



Nurses’ Knowledge of Contact-Transmitted Healthcare-Associated Infections: A Cross-Sectional Study Based on WHO Guidelines

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Background:

Healthcare-associated infections (HAIs) remain a major patient-safety and public-health problem worldwide. Among them, infections transmitted by direct or indirect contact are particularly important, as they are closely linked to everyday bedside care and routine procedures. Nurses, who constitute the largest professional group in hospitals and have the most frequent and closest contact with patients, play a key role in breaking the chain of transmission. Despite advances in antiseptic agents, equipment and infection-control procedures, contact-transmitted HAIs still occur more often than would be expected. A persistent gap between evidence and practice is largely related to inadequate hand hygiene and suboptimal adherence to basic aseptic principles. The World Health Organization (WHO) has proposed clear recommendations and the “Five Moments for Hand Hygiene” strategy to standardize preventive practice, but the extent to which nurses know and apply these guidelines may vary. Regular assessment of nurses’ knowledge of contact-transmitted HAIs and WHO hand-hygiene recommendations is therefore essential. Identifying strengths and gaps in knowledge, as well as demographic and professional factors associated with weaker results, can support targeted educational interventions and help improve patient safety.



Material and Methods

A cross-sectional questionnaire study was conducted among 108 nurses employed on surgical and medical wards. Most respondents were women and worked in a shift system.Knowledge of contact-transmitted healthcare-associated infections was assessed using a custom 26-item questionnaire (mainly true/false statements) developed on the basis of World Health Organization (WHO) hand-hygiene recommendations. The tool included items on routes of transmission, indications for hand hygiene, and basic principles of asepsis, as well as a short demographic form (age, education, length of service, ward profile, work system).The reliability of the knowledge scale was acceptable (Cronbach’s $\alpha = 0.684$). Data analysis comprised the Shapiro–Wilk test for distribution assessment, Mann–Whitney U and Kruskal–Wallis tests with Dunn’s post hoc for between-group comparisons, and Fisher’s exact test for categorical variables. Statistical significance was set at $p < 0.05$.



Aim:

The aim of this study was to assess nurses’ knowledge of contact-transmitted healthcare-associated infections, based on World Health Organization (WHO) hand-hygiene guidelines, and to identify demographic and professional factors (age, education, length of service, ward profile, work system) associated with differences in knowledge levels.



Results – Summary

The study demonstrated a generally high level of nurses’ knowledge regarding contact-transmitted healthcare-associated infections, with a mean score of **26.9 ± 2.5** points (range **15–31**). For more than half of the questionnaire items, at least **95%** of responses were correct, while several more detailed questions showed clearly lower percentages, indicating uneven knowledge across specific topics. Knowledge scores were significantly lower among nurses aged **≥51 years** and those with **≥31 years** of work experience compared with younger and less experienced staff, whereas nurses with higher education (bachelor’s or master’s degree) achieved slightly better results than those with secondary medical education. No significant differences in overall knowledge were found between surgical and medical wards or between different work systems. These findings suggest that, although the overall level of knowledge about contact-transmitted HAIs is high, important thematic gaps persist, particularly in older age groups and among long-serving nurses. This underlines the need for regular, WHO-based educational programmes focused on updating detailed infection-control knowledge and reinforcing hand-hygiene practices across all professional and age groups.

Conclusions

- Nurses demonstrated an overall **high level of knowledge** regarding contact-transmitted healthcare-associated infections and hand hygiene.
- However, **knowledge was not uniform**: selected, more detailed items (e.g. specific indications or details of aseptic practice) were answered correctly much less frequently.
- Older age (≥51 years)** and **very long work experience (≥31 years)** were associated with **significantly lower knowledge scores**, compared with younger and less experienced nurses.
- Nurses with **higher education (bachelor’s/master’s degree)** achieved **slightly better results** than those with secondary medical education.
- No significant differences were found between **surgical vs. medical wards** or between **different work systems**, suggesting a relatively uniform training environment in the studied hospitals.

Recommendations

- Maintain and further develop **regular, structured training programmes** on contact-transmitted HAIs and WHO hand-hygiene guidelines for all nursing staff.
- Prioritise refresher education** for nurses in older age groups and those with long work experience, focusing on updating knowledge in line with current WHO standards.
- Target training to **specific knowledge gaps** identified in the questionnaire (items with the lowest proportion of correct answers), especially detailed indications for hand hygiene and elements of aseptic technique.
- Integrate WHO’s **“Five Moments for Hand Hygiene”** into routine educational activities, visual materials and bedside reminders on all wards.
- Consider **periodic re-assessment of knowledge** using standardized tools to monitor progress over time and to adapt educational strategies to the evolving needs of staff.

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