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# Knowledge and Practice of Infection Control Among Nurses at Liaquat Institute of Medical and Health Sciences Hospital, Thatta

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**Disclaimers**

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|---|---|
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## ABSTRACT

**Background**: Infection control in hospitals is crucial for patient and healthcare worker safety, reducing morbidity, mortality, and healthcare costs. Nurses play a pivotal role in preventing healthcare-associated infections (HAIs).

**Objective**: This study aimed to evaluate the knowledge and practices of infection control among nurses at Liaquat Institute of Medical & Health Sciences Hospital, Thatta.

**Methods**: A cross-sectional descriptive study was conducted with 30 nurses from various departments using a non-randomized convenience sampling method. Data were collected via a validated questionnaire, covering sociodemographic data and infection control knowledge and practices. Data analysis was performed using IBM SPSS version 25, employing descriptive statistics like frequencies and percentages.

**Results**: Among the nurses, 66.7% were female, 53.3% were married, and 43.3% held a diploma. While 83.3% had access to infection control guidelines, 93.3% lacked periodic training. Only 63.3% practiced consistent hand hygiene, and 76.7% used PPE during invasive procedures. Misconceptions were prevalent, with 66.7% believing clean water destroys microorganisms.

**Conclusion**: The study identified significant gaps in infection control knowledge and practices among nurses, highlighting the need for regular training and stricter adherence to protocols.

## INTRODUCTION

Healthcare-associated infections (HAIs) are a major concern in healthcare settings worldwide, posing a significant threat to patient safety and healthcare quality. These infections lead to increased morbidity, prolonged hospital stays, and elevated healthcare costs, making them a critical issue for both patients and healthcare workers (1). The World Health Organization (WHO) and other global health agencies have underscored the importance of infection control measures in mitigating these risks. Effective infection prevention and control (IPC) measures are crucial to curbing the spread of pathogens within healthcare facilities, and these measures hinge on the knowledge and practices of healthcare workers, particularly nurses, who play a frontline role in patient care (2, 3). Nosocomial infections, or hospital-acquired infections (HAIs), are especially concerning due to their significant impact on patient outcomes and the healthcare system's financial burden (4). These infections often result from inadequate hygiene practices and lapses in standard precautions, making infection control a critical discipline within the healthcare system (5).

Hand hygiene is universally recognized as the most effective measure to prevent the spread of infections in healthcare settings. It is a basic yet vital practice that all healthcare workers must adhere to consistently to reduce HAIs (6). Despite established guidelines and protocols, compliance with hand hygiene and other infection control measures among healthcare workers, including nurses, often remains suboptimal. Studies have shown that while knowledge of infection control guidelines is generally high, adherence to these guidelines in practice is frequently inadequate (7). Several factors contribute to this gap, including a lack of continuous education, inadequate training, and insufficient resources for infection control measures, such as personal protective equipment (PPE) (8). Research highlights that continuous education and regular training are essential in maintaining updated knowledge and ensuring adherence to infection control protocols among nurses (9, 10).

Nurses play a pivotal role in infection prevention and control due to their close and continuous contact with patients. Their practices and compliance with infection control measures are directly linked to patient outcomes and the incidence of HAIs in healthcare settings (11). It is well documented that infections can spread through various means, including contaminated hands, medical equipment, and environmental surfaces. Therefore, maintaining stringent infection control practices is essential to prevent the transmission of pathogens (12). However, studies have also pointed out misconceptions and knowledge gaps among nurses regarding infection control. For instance, misunderstandings about the sources of nosocomial infections and the effectiveness of certain hygiene practices can lead to suboptimal infection control strategies (13). This discrepancy between knowledge and practice underscores the need for comprehensive infection control training programs tailored specifically for nursing staff to bridge

these gaps and promote better compliance with infection prevention measures (14).

