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"A Study to Assess the effectiveness of station-based skill training model through Objective Structured Clinical Examination (OSCE) on obstetrical assessment on Nursing students at selected Nursing colleges at Anand- Kheda district."

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Abstract

Present paper based on pre-test post-test study to assess the effectiveness of Objective Structured Clinical Examination (OSCE) on obstetrical assessment on Nursing students at selected Nursing colleges at Anand- Kheda district, was carried out by the final year student of Dinsha Patel College of Nursing, Nadiad. The statement of the study was: "A Study to Assess the effectiveness of station-based skill training model through Objective Structured Clinical Examination (OSCE) on obstetrical assessment on Nursing students at selected Nursing colleges at Anand- Kheda district." The objectives of the study were: (1) To assess the obstetrical assessment score by OSCE. (2) To evaluate the effectiveness of OSCE on obstetrical assessment among nursing students. **Research design**: Quasi experimental one group pretest- post-test design research design with Quantitative research approach was used for research study. The researcher used convenient sampling technique for selecting the 40 samples. The tool used in the study were: Structure demographic questionnaires for Section-A & WHO standardized checklist for obstetrics assessment & management of obstetrical emergency. Validity of Tool was assessed by 7 experts. Assessment of the tool was ascertained by the chi-Square formula. **Data analysis & Results**: In Demographic variables- 16(40%) students were having age 21; 29(72.5%) were female students; 25(62.5 %) Hindu students ; 14(35%) Final Year B.sc Nursing students, 13(32.5%) First year P.b.B.sc students & 13(32.5%) GNM Students; 21(52.5%) students were living in urban area ; All students-40(100%) having previous knowledge about obstetrical assessment; 34(85%) Students Having hands on experience during clinical training on obstetrical training ; 29(72.5%) Students

agreed with having availability of advance models at their college/Institute; 34(85%) students agreed about teachers are doing bedside teaching for procedures on obstetrical assessment; OBG M.Sc. teachers during posting- 14(35%) agreed students; 22(55%) Teachers are doing demonstration of midwifery related procedure in clinical & 32(80%) in laboratory area; 15(37.5%) Students are doing redemonstration of midwifery related procedures by student in clinical area & 21(52.5%) in laboratory area; 26(65%) students knowing about OSCE & 13(32.5%) students having experience of been through OSCE examination. In Analysis and interpretation of collected data; In both Stations, In Post-OSCE Test, Average score & Average percentage was higher than Pre-OSCE Test score. There was any specific significant increase. This Reveals about effectiveness of OSCE. In Chi-Square (X^2) Test, there was significant association between demographic variables- Nursing program, OBG M.Sc. teachers during posting, Demonstration of midwifery related procedure by teachers in clinical area, Redemonstration of midwifery related procedures by student in clinical area, Experience of been through OSCE examination & Pre OSCE-Test. **Interpretation & Conclusion**: In Paired t test analysis for the significance of Pre OSCE-Test and Post OSCE Test; In both Stations, Mean Post OSCE Test score was higher than the mean Pre OSCE-Test score and the paired t-test value greater than the tabulated 't' . This was statistically proved. Hence the Investigator concluded that there was significant increase. So , this reveals that, OSCE is one of the best methods for Evaluation and to improve clinical practice & decision-making skills in medical field.

Key words: OSCE, Obstetrical assessment, Obstetrical emergency, Demonstration

Introduction

Many women have benefitted immensely from the antenatal care and assessment programs, safe guarding the mother and the baby from various health problems. In fact, efforts are being made to aware and educate the rural India about the immense health benefits associated with the antenatal care & assessment.[1]

For antenatal assessment proper evaluation method is very much important. OSCE is the new method which help to improve clinical skills with specific tools.

