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Abstract.

This article examines the organization and implementation of the Objective Structured Clinical Examination (OSCE) in Ukrainian and international medical institutions as one of the primary methods for assessing the practical competencies of medical students. The relevance of OSCE is analyzed in the context of modern medical education, which is undergoing continuous transformation due to increasing requirements for the quality of specialist training and the need to ensure patient safety. Particular attention is paid to the strengths of the OSCE, including the training of highly qualified examiners, equipping simulation centers with modern devices and materials, motivating students and staff, and standardizing evaluation criteria to

ensure objectivity and transparency of results. The main weaknesses of OSCE are also identified, including organizational and logistical difficulties in preparing stations, limited experience in conducting the exam in some institutions, insufficient technical support, and challenges in the training of standardized patients. Opportunities for optimizing the examination are discussed, including the implementation of digital platforms, automation of assessment, the use of virtual simulators, and involvement of national and international experts, which enhance the effectiveness of student training and assessment quality. Scientifically grounded recommendations are provided for determining the optimal number of stations, developing clear clinical scenarios and structured checklists for assessment, training standardized patients, improving logistics, and implementing unified national standards for OSCE. The study demonstrates that these measures contribute to improving the professional training of future physicians, increasing the objectivity of evaluation, and enhancing the overall quality of healthcare services in the country.

Keywords: Objective Structured Clinical Examination, OSCE, medical education, simulation training, assessment standardization, digital technologies, student training, professional competencies.

Об'єктивно структурований клінічний іспит (ОСКІ) у підготовці медичних фахівців

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У статті досліджується організація та проведення об'єктивно структурованого клінічного іспиту (ОСКІ) у медичних закладах України та зарубіжжя як одного з основних методів оцінювання практичних компетенцій студентів медичних спеціальностей. Розглянуто актуальність застосування ОСКІ у контексті сучасної медичної освіти, що перебуває у стані постійної трансформації під впливом зростаючих вимог до якості підготовки фахівців і забезпечення безпеки пацієнтів. Особлива увага приділяється сильним сторонам іспиту, включно з підготовкою висококваліфікованих екзаменаторів, оснащенням симуляційних центрів сучасним обладнанням та матеріалами, мотивацією студентів і персоналу, а також стандартизацією оцінювання, що забезпечує об'єктивність та прозорість результатів. Визначено основні слабкі сторони, серед яких – організаційні та логістичні складнощі при підготовці станцій, недостатній досвід проведення ОСКІ у деяких закладах, обмежена технічна підтримка та проблеми з підготовкою стандартних пацієнтів. Розглянуто можливості оптимізації іспиту шляхом впровадження цифрових платформ, автоматизації оцінювання, використання віртуальних симуляторів і залучення національних та міжнародних експертів, що дозволяє підвищити ефективність підготовки студентів та якість оцінювання. Наведено науково обґрунтовані рекомендації щодо формування оптимальної кількості станцій, розробки чітких сценаріїв клінічних ситуацій та структурованих чек-листів для оцінювання, підготовки та навчання стандартизованих пацієнтів, а також удосконалення логістики і впровадження єдиних національних стандартів проведення ОСКІ. Показано, що реалізація цих заходів сприяє підвищенню рівня професійної підготовки майбутніх лікарів, підвищенню об'єктивності оцінювання та покращенню якості медичних послуг у країні.

Ключові слова: об'єктивно структурований клінічний іспит, ОСКІ, медична освіта, симуляційне навчання, стандартизація оцінювання, цифрові технології, підготовка студентів, професійні компетенції.

Introduction.

Modern medical education is undergoing constant transformation, driven by growing demands for the quality of training for healthcare professionals and the need to ensure a high level of patient safety. One of the key factors in improving the effectiveness of the educational process is the integration of simulation-based learning, which gives students the opportunity to practise clinical skills in conditions as close as possible to real-life situations, without risk to the patient. Simulation technologies enable the development of practical competencies necessary for the practice of medicine at a high professional level, and also promote the development of critical thinking, rapid decision-making and interdisciplinary collaboration [1, 2, 3, 4].

Relevance of the issue.

The relevance of the issue is confirmed by the regulatory and legal documents of Ukraine, in particular Order No. 900 of the Ministry of Health of Ukraine dated 24 May 2024 'On the Approval of Amendments to the Procedure, Conditions and Timelines for Conducting the Unified State Qualification Examination and the Criteria for Assessing Results' and Resolution of the Cabinet of Ministers of Ukraine No. 334 of 28 March 2018 'On the Approval of the Procedure for Conducting the Unified State Qualification Examination for Higher Education

Students in Field of Knowledge 22 “Healthcare”. These documents define the main strategic directions for improving the system of assessing the competences of students at medical educational institutions and emphasise the need to introduce modern methods of objective assessment of knowledge and practical skills [5, 6, 7].

