Original Article

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Effect of Nursing Intervention for knowledge regarding infection control measures among health care workers

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ABSTRACT

Background and Objectives: This study investigates the impact of educational interventions on nurses' knowledge concerning the infection control measures. The aim was to evaluate whether structured educational session could enhance the awareness levels among health care worker, thereby improving infection control measures.

METHODOLOGY: A quasi-experimental design was employed, involving 40 health care workers from one hospital the group received a comprehensive program that included simulation-based training adherence to safety protocol, encompassed various strategies such as hand hygiene promotion and proper use of personnel protective equipment's and post sessional data were collected through surveys over a four months period.

RESULTS: The result shows a significant improvement in compliance with infection control measures ($p<0.001$). knowledge score about infection control measures improved markedly ($p<0.001$) among healthcare worker who received an intervention. The mean pre knowledge score (47.80) is significantly lower than the mean post knowledge score (65.30) after the post intervention the healthcare workers knowledge lied in good category which was 60% to 75%.

CONCLUSION: The educational intervention significantly enhanced the knowledge among health care workers regarding the infection control measures. Pre intervention awareness was relatively low but the structure education session effectively elevates the healthcare workers understanding and satisfaction. The study methodology and results highlight the effectiveness of targeted educational programs in healthcare settings, suggesting that similar interventions could be beneficial in other medical domains to improve professional competency and patient outcomes' regarding infection control measures.

KEYWORDS: Educational intervention, infection control measures, healthcare workers, knowledge improvement, hand hygiene promotion, personal protective equipment.

INTRODUCTION

Healthcare-acquired infection (HAI) control techniques and treatments are increasingly necessary for a growing population. Thus, there is an urgent need to implement procedures to assess the quality of care in this territory. Infection control and prevention in hospital settings are the main goals of infection prevention care, aiming to minimize the harm caused by HAI and ensure patient safety.

The World Health Organization (WHO) has developed a framework for infection prevention and control (IPC). This framework is critical as it addresses the prevention of pathogen transmission and ensures safety within healthcare facilities. Healthcare-associated infections can develop in patients during treatment in hospitals or other healthcare institutions, becoming apparent 48 hours or more after admission or within 30 days post-treatment.

The global rate of HAIs has increased, posing significant public health hazards. Numerous studies highlight the need for healthcare workers (HCWs) to adhere to standard precautions to prevent the spread of infectious diseases. These precautions include hand hygiene, environmental cleansing, disinfection, proper use of personal protective equipment (PPE), medical waste management, safe injection techniques, and respiratory hygiene.

The practice of nursing education, accessible and affordable IPC interventions, and capacity develop

How to cite this: Noor S, Jamshaid A, Anwar S, Sarwar H, Effects of Nursing intervention for knowledge regarding infection control measures among health care workers. International Journal of Healthcare Professions. 2025; 2(2): 7-10

Vol. 02, Issue 02, April-June, 2025

ment through teaching healthcare workers about IPC fundamentals can prevent HAIs. However, adherence to IPC practices among HCWs remains suboptimal due to knowledge deficits, lack of training, and attitudinal barriers. This study evaluates the effects of structured nursing interventions on HCWs' knowledge and adherence to infection control measures, aiming to improve patient outcomes by reducing HAIs.

Literature Review

Previous Studies and Findings:

1. Al-Faouri, Okour et al. (2021):
- Majority of participants from governmental hospitals.
- Moderate positive correlation between knowledge level, years of experience, and standard precautions compliance.

2. Senbato, Wolde et al. (2024):
- Training, awareness of standard precautions, hospital enforcement mechanisms, and availability of cleaning chemicals significantly associated with compliance.

3. Blomgren, Swenne et al. (2024):
- Moderate to good knowledge levels among first-semester students, last-semester students, and registered nurses.

4. Saqlain, Munir et al. (2020):
- Good knowledge, positive attitude, and good practice towards COVID-19 among HCWs.

5. Modi, Nair et al. (2020):
- Adequate awareness of infection control measures, but gaps in understanding of specific procedures like correct sequence for mask application and preferred hand hygiene methods.

Overall, HCWs generally have adequate knowledge of IPC measures, but gaps remain in specific areas such as occupational vaccinations and transmission modes of infectious diseases. Improving adherence to IPC guidelines through targeted educational programs is crucial.

OBJECTIVES

- To assess the effect of nursing intervention on knowledge regarding infection control measures among healthcare workers.

METHODOLOGY

A quasi-experimental study was conducted at Ali Fatima Hospital involving 40 healthcare workers. Purposive sampling was used to select the sample size. Data were collected through self-administered questionnaires before and after the intervention. The intervention included a one-day educational session based on NICE guidance, using methods such as role demonstrations, hands-on training, and visual aids. Participants' consent was obtained, and data privacy was ensured. The study complied with ethical codes and standards. Data were analyzed using SPSS version 26.0 and MS Excel. Descriptive and inferential statistics were used, including paired t-tests to determine the significance of the results.

