.1
Age 34–40 years	35	17.8
Age 41–47 years	25	12.7
Age ≥48 years	32	16.2
Male	80	40.6
Female	117	59.4
RN/Diploma	150	76.1
BNSC	20	10.2
MSc	15	7.6
Others	12	6.1
Experience ≥10 years	117	59.4

The findings revealed that the majority of the respondents were aged 27–33 years (43.1%), indicating that most nurses were in their active working age. Female nurses constituted a higher proportion (59.4%) compared to males (40.6%). Most respondents possessed a Registered Nurse (RN) qualification (76.1%), while only a few had

postgraduate qualifications. Furthermore, more than half of the respondents (59.4%) had over ten years of nursing experience, suggesting that the study participants were largely experienced professionals with substantial exposure to clinical practice and infection prevention activities.

Table 2: Awareness of Infection Prevention and Control among Nurses

Item	Mean ± SD
I am aware of IPC protocols implemented at FMC Yenagoa	3.55 ± 1.12
I have received adequate training on IPC practices	3.43 ± 1.14
I understand the importance of hand hygiene in preventing infections	4.32 ± 0.78
I am familiar with proper use of PPE	4.09 ± 0.93
I know the correct procedures for sterilization and disinfection	3.85 ± 1.05
I am up-to-date on latest IPC guidelines	3.43 ± 1.18
I am aware of protocols for isolating infectious patients	3.61 ± 1.12
I understand the rationale for regular IPC training	4.04 ± 0.92
I am knowledgeable about infection control methods	3.82 ± 1.04
I regularly review IPC protocols and guidelines	3.43 ± 1.18
Global Mean	3.76 ± 1.05

The results showed that nurses generally demonstrated good awareness of Infection Prevention and Control (IPC), with a global mean score of 3.76 ± 1.05, which exceeded the benchmark mean score of 3.0. The highest awareness was recorded for the importance of hand hygiene in preventing infections (4.32 ± 0.78), followed by

familiarity with the proper use of personal protective equipment (4.09 ± 0.93) and understanding the rationale behind regular IPC training (4.04 ± 0.92). However, relatively lower awareness was observed regarding adequacy of IPC training received (3.43 ± 1.14), staying updated with current IPC guidelines (3.43 ± 1.18), and regular review of IPC protocols

(3.43 ± 1.18). These findings indicate that while nurses possess good foundational knowledge of IPC,

gaps exist in continuous professional development and access to updated information.

Table 3: Level of Awareness of Infection Prevention and Control

Awareness Level	Frequency (n)	Percentage (%)
Good Awareness	148	75.2
Poor Awareness	49	24.8
Total	197	100.0

The findings revealed that 148 (75.2%) of the respondents had good awareness of IPC, while 49 (24.8%) demonstrated poor awareness. This indicates that approximately three-quarters of the nurses possessed adequate knowledge and understanding of infection prevention and control

measures. Nevertheless, the proportion of nurses with poor awareness suggests the need for continuous education and training to ensure that all healthcare workers maintain an acceptable level of IPC knowledge.

Table 4: Knowledge Gaps Identified among Nurses

Knowledge Gap Area	Mean ± SD	Rank
Adequate IPC training received	3.43 ± 1.14	1
Up-to-date with latest IPC guidelines	3.43 ± 1.18	1
Regular review of IPC protocols	3.43 ± 1.18	1
Awareness of institutional IPC protocols	3.55 ± 1.12	4
Isolation protocols for infectious patients	3.61 ± 1.12	5

The results identified specific areas where awareness was relatively lower among the respondents. The most prominent knowledge gaps were related to receiving adequate IPC training (3.43 ± 1.14), being up-to-date with the latest IPC guidelines (3.43 ± 1.18), and regularly reviewing IPC protocols and guidelines (3.43 ± 1.18). Lower scores were also observed in awareness of institutional IPC protocols (3.55 ± 1.12) and knowledge of isolation

procedures for infectious patients (3.61 ± 1.12). These findings suggest that although general awareness of IPC was satisfactory, deficiencies remain in ongoing professional education, access to current guidelines, and routine engagement with institutional IPC policies. Addressing these gaps could enhance nurses' preparedness and improve compliance with recommended infection prevention practices.