Objective Structured Clinical Examination (OSCE) is one of the most effective ways to evaluate professional skills, which standardizes the assessment procedure, guarantees an objective and structured assessment, and can give reliable information concerning the preparation of future specialists [8, 9, 10]. The implementation of OSCE needs proper material resources, as well as proper organizational and logistical support, staff training and implementation of modern technologies. The use of international best practices, digital platforms, virtual simulators, and automated evaluation systems help to improve the efficiency of the exam and help create qualified doctors who can practice effectively and safely on their own [11]. The process of conducting OSCEs in medical education institutions at home and abroad is of great interest, because it is possible to identify its advantages and disadvantages, to draw conclusions on the effectiveness of the logistics, methodology of conducting OSCEs, to optimize the process of preparing students for OSCE, and assess their competency. The quality of the OSCE, the harmonization of national standards and the introduction of modern technological solutions directly affect the level of professional education of future doctors, and the quality of health care services in the country [12, 13].

Objective. The goal of this article is to review the experience of Ukrainian and foreign medical education institutions in organization and implementation of the Objective Structured Clinical Examination for further improvement of its effectiveness as a tool for the assessment of students' professional competence. The study is designed to ascertain the advantage and disadvantage of the current practices, investigate the logistical and organizational issues of the examination process and examine the possibilities of optimizing the process of student preparation and evaluation of practical skills.

Research Methodology.

For the purpose of achieving the aim of the study, a comprehensive approach was used, which involved analyzing the literary sources and regulatory documents, and also gained practical experience in conducting OSCE in domestic and foreign medical education institutions. Systematic analysis of the exam's strengths and weaknesses, comparative analysis, and SWOT analysis are used to identify strengths and weaknesses with regards to organizing and assessing the exam, and to evaluate risks and opportunities for optimizing the exam. The regulatory documentation of Ukraine, such as the Order of the Ministry of Health of Ukraine No. 900 from 24.05.2024, the Resolution of the Cabinet of Ministers of Ukraine No. 334 from 28.03.2018, and international recommendations on OSCE standardization have been analysed in a systematic manner. Comparative analysis helped to compare approaches in the organization of exams in various countries, identify good practices, and assess the effectiveness of the logistical and technological solutions.

The SWOT analysis method was used to analyze the internal and external factors affecting OSCE to assess student preparation, examiner qualification, equipment of simulation centers, technical assistance and organizational and logistic issues. Great effort was made to pinpoint areas where modern digital technologies can be incorporated, the assessment process automated, and virtual simulators utilised to better prepare students and increase the objectivity of assessment.

An analysis of the experience of making standardized patients and clinical scenario script for evaluating students' practical competencies was carried out. The data were collected systematically and objectively, using a structured checklist and the unified evaluation criteria. The comprehensive methodological approach enabled not only to assess the current organization of OSCE but also to make practical recommendations for enhancing the efficiency of the OSCE at the national level.

Results.

The OSCE is a complex and standardised way of evaluating the practical skills of students in a medical education institution. The exam will be based on a series of stations, each representing a clinical scenario and designed to assess specific professional skills like undertaking a history, physical examination, formulation of a diagnosis, clinical decision-making and communication skills. The number of stations depends on the specialty and the degree of training of students, and according to international standards, is in the range of 10-20 stations. The time allowed for each station completion is usually 5-15 minutes in which practical skills can demonstrate, but at an optimum pace for examination [14, 15].

The OSCE preparation is complex and comprises of several steps. The first is that a team of examiners are selected and trained so that they adopt a consistent approach to assessment of students and apply the same criteria for evaluating them. Second, materials to develop for the stations are prepared, such as clinical case scenarios, assessment checklists, information cards for standardized patients, and medical equipment needed for the stations. Third, standardized patients are chosen and trained; they can be actors or specially trained volunteers who can portray real clinical scenarios [16, 17].

The modern administration of the OSCE is impossible without the use of technical and digital tools. These include simulators and manikins, electronic systems for registration and automatic marking, video surveillance and recording systems to check the quality of assessment, and interactive virtual simulators to simulate rare or complex clinical cases. The application of such technologies guarantees the objectivity, transparency and efficiency of the exam, minimizes the influence of the human factor on the process of assessing the results of the exam, helps to enhance students' professional training [18, 19].

The analysis of the organisation and conduct of the OSCE identifies various key strengths which make the exam effective. Firstly, highly qualified examiners ensure that the assessment is carried out in a uniform and standardised manner and that the criteria are followed, thus improving the objectivity of the results. Secondly, introducing to the simulation centres the latest equipment, instruments, manikins, etc. makes it possible to recreate a variety of clinical situations and provides conditions as close as possible to the real medical practice.

The other important factor is student and staff motivation, which is a motivation for students to be active in learning and also to improve the quality of demonstrations of students' practical skills. Finally, standardisation of assessment, the use of structured checklists and clear criteria, ensures the objectivity of the results, minimises the influence of subjective factors and results in the ability to reliably assess the competence level of the students [20]. Clinical case simulations are limited in realism due to problems with preparation of standardized patients, standardization of behavior and level of qualification. Logistical issues, including the logistics of getting students from station to station, timing, and using facilities effectively, can impact the efficiency of the examination and quality of the assessments.