The Objective Structured Clinical Examination (OSCE) was first described by Harden in 1975 as an alternative to the existing methods of assessing clinical performance (Harden et al).[2] OSCE is defined as an approach to the assessment of clinical competence in which the components of competence are assessed in a well-planned or structured manner with attention being paid to objectivity[3]

The existing flaws in the conventional examinations such as variability in the assessment questions and tasks among the students, difference in marking, bias and lack of uniformity,

objectivity and content validity can be overcome by adopting OSCE. A good assessment of learner should include both clinical skills and factual knowledge; Therefore, an OSCE should be complemented by other methods of evaluation.

OSCE is introduced relatively late in dentistry as compared to that being widely used in the medical profession to assess the clinical competence. This article suggests that inclusion of OSCE in the formative and summative examination would be beneficial; it will lead to better achievement of the learning goals. The efforts should be made to continue the development of the OSCE for evaluation in obstetrical education.[4]

The OSCE is a versatile multipurpose evaluative tool that can be utilized to evaluate health care professionals in a clinical setting. It assesses competency, based on objective testing through direct observation. It is comprised of several "stations" in which examinees are expected to perform a variety of clinical tasks within a specified time period against criteria formulated to the clinical skill, thus demonstrating competency of skills and/or attitudes. The OSCE has been used to evaluate those areas most critical to performance of health care professionals, such as the ability to obtain/interpret data, problem-solve, teach, communicate, and handle unpredictable patient behaviour, which are otherwise impossible in the traditional clinical examination.[5]

Need of the study

The findings suggest that 70 percent of districts (448 out of 640 districts districts) in India have reported MMR above **70 deaths**.[6] A midwifery health nurse plays a liaison role for early identification of at-risk women in their antenatal period.

Mother and child must be considered as one unit during antenatal period, as the fetus is the part of the mother. The development of fetus in mother's uterus is about 280 days. A healthy mother brings forth a healthy baby etc…. Improvement at maternal health and social conditions coupled with advances in diagnostic screening techniques, now make it possible to revise current systems and implement new schemes for maximum efficiency. (Hall et all, 2002) In OSCE clinical skills are tested and then practiced repeatedly until one perfect the skill. Candidates rotate through stations, completing all stations in their circuit. It is an improvement over traditional examination methods because the stations can be standardized, fairer peer comparison and complex procedures can be assessed without endangering patient's health.(Newble,2004)

The traditional format of clinical examination usually includes checklist & used for observation of student's performance in real clinical or simulated situations. assessment techniques appear to have an impact on learning strategies and to influence the performance of students.

OSCE is one of the best methods for student's evaluation. It emphasizes learning practical skills rather than acquisition from books & notes of large volumes of information. It provides a suitable tool for improvement of undergraduate education in nursing. Therefore, there is essential need to adopt OSCE to assess the student's clinical performance.[7]

Hence, Researcher is interested to assess the effectiveness of using OSCE on obstetrical examination among Final Year B.Sc. Nursing, Third Year GNM & First Year P.b.B.sc Nursing students.

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Aims of the study

The aim of an OSCE is to use a simulated clinical environment to test how well students deal with situations and respond to questions that arise.

Objectives of the study

1. To assess the obstetrical assessment score by OSCE.
2. To evaluate the effectiveness of OSCE on obstetrical assessment among nursing students.

Hypothesis

H1 -There will be no significant difference between Pre-OSCE Test Score & Post-OSCE Test Score (Post-OSCE Test Score will be no higher than Pre-OSCE Test Score)

H2 - There may be no significant association of Pre-OSCE Test Score with Selected demographic variables.

Assumption

1. Students possess some knowledge regarding obstetrical assessment.
2. Proper knowledge improves clinical skill regarding obstetrical assessment.
3. Demonstration and practice might help to improve clinical knowledge regarding obstetrical assessment and help to women in obstetrical care.

Methodology

Research approach: A quantitative Approach was used in this study.

Research design: Quasi experimental one group pre-test post-test design.

Variables

1. **Independent variable:** Demonstration and practice of obstetrical assessment
2. **Dependent variables:** Practice of obstetrical assessment of nursing students

Research setting: The study was conducted in Methodist Nursing College, Nadiad; Dinsha Patel College of Nursing, Nadiad & Vinayaka Institute of Nursing, Bakrol Nadiad. Selected rural area of Kheda district.

