OSCE Outcome and Nursing Students' Perceptions and Clinical Performance

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Abstracts: The objective of the research was correlation between clinical performance and their perception towards OSCE and their OSCE exam results. A Comparative cross-sectional study was conducted among 224 Female students (167 female students and 57 male students) who enrolled in the clinical courses from level 4 to 8 in the department of nursing and sample were selected through stratified random sample method. The questionnaire used to assess the students' perception towards OSCE and to assess the correlation between nursing students' perceptions and their OSCE exam results and to find the correlation between nursing students' clinical performance score, lab score and their OSCE exam results, the real grades were taken from each course. Current study showed that students had a positive overall impression of the OSCE exam (M = 41.3, SD 12.7). Students' attitudes towards the OSCE exam were rated on a mean scale of 11 (SD 3.45). Researcher found positive correlation between the students' OSCE grade and their lab competency grade (r_s = .445, P = <0.001) and their clinical performance grade (r_s = .503, P = <0.001) grades. there was no relationship (r_s =.085, P =.207) between the students' OSCE grade and their perception toward the OSCE exam. The majority of respondents were identified to have positive attitudes on OSCE as well as overall positive impression of the OSCE exam. The OSCE is a reliable and valid assessment tool in the nursing profession. At the same time, it can inspire students' critical thinking and promote their communication skills. Through the continuous application of OSCE in nursing education from the beginning, it may also have some potential impact on the clinical field.

Keywords: Objective Structured Clinical Examination (OSCE), competency, skills lab, clinical performance, health science students

1. INTRODUCTION

The Nursing Standards of Practice and Standards of Professional Performance include competencies required of registered nurses. A competency is an expected level of performance that integrates knowledge, skills, abilities, and judgment. American Nurses Association (ANA) believes that competence in nursing practice must be evaluated by the individual nurse (self-assessment), nurse peers, and nurses in the roles of supervisor, coach, mentor, or preceptor [1]. Nursing competency includes core abilities that are required for fulfilling one's role as a nurse. Therefore, it is important to clearly define nursing competency to establish a foundation for nursing education curriculum [2].

In the last two decades, rapid and extensive changes have taken place in student assessment methods of medical education. Many of the assessment methods have been developed and are mainly concentrated on clinical procedural ability, conveying skills and professionalism. Objective structured clinical examination (OSCE) is an examination which is purposely conducted for health science such as midwifery, occupational therapy, physical therapy, radiography, rehabilitation medicine, pharmacy, dentistry, medicine and nursing. OSCE is described as an evaluation method for assessing students' performance in specific skills through simulation. The concept of OSCE was first introduced by Harden and Gleeson in 1979, requiring examinees to move through various stations, each presenting a unique clinical scenario. At these stations, students must demonstrate specific clinical examination skills within a predetermined timeframe [3]. It is also designed to test clinical performance and capability of nursing such as communication skills, clinical examination and nursing procedures. OSCE keeps students engaged, empowers them to realize the important factors which helps to handle the nursing decision-making process and dare the professional to do advanced thinking and unveil their errors in case-handling, as well as, provides an open

space for improved decision making based on evidence-based practice for real world responsibilities [4]. Based on existing evidences, generally OSCE is valid, highly reliable, objective and a powerful tool than other traditional assessment formats such as short or long case examinations, viva, etc [5]. Hence this new assessment method is the most suitable method for complete exploration of clinical nursing examination as per students' feedback.

As a new assessment tool OSCE also has its fair set of challenges. One among these is standardizing the setting or station. These difficulties, along with the resource limitations and lack of experience, might cast a challenge for OSCE in developing countries. With all the advantages, simple standardization of stations and checklists does not ensure reliability of OSCE. It has to be assessed periodically, and inputs from concerned bodies are essential for improving the organization, design and administration of the exam [6].

When the researchers looked into the literature a lot of researches have been focused on students' perception. However, examiners' view has been evaluated less frequently in the past. A very few studies have made an effort to understand examiners' views, the source of examiner bias and its consequences. Studying these factors related to students and those that affect their performance is highly important in order to provide the learners with the optimal educational conditions for the best outcomes in terms of knowledge retention, application and exam performance [7]. Studies show that factors such as lack of skill lab, excess cost, shortage of trained faculty, unfair selection of tasks across the competency, increased stress, inconsistent tools, lack of standardized patients, absence of assessor training, assessors' intimidation, time shortage on stations, and difficulty in standard setting have affected implementation of OSCE mainly in schools of developing countries [8].

