

**Objective structured clinical
examination in assessing the practical
skills of graduates in nursing**

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<p>Abstract</p> <p>Background: In the conditions of the state comprehensive final exam, a comprehensive assessment of all necessary professional competencies of the graduate is required.</p> <p>Objective: To explore the experiences of students concerning how the Objective structured clinical examination is implemented in Kazakhstan Medical colleges.</p> <p>Method: This qualitative study was conducted in June 2019. A total of six focus groups (67 participants) were interviewed. The interviews were analyzed using content analysis and an inductive approach.</p> <p>Results: Data analysis led to the identification of four main themes: (a) preparation for the Objective structured clinical examination included practical and clinical support, (b) the emotional environment was considered tense, (c) consistency of Objective structured clinical examination station attributes with respect to training content and time frames, and (d) organization and realism had an effect on the level of the Objective structured clinical examination.</p> <p>Conclusions: The Objective structured clinical examination has had a positive impact on the students' experience, contributing to the development of clinical skills and increasing confidence in their knowledge. At the same time, shortcomings were identified in the organization and conduct of the unified state exam: increased stress levels among students, insufficient training of exam participants, partial assessment of competencies, inconsistency of the content of pre-graduate practice and the OSCE, as well as some technical shortcomings. In the future, there is a need to improve and integrate examination programs, practice and training, and to thoroughly prepare students for the OSCE methodology itself.</p>		
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1 Introduction

The educational system in nursing requires the application of modern objective methods of assessing the clinical competence of nursing students. An objective assessment of clinical competencies is a key element in the educational curricula of nursing. (Cant, McKenna, & Cooper 2013; Mitchell, Henderson, Groves, Dalton, & Nulty 2009.) When teaching nursing students, a significant amount of time is devoted to the development of competencies. But at the same time, the requirements for the level of clinical competence of a nursing graduate are also increasing (Wangensteen, Johansson, Björkström, & Nordström 2012). For the successful implementation of the nursing process, a graduate of nursing must have full qualification in clinical practice, that is, competence in the field of clinical skills (Morrow 2009).

In Kazakhstan, nursing is moving to a new level. The role of the nurse is changing, and more serious tasks will be assigned to the nurse, nursing graduates should be ready (Comprehensive Plan of Nursing Care Development in the Republic of Kazakhstan till 2020, 2014). In this regard, nursing students need to develop their competencies and attitudes towards professional activities. However, the objectivity and fairness of the assessment of student's competencies has been questioned (Cant et al. 2013; East, Peters, Halcomb, Raymond & Salamonson 2014).

In the conditions of the final exam, using objective structured clinical examination (hereinafter OSCE) technology, a comprehensive assessment of the implementation of all necessary professional competencies is required (Liddle 2014; Zabar, Kachur, Kalet & Hanley 2013, 14). The assessment stage clinical competency is considered a necessary and important requirement for a graduate in nursing (Cant et al. 2013). Unfortunately, modern nursing graduates, who have the theoretical knowledge and have successfully passed the final examination, have difficulties in performing some practices in hospital conditions (Missen, McKenna, Beauchamp & Larkins 2016), despite the fact that in the EU countries more than 50% of the total amount of training takes practice (Directive 2013/55/EU), and in Kazakhstan at least 40% (HM RK №647 2015).

Undoubtedly, the OSCE is a reliable and effective method of assessing competencies. (McWilliam & Botwinski 2010; Rushfort 2007; Navas-Ferrer, Urcola-Pardo, Subiron-Valera & German-Bes 2017; Cant et al. 2013). But this method also has disadvantages. Among it is student stress, ensuring the validity of the process, and huge resource and financial costs. (Rushfort 2007; El-Nemer & Kandeel 2009; Nulty, Mitchell, Jeffrey, Henderson & Groves 2011; Jones, Pegram & Fordham-Clarke 2010.) The main problem is the obstacles that arise in the process of organizing and implementing OSCE (Obizoba 2018; Bagnasco, Tolotti, Pagnucci, Torre, Timmins, Aleo & Sasso 2016; Walsh, Bailey, Mossey & Koren 2010; Selim, Ramadan, El-Gueneidy & Gaafer 2012; Harden, Lilley & Patricio 2016, 193).

Thus, the evaluation of clinical competence is an important issue in nursing education, and the use of objective structured clinical assessment for this purpose was considered to be a very important topic for study. This study aims to develop of the objectivity of the evaluation of the competencies of nursing graduates students during the final comprehensive examination to assess the students experience to increase the level of exam materials and improve exam conditions.

2 Assessment of competences of nurse students in their final state

During OSCE examination nursing students should develop clinical knowledge, skills and attitudes towards professional practice, and nursing teachers should assess the readiness of students' basic skills for clinical practice. In addition, this assessment should be a real indicator of the competence of the graduate.

2.1 Assessment of competence

Assessing the competence of nursing students is a basic aspect in determining the competence of a nursing graduate (Selim, Ramadan, El-Gueneidy, & Gaafer 2012). Many assessment methods have been developed in order to determine the progress among students in terms of competence (Kuh, Jankowski, Ikenberry, & Kinzie 2014), but consensus on the most appropriate evaluation method has not yet been reached. In addition, the method of assessing competence acquisition among nursing students has been affected by subjective aspects, which have presented several drawbacks such as variability in the evaluation method (O'Connor, Al Saleh, Afaneh, Moore, Patton, & Derwin 2017). Therefore, nursing educators demand more studies that evaluate the effectiveness of the learning assessment in nursing education programs (Annan, Tratnack, Rubenstein, Metzler-Sawin, & Hulton 2013).

