

Effectiveness Of Structred Teaching Program On The Knowledge And Practice Regarding Hand Hygiene Among Student Nurses

Isha Sharma¹, Anita Rawat², Ankita Rawat³, Bina Kumari⁴, Swati Aswal⁵, Dr. Kanchan Bala⁶, Mr. Jayant Abhishek Gideon^{7*}

^{1,2,3,4,5,6}Assistant Professor, Obstetrics & Gynecological Nursing Department, Himalayan College of Nursing, Swami Rama Himalayan University, Jolly Grant, Dehradun.

^{7*}Assistant Professor, Mental Health Nursing Department, Himalayan College of Nursing, Swami Rama Himalayan University, Jolly Grant, Dehradun. Gideonjayant@Gmail.Com

Abstract

Hand Hygiene is cost-effective method in preventing infection transmission. Hand hygiene practices have been found to be faulty in most health care settings. An experimental study with one group pretest posttest design was undertaken at a tertiary care hospital in Dehradun, Uttarakhand. Consecutive sampling technique was used to select the study subjects. Data was collected from 88 student's nurses by using structured knowledge questionnaires and practice checklist. A knowledge questionnaire based on hand hygiene practices and also based on World health Organization's concept of "Five Moments for Hand Hygiene" was used to evaluate the practices regarding hand hygiene.

Result: The overall posttest mean knowledge score was 13.05 ± 2.82 which was higher than the pretest mean knowledge score 9.94 ± 2.38 and the post mean score of practice regarding hand hygiene with soap and water was 17.11 ± 2.87 , with hand rub or sanitizer was 9.57 ± 3.46 and practice with the steps of five moments of hand hygiene 3.52 ± 0.57 was higher than the pretest mean score of practice regarding hand hygiene with soap and water was 13.57 ± 3.3 & with hand rub or sanitizer was 2.24 ± 3.98 and practice with the steps of five moments of hand hygiene was 2.06 ± 1 .

Conclusion: the study concluded that the post-test level of knowledge and practice was increased after the structured teaching program, hence it can be inferred that a structured teaching program was an effective method to enhance the knowledge and practice of hand hygiene.

Keywords: effectiveness, hand hygiene, knowledge, practice, student nurse, structured teaching programme.

Introduction:

Effective hand hygiene stands out as a pivotal strategy in managing outbreaks. It encompasses any method aimed at eliminating or eradicating microorganisms from hands. The significance of thorough hand washing is extensively acknowledged as the foremost measure in preventing the transmission of pathogens.

Recognized as the primary measure for preventing the cross-transmission of microorganisms and reducing healthcare-associated infections, hand hygiene is crucial. Despite the apparent simplicity of this practice, compliance among healthcare providers is alarmingly low, akin to comparing it with poorly adhered-to standards. Addressing this issue involves ongoing efforts to identify effective and sustainable strategies.

One such initiative involves the World Health Organization's evidence-based concept known as "My Five Moments for Hand Hygiene." These five key moments that necessitate hand hygiene include before touching a patient, before conducting aseptic and clean procedures, after potential exposure to body fluids, after interacting with a patient, and after touching the patient's surroundings.

Crafted on evidence-based principles, field-tested, and centered around user convenience, this approach is intentionally designed to be easily learnable, logical, and adaptable across various settings. The guidelines advocate for healthcare workers to perform hand hygiene:

1. Before making contact with the patient
2. Prior to engaging in clean or aseptic procedures
3. Following exposure to body fluids or when at risk
4. After interacting with the patient
5. After coming into contact with the patient's surroundings

The primary mode of transmission for most hospital-acquired infections is believed to be through the hands of healthcare workers. It has long been established that maintaining proper hand hygiene among healthcare workers is pivotal in preventing the spread of infectious agents. Handwashing stands out as the most effective method for curbing the transmission of infectious diseases.

Despite the requirement from the Joint Commission for the implementation of Centers for Disease Control and Prevention hand hygiene guidelines in hospitals, adherence among healthcare workers remains suboptimal. Several factors contribute to this lack of compliance with handwashing, including inadequate equipment, low staff-to-patient ratios, allergies to handwashing products, insufficient knowledge among staff about risks and procedures, the time required, and casual attitudes among healthcare workers towards biosafety.

Objectives:

1. To assess the pretest level of knowledge and practice of student nurses regarding hand hygiene.
2. To assess the effectiveness of structured teaching programme regarding hand hygiene.
3. To find the association between knowledge and practice with their selected demographic variable.

