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Assessment of Nurses' Knowledge, Attitudes and Practices towards Hospital-Acquired Infection Prevention in selected Private Hospitals in Chennai City

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Abstract: Hospital-acquired infections (HAIs) are a major concern in healthcare institutions, making nurses' knowledge, attitudes and practices essential for effective infection prevention and patient safety. The present study aimed to assess nurses' knowledge, attitudes and practices towards hospital-acquired infection prevention in selected private hospitals in Chennai City. A descriptive cross-sectional research design was adopted, involving 155 nurses selected through a non-probability convenience sampling technique. Data were collected using a structured questionnaire covering socio-demographic characteristics, knowledge and attitudes, along with an observational checklist to assess infection prevention practices. The data were analysed using SPSS Version 25. The findings revealed that 76.8% of nurses correctly identified the factors influencing HAIs, while 72.3% were aware of the importance of standard precautions. Regarding attitudes, 94.2% agreed that antiseptic use was necessary for infection prevention, and 83.9% believed that infection control guidelines could reduce infection rates. However, variations were observed in actual practices, with only 40% consistently performing hand hygiene before and after direct patient contact and 14.8% always following guidelines for infectious waste disposal. The study highlights the need for strengthening infection prevention practices through continuous training, institutional monitoring and effective implementation of hospital infection control protocols.

Keywords: Hospital-Acquired Infections, Nurses, Knowledge, Attitudes, Practices, Infection Prevention and Control, Private Hospitals.

Introduction

Hospital-acquired infections (HAIs), also referred to as nosocomial infections or healthcare-associated infections, are a major concern for healthcare institutions worldwide. These infections develop during the delivery of healthcare services and are not present or incubating at the time of a patient's admission. They may arise from exposure to contaminated medical equipment, healthcare personnel, hospital environments and inadequate infection prevention procedures. HAIs contribute to increased morbidity and mortality, prolonged hospitalisation, higher treatment costs and additional pressure on healthcare resources. The problem is particularly important in developing countries, where limitations in infection prevention infrastructure, inadequate training and inconsistent implementation of standard precautions may increase the risk of infection transmission (Gruda & Sopjani, 2017; Yousif et al., 2020). Therefore, effective infection prevention and control (IPC) measures are essential for maintaining patient safety and improving the quality of hospital services.

Nurses play a central role in preventing and controlling HAIs because of their continuous interaction with patients and their involvement in various clinical and non-clinical procedures. Their responsibilities include administering medications, dressing wounds, handling medical equipment, assisting in surgical procedures, maintaining patient hygiene and managing clinical waste. These activities may expose patients and healthcare professionals to infectious microorganisms when appropriate infection control measures are not followed. Consequently, nurses' knowledge of infection transmission, standard precautions, hand hygiene, sterilisation, disinfection and personal

protective equipment (PPE) is essential for reducing the possibility of cross-infection. Kaushal et al. (2015) emphasised that adherence to standard precautions and effective hand hygiene are important components of infection control and patient safety. Similarly, Althiyabi et al. (2024) highlighted the importance of nurses' knowledge and compliance with infection prevention practices in reducing the risks associated with hospital-acquired infections.

The knowledge, attitudes and practices (KAP) framework provides a useful approach for examining the preparedness of nurses towards infection prevention. Knowledge represents their understanding of infection transmission, preventive measures and established hospital protocols. Attitudes reflect their perceptions, beliefs, commitment and willingness to follow infection control guidelines. Practices refer to the actual implementation of preventive measures during patient care. These three dimensions are closely connected because adequate knowledge and positive attitudes may encourage appropriate infection prevention behaviour. However, awareness alone does not necessarily ensure consistent compliance with infection control procedures. For instance, Kaushal et al. (2015) reported an average knowledge score of 79%, a good attitude score of 89% and a very good self-reported practice score of 91% among ICU nurses. In contrast, Kabir et al. (2018) identified a gap between nurses' knowledge and actual infection prevention practices, indicating that favourable awareness does not always translate into appropriate clinical behaviour.

