

Exploring Challenges in Clinical Learning and the Impact of Structured Teaching on Infection Control Knowledge and Attitudes Among Nursing Students

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Abstract

Living a healthy lifestyle is essential for preventing chronic diseases and maintaining physical, psychological, and social well-being. The present study, titled “Exploring Challenges in Clinical Learning and the Impact of Structured Teaching on Infection Control Knowledge and Attitudes among Nursing Students” aimed to address key challenges faced by nursing students and evaluate the impact of a structured teaching program. The study employed a quantitative research approach using a pre-experimental design with a one-group pretest and posttest. It was conducted with 50 nursing students at the Modern Medical Institute of Nursing in Lalpur, Raipur C.G. using inclusive criteria selected by non-probability convenient sampling. Tools used for data collection included a checklist for challenges, a structured questionnaire for knowledge assessment, and a rating scale for attitude evaluation. Content validity was established by five experts, and reliability testing showed high reliability for knowledge ($r = 0.9$) and attitude ($r=0.67$). Ethical considerations were maintained throughout the study. The results revealed that, in the pretest, 78% of students had inadequate knowledge and 14% exhibited poor attitudes towards infection control measures. After the structured teaching program, the posttest results showed significant improvement: 72% achieved adequate knowledge, 60% demonstrated good attitudes, and none of the students remained in the poor category. Pretest mean value of level of knowledge was 10.92 ($SD = 3.14$) to 13.66 ($SD = 3.17$), and the mean attitude score improved from 34.84 ($SD = 6.45$) to 38.4 ($SD = 3.43$). Paired t-tests confirmed these improvements as statistically significant ($p < 0.05$). So H_0 was rejected. The findings show after structured teaching program there was an improvement in the level of nursing students’ knowledge and attitudes regarding infection control measures. These results have vital implications for nursing education, practice, and research, emphasizing the need for structured learning interventions to enhance infection control practices.

Keywords: Covid-19 – Corona Virus, Hcais – healthcare acquired infections, Hcws – healthcare workers, MERS – middle east respiratory syndrome, RN – registered nurse, SARS – severe acute respiratory syndrome, WHO – World Health Organization

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Received Date: December 10, 2024

Accepted Date: December 24, 2024

Published Date: January 04, 2025

Citation: Bhawana Bisen. Exploring Challenges in Clinical Learning and the Impact of Structured Teaching on Infection Control Knowledge and Attitudes among Nursing Students. Research & Reviews: A Journal of Immunology. 2025; 15(1): 42–47p.

INTRODUCTION

Health is not just the absence of illness but a resource that supports everyday life, fostering personal and social well-being alongside physical strength. Feeling good about ourselves and taking care of our health plays a crucial role in maintaining self-esteem and positive self-image. One comprehensive definition of health describes it as “a state of anatomic, physiological, and psychological integrity; the capacity to fulfill valued roles in family, work, and community; and the resilience to cope with physical, biological, psychological, and social stress” [1].

At the end of 2019, health authorities in Wuhan, China, reported a cluster of pneumonia cases caused by an unknown agent. This was later identified as COVID-19, an infectious disease triggered by the SARS-CoV-2 virus, believed to have originated in bats. As the virus spread within and beyond China, it became clear that it could be transmitted between humans, enabling widespread contagion. The rapid global spread has now led to a full-blown pandemic [2].

The COVID-19 crisis has posed immense challenges to healthcare professionals, particularly nurses, who often endure intense physical and emotional strain. Clinical nurses frequently experience moral distress due to ethical dilemmas, high patient acuity, frequent deaths, and extended work hours. This is compounded by the immunological complexities of the pandemic, as they navigate unprecedented situations, such as managing severe immune responses like cytokine storms in critically ill patients. Balancing personal safety while delivering high-quality care adds another layer of stress to their already demanding roles. As with all knowledge regarding infection control measures (universal precautions, standard safety precautions, measures for preventing needle stick injury and biomedical waste management) among student nurses, are mandatory to prevent the spread of infection from one person to another. It lies in the hands of every healthcare worker and especially in student nurses because they are the future of healthcare team [3, 4].