RESULTS

In this chapter data analysis and data interpretation was discussed by the tables and graps.a table shows that the demographics, independent and dependent variables frequencies along with t.test analysis.

Table 1: Percentage and frequency of demographic variables.

Age and year			
		Frequency	Percent
	18-21	9	22.5
	21-24	19	47.5
	24-27	12	30.0
	Total	40	100.0
Gender			
		Frequency	Percent
	Female	40	100.0
Education			
		Frequency	Percent
	Matric	8	20.0
	Bachelor	17	42.5
	Master	15	37.5
	Total	40	100.0

The sample consist of 40 participants ,with 22.5 % (9 participant) aged between 18-21 years , 47.5% (19 participants) aged between 21-24 years and 30%(12 participants) aged between 24- 27 years .All participants in this study are emale 100%.20%(8 participants) hold a matric degree,42.5% (17 participants) hold bachelor degree , while 37.5 % (15 participants) have master degree.

Table 2: T-Test (Paired sample test)

Paired Samples Statistics				
		Mean	N	Value of p
Pair 1	Pre knowledge	47.80	40	<0-001
	Post knowledge	65.30	40	

The mean difference between pre- and post-seminar knowledge scores is -17.500.The standard deviation of the differences is 11.919, with a standard error mean of 1.884. The 95% confidence interval for the mean difference ranges from -21.312 to -13.688. The t-value is -9.286, with 39 degrees of freedom. The p-value (Sig. 2-tailed) is .000, indicating a statistically significant improvement.

The significant increase in knowledge scores from

pre-seminar (mean = 47.80) to post- seminar (mean = 65.30) demonstrates the effectiveness of the nursing seminar in enhancing nurses' knowledge about infection control measures. The highly significant p-value of .000 indicates that the improvement in knowledge scores is not due to chance but is a result of the seminar intervention. The negative mean difference (-17.500) indicates a considerable increase in knowledge following the seminar. This suggests that the seminar successfully addressed knowledge gaps and improved nurses' understanding of infection control measures. The 95% confidence interval for the mean difference does not include zero, indicating that the improvement in knowledge is statistically significant.

The findings suggest that the nursing seminar had a significant positive effect on nurses' knowledge about infection control. By increasing awareness and understanding of these important topics, the seminar likely contributes to better patient education and improved health outcomes related to hospital acquired infection. Participants showed considerable variability in responses across different questions, indicating diverse opinions and attitudes. The paired t-test results confirmed a significant increase in knowledge scores post-intervention.

DISCUSSION

A study by (Al-Faouri, Okour et al. 2021) revealed that the 53% of the participants were from governmental hospitals and 57.1% were females. The age median of them was 30 years (IQR = 28–32). The majority of the participants were medical/surgical RNs (33.1%) while only

8.3% of them were from the pediatric/gynecology departments. The overall knowledge score was

16.27 (SD = 3.15), and the total compliance score was 49.15 (SD = 12.36). Besides, the study showed a moderate positive correlation between the level of knowledge, experience in years, and the standard precautions compliance (r = 0.387, p = 0.01), (r = 0.341, p = 0.01), respectively.

While our study contrast represent the positive correlation, the negative mean difference (17.500) indicates a considerable increase in knowledge following the seminar. This suggests that the seminar successfully addressed knowledge gaps and improved nurses' understanding of infection control measures. The 95% confidence interval for the mean difference does not include zero, indicating that the improvement in knowledge is statistically significant. The findings suggest that the nursing seminar had a significant positive effect on nurses' knowledge about infection control. By increasing awareness and understanding of these important topics, the seminar likely contributes to better patient education and improved health outcomes related to hospital acquired infection.

CONCLUSION

The educational intervention significantly improved the knowledge of healthcare workers regarding infection control measures. Pre-intervention awareness was low, but the structured educational session effectively enhanced understanding and satisfaction. This study underscores the effectiveness of targeted educational programs in healthcare settings, suggesting their potential benefit in other medical domains to improve professional competency and patient outcomes concerning infection control measures.

RECOMMENDATION

- Moving forward, several areas warrant attention to further enhance the efficacy of nursing interventions for infection control measures among health care workers.
- Nursing intervention should focus on building resilience, capacity, and response mechanism to mitigate the spread of infectious disease.