Moreover, infection control is not limited to individual practices but is a systemic issue that requires organizational support and policies. The availability and accessibility of infection control guidelines, resources like PPE, and ongoing training sessions are vital components in ensuring effective infection control (15). Despite this, many healthcare settings fail to provide regular training and adequate resources, which undermines the efforts of healthcare workers to implement effective infection prevention strategies. Studies have highlighted that a lack of organizational support and inadequate monitoring of infection control practices significantly contribute to the persistence of HAIs (16, 17). Consequently, there is a critical need for healthcare institutions to strengthen their infection control policies, provide regular training programs, and ensure adequate resources to support healthcare workers, particularly nurses, in maintaining high standards of infection control (18, 19).

In conclusion, infection control remains a fundamental aspect of patient care and safety, particularly in hospital settings where the risk of HAIs is significant. Nurses, being at the forefront of patient care, have a crucial role in implementing and adhering to infection control measures. Ensuring that they have the necessary knowledge, skills, and resources is essential for effective infection prevention and control. Addressing the existing gaps in knowledge and practice through regular education, training, and organizational support can substantially reduce HAIs and enhance the overall quality of healthcare (6, 8, 13).

## MATERIAL AND METHODS

A cross-sectional study was conducted to evaluate the knowledge and practice of infection control among nurses at the Liaquat Institute of Medical & Health Sciences Hospital, Thatta. The study targeted a sample of 30 nurses, both male and female, aged between 20 and 40 years, who were employed in various wards and departments of the hospital. These nurses were selected based on a non-randomized convenience sampling method, which allowed the inclusion of participants readily available and willing to participate. The inclusion criteria comprised all staff nurses, both male and female, working in the hospital, while student and intern nurses were excluded from the study.

Data were collected using a validated, structured questionnaire designed to assess the knowledge and practices of nurses regarding infection control. The questionnaire included two sections: Section A focused on sociodemographic data such as years of experience, education level, work area, gender, and marital status; Section B contained 20 questions that assessed both the knowledge and practices related to infection control. The questionnaire was distributed to the participants after obtaining informed consent, ensuring that participation was voluntary and data confidentiality was maintained. Before data collection, official approval was obtained from the hospital administration to conduct the study. The study's purpose and objectives were clearly explained to the participants, and both written and verbal consent were obtained from those who agreed to participate. The research adhered to the principles outlined in the Declaration of Helsinki to ensure ethical conduct throughout the study.

The data collection process involved distributing the questionnaires to 30 nurses working across different units within the hospital. Participants were given ample time to complete the questionnaire, and assistance was provided if there were any questions or ambiguities regarding the items. The responses were collected anonymously to maintain confidentiality and encourage honest and accurate responses. Upon completion of the data collection, the responses were reviewed for completeness and accuracy.

Data analysis was carried out using IBM SPSS version 25. Descriptive statistics, such as frequencies and percentages, were used to describe the demographic characteristics of the participants and their responses to the knowledge and practice questions. The analysis provided insights into the distribution of knowledge and practice levels among nurses and highlighted specific areas that required improvement. The findings were presented in tables to illustrate the key variables and their relationships.

The study recognized the limitations associated with self-reported questionnaires, which may not always reflect actual clinical practice due to social desirability bias. The sample size was relatively small, and the study was conducted in a single hospital setting, which may limit the generalizability of the findings to other healthcare institutions. However, the study provided valuable insights into the infection control practices among nurses in the selected hospital and underscored the need for regular training and education to address the gaps in knowledge and practice. The findings highlight the importance of continuous professional development and the provision of adequate resources to enhance infection control practices among nurses in healthcare settings.

## RESULTS

The results of the study are presented in two main sections: socio-demographic characteristics of the participants and their knowledge and practices regarding infection control.