2.2 Clinical skills

Clinical skills are an important part of the nursing profession, and therefore the results of the nursing process are directly dependent on a competent approach to performing procedures and on the degree of professional level (Benner, Sutphen, Leonard, & Day 2010, 28). The American Nursing Association and the Nursing and Midwifery Council define competence as a complex of knowledge, skills, abilities, and relationships (American Nurses Association 2014; Nursing and Midwifery Council 2010). According to Kajander-Unkuri, Salminen, Saarikoski, Suhonen, and Leino-Kilpi (2013), for senior students, especially graduates, clinical

competencies are very important, and so, it is necessary to improve and evaluate them. Thus, clinical skills are a vital part of the nursing graduate curriculum.

2.3 Final exam

In Kazakhstan, due to the transition of the nursing education system to a competence-based approach, the problem is that the assessment of learning outcomes should be updated. Therefore, educational institutions face a new task the choice of a method for assessing competencies. A comprehensive assessment of clinical skills is still an unresolved problem for nursing teachers (Jasemia, Whiteheadb, Habibzadeha, Zabihia & Rezaiea 2018; Rafiee, Moattari, Nikbakht, Kojuri & Mousavinasab 2014). The organization of the assessment process is one of the mandatory conditions for the effective formation of students' competencies in the system of professional education (Krautscheid, Mocerri, Stragnell, Manthey & Neal 2014; Axley 2008). The assessment of students' level of competence should objectively show the degree of their knowledge, skills, and attitude in solving problems from areas of future professional activity. Thus, there is a shift of focus from controlling the mastery of separate educational disciplines to controlling the degree of formation of the required professional competences (Pijl-Zieber, Barton, Konkin, Awosaga & Caine 2014; Sedgwick, Kellett, & Kalischuck, 2014; Yanhua & Watson, 2011). According to Burden, Topping, and O'halloran (2017), the assessment of competencies is not yet sufficiently developed and considered just some questions of their measurement.

Objective and qualitatively evaluated competence of the student is important for the effective implementation of the nursing process for the patient. But organizing an objective assessment process can be a problem for a nursing teacher (Obizoba 2018). There is no generally accepted methodology in the world that would fully provide an objective assessment of knowledge, skills, and attitude. In addition, each nursing school may use different methods, such as an oral exam, testing, objective structured practical examination (OSPE), and objective structured clinical examination (OSCE). (Yaqinuddin, Zafar, Ikram & Ganguly 2012). Reviews to literature have noted that the assessment of competences is not without issues, such as the emphasis on General

competencies and insufficient attention to special competencies (Pijl-Zieber et al. 2014; Gallagher, Smith & Ousey 2012). In their concept analysis of competence, Garside and Nhemachena (2013) noted that many specialists have offered various definitions of competence regarding different context. This, however, in part has increased the confusion on the question, what competence really is. The literature reviews in the competency assessment show that its elements are not fully used in the evaluation of a student competencies (Pijl-Zieber et al., 2014). The basic three key elements are knowledge, skills, and attitudes that need to be integrated in real terms (Pijl-Zieber et al., 2014; Yanhua & Watson 2011).

According to Athlin, Larsson, and Soderhamn (2012), due to clinics' need for competent nursing professionals, the final exam remains an important issue for nursing management and training. They introduced one of the models of the final exam according to which the exam consists of a theoretical and practical part. They concluded that this model needs better standardization. This model aims to assess the clinical competencies of nursing students, taking into account their knowledge and skills, critical thinking, ability to act, and ethical skills included in the exam. The model provides for continuous cooperation of teachers with practical health care at all stages. In addition, all stages of the exam for the student and the examiner are described, as well as their competency criteria for both parties. Mårtensson and Löfmark (2013) suggested that the final exam should be held in real clinical conditions, monitored at the bedside of the patient in order to evaluate the actions in real life. However, the reliability and trustworthiness of this type of exam remains a problem. (Mårtensson and Löfmark 2013.)

According to Wellard, Bethune, and Heggena (2007), the assessment of training is carried out in order to ascertain the reality of acquired knowledge and skills of students, and to determine their readiness for independent and safe nursing practice. In some countries of the world, for example, USA, Canada, Taiwan, China and New Zealand, graduates of nursing care, as a result of their training program, pass the final exam in order to be eligible to start work (Arcus 2008; College of Nurses Ontario 2019; National Council of State Boards of Nursing 2017; Taiwan Nurses Association 2014; Wang, Whitehead & Bayes 2016). In Korea, examinations

are conducted with a view to further employment, and according to a study conducted by Choe and Yang (2009), exam preparation has a positive effect on nursing knowledge and critical thinking skills. In New Zealand, the frequently mentioned reasons for conducting a nursing graduate state exams are tradition and safety (Arcus 2008). The United States and Canada also conduct a national exam, which involves assessing the competencies and thinking that are necessary to guarantee patient safety (College of Nurses of Ontario 2019). A completely different approach was introduced in Australia. To ensure safe care, a nursing regulatory organization approves curricula and monitors the assessment of graduate competencies (Australian Nursing & Midwifery Accreditation Council 2019).

