

Navigating the OSCE: Exploring Nursing Students' Perceptions and Challenges— A Systematic Review

Dr.Kavita Kelkar

Principal

PCMC Institute of Nursing Sciences, YCMH, Pimpri, Pune-18

Abstract

Background: Assessment of nursing competency of nursing students ensures safe practice and standard care to the patients. An Objective Structured Clinical Examination (OSCE) is universally used globally in nursing education programs to evaluate clinical skill and knowledge. **Objective:** This systematic review has objective to identify the perception and challenges about OSCE among nursing students globally. **Methods:** Analyze (PRISMA),A relevant article published from 2016 to 2024 was retrieved from Science Direct PubMed, Web of Science, PubMed and Google scholar. Inclusion criteria were studies in which the subjects were nursing students. The Mixed method assessment tool (MMAT) was used to assess the quality of study. **Results:** The literature search identified 62 articles. After applying the predefined inclusion criteria, 11 studies were selected for the final review. The findings indicated that students reported OSCE is more fair, valid and reliable to tool to assess students learned material. Despite the fact students faced the challenges in terms of stress and time consuming and feedback was given inappropriate.**Conclusion:** This review can concluded that student's perception towards the OSCE was favorable, contributing to the to learn how to be in the real clinical setting, well-structured and sequenced. Conducting more research related perception and a challenge regarding OSCE to clinical outcome is advised and strategies for lowering anxiety, stress, time management and constructive feedback are recommended.

Keywords: Perception, Challenges, OSCE, Nursing student, Examination

1. Introduction

Background

The Objective Structured Clinical Examination (OSCE) was first used in evaluation by Harden et al. in the middle of the 1970s.¹ Learning in the clinical setting of nursing equips nursing students with current knowledge, skills, dispositions, and capacities. There are several good reasons why OSCE is a significant, sensible, beneficial, and appropriate way to evaluate students' clinical performance.²

To assess new nurses' demonstration of fundamental nursing abilities in an actual clinical environment. The OSCE following lectures and practice of fundamental nursing skills, which improves nursing students' memory of information prior to graduation.³One of the finest ways to give nursing students a standardized, objective assessment of their

clinical skills and assist them in mastering various clinical skills is through the OSCE.

It's one of the greatest ways to evaluate students' clinical ability.

The OSCE method is used in nursing programs at the undergraduate level to evaluate students' psychomotor abilities, which include applying their knowledge and comprehension. ⁴Assessing nursing students' clinical competency can be done with validity and reliability using the OSCE. The OSCE is used to evaluate students' competency skills in the nursing program at TecnoCampus, a facility affiliated with Pompeu Fabra University. This shows that the tool is legitimate and reliable. In spite of its high cost (both in terms of time and resources) and high stress level, the OSCE is marketed as an assessment tool that both students and assessors find to be highly satisfactory. OSCE is a legitimate and trustworthy tool that could significantly help the nation maintain high standards for aspiring nurses. ⁵

OSCE was quicker, more accurate, and impartial. The OSCE is a useful clinical evaluation tool for a variety of nursing procedures. OSCE outperformed traditional evaluation as a clinical evaluation tool. ⁶OSCE evaluates a variety of lessons, takes less time, is less stressful, and is less unstable during practical sessions. When it comes to evaluating nursing students' clinical ability, the OSCE technique of practical examination is thought to be superior to TPE. ⁷OSCE can be a much more objective, consistent, and adaptable assessment technique when it comes to clinical scenarios that can be evaluated. ⁸In the OSCE, technical and educational infrastructure are crucial, and inadequate equipment means When performing the OSCE, nursing examiners also encounter difficulties with inconsistent instruments, a shortage of manikins, an inadequate number of stations, and a poorly furnished skill lab. ⁹

In order to prevent students from experiencing needless stress and burnout, separate schedules for OSCE and other assessment methods should be established. It is recommended to adhere to the standard OSCE preparation processes. Students should get orientation regarding the OSCE exam and practice mock exams prior to the actual exam in order to familiarize them with the assessment process and train examiners. ¹⁰The OSCE's clinical competence is generally deemed satisfactory. In the nursing curriculum of the institution, OSCE is widely accepted as an examination system that will undoubtedly prepare young professionals for the real world of work. ¹¹Curriculum has benefited from OSCE, which is a fair and significant type of assessment in our context. If appropriately crafted, OSCE can be a valuable and legitimate teaching and assessment tool for nursing students. ¹²

