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Analysis of Standard Precautions and Prevention of Nosocomial Infections in Improving Patient Safety Culture Among Nurses at Duta Indah Hospital, Jakarta

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ABSTRACT

Patient safety is a top priority in healthcare, yet healthcare-associated infections (HAIs) remain a persistent challenge. Duta Indah Hospital Jakarta experiences gaps between infection prevention standards and actual nursing practices, affecting its patient safety culture. To analyze nurses' understanding and implementation of standard precautions and HAI prevention, examine their contribution to patient safety culture, and identify influencing factors. A qualitative case study was conducted through in-depth interviews with 17 informants, observations, and document review. Data were analyzed thematically. Standard precautions were acknowledged as the foundation of infection prevention but were not optimally applied, especially in preventing ventilator-associated pneumonia (VAP). Nurses supported patient safety culture through hand hygiene compliance, proper use of personal protective equipment (PPE), environmental hygiene, and HAI bundles. Barriers included unsupportive mindsets and work culture, limited PPE and hand hygiene facilities, and high workload. Standard precautions are vital in preventing HAIs and fostering a patient safety culture. Strengthening their implementation requires education, compliance monitoring, and managerial support. Adherence to national regulations Law No. 17/2023 on Health, Minister of Health Regulation No. 27/2017 on Infection Prevention and Control, and Minister of Health Regulation No. 11/2017 on Patient Safety is essential as a legal framework to reinforce patient safety culture in hospitals.

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1. INTRODUCTION

Patient safety is the primary foundation for providing quality healthcare services, as affirmed in Law Number 17 of 2023 concerning Health. This law not only requires every healthcare facility to

prioritize patient safety (Article 173) but also regulates hospital classification based on classes A, B, C, and D. This classification reflects the complexity of services and varying quality requirements across classes, yet the essence of patient safety remains a universal priority. Furthermore, the law emphasizes infection prevention and control as an integral part of risk control efforts (Article 376).

In this context, Healthcare-Acquired Infections (HAIs), commonly known as nosocomial infections, pose a serious threat, resulting in increased morbidity, mortality, and significant healthcare costs globally and in Indonesia (World Health Organization, 2023). Data from the National Patient Safety Commission (KNKPRS) in 2019 highlighted thousands of patient safety incidents in Indonesia, some of which resulted in death, underscoring the urgency of infection prevention and control (Minister of Health Regulation No. 27 of 2017). A 2013 Ministry of Health survey in various hospitals, including in Jakarta, recorded a relatively high average nosocomial infection rate of 9.8% (Chairani et al., 2022), indicating the need to strengthen Infection Prevention and Control (IPC) strategies at all levels of healthcare facilities.

The effectiveness of HAIs prevention depends heavily on the strict and consistent implementation of standard precautions. Standard precautions include basic practices such as hand hygiene, use of Personal Protective Equipment (PPE), safe injection practices, and proper waste management (WHO, 2022; Ibrahim and Rahmi, 2020). The implementation of evidence-based interventions or specific bundles to prevent infections such as catheter-associated urinary tract infections (CAUTIs) or central line-associated bloodstream infections (CLABSIs) has also proven crucial in reducing the incidence of HAIs (Fried, 2023).

However, the successful implementation of nosocomial infection prevention practices is inseparable from the role of a patient safety culture. A strong safety culture reflects an institution's commitment to incident prevention through open communication, learning from mistakes, and effective teamwork (Agency for Healthcare Research and Quality, 2019). A positive safety culture has consistently been shown to correlate with reduced HAIs, as healthcare workers feel more comfortable reporting incidents and actively participating in safety improvements (Waluyo et al., 2019; Elmonita et al., 2022).

Nurses, as frontline workers with the most direct patient contact, play a crucial role in implementing standard precautions and establishing a patient safety culture (Ellis, 2021; Simamora et al., 2019). Compliance, experience, and support from nursing leadership significantly influence the success of the IPC program and patient safety culture (Talib et al., 2023).

In the context of Duta Indah Hospital in Jakarta, accreditation data from the Damar Husada Paripurna Hospital Accreditation Institute (LARS DHP) in 2022 showed an IPC score of 84%, which increased to 100% after administrative improvements. However, a follow-up evaluation in 2024 revealed that IPC implementation still faced significant challenges, with standard precautions reaching 85.92%, nosocomial infection prevention at 83.55%, and patient safety culture at only 59.97%. These figures indicate a gap between established standards and actual practice, particularly regarding patient safety culture.

