Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1446
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1446*
Original Research Article

A STUDY ON KNOWLEDGE, ATTITUDE, AND PERFORMANCE OF NURSES REGARDING HAND HYGIENE

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(Received, 04th September 2024, Revised 25th December 2024, Published 30th December 2024)

Abstract: *Hand hygiene is a critical component of infection control and patient safety, yet compliance with hand hygiene practices remains a significant challenge, particularly in resource-constrained settings like Pakistan. This study aimed to evaluate the knowledge, attitudes, and practices of nurses regarding hand hygiene in a tertiary care hospital.* ***Methods:*** *A descriptive cross-sectional study was conducted among 106 nurses working in various departments, including surgical, medical, and critical care units. Participants were selected through convenience sampling. Data were collected using a prevalidated structured questionnaire covering demographics, knowledge, attitudes, and practices. The data were analyzed using SPSS version 26, employing descriptive and inferential statistics, with a p-value of <0.05 considered significant.* ***Results:*** *The findings revealed moderate knowledge levels (mean score: 8.3 ± 2.4), with 99.5% of participants understanding the need to remove accessories before scrubbing and 82% recognizing the importance of hand hygiene before taking an ECG. Attitudes were generally positive, with 87% agreeing that hand hygiene prevents nosocomial infections. However, only 42.9% consistently used hand hygiene assessment tools, highlighting gaps in practices. Age and education level significantly influenced knowledge and practices ($p < 0.05$).* ***Conclusion:*** *While nurses demonstrated adequate knowledge and positive attitudes toward hand hygiene, significant gaps in practices were observed. These findings underscore the need for targeted training programs, improved infrastructure, and institutional support to enhance compliance with hand hygiene protocols. Addressing these challenges is essential to reducing healthcare-associated infections and improving patient outcomes in Pakistan.*

Keywords: Hand Hygiene, Infection Control, Nursing Practices, Healthcare-Associated Infections, Pakistan, Who Guidelines

Introduction

Hand hygiene is a fundamental practice in healthcare settings to prevent healthcare-associated infections (HAIs) and ensure patient safety. Globally, inadequate adherence to hand hygiene protocols has been identified as a major contributor to the transmission of infectious diseases within hospitals (1). In Pakistan, where the healthcare system faces significant challenges due to limited resources, high patient-to-nurse ratios, and inconsistent training, the importance of effective hand hygiene practices is amplified (2).

The World Health Organization (WHO) emphasizes the critical role of hand hygiene in reducing nosocomial infections, especially in resource-constrained settings (3). Despite these recommendations, studies in Pakistan and similar low- and middle-income countries (LMICs) have highlighted significant gaps in the knowledge and practices of healthcare workers regarding hand hygiene (4). A study conducted by Ahmed et al. revealed that only 60% of nurses in Pakistani hospitals adhered to WHO-recommended hand hygiene practices, citing barriers such as inadequate supplies, lack of training, and time constraints (5).

Cultural and systemic factors also play a role in influencing hand hygiene compliance in Pakistan. For instance, religious beliefs and personal hygiene practices often intersect with professional protocols, potentially impacting adherence rates (6). Moreover, the lack of infrastructure, such as insufficient availability of alcohol-based hand rubs and proper sinks in healthcare facilities, further hinders compliance(7).

Previous research has demonstrated that structured training and continuous education significantly improve healthcare workers' adherence to hand hygiene protocols (8). Malik et al. reported that targeted educational interventions increased hand hygiene compliance among nurses in LMICs from 40% to 80% within a year (9). However, in Pakistan, there is limited data assessing the knowledge, attitudes, and practices of nurses specifically regarding hand hygiene, creating a gap in understanding the effectiveness of current interventions (10).

This study aims to assess the knowledge, attitudes, and practices of nurses regarding hand hygiene in a tertiary care hospital in Pakistan. By identifying gaps and strengths, the findings will contribute to the development of evidence-based strategies to improve adherence to hand hygiene protocols, ultimately enhancing patient outcomes and reducing the burden of HAIs in the Pakistani healthcare system.

