

“EFFECTIVENESS OF SKILL STATION TEACHING ON KNOWLEDGE AND PRACTICE REGARDING ANTENATAL PALPATION AMONG NURSING STUDENTS IN SELECTED NURSING COLLEGES”

Sindhu Gaikwad¹, Archana Dhanawade¹, Seema Geddugol¹, Tejaswini Chougule¹, Susan George¹, Elizabeth Bhoré¹, Stuti Kale¹

¹Assistant Professor, Department of Obstetrics and Gynaecological, Nursing, Bharati Vidyapeeth (Deemed To Be University) College of Nursing, Sangli, Maharashtra, India 416414.

Corresponding Author: Mrs. Archana Dhanawade, ORCID ID; Mrs. Archana Dhanawade; 0000-0002-2577-1261

ABSTRACT

Antenatal palpation is an essential clinical skill in maternal health nursing that helps assess fetal growth, position, presentation, and overall maternal-fetal well-being. Nursing students often face difficulties in acquiring adequate knowledge and practical competence in antenatal palpation through conventional teaching methods alone. Skill station-based learning provides a structured, hands-on approach that may enhance students' knowledge and practice.

The Objective of the study:

1. To assess the Existing knowledge and practice regarding antenatal palpation among nursing student.
2. To assess knowledge and practice regarding antenatal palpation after skill station among nursing students.
3. To compare the pretest and posttest knowledge scores
4. To find out association of student's knowledge with demographic variables.

MATERIAL AND METHODS:

A quantitative approach was adopted using a quasi-experimental one-group pretest–post-test design. The study was carried out among 6th and 7th semester B.Sc. Nursing students from selected nursing colleges of Sangli Miraj Kupwad Corporation area. 100 students selected through non-probability convenience sampling. The data collection instrument comprised Demographic Variables, Structured knowledge questionnaire and observational practice checklist.

Content validity was ensured by review from experts in obstetrics and gynecological nursing. Reliability, tested using Karl Pearson's correlation coefficient, was satisfactory ($r = 0.94$). A pilot study on 10% of the sample established feasibility. After obtaining informed consent, pre-test assessments of knowledge and practice were conducted, followed by a structured skill station training on Antenatal Palpation. The post-test was administered on the 3rd day after the intervention. Data were analyzed using Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (paired t-test)

RESULTS:

The pre-test assessment showed that 83% of nursing students had average knowledge and 17% had poor knowledge regarding antenatal palpation. After the skill station intervention, 88% demonstrated average knowledge and 12% achieved good knowledge, with no students remaining in the poor category. The mean knowledge score increased from 8.29 ± 2.341 in the pre-test to 11.73 ± 1.6988 in the post-test. The calculated paired t-test value was -15.5799 ($p < 0.05$), indicating a statistically significant improvement in knowledge. Practice scores also improved substantially across all components of antenatal palpation, including pre-procedure preparation, Leopold's maneuvers, and post-procedure care. No significant association was found between pre-test knowledge scores and demographic variables such as age, gender, year of study, and previous exposure to antenatal palpation training.

Keyword

Antenatal palpation, Leopold's maneuvers, Skill station, Nursing students, Clinical skills.

BACKGROUND OF STUDY:

Pregnancy is an normal physiological condition that causes several physical and emotional changes in a woman's life. For betterment of health and wellbeing of the Mother and the developing foetus Appropriate antenatal care is important in pregnancy. Antenatal care involves regular check-ups, continuous monitoring, health education, and early identification of complications that may occur during pregnancy. Antenatal care aims to promote a safe pregnancy and help ensure the delivery of a healthy baby, while maintaining the mother's health throughout pregnancy.¹

Antenatal examination is an essential part of antenatal care and contributes significantly in monitoring the

health of both the mother and the fetus during pregnancy. It includes history taking, physical assessment, abdominal examination, and regular monitoring of maternal and fetal conditions. Among the various components of antenatal examination, antenatal palpation, also known as obstetrical palpation, is an important clinical procedure commonly performed by nurses and midwives. Antenatal palpation helps in assessing fetal lie, presentation, position, engagement, fetal growth, and the condition of the uterus. It also aids in detecting abnormalities such as malpresentation, intrauterine

growth restriction, multiple pregnancy, and abnormal fetal growth. Accurate assessment through palpation allows healthcare professionals to identify problems early, provide timely interventions, and reduce complications during pregnancy and childbirth.²