In the field of advanced practice, the objective structured clinical examination (OSCE) is a widely used technique for evaluating clinical competency. A strong pedagogy for use in nursing education is OSCE. OSCE to improve advanced nurse practitioners' experience and performance, as well as their clinical practice competency. ¹³

2. Material and Methods

Review question

The review was developed using the Population, Intervention, Comparison, and Outcome (PICO) framework. The components included: **Population (P):** nursing students; **Intervention (I):** the use of the Objective Structured Clinical Examination (OSCE) as a simulation-based assessment tool; **Comparison (C):** students' perceptions of OSCE across different global settings; and **Outcome (O):** the challenges associated with the use of OSCE. What is the perception and challenges faced by the nursing students? ¹⁴

3. Methodology

Search Strategy

The comprehensive literature was conducted to identify the relevant studies regarding nursing student's perception and challenges related OSCE. These articles were searched in electronic data bases such as Science Direct, PubMed, Web of Science, and Google Scholar by using key words Objective Structured Clinical Examination (OSCE), perception, challenges, nursing students and competency. The search of articles were limited to articles published in English language from 2015-2024. The retrieved articles were screened by title, abstract and full text based on inclusion criteria. The search Strategy followed the PRISMA Guideline, is illustrated in Figure1.¹⁵

Criteria for Inclusion

The study included the articles who met the following criteria

1. Population undergraduates nursing students who are pursuing nursing Programme globally and experience OSCE
2. Study published in English language between 2016 and 2024
3. Study included research design mixed method approach
4. Articles available in full text
5. Studies involve the concept of perception, challenges, experiences and attitude towards OSCE Examination.

Criteria of Exclusion

The study excluded the articles who met following criteria

1. Studies involve participation other than nursing students.
2. Studies that did not observe students' perceptions, experiences, or challenges related to OSCE
3. Studies like editorials, commentaries, conference abstracts, and opinion papers.
4. Duplicate publications.

Assessment of data quality

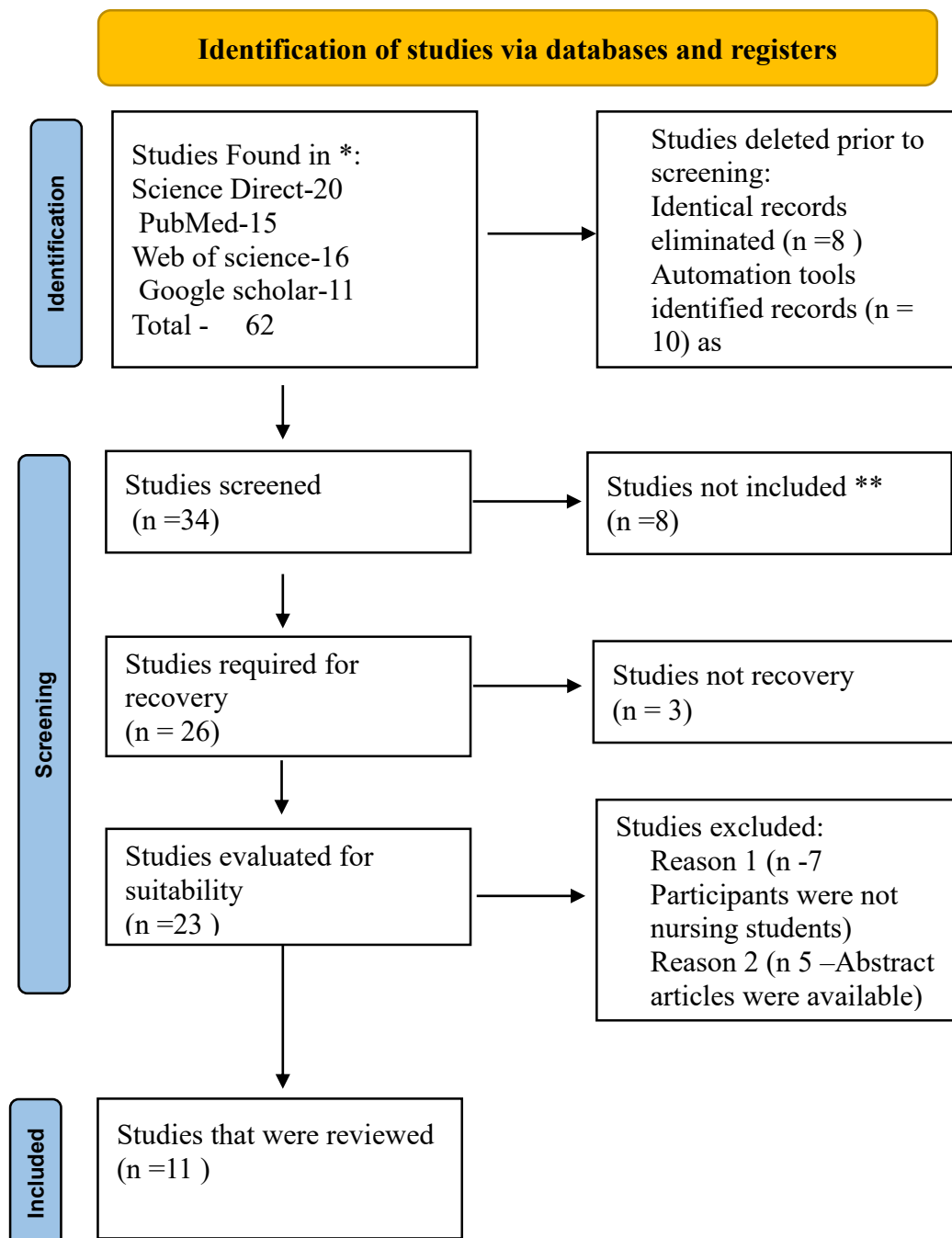
The quality of the 11 included studies was assessed by using tool such as Mixed Method Assessment Tool (MMAT). To assess the quality of data obtained using mixed-method approaches. The assessment focused on objective, design, inclusion criteria, sample size, data collection and interpretation of finding. The included studies were measured to have moderate to high quality rating.