A cross sectional study conducted in Malaysia (2016) revealed that, majority of respondents identified to have positive perceptions on OSCE. However, some of them have negative perceptions on OSCE. Thus, the relevant authorities should take a step to improve the quality of OSCE exam, as well as its accuracy and reliability. It is hoped that the OSCE will be one of the main assessments in health care courses at the other universities [9].

The research aimed to correlate the students' OSCE exam scores with their perception of OSCE lab performance and clinical training. The research question was "How do students perceive the OSCE?". The research hypothesis was "there a correlation between the students' OSCE scores and their perception, lab competency, and clinical performance."

2. METHODS

Comparative cross-sectional descriptive research looked at the relationship between the students' OSCE test scores, their perceived OSCE, and what they did in the lab and during their clinical training. The study was conducted in a bachelor's degree nursing program offered by a private institution in the eastern region of Saudi Arabia in the Spring semester of 2023.

A sample size of 220 nursing students was calculated by using the website http://www.raosoft.com/samplesize.html. For a significant Pearson correlation at a 0.05 level of significance (95% CI), a power of 0.80, a margin of error of 5%, and a medium effect size. A stratified random sample technique was used to allocate the students from different levels. Participants were recruited from the courses that have lab, clinical training, and OSCE. Nursing Students enrolled in courses with no lab, clinical training, or OSCE exams were excluded from the study.

Students are prepared for the OSCE exam before they take the actual OSCE exam. The first part of this preparation involved students practicing their skills in a lab setting one day per week for three weeks and being evaluated on the last day using the competency checklist. Those who got low scores in their lab competency repeated the skills. Then, under the watchful eye of their preceptors, they honed their skills in the clinic/hospital, one day per week for 12 weeks, using clinical checklists. The students received continuous feedback on their performance in the clinical training. They eventually received general guidelines one day before the OSCE exam to prepare for the exam. The OSCE is conducted in week 15. The OSCE stations have varying components, from history taking, demonstration of physical examination skills, interpretation of laboratory or imaging investigations, and performance of procedures, wherein the student is observed while performing the tasks. Depending on the station, standardized patients or

mannequins are used. The students' scores in the Lab competency, clinical training, and OSCE were collected from the course coordinators to achieve the research aim. Students were graded in the lab, the clinical training, and the OSCE using a checklist developed by Kozier 2022 (nursing skills checklist).

A five-point Likert scale questionnaire is used in the current research to assess the students' perception. The investigators developed it after a literature review. The tool was organized into three parts: the first evaluated students' attitudes toward the OSCE exam, the second examined their perception of its benefits, and the third evaluated their perception of the pre-OSCE preparation (Lab competency, clinical training, and General guideline). The minimum score for each question was 1 for "Strongly disagree," 2 for "Disagree", 3 for "Fair," 4 for "Agree," and the maximum score was 5 for "Strong agree." Part I contained three questions, while parts II and III contained four questions for each one. The maximum score of the three parts were 15, 20, and 20, respectively. The minimum total score on the survey is 11, and the maximum total score is 55. Three experts established the content validity of the tool. Ten students did a pilot study to check the clarity of the tool. Reliability was tested by Cronbach alpha (.976). The tool is organized into Part 1 and Part II. It finally included questions on comparison of different methods of assessment. The researcher collected the survey after the students completed their OSCE.

Data was entered and analysed with Statistical Package for the Social Sciences version 22. For the Descriptive statistics, frequency, percentages, mean, and standard deviation (SD) were calculated. Shapiro-Wilk test was used to ensure that the variables were normally distributed before testing the hypothesis. To evaluate the study hypothesis with statistical significance at p less than 0.05 and determine the correlation between the variables, the Spearman correlation (non-parametric test) test was employed.

Ethical Consideration

Before conducting the research, permission was obtained from the Scientific Research Unit at MACHS Institutional Review Board.

3. DATA ANALYSIS

1. Descriptive Data

Table 1 shows 224 students completed the survey; 167 female students and 57 male students. The students werecollected from various courses in different levels.

Table 1: Distribution of students in the nursing courses

Level		Students NO	%
Level 4	Health assessment	42	18.8 %
Level 5	Nursing Care of Adult	39	17.4 %
	Psychiatric	12	5.4 %
Level 6	Obstetrics	32	14.3 %
Level 7	Children	11	4.9 %
	Critical Care	20	8.9 %
Level 8	Community	40	17.9 %
	Leadership	28	12.5 %
	Total	224	100 %

Nearly all of the students attended the preparatory interventions prior to their OSCE exam, as Table 2 makes clear. All of the lab preparations were attended by about 84% of the students. However, the majority of the clinical days leading up to the final OSCE exam were attended by about 97% of the students.