Nurses are key members of the healthcare team, supporting the health and well-being of mothers and children as they are often the first healthcare professionals to assess and care for pregnant women in hospitals as well as community settings. Therefore, nursing students need to develop adequate theoretical knowledge and practical competency in antenatal palpation during their training period. The primary aim of obstetrical nursing education is to equip students with the knowledge and skills needed to provide safe, effective, and evidence-based care to pregnant women. Competency in antenatal palpation is essential because it serves as a fundamental skill for maternal assessment and supports appropriate clinical decision-making during pregnancy.³

In recent years, nursing education has experienced significant changes with the advancement of science, technology, and modern teaching approaches. Traditional teaching methods, including classroom lectures and demonstrations, are widely used in nursing education. However, these approaches may not always provide enough opportunities for students to develop psychomotor abilities and clinical competency. Clinical procedures such as antenatal palpation require repeated observation, supervised training, and hands-on practice to achieve skill mastery. Many nursing students face challenges while performing obstetrical palpation due to limited clinical exposure, fear of committing mistakes, lack of self-confidence, and inadequate opportunities for repeated practice in clinical settings.⁴

NEED FOR STUDY :

Pregnancy is an important stage in a woman's life that requires continuous care and regular health check-ups and proper healthcare to ensure the wellbeing of both the mother and the unborn baby. Antenatal care is essential for maintaining the health and well-being of both the mother and the developing baby by helping healthcare professionals identify, prevent, and manage complications at an early stage. Effective antenatal care contributes greatly to reducing maternal and neonatal illness and death. One of the essential components of antenatal assessment is antenatal palpation, which helps in assessing fetal growth, fetal lie, presentation, position, engagement, and the condition of the uterus. Accurate antenatal palpation allows healthcare providers to recognize abnormalities early and take appropriate interventions in a timely manner. Therefore, Nursing students need adequate knowledge and develop practical competency in antenatal palpation so that they can provide safe, effective, and quality maternal care in clinical settings.⁵

Nursing students are the future members of the healthcare workforce and have an important responsibility in delivering maternal and child healthcare services in hospitals, maternity units, primary health centers, and community healthcare settings. During their obstetrical clinical training, students are expected to participate in antenatal assessments and assist in caring for pregnant women.⁶

However, many nursing students experience challenges while performing antenatal palpation accurately due to insufficient hands-on clinical experience, limited chances for repeated practice, and lack of self-confidence. Even though students gain theoretical knowledge about antenatal examination in the classroom, they may struggle to apply this knowledge effectively in real clinical environments. This difference between classroom learning and practical performance highlights the importance of introducing innovative, practice-oriented, and hands-on learning methods in nursing education.⁷

Conventional teaching methods in nursing education mainly rely on classroom lectures and demonstrations, which may not always be enough to develop essential psychomotor and clinical skills. Procedures such as antenatal palpation require continuous observation, repeated practice, proper guidance, and close supervision to achieve competency. In many nursing colleges, students often receive limited opportunities to practice antenatal palpation due to overcrowded clinical settings, inadequate patient exposure, shortage of clinical instructors, and concern about causing discomfort to pregnant women during examination. Because of these limitations, many students may feel nervous, uncertain, and lacking in confidence while performing antenatal assessments in real clinical situations. Therefore, there is a growing need for effective and practical teaching approaches that can strengthen both the theoretical understanding and hands-on clinical skills of nursing students, enabling them to provide safe and competent maternal care.⁸

RESEARCH METHODOLOGY

This study was conducted in selected colleges using Quantitative research approach. Pre-test post-test with control group design was adopted. 100 samples were selected by non purposive sampling technique. Ethical approval was taken from Institutional Ethical Committee, BV DU, College of Nursing, and Sangli. Tool validity was done by 10 experts of nursing field, with statistician. The test -retest method was used to calculate the reliability('r' value

is 0.95) . Pilot study was conducted to check the feasibility of main study. The data collection tool had two sections:

Section I: Demographic Variables. It consists of age, gender, year of study, type of course, previous exposure to antenatal palpation training.

Section II: Observational Practice Checklist

Section III Structured -Knowledge questionnaire

Table No.1:Frequency And Percentage Distribution Of Demographic Variables.

