

Impact of Objective Structured Clinical Examination on Knowledge and Perception among Nursing Students from Selected Colleges in Metropolitan City

Shweta Saisagar Kshirsagar

Department of Obstetrics and Gynaecological Nursing, K. J. Somaiya College of Nursing, Mumbai, Maharashtra, India

Abstract

Aim: The aim of this study was to assess impact of objective structured clinical examination (OSCE) on knowledge and perception among nursing students from selected.

Materials and Methods: The research design adopted for this study was experimental one group pre-test and post-test research design with qualitative and quantitative research approach. The source of data collection process was done using primary and secondary data from nursing students in selected colleges of Mumbai and New Mumbai region. Three hundred nursing students from 3rd to 4th year basic BSC nursing, 3rd year general nursing and midwifery, and 1st year post basic BSC nursing were recruited in the study using non-probability convenient sampling technique. Tool used consisted of demographic data, opinionative to assess the perception of nursing students about OSCE, suggestions by the respondents, and rating of OSCE. ANOVA is included in the analysis of quantitative research and interest for the discrepancy in performance. Data were analyzed using descriptive and inferential statistics. Fishers exact test used for association between post insight score with selected demographic variables

Results: The results of this study showed that mean difference between pre-insight and post-insight scores is statistically significant as the calculated T value is 84.85 ($P = 0.0026$) which is greater than the T table value of 1.06 at a significance level of 0.05 with a degree of freedom being 281. The knowledge among the students has been increased after providing the knowledge.

Conclusion: The findings of the study concluded that OSCE is has a positive impact on nursing students' knowledge and perception.

Keywords: Impact, knowledge, nursing students, objective structured clinical examination, perception

INTRODUCTION

It has been suggested that the objective structured clinical examination (OSCE) is a step in the “direction of competency-based evaluation.” The OSCE was conceived with care, and

it achieved reliability and validity that were enough for the purpose of determining students' levels of knowledge and the accuracy with which they could apply what they had learned in the examination. The OSCE, the precertification examinations, and the monthly clinical reviews had all demonstrated that the former had a higher percentage of substantial similarities than the latter did. The outcomes of the research indicate that a combination of the OSCE, uniform board exams, and direct evaluation in the clinical environment has the potential to become the “gold standard” for evaluating the students' level of competency.^[1]

According to the comments obtained from nursing students, the OSCE was regarded favorably by the vast majority of nursing students for its emphasis on professional knowledge.

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Address for Correspondence:

Shweta Saisagar Kshirsagar, Department of Obstetrics and Gynaecological Nursing, K. J. Somaiya College of Nursing, Mumbai, Maharashtra, India.

E-mail: shwetanaik333@gmail.com

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The majority of students said that OSCE was a fair evaluation procedure because it highlighted areas of vulnerability, included a broad spectrum of skills and minimized the danger of failing. Students of nursing were given valuable opportunities for practical experience thanks to the OSCE. The feedback that was gathered regarding this evaluation approach demonstrates that the OSCE is a reliable and applicable tool for assessing the clinical skills of nursing students.^[2]

A student's knowledge, clinical performance, and overall happiness with OSCE were all evaluated, which led to a high post-test knowledge score in comparison to a low pre-test knowledge score. The data indicate that the OSCE is beneficial in terms of both formative and assumptive evaluation. The vast majority of students reported being satisfied with the examination and believing it to be both reasonable and successful.^[3] The OSCE is a created, reliable, and effective multi-station test for an objective and transparent evaluation of practical technical skills. OSCE has also been used in other fields, such as the radiology department, and they stated that OSCE is a created test.^[4] After examining the nursing students' perspectives on the OSCE test, it became clear that the OSCE was the method that was the most useful in determining which nursing students possessed the necessary clinical skills. Results from a survey given to students who took the family health course using the OSCE technique revealed that their overall satisfaction with the OSCE approach was significantly higher than that of students who took the course using the traditional method.^[5]

It was determined that the OSCE clinical assessment design had evident benefits, especially in terms of uniformity, objectivity, as well as the flexibility of clinical situations that may be examined, and that it outperformed conventional clinical assessment. The OSCE has been the evaluation of choice. It made it possible for clinical students at different levels of training to be tested on a wide range of skills and difficulties within a reasonable amount of time. The OSCE done away with discrimination in student tests and made it possible for all candidates to be tested on the same spectrum using the same criteria.^[6]