Screening

The researcher assessed the eligibility of the identified studies on an individual basis. This initial evaluation was based on the titles of the studies. Next, the researcher reviewed the abstracts, which led to selecting and retrieving the full texts of those publications that met the inclusion criteria outlined in the abstracts. Identical records were removed, and articles that did not satisfy the predefined inclusion criteria were excluded. To identify additional relevant studies, the researcher also performed a manual review of the reference lists of the included articles using the same screening approach.

4. Results

Twelve articles (Five qualitative, seven quantitative,) were included in the systematic review. Studies were undertaken Saudi Arabia (4) India (4) Egypt (1), Africa (1) Nigeria (1). The subjects in the research varied in number from 11 to 315. The assessment methods used for simulation nursing students are detailed by identifying the appropriate tools needed to evaluate skill competence and the necessary information for practice, while organizing two primary themes: perception and challenges.



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

5. Result

Author/s Year	Sample Size	Study Design	Main findings
Evelyn Taibu,etal 2024 Africa ²⁵	53	Phenomenological design	Gender- Male 34%, female-66%Participants experienced the OSCE as a source of tension and stress, citing factors such as time constraints, anxiety over being observed, and unfamiliarity with the exam format. Students expressed that there was inadequate time, shortage of clinical equipment, technological support, and enough assessors. Some assessors were unprofessional conduct, lack of empathy and respect towards the students. They were not provided with feedback.
Abhinaya K,et al 2024 India ²⁶	100	Descriptive research	The OSCE method faced moderate challenges in 97% of the samples. Almost half (48%) of the participants reported struggling with both time management and stress.
Mary Idowu Edward 2016 Nigeria ⁷	148	Survey	Students believed thatOSCE takes up less time; Its structure was seen as more equitable and impartial. Evaluate a broader spectrum of acquired content. Requesting reduced preparation. Students viewed OSCE as being lower Tensed
Dr. Eman M Gaber Hassan 2023 Egypt ²⁷	220	Cross-sectional descriptive	167 female students and 57 male. They stated that the OSCE exam served as a dependable and valid evaluation instrument, encouraging their analytical thinking and enhancing their communication skills.
Soya Kattil 2022 India ²⁸	46	Descriptive survey	Most (73.9%) believed that the exam was administered, organized and ordered effectively.30.4% of the participants believed that additional time was necessary at the respective stations. Most (76.1%) of the participants believed that the students understood the extent of information required.
Lavanya Subhashini 2018	34	Descriptive cross-sectional	94.1% majority of students approved exams are well managed 91.1% enclosed extensive area of knowledge ,85.3% felt exam was unbiased.88.2% well-structured and

