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# Challenges of Objective Structured Clinical Examination in Nursing Education: An Integrative Review

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## Abstract

The Objective Structured Clinical Examination (OSCE) is a performance-based exam designed for the assessment of clinical competence. OSCEs are commonly and effectively used in a range of health professional education programs, but rarely are the challenges around the introduction and integration of such assessment techniques explored. This is critical for their use to be diversified into international clinical programs, particularly those based in non-English speaking areas. Therefore, the present review aimed to specifically investigate the challenges and barriers to OSCE implementation in undergraduate nursing education. The study was designed based on the integrative review method by Whittemore and Knafl. The data collection sources were CINAHL, EMBASE, Medline, PubMed, and Cochrane databases, which were searched using the keywords "OSCE", "Nursing", "Nursing Education", "Assessment", "Clinical Competence", "Challenge", "Problems", "Barriers", "Experiences", and their combinations. Database searches yielded 207 studies whose abstracts were independently evaluated for relevance prior to full texts review.

Following the screening, 22 studies were considered eligible and entered the analysis. Three main themes for OSCE-related challenges included: i) challenges related to exam validity and reliability, ii) implementation and technical challenges, and iii) inherent challenges of the OSCE. Overall the quality of evidence included was moderate. Synthesis of data from these studies can assist ease of implementation in future programs, as well as help to inform strategies to improve the OSCE implementation in the design and implantation of nursing curricula.

**Keywords:** *Assessment, OSCE, Clinical Competence, Nursing Education*

## Introduction

Nursing programs are designed to prepare nurses to undertake safe and effective clinical practice(K.-C. Lee, Ho, Yu, & Chao, 2020). Such practice may vary depending on the scope and expectations of nurses and nursing roles in different areas/countries/health systems. These may vary. This means that not only do nursing curricula need to reflect the role and scope of nurses from each region but the methods of assessment applied in the relevant regions need to ensure that nursing students meet those expectations(Shaltry, 2020). There is a great deal of literature exploring parameters around the standard clinical assessment processes in most English-speaking countries, but little in non-English speaking countries. Moreover, the assessment processes discussed in the literature are so well embedded in clinical programs in English-speaking countries, that there is little or no focus or data on

how best to develop and implement such processes(Zamanzadeh et al., 2021). As expectations and scope for nurses changes and there is increased emphasis on the internationalization of nursing programs, more curricula are implementing assessment processes such as OSCEs, with apparently little evidence-based support from the literature(Solà-Pola et al., 2020). This is the focus of this review.

The OSCE is a performance-based examination in which examinees are observed and scored as they rotate around a series of stations according to a set plan (Bdair, Abuzaineh, & Burqan, 2019; Y.-H. Lee, Lin, Wang, & Lin, 2020). The OSCE is at the third level of Miller's pyramid, introduced in 1990 (Adib-Hajbaghery & Yazdani, 2018), and focuses on competence in clinical skills. OSCEs assess not only cognitive/knowledge aspects of clinical care, but also the emotional and psychomotor aspects of clinical competence (Chen, Chen, Lai, Chen, & Yeh, 2021). Given this, OSCEs are commonly cited as a reliable and valid method for clinical skills assessment (Bdair et al., 2019; Solà et al., 2017).

Despite numerous advantages (Bdair et al., 2019; Goh, Zhang, Lee, Wu, & Wang, 2019), there are challenges and problems in OSCE implementation(Ataro, Worku, & Asaminew, 2020; Obizoba, 2018b; Sutrisno, Primanda, & Haris, 2020; Zamanzadeh et al., 2021). These challenges need to be identified and evidence-based strategies to resolve the challenges and improve the exam implementation in nursing need to be highlighted in the literature (Obizoba, 2018a). Thus, this review study aimed to explore and synthesize documented challenges and barriers around OSCE implementation and use in nursing, and to extract solutions to such challenges and barriers where they exist.

**Methods**

The methodology for this review was developed based on the PRISMA-P protocol (Moher et al., 2015). An integrative review was chosen to combine different study methods and enable the synthesis of results from both qualitative and quantitative studies (Whittemore & Knafl, 2005).

The study was designed based on the five-step integrated review method by Whittemore and Knafl (2005). Their steps included problem identification, literature search, data evaluation, data analysis, and results presentation (Whittemore & Knafl, 2005).

Problem identification emerged from the professional experience of the authors in attempting to implement OSCEs into new clinical programs in a non-English speaking region. Evidence around overcoming challenges in OSCE implementation in nursing was sparse and rarely explicitly outlined translation of OSCE processes into practice(Krusen & Martino, 2020).