Sampling technique : The investigator adopted convenient sampling technique to select the samples

Sample size: The sample consists of 40 samples of Final Year B.Sc. Nursing, Third Year GNM & First Year P.b.B.sc Nursing students at selected nursing colleges of Anand-Kheda district

Result

Station-1

Effectiveness of OSCE Programme on Antenatal Assessment among students of Final Year B.Sc. Nursing, Third Year GNM & First Year P.b.B.sc Nursing.
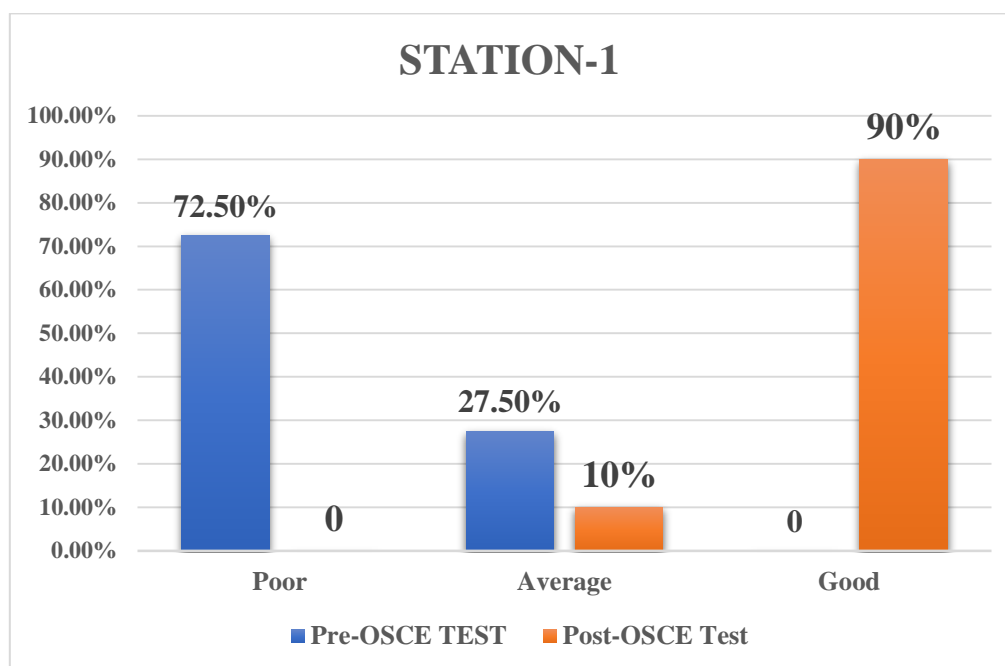
Table 1: Frequency and percentage distribution on Pre OSCE-Test and Post OSCE Test regarding Antenatal Assessment among students of Final Year B.Sc. Nursing, Third Year GNM & First Year P.b.B.sc Nursing before and after Administration of OSCE programme.

(n=40)

Station-1: Abdominal palpation and auscultation of fetal heart sound				
OSCE Score	Pre-OSCE Test		Post-OSCE Test	
	Frequency	Percentage	Frequency	Percentage
Poor (0-6 Score)	29	72.5	0	0
Average (6.5-12 Score)	11	27.5	4	10
Good (12.5-18 Score)	0	0	36	90
Total	40	100	40	100

The above Table 1, shows in the Pre OSCE-Test, 29(72.5%) of students had poor score & 11 (27.5%) had average score and in post OSCE Test, 4(10%) had average score & 36 (90%) had moderate good score.

Analysis and interpretation to assess effectiveness of OSCE by using paired t-test

Effectiveness of OSCE Programme on Antenatal Assessment among students of Final Year B.Sc. Nursing, Third Year GNM & First Year P.b.B.sc Nursing.