India ⁴			sequenced,44.1 % students also specified exam is very tense,55.8% also less stressful than other exams,91.1% students agreed that Instructions were clear and unambiguous,82.3% Exam provided chances to learn,85.3%Sequence of stations logical and suitable32.3% fully aware of nature of exam
Alizadeh, M 2024 Saudi Arabia ²⁹	12	qualitative approach and a conventional content analysis	There were 12 participants, comprising 7 males and 5 females. OSCE face a lack of agreement on the suitable content for the exam and the evaluation checklists. Identical situations for every student; suitable feedback for students; proper conduct of evaluators and their training and readiness, as well as evaluator fatigue, and students' isolation. , absence of strategies to address students' stress and anxiety, along with inadequate preparation of them
Nazdar Alkhateeb 2022 Saudi Arabia ³⁰	141	survey	34.7%were males and65.7%were females. It enhances confidence, engagement, and motivation for learning, improving practical study sessions and fostering a greater sense of responsibility for their education.theteachers' limited experience within this domain. Additional issues involved timing, length, and structure of the OSCE.
Amal Alaskar2022 Saudi Arabia ³¹	157	Descriptive cross-sectional	Most of them 63% were female. 57.8% of students perceived OSCE as a fair method, 89% of them perceived well-structured and sequenced, 60.4% it as a logical sequence of stations. 62.3% of students felt covered a broad spectrum of critical areas.64.9% clinical skills based on a standardized score.62.3% of students thought stressful, 58.4% thought it was threatening. 57.8 % of students accepted it as an efficient clinical assessment process
Alamri, Shaikha Oman 2020 ³²	160	cross-sectional descriptive	Stressful test, lack of confidence in performance, unrealistic time constraints for task completion, unpleasant examiners, and inadequate OSCE station administration. Therefore, giving students with practice trials before the OSCE, defining the proper time frame for each station, and training the students in time management
Dr.Sunita Lawrence2019 India ³³	80	Retrospective case series design	62.5% students were agreed, that the exam covered a variety of clinical skills. 88.75% students said that assigned tasks reflected what is taught in their courses. 53.75% participants' state that time at each station was sufficient.

			62.5% learners were approved the setting and context at each station felt authentic. 75% samples were agreed, the guidelines were clear and definite. 72.5% subject noted that stations were sequentially with logic. 75% students were indicated, OSCE exam provided opportunities to learn in simulated setting. 73.75% agreed, OSCE scores provide accurate measure of crucial clinical skills. 76.25% undergraduates were approved, Conduct and social relations of students do not affect OSCE scores
Mirna Fawaz 2021 Saudi Arabia 34	315	mixed-method design	(35.6%) were males while (64.4) were females.(85.4%) agreed that the Instructions were flawless and definite(75.3%) approved on its objectives and scoring,(73.7%) granted that the Exam provided opportunities to learn,”(72.1%) agreed that “OSCE is a hands-on and worthwhile experience.(60%) of the participants stated that the time allotted to each station was inadequate(61.6%) was particularly organized, excellent scores were reported. Maximum students said that they were examined by standard evaluation tool and marks obtained strictly as per their OSCE performance.