Among the various infection prevention measures, hand hygiene is considered a fundamental practice for reducing the transmission of infectious microorganisms within healthcare settings. Inadequate hand hygiene may facilitate the spread of pathogens through direct contact with patients, contaminated equipment and environmental surfaces. The World Health Organization's hand hygiene approach emphasises the importance of performing hand hygiene at appropriate moments during patient care. Yousif et al. (2020), in their study of doctors and nurses at Ribat University Hospital, found that only 35.6% of healthcare workers demonstrated sufficient knowledge, while 20.2% had positive attitudes and 18.1% reported good hand hygiene practices. The findings highlighted the importance of training and institutional support in strengthening infection prevention behaviour. Similarly, Kabir et al. (2018) observed that although most participating nurses recognised the importance of preventing HAIs, actual hand hygiene compliance remained inadequate. These findings demonstrate the need to examine not only nurses' awareness but also their practical adherence to infection prevention procedures.

Apart from hand hygiene, effective infection control requires consistent use of PPE, appropriate sterilisation and disinfection, safe handling of sharps, respiratory hygiene, biomedical waste segregation and maintenance of a hygienic hospital environment. Nurses must understand the circumstances in which protective equipment is required and follow the prescribed procedures while handling patients, instruments and infectious materials. Chauhan et al. (2024), in their cross-sectional study among registered nurses in medical and surgical wards in Northern India, found that 54.3% of participants belonged to the poor KAP group, while 45.7% demonstrated good KAP. The study also identified differences in knowledge concerning sterilisation and handwashing, suggesting the importance of strengthening specific infection control competencies. Further, Nooriyan et al. (2025) reported that although nurses demonstrated considerable awareness of HAIs, gaps remained in practical competencies, particularly in hand hygiene and consistent PPE utilisation.

The effectiveness of infection prevention practices is also influenced by nurses' professional experience, educational qualifications, previous training, workload and the availability of institutional resources. Regular training programmes, accessible infection control guidelines, adequate PPE supplies and supportive hospital management can encourage nurses to follow standard precautions consistently. Althiyabi et al. (2024) observed that age and clinical experience were significantly associated with nurses' knowledge and practice levels concerning infection prevention. Similarly, Gupta et al. (2025) demonstrated that a structured instructional module significantly improved nurses' knowledge, attitudes and practices regarding HAI prevention. Their findings reinforce the importance of continuous professional education and context-specific training in improving infection

control competencies. Bhugun-Aumeerbocus and Nuckchady (2026) also identified a significant association between positive attitudes and better infection prevention practices, highlighting the importance of institutional leadership, managerial support and a strong infection prevention culture.

In the Indian healthcare context, private hospitals serve a substantial proportion of patients and provide healthcare services through departments such as general medicine, surgery, intensive care, emergency care and specialised treatment units. The diverse nature of clinical activities and frequent interactions between nurses and patients make infection prevention an important component of hospital administration and nursing practice. Maintaining appropriate infection control standards requires nurses to possess adequate knowledge, demonstrate positive attitudes and consistently implement preventive measures. Although previous studies have examined nurses' KAP regarding HAIs and standard precautions in different healthcare settings, the findings indicate variations in knowledge, attitudes and actual practices across institutions and professional groups (Gruda & Sopjani, 2017; Chauhan et al., 2024; Gupta et al., 2025). Therefore, assessing these dimensions within selected private hospitals in Chennai City is important for understanding the existing level of infection prevention preparedness among nursing professionals.

Against this background, the present study entitled "Assessment of Nurses' Knowledge, Attitudes and Practices towards Hospital-Acquired Infection Prevention in Selected Private Hospitals in Chennai City" aims to evaluate nurses' knowledge, attitudes and practices concerning the prevention and control of hospital-acquired infections. The study focuses on understanding their awareness of infection transmission, adherence to standard precautions, hand hygiene, use of PPE and other essential infection control measures. It also seeks to examine the association between nurses' professional and demographic characteristics and their KAP levels. The findings are expected to identify potential gaps in infection prevention practices and provide useful insights for strengthening nursing education, institutional training programmes and hospital infection control policies.