3 Objective structured clinical examination (OSCE)

3.1 OSCE as an assessment method

OSCE first appeared and was applied by Harden, Stevenson, Downie and Wilson in 1975. Rentschler, Eaton, Cappiello, McNally and McWilliam (2007) sum up previous studies (Bland & Altman 1986; Pugnaire, Leong, Quirk, Mazor & Gray 1999; Roberts & Brown 1990), presenting that OSCE has been found to be an effective and reliable assessment method to determine the level of knowledge, skills, and abilities in different settings. The OSCE is an exam in which students need to demonstrate their skills in a specific clinical situation. Its purpose is to evaluate the adaptation of learning experience in theoretical and practical classes in a simulated clinical environment (McWilliam & Botwinski 2010).

The objective structured clinical exam is an assessment method that is often used in medical and nursing education, where observation stations are more often used. (Merriman & Westcott 2010, 82). The Kazakhstani nursing schools participating in this study used this version of OSCE applying OSCE stations.

Khan, Ramachandran, Gaunt, and Pushkar (2013) offer the following definition of an OSCE: *“An assessment tool based on the principles of objectivity and standardisation, in which the candidates move through a series of time-limited stations in a circuit for*

the purposes of assessment of professional performance in a simulated environment. At each station candidates are assessed and marked against standardised scoring rubrics by trained assessors". Daniels and Pugh (2017) consider OSCE to be a series of stations used to assess knowledge and skills in performing isolated professional skills. Nulty and colleagues (2011) assert that the implementation of OSCE is highly dependent on the availability of a simulated clinical nursing environment. Based on the results of previous studies, it can be concluded that OSCE is a qualitative and effective tool for assessing the competencies of nursing students (AbdAlla & Mohammed 2014; Ha 2016). This approach ensures structure and consistency, and a great deal of attention is paid to the objectivity of the exam (Byrne & Smyth 2008).

The stations can be divided into "question stations" and "procedure stations". The "question station" does not need the presence of an expert, but the "technical station" must be under the monitoring of an expert (Gupta, Dewan & Singh 2010). A prerequisite is the application for OSCE of the same stations with the same conditions in order to improve the objectivity of assessment of competencies, and to eliminate the possibility of subjectivity (Rushforth 2007).

Several OSCE options, described in Table 1, use the initial format of relocation of assessment stations to evaluate a number of different results. The variety of OSCE formats allows us to adapt this assessment method to different needs (Harden et al. 2016, 65).

Table 1. Types of the OSCE

OSCE type	Description
Objective Structured Practical Examination (OSPE).	A form of examination that assesses a student's competence in a non-clinical setting. (Saed & Abbas 2016)
Objective Structured Assessment of Technical Skills (OSATS).	A common type of OSCE for assessing technical skills, the main disadvantage of which is the assessment of the result of the teacher in real time. Students' competencies are assessed by special

	checklists and rating scales, and feedback is given immediately upon graduation. (Bodle, Kaufmann, Bisson, Nathanson, & Binney 2008; Hatala, Cook, Brydges & Hawkins 2015.)
Objective Structured Video Examinations (OSVE).	Students watch one or more videos of a patient meeting with a health care professional, and then answer a series of questions in writing. (Chen, Lee, Chen, & Lee 2013; Selim & Dawood 2015; Baribeau, Mukovozov, Sabljic, Eva, & Delottinville 2012).
Team Objective Structured Clinical Examination (TOSCE)	It is mainly used for formative assessment of competencies in a team or group that visits stations in turn. The emphasis is on teamwork, and the work is evaluated through feedback (Marshall, Hall, & Taniguchi 2008; Hall, Marshall, Weaver, Boyle & Taniguchi 2011; Gordon, Uppal, Holt, Lythgoe, Mitchell & Hollins-Martin 2012.)

OSCE is commonly used to evaluate cognitive, affective, and psychomotor skills (Khan et al 2013). Of course, the OSCE can be used to evaluate all three types of skills, but according to Epstein (2007), combining assessment methods increases the validity and reliability. A comment was also made about the risk of over-separating competences and isolating them when evaluating (Nestel, Kneebone, Nolan, Akhtar & Darzi 2011). OSCE is based on two basic principles “validity” and “reliability”. As a rule, they are directly dependent on standardized evaluation tools and the examiner (Khan et al 2013). From the words of Boursicot (2010), a well-organized OSCE can

show a high level of reliability. Thus, the OSCE as an assessment method can be used to assess clinical competencies, while ensuring objectivity in comparison with traditional methods (Katowa, Mwape, Kabinga, Mweemba & Maimbolwa 2013).

3.2 Environment and technical aspects for OSCE

An objective structured clinical exam is a way to test competencies using a sequence of stations, with pre-designed station markings. At each station, the examinee will have to solve a professional question or demonstrate a clinical skill. The duration of the stations and their number, the use of evaluation tools, the role of an expert, statistics or simulators are not constant criteria of the OSCE, but the main basic principle remains the same conditions and stations for each candidate according to the blueprint. (Bouriscot 2010.)