Assessment of current practices can help identify ideas for OSCE development. One important element is that digital platforms are implemented and the assessments are automated, thus allowing for quick calculation of scores, minimizing the impact of human error, and enhancing transparency of the process. Virtual simulators and interactive learning technologies can simulate rare or complex clinical cases, and broaden students' practical skill sets. National and international experts participate, which helps to enhance the quality of scenarios and to harmonize OSCE standards. Additionally, more financial resources and support for resources increases the potential to improve the equipment, train examiners and standardized patients, and improve the overall organization of the exam. Meanwhile, there are external factors that may hinder the effectiveness of the OSCE. One of them is the absence of a common assessment system for the whole country, posing a danger that students' competency

levels would not be uniform. Equipment upgrades, staff training, and administering the examination at a proper level may be compromised by lack of funding and material resources.

Even when there's no automation and a clear process, the subjective assessment risk can still be present. Moreover, challenges in achieving and sustaining competency standards of examiners and standardized patients can also impact the consistency of assessing students' hands-on skills and the quality of professional competency formation.

Comprehensive actions that could improve the organizational, logistical and methodological part of the assessment process are needed to enhance the effectiveness of the Objective Structured Clinical Examination (OSCE). The optimal number of stations and their difficulty level is one of the priority areas, considering the specificity of students' specialties and the volume of professional skills assessed. Rational design of stations provides equitable distribution of test takers and enables all important aspects of clinical training to be evaluated, such as practical, communicative and cognitive skills.

Clear clinical scenario scripts and structured assessment checklists are a major aspect of optimization, ensuring standardisation of evaluation criteria and objectivity of results. This standardization reduces the subjectivity and makes it possible to have clear and comprehensible evaluations of student skills. Preparation and training of standardized patients, including acting training, are also vital, since the degree of realism of clinical case simulation closely relates to the reliability of practical skill assessment.

Special attention needs to be given to the logistical aspects of OSCE administration. The rational placement of the examination points, organizing efficient transport of students from one point to another, the rational use of facilities contribute to the reduction of delays, to the elimination of stress factors in the examination process, and to the overall efficiency. An important aspect is the use of IT solutions for automating assessment, such as electronic platforms for recording the results of an assessment, calculating the score, and giving immediate feedback to students.

The implementation of unified national assessment standards, in parallel with the use of modern digital technologies, increases the transparency and objectivity of the OSCE, standardizes the preparation of students at different levels and the assessment of their preparedness, and brings up a competent, professionally trained specialist. The integration of these all-encompassing steps into the medical education system provides a framework for a steady improvement in education, practical skill development among the students and improvement of safety in providing clinical care [21, 22, 23].

Discussion

The use of Objective Structured Clinical Examination in the Ukrainian and International Medical education institutions can identify the main trends which affect the effectiveness of the assessment of students' professional competences and problematic areas which need to be improved. Strengths, including the ability of highly qualified examiners, the use of modern technology for simulation centres, and the standardisation of assessment criteria, support the view that the OSCE supports the acquisition of students' holistic clinical skills, critical thinking skills and the ability to make sound clinical decisions in simulated conditions that are close to real practice. Meanwhile, the weaknesses observed in the OSCE, such as organizational and logistical issues, the lack of experience in performing the examination, and the low level of expertise in the preparation of standardized patients, indicate that there is a need to address the OSCE through a systematic approach to improve its quality. These problems reduce the impact of the assessment, can influence the objectivity of its findings, and can introduce risk of the assessment fulfilling the main purpose of the assessment: accurate evaluation of student practical skills.

Considering opportunities for OSCE improvement suggests that digital platforms, automatic assessment and virtual simulators could greatly increase the objectivity and transparency of the OSCE process. National and international experts and greater funding

provide opportunities for the standardization of preparation and administration of the exam, greater quality of clinical case scenarios, and enhancing the learning environment.

There are external threats that lack of unified national assessment standards, insufficient funds and the possibility of subjective assessment. The importance of total integration of modern technologies and standardization, in order to minimize the effects of subjective factors and to have the same assessment of student competencies in all medical institutions is emphasized.

Interpretation of Results

The interpretation of the results shows that the OSCE is a valid instrument for the evaluation of practical skills, yet it is highly dependent on the training of the OSCE examiners, the organization of the logistics, the technical set-up and the presence of clear assessment standards. By applying the comprehensive recommendations for optimizing the process, digitalization, automation and standardisation can achieve the highest possible examination efficiency, better professional training for future doctors and support the national improvement of the quality of health-care services.

Scientific Novelty. The scientific novelty of this study lies in a comprehensive analysis of the experience of conducting the Objectively Structured Clinical Examination (OSCE) in both domestic and international medical educational institutions, with the aim of improving the effectiveness of assessing students' practical competencies. For the first time, the strengths and weaknesses of OSCE organisation in Ukraine have been systematised and compared with international practices, enabling the identification of priority areas for improving the assessment process.

Conclusions.

An objectively structured clinical examination is an effective tool for assessing students' practical competencies, ensuring standardisation, objectivity and transparency in assessment. The study showed that the key strengths are the training of qualified examiners, the equipment of simulation centres and the standardisation of assessment criteria, whilst the weaknesses include logistical difficulties, limited experience in conducting the examination and insufficient training of standardised patients.

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