OBJECTIVES

To explore the challenges in clinical learning among nursing students. Table 1 below highlights the challenges faced by nursing students in clinical settings, with the majority citing issues related to learning (68%), time (60%), and fear (60%).

- To evaluate the impact of Structured Teaching Programme regarding infection control measures.
- To determine the correlation between level of knowledge and attitude regarding Infection Control Measures.

Table 1. Challenges Faced by Nursing Students in the Clinical Environment.

Challenges	Agree	%	Disagree	%
Related to learning	34	68	16	32
Related to time	30	60	20	40
Related to fear	30	60	20	40
Related to family support	31	62	19	38
Related to travel	25	50	25	50

Table 2. Correlation between Level of Knowledge and Attitude Regarding Infection Control Measures.

Post Test	Mean	SD	Correlation
Level of Knowledge	13.66	3.17	r = 0.020 Positive correlation
Level of Attitude	38.4	3.43	

Table 2 above shows a positive correlation ($r = 0.020$) between the posttest level of knowledge and attitude regarding infection control measures among nursing students.

To examine the relationship between sociodemographic variables and the pretest levels of knowledge and attitudes toward infection control measures.

METHODOLOGY

The study used a pre-experimental one-group pretest posttest design to evaluate the impact of a Structured Teaching Program on the knowledge and attitudes regarding infection control measures. Data was collected by self reported structured knowledge questionnaire to assess the knowledge of students and checklist to identify the challenges of nursing students in clinical experience of pandemic

period and rating scale for assessing the attitude Regarding Infection Control Measures During Pandemic Among Nursing Students [5, 6].

A representative sample was selected using non-probability-convenient sampling from the population of all student nurses.

Frequency and percentage analysis was done to describe the demographic characteristics of the student nurses. The paired “t” test used to compare the pretest and posttest knowledge level of student nurses. The Chi-square analysis to determine the analysis, reflected by the t-value of -4.82 it was more than table value and statistically significant at $p < 0.000014$ for knowledge and t-value was 0.000559 which was less than $p < 0.00027$ for attitude. This study statistically proved that intervention of student’s education increased the level of knowledge and positive attitudes towards the infection control measures. Therefore, the structured teaching program instruction was effective in improving level of knowledge and attitude regarding prevention of infection and challenges that was faced by the students during the pandemic period in the clinical experiences [7–10].

RESULT

Challenges in the Clinical Learning Environment

- Among nursing students, 68% reported challenges related to learning, while 60% faced issues with time management.
- Sixty percent expressed fear of exposure to infection, 62% reported issues with family support, and 50% faced difficulties with travel during the pandemic.

Knowledge Regarding Infection Control Measures

Pretest Results

- 39 (78%) students had inadequate knowledge.
- 11 (22%) students had moderate knowledge.
- None demonstrated adequate knowledge
- 36 (72%) students attained adequate knowledge.
- 14 (28%) had moderate knowledge.
- None fell under the category of inadequate knowledge.

Attitude Regarding Infection Control Measures

Pretest Results

- 7 (14%) students displayed poor attitudes.
- 21 (42%) had a fair attitude.
- 22 (44%) demonstrated good attitudes.
- No students had poor attitudes (0%).
- 20 (40%) displayed fair attitudes.
- 30 (60%) demonstrated good attitudes.

Impact of the Structured Teaching Program Knowledge

- *Mean pretest score:* 10.92 (SD = 3.14).
- *Mean posttest score:* 13.66 (SD = 3.17).
- *Paired t-test value:* -4.82 ($p < 0.05$), indicating a significant increase in knowledge.

Attitude

- *Mean pretest score:* 34.84 (SD = 6.45).
- *Mean posttest score:* 38.4 (SD = 3.43).
- *Paired t-test value:* 0.00055 ($p < 0.05$), indicating a significant improvement in attitude.

Correlation Between Knowledge and Attitude

- *Posttest Correlation Value:* 0.020 ($p < 0.05$), indicating a positive and significant correlation between knowledge and attitude.