Evaluation of student's opinion regarding OSCE for graduate nursing students also determined that the majority of the students came to the conclusion that an OSCE is a stronger form of clinical assessment than a traditional test due to the fact that bias can be reduced and it is less difficult as compared with the ordinary examination. This was determined by the results of the evaluation. They also came to the conclusion that the OSCE would be able to offer compensation in the event that the results were inadequate.^[7] The evaluation of an OSCE can also be adapted for use in social work, and the fact that OSCE rating ranges can cover such a wide variety of points shows that different students have different levels of competency. According to the correlation studies, the OSCE ranges and the field final assessments were quite comparable to one another. The research came to the conclusion that the OSCE type of measurement should be interpreted with

some degree of caution, and that it should be duplicated and modified for the purpose of evaluating the efficacy of social work educational programs.^[8]

The OSCE is designed to help evaluate a student's proven clinical abilities and underlying knowledge in a simulated setting. According to the outcomes of the study, students felt that the OSCE was a valid assessment.^[9] An investigation on the experiences of student midwives in a university setting with the OSCE evaluation procedure for obstetric crises was conducted. This investigation focused on the student midwives' interactions with the OSCE evaluation process for obstetric emergencies. When OSCEs were used, students showed an increase in their level of comprehension, and the preparations that were made for the OSCEs proved to be an effective learning tool. When it comes to preparing students for clinical practice, OSCEs are widely regarded as being more effective than other types of assessment.^[10]

MATERIALS AND METHODS

Study design and setting

The research design for this study consisted of an experimental one-group pre-test and post-test research design, and they used both qualitative and quantitative research methods in their investigation. The nursing students attending certain colleges in the Mumbai and New Mumbai region provided both primary and secondary data sources for the data collecting process, which was carried out using those sources. Participants in the study included nursing students who were in their 3rd–4th years of basic BSC nursing, their 3rd years of general nursing and midwifery, and their 1st years of post-basic BSC nursing.

Sample size and sampling method

Students in their 3rd and 4th years of the basic BSC nursing program, as well as students in their 3rd year of general nursing and midwifery, and students in their 1st year of the post-basic BSC nursing program, participated in the study. Whereas only 30 nursing students were included in the sample for the pilot study (10% of the total sample for the main study), there were 300 nursing students included in the sample for the main study. Non-probability the sample for the research project was chosen using a method known as the convenient sampling technique. The study only included the samples provided by people who were willing to provide their consent to take part in the research. The nursing students attending certain colleges in the Mumbai and New Mumbai region provided both primary and secondary data sources for the data collecting process, which was carried out using those sources.

Data collection tool and technique

During the course of the investigation, the investigator will devise and make use of various tools that he or she has created to acquire important data. The instrument that the researcher developed in preparation for the study is comprised of demographic data parameters, a structured questionnaire to assess knowledge-based on OSCE, an opinionative regarding the OSCE method, a rating scale, and open suggestions. The

demographic profile was divided into general and specific categories, as well as library, clinical, examination, and OSCE categories. The structured questionnaire was constructed in a form to examine the respondent's knowledge-based on the OSCE, their opinions regarding the OSCE technique, their ratings on the OSCE rating scale, and their open suggestions. In this type of research design, the researcher had given an OSCE-based midwifery practical examination to a group of nursing students who had previously been exposed to routine midwifery clinical examination in midterm examination and had also attended OSCE session as its knowledge-based pre- and post-test. In addition, the students had participated in routine midwifery clinical examination in midterm examination. The researcher decided to use a one-group pre-test post-test design rather than any of the other possible forms of pre-experimental designs. In this experimental research design, the researcher chose a group of nursing students who had previously been exposed to the routine clinical examination (RCE) of the same subject to obtain their rating regarding the RCE and OSCE. This was done to compare and contrast the two types of examinations. Both a pre-test and a post-test were administered to evaluate test takers' OSCE knowledge. The pre-experimental research design that is being analyzed here does not include any controls for extraneous factors. The pre-test and post-test design was employed only with this one group.

Ethical consideration

The ethical and DRC committee at the university would have to provide their approval for the research plan. In advance, permission would need to be obtained from the appropriate authority. For each individual sample, a signed document indicating informed written consent will be requested.