The inclusion criteria, determined to ensure data relevance, were that studies peer-reviewed articles on OSCE challenges in nursing were published from 2000-to 2021. Articles exploring the challenges of OSCE implementation in other professions, non-peer-reviewed articles, book chapters, and conference reports, were excluded.

The second step of the review process was searching the literature. CINAHL, EMBASE, Medline, PubMed, and Cochrane databases were used for this review. Following preliminary searches the following keywords and search strategies were adopted: OSCE AND (Nursing OR Nursing Education OR nurses) AND (Assessment OR Evaluation) AND (Clinical Competence OR Competence) AND (Challenge OR Problems OR Barriers). These databases and the time limit were chosen to ensure a comprehensive search and adequate breadth and depth in the recovered literature.

**Search Results**

The integrative review included several stages in the selection of articles. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart summarizes the processes applied (Fig. 1).

The outcomes from each database were pooled into a single file, duplicates were removed and a simple title screen was undertaken to remove non-relevant articles. This left 207 related articles in the database. The abstract from each of these articles were sourced and evaluated for relevance and, where necessary, the full text of each article was examined for relevance. Following this screening, 22 articles were considered eligible and entered the analysis. Two researchers were included in each step of this process to independently evaluate the articles and decide if each article met the inclusion and not the exclusion criteria. Where discrepancy arose, a discussion/ moderation process was applied (Whittemore & Knafl, 2005).

To complete the third step of the review process, data evaluation or quality evaluation was undertaken on each of the 22 articles selected using the Mixed Methods Appraisal Tool (MMAT) (Hong, Pluye, Fàbregues, Bartlett, & Boardman, 2020; Hong et al., 2018). Data relevance, as well as methodological rigor, was confirmed at this stage.

The fourth step for the review was data analysis; again undertaken based on the method of Whittemore and Knafl (2005). Data extraction and synthesis were undertaken by two independent researchers working separately. This included the preliminary development of themes and subthemes. Finally, members of the research team compared the results of each analysis and agreed on the results via a process of discussion and consensus moderation. The content presentation included the development of a data summary table and articulation of the 3 main themes emerging from the literature that related to the review question.

## Findings

Seven of the studies were quantitative, nine were qualitative, and three were mixed methods (Figure 1). An overview of the objective/s, sample, study design, main findings, and qualities of all studies are presented in Table 1.

The findings provide a combination of the current knowledge according to the reviewed studies on the OSCE challenges in nursing. Study syntheses obtained from the data analysis are presented in Table 2. Each of the three main themes is associated with a range of contributory subthemes.

## Discussion

This review study aimed to explore and synthesize documented challenges and barriers around OSCE implementation and use in nursing student assessment and to extract solutions to such challenges and barriers where they existed in literature. Despite the numerous benefits reported for OSCEs, several studies also described challenges and barriers to the implementation of such examinations in undergraduate nursing (Ataro et al., 2020; Obizoba, 2018b; Zamanzadeh et al., 2021). Very few studies reported solutions to such challenges. The findings obtained around barriers and challenges fell into 3 main thematic areas; challenges to the validity and reliability of OSCEs, implementation, and technical challenges and challenges inherent to the OSCE format. Studies with both qualitative and quantitative findings contributed to these themes (Kelly et al., 2016; Mitchell et al., 2009).

Two key characteristics of a good assessment are reliability and validity. The reliability of an assessment is the extent to which the results are measured consistently, dependable and free from error. For an examination to be valid, the content and arrangement of the assessment need to be aligned with the purpose of the examination and the desired learning outcomes(Harden, Lilley, & Patricio, 2015). Validity and reliability in examination depend on numerous criteria being satisfied. These criteria include content, consistency, comprehensive scoring, and effective moderation to ensure reliable application by examiners(Harden et al., 2015; Mitchell et al., 2015).

The content used in OSCE for competence assessment of the examinees should be comprehensive and match that of the training course (K.-C. Lee et al., 2020). Moreover, with a pre-exam validity assessment, the questions and scenarios should be the same or similar for all of the examinees (Fijačko et al., 2017). Checklists and rating scales should be appropriately designed based on the latest references to increase the accuracy of performance assessment. Additionally, checklists should be comprehensive as incomplete or poorly defined checklists may lead to bias in examiner scores (Moreno-López & Sinclair, 2020). Accordingly, the examiner's performance can affect the OSCE validity and reliability (Bani-Issa et al., 2019). Various studies have reported that examiners may not score equivalently, treat the examinees similarly, or provide the same level of emotional support for the examinees during the exam and so their personal characteristics can affect both student performance and scoring. These challenges are mainly resolved by consistent training and preparation of the examiners (Ataro et al., 2020; Majumder et al., 2019).

