

A STUDY TO ASSESS THE EFFECTIVENESS OF SKILL STATION ON KNOWLEDGE & PRACTICE REGARDING ASSESSMENT INFANT AMONG NURSING STUDENTS FROM SELECTED NURSING COLLEGES OF SANGLI MIRAJ, KUPWAD CORPORATION AREA.

Milka Rajiv Devraj¹, Shefali Daruwala², Bahubali J. Geddugol³, Narayan K. Ghorpade^{4*}, Aniket Prakash Khade⁵, Soniya Ravi Phalke⁶, Tabitha Anil Daniel⁷

¹Clinical Instructor, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India. ORCID: <https://orcid.org/0009-0005-9704-4636>

²Clinical Instructor, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India. ORCID: <https://orcid.org/0009-0001-0614-8378>

³Assistant Professor³, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India. ORCID: <https://orcid.org/0000-0002-2282-5818>

⁴Assistant Professor, Bharati Vidyapeeth (Deemed to be University), (Corresponding Author) – College of Nursing, Sangli, Maharashtra, India. orcid: <https://orcid.org/0000-0003-2508-6368>

⁵P.B. B.Sc. Nursing, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India

⁶P.B. B.Sc. Nursing, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India.

⁷P.B. B.Sc. Nursing, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India.

ABSTRACT

Accurate infant assessment is an essential component of pediatric nursing practice. Nursing students require both theoretical understanding and psychomotor competence to perform anthropometric assessment correctly. Skill-station teaching provides structured demonstration, guided practice and feedback in a controlled learning environment. The research Objectives were to assess the effectiveness of skill-station teaching on knowledge and practice regarding infant assessment among nursing students. Methods used in this study a quantitative evaluative approach with a quasi-experimental one-group pre-test–post-test design was used among 80 third-year, sixth-semester B.Sc. Nursing students from selected nursing colleges in the Sangli–Miraj–Kupwad Corporation area. Data were collected using a structured knowledge questionnaire and an observational checklist for infant anthropometric assessment. Descriptive statistics and paired t-test were used for analysis. Results found that the before the intervention, 4 (5.0%) students had poor knowledge, 65 (81.2%) had average knowledge and 11 (13.8%) had good knowledge. After skill-station teaching, none had poor knowledge, 7 (8.8%) had average knowledge and 73 (91.2%) had good knowledge. The mean knowledge score increased from 17.7875 ± 3.2166 in the pre-test to 24.025 ± 2.2668 in the post-test. The paired t-test was -14.7223 ($p < 0.05$), indicating a statistically significant improvement. Practice performance also showed improvement across assessment domains including weight, length, head circumference, chest circumference, mid-upper-arm circumference and mid-thigh circumference. finally, conclusion that within the limitations of the study design, skill-station teaching was associated with significant improvement in knowledge and better observed performance of infant anthropometric assessment among nursing students.

KEYWORDS: infant assessment; skill station; nursing students; anthropometry; clinical skills; simulation-based learning; nursing education.

INTRODUCTION

Infant assessment is a fundamental component of pediatric nursing care because it supports monitoring of growth, recognition of deviations from expected development and early identification of health problems. Nurses frequently participate in routine assessment and growth monitoring, making accurate measurement and interpretation important competencies during undergraduate nursing education.

The source study identifies a gap between theoretical knowledge and practical confidence or competence among nursing students. Limited clinical exposure and reliance on conventional classroom teaching may restrict opportunities for repeated practice of infant assessment procedures. Skill-station teaching addresses this gap by combining demonstration, supervised practice, repetition and feedback. Such structured experiential learning can help learners translate theoretical knowledge into observable clinical performance.

The present study therefore evaluated the effectiveness of a skill station focused on infant anthropometric assessment among B.Sc. Nursing students in selected nursing colleges in the Sangli–Miraj–Kupwad Corporation area.

Objectives

To assess the pre-test level of knowledge regarding infant assessment among nursing students.

To assess the pre-test level of practice regarding infant assessment among nursing students.
 To assess the post-test level of knowledge and practice after skill-station teaching.
 To compare pre-test and post-test knowledge and practice scores regarding infant assessment.

MATERIALS AND METHODS

Research Design and Setting

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

Participants and Sampling

The study included 80 third-year, sixth-semester Basic B.Sc. Nursing students. Students undergoing third-year, sixth-semester B.Sc. Nursing were eligible, while students unwilling to participate were excluded. The sampling technique used was non-probability convenience sampling.

3.4 Data Collection Tools

Section I collected demographic information. Section II was a structured knowledge questionnaire. Section III was an observational checklist for infant anthropometric measurement assessment. The source document reports expert review for content validity.

Reliability verification required: the supplied document reports $r = 0.76$ in the abstract and $r = 0.87$ in another methodology section. The correct reliability coefficient should be confirmed from the original study record before journal submission.

3.5 Data Collection and Follow-up

Informed consent was obtained before data collection. Pre-test knowledge and practice were assessed before the intervention. The supplied source contains inconsistent post-test timing: the methodology states the seventh day, the abstract states the tenth day, and another section refers to the eighth day. The actual interval should be verified from the data-collection record before publication.

