

# Compliance with Hand Hygiene in Healthcare Facilities: Analysis Based on the Harnos Model and Who Concepts

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**Annotation:** Healthcare-associated infections (HAIs) remain one of the most pressing challenges in modern healthcare systems. The transmission of microorganisms via the hands of medical personnel from one patient to another is considered a leading factor in the spread of these infections. Therefore, strict adherence to hand hygiene is recognized as one of the most effective and cost-efficient measures for infection prevention. Among evidence-based approaches to hand hygiene, the behavior-oriented model developed by Harnos and the “Five Moments for Hand Hygiene” concept proposed by the World Health Organization (WHO) are of particular importance. This study aimed to assess the level of knowledge, attitudes, and practical skills related to hand hygiene among medical students and faculty members involved in medical education.

**Keywords:** hand hygiene, healthcare-associated infections, WHO, Harnos concept, medical education, questionnaire-based study.

**Relevance.** Healthcare-associated infections (HAIs) remain a major global public health challenge, leading to increased morbidity, mortality, length of hospital stay, and healthcare costs. According to international data, a significant proportion of HAIs are preventable, with inadequate hand hygiene recognized as the most critical contributing factor in their transmission [1,2,5]. Despite the availability of evidence-based guidelines, compliance with hand hygiene

recommendations in healthcare facilities remains suboptimal worldwide. Hand hygiene is widely acknowledged as the single most effective, simple, and cost-efficient intervention for preventing the spread of infections in clinical settings. The World Health Organization (WHO) has developed standardized strategies, including the “Five Moments for Hand Hygiene,” to improve compliance and reduce infection risks[4,6,9]. However, successful implementation of these recommendations largely depends not only on knowledge but also on behavioral, motivational, and organizational factors. The Harnos behavioral model emphasizes the role of attitudes, habits, and compliance-related behavior in shaping hand hygiene practices. Integrating this model with WHO concepts allows for a more comprehensive assessment of hand hygiene adherence, particularly in educational and clinical environments[3,7,9]. Medical students and faculty members represent key target groups, as their behaviors directly influence patient safety and serve as a foundation for future professional practice[8]. Therefore, analyzing and comparing hand hygiene compliance based on the Harnos model and WHO concepts is highly relevant for identifying existing gaps in knowledge and practice, optimizing medical education, and developing targeted interventions. Such an approach contributes to strengthening infection control systems and supports long-term strategies aimed at reducing the burden of healthcare-associated infections.

**Purpose of the study:** To analyze the level of compliance with hand hygiene among students and faculty members using questionnaires developed based on the Harnos concept and WHO recommendations, and to conduct a comparative assessment between the study groups.

**Materials and methods.** The study was designed as a cross-sectional analytical survey. A total of 190 participants were enrolled, including 150 medical students and 40 faculty members. The questionnaire was developed based on behavioral components proposed by Harnos (knowledge, attitudes, and practical compliance) as well as standard WHO recommendations on hand hygiene. The questionnaire included the following domains: level of knowledge regarding the importance of hand hygiene; frequency of hand washing and use of antiseptics; role of hand hygiene in the prevention of healthcare-associated infections; barriers to compliance with hand hygiene in clinical practice. The collected data were expressed as percentages and compared between the study groups.

#### **The results obtained and their discussion.**

The analysis revealed that 92.5% of faculty members demonstrated complete and accurate knowledge of the importance of hand hygiene, whereas this indicator was 68.0% among students. Continuous compliance with hand hygiene in all WHO-recommended situations-before and after patient contact, before aseptic procedures, and after contact with biological fluids-was observed in 85.0% of faculty members and 54.7% of students. The proportion of correct responses regarding the main causes of HAIs was significantly higher among faculty members. In contrast, insufficient attention to hand hygiene in practical settings was identified among students. These findings indicate that professional experience and close involvement in clinical practice enhance responsibility toward hand hygiene compliance. According to the Harnos concept, not only knowledge but also attitudes and behavioral factors play a decisive role in adherence to hand hygiene. The relatively low compliance rate among students highlights the need to strengthen practical training and simulation-based education. Early integration of WHO hand hygiene recommendations into medical curricula may contribute to a reduction in HAIs in the future.

**Table 1. Level of knowledge, compliance, and awareness of healthcare-associated infections (n = 190)**

Indicators	Students (n=150), %	Faculty members (n=40), %
Adequate knowledge of the importance of hand hygiene	68,0	92,5
Consistent compliance with hand hygiene in WHO-recommended situations	54,7	85,0
Awareness of healthcare-associated infections (HAIs)	61,3	90,0

*Note: Data are calculated based on questionnaire results and expressed as percentages.*

The table clearly demonstrates that the level of hand hygiene knowledge among faculty members is significantly higher than among students (92.5% vs. 68.0%). Similarly, consistent compliance with WHO-recommended hand hygiene practices was observed in 85.0% of faculty members, compared with only 54.7% of students. Awareness of the role of hand hygiene in the development of HAIs was also higher among faculty members (90.0%) than among students (61.3%).

**CONCLUSION.** The study findings indicate that compliance with hand hygiene practices is significantly higher among faculty members compared to students. This underscores the necessity of strengthening systematic, practice-oriented training on hand hygiene within medical education. Conducting large-scale interventional studies in this area is considered a promising direction for future research.

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