N= 100

Demographic variables		Frequency	Percentage
Age (in yrs.)	21	8	8
	22	76	76
	23	16	16
Gender	Male	62	62
	Female	38	38
Year of study	6 th sem.	60	60
	7 th Sem	40	40
Type of course	B.Sc.(N)	100	100
Previous exposure to antenatal palpation training	Yes	44	44
	No	56	56

Interpretation: The demographic data showed that A large proportion of the nursing students, 76 (76%) were aged 22 years, while 8 (8%) were aged 21 years and 16 (16%) were aged 23 years. Regarding gender, majority of participants 62 (62%) were male and female 38 (38%). Majority of 60 (60%) students were studying in 6th semester and 40 (40%) were studying in 7th semester. All the participants 100 (100%) enrolled in B.Sc. Nursing course. 44 (44%) students had previous exposure to antenatal palpation training, whereas majority 56 (56%) had no previous exposure.

TABLE NO. 2: PRE- TEST KNOWLEDGE SCORE OF ANTENATAL PALPATION.

N= 100

LEVEL OF KNOWLEDGE		FREQUENCY	PERCENTAGE
0-6	POOR	17	17
7-13	AVERAGE	83	83
14-20	GOOD	0	0

Interpretation-The majority of students possessed only average knowledge before the intervention, while very few had good knowledge. This suggests inadequate baseline understanding regarding antenatal palpation among nursing students.

TABLE NO. 3: POST- TEST KNOWLEDGE SCORE OF ANTENATAL PALPATION.

N= 100

LEVEL OF KNOWLEDGE		FREQUENCY	PERCENTAGE
0-6	POOR	0	0
7-13	AVERAGE	88	88
14-20	GOOD	12	12

Interpretation - After the skill station training, improvement in knowledge was observed as the percentage of students with good knowledge increased and no student remained in the poor category. The results demonstrate the positive impact of the skill station teaching method.

TABLE NO. 4: COMPARISON OF PRE-TEST AND POST- TEST KNOWLEDGE SCORE OF ANTENATAL PALPATION.

N= 100

KNOWLEDGE	MEAN	S.D.	PAIRED T- TEST	P- VALUE	SIGNIFICANCE
PRE- TEST	8.29	2.341	-15.5799	0 < 0.05	SIGNIFICANT

POST- TEST	11.73	1.6988		
------------	-------	--------	--	--

Interpretation-An increase in the post-test mean score compared to the pre-test mean score indicates that students' knowledge improved following the skill station training. The statistically significant result confirms that the skill station teaching method was effective in enhancing knowledge regarding antenatal palpation among nursing students.

Knowledge Level	Pre-test	Post-test
Poor	17%	0%
Average	83%	88%
Good	0%	12%

The mean knowledge score improved significantly from 8.29 ± 2.341 to 11.73 ± 1.6988 after the intervention (paired $t = -15.5799$, $p < 0.05$). Practice performance improved across preparation, Leopold's maneuvers, and post-procedure care.

TABLE NO.5: PRE AND POST SKILL STATION PRACTICES REGARDING ANTENATAL PALPATION.

A. PRE-PROCEDURE PREPARATION

N=100

S.No.	STEPS	YES(PRE)		NO(PRE)		YES(POST)		NO(POST)	
		F	%	F	%	F	%	F	%
1	WASHES HANDS THOROUGHLY	54	54	46	46	75	75	25	25
2	PREPARES ARTICLES (GLOVES, MEASURING TAPE, PILLOW, DRAPES)	64	64	36	36	79	79	21	21
3	ENSURES PRIVACY (SCREEN/CURTAIN)	66	66	34	34	81	81	19	19
4	EXPLAINS PROCEDURE TO PATIENT	66	66	34	34	84	84	16	16
5	OBTAINS INFORMED CONSENT	65	65	35	35	88	88	12	12
6	ASKS PATIENT TO EMPTY BLADDER	70	70	30	30	87	87	13	13
7	POSITIONS PATIENT SUPINE WITH HEAD SLIGHTLY ELEVATED	79	79	21	21	87	87	13	13
8	EXPOSES ABDOMEN ADEQUATELY WHILE MAINTAINING DIGNITY	74	74	26	26	88	88	12	12

Interpretation: The findings show that most students were able to perform pre-procedure preparation steps adequately, especially patient positioning and maintaining dignity. However, deficiencies were observed in hand washing, article preparation, and communication-related practices, indicating the need for improvement in infection control and patient preparation skills. The post-test findings indicate marked improvement in pre-procedure preparation practices after the skill station training. Most students correctly followed patient preparation, communication, and infection control measures.