3.6 Statistical Analysis

Frequency, percentage, mean and standard deviation were used for descriptive analysis. The paired t-test was used to compare pre-test and post-test knowledge scores, with statistical significance interpreted at $p < 0.05$.

3.7 Ethical Considerations

The source document states that the research proposal was approved by the ethical committee, formal institutional permissions were obtained, informed consent was taken, participation was voluntary and confidentiality was maintained.

4. RESULTS

Section- I Participant Characteristics

Characteristic	Category	n (%)
Age	21–22 years	70 (87.5%)
Age	23–24 years	10 (12.5%)
Gender	Male	30 (37.5%)
Gender	Female	50 (62.5%)
Year	Third year, sixth semester	80 (100%)
College type	Private/Trust	80 (100%)
Previous pediatric/NICU/PICU posting	Yes	33 (41.3%)
Previous pediatric/NICU/PICU posting	No	47 (58.7%)
Previous teaching/workshop/skill-lab session	Yes	28 (35.0%)
Previous teaching/workshop/skill-lab session	No	52 (65.0%)
Previous information on infant assessment	Yes	24 (30.0%)
Previous information on infant assessment	No	56 (70.0%)

Section -II Knowledge before and after Skill-Station Teaching

Knowledge level	Pre-test n (%)	Post-test n (%)
-----------------	----------------	-----------------

Poor (0–10)	4 (5.0%)	0 (0%)
Average (11–20)	65 (81.2%)	7 (8.8%)
Good (21–30)	11 (13.8%)	73 (91.2%)

Measure	Pre-test	Post-test	Paired t	p-value	Interpretation
Knowledge score mean ± SD	17.7875 ± 3.2166	24.025 ± 2.2668	–14.7223	<0.05	Significant

The mean knowledge score increased by 6.2375 points following the skill-station intervention. The paired t-test indicated a statistically significant pre-test/post-test difference.

Section-III Observed Practice

The observational checklist covered weight, length, head circumference, chest circumference, mid-upper-arm circumference (MUAC) and mid-thigh circumference assessment. The source reports improvement across the practice domains after the intervention.

Practice indicator	Pre-test n (%)	Post-test n (%)
Weight: instrument checked	43 (53.7%)	57 (71.3%)
Weight: weighed correctly	43 (53.7%)	56 (70.0%)
Weight: minimal clothing	48 (60.0%)	59 (73.7%)
Weight: recorded in kg	34 (42.5%)	56 (70.0%)
Weight: compared with WHO chart	43 (53.7%)	59 (73.7%)
Weight: growth chart plotted	49 (61.3%)	69 (86.3%)
Length: infantometer used	46 (57.5%)	62 (77.5%)
Length: head positioned correctly	55 (68.7%)	68 (85.0%)
Length: legs extended	45 (56.2%)	68 (85.0%)
Length: recorded in cm	55 (68.7%)	72 (90.0%)
Length: growth chart plotted	46 (57.5%)	68 (85.0%)
MUAC: midpoint identified	61 (76.3%)	71 (88.7%)
MUAC: recorded in cm	58 (72.5%)	66 (82.5%)
MUAC: usefulness for acute malnutrition	59 (73.7%)	71 (88.7%)
MUAC: age appropriate	54 (67.5%)	72 (90.0%)
Mid-thigh: measured correctly	57 (71.3%)	70 (87.5%)
Mid-thigh: tape used properly	67 (83.7%)	67 (83.7%)
Mid-thigh: recorded in cm	61 (76.3%)	71 (88.7%)
Mid-thigh: nutritional status assessed	55 (68.7%)	69 (86.3%)
Chest circumference: normal findings checked	—	70 (87.5%)

DISCUSSION

The study demonstrated a marked improvement in knowledge after skill-station teaching. At baseline, most students had average knowledge, whereas after the intervention more than nine out

The mean knowledge score increased by 6.2375 points following the skill-station intervention. The paired t-test indicated a statistically significant pre-test/post-test difference.

Section-III Observed Practice

The observational checklist covered weight, length, head circumference, chest circumference, mid-upper-arm circumference (MUAC) and mid-thigh circumference assessment. The source reports improvement across the practice domains after the intervention.

Practice indicator	Pre-test n (%)	Post-test n (%)
Weight: instrument checked	43 (53.7%)	57 (71.3%)

Weight: weighed correctly	43 (53.7%)	56 (70.0%)
Weight: minimal clothing	48 (60.0%)	59 (73.7%)
Weight: recorded in kg	34 (42.5%)	56 (70.0%)
Weight: compared with WHO chart	43 (53.7%)	59 (73.7%)
Weight: growth chart plotted	49 (61.3%)	69 (86.3%)
Length: infantometer used	46 (57.5%)	62 (77.5%)
Length: head positioned correctly	55 (68.7%)	68 (85.0%)
Length: legs extended	45 (56.2%)	68 (85.0%)
Length: recorded in cm	55 (68.7%)	72 (90.0%)
Length: growth chart plotted	46 (57.5%)	68 (85.0%)
MUAC: midpoint identified	61 (76.3%)	71 (88.7%)
MUAC: recorded in cm	58 (72.5%)	66 (82.5%)
MUAC: usefulness for acute malnutrition	59 (73.7%)	71 (88.7%)
MUAC: age appropriate	54 (67.5%)	72 (90.0%)
Mid-thigh: measured correctly	57 (71.3%)	70 (87.5%)
Mid-thigh: tape used properly	67 (83.7%)	67 (83.7%)
Mid-thigh: recorded in cm	61 (76.3%)	71 (88.7%)
Mid-thigh: nutritional status assessed	55 (68.7%)	69 (86.3%)
Chest circumference: normal findings checked	—	70 (87.5%)

