

Health science students' perceptions about Objective Structured Clinical Examination (OSCE) as a method of clinical evaluation

Amal Alaskar^{1*} , Arun Vijay Subbarayalu² , Eshtiaq Alfaraj³ , Ola Ibrahim Ramzi⁴ , Njoud Saleh Alameri⁵ ,
Ameen Alhababi⁶ , Minimole Vijayan⁷ 

¹ Nursing Professional Development and Saudization Program, Nursing Administration, King Fahad Military Medical Complex, Dhahran, SAUDI ARABIA

² Quality Assurance Department, Deanship of Quality and Academic Accreditation, Imam Abdulrahman Bin Faisal University, Dammam, P. O. Box 1982, SAUDI ARABIA

³ Nursing Education Department, College of Nursing, Imam Abdulrahman Bin Faisal University, P. O. Box 1982, Dammam, SAUDI ARABIA

⁴ Accreditation Department, Deanship of Quality and Academic Accreditation, College of Public Health, Imam Abdulrahman Bin Faisal University, P. O. Box 1982, Dammam, SAUDI ARABIA

⁵ Independent Researcher, Dhahran, SAUDI ARABIA

⁶ Environmental and Public Health and Research Activity / Preventive Medicine Department, King Fahd Military Medical Complex, Dhahran 31932, SAUDI ARABIA

⁷ Nursing Department, Prince Sultan Military College of Health Sciences, Dhahran, SAUDI ARABIA

*Corresponding Author: aalaskar@live.com

Citation: Alaskar A, Subbarayalu AV, Alfaraj E, Ibrahim Ramzi O, Saleh Alameri N, Alhababi A, Vijayan M. Health science students' perceptions about Objective Structured Clinical Examination (OSCE) as a method of clinical evaluation. *Electron J Gen Med.* 2022;19(6):em416. <https://doi.org/10.29333/ejgm/12466>

ARTICLE INFO

Received: 18 Apr. 2022

Accepted: 28 Aug. 2022

ABSTRACT

Background: For decades, practical clinical examinations have been valid and reliable methods to evaluate health sciences undergraduate students' clinical performance and competencies for a wide range of skills. Objective structured clinical examination (OSCE) is a widely used practical clinical examination. This study aims to assess health sciences students' perceptions about OSCE as an evaluation method of clinical skills acquisition.

Methods: A descriptive cross-sectional design was used, and 157 students of five health science programs, who undergo real-time OSCE at Prince Sultan Military College of Health Sciences (PSMCHS), Dhahran, were invited to participate in this study. Data were collected through a structured questionnaire and analyzed quantitatively.

Results: The findings revealed that 57.8% of the participants perceived OSCE positively due to its unique features related to structure, logical sequence, standardized score tools, and coverage of a broad spectrum of critical clinical skills. On the contrary, 62.3% (n=96) of participants believed OSCE was stressful, and 58.4% (n=90) thought it was threatening because of inadequate preparation.

Conclusion: Health sciences students perceived OSCE as an effective evaluation method for clinical skills. However, OSCEs generate feelings of uncertainty and aggravate a high-stress level. This stress requires the educators at the academic and clinical settings to conduct dry run simulated scenarios beforehand to orient and guide students to manage and confound their stress and anxiety during real-life OSCE experiences.

Keywords: objective structured clinical examination, perception, health science students, clinical evaluation

INTRODUCTION

Objective structured clinical examination (OSCE) is widely used for clinical skills and competency evaluation. It is a recognized type of examination often used in health sciences. It is a practical, real-world approach to learning and assessment which is conducted in a well-structured and objective way to assess clinical skill performance and competence in a range of skills. The content and scoring procedure of OSCE are standardized. Each OSCE station focuses on particular clinical competencies. A standardized scoring tool or checklist usually describes what an examinee does or does not do well [1]. Healthcare professionals' clinical skills are commonly assessed through OSCE because it has been a versatile and reproducible evaluation tool since its introduction as a method of student assessment in the 1970s [2, 3]. OSCE is a quick and efficient evaluation method, allowing

instructors to offer rapid feedback to students about identified clinical deficits and skills that are being mastered [4]. The distinctive benefits of OSCE made it one of the highly proposed methods for clinical skills evaluation [5]. It was often reported as an exciting teaching method that encourages students toward active learning. It develops logical and critical thinking skills rather than promoting passive learning. It ensures a safe, controlled environment without compromising patients' safety. Students who undergo OSCE learn empirically and, therefore, develop self-confidence in addition to the value-added knowledge they accumulate.

Moreover, OSCE as an assessment approach is designed to learn what drives the decision-making processes and how to overcome challenges through advancing clinical skills, communication skills, medical/surgical procedures, and prescription [6]. However, the hindrance to using this method is the cost of securing resources and maintaining them, plus the time consumed in preparation [5]. OSCE stations require

sets of preparations. It includes the organization of a minimum of seven to ten stations that require specific tools and equipment, using simulated patient or medium-to-high fidelity simulators. The researchers in [6] described that the students require about three to four hours to complete these stations and achieve reliability of 0.85 to 0.90. It involves the coordination of participants' timing and test duration, which may range between 7-12 minutes. OSCE is founded on one student-to-one or two impartial examiners and makes them dismiss students who decide in an unsystematic way.