Hypothesis:

- H₁: There would be significant increase in the posttest level of knowledge than pretest level of knowledge regarding hand hygiene among student nurses at the level of $p < 0.05$.
- H₂: There would be significant increase in the posttest level of practice than pretest level of practice regarding hand hygiene among student nurses at the level of $p < 0.05$.
- H₃: There would be significant association between pretest level of knowledge regarding hand hygiene among student nurses at the level of $p < 0.05$.
- H₄: There would be significant association between pretest level of practice regarding hand hygiene among student nurses at the level of $p < 0.05$.

Methodology:

A quasi experimental design was adopted to assess the effectiveness of structured teaching programme regarding hand hygiene among 88 student nurses who were selected through consecutive sampling technique. The data was collected by using a self-structured practice checklist and structured knowledge questionnaire.

Data Analysis

Data analysis was done using descriptive and inferential statistics based on the objectives of the study.

RESULTS

Table No. 1 Frequency and Percentage distribution of sample characteristics. (n=88)

S. No	Demographic Variables		Frequency (f)	Percentage (%)
1	Age in Years	17-20	57	65
		21-24	31	35
2	Gender	Male	21	24
		Female	67	76
3	Area	Intermediate Care	27	31
		Neurosurgery	19	21
		Pediatrics	12	14
		Orthopedics	15	17
		Surgery	15	17
4	Class	B.Sc. Nursing 1 st Year	19	22
		B.Sc. Nursing 2 nd Year	31	34
		B.Sc. Nursing 3 rd Year	38	44

Table No. 2 Pretest and Posttest knowledge score regarding hand hygiene among student nurses (n=88)

Knowledge Score	Range Score	Mean ± SD	Mode	Median
Pre-test	3-15	9.94 ± 2.38	11	10
Post-test	3-18	13.05 ± 2.82	14	14

Table No.2 shows the pretest and posttest knowledge score regarding hand hygiene among student nurses. The mean (13.05 ± 2.82) post test score was higher than the mean (9.94 ± 2.38) pretest knowledge score.

Table No. 3 Pretest and posttest practice score regarding hand hygiene among student nurses (n=88)

Practice Score	Range Score		Mean ± SD		Mode		Median	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Hand washing with soap and water	0-22	3-18	13.57±3.3	17.11±2.87	14	17	14	17
Hand Rub	0-14	0-14	2.44±3.98	9.57±3.46	0	9	0	9
Five Moments	0-4	2-5	2.06±1	3.52±0.75	2	3	2	3.5

Table no.3 depicts that pretest and posttest practice score regarding hand hygiene among student nurses. The highest pretest (13.57±3.3) and posttest mean (17.11±2.87) was in the area of hand washing with soap and water and the lowest pretest (2.06±1) and post-test mean (3.52±0.75) was in the area of Five Moments.

Table No. 4 Effectiveness of Structured Teaching Programme regarding hand hygiene on the knowledge of student nurses. (n=88)

Knowledge Score	Range Score	Mean ± SD	Mean Difference	't' value
Pretest	3-15	9.94±2.38	3.11	8.5*
Post test	3-18	13.05±2.82		

Table no.4 depicts that the posttest mean score was higher than pretest mean score with the mean difference of 3.11 and calculated t value was 8.5 which was statistically significant. Hence it could be inferred that the structured teaching programme was an effective method to enhance the knowledge regarding hand hygiene among student nurses.

Table No. 5 Effectiveness of structured teaching program regarding hand hygiene on the practice of student nurses. (n=88)

Practice Score		Range Score	Mean ± SD	Mean Difference	't' Value
Hand Washing	Pretest	0-22	13.57±3.3	3.54	7.7
	Posttest	3-18	17.11±2.87		
Hand rub	Pretest	0-14	2.44±3.98	7.13	12.73
	Posttest	0-14	9.57±3.46		
Five Moments	Pretest	0-4	2.06±1	1.46	11.2
	Posttest	2-5	3.52±0.75		

Table no.5 depicts that the posttest mean score was higher than pretest mean score with the mean difference of 3.54 and calculated t value was 7.7 in the area of hand washing. In the area of hand rub mean difference was 7.13 and calculated t value was 12.73 and in the area of five moments the mean difference was 1.46 with t value 11.2 which was statistically significant. Hence it could be inferred that the structured teaching programme was an effective method to change the practice regarding hand hygiene among student nurses.

Table No. 6 Association between selected demographic variables and pretest level of knowledge among student nurses (n=88)

Demographic Variables		Below Median	At & above Median	X ² value
Age in Years	17-20	21	35	0.06
	21-34	13	19	
Gender	Male	5	17	3.12
	Female	29	37	
Area	Intermediate Care	9	18	5.22
	Neurosurgery	8	11	
	Pediatrics	7	5	
	Orthopedics	5	10	
	Surgery	6	9	
Class	B. Sc. Nursing 1 st Year	5	14	12.34**
	B. Sc. Nursing 2 nd Year	12	19	
	B. Sc. Nursing 3 rd Year	17	21	

Table no.6 shows that only class was having statistical significant association with the pre-test knowledge score at the level p< 0.05. Other Socio-Demographic variables like age, gender and area statistically not having any association with pre-test knowledge score at the level p< 0.05. Hence, there was no evidence to reject null hypothesis for the variable class, hence research hypothesis was rejected.

