

A STUDY TO ASSESS EFFECTIVENESS OF SKILL STATION ON KNOWLEDGE AND PRACTICE REGARDING VACCINATION AMONG NURSING STUDENTS FROM SELECTED NURSING COLLEGES OF SANGLI, MIRAJ AND KUPWAD CORPORATION AREA

Mr. Rohit Kamble¹, Snehalata Reddy², Asha Nayakavadi³, Mrs. Sudaivi Kadam⁴, Mr. Rohit Shinde⁵, Ms. Sayali Sorte⁶, Ms. Sanjana Waghmare⁷

¹Clinical Instructor and Research Guide, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India.

²Assistant Professor, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India.

^{3,4}Clinical Instructor, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India.

^{5,6,7}P.B. B.Sc. Nursing Students, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India.

*Corresponding Author: Snehalata Reddy

ABSTRACT

Background: Vaccination is an important public health intervention for preventing vaccine-preventable diseases. Nursing students require adequate theoretical knowledge and practical competency to perform vaccination procedures safely, including vaccine administration, cold-chain management, infection prevention and related safety measures. Skill-station teaching provides structured demonstration, hands-on practice, return demonstration and feedback.

Objectives: To assess the pre-test level of knowledge and practice regarding vaccination among nursing students; to provide skill-station training on vaccination methods, immunization guidelines and cold-chain management; to assess post-test knowledge and practice; and to compare pre-test and post-test scores to determine the effectiveness of the training.

Methods: A quantitative research approach with a pre-experimental one-group pre-test–post-test design was used. The study included 80 nursing students from selected nursing colleges in the Sangli, Miraj and Kupwad Corporation area. The thesis reports simple random sampling. Data were collected using a demographic proforma, structured knowledge questionnaire and observational practice checklist. Content validity was established through subject experts. Reliability was assessed by the split-half method with Spearman–Brown coefficient $r = 0.86$. Pre-test assessment was followed by one-day skill-station training; the post-test was administered on the tenth day after the intervention. Data were analysed using frequency, percentage, mean, standard deviation and paired t-test.

Results: Most participants were aged 22–23 years (72, 90%) and 50 (62.5%) were male. None had attended previous vaccination training. Regarding clinical exposure, 60 (75%) had only observed vaccination procedures and 20 (25%) had assisted in vaccination. The mean knowledge score increased from 12.78 ± 1.91 in the pre-test to 15.89 ± 1.94 in the post-test; paired $t = 16.59$, $p < 0.0001$. The mean practice score increased from 12.80 ± 1.79 to 15.11 ± 1.84 ; paired $t = 11.74$, $p < 0.0001$.

Conclusion: Within the limitations of the one-group pre-test–post-test design, the findings indicate improvement in knowledge and observed practice following skill-station training on vaccination among nursing students.

KEYWORDS: vaccination; skill station; nursing students; knowledge; practice; immunization; clinical skills; nursing education

INTRODUCTION

Vaccination is widely recognized as an important and effective public health measure for preventing infectious diseases and reducing morbidity and mortality. Immunization protects individuals against vaccine-preventable diseases and contributes to disease prevention and health promotion. Nurses have an important role in immunization services, including vaccine preparation and administration, maintenance of the cold chain, patient education, documentation, infection prevention and monitoring of adverse events following immunization.

Vaccination competency requires both theoretical knowledge and practical skill. Nursing students need to understand immunization schedules, indications and contraindications, vaccine storage, correct dosage, routes and sites of administration, aseptic technique, biomedical waste management and management of adverse reactions. Traditional classroom teaching may not provide sufficient opportunities for repeated psychomotor practice. Skill-station teaching offers a structured environment in which students can observe demonstrations, perform return demonstrations, practise procedures repeatedly, receive supervision and obtain immediate feedback.

The present study was undertaken to assess the effectiveness of skill-station training on knowledge and practice regarding vaccination among nursing students in selected nursing colleges in the Sangli, Miraj and Kupwad

Corporation area. The study focused on whether structured hands-on training was associated with improvement in students' knowledge and observed vaccination practice.

OBJECTIVES

- To assess the pre-test level of knowledge and practice regarding vaccination among nursing students.
- To provide skill-station training on vaccination methods, immunization guidelines and proper cold-chain management.
- To assess the post-test level of knowledge and practice regarding vaccination among nursing students after skill-station training.
- To compare the pre-test and post-test knowledge and practice scores of nursing students to determine the effectiveness of skill-station training.