Table 2: Paired t test analysis for the significance of Pre OSCE-Test and Post OSCE Test regarding Antenatal Assessment

Station-1: Abdominal palpation and auscultation of fetal heart sound							
OSCE Programme	Mean	Mean Difference	SD	Calculated t Value	Table t value	Df	Level of Significance
Pre-OSCE Test	4.925		1.842				
Post-OSCE Test	14.125	9.2	1.924	29.5316	2	39	0.05

(*P<0.05 as well as P<0.01)

[Table 2] showed the comparison between Pre OSCE-Test and Post OSCE Test regarding Antenatal Assessment. The mean Pre OSCE-Test score was 4.925 and the Mean post OSCE test score was 14.125 with a mean difference of 9.2 also the paired t-test was 29.5316 and the tabulated 't' was (2.021).
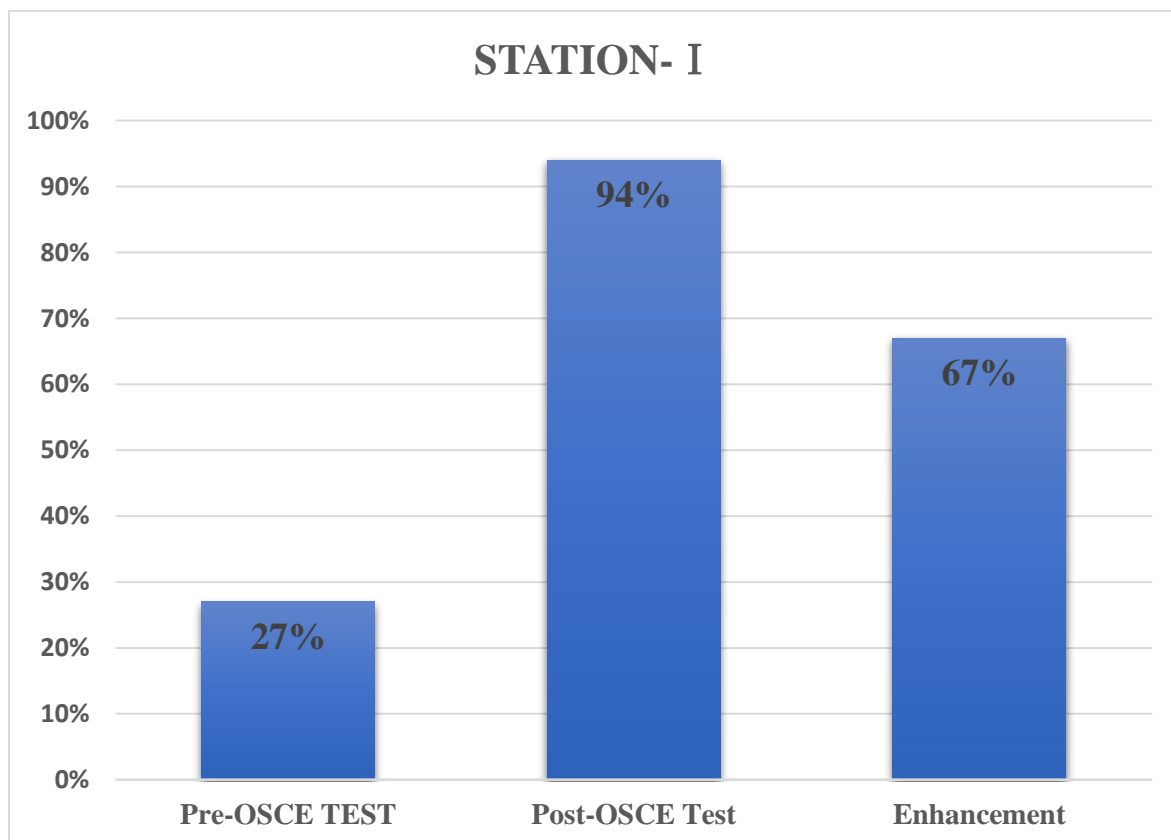
This reveals that mean Post OSCE Test score was higher than the mean Pre OSCE-Test score and the paired t-test was 29.5316 greater than the tabulated 't' (2.021). This was statistically proved. Hence the Investigator concluded that there was significant increase in the mean post OSCE test score as compare to the mean Pre OSCE-Test score after the administration of the OSCE Programme. So, the research hypothesis H_1 was accepted and null hypothesis Ho was rejected.