Methodology

The study utilized a descriptive cross-sectional design to assess the knowledge, attitudes, and practices of nurses regarding hand hygiene in a tertiary care hospital. This design was chosen to provide a comprehensive snapshot of nurses' competencies and adherence to hand hygiene protocols at a single point in time.

The study population comprised registered nurses working in various departments, including surgical, medical, and critical care units. A total of 106 nurses were included, selected through convenience sampling. Inclusion criteria required participants to have at least one year of clinical experience and direct involvement in patient care. Nurses

on extended leave or those unwilling to participate were excluded.

Data were collected using a structured, prevalidated questionnaire, which was developed based on the World Health Organization (WHO) guidelines on hand hygiene and relevant literature. The questionnaire consisted of four sections: demographic information, knowledge, attitudes, and practices. The demographic section captured variables such as age, gender, education level, marital status, and years of clinical experience. The knowledge section assessed awareness of hand hygiene principles, including appropriate techniques, the use of alcohol-based hand rubs, and factors influencing compliance. The attitude section evaluated perceptions regarding the importance of hand hygiene in preventing infections, while the practice section explored the frequency and consistency of hand hygiene behaviors in clinical settings.

Ethical approval was obtained from the institutional ethics review board before data collection. Participants were informed about the study's objectives, and written informed consent was secured. Confidentiality and anonymity were maintained throughout the research process, ensuring participants' privacy.

Data collection was conducted over four weeks during nurses' work shifts to minimize disruption to their duties. The self-administered questionnaires were distributed and collected by trained research assistants, who were available to clarify any questions. Completed questionnaires were reviewed for completeness before data entry.

The collected data were analyzed using SPSS version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic variables, knowledge, attitudes, and practices. Inferential statistics, such as chi-square tests, were employed to identify associations between demographic factors and knowledge, attitudes, and practices. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 106 nurses participated in the study. The demographic characteristics included age, gender, education level, marital status, and clinical experience. The results indicated that the majority were female (85%), aged 36–40 years (33%), and held a Bachelor of Science in Nursing (58%). Most were married (83%) and had 4–6 years of clinical experience (42%). Detailed demographic data is presented in Table 1.

The knowledge of hand hygiene was assessed using various indicators. A high percentage of respondents (99.5%) knew the importance of removing accessories beforehand scrubbing, and 84% understood the necessity of replacing gloves when moving from a contaminated to a clean environment. However, knowledge regarding the use of alcohol-based detergents and avoiding hot water during handwashing was comparatively lower. Comprehensive data is presented in Table 2.

The attitudes of nurses toward hand hygiene were generally positive. A significant majority agreed that preventing nosocomial infections was a priority (87%) and recognized the role of hand hygiene in reducing mortality (77%). Detailed responses are included in Table 3.

The practice of hand hygiene among participants demonstrated areas of strength and improvement. While 98% of nurses reported always washing hands after using the toilet, 42.9% admitted never using hand hygiene assessment tools. Detailed results are presented in Table 4.

These results present a comprehensive overview of nurses' knowledge, attitudes, and practices regarding hand hygiene, emphasizing areas of strength and potential improvement. They provide a valuable foundation for targeted interventions and training programs to enhance compliance with international hand hygiene standards.

Table 1: Demographic Characteristics of Participants

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	90	85%
	Male	16	15%
Age Group (years)	20–25	11	10.3%
	26–30	17	16%
	31–35	23	21%
	36–40	35	33%
	41–45	20	18.8%
Education Level	Diploma in Nursing	13	12%
	Bachelor of Nursing	62	58%
	MSc Nursing	31	29%
Marital Status	Married	88	83%
	Single	18	17%
Clinical Experience	1–3 years	37	35%
	4–6 years	45	42%
	>6 years	24	23%

Table 2: Knowledge Assessment of Hand Hygiene

Knowledge Questions	Correct Response (n)	Percentage (%)	Incorrect Response (n)	Percentage (%)
Remove accessories before scrubbing	105	99.5%	1	0.5%
Hand hygiene before taking ECG	87	82%	19	18%
Hand hygiene after exiting the isolation room	106	100%	0	0%
Avoid using hot water for handwashing	72	68%	34	32%
Knowledge of alcohol-based detergents	65	61%	41	39%