Literature Review

Gruda and Sopjani (2017) examined nurses' knowledge, attitudes and practices towards the management of hospital-acquired infections at the University Clinical Center of Kosovo. The findings revealed that nurses demonstrated 90% knowledge, 84.4% positive attitudes and 76.2% appropriate practices, with work experience significantly influencing all three dimensions. Similarly, Kaushal et al. (2015) analysed nurses' knowledge, attitudes and practices concerning standard infection control precautions among ICU nurses and reported an average knowledge level of 79%, a good attitude level of 89% and very good self-reported practices of 91%. Yousif et al. (2020), in their study on hand hygiene among healthcare workers at Ribat University Hospital, Sudan, found that only 35.6% had sufficient knowledge, 20.2% demonstrated positive attitudes and 18.1% reported good practices, emphasising the need for regular training. Kabir et al. (2018) investigated nurses' knowledge, attitudes and practices regarding hospital-acquired infections in tertiary care hospitals in Dhaka and identified good knowledge and moderately positive attitudes but inadequate infection prevention practices. The authors recommended regular training and performance monitoring to improve compliance. Althiyabi et al. (2024) assessed nurses' knowledge and practices towards HAI prevention in an emergency department in Saudi Arabia and found that 63.8% demonstrated good knowledge and 56.4% had good practices. Age and clinical experience were significantly associated with knowledge and practice levels. Chauhan et al. (2024) examined knowledge, attitudes and practices regarding standard precautions among registered nurses in Northern India and reported that 54.3% belonged to the poor KAP category, while 45.7% demonstrated good KAP, indicating the need for targeted infection control interventions. Gupta et al. (2025) evaluated the effectiveness of an instructional module among nurses in Gautam Budh Nagar, Uttar Pradesh, and established that structured educational intervention significantly improved knowledge, attitudes and practices regarding HAI prevention. Nooriyan et al. (2025) evaluated nurses' competencies in hospital infection control in Afghanistan and found that although 81.36% were aware of HAIs, only 42.5% reported possessing the necessary skills to manage infections effectively. More recently, Bhugun-

Aumeerbocus and Nuckchady (2026) examined infection prevention and control practices among healthcare workers in Mauritius and found that 69% demonstrated adequate knowledge, 86.2% had positive attitudes and 84.5% showed good practices. The study also identified a significant association between positive attitudes and better infection prevention practices. Overall, the reviewed studies indicate that nurses' knowledge, attitudes and practices are essential determinants of effective hospital infection prevention. However, variations in KAP levels across healthcare settings highlight the importance of examining these dimensions in specific institutional contexts. Therefore, the present study focuses on assessing nurses' knowledge, attitudes and practices towards hospital-acquired infection prevention in selected private hospitals in Chennai City.

Methodology

A descriptive cross-sectional research design was adopted to assess nurses' knowledge, attitudes and practices towards hospital-acquired infection prevention in selected private hospitals in Chennai City. A non-probability convenience sampling technique was employed to select 155 nurses working in the selected hospitals. Nurses with a minimum of one year of work experience were included in the study to ensure adequate exposure to hospital-based clinical practices and infection control procedures. Data were collected using a structured self-administered questionnaire consisting of three parts. Part I covered the socio-demographic and professional characteristics of the respondents, Part II assessed their knowledge regarding hospital-acquired infections and preventive measures, and Part III examined their attitudes towards infection prevention and control. The measurement scales used for assessing knowledge and attitudes were adapted from the study of Anwar Omar and Mohammed M-Amen (2025), with appropriate modifications to suit the objectives and context of the present study. In addition, nurses' actual infection prevention practices were assessed through an observational checklist to evaluate their adherence to standard infection control procedures. Prior permission was obtained from the concerned hospital authorities before conducting the study, and informed consent was obtained from the participating nurses. Confidentiality and anonymity of the respondents were maintained throughout the data collection process. The collected data were coded, tabulated and analysed using Statistical Package for the Social Sciences (SPSS), Version 25. Descriptive and statistical techniques were employed to interpret the findings in accordance with the study objectives.