Graph 2: Mean Percentage (%) of Station-1

Pre-OSCE Test Score: 27%

Post-OSCE Test Score: 94%

Enhancement: 67%

Station-II

Effectiveness of OSCE Programme on Management of Pre-eclampsia & Eclampsia among students of Final Year B.Sc. Nursing, GNM & First Year P.b.B.sc Nursing.

Table 3 : Frequency and percentage distribution on Pre OSCE-Test and Post OSCE Test regarding Management of Pre-eclampsia & Eclampsia among students of Final Year B.Sc. Nursing, Third Year GNM & First Year P.b.B.sc Nursing before and after Administration of OSCE programme.

(n=40)

Station-2: Management of Pre-eclampsia/ eclampsia				
OSCE Score	Pre-OSCE Test		Post-OSCE Test	
	Frequency	Percentage	Frequency	Percentage
Poor (0-5 Score)	34	85	0	0
Average (5.5-10 Score)	6	15	7	17.5
Good (10.5-15 Score)	0	0	33	82.5
Total	40	100	40	100

The above Table 3 shows in the Pre OSCE-Test, 34(85%) of students had poor score & 6(15%) had average score and in post OSCE Test, 7(17.5%) had average score & 33(82.5%) had moderate good score.

Station-II

Effectiveness of OSCE Programme on Management of Pre-eclampsia & Eclampsia among students of Final Year B.Sc. Nursing, GNM & First Year P.b.B.sc Nursing.
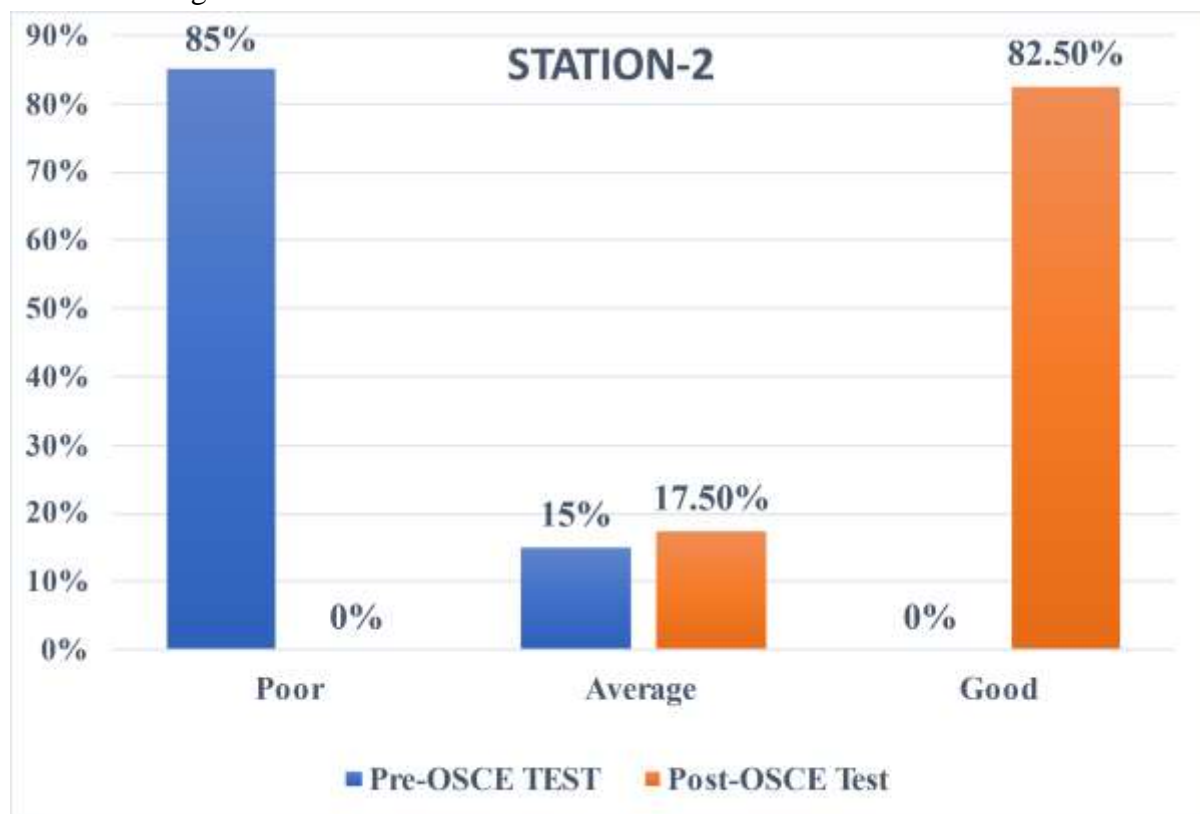
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Table 4: Paired t test analysis for the significance of Pre OSCE-Test and Post OSCE Test regarding Management Of Pre-eclampsia & Eclampsia.