This situation is exacerbated by a room occupancy rate (BOR) that is almost consistently above 90%, increasing nurse workloads and increasing the potential risk of nosocomial infections. In the ICU-PICU of Duta Indah Hospital, only four of the 14 nurses have received specific ICU-PICU training, and two have a bachelor's degree in nursing, including the head nurse. All nurses have received PPI socialization. Although there are enough nurses for 11 beds, limited specific competencies remain a challenge in ensuring the quality of critical care and optimal implementation of nosocomial infection prevention measures.

Healthcare Associated Infections (HAIs) data indicates that the implementation of standard precautions at Duta Indah Hospital still needs to be strengthened. Post-CS SSI averaged 2.06% over the past five years, slightly above the national threshold (<2%), while VAP in the ICU was high and fluctuating (6.13–9.16‰), far exceeding the national limit (<5.8‰) (Duta Indah Hospital PPI data 2020–

2024). In comparison, Ibnu Sina Hospital performed better, with lower SSI (0.50–1.80%) and controlled VAP in the 2022–2024 period.

This difference in performance underscores the need for research to understand the factors influencing nurses' adherence to standard precautions and nosocomial infection prevention, making it a crucial issue for improving patient safety culture. This situation creates two main gaps that underlie this research.

This research is motivated by the gap between national standards and field practice at Duta Indah Hospital, Jakarta, as evidenced by the high rate of HAIs and the low level of patient safety culture. Furthermore, there is a lack of in-depth qualitative research on the organizational, behavioral, and cultural factors that influence nurses' adherence to standard precautions and nosocomial infection prevention, and their impact on patient safety culture.

Duta Indah Hospital was selected because of its characteristics of High Volume, High Risk, High Impact, and High Policy. High Volume means the hospital handles a large number of patients with various medical procedures, requiring sound risk management. High Risk indicates a high potential for serious complications due to HAIs, including increased length of stay, costs, and the risk of death. High Impact reflects the influence of HAIs and patient safety on service quality, patient satisfaction, and the hospital's reputation. High Policy means strong regulatory support, such as Law No. 17 of 2023 and hospital accreditation standards, which serve as a framework for continuous quality improvement.

This study aims to identify factors that influence nurse compliance, understand the relationship between the implementation of standard precautions and PPI with patient safety culture, and provide applicable recommendations to improve the effectiveness of PPI programs and patient safety.

2. METHODS

This research used a qualitative descriptive approach using a case study to understand the implementation of standard precautions and nosocomial infection prevention in relation to patient safety culture at Duta Indah Hospital. The case study was selected to intensively explore the experiences, perceptions, and practices of nurses and other healthcare workers, including factors that support and hinder their implementation.

Sixteen participants were purposively selected, consisting of leaders, IPCLN team leaders, quality committee members, nursing managers, unit heads, physicians, nurses, IPCLN (National Health and Safety Officers), cleaning staff, environmental health officers, and IPCNs. Data were collected through semi-structured interviews, field observations, and document analysis (IPCI Standard Operating Procedures, audit reports, hospital data, and scientific references).

Data analysis was conducted thematically through three stages of coding: open coding to identify underlying concepts, axial coding to connect categories, and selective coding to establish key themes. Data were presented in a matrix to facilitate comparisons between informants and to identify relationships between themes. This approach allowed researchers to obtain a comprehensive overview of the implementation of standard precautions, influencing factors, and its contribution to patient safety culture.

3. FINDINGS AND DISCUSSION

The Meaning and Implementation of Standard Precautions and Nosocomial Infection Prevention Among Nurses at Duta Indah Hospital

As a Foundation for Nosocomial Infection Prevention Practice

The PPI Team Leader emphasized that standard precautions are the primary foundation for preventing nosocomial infections, not just rules. Education is provided to ensure they become a habit and culture for nurses.

The Quality Committee Chair emphasized that "standard precautions are indicators of service quality that directly impact patient safety. Their implementation must be monitored through

compliance audits, incident reporting, and integrated with quality programs to build a sustainable safety culture."

The Nursing Manager stated that standard precautions are the foundation of nursing practice and part of a safe work culture. Their implementation is achieved through continuous practice, awareness raising, briefings, and role models from seniors, supported by training and SOPs.