DISCUSSION

The study demonstrated a marked improvement in knowledge after skill-station teaching. At baseline, most students had average knowledge, whereas after the intervention more than nine out of ten achieved a good knowledge level. The mean knowledge score increased from 17.7875 to 24.025, and the paired t-test demonstrated a statistically significant difference.

Observed practice also improved across most reported indicators. Improvements were particularly evident in correct recording, plotting of growth measurements and positioning or technique-related steps. The unchanged proportion for proper tape use during mid-thigh circumference measurement suggests that not every checklist component improved to the same extent and may require additional practice or reinforcement.

These findings support the educational value of structured, hands-on teaching for psychomotor learning. Demonstration followed by supervised performance and feedback provides students with an opportunity to practice procedures before independent clinical performance. The source thesis also relates the findings to simulation- and OSCE-based approaches reported in the nursing education literature.

Strengths and Limitations

Simultaneous assessment of knowledge and observed practice following a structured skill-station intervention.

Use of an observational checklist rather than relying only on self-reported confidence.

LIMITATIONS

One-group pre-test–post-test design without a control group.

Relatively small sample of 80 students.

Restriction to selected nursing colleges in one geographic area.

Short follow-up period.

Source-document inconsistencies in sampling technique, reliability coefficient and post-test timing that require verification before publication.

Implications for Nursing Education

Regular skill-station and simulation sessions can provide structured opportunities for psychomotor learning. Skill laboratories may be used to reinforce pediatric assessment before clinical placement. OSCE-style assessment may support objective evaluation of competency. Nursing administrators can support this approach by ensuring appropriate equipment, supervision and scheduled practice opportunities.

CONCLUSION

Within the limitations of the one-group pre-test–post-test design, the study found that skill-station teaching was associated with significant improvement in knowledge and better observed performance of infant assessment among B.Sc. Nursing students. The findings support the use of structured experiential learning as a complementary strategy for developing pediatric clinical skills.

Recommendations

Larger multi-center studies should be conducted to improve generalizability.

Controlled studies should compare skill-station teaching with conventional teaching methods.

Regular skill-station practice may be incorporated into pediatric nursing education.

Longer follow-up studies should assess retention of knowledge and skills.

Further studies may evaluate simulation and OSCE-based approaches for infant assessment.

DECLARATIONS

Ethics approval: The source thesis states that the research proposal was approved by the ethical committee. The formal ethics committee name and approval/reference number should be inserted before submission if available.

Informed consent: Written/informed consent was obtained according to the source document. Funding: Not reported in the source document; this should be confirmed by the authors.

Conflict of interest: Not reported in the source document; the authors should confirm and state the appropriate declaration.

Author contributions: To be confirmed by the authors according to the actual contribution of each author.

REFERENCES

1. Asokan B, Saravanan S. Assessment of gestational age using anthropometric parameters in newborns. *International Journal of Contemporary Pediatrics*. 2023;10(4):488-492.
2. Belay FW, Fikre R, Alemayehu A, Clarke A, Williams S, Richards H, et al. Feasibility and diagnostic accuracy of neonatal anthropometric measurements in identifying low birthweight and preterm infants in Africa: a systematic review and meta-analysis. *BMJ Paediatrics Open*. 2024;8(1):e002741.
3. Ba-Saddik IA, Al-Asbahi TO. Anthropometric measurements of singleton live full-term newborns in Aden, Yemen. *International Journal of Pediatrics and Adolescent Medicine*. 2020;7(3):121-126.
4. Cakici C, Koksall E. Anthropometry to advanced technologies: evaluation of growth and body composition in neonates. *Journal of Developmental Origins of Health and Disease*. 2025;16:e43.
5. Sawyer T, et al. Competency-based assessment in neonatal simulation training: the role of simulation-based OSCEs in evaluating clinical and non-technical skills. 2023.
6. Kim EJ, Song SS, Kim SK. Simulation-based education in undergraduate pediatric nursing programs: a scoping review of learning outcomes and OSCE-based assessment strategies. 2023.
7. Ha E, Lim E. Effect of objective structured clinical examination (OSCE) on clinical competency and knowledge retention among pre-licensure nursing students in Korea. *Nurse Education Today*. 2023;124:105786.
8. Oducado RMF, et al. Objective structured clinical examination (OSCE) in undergraduate nursing education: a systematic review. *Nurse Education in Practice*. 2023;70:104849.