HYPOTHESIS

H0: There will be no significant difference between the pre-test and post-test knowledge and practice scores regarding vaccination among nursing students.

H1: There will be a significant difference between the pre-test and post-test knowledge and practice scores regarding vaccination among nursing students.

MATERIALS AND METHODS

RESEARCH DESIGN AND SETTING

A quantitative research approach and pre-experimental one-group pre-test–post-test design were used. The study was conducted among nursing students from selected nursing colleges in the Sangli, Miraj and Kupwad Corporation area, Maharashtra, India.

PARTICIPANTS AND SAMPLING

The sample comprised 80 nursing students enrolled in B.Sc. Nursing programmes who were present during data collection and willing to participate. The thesis identifies simple random sampling as the sampling method. Students who were absent during data collection, had recently received advanced vaccination skill training/certification, or were interns/registered nurses were excluded.

Manuscript note: One methodology sentence in the thesis states that a sample size of 100 was considered adequate, whereas the stated sample, analysed participants and results are all based on 80 students. This manuscript uses 80 to match the participants actually reported in the results.

VARIABLES

Independent variable: Skill-station training on vaccination. Dependent variables: Knowledge and practice regarding vaccination.

DATA COLLECTION TOOLS

Section I: Demographic variables, including age, gender, year of study, course and previous exposure to vaccination training. Section II: Structured knowledge questionnaire. Each correct answer received one mark; the maximum knowledge score was 20. Section III: Observational practice checklist for vaccination procedures. Content validity was established through review by experts in Child Health Nursing and Community Health Nursing. The thesis reports minor modifications such as grammatical corrections, rephrasing and rearrangement of options. Reliability was assessed during the pilot phase; the reported split-half reliability coefficient using the Spearman–Brown Prophecy Formula was $r = 0.86$.

INTERVENTION AND DATA COLLECTION PROCEDURE

After obtaining institutional permission and informed consent, baseline knowledge and practice were assessed. A structured skill-station training programme on vaccination was then conducted for one day. The training included demonstration, return demonstration, supervised hands-on practice, vaccination techniques and protocols, cold-chain maintenance, infection prevention and safe vaccination practices. According to the methodology section of the thesis, the post-test was administered on the tenth day after the intervention.

ETHICAL CONSIDERATIONS

The thesis states that ethical clearance and institutional permission were obtained, written informed consent was taken, participation was voluntary, confidentiality and anonymity were maintained, and participants could withdraw without academic or personal repercussions.

STATISTICAL ANALYSIS

Frequency and percentage were used for categorical variables. Mean and standard deviation were used for knowledge and practice scores. Paired t-test was used to compare pre-test and post-test scores, with statistical significance interpreted at $p < 0.05$.

RESULTS

PARTICIPANT CHARACTERISTICS

Variable	Category	n	%
Age	20–21 years	4	5.0
Age	22–23 years	72	90.0
Age	24–25 years	4	5.0
Gender	Male	50	62.5
Gender	Female	30	37.5
Year of study	B.Sc. Nursing year reported in thesis	80	100.0
Previous vaccination training	Yes	0	0.0
Previous vaccination training	No	80	100.0
Clinical exposure	Administered vaccine	0	0.0
Clinical exposure	Assisted in vaccination	20	25.0
Clinical exposure	Observed vaccination	60	75.0

KNOWLEDGE SCORES BEFORE AND AFTER SKILL-STATION TRAINING

Measure	Pre-test	Post-test	Paired t	p-value
Mean $\pm$ SD	12.78 $\pm$ 1.91	15.89 $\pm$ 1.94	16.59	<0.0001

The mean knowledge score increased from 12.78 $\pm$ 1.91 before the intervention to 15.89 $\pm$ 1.94 after skill-station training. The paired t-test value of 16.59 with $p < 0.0001$ indicated a statistically significant pre-test/post-test difference.

PRACTICE SCORES BEFORE AND AFTER SKILL-STATION TRAINING

Measure	Pre-test	Post-test	Paired t	p-value
Mean $\pm$ SD	12.80 $\pm$ 1.79	15.11 $\pm$ 1.84	11.74	<0.0001

The mean practice score increased from 12.80 $\pm$ 1.79 in the pre-test to 15.11 $\pm$ 1.84 in the post-test. The paired t-test value of 11.74 with $p < 0.0001$ indicated a statistically significant improvement in practice scores following the intervention.