**Table 1: Socio-Demographic Characteristics of Participants**

| Variable | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Gender | Male | 10 | 33.3 |
| | Female | 20 | 66.7 |
| Age | >25 Years | 9 | 30.0 |
| | 26-30 Years | 11 | 36.7 |
| | 31-40 Years | 10 | 33.3 |
| | Above 40 Years | 0 | 0.0 |

| Variable | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Marital Status | Single | 14 | 46.7 |
| | Married | 16 | 53.3 |
| | Widowed | 0 | 0.0 |
| Qualification | Diploma | 13 | 43.3 |
| | BSN | 9 | 30.0 |
| | MSN | 0 | 0.0 |
| | Others | 8 | 26.7 |
| Department | Emergency | 1 | 3.3 |
| | High Dependency Unit (HDU) | 9 | 30.0 |
| | Medicine | 3 | 10.0 |
| | Labor Room | 11 | 36.7 |
| | Others | 6 | 20.0 |
| Years of Experience | < 5 Years | 12 | 40.0 |
| | 5-10 Years | 18 | 60.0 |
| | Above 10 Years | 0 | 0.0 |
| Employment | Government | 28 | 93.3 |
| | Contract | 2 | 6.7 |

Table 1 presents the socio-demographic data of the 30 nurses who participated in the study. The majority were female (66.7%), aged between 26 and 40 years (70.0%), and married (53.3%). Regarding qualifications, 43.3% of nurses had a diploma, and 30.0% had a BSN degree. Most nurses worked in the Labor Room (36.7%) and the High Dependency Unit (30.0%). A significant portion (60.0%) had 5-10 years of experience, and 93.3% were employed on a government basis.

**Table 2: Knowledge and Practices of Participants Regarding Infection Control**

| Statement | Yes (Freq) | Yes (%) |
|---|---|---|
| Periodic educational program in your department regarding infection control | 2 | 6.7 |
| Infection control guidelines available in your department | 25 | 83.3 |
| Hospital-acquired infection can be transmitted by medical equipment | 27 | 90.0 |
| Nosocomial infection is an infection that the patient comes with from home | 11 | 36.7 |
| Always wash hands before and after direct contact with patients | 19 | 63.3 |
| Knowledge of the WHO's '5 Moments of Hand Hygiene' | 16 | 53.3 |
| Patients with communicable diseases may be admitted in the same ward | 25 | 83.3 |
| Micro-organisms are destroyed by using clean water | 10 | 33.3 |
| All staff and patients should be considered potentially infectious | 29 | 96.7 |
| Handle body fluids with bare hands if gloves are not available | 5 | 16.7 |
| Knowledge of how to prevent and control hospital-acquired infections | 15 | 50.0 |
| Always put on a mask and glasses when performing invasive procedures | 23 | 76.7 |
| Knowledge of infection prevention and control being monitored in the hospital | 27 | 90.0 |
| Attend in-service training/workshops related to infection prevention yearly | 2 | 6.7 |
| Surgical operation sites are shaved with razors | 27 | 90.0 |
| Vaccination is provided to staff | 27 | 90.0 |
| Personal protective equipment (PPE) is always accessible | 26 | 86.7 |
| Hospital monitors urinary catheter infections and gives feedback | 2 | 6.7 |
| Infection prevention does not improve patient outcomes | 18 | 60.0 |
| Wear PPE when handling linen | 7 | 23.3 |

Table 2 provides an overview of the knowledge and practices of infection control among the nurses. The results indicate that while 83.3% of nurses reported having infection control guidelines available in their departments, 93.3% did not have access to periodic educational programs on infection control. Most nurses (90.0%) recognized that medical equipment could transmit hospital-acquired infections, but only 63.3% consistently practiced hand hygiene before and after patient contact. Only 53.3% were aware of the World Health Organization's '5 Moments of Hand Hygiene.' There were notable misconceptions, with 66.7% incorrectly believing that clean water destroys microorganisms and 63.3% misunderstanding the concept of nosocomial infections.

A high percentage (96.7%) of nurses believed that all staff and patients should be considered potentially infectious. However, only 76.7% consistently used personal protective equipment (PPE) during invasive procedures, despite 86.7% reporting that PPE was always accessible. Additionally, only 6.7% attended in-service training or workshops on infection prevention annually, and a similar percentage (6.7%) reported that urinary catheter infections were monitored and feedback was provided. Furthermore, 76.7% did not use PPE when handling linen, highlighting gaps in compliance with standard infection control practices. These findings

underscore the need for improved training, continuous education, and stricter adherence to infection control protocols to enhance patient safety and reduce hospital-acquired infections.