Besides, the significance and characteristics of OSCE produce an unpleasant atmosphere that many participants find stressful and dreadful. The researchers in [6] reported that students commonly criticize OSCEs that it makes them feel inhabited by the OSCEs environment. The anxiety aggravated by OSCE is the greatest compared to other types of assessment [5]. Ultimately, students are demanded to prepare for OSCE more than the other examinations [5]. Therefore, students' perceptions are vital when preparing them to undergo the OSCE examination to enhance their readiness to display cognitive, affective, and psychomotor skills promptly and precisely, to lessen their fear and anxiety provoked by OSCE. Assessing the skills related to the three domains of learning through a comprehensive method of OSCE made it frequently utilized to evaluate preclinical and clinical skills efficiently [7].

Nevertheless, the literature illustrates healthcare professionals' debate over the effectiveness of OSCE and how it promotes clinical competence [7, 8]. The researcher in [9] indicated that about half of the participants had negative perceptions of nursing education practical examination, while the other half was opinionated about adjusting the examination standards. Still, OSCE is among other practical methods used in nursing that blend theory with practice to narrow the academic and clinical gap [3]. Moreover, it is one of the standard assessment methods within higher education to equip for the advanced nurse practitioner position [10]. In conformance to this finding, a recent study also highlighted that clinical scenario-based education and reflective thinking effectively enhanced nurses' knowledge and attitude [11].

Especially in Saudi Arabia, the official governing office named the Saudi Commission for Health Specialties (SCFHS) is responsible for postgraduate education and assessment standards of specialist training, registration, and licensure for all healthcare professionals [12]. SCFHS OSCE manual of 2014 indicated that OSCEs became an assessment method to examine the healthcare professionals' competencies [12]. Therefore, medical educators explain why OSCE has been used as a mode of assessment [13] in many Health Sciences institutions since 1979 [14]. Furthermore, it was indicated that the SCFHS began implementing OSCE in Internal Medicine Practical Examination during 2007-2008 [15]. Later, OSCE was introduced as an internal medicine physician examination assessment method in 2011. Further, it was mentioned that Internal Medicine Department at the Imam Abdulrahman bin Faisal University has been using this assessment method since 2013 to evaluate the competency of medical students [16]. In the same context, it was conducted a retrospective study at RKDF College of Nursing, Bhopal to assess undergraduate students' perceptions toward OSCE [6]. It is found that two-thirds of students perceived OSCE as a tool that provides an accurate measure of clinical skill without being affected by students' personalities and social relations and simultaneously provides opportunities to learn in a virtual setting. A recent

study aimed to assess the attitude among 150 undergraduate nursing students towards OSCE revealed that 118 (85.51%) nursing students had a favorable attitude, and 19 (13.77%) had a moderately favorable attitude toward OSCE [17].

OSCE as testing competencies of a series of clinical stations with equal duration was described [12]. Certain stations employ human-crewed, while some are uncrewed stations. Students' performance in each station is rated through procedural checklists. The researchers in [18] indicated that students in Saudi Arabia were commonly perceived OSCE as a fair clinical assessment method. Several studies reported this perception [2, 18-22]. Other studies confirmed OSCE's reliability [2, 18-22], validity [2, 12, 13, 16, 23, 24], acceptances [24], and accuracy in measuring clinical skills [23, 25-27], because of the unbiased model for evaluating psychomotor skills [2, 19, 28]. Furthermore, OSCE provides standardized scoring [18, 25, 29] and tests a broad spectrum of clinical skills [2, 12, 13, 18, 22, 27]. Therefore, utilization of OSCE improves communication skills [2, 19, 30-32]. The study [32] advocated using OSCE as a learning outcome assessment tool when evaluating practical skills. While the study [15] suggested that educators incorporate OSCE as a formative assessment method since it provides feedback about students' performance for better learning.

Although the OSCE is a reliable, valid, and objective tool, it requires an enormous effort from students and staff [20], and it may produce a stressful experience [16, 18-20, 33-35]. Nevertheless, it was identified that stress during OSCE can be adequately managed through application and practice [20]. Thus, OSCE is becoming more popular to evaluate clinical and soft skills in most healthcare disciplines and settings [14]. A cross-sectional study [36] was conducted at King Abdulaziz University to identify medical students and interns perceptions about factors affecting their exam performance. The majority (83.5%) of the students perceived that formative assessment and receiving feedback enhance their performance associated with OSPE and OSCE. Most students reported that OSCE is the most common assessment that can cause exam anxiety. Such findings related to the students' perception were also reported by the previous studies [35, 37-39]. In addition, most of the students believed that the personality of the examiners, the presence of many examiners in one station, and their gender could impact their performance in OSCE because it involves a potential source of bias [40]. Also, students confirmed that technical problems could influence the performance of their OSPE and OSCE. The study concluded that motivation from instructors before OSCE enhances students' performance. However, the researcher in [34] suggested conducting further studies to make sure students accept OSCE as a method of clinical skills assessment.