OSCE is mainly used to assess the clinical competencies of medical students. It is usually implemented in a simulated environment in simulation centers and is a standardized level of assessment (Oranye, Ahmad, Ahmad, & Abu Bakar 2012). In the original, the OSCE includes from 16 to 20 stations for evaluating a specific competence, and the duration of each station is five minutes (Mitchell, Henderson, Groves, Dalton & Nulty 2009). A more reliable option for the number of stations to ensure reliability is 10 stations, with an allotted time of 5-10 minutes for each (Epstein 2007). Turner and Dankoski (2008) recommend using at least 10 stations, which in turn will help improve reliability. Nursing diagnosis, intervention planning, and functional state assessment can be assessed competencies included in the stations (Merriman & Westcott 2010, 4). To pass the exam, students must complete the full range of stations in which they perform the appropriate tasks. During the process, all students move from one station to another in the same sequence.

The OSCE is a complex organizational process aimed at demonstrating and evaluating competencies in safe nursing at a certain number of stations, by moving the student through all the stations in a period of time (Bowling, 2015). Usually, OSCE stations are limited in time, and video and audio recordings are made of the process of demonstrating and evaluating competencies, in order to ensure the objectivity of the

process (Liddle 2014). To assess the students' competencies, Obizoba (2018) recommends attracting additional experts from practical health care, who must first be trained. The number of exam stations depends on the purpose of the exam and the capabilities of the educational institution. According to McWilliam and Botwinski (2010), a technical employee must be present to ensure a smooth evaluation process. Thus, the technical criteria and environment of the OSCE may change depending on the goals and conditions set. The OSCE can be adapted to different conditions, such as the duration and number of stations, evaluation with the involvement of standardized patients or simulators, and also evaluate skills or contribute to their formation (Mitchel et al. 2009)

3.3 Planning and cases of OSCE

Planning is an important stage of a successful OSCE, and sufficient time must be devoted to it; otherwise, it can lead to bad results in the implementation of OSCE (Harden et al. 2016, 115). The organization and planning of OSCE is an important process that needs a strong and stakeholders organizer. A large team is needed for the OSCE stages of being feasible. (Khan et al., 2013.) When planning and conducting the OSCE, there is a powerful interaction between all team members and students, which contributes to the achievement of the goal and despite the psycho-emotional stress, the participants of the exam note the importance of this form of evaluation (Zabar, Kachur, Kalet, Hanley, Bruno & Gillespie 2013, 7).

Zayyan (2011) recommends conducting the OSCE in 5 stages (see Figure 1). Each stage includes a large amount of work for optimal preparation for the exam.

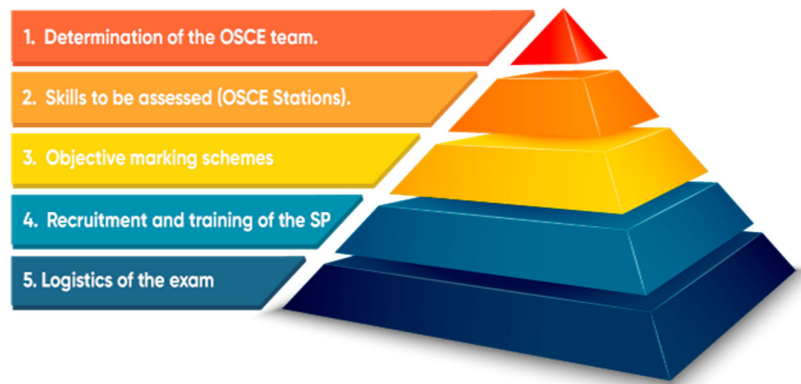


Figure 1. The steps planned for OSCE. (Zayyan 2011)

When planning an OSCE, special attention should be paid to the number of stations and the time allotted for each station, the number of approaches, the type of station used, and the organization of feedback. The planning process usually begins with the formation of a team and the allocation of resources for the successful implementation of the OSCE. At this stage, it is necessary to determine the main head responsible for the exam and the rest of the team consisting of stakeholders. In the second stage, it is necessary to agree on the goals and objectives of the exam as well as the schedule of preparation and implementation of the OSCE. It is important that the exam is given enough time. (Harden et al. 2016, 66.) According to Harden and colleagues (2016, 115), preparation for the exam should start a few months ahead of the exam. The third stage involves the preparation of the matrix a summary of the exam. It is also necessary to prepare a list of stations and training results to be evaluated. The list of stations will allow you to specify connected or dual stations and add a rest station if the duration of the exam is more than 60 minutes. According to Zabar and colleagues (2013), it is necessary to begin with a design which provides definition of competences and results of training, and coordination of the contents of the OSCE. In this case, the exam must be valid. This is achieved by aligning with the curriculum when developing a blueprint for the OSCE. (Khan et al. 2013.) The fourth stage is to develop cases for the OSCE. An individual case for each station should include instructions for the candidate, instructions for the expert, a detailed description of the situation, checklists and a list of necessary equipment. In addition, it is necessary to provide a type of activity after the stations, which can be feedback,

an additional station, or a rest station. Rating scales and checklists are created to improve the objectivity of the assessment of OSCE stations and quality feedback to students. (Harden et al. 2016, 71.)