Table 2: Attendance rate of the students in the Lab and Clinical before the final OSCE exam

	Attendance Rate in the Lab		Attendance Rate in the Clinical	
	Frequency	%	Frequency	%
Absent 1-2 days	35	15.6 %	80	35.7 %

Absent 3 days or more	2	0.9 %	7	3.1 %
Attend all days	187	83.5 %	137	61.2 %
Total	224	100 %	224	100 %

2. Students' perception toward OSCE exam

According to Table (3), students had a positive overall impression of the OSCE exam (M = 41.3, SD 12.7). Students' attitudes towards the OSCE exam were rated on a mean scale of 11 (SD 3.45). Furthermore, 4.9 (SD 4.92) was the average score for the second section, which evaluated the students' assessment of the utility of the OSCE exam. Additionally, the third section's mean score (M = 15.4, SD 4.81), which evaluated the students' assessment of their pre-OSCE exam preparation, was greater.

Table 3: Perception survey results

	Part 1: Students' attitude toward OSCE				Part 2: perception of the OSCE Benefit					Part 3: Perception of OSCE Preparation					Overall Survey Score
	Challenge	Stressful	Objectives	Average of Part 1	Test Skills and Knowledge	Test Communication Skills	Test Clinical Skills	Test Critical Thinking	Average of Part 2	Attend Lab and Clinical	lab Preparation	Clinical Training Preparation	Instruction before OSCE	Average of Part 3	
Mean	3.75	3.57	3.69	11	3.82	3.58	3.77	3.71	14.9	3.88	3.85	3.78	3.88	15.4	41.3
SD	1.31	1.37	1.23	3.45	1.26	1.32	1.3	1.31	4.92	1.23	1.25	1.31	1.27	4.81	12.7
Max	5	5	5	15	5	5	5	5	20	5	5	5	5	20	55

3. Test the Hypotheses

The researcher used Shapiro-Wilk test to ensure that the variables were normally distributed before testing the hypothesis. The data was not normally distributed, as shown by Table 4, the p values for the four variables being less than 0.5 (p = <.001 for all variables). In order to evaluate the study hypothesis with statistical significance at p less than 0.05 and determine the correlation between the variables, the Spearman correlation (non-parametric test) test was employed.

Table 4: Descriptive data for the hypothesis's variables and its normality

	Perception Survey	Lab Competency Grade	Clinical Performance Grade	OSCE Grade
N	224	224	224	224
Mean	41.3	4.75	12.6	12.3
SD	12.7	0.429	2.42	2.11
Minimum	11	2.60	0.500	0.00
Maximum	55	5.00	15.0	15.0
Shapiro-Wilk W	0.846	0.645	0.855	0.887
Shapiro-Wilk p	<.001	<.001	<.001	<.001

Table (5) demonstrated that there were positive correlation between the students' OSCE grade and their lab competency grade ($r_s = .445$, $P = <0.001$) and their clinical performance grade ($r_s = .503$, $P = <0.001$) grades, based on the findings of the Spearman correlation test. Nevertheless, there was no relationship ($r_s = .085$, $P = .207$) between the students' OSCE grade and their perception toward the OSCE exam ($r_s = .085$, $P = .207$)

Table 5: Spearmen test examines the correlation between OSCE grade and other variables.

		Perception Survey	Lab Competency Grade	Clinical Performance Grade	OSCE Grade
Perception	Correlation Coefficient	1.000	.085	.022	.085
	Sig. (2-tailed)	.	.207	.745	.207
	N	224	224	224	224
Lab Competency Grade	Correlation Coefficient	.085	1.000	.509[**]	.445[**]
	Sig. (2-tailed)	.207	.	**<.001**	**<.001**
	N	224	224	224	224
Clinical Performance Grade	Correlation Coefficient	.022	.509[**]	1.000	.503[**]
	Sig. (2-tailed)	.745	**<.001**	.	**<.001**
	N	224	224	224	224
OSCE Grade	Correlation Coefficient	.085	.445[**]	.503[**]	1.000
	Sig. (2-tailed)	.207	**<.001**	**<.001**	.
	N	224	224	224	224
**. Correlation is significant at the 0.01 level (2-tailed).					