B. PROCEDURE STEPS FOR ANTENATAL PALPATION (PRE & POST) GENERAL INSPECTION

S.No.	PROCEDURE	YES(PRE)		NO(PRE)		YES(POST)		NO(POST)	
		F	%	F	%	F	%	F	%
9	INSPECTS ABDOMEN FOR SIZE, SHAPE, SCARS, LINEA NIGRA	76	76	24	24	88	88	12	12
10	OBSERVES FETAL MOVEMENTS	78	78	22	22	79	79	21	21

Interpretation: Most students performed general inspection correctly, but some lacked complete observational skills regarding abdominal assessment and fetal movements. Students demonstrated high competency in general inspection after training, indicating improvement in observational and assessment skills.

PALPATION – LEOPOLD’S MANEUVERS

I – FIRST MANEUVER (FUNDAL GRIP)(PRE & POST)

	PROCEDURE	YES(PRE)		NO(PRE)		YES(POST)		NO(POST)	
		F	%	F	%	F	%	F	%
11	PLACES BOTH HANDS ON UTERINE FUNDUS	71	71	29	29	90	90	10	10
12	IDENTIFIES FETAL PART (HEAD/BREECH)	69	69	31	31	83	83	17	17

Interpretation: The majority of students demonstrated moderate competency in performing the first maneuver, though some students had difficulty identifying fetal parts accurately. Post findings reveal significant improvement in students’ competency in performing the first maneuver and identifying fetal parts accurately.

II - SECOND MANEUVER (LATERAL GRIP)(PRE& POST)

S.No.	PROCEDURE	YES(PRE)		NO(PRE)		YES(POST)		NO(POST)	
		F	%	F	%	F	%	F	%
13	PLACES HANDS ON BOTH SIDES OF ABDOMEN	72	72	28	28	88	88	12	12
14	IDENTIFIES SMALL PARTS	65	65	35	35	91	91	9	9
15	IDENTIFIES FETAL BACK	72	72	28	28	85	85	15	15

Interpretation: Students showed average competency in the second maneuver. Identification of small fetal parts was comparatively weaker, suggesting insufficient palpation skills. Post skill station training effectively enhanced students’ ability to perform the second maneuver accurately and confidently.

III - THIRD MANEUVER (PAWLIK’S GRIP)(PRE& POST)

S.No.	PROCEDURE	YES(PRE)		NO(PRE)		YES(POST)		NO(POST)	
		F	%	F	%	F	%	F	%
16	GRASPS LOWER ABDOMEN ABOVE SYMPHYSIS PUBIS	65	65	35	35	90	90	10	10
17	IDENTIFIES PRESENTING PART	77	77	33	33	86	86	14	14
18	ASSESSSES ENGAGEMENT	78	78	22	22	85	85	15	15

Interpretation Most students could identify the presenting part and assess engagement, but a considerable number still lacked confidence in performing the maneuver accurately. Most students demonstrated excellent competency in the third maneuver after the training, showing better understanding and palpation skills.

IV- FOURTH MANEUVER (PELVIC GRIP)(PRE & POST)

S.No.	PROCEDURE	YES(PRE)		NO(PRE)		YES(POST)		NO(POST)	
		F	%	F	%	F	%	F	%
19	APPLIES DEEP PRESSURE CORRECTLY	75	75	25	25	85	85	15	15
20	FACES PATIENT’S FEET	65	65	35	35	87	87	13	13
21	DETERMINES FETAL DESCENT AND ATTITUDE	73	73	27	27	85	85	15	15

Interpretation Students showed moderate practical skills in the fourth maneuver, though some had difficulty maintaining correct examiner position and assessing fetal descent accurately. Students showed substantial improvement in performing the fourth maneuver accurately after skill station training.

C. POST PROCEDURE STEPS FOR ANTENATAL PALPATION(PRE & POST)

S.No.	PROCEDURE	YES(PRE)		NO(PRE)		YES(POST)		NO(POST)	
		F	%	F	%	F	%	F	%
22	CLEANS AND COVERS PATIENT	81	81	19	19	90	90	10	10
23	MAKES PATIENT COMFORTABLE	69	69	31	31	87	87	13	13
24	WASHES HANDS AFTER PROCEDURE	75	75	25	25	88	88	12	12
25	DOCUMENTS FINDINGS PROPERLY	63	63	37	37	74	74	26	26

Interpretation Post-procedure practices were moderately satisfactory, especially cleaning and hand washing. However, documentation skills remained inadequate among many students before the intervention. Post-procedure care practices improved considerably after the intervention, especially patient comfort, cleanliness,

and infection control practices. Documentation skills also improved compared to pre-test findings.