RESULTS

The data were entered into master sheet for tabulation and statistical processing the obtained data were analyzed, organized, and presented under the following headings:

- Section A: Distribution of subjects concerning demographic data variables
- Section B: Comparison between pre-test and post-test by paired t-test
- Section C: Profile of association between post-insight score and demographic variables
- Section D: Comparison between OSCE and RCE.

Section A: Distribution of subjects concerning demographic data variables

Table 1 depicts that distribution of demographic variables, majority of 80% respondents belong to 21 years and 10% respondents belong to 22 year and 23 years, respectively. About 70% of respondents were female and 30% respondents were male, 70% respondents belong to Christian community, and 25% were belongs to Hindu, 50% of respondent's mother's completed secondary education, 60% respondents father's completed their graduation, and 40% respondents monthly

Table 1: Distribution of subjects concerning demographic variables $n=300$

Demographic variables	Frequency	Percentage
Age in years		
21 years	240	80
22 years	30	10
23 years	30	10
>23 years	0	0
Gender		
Male	90	30
Female	210	70
Transgender	0	0
Religion		
Christian	75	70
Muslim	15	5
Hindu	210	25
Other	0	0
Mother's education		
Primary	60	20
Secondary	150	50
Higher secondary	30	10
Graduate	30	10
Postgraduate	15	5
Other	15	5
Father's education		
Primary	15	5
Secondary	15	5
Higher secondary	60	20
Graduate	180	60
Postgraduate	30	10
Other	0	0
Monthly family income		
No Income	0	0
<5000	15	5
5000–10,000	45	15
10,000–15,000	120	40
15,000–20,000	30	10
>20,000	90	30
Nursing program		
3 rd year GNM	60	20
3 rd year BSc	60	20
4 th year BSc	180	60
1 st year PB BSc	0	0
Accommodation		
Day scholar	105	35
Hostelite	195	65
Self-study time		
Regular	75	25
Irregular	225	75
Self-study time on daily basis		
<1 h	180	60
1–2 h	45	15
2–3 h	45	15
>3 h	30	10
Library facility		
Yes	300	100
No	0	0
Hours spend in library		
<1 h	240	80
1–2 h	30	10
2–3 h	15	05
>3 h	15	05
Reading material		
Yes	300	100
No	0	0
Demonstration and re demonstration before clinical examinations		
Yes	300	100
No	0	0

(Contd...)

Table 1: (Continued)

Demographic variables	Frequency	Percentage
Competency checklist		
Yes	150	50
No	150	50
Student supervisor ratio 10:1		
Yes	300	100
No	0	0
Periodic revision		
Yes	300	100
No	0	0
Bedside teaching		
Yes	300	100
No	0	0
Procedure viva		
Yes	300	100
No	0	0
Provision specialty teachers		
Yes	300	100
No	0	0
Hands-on experience		
Yes	300	100
No	0	0
Availability of adequate resources		
Yes	300	100
No	0	0
Availability of advance models		
Yes	300	100
No	0	0

family income is between 10,000 and 15,000 Rs. Majority of 60% respondents belong to 4th year B.sc nursing and 20% were from 3rd year GNM and 3rd year B.Sc nursing, respectively. About 65% respondents living in the hostel, 75% respondent's self-study time is irregular, and 60% respondents doing self-study on daily basis <1 h. In the college, library facility is present all the reading material is present in the library, 80% of respondents spending <1 h in the library, 100% or respondents doing demonstration and redemonstration before clinical examination, as well as 50% respondents competency checklist. About 100% of respondents doing periodic revision, bedside teaching, procedure viva, provision specialty teachers, hands-on experience, availability of adequate resources, and availability of advance models [Table 1].

Section B: Comparison between pre-test and post-test by paired t-test

Tables 2 and 3 Interpretation: The mean difference between pre-insight and post-insight scores is statistically significant as the calculated T value is 84.85 ($P = 0.0026$) which is greater than the T table value of 1.06 at a significance level of 0.05 with a degree of freedom being 281. The knowledge among the students has been increased after providing the knowledge [Tables 2 and 3].

Section C: Profile of association between post-insight score and demographic variables

Table 4 Interpretation: There is no statistically important mean differential between gender groups since the F value measured is less than the Table F value of 3.86; hence, there is no association between insight and age [Table 4].

Table 2: Comparison between post and pre-test by paired t-test paired samples test

Variables	Mean	n	SD	Standard error mean
Pair 1				
Post total	38.20	300	5.080	0.360
Pre total	6.77	300	3.362	0.180

Table 5 Interpretation: There is no statistically important mean differential between gender groups since the F value measured is less than the Table F value of 3.87; hence, there is no association between insight and gender [Table 5].