Like other universities, Prince Sultan Military College of Health Sciences (PSMCHS), Dhahran, Saudi Arabia, is using OSCE to assess and evaluate students' clinical skills and then gauge the clinical skills gap among students. PSMCHS is a higher educational institute situated in Dhahran of Saudi Arabia that offers health sciences undergraduate programs for nursing, clinical laboratory sciences, anaesthesia, emergency medicine, respiratory care, dental and oral health, health information management, and biomedical technology. It has 117 faculty members to teach a total of 1,210 students. OSCE was introduced in PSMCHS for the first time during the academic year 2018-2019. As an attempt to add to the existing literature and cover the perceptions of health science students,

this study aimed to assess the perceptions of health sciences students about OSCE as an evaluation method of clinical skills. In addition, to identify the strength of OSCE as an efficient evaluation method that would enhance future implementations in the health care institutions and suggest strategies to alleviate or lessen students' stress and anxiety [7].

METHODS

Study Design

A descriptive cross-sectional design was used to assess the perceptions of health sciences students about OSCE as an evaluation method of clinical skills.

Participants

Participants were students in the second, third, and fourth years of their undergraduate programs of nursing, respiratory care, emergency medical technology, anaesthesia, and clinical laboratory science and dental hygiene at Prince Sultan Military College of Health Sciences (PSMCHS). Those were aged between 18 and 26 years and undertook OSCE during the data collection period or experienced OSCE beforehand. The sample size was calculated based on the determination formula for proportion ($N = Z^2 pq / d^2$), where $q = 1 - p$; $p =$ assumed proportion for the study; $d = 95\%$ confidence interval is desired with $d = 0.05$. If $p = 0.10$ (based on previous studies) so $q = 0.90$; $z = 1.96$. Therefore, the minimum sample size required was calculated as 138 ± 30 . Specifically, the first-year students were excluded from sampling as they did not undertake OSCE. Subsequently, 157 students were invited to participate in this study, using a structured self-administered questionnaire. Among them, 154 completed the questionnaires were returned, demonstrating a response rate of 98% (57 were males, and 97 were females). Besides, the Institutional Review Board (IRB) of PSMCHS had ethically approved this study (IRB Number IRB-2019-NUR-SGP-030).

Data Collection Tool

This study used a structured questionnaire developed by [27], and it has two parts. Part I includes demographic variables such as age, gender, and educational status (year of study). Part II consists of 23 item statements that are divided into four sections. Section-I includes eleven statements that assess students' general opinions regarding OSCE. Section-II contains three statements that capture participants' satisfaction with how the OSCE was carried out. Section-III includes four statements that investigate how participants perceived the outcome of OSCE, and lastly, section-IV consists of five statements that assess whether participants are satisfied with the preparation of OSCE. The participants' responses concerning the feedback/opinions about OSCE, perceptions of satisfaction with OSCE, and the outcome of OSCE were captured using a five-point Likert scale (i.e., strongly disagree-1, disagree-2, true sometimes-3, agree-4, strongly agree-5). The student's preparation for OSCE was captured through four-point scale response options (i.e., poor, good, very good, and excellent). Unlike the original scale, the questions comparing the OSCE/OSPE examination with the other assessment methods were not included in this study's questionnaire as it was not among the study objectives. The internal consistency of the questionnaire was evaluated using Cronbach's alpha reliability test and found to be 0.612. Moreover, the content

Table 1. Demographic characteristics of respondents (n=154)

Categories	Frequency (%)	
Gender	Male	57 (37.0)
	Female	97 (63.0)
Age group	From 19 to 22 years	88 (57.1)
	From 23 to 26 years	56 (36.4)
	26 years and above	10 (6.5)
Study year	Second	40 (26.0)
	Third	48 (31.2)
	Fourth	66 (42.9)

validity of the quantitative variables of the questionnaire was examined by three specialized juries who suggested some minor modifications that were incorporated into it.

Statistical Analysis

The data were statistically analyzed using SPSS 25.0 with a p-value < 0.05 considered statistically significant. Descriptive statistics were applied to describe the characteristics of the respondents and results were presented in numbers, percentages, and mean values \pm SD [41]. Moreover, an independent 't-test' was used to study whether there is any significant difference between gender concerning the health sciences students' perceptions about OSCE. Finally, a univariate ANOVA technique was utilized to reveal any significant difference among the health Sciences students' perceptions about OCSE concerning their age and academic year of study.

RESULTS

The demographic characteristics of the respondents are described in **Table 1**. The respondents (n=154) were categorized based on their age, gender, and academic year of study. Among those respondents, most of them (63%) were female. Half of them (57.1%) were aged 19-22 years, and notably, 6.5% were aged 26 years and above. About 42.9% were in the fourth year of their academic study.

Health Science Students' Perceptions of OSCE

About half of the students perceived OSCE positively (**Table 2**). Notably, 57.8% (89) of students perceived OSCE as a fair method for evaluation, and 59.1% (91) believed it covered a wide knowledge area.

Furthermore, 57.8% (89) of them perceived OSCE as a well-structured and sequenced type of assessment, whereas 60.4% (93) regarded it as a logical sequence of stations. Similarly, 62.3% (96) of students felt OSCE covered a broad spectrum of critical areas, and 61% (94) thought OSCE was practical and valuable in assessing their skills. Almost two-thirds of participants, 64.9% (100), valued OSCE for assessing the level of clinical skills based on a standardized score, while 48.7% (75) considered it as an accurate measure of their clinical skills learned.