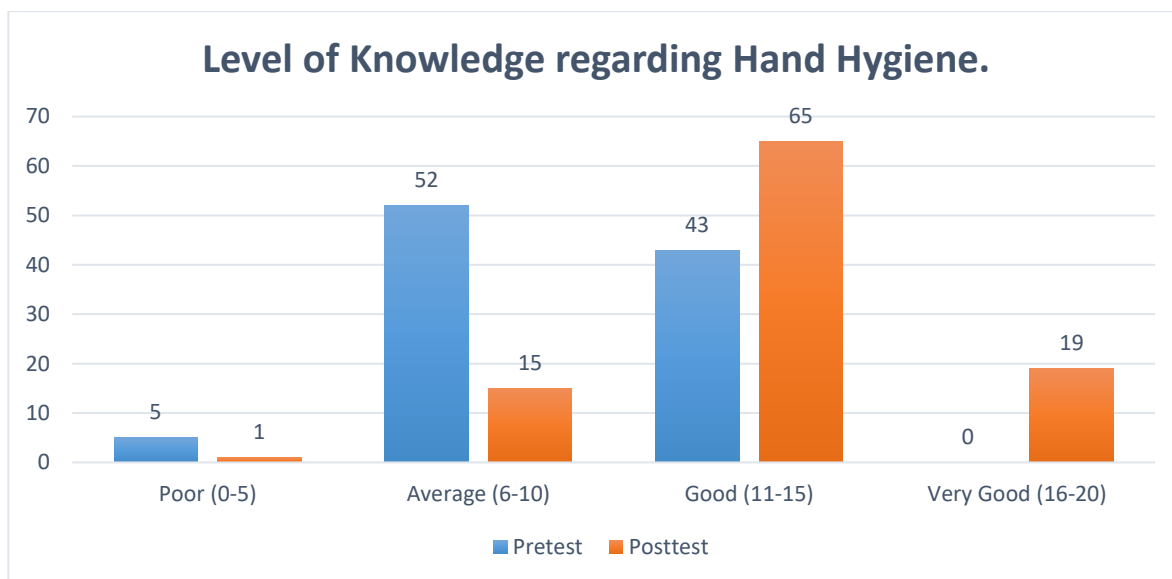


Figure No.1 Pretest and Posttest level of knowledge regarding hand hygiene among student nurses

Data presented in figure no.1; depicts the arbitrary category scoring of knowledge score at pretest and post-test level. In the pre-test majority of the student nurses (43%) had good level of knowledge, 52% student nurses showed average level of knowledge and only 5% student nurses had poor level of knowledge; and 65% student nurses got good level of knowledge at post-test level, 19% had very good level of knowledge, 15% of the students nurses had average level of knowledge and only 1% had poor level of knowledge.

Discussion:

The findings of the study have been discussed with references to the objectives and hypotheses in the light of other studies conducted in the same area.

Comparing the Knowledge of student nurses according to arbitrary category:

The arbitrary category scoring of knowledge score revealed that the majority of the student nurses (43%) had good level of knowledge at pre-test level, (52%) student nurses showed average level of knowledge and only (5%) student nurses had poor level of knowledge regarding hand hygiene. In the posttest majority of the student nurses (65%) had good level of knowledge at pre-test level, 19% had very good level of knowledge, (15%) student nurses showed average level of knowledge and only (1%) student nurses had poor level of knowledge regarding hand hygiene. The results were supported by the findings of the study conducted by **Dutta, Gitashree**³ on knowledge of undergraduate students regarding hand hygiene in Imphal and another study conducted by **Vaishnavi S Thakker**⁴ on the knowledge of student nurses regarding hand hygiene.

Area wise practice score of student nurses regarding hand hygiene:

The area wise pretest and posttest practice score regarding hand hygiene among student nurses revealed that the highest pretest (13.57 ± 3.3) and posttest mean (17.11 ± 2.87) was in the area of hand washing with soap and water and the lowest pretest (2.06 ± 1) and post-test mean (3.52 ± 0.75) was in the area of Five Moments. The results were supported by the findings of the study conducted by **Dutta, Gitashree**³ on practice of undergraduate students regarding hand hygiene in Imphal and another study conducted by **Hyang Soon Oh**⁵ on practice of undergraduate students regarding hand hygiene in Korea.