Table 6 Interpretation: There is no statistically important mean differential between gender groups since the F value measured is less than the Table F value of 3.85; hence, there is no association between insight and religion [Table 6].

Table 7 Interpretation: There is no statistically important mean differential between gender groups since the F value measured is less than the Table F value of 3.88; hence, there is no association between insight and mother's education [Table 7].

Table 8 Interpretation: There is no statistically important mean differential between gender groups since the F value measured is less than the Table F value of 3.86; hence, there is no association between insight and father's education [Table 8].

Table 9 Interpretation: There is no statistically important mean differential between gender groups since the F value measured is less than the Table F value of 3.87; hence, there is no association between insight and family income [Table 9].

Table 10 Interpretation: The mean difference between the groups of gender is statistically important, given that the F values measured are not less than the Table F value is 3.86; hence, there is association between insight and nursing program [Table 10].

Section D: Comparison between OSCE and RCE

Table 11 depicts the distribution of the sample according to their rating scale score for OSCE and RCE. The mean score for OSCE is 4.40, SD=0.66, and SEM=0.04, whereas the mean difference for RCE is 3.74, SD=0.82, and SEM=0.05 with df=299, standard error of difference 0.027 and paired t-value of 24.0917. The value of the two-tail P is under 0.0001. This difference is deemed incredibly important statistically [Table 11].

Confidence interval

The OSCE means with fewer RCE which is 0.66. This difference of 95% confidence interval: between 0.61 and 0.71.

DISCUSSION

In a study that was backed by Marzieh (2012) and titled "The OSCE: A study on satisfaction of students, faculty members, and tutors," the findings revealed that the majority of students and examiners prefer OSCE to traditional methods of instruction. The amount of satisfaction that participants in both groups felt was highest about the equipment, whereas the level of pleasure that participants felt regarding the time

Table 3: Paired differences by two-tailed paired t-test

Variables	Paired differences					Df	T	Sig. (2-tailed)
	Mean	Standard mean error	SD	95% Confidence interval difference				
				Upper	Lower			
Pair 1								
Post total	28.09					281		
Pre total		0.395	6.336	27.589	24.963		84.855	0.0026

Table 4: Profile of association between post-insight score and age

Variables	n	Mean	SD	Standard error	Mean 95% confidence interval		Minimum	Maximum
					Lower bound	Upper Bound		
1	50	34.26	4.280	0.605	33.04	35.48	26	41
2	250	33.12	4.180	0.264	32.60	33.64	21	42
Total	300	33.31	4.212	0.243	32.83	33.79	21	42
		Sum of squares		df	Mean Square		F	Sig.
Between groups		54.531		1	54.531		3.096	0.080
Within groups		5249.256		298	17.615			
Total		5303.787		299				

Table 5: Profile of association between post-insight score and gender

Variables	n	Mean	SD	Standard error	Mean 95% confidence interval		Minimum	Maximum
					Lower bound	Upper bound		
1	50	34.26	4.280	0.605	33.04	35.48	26	41
2	250	33.12	4.180	0.264	32.60	33.64	21	42
Total	300	33.31	4.212	0.243	32.83	33.79	21	42
		Sum of squares		df	Mean square		F	Sig.
Between groups		54.531		1	54.531		3.096	0.080
Within groups		5249.256		298	17.615			
Total		5303.787		299				

Table 6: Profile of association between post-insight score and religion

Variables	n	Mean	SD	Standard error	Mean 95% confidence interval		Minimum	Maximum
					Lower bound	Upper bound		
1	50	34.26	4.280	0.605	33.04	35.48	26	41
2	250	33.12	4.180	0.264	32.60	33.64	21	42
Total	300	33.31	4.212	0.243	32.83	33.79	21	42
		Sum of squares		df	Mean square		F	Sig.
Between Groups		54.531		1	54.531		3.096	0.080
Within Groups		5249.256		298	17.615			
Total		5303.787		299				

Table 7: Profile of association between post-insight score and mother's education