Nevertheless, 26% (40) of students declared that a revision was provided to them before OSCE, and 30.5% (47) of students expressed that they had a general idea of OSCE before the actual examination. Regardless, 32.6% (51) of students felt that their teachers responded to their questions and were obliged to satisfy their inquiries. On the contrary, 62.3% (96) of students thought OSCE was stressful, and 58.4% (90) thought it was threatening.

Table 2. Health science students' perceptions towards OSCE [Frequency (%)]

Opinion about OSCE	SA	A	NAND	D	SD
OSCE examination conducted was fair	31 (20.1)	58 (37.7)	28 (18.2)	26 (16.9)	11 (7.1)
Wide knowledge area covered	26 (16.9)	65 (42.2)	35 (22.7)	22 (14.3)	6 (3.9)
Needed more time at the station	70 (45.5)	29 (18.8)	19 (12.3)	23 (14.9)	13 (8.4)
The examination was very stressful	43 (27.9)	53 (34.4)	30 (19.5)	18 (11.7)	10 (6.5)
OSCE is less stressful than other exams	34 (22.1)	43 (27.9)	29 (18.8)	35 (22.7)	13 (8.4)
The examination was well structured and sequenced	34 (22.1)	55 (35.7)	36 (23.4)	21 (13.6)	8 (5.2)
OSCE allows students to compensate in some areas	33 (21.4)	57 (37)	34 (22.1)	18 (11.7)	12 (7.8)
OSCE highlights areas of weakness	26 (16.9)	46 (29.9)	40 (26)	26 (16.9)	16 (10.4)
The examination was threatening	39 (25.3)	51 (33.1)	32 (20.8)	21 (13.6)	11 (7.1)
A wide range of critical areas covered	35 (22.7)	61 (39.6)	28 (18.2)	21 (13.6)	9 (5.8)
Students aware of the level of information required	37 (24)	47 (30.5)	33 (21.4)	24 (15.6)	13 (8.4)
Satisfaction with OSCE					
Procedures asked to perform at the station fair	34 (22.1)	54 (35.1)	30 (19.5)	19 (12.3)	17 (11)
The sequence of station logical	30 (19.5)	63 (40.9)	31 (20.1)	19 (12.3)	11 (7.1)
The examination provided the opportunity to learn	34 (22.1)	59 (38.3)	25 (16.2)	21 (13.6)	15 (9.7)
Outcome of OSCE					
Personality, gender, & social relations of instructor will not affect outcome of results	36 (23.4)	49 (31.8)	33 (21.4)	20 (13)	16 (10.4)
OSCE practical and useful experience	33 (21.4)	61 (39.6)	28 (18.2)	19 (12.3)	13 (8.4)
OSCE scores standardized	31 (20.1)	69 (44.8)	34 (22.1)	16 (10.4)	4 (2.6)
OSCE is a true measure of clinical skills	36 (23.4)	39 (25.3)	28 (18.2)	23 (14.9)	28 (18.2)
Preparation for OSCE		Poor	Good	Very good	Excellent
Revision about different types of clinical procedures had to be made before examination		31 (20.1)	83 (53.9)	20 (13)	20 (13)
The general idea of OSCE given beforehand		33 (21.4)	74 (48.1)	29 (18.8)	18 (11.7)
Quality of lab/mannequin		48 (31.2)	67 (43.5)	27 (17.5)	12 (7.8)
Availability of all equipment and simulation		50 (32.5)	63 (40.9)	22 (14.3)	19 (12.3)
Cooperation of staff to answer your queries		33 (21.4)	70 (45.5)	28 (18.2)	23 (14.9)

Note. SA: Strongly agree; A: Agree; NAND: Neither agree nor disagree; D: Disagree; & SD: Strongly disagree

Table 3. Health science students' perceptions of OSCE according to their gender

OSCE domains	Male	Female	Mean difference	t-value	p-value
	Mean±SD				
General opinion about OSCE	39.81±7.264	38.09±7.083	1.714	1.437	0.879
Satisfaction with OSCE	11.02±2.192	10.15±2.766	0.863	2.012	0.009*
Outcome of OSCE	14.05±3.399	13.78±3.342	0.269	0.479	0.616
Preparation for OSCE	11.19±2.949	10.69±3.641	0.502	0.885	0.474

Note. *Significant at 0.05 level

Consequently, 71.4% (110) of the participants indicated that OSCE elevated their stress levels due to inadequate preparation. At the same time, 28.6% (44) perceived OSCE preparation was adequate. Likewise, 57.8 % of students recognized OSCE as an efficient clinical evaluation method.

Variation in Health Science Students' Perceptions of OSCE Concerning Their Demographic Characteristics

The analysis included the difference in the participants' perceptions of OSCE concerning their gender using the independent t-test (Table 3). A significant gender difference was only observed in the participants' perceptions of satisfaction with OSCE ($p < 0.05$). However, the participants did not differ in their perceptions toward the remaining OSCE domains. Moreover, the variation in participants' perceptions of OSCE concerning their age group and academic year was examined using ANOVA. Table 4 demonstrates no significant difference in the participants' perceptions of their general opinion about OSCE, satisfaction, outcome, and preparation of OSCE according to their age groups as ($p > 0.05$). In contrast, participants were found significantly varied in their general opinion with OSCE when compared based on their academic year as ($p < 0.05$). But those failed to show the variation in their perception toward the remaining OSCE domains (Table 5).