The ICU Head emphasized that standard precautions must become a shared habit and culture, especially for highly vulnerable ICU patients. Discipline in hand hygiene, risk-appropriate PPE, and environmental cleanliness are priorities, although workload often influences compliance. ICU staff remind each other to maintain consistency.

The Head of the Treatment Room stated that standard precautions are a professional responsibility that requires awareness, discipline, and cooperation. Compliance is fostered through role models, supervision, and a culture of mutual reminders.

The IPCLN explained that standard precautions are the primary foundation for preventing infection transmission in patients, staff, and the environment, and also serve as the basis for education and audits. SOP compliance improves when the practice foundation is strong. Monitoring is carried out through hand hygiene, risk-appropriate PPE, and equipment and waste management.

The Cleaning Service Supervisor emphasized the significant role of cleaning staff, especially in high-risk areas. Standard precautions are defined as working cleanly, carefully, and according to regulations, implemented using the 5R principle. Supervision is conducted daily, including in hard-to-reach areas. However, discrepancies in waste segregation were found, despite adequate handling of sharps waste.

The cleaning service officer explained that cleaning is tailored to the risk area and chlorine is used in high-risk areas. Spills are handled using spill kits in the correct order. There is still non-compliance in the separation of medical and non-medical waste, which requires improvement.

The Health Officer added that daily hygiene is continuously monitored as part of the implementation of standard precautions, including the use of disinfectants in risk areas.

As an IPCN, the researcher views standard precautions not merely as a technical procedure, but as a manifestation of professional culture and morality, protecting patients, staff, and the environment. Their implementation reflects a patient safety culture that grows from awareness, discipline, and moral responsibility.

Implementation of Standard Precautions

The Hospital Director explained that implementation is realized through policy reviews, team formation, and strengthening of the PPI organizational structure. These efforts serve as a systematic foundation for implementing standard precautions.

The PPI Team Leader emphasized that implementation is not yet optimal and requires continuous strengthening, monitoring, and evaluation. Nurse competency improvement is carried out through case-based training, clinical simulations, and compliance assessments.

The Nursing Manager conveyed challenges in the ICU—although the 1:1 nurse ratio meets standards; competency is not evenly distributed because only 4 of the 14 nurses have attended ICU training. The high BOR (>90%) increases the workload and affects the consistency of standard precautions.

In response to Ministry of Health Regulation No. 1596/2024, management strengthened the IPC and patient safety culture through quarterly evaluations, joint audits with the IPCN and quality team, and the use of compliance data and patient feedback as indicators.

Management also integrated the IPC with the quality system, created a real-time dashboard, and provided incentives for units with high compliance.

Monitoring and evaluation were conducted through a cross-unit coordination forum, ensuring that policies were translated into daily SOPs.

However, numerous inconsistencies were found in implementation in the field: hand hygiene did not comply with the WHO 5 moments, soap and tissues were often empty, personal protective equipment was not used correctly, equipment decontamination was not optimal, environmental cleanliness was uneven, medical and non-medical waste was still mixed, contaminated linen was not managed according to SOPs, staff lacked understanding of exposure, isolation rooms were not always ready, education on cough etiquette was still low, and aseptic injection practices were inconsistent.

Implementation of Nosocomial Infection Prevention Bundles (CAUTI, CLABSI, VAP, SSI)

The implementation of the bundles at Duta Indah Hospital showed variation in implementation and several inconsistencies in the field.

a. CAUTI

The IPCLN emphasized that urinary catheter insertion should ideally be performed with hand hygiene, sterile technique, regular evaluation, and prompt removal when unnecessary. However, implementation was not always consistent, increasing the risk of CAUTI. The ICU physician stated that the diagnosis of CAUTI was determined based on clinical signs and laboratory tests.

Observations indicated that sterile instruments were inadequate, the use of sterile drapes was not standardized, and urine bags were still found on the floor, indicating the need for improved procedural compliance.

b. CLABSI

The ICU physician emphasized that CVC insertion must be performed with hand hygiene, sterile technique, chlorhexidine, and the use of full PPE. The IPCLN added that the need for IV drips should be evaluated daily and CVCs removed when unnecessary, although implementation sometimes did not meet standards.