Analysis

Knowledge of Nurses Regarding Hospital-Acquired Infections

Table 2 presents the knowledge of nurses regarding hospital-acquired infections among 155 respondents. The findings indicate that 76.8% of nurses correctly identified the factors influencing hospital-acquired infections, followed by 72.3% who were aware that standard precautions should be applied to all patients at all times. Further, 71.6% correctly recognised that the same pair of gloves should not be used for multiple patients, even in the absence of visible contamination. Regarding hand hygiene, 68.4% understood that it should be performed before and after direct patient contact, while 61.3% recognised that washing hands with soap or an alcohol-based antiseptic reduces the risk of infection transmission. However, only 44.5% correctly identified the definition of hospital-acquired infections, and 42.6% identified handwashing as the most effective measure to prevent their transmission. Knowledge gaps were also observed regarding the use of gloves (38.7%) and appropriate protective equipment during exposure to blood or body fluids (35.5%). Overall, the findings indicate that nurses possess a reasonable understanding of certain infection prevention measures, although deficiencies remain in fundamental concepts and specific protective practices.

Table 2 Knowledge of Nurses Regarding Hospital-Acquired Infections

Items	Correct answer No. (%)	Incorrect answer No. (%)
Hospital-acquired infections definition	69 (44.5)	86 (55.5)
Factors influencing hospital-acquired infections	119 (76.8)	36 (23.2)
The most common way of hospital-acquired infection transmission	81 (52.3)	74 (47.7)
Standard precautions for infection control are applied to all patients at all times	112 (72.3)	43 (27.7)
The most effective way to stop the transmission of hospital-acquired infections is washing hands	66 (42.6)	89 (57.4)
Hand hygiene should be performed before and after direct patient contact	106 (68.4)	49 (31.6)
Washing hands with soap or an alcohol-based antiseptic decreases the risk of HAI transmission	95 (61.3)	60 (38.7)
Wearing gloves decreases the chance of getting HAIs	60 (38.7)	95 (61.3)
When there is a risk of a splash of blood or body fluid, the nurse should wear gloves, mask, goggles and gown	55 (35.5)	100 (64.5)
The same pair of gloves cannot be worn for multiple patients, even if there is no visible contamination	111 (71.6)	44 (28.4)
Total respondents per item	155 (100.0)	155 (100.0)

Attitude of Nurses Regarding Hospital-Acquired Infections

Table 3 illustrates the attitudes of nurses towards hospital-acquired infection prevention. The findings reveal that 94.2% of respondents agreed that the use of antiseptics is necessary to prevent hospital-acquired infections, while 83.9% believed that infection control policies and guidelines would reduce infection rates. Further, 75.5% agreed that hand hygiene after removing gloves is an important infection control measure, and 73.5% expressed willingness to attend regular in-service training programmes and workshops. A considerable proportion (58.1%) recognised healthcare workers' hands as a vehicle for transmitting hospital-acquired pathogens. However, 25.8% agreed with the statement that handwashing is unnecessary when gloves are used, indicating a misconception regarding hand hygiene. Similarly, 48.4% agreed that changing masks before attending another patient is an infection control measure. Notably, 12.3% agreed that invasive procedures are not a risk factor for infectious organisms, while 23.9% did not recognise the importance of avoiding needle recapping. Overall, the findings

suggest that nurses demonstrate favourable attitudes towards several infection prevention measures, although certain misconceptions and areas requiring attitudinal improvement remain