Association with Sociodemographic Variables

Significant Associations were Found between Pretest Knowledge and the Following Variables

- Age ($\chi^2 = 1.44$, $p < 0.05$).
- Gender ($\chi^2 = 2.38$, $p < 0.05$).
- Religion ($\chi^2 = 1.46$, $p < 0.05$).

For Pretest Attitudes, Significant Associations were Identified with

- Residential status ($\chi^2 = 12.750$, $p < 0.05$).
- Education media ($\chi^2 = 22.617$, $p < 0.05$).

No significant associations were found between pretest knowledge or attitudes and previous respiratory infection, gender, age, or religion.

NURSING IMPLICATIONS

Nursing Practice

- Furthermore the implication of this study will help the students in reducing the cross infection to self and patient and cost of hospital stay and treatment.
- Conduct a health education program in the hospital and explain thoroughly regarding infection control measures with the help of audiovisual aids.

Nursing Education

- The study has an important impact on nursing education.
- Students should be taught about holistic care about interventional procedures.
- To provide evidence-based nursing, the nurse educator should learn and share their learning experience with student nurses regarding the infection control measures (uses of standard of safety precautions).

Nursing Administration

- There is a need to report to the higher authorities and health agencies in health maintenance about the findings of the study so that they can take necessary actions or measures.
- More emphasis is given to this condition, cost effective production of materials, such as charts, posters, pictures, photographs and organize in service education program for the healthcare workers.

Nursing Research

- The present study will help the future nursing researchers to carry out further studies on this topic or related ones.
- This study motivates other investigators to conduct further studies on the same topic but in different settings.
- This study will help nurses to improve their quality of care for the patients after every procedure. So, nurses must take up research in this area so that quality care can be developed and implemented in this area.

Community Health

- Involvement of parents and family members in education of infection control measures as it helps to strengthen their knowledge leading to better infection prevention.
- It focuses on the health of all the members living in a society to prevent infection.

- Structured teaching program empowering knowledge and attitude about prevention of infection for proactive steps they can take to action as post-procedures instructions for staying healthy and preventing further infections.

DISCUSSION

The study highlighted the challenges faced by nursing students in the clinical learning environment, with a significant proportion reporting issues related to learning, time management, and fear of infection during the pandemic. These findings underscore the need for enhanced support systems and tailored interventions to address these challenges.

The Structured Teaching Program effectively improved students' knowledge and attitudes regarding infection control measures. The marked improvement in posttest knowledge and attitude scores underscore the efficacy of structured educational interventions. These results align with existing literature emphasizing the role of targeted educational programs in enhancing nursing students' competencies in infection control.

The positive correlation between knowledge and attitude reinforces the notion that improvements in theoretical understanding can positively influence behavioral outlooks. However, the modest correlation value suggests the potential influence of other variables, such as clinical exposure and personal motivation.

The significant associations between sociodemographic factors and pretest knowledge and attitudes highlight the role of individual characteristics and external influences in shaping students' learning outcomes. These findings suggest that tailored strategies, considering demographic and contextual factors, are essential to optimize the learning experience.

The lack of significant associations with certain variables, such as previous respiratory infections, indicates that experiential factors alone may not strongly influence baseline knowledge or attitudes. This suggests the necessity for structured and consistent educational frameworks, irrespective of students' prior experiences or backgrounds.

Recommendations

- A similar study can be conducted by using a large sample size.
- The study can also be conducted by using experimental design.
- This similar study can be conducted for a longer duration.
- The same study can be conducted in different settings.
- A similar study can be conducted for skill and practice.

CONCLUSIONS

The study found that a structured teaching program significantly enhanced nursing students' understanding and attitudes regarding infection prevention. It also sheds light on the significant challenges faced by students during the pandemic, such as difficulties in clinical learning, time management, fear of infection, lack of family support, and travel-related issues. These findings highlight the need for targeted educational programs that not only enhance students' skills and preparedness in infection control but also address the challenges they encounter in clinical learning environments. Future research should focus on evaluating the long-term benefits of such programs and developing strategies to overcome these challenges, ensuring a supportive and enriching learning experience for nursing students.

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