DISCUSSION

This study aimed to assess the perceptions of health sciences students about OSCE as an evaluation method of clinical skills in a multidisciplinary educational institution in Saudi Arabia. From the findings, it is observed that more than half of the participants (57.8-60%) had positive perceptions about OSCE as those believed OSCE is a fair method for evaluation, covered a wide knowledge area, a well-structured and systematic type of assessment that has a logical sequence for procedural steps of each station. Furthermore, 62.3% of the participants believed that OSCE as an evaluation method covered a broad spectrum of critical areas. These findings are in line with the outcomes of previous studies, which showed that more than two-thirds of their participants perceived OSCE as a fair testing tool for knowledge, covered various clinical skills, and substantiated that OSCE meditates what students learn in their courses [6, 17, 42, 43]. Thus, these studies' participants developed positive attributes [6, 44] and favorable attitudes toward OSCE, i.e., the mean attitude score of participants toward OSCE was 85.71 with a standard deviation of 8.50 [16].

Respondents in this current study considered OSCE a valuable method and a practical appraisal due to the systematic, structured examination of each station which

Table 4. ANOVA showing the difference among health science students' perceptions about OSCE according to their age group

OSCE domains	Age group	Mean±SD	F-value	p-value
General opinion about OSCE	19-22	37.57±6.575	3.317	0.058*
	23-26	40.66±7.257		
	26 and above	38.10±9.927		
Satisfaction with OSCE	19-22	10.08±2.543	3.347	0.068
	23-26	11.18±2.413		
	26 and above	10.00±3.399		
Outcome of OSCE	19-22	13.44±3.001	2.027	0.135
	23-26	14.59±3.682		
	26 and above	13.80±4.050		
Preparation for OSCE	19-22	10.64±3.329	2.402	0.094
	23-26	10.86±3.349		
	26 and above	13.10±3.843		

Note. *Significant at 0.05 level

Table 5. ANOVA showing the difference among health science students' perceptions about OSCE according to their academic year

OSCE domains	Year of Study	Mean±SD	F-value	p-value
General opinion about OSCE	Second year	40.50±8.224	4.105	0.018*
	Third year	36.42±5.753		
	Fourth year	39.33±7.100		
Satisfaction with OSCE	Second year	10.73±2.864	0.444	0.643
	Third year	10.21±2.221		
	Fourth year	10.52±2.696		
Outcome of OSCE	Second year	14.23±3.468	0.574	0.564
	Third year	13.48±2.729		
	Fourth year	13.97±3.700		
Preparation for OSCE	Second year	11.38±4.307	2.813	0.063
	Third year	11.48±2.535		
	Fourth year	10.14±3.234		

Note. *Significant at 0.05 level

provoked a spontaneous and sequenced assessment that helped unfold a wide range of critical practical skills. Also, the standardization of the scoring system help devise an accurate measuring tool of clinical skills. This study results are consistent with those from other research [7, 8, 16, 28], in which participants perceived OSCE as an essential instrument for assessing skills and knowledge. It was pointed out students' high acceptance of the OSCE to evaluate clinical skills [7]. Furthermore, the current study agrees with the previous researchers [8, 16, 28] in their declaration that OSCE is an unbiased and standardized method for evaluation when compared to traditional clinical practical examination. Likewise, it was implied that most participants hold positive feedback about OSCE because they take OSCE as an equitable tool for measuring practical skills, covering most of the course [45].

On the contrary, this study's findings illustrated that nearly two-thirds of students experienced stress provoked by OSCE; they felt threatened. Accordingly, 71.4% (n=110) of the participants implied elevated stress levels due to inadequate preparation or orientation during their formative evaluation. The findings of this study support the OSCE stress-related issue suggested by [46], which inferred that they favored other forms of tests over the OSCE framework due to the stress encountered. Given the minimal familiarity of participants with the OSCE design, this outcome was reasonably anticipated. It disseminated relevant results, addressing the critical factors for participants' stress related to knowledge deficit, lack of readiness, and unawareness of the examination layout [47].

Therefore, incorporating the OSCE as an appraisal approach and evaluation method for practical clinical skills is highly advised to consider early planning for clinical courses to

alleviate students' anxiety and stress levels with the test and enhance their results. It was proposed enhancing the OSCE procedure by expanding the pre-examination training and introducing a mixed learning approach to maximize responsiveness to activities of OSCE [48]. It was urged the academic faculty to take preparation measures thoughtfully to lessen students' stress during OSCE or remove it [20]. Furthermore, the researchers in [31] proclaimed that conducting appropriate orientation and clinical skills practice before OSCE reduces stress during the real-life examination. In addition, the use of rehearsal sessions of skill lab and manikins practice would improve the quality of clinical skills competencies. Simultaneously, a continuous review of scenarios for each OSCE station should occur before actual clinical skills evaluation. As a result, the more OSCE assessment audit carried out, the more advanced the evaluation method of OSCE in an institution [31, 42]. Hence, many educators consider OSCE as an effective evaluation method for practical clinical skills because of the significant benefits of OSCE over the disadvantages that it causes [31, 49, 50, 51].