Observations found that hand hygiene was frequently skipped, hypafix was used instead of transparent dressings, and aseptic technique during dressing changes was suboptimal. This indicates that SOPs were not fully implemented.

c. VAP

The VAP bundle was the most prominent finding due to the highest number of cases. The ICU physician explained that VAP increases when ventilator insertion and maintenance techniques are suboptimal. Routine IPC audits are conducted and discussed in quality forums for continuous improvement.

The ICU nurse stated that ventilator maintenance should include oral hygiene 4–6 times daily, head tilt 30–45°, and intermittent sedation, but this was not consistently implemented. The ICU head added that a shortage of nurses and high workload made it difficult to implement the bundle optimally. The nursing manager highlighted staff rotation and limited technical training as causes of variations in the quality of care.

From an IPC perspective, the IPCLN noted that compliance with hand hygiene and PPE decreased in emergency situations. The IPC Team Leader stated that despite the audit, the results revealed numerous discrepancies in ventilator insertion and maintenance. The Quality Committee assessed the high VAP rate in 2024 as an indicator of a weak patient safety culture.

Observations revealed inconsistent oral hygiene, incorrect suctioning techniques, and the use of the same catheter for the mouth and endotracheal tubes, increasing the risk of infection.

d. SSI

The Nursing Manager explained that the SSI bundle should begin pre-operatively: antiseptic bathing, shaving with clippers, blood sugar control <200 mg/dl, and timely antibiotic administration. The Head of the Inpatient Unit added that post-operative wound care was performed according to procedure, but challenges arose because patients often shaved at home or were less compliant with instructions.

The Head of the Operating Room explained that additional challenges included uncontrolled personnel turnover, unstable equipment, and differences in antibiotic prophylaxis practices between

the PPRA and the surgeon. The operating room team conducted regular briefings and checklists to ensure equipment readiness.

The Head of the Polyclinic reported that surgical site infections were common in cesarean section patients, primarily because patients missed timely check-ups or did not follow wound care instructions.

Observations show that blood sugar is often not checked, shaving is not done on time, post-operative aseptic technique is still neglected, and patient factors such as low hemoglobin and protein deficiency exacerbate the risk.

Informants assessed that the high rate of nosocomial infections, especially VAP, is influenced by technical and structural factors, namely: limited staff and high workloads, variations in competency and training, weak monitoring and compliance, weak integration of IPC, and an ingrained patient safety culture.

The implementation of the CAUTI, CLABSI, VAP, and SSI bundles demonstrates that standard precautions are the foundation, and any minor non-compliance increases the risk of infection in patients.

Nurses' Experience in Implementing Standard Precautions and Nosocomial Infection Prevention Contributes to the Formation of a Patient Safety Culture

Environmental Cleanliness and PPE Use as a Patient Safety Culture

The Nursing Manager emphasized that a safety culture is the main foundation for environmental cleanliness and the effective use of PPE to prevent nosocomial cross-infection. These two elements of standard precautions are considered to contribute directly to infection prevention when incorporated into the work culture.

As a researcher and IPCN, observations indicate progress in nurses' awareness regarding the use of PPE appropriate to the risk. However, inconsistencies were also found, such as frequently skipping hand hygiene during busy times, removing masks before leaving patient areas, and not changing gloves between procedures. These conditions create the potential for cross-contamination.

Hand Hygiene Compliance as a Patient Safety Culture

The Chair of the Quality Committee assessed that hand hygiene compliance is a key foundation for a patient safety culture, as it reflects staff commitment to quality care. However, some staff still do not consistently perform hand hygiene according to the WHO's 5 Moments and use PPE inappropriately.

The Head of the Quality Committee added that the biggest obstacles stem from behavior and work culture, such as prioritizing rapid action during emergencies, lack of self-awareness, minimal supervision, and the need for ongoing monitoring, real-time feedback, and role modeling from seniors to foster discipline.

As a researcher, field observations indicate that although staff understand the importance of hand hygiene, implementation is still influenced by action priorities, individual awareness, and weak supervision. Therefore, ongoing education, active supervision, and strong role modeling are needed to ensure hand hygiene compliance becomes an ingrained culture.

Behaviors or Actions to Prevent Nosocomial Infection Transmission as a Safety Culture

According to the Head of the PPI Team, the implementation of HAIs bundles aims to increase accuracy, cooperation, and mutual reminders. However, nurses are still found to be negligent in documentation and procedural compliance, necessitating strengthened discipline.