An exam is generally considered valid if the content and form of the assessment align with the related course objectives and learning outcomes (Navas-Ferrer, Urcola-Pardo, Subirón-Valera, & German-Bes, 2017). A reliable exam has to assess exactly what it is supposed to assess (Harden et al., 2015). Validity and reliability are the two main properties of any standard performance assessment(Harden et al., 2015). OSCEs are considered the gold standard for performance assessment (Donohoe, Reilly, Donnelly, & Cahill, 2020), in part because OSCE validity and reliability have been examined and confirmed in various studies(Fijačko et al., 2017; Navas-Ferrer et al., 2017). It is worth noting that the OSCE can be used for assessing an extensive range of learning outcomes, including communication skills, physical examination, practical procedures, problem-solving, clinical reasoning, decision-making, attitude, ethics, and other skills (Harden et al., 2015). Despite this, validity and reliability remain one of the major challenges cited in OSCE implementation, particularly when they are first introduced to a program of nursing education (Navas-Ferrer et al., 2017; Sabzi, Modanloo, Yazdi, Kolagari, & Aryaie, 2018).

The OSCE validity can be improved by preparing an exam blueprint, making exam content compatible with that of the training course, and assessing in a realistic situation(Emadzadeh et al., 2017; Sabzi et al., 2018). Moreover, reliability is increased by using examples of similar skills for examinee assessments, employing trained examiners and standard patients for homogenous performance, and designing accurate checklists and rating scales (Harden et al., 2015; Sabzi et al., 2018). Thus, while challenging – these potential barriers can be identified early and offset.

The OSCE is an exam that requires extensive resources, including workforce (staffing), equipment, physical space, and time (Harden et al., 2015). Many concerns have been raised regarding the related expenses(Harden et al., 2015; Rodriguez & Sánchez-Ismayel, 2021). However, the advantages of OSCE are generally considered to far outweigh these expenses(Suttle, 2017). OSCE implementation is possible even with limited resources(Harden et al., 2015) and so it should be noted that high costs and resource shortages should not hinder the OSCE development and implementation. Faculty need to be creative and make the most of the available resources (Harden et al., 2015; Solà et al., 2017). It is essential to train and prepare the examiners before the OSCEs. Some studies have shown that examiners may exhibit negative attitudes or inappropriate

behaviors or interactions with students, impacting student outcomes(Chong, Taylor, Haywood, Adelstein, & Shulruf, 2017; De Villiers & Archer, 2012; Zamanzadeh et al., 2021). This requires scrutiny and oversight (moderation) (Bani-Issa et al., 2019). Another challenge can be the inept behavior of examiners with examinees and their inexperience in OSCE implementation(East et al., 2014; Mortsiefer, Karger, Rotthoff, Raski, & Pentzek, 2017; Zimmermann & Kadmon, 2020). Moreover, where examiners may have different roles (assessment, moderation, student introduction, etc), it leads to overwork and exhaustion (Harden et al., 2015). All these points should be addressed by the managers and educational authorities when planning for OSCE implementation (Lyngå, Masiello, Karlgren, & Joelsson-Alm, 2019).

Stress and anxiety for student participants are reported as significant challenges by several studies; often affecting the performances of examinees(Byrne & Smyth, 2008; El-Nemer & Kandeel, 2009; Katowa-Mukwato et al., 2013). Although it is normal for an examinee to have some level of stress in any test, they can have a positive experience if they are prepared in advance and the exam is carefully designed and implemented (Sánchez-Conde & Clemente-Suárez, 2021). Before the OSCE, examinees should be fully prepared for the exam and provided with the necessary instructions and adequate facilities for practice, since these previous experiences and preparations can significantly decrease their stress and anxiety(Fidment, 2012; Harden et al., 2015; Munkhondya et al., 2014). OSCE preparation before and even on the day of the exam can clarify the expectations of the examinees (Bani-Issa et al., 2019; García-Mayor et al., 2021).