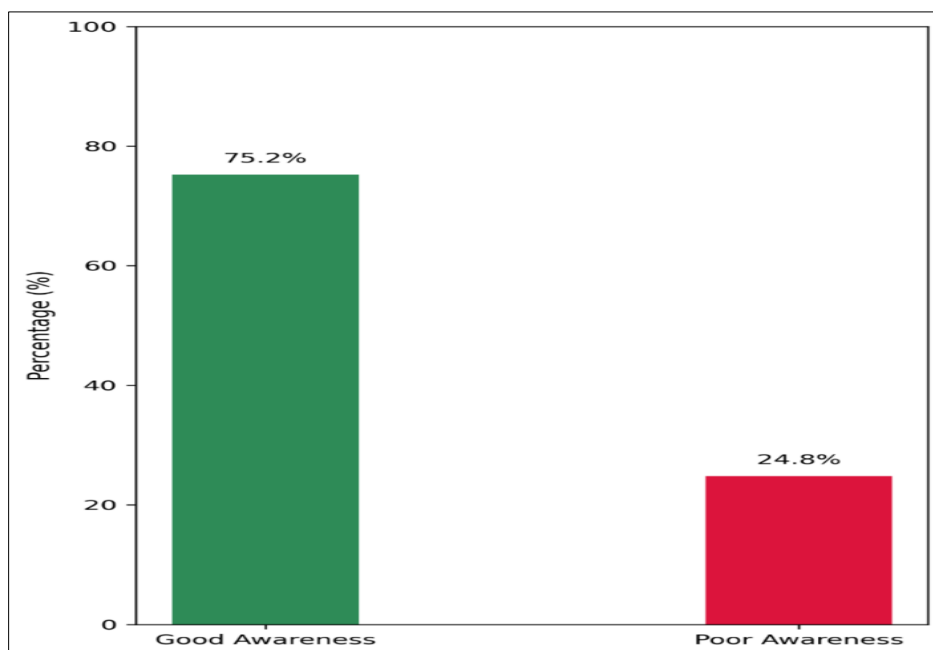


Figure 1: Level of Awareness of Infection Prevention and Control (IPC) among Nurses at FMC Yenagoa, Bayelsa State (N = 197)

Figure 1 illustrates the level of awareness of Infection Prevention and Control (IPC) among nurses at FMC Yenagoa, Bayelsa State. The findings show that the majority of respondents, 148 (75.2%), demonstrated good awareness of IPC principles, while 49 (24.8%) exhibited poor awareness. This indicates that approximately three out of every four nurses possessed adequate knowledge and understanding of infection prevention and control measures within the healthcare setting.

The high proportion of nurses with good awareness suggests that most respondents were familiar with key IPC concepts such as hand hygiene, use of personal protective equipment, sterilization procedures, and infection control protocols. However, the presence of nearly one-quarter of respondents with poor awareness highlights existing knowledge gaps that may adversely affect the consistent implementation of IPC measures. These findings underscore the need for continuous professional education, regular refresher training, and improved dissemination of updated IPC guidelines to ensure that all nurses maintain adequate awareness required for effective infection prevention and patient safety.

DISCUSSION

This study assessed the level of awareness of Infection Prevention and Control (IPC) among nurses at the Federal Medical Centre, Yenagoa, Bayelsa State. The findings revealed a generally high level of awareness, with three-quarters of the respondents demonstrating good awareness of IPC principles. This suggests that most nurses possess the foundational knowledge required to implement infection prevention measures and contribute to patient safety within the healthcare setting. Similar findings of high IPC awareness among nurses and healthcare workers have been reported in Nigeria and other developing countries [14-23].

The highest awareness score was observed for the importance of hand hygiene in preventing infections. This finding is encouraging because hand hygiene is widely recognized as the most effective and cost-efficient strategy for preventing healthcare-associated infections [7-24]. The high level of awareness in this area may be attributed to increased institutional emphasis on hand hygiene campaigns and infection control training, particularly following the COVID-19 pandemic [8-24].

Respondents also demonstrated high awareness regarding the proper use of personal protective equipment (PPE) and the importance of regular IPC training. These findings indicate that nurses appreciate the role of PPE and continuous

education in preventing infection transmission. The heightened awareness observed may reflect the increased attention given to infection prevention practices during recent public health emergencies and the growing recognition of occupational safety among healthcare workers [8-18].

Despite the overall positive findings, several knowledge gaps were identified. Awareness was relatively lower regarding adequacy of IPC training received, staying updated with current IPC guidelines, and regular review of institutional IPC protocols. These findings suggest that although nurses possess good basic knowledge of infection prevention, opportunities for continuous professional development and access to updated information may be insufficient. Such deficiencies could negatively affect adherence to evolving infection prevention recommendations and reduce the effectiveness of IPC programs [17-22].