As a researcher, observations indicate that infection prevention behavior is strongly influenced by individual discipline, unit work culture, and supervisory support from leaders. Healthcare workers understand the principles of standard precautions, but their implementation remains situational, depending on workload and personal awareness. Therefore, coaching, role modeling, and a culture of mutual reminders are crucial factors in ensuring standard precautions become daily work behavior.

The study results show that nurses understand standard precautions as the main foundation of a patient safety culture, including environmental cleanliness, use of PPE, hand hygiene compliance, and prevention of nosocomial infections. However, their implementation still faces obstacles: hand hygiene does not always comply with the WHO 5 Moments, PPE use and glove changes are inconsistent, light equipment disinfection and medical waste management are suboptimal, and cough/sneeze etiquette and injection practices are not always safe. These findings emphasize the need for strengthened education, supervision, and behavioral reinforcement to ensure a culture of patient safety is truly realized in daily practice.

Factors Influencing Nurses' Lack of Understanding and Practice in Implementing Standard Precautions, Nosocomial Infection Prevention, and Patient Safety Culture

Mindset and Work Culture

Research results indicate that mindset and work culture are the main factors hindering the implementation of standard precautions. The Nursing Manager emphasized that some healthcare workers still underestimate small things, such as hand hygiene, leading to these practices becoming bad habits. The Head of the PPI Team stated that some staff consider hand hygiene a waste of time, while the IPCLN observed that PPI is often perceived as a burden, rather than a safety necessity. The Head of the Quality Committee added that prioritizing quick action over infection prevention procedures is still common, especially during emergencies.

Researchers also found that a culture of mutual reminders, leadership role models, and a positive mindset towards PPI are crucial for the success of standard precaution practices. Continuous coaching, effective communication, and leadership role models are needed to foster a safe and consistent work culture.

Inadequate Personal Protective Equipment (PPE) and Hand Hygiene Facilities

Another factor is the limited supporting facilities, particularly PPE and hand hygiene facilities. The Nursing Manager stated that shortages of hand sanitizer, tissues, and PPE prevented healthcare workers from effectively implementing standard precautions. The Head of the ICU Team recalled that during the pandemic, PPE shortages occurred, hampering safety procedures.

The Head of the ICU emphasized that although warehouse stock was sufficient, slow distribution and high BOR resulted in frequent PPE shortages in the unit. Regarding logistics, the Head of Pharmacy explained that while stock was adequate and the inventory system was automated, challenges persisted, such as surges in demand, vendor delays, or unrecorded unit orders. The Head of General Logistics also stated that delays in supplier deliveries often resulted in shortages of soap and tissues in the unit.

The researchers' observations indicated that despite an operational logistics system, these unstable facilities continued to impact the consistency of IPC measures. The availability and distribution of these facilities were crucial for rapid, accurate, and equitable implementation.

High Workload

High workloads were a significant barrier to implementing a patient safety culture. The Nursing Manager stated that heavy workloads made it difficult to maintain safety habits, while the Head of the ICU Team confirmed that high workloads often decreased compliance. The IPCLN also emphasized the same point, that field conditions make it difficult for staff to consistently follow procedures.

Field findings indicate that during busy times or high workloads, compliance with hand hygiene, PPE use, and the implementation of bundles such as CAUTI, CLABSI, VAP, and SSI often declines. Researchers concluded that the disproportionate workload impacts healthcare workers' focus and ability to implement standard precautions.

Management has implemented several improvement efforts, such as daily/weekly audits, quality indicators (hand hygiene compliance, PPE use, HAI rates), real-time reporting dashboards, quarterly

evaluations, and patient feedback. However, improving patient safety culture still requires collaboration among all staff and a more proportional workload adjustment.

Discussion

The Meaning of Standard Precautions as the Foundation for Nosocomial Infection Prevention and Their Relevance to Patient Safety Culture

The results of the study indicate that all informants, from the PPI Team Leader, Nursing Manager, IPCLN, Quality Committee Chair, and nurses, agreed that standard precautions are the primary foundation for nosocomial infection prevention at Duta Indah Hospital. The PPI Team Leader called them "the foundation of primary practice for preventing nosocomial infections," while the Nursing Manager emphasized them as "the foundation of nursing practice and a safe work culture." This understanding aligns with WHO and Indonesian Ministry of Health guidelines.