6. DISCUSSION:

Systematic review aim to review perception and challenges faced by the nursing students globally. Three major themes emerged: OSCE organization and objectivity; psychological aspect, and OSCE implementation challenges. The OSCE-based curriculum enables students to retain knowledge successfully. OSCE, in addition to lectures and basic nursing skill practice, increased information retention. These strategies can improve nursing students' knowledge levels, and using the OSCE can help students improve their clinical competency.¹⁶ The OSCE style of clinical evaluation is superior because of its clear benefits, particularly in terms of objectivity, homogeneity, and flexibility of clinical scenarios that can be assessed. OSCE eliminates prejudice in examining students and allows everyone to go through the same scope and criteria for assessment.¹⁷ OSCE is a desired and feasible assessment method in the chosen setting, which includes advanced learners. It is also implied that powerful and evocative research evidence makes the implementation of an innovative curricular reform more sustainable and meaningful.¹⁸ the students gave excellent feedback on the OSCE format. They agreed that the time at each station is adequate (96%). The majority of students stated that OSCE stations covered the entire course (90%) and that "OSCE provide a measure of clinical essential skill" (94%).¹⁹ Participants experienced tension, disorientation, and distraction throughout the OSCE, which may have affected their performance.²⁰ The study's findings revealed that first-year nursing students experienced moderate stress during their first OSCE; yet, the OSCE atmosphere remained difficult for nursing students. Participants in this study reported feelings of anxiety, anger, and discomfort during the resource-intensive OSCE assessments,²¹ Participants in this study reported feelings of anxiety, anger, and discomfort during the resource-intensive OSCE assessments. They suggested increased preparation

time, more manpower, checklists, exam space organization, mannequins/simulators/skill labs, and trained faculty.²² nursing educators face a variety of concerns and challenges while administering the OSCE. They encountered challenges with time, equipment, skilled faculty, technical and educational infrastructure, and well-equipped nursing labs.²³ Poor organization, inadequate station, insufficient time provide for the station and inter exam time gap were factors were impending much needed implementation of OCSE.²⁴

Limitations

The results of this systematic review showed that the study was restricted to nursing students and could not be applied to any other field. Other fraternity students who take the OSCE should be the subject of additional inquiry. This study solely evaluates how nursing students perceive and deal with OSCE. The results point to deficiencies in the patients' actual experience and performance. Additionally, there is a dearth of studies using randomized controlled trials to compare OSCE with conventional assessment techniques. The majority of papers that were published in languages other than English were excluded from this review, which may have prevented the non-English speaking nations from receiving pertinent information.

Implications

The systematic review has important ramifications for research, clinical practice, and nursing education. The study's findings suggested that using OSCE as an assessment method could improve students' learning satisfaction and evaluation procedures. To determine the influence on patient care outcomes and nursing skill preparation, more study into OSCE-based simulation training and actual clinical practice is recommended. By assisting in the growth of healthcare delivery and identifying areas where the nursing curriculum needs to be improved, the integration of the student approach and self-directed evaluation technique may provide significant benefits in nursing education. As a result, our results support the broader use of OSCE as a useful assessment.

Conclusion

The study's findings revealed that nursing students believe the OSCE is well-structured and evaluates a wide range of knowledge and competencies. It provides opportunities for virtual learning. It is a very valid and objective evaluation method. This method promotes students' analytical, critical thinking, and communication skills. Students were given clear instructions before beginning the OSCE Exam. A logical and sequential station was constructed. The standard format is being utilized for evaluation. Personality and social behavior does not influence the outcome.

The majority of students reported that the OSCE produces tension and worry. Time management was a major concern. Administrative and academic challenges include a dearth of clinical equipment, insufficient stations, and assessors, unprofessional conduct, the same scenario for every student, and a lack of stress-reduction strategies.

Funding: Self-funded research

Declaration of Competing Interest: According to the authors, the work reported in this study was not influenced by any known competing financial interests or personal relationships.

Authors Contribution

1. Study Conception, Data Collection and analysis data, preparation of manuscript
2. Data Collection and analysis data, preparation of manuscript and critical revision.

References:

1. Harden RM, Stevenson M, Downie WW, Wilson GM. Assessment of clinical competence using objective structured clinical examination (OSCE) British Medical Journal. 1975; 1:447–451. doi: 10.1136/bmj.1.5955.447. [DOI] [PMC free article] [PubMed] [Google Scholar]
2. Vijayalakshmi. S, Deiva K, Kathyayani B.V. Objective Structured Clinical Examination (OSCE) on Antenatal Assessment among nursing students. Asian Journal of Nursing Education and Research. 2021; 11(3):401-4. doi: 10.52711/2349-2996.2021.00096 Available on: <https://ajner.com/AbstractView.aspx?PID=2021-11-3-23>
3. Eun-Ho Ha ¹, Eunju Lim ². The effect of objective structured clinical examinations for nursing students, 2023 Jun 9;18(6):e0286787. doi: 10.1371/journal.pone.0286787
4. Lavanya Subhashini Radha MS2 , Baby GK3 Effectiveness of OSCE in assessment of clinical competencies and perception of OSCE among nursing students, RGUHS Journal of Nursing Sciences, December 2018 / Vol-8 / Issue-2
5. Carolina Chabrera ¹, Eva Diago ², Laura Curell ³ Development, Validity and Reliability of Objective Structured Clinical Examination in Nursing Students 2023 Oct 9;9:23779608231207217. doi: 10.1177/23779608231207217
6. Shweta Saisagar Kshirsagar A Study to Assess Perception of Nursing Students about the Effectiveness of Objective Structured Clinical Examination (OSCE) during Perineal Care Procedure in the selected College of Metropolitan City, International Journal of Nursing Education and Research. 9(4): October - December, 2021
7. Mary Idowu Edward, Funmilayo Okanlawon. Perception of objective structured clinical examination and traditional practical examination in assessment of nursing students clinical competencies by nursing students in south west Nigeria. Int J Med Res Rev 2016;4(8):1340-1350. doi:10.17511/ijmrr.2016.i08.11.
8. Jindal, Parul; Khurana, Gurjeet The opinion of post graduate students on objective structured clinical examination in Anaesthesiology. A preliminary report, Indian Journal of Anaesthesia 60(3):p 168-173, March 2016. | DOI: 10.4103/0019-5049.177869
9. Usama Siddique1*, Bakhtyar Ali Shah2, issues and challenges faced by nurse examiners during the conduct of objective structure clinical/practical examination at nursing colleges, Journal of Population Therapeutics & Clinical Pharmacology, Vol. 30 No. 17 (2023): JPTCP
10. Getu Ataro Solomon Worku Tsedeke Asaminew , Experience and Challenges of Objective Structured Clinical Examination (OSCE): Perspective of Students and Examiners in a Clinical Department of Ethiopian University, Ethiop J Health Sci 2020 May;30(3):417–426. doi: 10.4314/ejhs.v30i3.13
11. Taala, W. Waggas, D. and Teresa, P. (2019) Utilization of Objective Structured Clinical Examination (OSCE) in Ensuring Clinical Competence of Nursing Students: A Case of FCMS. Open Access Library Journal, 6, 1-12. doi: 10.4236/oalib.1105209.

12. Tiwonge Ethel Mbeya Munkhondya, Gladys Msiska, Evelyn Chilemba, Maureen Daisy Majamanda, Experience of Conducting Objective Structured Clinical Evaluation (OSCE) in Malawi"published by Open Journal of Nursing, Vol.4 No.10, 2014
13. Joanna Lavery Observed structured clinical examination as a means of assessing clinical skills competencies of ANPs, advanced clinical practice, 24 February 2022
14. Maysa Fareed Kassabry, Evaluation of simulation using objective structured clinical examination (OSCE) among undergraduate nursing students: A systematic review, International Journal of Africa Nursing Sciences,18,(2023)10053
15. Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *Bmj*, 349.
16. Ha E-H, Lim E (2023) The effect of objective structured clinical examinations for nursing students. *PLoS ONE* 18(6): e0286787. <https://doi.org/10.1371/journal.pone.0286787>
17. Zayyan M. Objective Structured Clinical Examination: The Assessment of Choice. *Oman Med J* 2011 Jul; 26(4):219-222. Available from http://www.omjournal.org/fulltext_PDF.aspx?DetailsID=114&type=fulltext
18. Sujitha Elavally, Athirarani Muralidharan Rohini, Manjula Annamalai, Seethalakshmi Avudaiappan, Nalini Sirala Jagadeesh, Thankamani VK. Feasibility and Effectiveness of Objective Structured Clinical Examination in Indian Collegiate Nursing Programme. *International Journal of Nursing Education and Research*. 2024; 12(1):27-2. doi: 10.52711/2454-2660.2024.00006
19. Entesar Makhoulf 1 Saudi Nursing Students' Outcomes and Perspectives about an Objective Structured Clinical Examination in Obstetrics and Gynecological Nursing Course, *International Journal of Medical Research & Health Sciences*, 2019, 8(3): 19-25
20. Yosra Raziani ^{a 1}, Ahmad Nazari ^b, Sheno Raziani , Nursing students' experiences with the objective structured clinical examination (OSCE): A qualitative study, *International Journal of Africa Nursing Sciences* Volume 16, 2022, 100433
21. Dorothee Line Adibone Emebigwine^I; Ntombizodwa S.B. Linda^{II}; Penelope Martin^I Objective structured clinical examination: Do first-year nursing students perceive it to be stressful? *Curationis* vol.46 n.1 Pretoria 2023 <https://doi.org/10.4102/curationis.v46i1.2339>
22. Pooja Dewan, Sumaira Khalil, Piyush Gupta, Objective structured clinical examination for teaching and assessment: Evidence-based critique, *Clinical Epidemiology and Global Health* Volume 25, January–February 2024, 101477
23. Usama Siddique, & Bakhtyar Ali Shah. (2024). Issues and challenges faced by nurse examiners during the conduct of objective structure clinical/practical examination at nursing colleges. *Journal of Population Therapeutics and Clinical Pharmacology*, 31(5), 122-132. <https://doi.org/10.53555/jptcp.v31i5.6090>
24. Ataro G, Worku S, Asaminew T. Experience and Challenges of Objective Structured Clinical Examination (OSCE): Perspective of Students and Examiners in a Clinical Department of Ethiopian University. *Ethiop J Health Sci*. 2020 May;30(3):417-426. doi: 10.4314/ejhs.v30i3.13. PMID: 32874085; PMCID: PMC7445939.