Nevertheless, the current study results are opposed to the findings of previous researchers who suggested disassociation between students' perceptions of OSCE and their gender and the year of academic study. Therefore, further investigations related to OSCE, gender, age, and year of study are recommended [8, 43].

CONCLUSION

This study brings out the perceptions of health sciences students about OSCE as a practical clinical skills evaluation

method. The study participants recognized OSCE as fair, well-structured, logically sequenced, and covered a broad spectrum of knowledge related to critical areas taught in the multidisciplinary academic programs. Moreover, participants denoted OSCE stations as practical and valuable, with a standardized scoring tool that measures clinical skills objectively. Students regarded OSCE as an effective evaluation method for clinical skills, but it generates feelings of uncertainty and elevates stress levels. This stress requires the educators to conduct dry run of simulated scenarios beforehand to orient and guide students to manage and confound their stress and anxiety during real-life OSCE experiences. However, the findings of this study suggest conducting a further exploration related to the students' lived experience upon OSCE assessment of their practical clinical skills or descriptive comparative studies to unfold and interpret their perceptions of OSCE from their perspectives and context. Such investigation can promote standardizing OSCE as an evaluation method in multidisciplinary health programs, including nursing.

Author contributions: **AA:** proposed the conceptual design of the study questionnaire and prepared the original draft; **AVS, EA, & OIR:** collected relevant literature and edited the manuscript draft; **NSA & AE:** contributed to the acquisition of data; & **MV:** carried out the analysis and interpretation of data. All authors have agreed with the results and conclusions.

Funding: No funding source is reported for this study.

Ethical statement: The study was approved by the Institutional Review Board of the Prince Sultan Military College of Health Science on March 29, 2019 (IRB number: IRB-2019-NUR-035).

Acknowledgements: The authors would like to thank to Brig. Gen./Dr. Eidan Musa Al Zahrani, College Director, the IRB (Institution Review Board) of Prince Sultan Military College of Health Sciences (PSMCHS), Dhahran, for granting permission to conduct this study. The authors would like to thank to Dr. Magda Ismail Yusuf, Head of Nursing Department, for her support. The authors would like to thank to Mr. Zechariah Jebakumar for his advice on data analysis. Lastly, the authors would like to thank to all health sciences' students of PSMCHS who participated in the study by filling out the questionnaire.

Declaration of interest: No conflict of interest is declared by authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

REFERENCES

- Rao P. Objective structured clinical examination (OSCE) nursing teacher and students' perception: A systemic review. *IOSR J Nurs Health Sci.* 2021;10(3):54-7.
- Zayyan M. Objective structured clinical examination: The assessment of choice. *Oman Med J.* 2011;26(4):219-22. <https://doi.org/10.5001/omj.2011.55> PMID:22043423 PMCID:PMC3191703
- Mahmoud GA, Mostafa MF. The Egyptian nursing student's perceptive view about an objective structured clinical examination (OSCE). *J Am Sci.* 2011;7(4):730-8.
- Sankarnarayan B, Sindhu B. Learning and teaching in nursing. New Delhi: Jaypee Brothers Medical Publishers; 2012.
- Ghiasi F, Nemati F, Nor Mohammadi A, et al. Evaluation of the causes of anxiety before OSCE in anesthesiology and operating room students of Ilam University of medical sciences. *Med Sci.* 2020;24(106):4139-43.
- Lawrence S, Selvan A. Perception of undergraduate nursing students towards objective structured clinical examination (OSCE). *J Nurs Health Sci.* 2019;8(1):45-9.
- Mohammaed NA, Amer HA. Nursing students' perceptions regarding modality use of the objective structured clinical examination (OSCE). *J Health, Med, and Nurs.* 2018;51(2018):56-66.
- Aung KT, Zakaria ANB. Nursing students' perceptions on objective structured clinical examination (OSCE). *MRIMS J Health Sci.* 2016;4(4):220-3. <https://doi.org/10.4103/2321-7006.306243>
- Naik N. Attitude towards nursing education practical exam among M.Sc. nursing students. *Sangbad e J Nurs.* 2012;11(2):10-2.
- Lavery J. Observed structured clinical examination as a means of assessing clinical skills competencies of ANPs. *Br J Nurs.* 2022;31(4):214-20. <https://doi.org/10.12968/bjon.2022.31.4.214> PMID:35220736
- Bijani M, Hamidzadeh S, Rostami K, et al. Evaluation of the effect of clinical scenario-based educational workshop and reflection on the knowledge and attitude of head nurses and clinical supervisors toward in the brain death and organ donation. *Electron J Gen Med.* 2020;17(5):em233. <https://doi.org/10.29333/ejgm/7903>
- Ware J, ElMardi A, Abdulghani H, Siddiqui I. Objective structured clinical examination (OSCE manual 2014). Saudi Commission for Health Specialties, Riyadh; 2014. <https://www.scfhs.org.sa/en/Media/OtherPublications/Documents/OSCE%20MANUAL.pdf> (Accessed 25 February 2022).
- Graham R, Bitzer Z, Anderson R. Reliability, and predictive validity of a comprehensive preclinical OSCE in dental education. *J Dent Educ.* 2013;77(2):161-7. <https://doi.org/10.1002/j.0022-0337.2013.77.2.tb05458.x> PMID:23382525
- Teresa AO, Margret MO, Olayinka AO. OSCE/OSPE: A tool for objectivity in general nursing examination in Nigeria state. *Nigeria J Res Nur Midwifery.* 2015;4(3):47-52.
- Alaidarous S, Mohamed TA, Masuadi E, Wali S, AlMalki A. Saudi internal medicine residents' perceptions of the objective structured clinical examination as a formative assessment tool. *Health Prof Educ.* 2016;2(2):121-9. <https://doi.org/10.1016/j.hpe.2016.04.001>
- Alsaid AH, Al-Sheikh M. Student, and faculty perception of objective structured clinical examination: A teaching hospital experience. *Saudi J Med Med Sci.* 2017;5(1):49-55. <https://doi.org/10.4103/1658-631X.194250> PMID:30787752 PMCID:PMC6298287
- Sundaresan D. Nursing students' attitude toward objective structured clinical examination. *Pondicherry J Nurs.* 2020;13(1):1-3. <https://doi.org/10.5005/jp-journals-10084-12142>
- Raheel H, Naeem N. Assessing the objective structured clinical examination: Saudi family medicine undergraduate medical students' perceptions of the tool. *J Pak Med Assoc.* 2013;63(10):1281-4.
- Nasir AA, Yusuf AS, Abdur-Rahman LO, et al. Medical students' perception of objective structured clinical examination: A feedback for process improvement. *J Surg Educ.* 2014;71(5):701-6. <https://doi.org/10.1016/j.jsurg.2014.02.010> PMID:25012605
- Hatamleh W, Abu Sabeeb Z. Nursing students perceptions of an objectives structured clinical examination. *Int J Health Sci.* 2014;2(2014):52-6.