The challenges related to standardized patients have been reported in various studies (K.-C. Lee et al., 2020). Examiners and standardized patients need to follow the standard protocols to ensure that the assessment of the performance of an examinee is the true measure of their clinical competence (K.-C. Lee et al., 2020). A standard patient has to accurately represent a clinical condition, repetitively, and realistically in order to present a similar challenge to each examinee. It is, therefore, necessary to ensure the reliability of the performance of the standard patient. (Harden et al., 2015).

Successful OSCEs depend on careful planning and scheduling(AbdAlla & Mohammed, 2016; Munkhondya et al., 2014). OSCE stations should be established and checked before the test (Elbilgahy et al., 2020; Munkhondya et al., 2014; Solà et al., 2017). However a key advantage of the OSCE is its flexibility; it can be programmed according to local needs and availabilities (Harden et al., 2015).

The environment of OSCE implementation should resemble the actual clinical situation as much as possible (Solà et al., 2017). Accordingly, different studies have reported that examinees have had feedback about the unrealistic environment of their OSCE. This can disrupt the performance of the examinees and add to their stress and so should be considered in the exam organization and resourcing (Bdair et al., 2019; Solà et al., 2017).

Previous studies have reported insufficiency in the allocated time for the stations or too few stations to manage the student numbers(Ali et al., 2012; El-Nemer & Kandeel, 2009). Such challenges can be offset by accurate estimates of the time needed for each station, including undertaking a mock run prior to the 'real' thing (Harden et al., 2015; Obizoba, 2018b).

The OSCE is well known for its value in providing feedback to the examinees on their performance(Munkhondya et al., 2014; Solà Pola et al., 2017). Nonetheless, giving feedback is time-consuming and thus challenging. Giving feedback during the exam extends the time needed for each session and it is usually used for informative evaluations(Harden et al., 2015). In summative evaluations, feedback is usually given at the end of the exam. During the test, the examiners typically only observe the examinees' performance and score them(Harden et al., 2015; Munkhondya et al., 2014). Therefore, examiners should be aware of time constraints, particularly around allocated time for giving feedback (during or after the exam) before the OSCE implementation.

Giving feedback is essential, but often detailed information is needed about the best way of giving feedback in the OSCE (Harden et al., 2015; Shen et al., 2018). One suitable method is for the examiners to determine clear cut-off points in scoring scales, to distinguish between the competent and incompetent examinees. An extensive range of standard-setting methods has been used in written and practical exams to achieve this goal (Harden et al., 2015; K.-C. Lee et al., 2020; Munshi, Alnemari, Al-Jifree, & Alshehri, 2017).

The last group of OSCE challenges is the inherent challenges, which can typically be addressed by proper planning and efficient management and supervision, as most of them are modifiable if detected. The subthemes of this group include the assessment of minimum competence, assessment of a limited sample of skills, poor holistic approaches, chances of prematurely revealing the station content, and difficulty in the assessment of some skills (Chiou-Rong & Ue-Lin, 2015; Harden et al., 2015). Each station only assesses a limited sample of skills. However, several examples of a wide range of skills often need to be assessed. Therefore, it is sometimes suggested that an OSCE with more stations and a shorter time for each station is better than an OSCE with fewer stations and a longer time for each station (Harden et al., 2015; Johnston et al., 2017). This, however, feeds into concerns that OSCEs only assess minimum competence (task focus rather than holistic patient care), and are unable to assess clinical excellence (Harden et al., 2015; Suttle, 2017). The fewer the stations and the more specific the tasks required in each station (such as an

aspect of history taking or physical examination) the greater the risk of fragmentation of nursing practice, attenuating the holistic approach by focusing on only specific skills in nursing (Harden et al., 2015; Suttle, 2017).

The final challenge is that associated with assessing some skills such as attitude, professionalism, teamwork, interdisciplinary collaboration, and health promotion (Harden et al., 2015; Suttle, 2017). None of the studies included explicitly addressed solutions for these studies.

**Strengths and limitations**

To our knowledge, this is the first integrative review studying the challenges of implementing OSCEs into existing nursing programs. One of the strengths of this review was that we used the integrative review method by Whittemore and Knafl to enhance the study's accuracy. Moreover, there were no limitations placed on study design or location. However, only studies in English were included, limiting the relevance to non-English speaking locations. Despite using a comprehensive search process, searches were limited to the studies collected by the databases CINAHL, EMBASE, Medline, PubMed, and Cochrane databases. Therefore, there may be some studies on this topic that were not included.

**Conclusion**

The literature describes several challenges related to OSCE in nursing including challenges related to exam validity and reliability, implementation and technical challenges, and inherent challenges, but relatively few solutions to these challenges. Solutions must continue to be the focus of research. The results of this study can be used in developing future programs and strategies to provide solutions for OSCE quality improvement in nursing education.