(n=40)

Station-1: Abdominal palpation and auscultation of fetal heart sound							
OSCE Programme	Mean	Mean Difference	SD	Calculated t Value	Table t value	Df	Level of Significance
Pre-OSCE Test	2.65	9.125	1.823	29.245	2	39	0.05
Post-OSCE Test	11.775		1.938				

(*P<0.05 as well as P<0.01)

Table 4 showed the comparison between Pre OSCE-Test and Post OSCE Test regarding Management of Pre-eclampsia & Eclampsia. The mean Pre OSCE-Test score was 2.65 and the Mean post OSCE test score was 11.775 with a mean difference of 9.125 also the paired t-test was 29.245 and the tabulated 't' was (2.021).

This reveals that mean Post OSCE Test score was higher than the mean Pre OSCE-Test score and the paired t-test was 29.245 greater than the tabulated 't' (2.021). This was statistically proved. Hence the Investigator concluded that there was significant increase in the mean post OSCE test score as compare to the mean Pre OSCE-Test score after the administration of the OSCE Programme. So, the research hypothesis H_1 was accepted and null hypothesis Ho was rejected.

Graph 3: Mean Percentage (%) of Station-2

Pre-OSCE Test Score: 18%

Post-OSCE Test Score: 80%

Enhancement: 62%
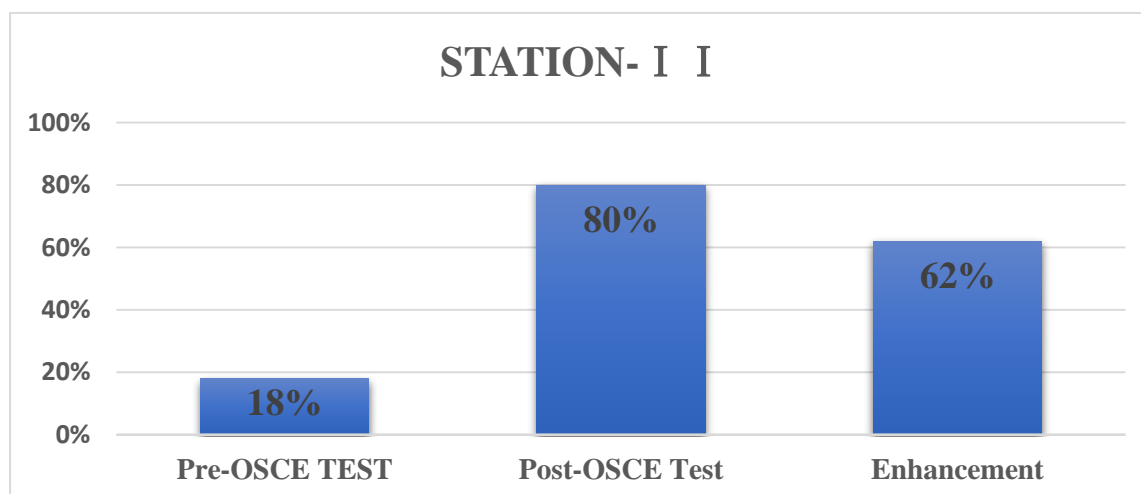
STATION- Ⅰ Ⅰ

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Station 1: Abdominal palpation and auscultation of fetal heart sound						
Sr.No	Demographic Variables	Frequency (f)	N=4			
			χ2		Df	Association
			Calculated Value	Table Value		
1	Age (In Years) A) 20 B) 21 C) 22 D) More than 22	6 16 15 3	2.696	7.82	3	Non-Significant
2	Gender A) Male B) Female C) Transgender	11 29 0	0.661	5.99	2	Non-Significant
3	Religion A) Hindu B) Christian C) Muslim D) Others	25 15 0 0	0.008	7.82	3	Non-Significant
4	Nursing Program A) GNM 3rd Year B) P.B.B.Sc Nursing 1st Year C) Final Year BSc Nursing	13 13 14	9.685	5.99	2	Significant
5	Residence A) Urban B) Rural	21 19	0.025	3.84	1	Non-Significan
6	Previous knowledge about obstetrical assessment A) Yes B) No	40 0	0	3.844	1	Non - Significant
7	Hands on experience during clinical training on obstetrical assessment ? A) Yes B) No	34 6	2.677	3.84	1	Non - Significant