25. Evelyn Taibu et al, Exploring Challenges Experienced by Nursing Students Regarding Objective Structured Clinical Examination in Malawian Nursing Colleges: A Qualitative Phenomenology Study. <https://doi.org/10.21203/rs.3.rs-4959116/>
26. Abhinaya K, Vallil A, Manasa A, Benny A, Nivethitha K, Chitra F. A descriptive study to assess the challenges towards OSCE method of evaluation among B.Sc. nursing students in selected college, Puducherry. International Journal of Advance Research in Medical Surgical Nursing. 2024;6(1):150-152.
27. Mary Idowu Edward, Funmilayo Okanlawon. Perception of objective structured clinical examination and traditional practical examination in assessment of nursing students clinical competencies by nursing students in south west Nigeria Int J Med Res Rev 2016;4(8):1340-1350.doi:10.17511/ijmrr.2016.i08.11.<https://doi.org/10.15379/ijmst.v10i4.2334>
28. Dr. Eman M Gaber Hassan¹ *, Sharell Lewis² , Latha S kannan³ , Nisha Sivapalan⁴ , Dr. Darling B. Jiji, clinical and International Journal of Membrane Science and Technology, 2023, Vol. 10, No. 4, pp 1946-1952 Soya Kattil 2022 et al The nursing journal of India, Vol CXIII, No-4 189-192
29. Alkhateeb N, Salih AM, Shabila N, Al-Dabbagh A (2022) Objective structured clinical examination: Challenges and opportunities from students' perspective. PLoS ONE 17(9): e0274055.<https://doi.org/10.1371/journal.pone.0274055>
30. 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>
31. M. Fawaz and Y. Alsalamah, International Journal of Africa Nursing Sciences 15 (2021) 100373
32. Dr.Sunita Lawrence. "Perception of Undergraduate Nursing Students towards Objective Structured Clinical Examination (Osce)". IOSR Journal of Nursing and Health Science (IOSRJNHS), vol. 8, no.01, 2019, pp. 45-49.
33. Alizadeh, M., Behshid, M., Cheraghi, R. et al. Nursing students' experiences of professional competence evaluation by Objective Structured Clinical examination method: a qualitative content analysis study. BMC Med Educ 24, 1302 (2024). <https://doi.org/10.1186/s12909-024-06292-3>
34. Alamri, Shaikha; Hashmi, Iman Al; Shruba, Kholah; Jamaan, Suad; Alrahbi, Zaina; and Kaabi, Thuraiya Al (2022) "Nursing Students' Perception and Attitude towards Objective Structured Clinical Examination in Oman," Sultan Qaboos University Medical Journal: Vol. 22: 343-350. DOI: <https://doi.org/10.18295/squmj.2.2022.012>