



ORIGINAL RESEARCH ARTICLE

HAND HYGIENE COMPLIANCE AMONG NURSES WORKING IN CRITICAL CARE UNITS AT CHITWAN MEDICAL COLLEGE, CHITWAN, NEPAL

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ABSTRACT

Background: Hospital Acquired Infections (HAIs) is an important cause of morbidity and mortality in intensive care units. Hands of healthcare personnel are the major source of cross transmission of pathogens in healthcare facilities. Hand hygiene is one of the most efficacious method for infection control program in health care settings. Thus, the purpose of this study was to assess the hand hygiene compliance among nurses working in critical care units.

Methods: This descriptive cross-sectional study involved 106 nurses from 6 critical care units of Chitwan Medical College. Sample was selected by using consecutive sampling technique. Data was collected from 15th November 2022 to 12th January 2023 by using WHO hand hygiene observation form. Data were analyzed by using descriptive statistics.

Results: The overall hand hygiene compliance rate was 44.84%. Based on WHO '5 moments of hand hygiene', maximum compliance was seen for the moment i.e. after touching patient (53.63%) whereas minimum in moment i.e. before aseptic and clean procedure (18.51%). The highest compliance rate was found in NICU (58.60%) followed by PICU (48.97%) and MICU I (48.68%).

Conclusions: Overall, the hand hygiene compliance was below average among the nurses. Thus, continuous training, periodic assessment of the nurses' knowledge, performance feedback and conducting continuous research activity in order to fill any gaps and identify the barriers to hand hygiene adherence would be advisable.

INTRODUCTION

Hospital Acquired Infections (HAIs) is an important cause of morbidity and mortality in intensive care units.¹ Healthcare workers (HCWs) are frequently exposed to infected patients and contaminated surfaces which places them at risk of acquiring and transmitting pathogens.² Hand hygiene (HH) is one of the most efficacious method for infection control program in health care settings.³

Hands of healthcare personnel are the major source of cross transmission of pathogens in healthcare facilities, and, as stated by the WHO and Centers for Disease Control and Prevention (CDC), hand hygiene is the most effective method for preventing against HAIs.⁴ In 2011, the overall compliance rate of hand hygiene of health care workers working in critical care unit of Punjab in a tertiary care hospital was reported as 43.2%.⁵

A most recent published study in 2017 showed highly variable levels of adherence to the best hygiene practices and inadequate knowledge about HAI.⁶ Several studies suggest that implementing hand hygiene intervention program can significantly improve

hand hygiene compliance among the healthcare workers.^{4,7} Thus, the purpose of this study was to assess the hand hygiene compliance among nurses working in critical care units and understand the gaps in their practices, thereby paving way for effective future hand hygiene protocols.

METHODS

A descriptive cross-sectional study design was adopted and the data was collected from 106 nurses working in Neonatal Intensive Care Unit (NICU), Pediatric Intensive Care Unit (PICU), Medical Intensive Care Unit I (MICU I), Medical Intensive Care Unit II (MICU II), Surgical Intensive Care Unit (SICU) & Coronary Care Unit (CCU) of Chitwan Medical College (CMC), Chitwan, Nepal from 15th November 2022 to 12th January 2023. Sample was selected by using consecutive sampling technique. The study was conducted after ethical approval from Institutional Review Committee of CMC. WHO hand hygiene observation checklist was used to assess the hand hygiene compliance. Two trained observers were involved in observing the practice. Observers stayed in the ICU for 8 hours every day (from 8 am to 4 pm) and each staff was observed for 30 minutes. The hand

hygiene followed by the critical care nurses were observed during 'opportunities' as defined by WHO '5 moments of hand hygiene' i.e. before touching a patient, before clean/aseptic procedure, after body fluid exposure risk, after touching a patient, and after touching patient's surrounding. The hand hygiene performed either with soap and water or using alcohol-based hand rub during the opportunities was noted and compliance was calculated. The hand hygiene compliance of the nurses was observed during their routine patient care without informing them to minimize the risk of change in their behavior

(Hawthorne effect). The collected data were entered into a SPSS statistical software version 20 and analyzed by using descriptive statistics such as frequency and percentage.

RESULTS

Total 106 nurses were included in the study. During the study, total 1242 hand hygiene opportunities were observed. Out of these opportunities, 557 hand hygiene action was performed. The overall compliance rate was 44.84% (Table 1).