The fifth stage is to instruct experts and, if involved, to train standardized patients. Standardized patients are drawn from the ranks of teachers, acquaintances or actors, with whom it is necessary to instruct and teach all the subtleties of the situation. It is also important to select experienced staff and train them in the evaluation of OSCE stations. Depending on the type of station, one or more stations may be present. The evaluator should be informed about possible errors and biases, as well as about the technique of feedback to students. Detailed instructions and recommendations are required for the evaluator and the standardized patient. Finally, the last step in planning the OSCE is to control the date and time of the exam, the availability of premises and equipment, as well as the readiness of participants. (Harden et al. 2016, 110.)

Thus, planning is crucial in preparation for the OSCE. The whole process will depend on the planning stage of the OSCE. A structured approach will help prepare for the exam and take into account all the details for organising.

3.4 Implementation of OSCE

After all the actions have been carefully planned and tested, an OSCE can be conducted, and preliminary preparatory activities will ensure a favorable course of the exam. On this day, a special role is assigned to the organizer of the OSCE, who manages the entire process of the exam and in case of problems should solve them. (Harden et al. 2016.) Rushfort (2007) describes the implementation of OSCE as moving students through ordered stations for the same assessment, lasting from 10 minutes to half an hour, until the end of the cycle. According to Mårtensson and Löfmark (2013), when implementing the OSCE, examinees were required to complete a series of tasks based on a single clinical case. Based on the newly obtained data, they carried out the nursing process, with an explanation and

reasoning of their actions for a certain time. At the same time, monitoring, evaluation, and feedback were carried out by an expert.

Harden and colleagues (2016) give their thorough recommendations for the implementation of the OSCE. On the day of the exam, the OSCE organizer must check the testing places and routes for students. Experts should be at the stations in advance, as well as standardized patients, who are recommended to be on site half an hour before the start of the OSCE. The expert must obtain the necessary documentation for the operation of the station. (ibid. 115-124.) According to Khan and colleagues (2013), there is a need to prepare a briefing before the exam separately for each group: students, experts, and standardized patients. Students, according to a pre-determined order in the itinerary, enter the station at a signal, while identification is carried out by number. If after the current group of students, another group is scheduled to be evaluated, the first group must be sent to "quarantine" to ensure fairness. At the end of the exam, a meeting can be held to receive feedback from students, and the organizer announces the test results. (Harden et al. 2016, 153). In turn, Nulty and colleagues (2011) have developed the best evidence for the implementation of OSCE, which contributed to improving the results of OSCE in all areas. According to the recommendations, the evaluation should focus on a safe nursing process relevant to nursing practice. The assessment should be conducted in accordance with the guidelines and in a comprehensive manner to improve objectivity. The process should be structured and integrated into everyday practice. (Nulty et al. 2011.)

Failures and problems are not excluded during the implementation of the OSCE (Harden et al. 2016, 179). Khan and colleagues (2013) present common problems and their solutions in the implementation of the OSCE (see Table 2).

Table 2. Problem and solutions with OSCE implementation.

PROBLEM	SOLUTION
When patients give out unnecessary information or do not follow instructions	the problem can be solved by high-quality training of standardized patients and awareness of examiners about actions in such situations
Simulator failure or system failure	To solve this problem it is necessary to have additional sets of equipment at the stations and check their performance beforehand
Unexpected problems of participants	You can solve the problem by attracting special people who will monitor the movement of students and adjust if necessary
The incidents with the documents of the stations	the problem can be solved by fixing the instructions and examiners pay special attention to the documentation

When evaluating students' competencies, different approaches should be used to ensure the objectivity of the process. OSCE can be an effective method if the necessary recommendations for the organization and implementation of the exam are met. (Nursing and Midwifery Council [NMC] 2010.)

3.5 Students experiences of OSCE

According to Harden and colleagues (2016, 198), when passing the OSCE, students need to provide the conditions for creating problem situations appropriate to clinical practice, for which they must find a solution.

The experience of 60 nursing students from the United Arab Emirates is considered positive and significant. In most cases, the study participants were satisfied with the organization of the exam and high objectivity. The participation of students in the OSCE awakened their desire for further growth and development in the profession. Students often noted the disadvantage of increased stress and excitement, which is a

limitation. (Abdalla & Mohammed 2014.) According to Byrne (2008), the study participants noted the preliminary preparation and consultation on the exam, but at the same time, it was concluded that it is necessary to use an objective structured clinical exam not only during sessions. In the Bani-Issa and colleagues (2019) study, students also found the OSCE method to be better compared to the traditional form of the exam, and that they received useful professional experience, but its quality is greatly affected by the preparation and organization process. Specifically, attracting students as standardized patients seemed like a bad idea. Students pointed out that the time allocated at the station with a limit and a signal causes tension and stress, but the preliminary preparation for the exam will help to increase the level of confidence. (Bani-Issa, Tamimi, Fakhry & Tawil 2019.)

The use of the OSCE as a final exam in Sweden was organized in two stages. The first stage of writing was noted by students as reliable and objective, while the students considered that high demands were made. For many students, this stage of training has become motivating for a deeper knowledge of nursing. Some participants felt that the two parts of the exam combined knowledge and skills over the entire training period but were convinced that the scope of the assessed competencies was not sufficient. The majority of participants indicated an increase in self-confidence after the second stage of the OSCE, noting positive experience in assessing their competencies and identifying gaps. Also, students noted a strong stress in preparing for the OSCE and not realistic situation when passing the OSCE. (Andersson 2011.)