8	Availability of advance models at College/Institute? A) Yes B) No	29 11	2.579	3.84	1	Non - Significant
9	Bedside teaching for					Non -

	procedures by teachers on obstetrical assessment ? A) Yes B) No	34 6	0.416	3.84	1	Significant
10	OBG M.Sc. teachers during posting ? A) Yes B) No	14 26	9.493	3.84	1	Significant
11	Teachers are demonstrating midwifery related procedure in clinical area ? A) Yes B) No	23 17	6.93	3.84	1	Significant
12	Teachers are demonstrating midwifery related procedures in laboratory area? A) Yes B) No	32 8	0.031	3.84	1	Non - Significant
13	Are you doing redemonstration of midwifery related procedures in clinic area ? A) Yes B) No	15 25	8.033	3.84	1	Significant
14	Are you doing redemonstration of midwifery related procedures in laboratory area ? A) Yes B) No	21 19	2.489	3.84	1	Non - Significant
15	Do you know about OSCE ? A) Yes B) No	26 14	0.012	3.84	1	Non - Significant
16	Experience of been through OSCE examination A) Yes B) No	13 27	11.192	3.84	1	Significant

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Station 2: Management of Pre-eclampsia/ eclampsia						
Sr.No	Demographic Variables	Frequency (f)	N=4			
			χ^2		Df	Association
			Calculated Value	Table Value		
1	Age (In Years) A) 20 B) 21 C) 22 D) More than 22	6 16 15 3	2.876	7.82	3	Non-Significant
2	Gender A) Male B) Female C) Transgender	11 29 0	0.416	5.99	2	Non-Significant
3	Religion A) Hindu B) Christian C) Muslim D) Others	25 15 0 0	0.052	7.82	3	Non-Significant
4	Nursing Program A) GNM 3rd Year B) P.B.B.Sc Nursing 1st Year C) Final Year BSc Nursing	13 13 14	7.55	5.99	2	Significant
5	Residence A) Urban B) Rural	21 19	1.04	3.87	1	Non-Significant
6	Previous knowledge about obstetrical assessment A) Yes B) No	40 0	0	3.87	1	Non - Significant
7	Hands on experience during clinical training on obstetrical assessment ? A) Yes B) No	34 6	1.246	3.87	1	Non - Significant
8	Availability of advance models at College/Institute? A) Yes B) No	29 11	2.677	3.87	1	Non - Significant
9	Bedside teaching for					Non -