Effectiveness of Structured Teaching Programme regarding hand hygiene on the knowledge of student nurses:

The mean of post-test knowledge score of the student nurses was higher than that of the mean of pre-test knowledge score. Hence the scores predicted the significant difference (3.11) between the mean of pre-test and post-test at $p < 0.05\%$ level and the calculated t values (8.5) was higher than the tabulated value. The research hypothesis (H_1) accepted as the difference of mean observed, was of true difference and the 'Structured Teaching Programme' was an effective method

to enhance the knowledge of student nurses regarding hand hygiene. The results were supported by the findings of the study conducted by **Aparajita Phukan Baruah**⁶ on the effectiveness of structured teaching programme regarding hand hygiene among the students in Digboi.

Effectiveness of Structured Teaching Programme regarding hand hygiene on the practice of student nurses:

The mean of post-test practice score of the student nurses was higher than that of the mean of pre-test practice score. Hence the scores predicted the significant difference (3.54) between the mean of pre-test and post-test at $p < 0.05\%$ level and the calculated t value (7.7) was higher than the tabulated value. The research hypothesis (H_2) accepted as the difference of mean observed, was of true difference. Hence, it could be inferred that the structured teaching programme was an effective method to change the practice regarding hand hygiene among student nurses. The results were supported by the findings of the study conducted by **Harpreet Kaur, Jasbir Kaur**⁷ on the hand hygiene practices among nurses.

Association between selected demographic variables and pretest level of knowledge among student nurses:

The obtained Chi-square value shows that only class was having statistical significant association with the pre-test knowledge score at the level $p < 0.05$. Other Socio-Demographic variables like age, gender and area statistically not having any association with pre-test knowledge score at the level $p < 0.05$. Hence, there was no evidence to reject null hypothesis for the variable class, hence research hypothesis was partially rejected. The results were supported by the findings of the study conducted by **Meena**⁸ on the association between knowledge score and demographic variables among nurses.

References:

1. Mangesh A. Pawase, Sara Tomy, Vanita S. Gaikwad, Pournima Naik, Vinayak R. Gunjal, Suvarna B. Kadam. Effectiveness of Teach Back Method on Knowledge and Practice regarding Hand washing among students of selected school. *International Journal of Nursing Education and Research*. 2023; 11(2):137-2. doi: 10.52711/2454-2660.2023.00030
2. Sister Ancy Varghese | Dr. Priyanka Chaudhary |Mrs. Ramanpreet Kaur "A Study to Assess the Knowledge and Practices of Hand Hygiene among Nursing Staff in Different Department of the Hospitals in Uttar Pradesh" Published in *International Journal of Trend in Scientific Research and Development (ijtsrd)*, ISSN:2456-6470, Volume-6 | Issue-1, December 2021, pp.349-372, URL:www.ijtsrd.com/papers/ijtsrd47804.pdf
3. Dutta, Gitashree, Singh, T Gambhir, Kumar, Tarun Knowledge and practice of hand hygiene among undergraduate students and junior doctors in the Regional Institute of Medical Sciences, Imphal [https://journals.lww.com/jfmpc/fulltext/2020/09090/knowledge_and_practice_of_hand_hygiene_among.42.aspx#:~:text=Nearly%20half%20\(49.1%25\)%20of,36.6%25\)%20had%20good%20knowledge.](https://journals.lww.com/jfmpc/fulltext/2020/09090/knowledge_and_practice_of_hand_hygiene_among.42.aspx#:~:text=Nearly%20half%20(49.1%25)%20of,36.6%25)%20had%20good%20knowledge.)
4. Vaishnavi S Thakker and Pradeep R Jhadhav "Knowledge of hand hygiene in undergraduate medical, dental, and nursing students: A cross-sectional survey <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4776613/>
5. Hyang Soon Oh. Knowledge, Perception, and Performance of Hand Hygiene and Their Correlation among Nursing Students in Republic of Korea. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8304706/>
6. Aparajita Phukan Baruah. Effectiveness of Structured Teaching Programme on Hand Hygiene among the students of Janata Vidyalaya, Digboi. *Asian Journal of Nursing Education and Research*. 2023; 13(4):249-3. doi: 10.52711/2349-2996.2023.00052 <https://ajner.com/AbstractView.aspx?PID=2023-13-4-2>.
7. Harpreet Kaur, Jasbir Kaur, Hand Hygiene Practices among Staff Nurses during Drug Administration at Selected Tertiary Health Care Centre of Ludhiana, Punjab. <https://ajner.com/HTMLPaper.aspx?Journal=Asian%20Journal%20of%20Nursing%20Education%20and%20Research;PID=2015-5-2-8>
8. Meena. A Study To Assess the Effectiveness of Structured Teaching Programme on Knowledge and Practice Regarding Hand Washing among Students of Selected School of Gopeshwar, Chamoli. <https://www.ijsr.net/archive/v10i9/SR21921000352.pdf>