COMPARISON OF PRE-TEST AND POST-TEST KNOWLEDGE AND PRACTICE SCORES

Statistical value	Knowledge	Practice
Pre-test Mean $\pm$ SD	12.78 $\pm$ 1.91	12.80 $\pm$ 1.79
Post-test Mean $\pm$ SD	15.89 $\pm$ 1.94	15.11 $\pm$ 1.84
Paired t-test	16.59	11.74
p-value	<0.0001	<0.0001
Inference	Highly significant	Highly significant

DISCUSSION

The present study assessed the effectiveness of skill-station training on knowledge and practice regarding vaccination among 80 nursing students. Before the intervention, the students had limited exposure to formal vaccination training; none reported previous vaccination training, while 75% had only observed vaccination procedures and 25% had assisted in vaccination.

Following the one-day skill-station intervention, both knowledge and practice scores increased. The mean knowledge score increased by 3.11 points, from 12.78 to 15.89, while the mean practice score increased by 2.31 points, from 12.80 to 15.11. The paired t-test values were statistically significant for both knowledge and practice ($p < 0.0001$).

The findings are consistent with the educational rationale described in the thesis: demonstration, return demonstration, supervised practice and feedback can provide learners with repeated opportunities to translate theoretical information into practical performance. Skill-station teaching may therefore serve as a structured competency-based approach for vaccination education.

STRENGTHS AND LIMITATIONS

STRENGTHS

- The study assessed both cognitive knowledge and observed practical performance.
- The intervention provided structured, hands-on skill-station learning rather than relying only on theoretical teaching.
- The same participants were assessed before and after the intervention, allowing paired comparison of scores.

LIMITATIONS

- The study used a one-group pre-test–post-test design without a control group.

- The sample was limited to 80 nursing students from selected colleges in one geographic area.
- The intervention duration was one day.
- The study did not assess attitude, motivation or long-term clinical performance.
- The post-test assessed short-term change and did not establish long-term retention.

IMPLICATIONS FOR NURSING NURSING PRACTICE

Skill-station training can be used to strengthen vaccination competency through structured demonstrations, supervised practice and return demonstrations. Regular practice may support safer vaccine administration, infection prevention and adherence to immunization procedures.

NURSING EDUCATION

Nursing education programmes may incorporate regular skill-station sessions on vaccination, cold-chain maintenance, infection prevention and safe injection practices. Demonstration and return demonstration can provide opportunities for competency-based learning.

NURSING ADMINISTRATION

Nursing administrators can support skill laboratories by providing appropriate teaching aids, vaccine models, supervision and adequate resources for simulation-based and skill-based training. Workshops and continuing educational activities on immunization can also be organized.

CONCLUSION

Within the limitations of the pre-experimental one-group pre-test–post-test design, the study found statistically significant improvement in both knowledge and practice regarding vaccination after skill-station training. The mean knowledge score increased from 12.78 ± 1.91 to 15.89 ± 1.94 , and the mean practice score increased from 12.80 ± 1.79 to 15.11 ± 1.84 . The paired t-test results were significant for knowledge ($t = 16.59$, $p < 0.0001$) and practice ($t = 11.74$, $p < 0.0001$). The findings support the use of structured skill-station teaching as a complementary educational strategy for developing vaccination-related competency among nursing students.

RECOMMENDATIONS

- Similar studies may be conducted with larger samples to improve generalizability.
- Studies may include nursing students from different nursing colleges and geographic areas.
- Comparative studies may examine lecture teaching, simulation teaching and skill-station training.
- Future studies may use a control group and stronger experimental designs.
- Longer training and follow-up periods may be used to assess retention of knowledge and practice.
- Future research may assess attitude, confidence and actual clinical performance in addition to knowledge and practice.
- Skill-station vaccination training may be incorporated regularly into nursing education.

DECLARATIONS

Ethics Approval: The thesis states that ethical clearance was obtained from the Institutional Ethics Committee and that institutional permissions were obtained before data collection. The formal ethics approval/reference number should be inserted in the final manuscript if available.

Informed Consent: Written informed consent was obtained from participants according to the thesis.

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