**Conflict of Interests**

We have no conflicts of interest to declare.

**Authors' Contribution:**

**Study design: VZ, SA.**

**Data collection: SA.**

**Data analysis: VZ, R Gh, LV, H k M, SA.**

**Study supervision: VZ, R Gh, LV, H k M, AJ.**

**Manuscript writing: SA, AJ.**

**Critical revisions for intellectual content: VZ, AJ.**

**Ethical Committee: Tabriz University of Medical Sciences**

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**Conflict of Interests**

**None of the authors has any conflict of interest to declare.**

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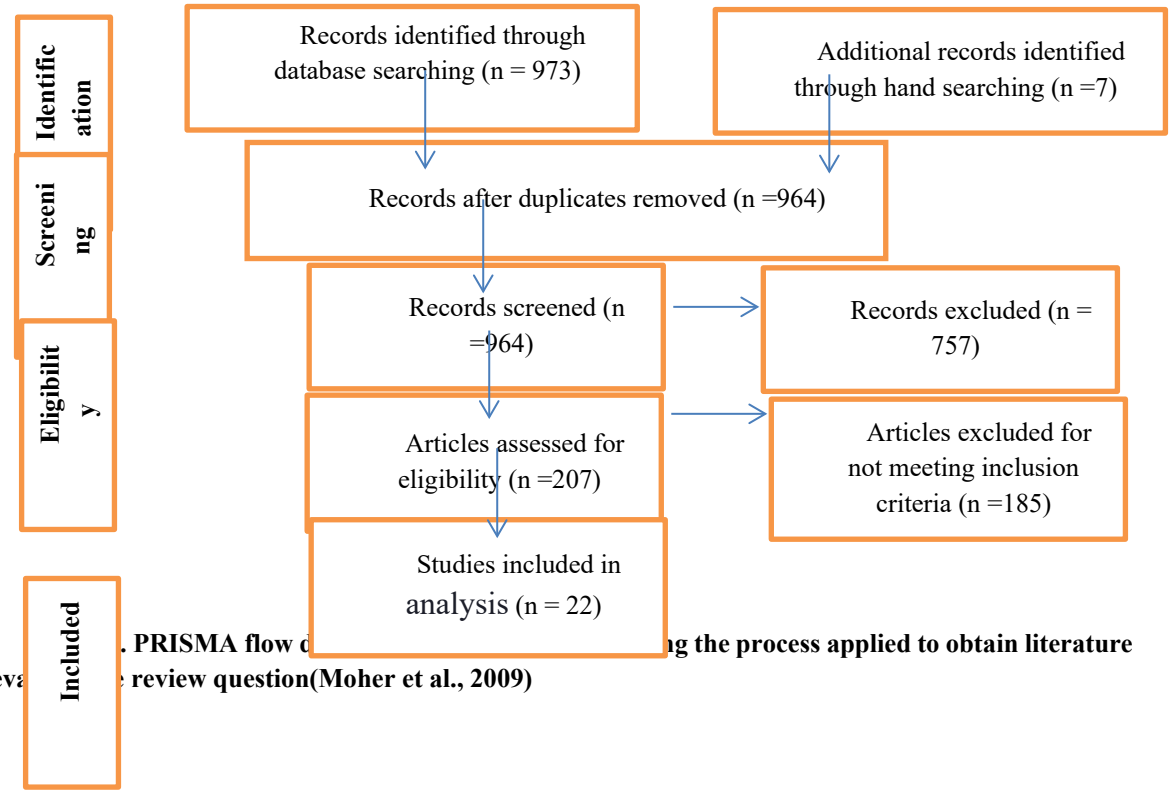


**. PRISMA flow d ng the process applied to obtain literature releva review question(Moher et al., 2009)**

**Table 1. Summary of Studies that Included Exploration of the Challenges of OSCEs in Nursing Education**

| First Author (Year) (Ref.) | Purpose of the Study | Sample & Design | Major Findings around challenges or barriers | MMAT score (quality) |
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| Byrne E, 2008(Byrne & Smyth, 2008) | The study objective was to present nurse educators' experiences and the outlook of the clinical competence assessment of students using the OSCE and address the related implementation challenges. | 11 nurse Educators- Qualitative study | The challenges were merging skills, students' preparation, their anxiety, and stress, educators' preparation, environment preparation, mock run, assessment duration, reflective practice, designing an exam with content validity, and ensuring the exam accuracy. | High |
| | This study aimed to examine the feedback from nursing students about implementing the | 724 undergraduate | The results showed that OSCE was accepted by most nursing students as a | |