REFERENCES

1. Al-Faouri, I., et al. (2021). "Knowledge and compliance with standard precautions among registered nurses: A cross-sectional study." Annals of medicine and surgery 62: 419- 424.
2. Al-Faouri, I., Okour, S. H., Alakour, N. A., & Alrabadi, N. (2021). Knowledge and compliance with standard precautions among registered nurses: A cross-sectional study. Annals of medicine and surgery, 62, 419424
3. Alhumaid, S., et al. (2021). "Knowledge of infection prevention and control among healthcare workers and factors influencing compliance: a systematic review." Antimicrobial Resistance & Infection Control 10(1): 86.
4. Alhmidi, H., Gonzalez-Orta, M., Cadnum, J. L., Mana, T. S., Jencson, A. L., Wilson, B. M., & Donskey, C. J. (2019). Contamination of health care personnel during removal of contaminated gloves. American journal of infection control, 47(7), 850-852.
5. Black J. R. M., Bailey C., Przewrocka J., Dijkstra K. K., Swanton C. (2020). COVID-19: The case for healthcare worker screening to prevent hospital transmission. Lancet, 395(10234), 1418–1420. https://doi.org/10.1016/S0140-6736(20)30917-X
6. Blomgren, P.-O., et al. (2024). "Hand hygiene knowledge among nurses and nursing students– a

descriptive cross-sectional comparative survey using the WHO's "Hand Hygiene Knowledge Questionnaire"." Infection Prevention in Practice 6(2): 100358.

7. Coghill, A. E., et al. (2019). "Advanced stage at diagnosis and elevated mortality among US patients with cancer infected with HIV in the National Cancer Data Base." Cancer 125(16): 2868-2876.
8. Jemal, S., Zeleke, M., Tezera, S., Hailu, S., Abdosh, A., Biya, M., & Abduljelil, S. (2019). Health care workers' knowledge, attitude and practice towards infection prevention in Dubti referral hospital, Dubti, north East Ethiopia. Int J Infect Dis Therapy, 3(4), 66.
9. Jemal, S., et al. (2019). "Health care workers' knowledge, attitude and practice towards infection prevention in Dubti referral hospital, Dubti, north East Ethiopia." Int J Infect Dis Therapy 3(4): 66.
10. Lim, S. H., Bouchoucha, S. L., & Aloweni, F. (2021). Evaluation of infection prevention and control preparedness in acute care nurses: Factors influencing adherence to standard precautions. Infection, Disease & Health, 26(2), 132-138.
11. Modi, P. D., et al. (2020). "COVID-19 awareness among healthcare students and professionals in Mumbai metropolitan region: a questionnaire-based survey." Cureus 12(4).
12. Raoofi, S., et al. (2023). "Global prevalence of nosocomial infection: A systematic review and metaanalysis." PLoS One 18(1): e0274248.
13. Saqlain, M., et al. (2020). "Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross-sectional survey from Pakistan." Journal of Hospital Infection 105(3): 419-423.
14. Senbato, F. R., et al. (2024). "Compliance with infection prevention and control standard precautions and factors associated with noncompliance among healthcare workers working in public hospitals in Addis Ababa, Ethiopia." Antimicrobial Resistance & Infection Control 13(1): 32.

Thakur, H. and R. Rao (2024). "EMPHASIS OF INFECTION PREVENTION AND CONTROL: A REVIEW." Journal of Population Therapeutics and Clinical Pharmacology 31(2): 2238- 2249.

16. Teus, J. K., Mithen, L., Green, H., Hutton, A., & Fernandez, R. (2024). The impact of infection prevention and control practice.s (IPCs), including personal protective equipment (PPE), on the prevalence of hospital acquired infections (HAIs) in acute care hospitals during COVID-19: A systematic review and meta-analysis. Journal of Hospital Infection.
17. Ungar, R., et al. (2024). "Burdens of infection control on healthcare workers: a scoping review." Journal of Hospital Infection 146: 76-81.
18. Zellmer C., Van Hoof S., Safdar N. (2015). Variation in health care worker removal of personal protective equipment. American Journal of Infection Control, 43(7), 750–751. https://-doi.org/10.1016/j.ajic.2015.02.005.
19. Labrague LJ, de los Santos JAA, Manzano A, et al. Infection control knowledge, practices, and outcomes of healthcare workers: A systematic review. J Nurs Scholarsh. 2020;52(3):300-307. doi: 10.1111/jonm.12959.
20. Teng X, Li J, Liang Y, et al. Effectiveness of educational interventions on improving healthcare workers' knowledge and practice of infection control: A meta-analysis. J Hosp Infect. 2019;101(1):12-20. doi: 10.1016/j.-jhin.2018.08.013.

Authors Contributions:

SIBGHA NOOR, AMNA JAMSHAID: Substantial contributions to the conception and design of the work.

SANA ANWAR, HAJRA SARWAR: Design of the work and the acquisition. Drafting the work.Final approval of the version to be published.

Submitted for publication: 13-04-2025
Accepted after revision: 16-05-2025