According to the results of Taylor and colleagues (2019), students also consider their experience positive despite the many difficulties they had to face. After the OSCE, students shared their experience and focused on the partial discrepancy between the OSCE curriculum and the low level of preparation for the OSCE. Most of the students noted that the whole process was set up and they did not feel pressure from experts or organizers, but despite this, the students experienced a lot of stress, which led to various incidents during the OSCE. OSCE helped nursing students realize how ready they were for professional work, even though they lacked experience in performing the nursing process and wanted to be more realistic when working with standardized patients. (Taylor, Bing-Jonsson, Johansen, Levy-Malmberg & Fagerstrom 2019.)

4 Kazakhstan's experience in using OSCE

In Kazakhstan, OSCE, based on KSMU, was first introduced for the system of higher medical education, including students of the fourth year of academic bachelor's degree in nursing. (Kemelova, Ricklefs, Kamarova, Aimbetova, Isataeva & Nursultanova 2017). Since 2018, the OSCE has officially been used as the second stage of the final state certification for the nursing students of medical colleges, conducted by the National center for independent examination (National center for independent examination [NCIE] 2020). However, there are no previous or current studies in this area.

Nursing students take a comprehensive state exam after four years of study. In Kazakhstan, the national comprehensive nursing exam consists of two parts: electronic testing and a practical part (Regulations on final certification of graduates 2019). The following day after the electronic test, the practical part is held, individually for each student, in which clinical skills are evaluated using the OSCE method. The final state exam includes five stations. According to Heikkilä, Tiittanen, Baigozhina, and Kabdullina (2019, 110), with a clear structure, reliability is achieved with three to four stations, but studies recommend using 10 or more stations (Turner and Dankoski 2008; Mitchell et al., 2009)

As preparation for the practical stage, nursing students attend consultations to prepare for the OSCE. Here they are introduced to the rules of the exam, which is conducted according to oral instructions. Members of the examination Committee are appointed in advance from among the college teachers and practical health professionals. On the OSCE day, students receive numbers and learn the order of delivery of the OSCE stations. (Heikkila et al., 2019.)

5 Purpose, Objectives, and Research Questions

Purpose: To provide information on Kazakhstan students' experiences on preparation and implementation of OSCE in order to improve planning and realization of OSCE in Kazakhstan.

Objectives:

1. To explore the experiences of students concerning how the OSCE is implemented in Kazakhstan Medical colleges.
2. Develop recommendations for OSCE organizers in medical colleges based on students' experience and evidence-based information.

Research questions:

1. How the Kazakhstan medical college students' experience the preparation and implementation of OSCE?
2. What are the factors influencing preparing and implementing OSCE described by Kazakhstan medical colleges nursing graduates?

6 Research methodology

The previous chapter provided an overview of a literature review. This Chapter will cover the research methodology, namely data collection methodology, population and sampling, data collection and analysis, and the role of the researcher.

For research, a method of qualitative research was used, because it centers on people's life experiences and understanding, behavior and feelings (Madrigal & McClain 2012). This study was conducted to identify, describe and interpret a phenomenon- student experience (Holloway & Wheeler 2009, 3).

In addition, qualitative research was conducted in a natural setting, focusing directly on the researcher and participants, using several data sources: focus group interviews, observation, and document analysis, and an emergent design, which allows a more in-depth study of the problem, where the study plan, the form of data collection and other characteristics can be changed and modified (Creswell & Creswell 2018, 175).

The study focused on studying students' experience and influencing factors on preparing and implementing OSCE during the graduate exam and evaluating the environment level of the OSCE. Therefore, based on the above information, qualitative research was the best choice of methodology.

6.1 Methods of data collection

Focus group interview method was used as data collection tool for this study. When conducting research in the field of student learning, researchers prefer focus groups as a method of data collection (Diambra, McClam, Fuss, Burton, & Fudge 2009; Raby, 2010; Wellington 2010). In addition, previous studies have used interview as the questioning method (Williams 2018). According to Kumar (2010), an in-depth interview and focus group are different in that one is conducted individually, and the second in the group, while the focus group interview allows you to explore the group experience.

Focus group interview is a series of prepared discussion interviews in a favorable environment, allowing the researcher to get useful information (Kruger & Casey 2009). In the words of Kruger and Casey (2014), focus groups can have five parts: “(1) a small group of people who (2) have certain characteristics, (3) provide quality data (4) in a focused discussion (5) to help understand the topic of interest”.

Working in a focus group allows participants to interact with each other, which leads to the disclosure of a collective experience, as well as discussion of opinions and answers. During a group discussion, participants can uncover feelings and perceptions more deeply, as opposed to an individual conversation or direct question, which is usually a problem for students.(Billups 2012.) In addition, during the discussion, participants can identify the main characteristics of a given topic, which in turn contributes to the identification of problematic and most important topics (Kruger & Casey 2009). This discussion option is effective when working with college students, especially if the purpose of the study is to study the main topics related to the feelings, experiences, and perceptions of respondents (Raby 2010; Kelty 2009).