	procedures by teachers on obstetrical assessment ? A) Yes B) No	34 6	0.015	3.87	1	Significant
10	OBG M.Sc. teachers during posting ? A) Yes B) No	14 26	3.111	3.87	1	Non - Significant
11	Teachers are demonstrating midwifery related procedure in clinical area ? A) Yes B) No	23 17	1.928	3.87	1	Non - Significant
12	Teachers are demonstrating midwifery related procedures in laboratory area? A) Yes B) No	32 8	0.784	3.87	1	Non - Significant
13	Are you doing redemonstration of midwifery related procedures in clinic area ? A) Yes B) No	15 25	6.327	3.87	1	Significant
14	Are you doing redemonstration of midwifery related procedures in laboratory area ? A) Yes B) No	21 19	2.691	3.87	1	Non - Significant
15	Do you know about OSCE ? A) Yes B) No	26 14	1.043	3.87	1	Non - Significant
16	Experience of been through OSCE examination A) Yes B) No	13 27	8.315	3.87	1	Significant

DISCUSSION

The Objective Structured Clinical Examination (OSCE) is a method in which students are assessed for clinical skills in a series of simulated stations that may involve history collection, physical assessment, laboratory investigation, and treatment.

"A Study to Assess the effectiveness of station-based skill training model through Objective Structured Clinical Examination (OSCE) on obstetrical assessment on Nursing students at selected Nursing colleges at Anand- Kheda district."

The present study was conducted to assess station-based skill training program-OSCE in nursing(clinical) field. Study was done on students of Final Year B.Sc. Nursing, Third Year GNM & Post Basic B.Sc. Nursing from different nursing colleges Anand-Kheda district, Gujarat.

The population of present study comprised of students of Final Year B.Sc. Nursing, Third Year GNM & Post Basic B.Sc. Nursing from different nursing colleges Anand-Kheda district, Gujarat. Non-Probability Convenient sampling technique was used. The sample consisted of 40 nursing students to fulfil the inclusion criteria of study in order to assess effectiveness of OSCE among nursing students. The Investigators used WHO standardized checklist to assess effectiveness of OSCE, which was like,

SECTION A:

Demographic data of Nursing students

SECTION B:

WHO safe childbirth Checklists for skill demonstration and practice

1. Station 1- Abdominal palpation and auscultation on fetal sounds

2. Station 2- Management of Pre–Eclampsia /Eclampsia

The content validity of the tool was done by obtaining suggestions from 7 experts, who are having knowledge & experience in Obstetrics and Gynaecology. The reliability of tool was done by using Test-Retest method, with the help of Karl Pearson's formula. Reliability of assessment of OSCE practice in, Station-1 was 0.95 & Station-2 was 0.90. The pilot study was done over 10% samples (6 samples) of total sample size in the month of June-2023. Based on the objectives and assumptions the data was analysed using both Descriptive and Inferential statistics. The descriptive statistics used were frequency and percentage. Inferential statistics used was Chi-square.

CONCLUSION

Analysis and Interpretation of collected data; In both stations average score & percentage of Pre-OSCE Test was higher than Post-OSCE Test. In Paired t test analysis for the significance of Pre OSCE-Test and Post OSCE Test; In both stations, Mean Post OSCE Test score was higher than the mean Pre OSCE-Test score and the paired t-test value was greater than the tabulated 't'. This was statistically proved. Hence the Investigator concluded that there was significant increase in both stations. In Chi-Square (X^2) Test, In Station-I, there was significant association between demographic variables-Nursing program, OBG M.Sc. teachers during posting, Demonstration of midwifery related procedure by teachers in clinical area, Redemonstration of midwifery related procedures by student in clinical area, Experience of been through OSCE examination & Pre OSCE-Test. In Station-II, there was significant association between demographic variables-Redemonstration of midwifery related procedures by student in clinical area & Experience of been through OSCE. This suggests that students were having higher scores,

- Where OBG M.Sc. teacher instructs students during posting
- Where Teachers are doing demonstration of midwifery related procedures by teachers in clinical area
- Who are doing redemonstration of midwifery related procedures in clinical area
- Who have experience of been through OSCE examination

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