Table 1: Overview of hand hygiene opportunities

Number of Nurses	Opportunity	Action Performed	Compliance (%)
106	1242	557	44.84

Table 2: Hand hygiene compliance based on WHO 5 moments of hand hygiene

Hand hygiene Indication	Opportunity	Action Performed	Compliance (%)
Before touching patient	418	172	41.14
Before aseptic and clean procedure	54	10	18.51
After Body Fluid Exposure Risk	120	44	36.66
After touching patient	399	214	53.63
After touching patient surrounding	251	117	46.61

Table 3: Hand hygiene compliance in different critical units

Department	Opportunity	Action Performed	Compliance (%)
Pediatric Intensive Care Unit (PICU)	243	119	48.97
Neonatal Intensive Care Unit (NICU)	215	126	58.60
Medical Intensive Care Unit I (MICU I)	267	130	48.68
Medical Intensive Care Unit I (MICU II)	181	84	46.40
Coronary Care Unit (CCU)	149	46	30.87
Surgical Intensive Care Unit (SICU)	186	51	27.41

In regards to compliance with WHO '5 moments of hand hygiene', nurses had best hand hygiene practice on after touching the patient (53.63%) followed by after touching patient surroundings (46.61%) (Table 2).

NICU department owes the best hand hygiene compliance (58.60%) followed by PICU (48.97%) and MICU I (48.68%) (Table 3).

DISCUSSION

This study revealed, nurses had an overall compliance of 44.84% which is consistent to another similar studies conducted in Turkey (41.4%) and India (41.3%).^{3,8} However, the present study findings is higher than other similar studies conducted in Bangladesh (28.5%) and South Africa (21.3%) whereas lower than the studies conducted in Uttar Pradesh, India (77.8%) & Mahatma Gandhi Hospital, India (82.9%).⁹⁻¹² Health worker's knowledge and motivation, their workload, availability of supplies and facilities for hand hygiene were found to be the key factors for the variability in the compliance rate.^{8,9}

Regarding hand hygiene compliance according to WHO 5

'moments', this study revealed that the nurses had higher compliance on after touching the patient (53.63%) followed by after touching patient surroundings (46.61%). This may be due to the fact that nurses were aware about the transmission of infection in health care settings and its consequences. However, a similar study conducted in India found highest compliance on after body fluid exposure risk (90.5%).¹¹ The present study also showed that the nurses had least compliance with before aseptic and clean procedure (18.51%) followed by after exposure to body fluid risk (36.66%) which might be due to their misconception that hand hygiene is not essential if gloves is used while doing the procedure.

Regarding hand hygiene compliance in different critical units, NICU department owes the higher hand hygiene practice with the compliance rate of 58.60% followed by PICU and MICU I i.e. 48.97% and 48.68% respectively. This may be due to the nurses' acquaintance of the fact that contaminated hands often lead to serious infection in neonates that invades their weak immune system causing serious morbidity and even mortality. However, hand hygiene compliance rate in PICU of Austria was 87.6% and in different PICUs of Brazil was 39.24% to 64.85%.^{7,13}

The Centers for Disease Control and Prevention's (CDC's) Healthcare Infection Control Practices Advisory Committee (HICPAC) published its comprehensive Guidelines for HH in healthcare settings in 2002 which recommended that healthcare facilities develop multidimensional programs to improve HH practices.¹⁴ This suggests need to apply interventional strategies for infection control in ICUs that helps in improving the compliance rate among nurses.¹⁵⁻¹⁷ Direct observation is one of the best method for determining compliance with all 5 moments of HH.¹⁸ In Nepal, where technology to monitor adherence may not be available, direct observation remains the best approach.

Also, the availability of functional and accessible HH facilities is essential for ensuring compliance with HH. To improve HH compliance, it is necessary to re-enforce the importance of HH for patient safety and infection prevention to the staff.⁹

The major limitation of this study is that the samples was taken from small group of nurses from six critical care units only, where other health professionals could have been involved as done in other similar studies.^{6,7,10} So, the results obtained may

not be generalizable to other caregivers and other care settings where the practice of infection prevention and control protocol is different.

CONCLUSION

Overall, the hand hygiene compliance was below average among the nurses. Thus, continuous training, periodic assessment of the nurses' knowledge, performance feedback and conducting continuous research activity in order to fill any gaps and identify the barriers to hand hygiene adherence would be advisable.