Despite good understanding, implementation in the field has not been optimal. Compliance with standard precautions only reached 85.21%, and nosocomial infection prevention reached 84.02%, still below the target of ≥90%. The Quality Committee Leader and IPCLN emphasized that consistent implementation of standard precautions is an indicator of service quality and the foundation of a patient safety culture.

Practice challenges arise in hand hygiene, PPE use, equipment decontamination, environmental cleanliness, waste and linen management, safe injection techniques, and aseptic principles. Infection prevention bundles such as CAUTI, CLABSI, VAP, and SSI also face challenges due to high workloads, limited equipment, unstable PPE distribution, and inconsistent staff and patient compliance.

Overall, the study reveals a significant gap between conceptual understanding and practice, influenced by individual, system, and work culture factors. Therefore, strengthening education, supervision, and behavioral reinforcement is necessary to build a consistent patient safety culture.

Nurses' Experiences in Implementing Standard Precautions and Their Contribution to Patient Safety Culture

Nurses' experiences in implementing standard precautions shape their perceptions of the importance of patient safety. The Nursing Manager emphasized that awareness of PPE use, maintaining a clean environment, and consistency in implementing SOPs are important steps to prevent cross-infection. This experience reinforces the concept that patient safety culture is a collective awareness and not just an individual obligation.

However, nurses' experiences are not always positive. Colleagues' non-compliance with hand hygiene, improper use of PPE, and negligence in aseptic procedures accentuate negative experiences and can weaken the safety culture. When nurses witness these inconsistencies, their trust in the safety system decreases. Conversely, positive experiences such as active supervision, colleagues' reminders, and decreased infection rates foster a stronger safety culture.

Therefore, nurses' experiences are a dynamic process that significantly determines the development of a safety culture. To enhance positive experiences, regular education, audit feedback, direct supervision, leadership role models, and adequate facilities are needed.

Inhibiting and Supporting Factors in Implementing Standard Precautions and a Patient Safety Culture

This study identified various inhibiting factors. Mindset and work culture were the biggest barriers. Several staff statements, such as "hand hygiene is a waste of time," "procedures are just a formality," or "quick action is more important than SOPs," indicated resistance to change. Some staff were also afraid to report incidents, preventing the formation of a just culture.

Another factor was the availability and distribution of facilities. A shortage of personal protective equipment (PPE), delays in the distribution of soap and gloves, and inequitable distribution to high-BOR units significantly impacted compliance. The heads of the ICU and Pharmacy confirmed that the

instability of the facility distribution system directly impacted the implementation of standard precautions.

High workload was the most consistent barrier expressed by Nursing Managers, IPCLN Team Leaders, and IPCLNs. Heavy workloads caused fatigue, decreased focus, and led staff to prioritize quick action over procedural compliance.

However, there were supporting factors, such as a culture of mutual reminders, ward leaders' role models, ongoing education, and the existence of SOPs, audits, and monitoring. However, these supporting factors were not strong enough to offset the dominant barriers.

Overall, optimizing standard precautions and a patient safety culture requires a change in mindset, improvements to facility and distribution systems, human resource support, workload management, ongoing supervision, the creation of a just culture, and leadership leadership. Standard precautions must become a habit and a work culture internalized in every healthcare worker's actions to create a strong and sustainable patient safety culture.

4. CONCLUSION

This study confirms that standard precautions and nosocomial infection prevention are essential foundations for maintaining patient safety at Duta Indah Hospital. Nurses understand and implement standard precautions as a key part of clinical practice to prevent infections, in line with national policies and the need for healthcare transformation.

Nurses' experiences significantly contribute to the formation of a patient safety culture through three core aspects: environmental hygiene practices and the use of PPE, adherence to hand hygiene, and the implementation of nosocomial infection prevention measures through HAIs bundles. These three aspects reflect nurses' commitment to integrating standard infection prevention measures into daily practice.

The implementation of standard precautions is influenced by several factors, including the mindset and work culture of healthcare workers, limited facilities such as PPE and hand hygiene facilities, and high workloads that can hinder consistent infection prevention behavior.

A recommendation for further research is to focus on healthcare workers, particularly physicians, to assess their roles, levels of adherence, and clinical decision-making processes in implementing standard precautions. This is important because findings indicate differences in adherence between physicians and nurses, with physicians tending to have lower adherence. Further studies are needed to understand the factors influencing these behaviors to strengthen a comprehensive patient safety culture.

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