4. DISCUSSION

OSCE is a crucial component of clinical evaluations everywhere in the world. Since its inception in the 1970s, the objective structured clinical examination (OSCE) has gained recognition as a fair and consistent method for evaluating clinical skills. This study was aiming to correlate between nursing students' perceptions and their OSCE exam results as well as their clinical performance score and their OSCE exam results.

Our research showed that, students had a positive overall impression of the OSCE exam (M = 41.3, SD 12.7), a result that was in line with the findings of Khan a et.al [10]. In another study conducted among undergraduate psychiatric nursing education, the students reported that OSCE was overall a positive experience [11].

In this study, we assessed the students' attitudes towards the OSCE exam and were rated on a mean scaleof 11 (SD 3.45). Ours current study observed that OSCE is a challenging form of examination but it is objective. They also described it as a stressful experience. The findings of our study are compared with results of another study done by Jabeen, N et.al [12] stated that OSCE is very stressful and intimidating despite being an objective evaluation.

The students' perception about OSCE benefit is discussed using four different parameters mainly such as covering a wide range of skills and knowledge, assessing communication skills, clinical skills and improving critical thinking. The participants believed that the OSCE is beneficial for them as it improves the knowledge, clinical and

communication skills and enhances critical thinking. This finding is in congruent with Edward, M. I et.al [13] who in their study mentioned that students perceived OSCE as capable of assessing a wider range of knowledge and skills. Probably this is because the students have to perform 5-6 procedures within the given time frame.

In the current study, the students reported that their pre-OSCE exam preparation was great. Students' perception on OSCE preparation was assessed using the following parameters-Attendance in lab and clinical, lab preparation, clinical training, and instructions before OSCE. In our study , the students' assessment of their pre-OSCE exam preparation, was greater with a mean score (M = 15.4, SD 4.81). These results are consistent with those of earlier research, which demonstrated that the majority of the students had a pre-OSCE preparation through revision [14]. Furthermore, another study by Edward, M. I. et.al [13] revealed that the respondents perceived OSCE as demanding less preparation than traditional practical exams. But this result contradicts another literature [15] which stated that the preparation time is longer for OSCE as it includes training, pilot testing etc. and multiple sessions are required for a simulated patient to become familiar with the scenario. The researcher also believes that OSCE may require more preparation for students as they will have to understand and comprehend the scenarios within the given time frame.

A retrospective study conducted by Russell, B. S., Hoiriis, K. T., & Guagliardo, J. [16] among the students of the Chiropractic College Program, intended to measure correlation of student performance between 2 objective structured clinical examinations (OSCEs) and an introductory integrated clinical skills course that preceded the OSCEs. After the study the researchers concluded that there was at least a moderate correlation between both sets of scores between upper level OSCE and clinical skills course, between the upper and lower level OSCEs. A similar finding can be noted in the current study wherein there was positive correlation between the students' OSCE grade and their lab competency grade (r s = .445, P = <0.001) and their clinical performance grade (r s = .503, P =

<0.001).

Similar findings can be noted in another study conducted by Al Rushood, M., & Al-Eisa, A. [7] among students taking the OSCE of the paediatric course. The study reported to have found strong positive correlations between students' performance on the in-training examinations (OSCE and written) and the final OSCE. The final written exam scores were positively correlated with the final OSCEs. In the current study, the scores of the students achieved in the 3 weeks of lab, their scores in the 12 weeks during the clinical training were correlated with the final OSCE grades of the course. The results indicated a positive correlation between students' performance in the lab, clinical and OSCE grade. This is consistent with the study done by Al Rushood, M., & Al-Eisa, A wherein they found correlation between training exam and final OSCE exam [17].

A study done in University of Calabar [18] to determine factors that may influence the performance of Nursing students in OSCE reported that more than 50 % of the research participants agreed that they rely on their clinical experience as it expands their knowledge. This finding supports the current study wherein the students who performed well in the clinical (clinical grade) also performed well in the OSCE.

CONCLUSIONS

This study provided a thorough assessment of students' perceptions of OSCE. There was an overall positive perception towards OSCE by the students. They reported that the OSCE exam was a reliable and valid assessment tool, inspiring their critical thinking and promoting their communication skills. Students' perception does not affect their performance on the OSCE, while their OSCE grades positively correlate with their performance in the lab competency and clinical. Well-planned preparation for the students before the OSCE exam reduced the stress associated with OSCE and improved the student's performance.

Researchers did not identify other factors that might affect the OSCE preparation. Future studies that consider these limitations need to be done, including a comprehensive OSCE assessment.

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