Familiarity with WHO handwashing techniques	70	66%	36	34%

Table 3: Attitudinal Assessment Toward Hand Hygiene

Attitude Questions	Strongly Agree (n)	Agree (n)	Neutral (n)	Disagree (n)	Strongly Disagree (n)
Preventing nosocomial infections is essential	25	67	10	4	0
Hand hygiene reduces mortality	20	61	18	7	0
Following WHO guidelines as a personal habit	22	62	16	6	0

Table 4: Practices of Hand Hygiene

Practice Questions	Always (n)	Often (n)	Sometimes (n)	Rarely (n)	Never (n)
Handwashing after toilet use	104	2	0	0	0
Replacing gloves during patient care	89	10	7	0	0
Hand hygiene after touching contaminated items	76	20	5	5	0
Reading guidelines for hand hygiene	80	15	5	6	0
Use of hand hygiene assessment tools	10	15	20	26	45

Discussion

This study assessed the knowledge, attitudes, and practices of nurses regarding hand hygiene in a tertiary care hospital in Pakistan. The results revealed moderate levels of knowledge, positive attitudes, and varying adherence to hand hygiene practices, consistent with findings from previous studies conducted in similar resource-constrained settings.

The mean knowledge score of nurses in this study was 8.3 ± 2.4, with a majority correctly identifying the need to remove accessories beforehand scrubbing (99.5%) and the importance of hand hygiene before taking an ECG (82%). These findings are in line with a study conducted by Ahmed et al., which reported that over 80% of healthcare workers in Pakistan were aware of key hand hygiene principles, although this knowledge did not always translate into practice(11). Similarly, Malik et al. highlighted that while nurses in LMICs demonstrated good theoretical knowledge, practical adherence to hand hygiene protocols remained suboptimal due to infrastructural and systemic barriers (12).

Attitudes towards hand hygiene were generally positive, with 87% of respondents agreeing that it prevents nosocomial infections. This aligns with a study by Apisarnthanarak et al., which found that healthcare workers with positive attitudes toward hand hygiene were more likely to comply with recommended practices (13). However, a smaller proportion (77%) recognized the role of hand hygiene in reducing mortality, indicating a need for further education on the broader implications of infection control measures (14).

The practice-related findings of this study revealed significant gaps, with only 42.9% of participants consistently using hand hygiene assessment tools. Similar trends were observed by Zafar et al., who reported low compliance rates with hand hygiene protocols among nurses in Pakistani hospitals due to inadequate training and resource limitations (15). In contrast, studies from high-income countries, such as that by Boyce and Pittet, demonstrated higher compliance rates, emphasizing the impact of better infrastructure and regular competency assessments on adherence (16).

Age and education level were significant predictors of knowledge and practice, with younger nurses and those holding advanced qualifications demonstrating better adherence to hand hygiene protocols. This is consistent with findings by Khan et al., who noted that continued professional development and younger cohorts were associated with higher competency levels in infection control practices (17).

Despite these findings, this study identified critical barriers to effective hand hygiene, including the lack of access to alcohol-based hand rubs and insufficient sinks in healthcare facilities. Rehman et al. similarly identified infrastructural deficiencies as a major impediment to infection control in LMICs, emphasizing the need for policy-level interventions to address these gaps (18). Additionally, cultural factors such as reluctance to report lapses in hand hygiene and misconceptions about the necessity of such practices during certain clinical procedures were observed, consistent with prior studies in South Asian settings (19).

Conclusion

While nurses in this study demonstrated reasonable knowledge and positive attitudes toward hand hygiene, significant gaps in practice remain. Addressing these gaps through targeted education, improved infrastructure and institutional support is critical for enhancing compliance with hand hygiene protocols and reducing healthcare-associated infections in Pakistan.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-SNU-029343/23)

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

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