TABLE 6: ASSOCIATION OF STUDENT KNOWLEDGE WITH DEMOGRAPHIC VARIABLES.

N=100

Demographic Variables		Level Of Knowledge		Chi Square Value	P Value	Significance
		Poor	Average			
Age (In Yrs.)	21	2	6	1.782	0.41	Not Significant
	22	14	62			
	23	1	15			
Gender	Male	13	49	1.82	0.177	Not Significant
	Female	4	34			
Semester Of Study	6 th Sem	7	53	3.024	0.082	Not Significant
	7 th Sem	10	30			
Type Of Course	B.Sc.(N)	17	83	-	-	-
Previous Exposure To Antenatal Palpation Training	Yes	7	37	0.442	0.802	Not Significant
	No	10	46			

Interpretation-The findings in Table 7 show that demographic factors such as age, gender, years of study, and prior exposure to antenatal palpation training did not have any significant relationship with the students' pre-test knowledge levels. The association for type of course could not be analyzed because all participants were from the same course category. Overall, the results indicate that the initial knowledge levels of nursing students were not influenced by these demographic variables.

DISCUSSION

The findings indicate that structured skill station teaching effectively strengthens theoretical knowledge and psychomotor competency, supporting competency-based nursing education.

Conclusion

Skill station teaching is an effective educational strategy for improving knowledge and practice regarding antenatal palpation and should be incorporated into undergraduate nursing education.

REFERENCES

1. Kulier, R., Gülmezoglu, A. M., Hofmeyr, G. J., Cheng, L. N., & Campana, A. (2012). *Routine antenatal care for low-risk pregnancy*. Cochrane Database of Systematic Reviews, (7), CD000934. DOI: <https://doi.org/10.1002/14651858.CD000934.pub3>
2. Neilson, J. P. (2000). *Ultrasound for fetal assessment in early pregnancy*. Cochrane Database of Systematic Reviews. DOI: <https://doi.org/10.1002/14651858.CD000182>
3. Butler, M. M., Sheen, J., Gough, S., & Ivers, N. (2016). *Nursing students' competence in clinical practice: A systematic review*. *Nurse Education Today*, 39, 26–32. DOI: <https://doi.org/10.1016/j.nedt.2016.01.015>
4. Flood, L. S., & Robinia, K. (2014). *Bridging the gap: Strategies to integrate classroom and clinical learning*. *Journal of Nursing Education*, 53(7), 391–394. DOI: <https://doi.org/10.3928/01484834-20140620-01>
5. Nassar, N., Roberts, C. L., Barratt, A., & Olive, E. C. (2006). *Systematic review of the accuracy of clinical examination for detecting fetal presentation and position*. *BJOG: An International Journal of Obstetrics & Gynaecology*, 113(11), 1259–1266. DOI: <https://doi.org/10.1111/j.1471-0528.2006.01074.x>
6. Renfrew, M. J., McFadden, A., Bastos, M. H., Campbell, J., Channon, A. A., Cheung, N. F., Silva, D. R., Downe, S., Kennedy, H. P., Malata, A., McCormick, F., Wick, L., & Declercq, E. (2014). *Midwifery and quality care: Findings from a new evidence-informed framework for maternal and newborn care*. *The Lancet*, 384(9948), 1129–1145. DOI: [https://doi.org/10.1016/S0140-6736\(14\)60789-3](https://doi.org/10.1016/S0140-6736(14)60789-3)
7. Panda, S., Dash, M., John, J., Rath, K., Debata, A., Swain, D., Mohanty, K., & Eustace-Cook, J. (2021). *Challenges faced by student nurses and midwives in clinical learning environment: A systematic review and meta-synthesis*. *Nurse Education Today*, 101, 104875. DOI: <https://doi.org/10.1016/j.nedt.2021.104875>
8. McGaghie, W. C., Issenberg, S. B., Cohen, E. R., Barsuk, J. H., & Wayne, D. B. (2011). *Does simulation-based medical education with deliberate practice yield better results than traditional clinical education? A meta-analytic comparative review*. *Academic Medicine*, 86(6), 706–711. DOI: <https://doi.org/10.1097/ACM.0b013e318217e119>