Table 3 Attitude of Nurses Regarding Hospital-Acquired Infections

Items	Disagree No. (%)	Neutral No. (%)	Agree No. (%)
Health workers' hands are a vehicle for the transmission of hospital-acquired pathogens	28 (18.1)	37 (23.9)	90 (58.1)
I don't have to wash my hands if I use gloves	102 (65.8)	13 (8.4)	40 (25.8)
Hand hygiene after removing gloves is a hospital-acquired infection control measure	24 (15.5)	14 (9.0)	117 (75.5)
The use of antiseptic is necessary to prevent hospital-acquired infections	3 (1.9)	6 (3.9)	146 (94.2)
I believe invasive procedures are not a risk factor for infectious organisms	120 (77.4)	16 (10.3)	19 (12.3)
I feel needles should not be recapped after use and before disposal	115 (74.2)	3 (1.9)	37 (23.9)
I believe infection control policies and guidelines will reduce rates of hospital-acquired infections	8 (5.2)	17 (11.0)	130 (83.9)
It is not my responsibility to comply with hospital-acquired infection control guidelines	131 (84.5)	14 (9.0)	10 (6.5)
Changing mask before going to another patient is a hospital-acquired infection control measure	38 (24.5)	42 (27.1)	75 (48.4)
I should attend in-service training/workshops related to infection prevention and control regularly	8 (5.2)	33 (21.3)	114 (73.5)

Practice of Nurses Regarding Hospital-Acquired Infections

Table 4 presents the infection prevention practices followed by nurses in selected private hospitals in Chennai City. The findings indicate that 61.3% of respondents always changed their gloves before attending a new patient, while 73.5% reported washing their uniforms or white coats weekly. Further, 43.9% always cleaned their stethoscopes and medical equipment using antiseptics, and 40% consistently performed hand hygiene before and after direct patient contact. Regarding personal protective equipment, 30.3% reported always wearing masks and protective glasses during invasive and body-fluid-related procedures. However, only 25.2% attended infection prevention and control training programmes annually, indicating limited participation in regular professional

development activities. A major concern is that 60% reported never discarding infectious materials and leftover samples according to established guidelines, while only 14.8% consistently followed the recommended procedure. Similarly, only 19.4% always cleaned their mobile phones using antiseptics. Regarding COVID-19 vaccination, 91% reported having received the vaccine. Overall, the findings reveal variations in nurses' infection prevention practices, with relatively better compliance in glove changing and uniform hygiene, but considerable scope for improvement in biomedical waste disposal, hand hygiene, equipment disinfection and regular infection control training.

Table 4 Practice of Nurses Regarding Hospital-Acquired Infections

Items	Never No. (%)	Sometimes No. (%)	Always No. (%)
I wash my hands before and after direct contact with the patient.	36 (23.2)	57 (36.8)	62 (40.0)
I put on a mask and glasses when performing invasive and body fluid procedures.	52 (33.5)	56 (36.1)	47 (30.3)
I change my gloves before starting to handle a new patient.	10 (6.5)	50 (32.3)	95 (61.3)
Surgical operation sites are shaved with razors.	24 (15.5)	49 (31.6)	82 (52.9)
I wash my uniform/white coat weekly.	0 (0.0)	41 (26.5)	114 (73.5)
I discard infectious materials and leftover samples according to the guidelines.	93 (60.0)	39 (25.2)	23 (14.8)
I received the COVID-19 vaccine.	14 (9.0)	0 (0.0)	141 (91.0)
I clean my stethoscope/equipment with antiseptic (e.g., 70% alcohol).	53 (34.2)	34 (21.9)	68 (43.9)
I clean my mobile phone with antiseptic (e.g., 70% alcohol).	85 (54.8)	40 (25.8)	30 (19.4)
I attend in-service training/workshops related to infection prevention and control yearly.	55 (35.5)	61 (39.4)	39 (25.2

Conclusion

The study concludes that nurses in selected private hospitals in Chennai City demonstrate reasonable knowledge and favourable attitudes towards hospital-acquired infection prevention. However, certain gaps remain in the practical implementation of infection control measures, particularly hand hygiene, biomedical waste disposal, equipment disinfection and regular training. The findings indicate that positive attitudes and adequate knowledge should be supported by consistent clinical practices to ensure effective infection prevention. Therefore, private hospitals should strengthen continuous professional education, organise regular infection control workshops,

ensure the availability of necessary protective equipment and implement systematic monitoring of nursing practices. These measures can improve nurses' infection prevention competencies, promote patient safety and reduce the risk of hospital-acquired infections.