Furthermore, nearly one-quarter of the respondents demonstrated poor awareness of IPC. This finding highlights the need for targeted educational interventions aimed at improving knowledge among all categories of nursing staff. Regular refresher courses, workshops, and institutional dissemination of updated guidelines are necessary to ensure that nurses remain informed about current best practices in infection prevention and control [15-25].

Overall, the findings indicate that while awareness of IPC among nurses is generally satisfactory, sustained efforts are required to strengthen continuous learning and ensure that knowledge remains current and applicable to everyday clinical practice [2-25].

CONCLUSION

The study found that nurses at the Federal Medical Centre, Yenagoa demonstrated good awareness of Infection Prevention and Control measures, with the majority exhibiting adequate knowledge of key IPC principles. Awareness was highest in areas related to hand hygiene, use of personal protective equipment, and the importance of IPC training. However, gaps were identified in regular review of IPC protocols, adequacy of training received, and awareness of updated IPC guidelines. These findings indicate the need for continuous educational initiatives to sustain and improve nurses' awareness of infection prevention practices.

RECOMMENDATIONS

1. Regular in-service training and refresher courses on Infection Prevention and Control should be

organized for nurses to enhance and sustain their knowledge.

2. Updated IPC guidelines and protocols should be made readily available and accessible in all clinical units to facilitate continuous learning and compliance.
3. Hospital management should strengthen continuing professional development programmes focusing on emerging infection prevention practices and current evidence-based recommendations.
4. Periodic assessments of nurses' awareness and knowledge of IPC should be conducted to identify gaps and guide targeted educational interventions.

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REFERENCES

1. World Health Organization. Global report on infection prevention and control 2024. Geneva: WHO; 2024.
2. World Health Organization. Infection prevention and control. Geneva: WHO; 2025.
3. OECD. Health at a Glance Europe 2024: Healthcare-associated infections. Paris: OECD; 2024.
4. European Centre for Disease Prevention and Control. Healthcare-associated infections. Stockholm: ECDC; 2025.
5. World Health Organization. Infection Prevention and Control Action Plan 2023/2024. Brazzaville: WHO AFRO; 2024.
6. World Health Organization. Infection prevention and control global programme. Geneva: WHO; 2025.
7. World Health Organization. Hand hygiene improvement programmes. Geneva: WHO; 2025.
8. Olalekan A, et al. Infection prevention and control practices, policy adherence and implementation among healthcare personnel in Nigeria. 2025.
9. WHO. Global report on infection prevention and control 2024. Geneva: WHO; 2024.
10. The Joint Commission. Infection control standards update. 2025.
11. WHO. Departmental update: Progress on infection prevention and control. Geneva: WHO; 2025.
12. Collins J, et al. Exploring the role of nursing care interventions in the prevention of healthcare-associated infections. *Am J Infect Control*. 2025.
13. The Role of Nurses in Preventing Hospital-Acquired Infections. 2026.
14. Harun MGD, et al. Infection Prevention and Control Knowledge, Attitudes and Practices among Healthcare Workers. *Clin Infect Dis*. 2025;81(1):49–58.
15. Batran R, et al. Determinants of Nurses' Compliance with Infection Prevention and Control Practices in Critical Care Units. *SAGE Open Nurs*. 2025.
16. Michael IT, et al. Determinants of Knowledge and Practice of Infection Prevention and Control among Healthcare Workers during COVID-19 in Nigeria. *Texila Int J Public Health*. 2021.
17. Naeem A, et al. Knowledge and Practice of Nursing Students Regarding Infection Prevention and Control. *Int J Biosci Res*. 2025.
18. Ayed A, et al. Infection control knowledge, attitudes and practices among nurses. 2024.
19. Oluwafemi OF, et al. Knowledge and Practice of Infection Prevention and Control among Healthcare Workers in Southern Cross River State, Nigeria. *Niger J Med*. 2024.
20. Amali OOK, et al. Infection prevention knowledge and practices among healthcare workers in Makurdi, Nigeria. 2023.
21. Assessment of Knowledge and Practice of Infection Prevention and Control among Healthcare Workers at Bauchi Specialist Hospital, Nigeria. 2026.
22. Factors Impacting Nurses' Compliance with Infection Prevention and Control Protocols in Delta State, Nigeria. 2025.
23. Knowledge and Practice of Infection Control among Nurse Clinicians in Tertiary Health Institutions in Southeast Nigeria. 2025.
24. WHO. Hand Hygiene: Save Lives, Clean Your Hands. Geneva: WHO; 2025.
25. Knowledge, Attitude and Practice Regarding Prevention of Hospital-Acquired Infections amongst Health Workers in Nigerian Tertiary Hospitals. *Frontline Professionals Journal*. 2025.