21. Radhika G, Dara AK, Varalaxmi KP, Bhavani C. Perceptions of the introduction of objective structured practical examination (OSPE)/objective structured clinical examination (OSCE): A pilot study carried out in Government Medical College, Ananthapuram, Andhra Pradesh, India. *J NTR Univ Health Sci.* 2015;4(3):145-9. <https://doi.org/10.4103/2277-8632.165401>
22. Elfaki OA, Al-Humayed S. Medical students' perception of OSCE at the Department of Internal Medicine, College of Medicine, King Khalid University, Abha, KSA. *J Coll Phys Surg Pak.* 2016;26(2):158-9.
23. Mater EAM, Ahmed EI, ElSayed AA, ElShaikh MA, Farag MK. The impact of objective structured clinical examination: approach for clinical evaluation skills on the students' performance in nursing college. *World J Medical Sci.* 2014;11(4):609-13.
24. Vijaya D, Alan S. A comparative study to evaluate practical skills in physiology among 1st phase medical undergraduates at JNMC Belgaum: Traditional practical examinations versus objective structure practical examinations (TPE V/S OSPE). *Int J Educat Res Technol.* 2014;5(1):126-34.
25. Ameh N, Abdul M, Adesiyun G, Avidime S. Objective structured clinical examination vs. traditional clinical examination: An evaluation of students' perception and preference in a Nigerian medical school. *Niger Med J* 2014;55(4):310-3. <https://doi.org/10.4103/0300-1652.137191> PMID:25114366 PMCID:PMC4124544
26. Skrzypek A, Szeliga M, Stalmach-Przygoda A, et al. The objective structured clinical examination (OSCE) from the perspective of 3rd year medical students-a pilot study. *Folia Med Crac.* 2017;VII(3):67-75.
27. Aizu K, Mikami K, Tsuchiya R, Shimizu M, Oka N, Nishizawa Y. Educational method for developing assessment skills of nursing students. *Open J Nurs.* 2018;8(8):518-30. <https://doi.org/10.4236/ojn.2018.88039>
28. Omu FE. Attitudes of nursing faculty members and graduates towards the objective structured clinical examination (OSCE). *Open J Nurs.* 2016;6(5):353-64. <https://doi.org/10.4236/ojn.2016.65037>
29. Jindal P, Khurana G. The opinion of postgraduate students on objective structured clinical examination in Anesthesiology: A preliminary report. *Indian J Anaesth.* 2016; 60(3):168-73. <https://doi.org/10.4103/0019-5049.177869> PMID:27053779 PMCID:PMC4800932
30. Opoka RO, Kiguli S, Semata AS, Govaerts M, Driessen EW. Perception of postgraduate trainees on the impact of objective structured clinical examination on their study behavior and clinical practice. *Adv Med Educ Pract.* 2015;6(2015):431-7. <https://doi.org/10.2147/AMEP.S79557> PMID:26082673 PMCID:PMC4461082
31. Graf J, Smolka, R, Simoes E, et al. Communication skills of medical students during the OSCE: Gender-specific differences in a longitudinal trend study. *BMC Med Educ.* 2017;17:75. <https://doi.org/10.1186/s12909-017-0913-4> PMID:28464857 PMCID:PMC5414383
32. Eldarir SA, Abdel Hamid NA. Objective structured clinical examination (OSCE) versus traditional clinical students' achievement at maternity nursing: A comparative approach. *IOSR J Dent Med Sci.* 2013;4(3):63-8. <https://doi.org/10.9790/0853-0436368>
33. Small LF, Pretorius L, Walters A, Ackerman M, Tshifugula P. Students' perceptions regarding the objective, structured, clinical evaluation as an assessment approach. *Health SA Gesondheid.* 2013;18(1):629-37. <https://doi.org/10.4102/hsag.v18i1.629>
34. Puryer J. Dental undergraduate views of objective structured clinical examinations (OSCEs): A literature review. *Dent J.* 2016;4(1):6-14. <https://doi.org/10.3390/dj4010006> PMID:29563448 PMCID:PMC5851204
35. Awad LA, Ahmed S, Alshamandy AA, Abolwafa NF. Perception of undergraduate nursing students towards objective structured clinical examination (OSCE). *IOSR J Nurs Health Sci.* 2017;6(5):52-60.
36. Ibrahim NK, Al-Sharabi BM, Al-Asiri RA, et al. Perceptions of clinical years' medical students and interns about factors affecting their exam performance, King Abdulaziz University, Jeddah. *J Medical Res.* 2018;4(3):132-6. <https://doi.org/10.31254/jmr.2018.4305>
37. Brand HS, Schoonheim-Klein M. Is the OSCE more stressful? Examination anxiety and its consequences in different assessment methods in dental education. *Eur J Dent Educ.* 2009;13(3):147-53. <https://doi.org/10.1111/j.1600-0579.2008.00554.x> PMID:19630933
38. Siddiqui FG. Final year MBBS students' perception for observed structured clinical examination. *J Coll Phys Surg Pak.* 2013;23(1):20-4.
39. Brosnan M, Evans W, Brosnan E, Brown G. Implementing objective structured clinical skills evaluation (OSCE) in nurse registration programs in a center in Ireland: A utilization-focused evaluation. *Nurs Educ Today.* 2006;26(2):115-22. <https://doi.org/10.1016/j.nedt.2005.08.003> PMID:16216390
40. Awaisu A, Mohamed MH, Al-Efan QA. Perception of pharmacy students in Malaysia on the use of objective structured clinical examinations to evaluate competence. *Am J Pharm Educ.* 2007;71(6):118. <https://doi.org/10.5688/aj7106118> PMID:19503702 PMCID:PMC2690929
41. Abdulhameed AA, Al-Hamdi KE, Mathkoo MA. Clinical evaluation of efficacy and safety of combined topical timolol and oral propranolol in children with infantile hemangioma. *J Clin Exp Invest.* 2018;9(1):1-8. <https://doi.org/10.5799/jcei.413049>
42. Fisseha H, Desalegn H. Perception of students and examiners about objective structured clinical examination in a teaching hospital in Ethiopia. *Adv Med Educ Pract.* 2021;12:1439-48. <https://doi.org/10.2147/AMEP.S342582> PMID:34924781 PMCID:PMC8674149
43. Ahmed ES, Mohamed SA, Mehany MM, Yousef YE. Nursing students' perception, anxiety, and stress during objective structured clinical examination (OSCE). *Assiut Sci Nurs J.* 2015;3(6):50-9. <https://doi.org/10.21608/asnj.2015.59782>
44. Shinde M, Mhaske A. Attitude of postgraduate nursing students towards objective structured clinical examination. *Eur J Mol Clin Med.* 2020;07(11):8693-8701.
45. Makhlof, E. Saudi nursing students' outcomes and perspectives about an objective structured clinical examination in obstetrics and gynecological nursing course. *Health Sci.* 2019;8(3):19-25.
46. Msiska G, KamangaM, Chilemba E, Msosa A, Munkhondya TE. Sources of stress among undergraduate nursing students during clinical practice: A Malawian perspective. *Open J Nurs.* 2019;09(01):89867. <https://doi.org/10.4236/ojn.2019.91001>