Typically, focus groups involve around five to eight people who meet once, for a period of around an hour and a half to two hours (Krueger & Casey 2009). According to Fain (2017), a focus group is made up of 6 to 12 individuals who are asked to discuss a particular topic led by a facilitator. In this study, the focus group consists of 10 to 12 students. This range of focus groups was chosen based on the purpose of the study and several recommendations that the number of participants in focus groups should be sufficient to provide a variety of information, but should not be large or insufficient (Onwuegbuzie, Dickinson, Leech & Zoran 2009, 8).

For the set of participants, a target sample was used. Krueger & Casey (2009) points out that a target sample of sufficient size can be applied to focus groups in a qualitative study, and the results are interpreted for the entire population, while the main purpose of randomization is to eliminate the possibility of bias.

The interview was to be conducted in six focus groups from three medical colleges in different regions of Kazakhstan. Focus groups are considered an effective means of

exploring a range of ideas and perspectives on new phenomena (Joyce 2008) and are therefore relevant in the context of this study.

To study the experience of students, open-ended interviews in focus groups were used. The use of open-ended interviews, due to the nature of the questions, contributes to the fact that informants can fully disclose and convey their experiences and opinions to the researcher. (Turner 2010.)

To obtain reliable and extended answers from respondents, a list of open questions was used as a guide when conducting interviews with an interviewer (see Appendix 4) (Tappen 2011). For interviews in the focus group, General questions were developed aimed at obtaining basic information. Detailed information was obtained through additional questions that were changed as a result of receiving the participants' answers to basic questions. So, there was no need for a complete list of questions prepared in advance. Depending on the answers of the respondents, different questions and different answers were given. This also resulted in different length of interviews in focus groups. Using the selected data collection method, information was obtained which contributed to the assessment of the respondents' experience and views on the submitted question (Ryan, Coughlan, & Cronin 2009). When using focus groups, data was obtained that could have been undiscovered in individual interviews (Doody, Slevin, & Taggart 2013).

During the interview in focus groups, all data was recorded on the recorder. Audio recordings were kept constantly, and records were used to mark important topics in order to prevent data loss. The data, recorded with the help of a voice recorder, made it possible to listen to the information multiple times in order to clarify details and perform qualitative analysis (Clough & Nutbrown 2007, 130). The received audio recordings were completely and literally transcribed during repeated listening. In addition, all transcripts were checked against the voice recorder for errors.

6.2 Population and sampling

When sampling for qualitative research, the researcher must adhere to ethical principles and be able to access respondents who can provide good data. Participants

are selected based on certain criteria, such as age, gender, condition of the patient, and others. (Holloway & Galvin 2016.) The study was conducted using a purposive sample, thus ensuring the representativeness of the research results. Purposive sampling follows from the judgment of the researcher and implies that informants are selected for a specific purpose and their experience and knowledge will help to solve the problem of the researcher (Cullum 2007).

The population consisted of nursing students from medical colleges who were evaluated by the OSCE in June 2019, the graduates from three different colleges in Kazakhstan. The total number of 67 students were included in the study, demographic data of which is shown in Table 3.

Table 3. Demographic characteristics of the participants

Participants		N 67
Age	18 years	8
	19 years	12
	20 years	38
	21 years	5
	25 years	2
	27 years	1
	39 years	1
Sex	female	67
	male	0
Form of training	budget education	44
	business education	23
Attending preparatory courses		67
Language of instruction		russian
Experience in the clinic	no	52
	yes	15

Since it was necessary to provide accurate information on the perception of OSCE students in nursing, it was decided not to include students of other specialties and courses. A total of six interviews were conducted in focus groups. Permission was requested and obtained in writing at each medical college (see Appendix 5).

Participants for the study were recruited immediately after the exam. Students were invited based on the selection criteria and whether they were willing to participate in the interview. Each focus group consisted of ten to twelve participants. Before the interview, participants were given numbers to ensure anonymity and ease of encoding. The students were explained the goals and objectives of the study, the rights of the participant, and they signed informed consent. Before proceeding to the group discussion, the students were re-informed and then proceeded to the conversation.

6.3 Researcher's role

This study involves higher medical colleges from different regions of Kazakhstan. As a teacher at one of the target medical colleges, special attention was paid to the position of the researcher. In order to ensure objectivity in data collection, the necessary ethical standards were observed in the process of data collection, storage and processing. When collecting data, the participants were not imposed a research opinion. Each participant in the study was perceived as a person with a unique life experience.

As a teacher at one of the target colleges, the position of an outside observer was observed. At the same time, it is not related to the organization and conduct of the OSCE, or to the training of these groups of students of the fourth year of nursing.

6.4 Implementation and analysis

Data were collected during June 2019. This data collection process took place two days after the completion of OSCE, suggesting that students would still be able to accurately recall the details regarding their perception.

Having studied the information on its subject and based on the purpose of the study, it was concluded that the method of inductive content analysis would be used. This method was chosen as it would answer the following questions: How the Kazakhstan medical college students' experience the preparation and implementation of OSCE?

What are the factors influencing preparing and implementing OSCE described by Kazakhstan medical colleges nursing graduates?