## DISCUSSION

The study conducted at the Liaquat Institute of Medical & Health Sciences Hospital, Thatta, assessed the knowledge and practices of infection control among 30 nurses, revealing significant gaps and inconsistencies despite the presence of infection control guidelines. The findings indicated that while most nurses were aware of the basic principles of infection prevention, such as the availability of guidelines and the potential transmission of infections through medical equipment, there were considerable gaps in their practical application of this knowledge. For instance, the absence of regular educational programs on infection control for 93.3% of nurses highlighted a significant deficiency in continuous professional development, which is essential for maintaining current knowledge and ensuring compliance with best practices (1, 2). This finding aligns with previous studies that emphasized the need for ongoing training to enhance compliance with infection prevention protocols (3, 4).

The study identified several misconceptions among nurses regarding infection control, such as the belief that clean water destroys microorganisms and misunderstandings about the origin of nosocomial infections. These misconceptions could lead to inadequate infection control measures and potentially increased risks of healthcare-associated infections (HAIs). The incorrect perception that nosocomial infections originate from outside the hospital rather than being acquired within the healthcare setting further underscores the need for targeted education and clarification of basic concepts related to infection control (5, 7). Moreover, only 63.3% of nurses reported consistent hand hygiene practices, which is concerning given that hand hygiene is widely recognized as the most effective measure to prevent the spread of infections in healthcare settings (6, 7). The gap between knowledge and practice regarding hand hygiene reflects broader systemic issues, including a lack of regular training and insufficient monitoring, which have been reported in similar studies (6).

The study also highlighted significant weaknesses in the use of personal protective equipment (PPE) during invasive procedures and while handling potentially infectious materials. Although most nurses acknowledged the importance of PPE, only 76.7% reported consistent use during invasive procedures, and a much lower percentage (23.3%) used PPE when handling linen. This inconsistency suggests a need for more stringent adherence to infection control protocols and better enforcement of these standards by healthcare management. Previous research has indicated that regular monitoring and feedback on infection control practices, such as PPE use and hand hygiene, are crucial for maintaining high standards of infection prevention (Alsolami & Tayyib, 2024; Khodadadi et al., 2024). The lack of regular in-service training and workshops, as reported by 93.3% of nurses, further compounds this issue, highlighting the importance of institutional support in promoting a culture of safety and adherence to infection control measures (10).

A strength of this study was its focus on a diverse sample of nurses working across different departments, providing a comprehensive overview of the current state of infection control knowledge and practices within the hospital. However, the study's reliance on self-reported data through questionnaires may have introduced biases, such as social desirability bias, where participants might have reported what they believed to be socially acceptable answers rather than their actual practices (Omer & Saleh, 2023). Additionally, the small sample size and the single-center setting limit the generalizability of the findings to other healthcare institutions. Future studies should consider including multiple centers and a larger, more diverse sample to provide more representative data on the knowledge and practices of infection control among nurses.

Recommendations from this study include the implementation of regular, structured educational programs and workshops focused on infection control to ensure that nurses are up-to-date with the latest guidelines and best practices. Enhanced monitoring and feedback mechanisms should be established to assess adherence to infection control protocols, particularly regarding hand hygiene and the use of PPE. Healthcare institutions should also consider revising their infection control policies to include regular competency assessments and refresher training sessions tailored to address identified knowledge gaps and misconceptions among healthcare workers. Strengthening these areas could significantly improve patient safety by reducing the incidence of healthcare-associated infections and ensuring a safer healthcare environment (16; 17).

## CONCLUSION

The study revealed significant gaps in the knowledge and practices of infection control among nurses at Liaquat Institute of Medical & Health Sciences Hospital, Thatta, with inadequate hand hygiene, inconsistent use of personal protective equipment (PPE), and prevalent misconceptions about infection control. These findings underscore the critical need for regular, structured training programs and strict adherence to infection control protocols to enhance patient safety and reduce healthcare-associated infections. Strengthening infection control practices not only improves the quality of care but also minimizes healthcare costs and prevents morbidity and mortality, highlighting a broader implication for human healthcare in promoting safer hospital environments.

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