47. Ariga RA. Decrease anxiety among students who will do the objective structured clinical examination with deep breathing relaxation technique. *Open Access Maced J Med Sci.* 2019;7(16):2619-22. <https://doi.org/10.3889/oamjms.2019.409> PMID:31777618 PMCID:PMC6876821
48. Fawaz M, Alsalamah Y. Perceptions of Lebanese nursing students and examiners regarding the objective structured clinical examination method (OSCE) in nursing fundamentals: A mixed method study. *Int J Afr Nurs Sci.* 2021;15(08):100373. <https://doi.org/10.4103/1658-631X.194250> PMID:30787752 PMCID:PMC6298287
49. Osaji TA, Opiah MM, Onasoga OA. OSCE/OSPE: A tool for objectivity in general nursing examination in Nigeria. *J Res Nurs Midwifery.* 2015;4(3):47-52.
50. Taala W, Waggas D, Teresa P. Utilization of objective structured clinical examination (OSCE) in ensuring clinical competence of nursing students: A case of FCMS. *Open Access Libr.* 2019;6:1-12. <https://doi.org/10.4236/oalib.1105209>
51. Yousef AA, Awary BH, AlQurashi FO, et al. Innovative method to digitize a web-based OSCE evaluation system for medical students: A cross-sectional study in university hospital in Saudi Arabia. *Int J Gen Med.* 2022;15:1085-95. <https://doi.org/10.2147/IJGM.S351052> PMID:35140510 PMCID:PMC8820456