References

[1] Althiyabi, F. S., Khuded, F. M., Alzaidi, F. M., Alswat, A. S. G., Alotaibi, F. S. B., Alotaibi, W. S. B., Alotaibi, K. I. A., Alshehri, F. A. H., & Almutairi, A. M. A. (2024). Assessment of nursing knowledge and practice toward prevention of acquired infections in the emergency department of King Faisal Medical Complex in Taif. SAGE Open Medicine, 12, 1–8. https://doi.org/10.1177/20503121231222341

[2] Bhugun-Aumeerbocus, B. N. A., & Nuckchady, D. C. (2026). Knowledge, attitudes, and practices of infection prevention and control among healthcare workers in a tertiary hospital in Mauritius. Cureus, 18(2), e103455. https://doi.org/10.7759/cureus.103455

[3] Chauhan, S., Srivastava, S. P., Tiwari, S. K., Singh, S., Patel, S. S., & Yadav, L. (2024). Knowledge, attitude and practices regarding standard precautions among registered nurses in medical and surgical wards: A cross-sectional study. Current Medicine Research and Practice, 14, 238–244.

[4] Gruda, A., & Sopjani, I. (2017). The knowledge, attitudes and practices of nurses toward management of hospital-acquired infections in the University Clinical Center of Kosovo. Materia Socio-Medica, 29(2), 84–87.

[5] Gupta, P., Gupta, S., Arif, N., Pathak, P. N., & Khanna, R. (2025). Assessing the impact of an instructional module on nurses' knowledge, attitudes, and practices for preventing hospital-acquired infections in Gautam Budh Nagar, Uttar Pradesh, India. Cureus, 17(10), e94549. https://doi.org/10.7759/cureus.94549

[6] Kabir, A. S. M. A., Akhter, F., Sharmin, M., Akhter, K., Begum, M. B., Saha, A. K., & Ahmed, I. (2018). Knowledge, attitude and practice of staff nurses on hospital acquired infections in tertiary care hospital of Dhaka city. Northern International Medical College Journal, 10(1), 347–350. https://doi.org/10.3329/nimcj.v10i1.39330

[7] Kaushal, G., Doke, P., Shah, A., & Verma, V. (2015). An analysis of knowledge, attitude and practices regarding standard precautions of infection control and impact of knowledge and attitude of ICU nurses on self-reported practices of infection control. International Journal of Research Foundation of Hospital & Healthcare Administration, 3(2), 79–85.

[8] Nooriyan, A. A., Khanjari, H., & Enayat, E. (2025). Comprehensive evaluation of nurses' competencies and performance in hospital infection control practices: A case study of Ali Abad Teaching Hospital, Afghanistan. Journal of Health Science and Medical Therapy, 3(1), 102–115. https://doi.org/10.59653/jhsmt.v3i01.1442

[9] Yousif, M., Tancred, T., & Abuzaid, M. (2020). A survey of knowledge, attitudes and practices regarding hand hygiene among doctors and nurses in Ribat University Hospital. International Journal of Medical Reviews and Case Reports, 4(2), 19–27. https://doi.org/10.5455/IJMRCR.hand-hygiene-doctors-nurses

[10] Anwar Omar, N., & Mohammed M-Amen, K. (2025). Knowledge, Attitude, and Practice of Nurses Concerning Hospital Acquired Infections in Surgical Specialty Hospital- Erbil Cardiac Center. *Erbil Journal of Nursing and Midwifery*, *8*(1), 77–85. https://doi.org/10.15218/ejnm.2025.09