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| El-Nemer A, 2009(El-Nemer & Kandeel, 2009) | OSCE to assess their clinical skills. | nursing students cross-sectional descriptive study | clinical skill assessment tool given that most students reported positive feedback. However, some students stated that the exam was very stressful for them, while some reported that the time designated for each station was not sufficient. | High |
| Mitchell, ML,2009(Mitchell, Henderson, Groves, Dalton, & Nulty, 2009) | The purpose of this paper is to review and evaluate the range of approaches and applications of OSCEs in health professional education and to make recommendations about how OSCEs may best be used in the assessment of nurse undergraduates. | Review Study | Four essential parts of reviewing competence are discussed in relation to OSCEs: measuring context-reliant competence, measuring competence versus measuring performance, measuring professional behavior, measuring the integration of skills | High |
| Eldarir Sh. A, 2010(Eldarir et al., 2010) | The study objectives included 1) creating a capacity for OSCE in nursing faculties and the staff members, 2) creating learning experiences by simulation in nursing practice, 3) comparing the feasibility, usability, and effectiveness of OSCE with traditional clinical assessments, and 4) examining the opinion of faculty members and students on the OSCE. | 400 nursing students and 140 faculty and staff members time serial research | The needs assessment showed that 57% of the faculty members knew nothing about OSCE and 98.6% had no experience in OSCE implementation. Moreover, faculty staff stated that OSCE implementation could help save time (76.3%), train highly qualified and competent students (62.5%), and improve students' performances (62.5%). Therefore, it is a suitable option for student competence assessment. | High |
| Ali G, 2012(Ali, Mehdi, & Ali, 2012) | The purpose of the study was to examine the students' perception of the OSCE as part of their clinical skill assessments. | 58 nursing students descriptive study | The results indicated that OSCE is a fair (75.9%) and comprehensive (72.4%) assessment tool with clear instructions (50.0%). It minimized the chance of failing (68.9%) and highlighted the student's weaknesses (46.6%). However, some students reported that OSCE was very stressful (24.1%) and others (50.0%) expressed | High |

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| | | | their concerns about the exam time duration. | |
| Fidment S, 2012(Fidment, 2012) | This study explored the OSCE experience of healthcare students, including nursing students. | nine nurses and one allied health professional<br>Qualitative study | Data analysis showed three main themes: (1) anxiety about the OSCE, (2) preparation as a coping strategy, and (3) simulation as the main cause of anxiety.<br>The participants expressed their concerns regarding the exam environment, equipment, and manikins.<br>The students have to feel that they are in a real situation to be able to immerse themselves in the scenario and role-playing. Most of them tried to act this way. However, the equipment and environment were not prepared to be realistic enough. Therefore, the simulation has to be as realistic as possible. | High |
| Eswi A, 2013(Eswi, Samy, & Shaliabe, 2013) | The study aimed to assess the Saudi nursing student's perception and feedback about the OSCE. | 80 nursing students<br>descriptive exploratory study | The results showed that most students had positive feedback about the OSCE as 95% reported that the exam was a realistic assessment of the course. Regarding the quality of OSCE performance, most students reported that the exam was fair (95%), covered a wide range of their knowledge (90%), and was well administrated (96.3%). However, some students reported the exam to be extremely stressful or even frightening. | High |
| Katowa-Mukwato P, 2013(Katowa-Mukwato, Mwape, Kabinga-Makukula, Mweemba, & Maimbolwa, 2013) | The study described the OSCE implementation at the University of Zambia for the assessment of nursing students' clinical competence. | Nursing students and faculty staff<br>Implementat | The challenges discussed were as follows:<br>Student preparation and orientation: students' performances can be affected by high levels of stress.<br>OSCE expenses: Many resources and materials and | |