Variables	n	Mean	SD	Standard error	Mean 95% confidence interval		Minimum	Maximum
					Lower bound	Upper bound		
1	50	34.26	4.280	0.605	33.04	35.48	26	41
2	250	33.12	4.180	0.264	32.60	33.64	21	42
Total	300	33.31	4.212	0.243	32.83	33.79	21	42
		Sum of squares		df	Mean square		F	Sig.
Between groups		54.531		1	54.531		3.096	0.080
Within groups		5249.256		298	17.615			
Total		5303.787		299				

allowed to each test portion was lowest. According to the findings, it is recommended to use the OSCE approach rather than the conventional technique to evaluate end-of-semester preparedness rather than the standard method.^[11]

Angela (2012), in their article titled “Effectiveness of an Educational Program in perineal repair for midwives,” evaluated a pre–post-intervention of quasi-experimental case survey incorporating a non-equivalent reference group

Table 8: Profile of association between post-insight score and father's education

Variables	n	Mean	SD	Standard error	Mean 95% confidence interval		Minimum	Maximum
					Lower bound	Upper bound		
1	50	34.26	4.280	0.605	33.04	35.48	26	41
2	250	33.12	4.180	0.264	32.60	33.64	21	42
Total	300	33.31	4.212	0.243	32.83	33.79	21	42
Sum of squares				df	Mean square		F	Sig.
Between groups				1	54.531		3.096	0.080
Within groups				298	17.615			
Total				299				

Table 9: Profile of association between post-insight score and family income

Variables	n	Mean	SD	Standard error	Mean 95% confidence interval		Minimum	Maximum
					Lower bound	Upper bound		
1	50	34.26	4.280	0.605	33.04	35.48	26	41
2	250	33.12	4.180	0.264	32.60	33.64	21	42
Total	300	33.31	4.212	0.243	32.83	33.79	21	42
Sum of squares				Df	Mean square		F	Sig.
Between groups				1	54.531		3.096	0.080
Within groups				298	17.615			
Total				299				

Table 10: Profile of association between post-insight score and nursing program

Variables	n	Mean	SD	Standard error	Mean 95% confidence interval		Minimum	Maximum
					Lower bound	Upper bound		
1	50	34.26	4.280	0.605	33.04	35.48	26	41
2	250	33.12	4.180	0.264	32.60	33.64	21	42
Total	300	33.31	4.212	0.243	32.83	33.79	21	42
Sum of squares				df	Mean square		F	Sig.
Between groups				1	58.531		3.88	0.0478
Within groups				298	15.1			
Total				299				

Table 11: Distribution of sample according to their rating scale score for OSCE and RCE n=300

Group	Mean	SD	SEM	Df	Standard error difference	Paired T
OSCE	4.40	0.66	0.04	299	0.027	24.0917
RCE	3.74	0.82	0.05			

OSCE: Objective structured clinical examination, RCE: Routine clinical examination

and assessment action trial framework of 145 samples was used to determine the efficacy of a work-based module and in-service instructional program in perineal repair. These objectives of the study were supported by Angela (2012). Following the implementation of an educational program, a statistically significant increase in the percentage of midwives in five intervention trusts who are willing to perform perineal repairs has been seen ($P = 0.006$). In addition, the number of senior student midwives who were confidently willing to engage in perineal repair under the active guidance of their instructor increased as a result of a training program for midwives. These students believed that their instructor was knowledgeable and capable of performing the operation.^[12]

In their article titled “are the OSCE a practical tool to assess abilities in undergraduate medical education?” Folque *et al.* provided support for the study’s objectives, stating that they believed the OSCE to be a valid method for doing so. The study also proposed that the OSCE has an inherent versatility in terms of the number of students that can be tested, the number of examiners involved, the variety of patients served, and the structure of the assessment itself, such as the number, the duration of the test, and the duration of stations. All of these variables were considered in the study.^[13]

In their article titled “The OSCE: A Qualitative Study Assessing Nursing Students,” which was published in 2014, Afaf and Khalid provided support for the study’s goals and objectives. Students’ clinical competencies as well as the decisions they made when they reached the clinical setting were evaluated based on their experience. The majority of students have expressed favorable opinions toward the OSCE format. According to the findings of the research, the OSCE orientation time for students and training sessions on OSCE procedure is both more important than previously thought. The implementation of OSCE at faculty was perceived by students as a positive development, and it was agreed

that the experience was helpful and deserving of further improvement.^[14]

CONCLUSION

Researcher can conclude that there is positive impact of OSCE on knowledge and perception among nursing students from selected colleges in metropolitan city.

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