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CONFLICT OF INTEREST: None

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REFERENCES:

- Tomar S, Lodha R, Das B, Kapil A. Hand Hygiene Compliance of Healthcare Workers in a Pediatric Intensive Care Unit. *Indian Pediatr.* 2015;52(7):620-1. [\[LINK\]](#)
- Sandbøl SG, Glassou EN, Ellermann-Eriksen S, Haagerup A. Hand hygiene compliance among healthcare workers before and during the COVID-19 pandemic. *Am J Infect Control.* 2022 Jul 1;50(7):719-23. [\[PMC\]](#)
- Karaaslan A, Kepenekli Kadayifci E, Atici S, Sili U, Soysal A, Çulha G, et al. Compliance of healthcare workers with hand hygiene practices in neonatal and pediatric intensive care units: Overt observation. *Interdiscip Perspect Infect Dis.* 2014;2014. [\[PMC\]](#)
- Farhoudi F, Dashti AS, Davani MH, Ghalebi N, Sajadi G, Taghizadeh R. Impact of WHO Hand Hygiene Improvement Program Implementation: A Quasi-Experimental Trial. *Biomed Res Int.* 2016;2016. [\[LINK\]](#)
- Sharma S, Sharma S, Puri S, Whig J. Hand hygiene compliance in the intensive care units of a tertiary care hospital. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine.* 2011 Jul;36(3):217. [\[PMC\]](#)
- Musu M, Lai A, Mereu NM, Galletta M, Campagna M, Tidore M, Piazza MF, Spada L, Massidda MV, Colombo S, Mura P. Assessing hand hygiene compliance among healthcare workers in six Intensive Care Units. *Journal of preventive medicine and hygiene.* 2017 Sep;58(3):E231. [\[PMID\]](#)
- Hoffmann M, Sendlhofer G, Gombotz V, Pregartner G, Zierler R, Schwarz C, Tax C, Brunner G. Hand hygiene compliance in intensive care units: An observational study. *International Journal of Nursing Practice.* 2020 Apr;26(2):e12789. [\[PMID\]](#)
- Sharma S, Sharma S, Puri S, Whig J. Hand hygiene compliance in the intensive care units of a tertiary care hospital. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine.* 2011 Jul;36(3):217. [\[LINK\]](#)
- Harun MG, Anwar MM, Sumon SA, Mohona TM, Hassan MZ, Rahman A, Abdullah SA, Islam MS, Oakley LP, Malpiedi P, Kaydos-Daniels SC. Hand hygiene compliance and associated factors among healthcare workers in selected tertiary-care hospitals in Bangladesh. *Journal of Hospital Infection.* 2023 Sep 1;139:220-7. [\[LINK\]](#)
- Arai M, Feniche M, Ouhadous M, Lajane H, Barrou L, Zerouali K. Hand Hygiene in the Intensive Care Unit: Knowledge, Compliance and Factors Influencing Nursing Adherence, a Descriptive Study. *The Open Nursing Journal.* 2022 Aug 23;16(1). [\[LINK\]](#)
- Goel V, Gupta S, Bisht D, Sharma R. Hand hygiene compliance among healthcare workers in a tertiary care academic health care organization. [\[LINK\]](#)
- Vaya S, Jeswani J. A study of hand hygiene technique in intensive care unit of a tertiary care hospital. *Saudi Critical Care Journal.* 2018 Jul 1;2(3):42-4. [\[LINK\]](#)
- Giamberardino HI, Pacheco AP, Webler JM, Domiciana BM, Malta JN. Hand hygiene compliance to five moments in pediatric and neonatal intensive care units. *Antimicrobial Resistance and Infection Control.* 2015 Dec;4(1):1-. [\[LINK\]](#)
- JM B. Healthcare Infection Control Practices Advisory Committee; HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force: Guideline for hand hygiene in health-care settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. *Am J Infect Control.* 2002;30(8):S1-46. [\[LINK\]](#)
- Lydon S, Power M, McSharry J, Byrne M, Madden C, Squires JE, O'Connor P. Interventions to improve hand hygiene compliance in the ICU: a systematic review. *Critical care medicine.* 2017 Nov 1;45(11):e1165-72. [\[PMID\]](#)
- Lambe KA, Lydon S, Madden C, Vellinga A, Hehir A, Walsh M, O'Connor P. Hand hygiene compliance in the ICU: a systematic review. *Critical care medicine.* 2019 Sep 1;47(9):1251-7. [\[LINK\]](#)
- Seo HJ, Sohng KY, Chang SO, Chaung SK, Won JS, Choi MJ. Interventions to improve hand hygiene compliance in emergency departments: a systematic review. *Journal of Hospital Infection.* 2019 Aug 1;102(4):394-406. [\[LINK\]](#)
- Challenge FG. WHO Guidelines on Hand Hygiene in Health Care. Available from: <https://www.pediatratria.gob.mx/archivos/burbuja/guia2.pdf> [\[LINK\]](#)