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| | | ion study | much time and human force is needed for the efficient implementation of OSCE. The number of examiners and standard patients was also limited. Limited time may lead to exhaustion in students and examiners, decreasing the validity and reliability of the exam.<br>Weighting of questions and scenarios: Despite the fact that some skills assessed in certain stations are more important than others, all stations are usually given equal points.<br>Use of checklists: Checklist preparation for OSCE needs detailed discussion, attention, and agreement, especially among the examiners. The examiners should be prepared enough to ensure consistency in inter-rater approach and reliability. In addition, the checklists should be standardized and comprehensive to prevent bias.<br>Mock run: Precise organization and mock runs are also necessary to maintain the validity and reliability of the exam. | High |
| JO K. H, 2014(JO & AN, 2014) | The study objective was to explore Korean nursing students' experience of the OSCE using qualitative content analysis. | 64 nursing students<br>Qualitative content analysis | The collected data were classified into two themes and seven subthemes. The themes included 1) "awareness of inner capabilities", with three subthemes of "inner motivation", "inner confidence, and creativity", and 2) "barriers to nursing performance", with four subthemes of "a deficiency of knowledge", "deficiency of communication skill", "deficiency of attitude towards comfort", and | High |

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| | | | “deficiency of repetitive practice”. | |
| Munkhondya T. E. M, 2014(Munkhondya, Msiska, Chilemba, & Majamanda, 2014) | This study aimed to examine the design and implementation of OSCE in Kamuzu College of Nursing in Malawi. | Nursing students and faculty staff<br>Implementation study | OSCE is an expensive and highly stressful exam that requires extensive preparation and careful organization.<br>Other challenges included:<br>Student preparation<br>Simulated patient preparation<br>Examiner preparation<br>Vetting<br>Examination time<br>Creating marking sheets<br>Evaluation and feedback | High |
| East L, 2014(East, Peters, Halcomb, Raymond, & Salamonson, 2014) | The study attempted to gain insight into assessing students based on personal assessments and identifying whether examiner perceptions and professional characteristics impact the students' scores. | 42 Academics and 256 nursing students<br>mixed-methods study | Findings indicated that examiner individual perceptions and clinical experiences could influence the OSCE scores of undergraduate nursing students. Development of standard criteria and objective assessments may be enhanced by greater cooperation of examiners and their further training for administering the exam. | High |
| Chiou-Rong H, 2015(Chiou-Rong & Ue-Lin, 2015) | This study is a short commentary describing the current status of OSCE implementation and summarizing five possible challenges in OSCE in Taiwan nursing education. | short commentary | Insufficient space, budget, and equipment<br>Inadequate financing: OSCE implementation requires remarkable financial resources.<br>Human resources development challenges: OSCE implementation requires sufficient human resources. All the personnel and faculty are required complete<br>preparation before OSCE implementation.<br>Overloading nursing educators<br>Design of the content of OSCEs:<br>It is challenging to design content to assess comprehensive professional | High |

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| | | | attitudes, such as care, empathy, accountability, patient-centered communication, etc. in students.<br>Incompatibility of exam content with the training course.<br>Identifying the key skills that need to be assessed and the manner of assessment.<br>Designing valid and reliable scenarios compatible with clinical contexts is challenging.<br>Student stress: the OSCE is highly stressful for the students. Stress may affect the assessor's performance, preventing certain assessment of examinee competence. Moreover, how nursing educators assist students in coping with stress is also challenging. | |
| AbdAlla A, 2016(AbdAlla & Mohammed, 2016) | The purpose of the study was to evaluate students' perception of the OSCE. | 60 undergraduate Nursing Students<br>cross-sectional descriptive study | Analysis showed three main themes: quality of instruction and organization of OSCE, perception of the OSCE, and evaluation of the quality of OSCE performance.<br>The study highlighted the further need for student orientation before the OSCE to reduce their stress and anxiety during the exam. | High |
| Brighton R, 2017(Brighton, Mackay, Brown, Jans, & Antoniou, 2017) | This study aimed to evaluate the first implementation of an OSCE from the perspective of the students of an Australian school of nursing for quality improvement of this assessment method. | 102 Nursing students<br>Qualitative study<br>two-stage data gathering, pre-post test | The first phase of data analysis revealed three main themes: (a) student anxiety, (b) student preparedness, and (c) effectiveness of this method of assessment.<br>The three key themes from the post-OSCE analysis were: (a) feelings toward the OSCE, (b) examiner interaction, and (c) the OSCE environment. | High |

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| Chongloi N, 2017(Chongloi, Thomas, Ara, & Deepak, 2017) | The study objective was to determine nursing students' attitudes towards the Objective Structured Practical Examination (OSPE) as an assessment tool. | 252 Undergraduate nursing students Exploratory study | Most of the students approved of OSPE and felt that it was fair, useful, good, effective, exciting, interesting, practical, and skill-oriented, but also high-cost. | High |
| Massey D, 2017(Massey et al., 2017) | The study was conducted to describe and assess the effect of online video OSCE examples on the perception and performance of undergraduate nursing students. | 730 nursing students mixed-method study | The online OSCE examples increased student confidence, knowledge, and capacity to prepare for assessment. In addition, they increased the students' engagement and decreased their anxiety during preparation for OSCE. Thus, these examples can be used to improve the quality of the learning experience of students. | High |
| Obizoba C, 2018(Obizoba, 2018b) | This study aimed to examine the strategies for addressing the challenges of OSCE in nursing education programs. | 10 undergraduate nursing faculty Phenomenological Research Study | Five strategies were suggested to resolve the OSCE challenges: administrative and technical support, use of clinical instructors during an assessment, faculty members' training, limiting validation to the required skills essential for professional practice, and collaboration among all the faculty members involved in the course. | High |
| Bani-issa W, 2019(Bani-Issa, Al Tamimi, Fakhry, & Al Tawil, 2019) | This study explored the experiences of undergraduate nursing students and examiners with the OSCE. | 85 undergraduate nursing students and 8 examiners mixed methods study | Results indicated that students regarded the OSCE as a valuable assessment tool that enhanced in-depth learning and student preparation for clinical practice. Moreover, the participants reported the exam to be a stressful experience, pointing out the need for more time in the exam stations. Recommendations for improving the OSCE process included extending pre-exam preparation, training of simulated | High |

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| | | | patients, adopting a mixed learning model, and upgrading the exam setting. | |
| Taylor I, 2019(Taylor, Bing-Jonsson, Johansen, Levy-Malmberg, & Fagerström, 2019) | The purpose of the study was to examine and describe the OSCE experiences of nurse practitioner students and examiners. | 15 nurse practitioner students and 5 examiners qualitative descriptive study | Theme 1: Insufficient preparedness for the OSCE<br>Compatibility of the course and the exam, skills training and the OSCE.<br>Theme 2: The OSCE as a challenging examination process<br>Student stress and disruption of student performance, the unnatural setting of the simulation.<br>Theme 3: The OSCE as a method for assessing clinical competence<br>Student ability in showing advanced clinical competence<br>Assessment of advanced clinical competence | High |
| Solà-Pola M, 2020(Solà-Pola et al., 2020) | This study explored students and faculty members' acceptance of the OSCE and the usefulness of its implementation in Catalan (Spain) nursing schools for 10 years. | Nursing students and faculty members qualitative study | Theme 1: Usefulness and acceptance of the OSCE perceived by students<br>Self-assessment/self-awareness, feedback, learning, individual responsibility, exam competence skills, real-life evaluation, personal experience<br>Theme 2: Usefulness and acceptance of the OSCE perceived by faculty members<br>Integration of skills, assessment of competence, objectivity in assessment, evaluation of the curriculum's effectiveness | High |
| Elbilgahy A. A, 2020(Elbilgahy, Eltaib, & Mohamed, 2020) | The study aimed to evaluate the effectiveness of OSCE on the attitude and satisfaction of nursing students and teachers. | 91 undergraduate nursing students and 25 nursing faculty staff | More than one-third of the students (35.2%) reported that the OSCE reduced the risk of failing. Strongly agreeing with the involvement of OSCE in the nursing curriculum, more than half of the faculty members reported that OSCE assessed all the | High |

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| | | members<br>Quasi-experimental study one group pre posttest | students objectively, was fair for all students, and offered a new experience for the students and faculty members. | |
| Zamanzadeh, V, 2021(Zamanzadeh et al., 2021) | This study aimed to explore and describe challenges associated with OSCE implementation based on the experiences of faculty members and nursing students. | 18 Faculty members and 15 Students<br>Qualitative study | Two main themes were evident from the data: 1) shortcomings in executive and technical infrastructure, and 2) shortcomings in educational infrastructure. | High |

**Table 2. Challenges of OSCEs in Nursing Education: Themes and Sub-Themes**

| Themes | Sub-Themes |
|---|---|
| Challenges related to OSCE validity and reliability | Determining the content under assessment<br>Designing questions and scenarios<br>Designing checklist/s and rating scales<br>Examiner impacts |
| Implementation and technical challenges | Resources<br>Examiner-related challenges<br>Examinee-related challenges<br>Challenges related to standard patients<br>Exam organization<br>Standardizing settings |
| Inherent challenges of OSCE | Assessment of minimum competence<br>Assessment of only a limited sample of competencies<br>Challenges in assessing a holistic approach to a patient<br>Risks of premature knowledge of the stations<br>Difficulty in the assessment of some learning outcomes |