After the transcribation, 20 pages (12 font size Calibri, 1.5 spacing) of data were obtained. For ease of marking and tracking results, each focus group was assigned a letter code: "D", "S", "R", "P", "F", "T", and the participant had an ordinal number. The obtained data were analyzed using qualitative content analysis with an inductive approach. Qualitative content analysis is a science-based method for describing and interpreting transcribed qualitative data, in the process of which systematic encoding is performed. (Assarroudi, Heshmati Nabavi, Armat, Ebadi & Vaismoradi 2018). Content analysis in qualitative research has recently become a fairly popular method of research in nursing. (Elo, Kääriäinen, Kanste, Pölkki, Utriainen & Kyngäs 2014). Content analysis is used when data is collected through interviews and focus groups (Schreier 2012, 3).

The qualitative content analysis task is a methodical description of the data essence (Kyngäs, Mikkonen & Kääriäinen 2020, 4). When performing content analysis, its high reliability is ensured by the accuracy and reliability of data, as well as the possibility of data recoding by the researcher (Chesnay 2015, 45). The inductive QCA method can be used when there is insufficient or fragmented knowledge to describe people's experiences. The results of the content analysis will help to describe and obtain concepts, categories, and topics.

Inductive content analysis usually consists of steps such as a) simplifying or reducing data, b) grouping or structuring data, and C) creating concepts. (Kyngäs et al. 2020, 14)

Before proceeding to the first stage, a transcribed interview was read several times to get a General picture of the data. Then the unit of analysis was selected and the general data was analyzed (ibid., 15). At this stage, units of analysis were received in

the form of one or more offers. After a detailed study, the selected units of analysis were generalized into open codes. (ibid., 18). An example of coding raw data can be seen in Table 4. As a result, 246 codes were received. The next step was to analyze the code once again and formulate 11 preliminary sub-categories. An example of generating sub-categories can be seen in Table 5. They were checked for validity by comparing them with the research questions. In turn, the sub-categories were grouped into four categories, from which four main themes were derived. An example of creating categories and main topics can be seen in Table 6. As a result, four main categories were obtained, which have been thoroughly analyzed and described.

Table 4. An example of the coding units of analysis

Raw data sample	Code
"The most difficult thing is the first station, the unknown..."	Stress due to unfamiliar situation
"... you do not know how they will evaluate..."	Ignorance of the evaluation methods
"... the constant fear of forgetting some point from the algorithm"	Stress of forgetting part of the procedure
"It was difficult in the first days, it was psychological..."	Psychological stress
"The time limit is also unusual and disturbing..."	Stress due to time limitation of the OSCE
"The tasks were slightly different..."	Different levels of situation tasks
"...some tasks were different in terms of more time may be required to complete..."	Time differences between tasks

Table 5. An example of generating sub-categories

Code	Sub-category
Stress due to unfamiliar situation	Feeling of fear and excitement while performing the OSCE
Stress of forgetting part of the procedure	
Psychological stress	
Stress due to time limitation of the OSCE	
Different levels of situation tasks	The level of complexity of the stations was different
Time differences between tasks	

Table 6. An example of creating categories and main topics

Sub-category	Category	Main theme
Feeling of fear and excitement while performing the OSCE	OSCE as a cause of stress for the nursing students	The emotional environment was considered tense
The level of complexity of the stations was different		

7 Trustworthiness

The selection of nursing graduates, who were willing to share their experience in preparing and passing the OSCE for this thesis study, was conducted in different medical colleges, overall from three different regions of Kazakhstan. This provided geographical diversity which may strengthen the transferability of the results to other regions in Kazakhstan (Rebar, Gersch, Macnee & McCabe, 2008). The number of focus groups and participants in the focus groups corresponded to the recommended research practice (Krueger & Casey 2009; Fain 2017; Onwuegbuzie, Dickinson, Leech & Zoran 2009, 8). Data collection was conducted after the recommended time for the students to gain experience, which ensured that student-participants had enough experiences on OSCEs to share in the focus group interview sessions. The analysis of focus group interviews was carried out systematically and thoroughly based on inductive content analysis method described by Elo, Kääriäinen,

Kanste, Pölkki, Utriainen, and Kyngäs (2014). All the above helps to increase the reliability of the results.

8 Ethical issues of the research

Research ethical principles should include truthfulness, confidentiality, favor, fairness, and lack of harm for the participant (Moule & Goodman 2009). Following Moule and Goodman's (2009), recommendations, all respondents were informed about the upcoming study, while respecting the rights of the participant. The participant had the right to participate or refuse to participate in the study at any time, without coercion or any consequences. All participants had fair treatment, without discrimination. None of the ethical principles were violated. None of the respondents had any physical, psychological, or socio-economic impact. The result of the study is considered useful for medical colleges and hospitals in Kazakhstan. All the participants' personal information was securely protected, and the data was stored in a locker, which could only be accessed only by the researcher (Moule & Goodman 2009). The data were not transferred to third parties without the consent of the participants (Fouka & Mantzourou 2011, 6.) During the work with the transcript, only the researcher extracted the data, avoiding data leakage. The researcher remained neutral, not suppressing and not taking anyone's side. The information presented was presented without bias of abuse, based on honesty and integrity. To ensure participants privacy and security, data was destroyed to comply with ethical and legal norms of research activities (Creswell 2014).

9 Results

Four obtained main categories were thoroughly analyzed and described. These identified categories were: (a) preparation for the OSCE included practical and clinical support, (b) the emotional environment was considered tense, (c) consistency of OSCE station attributes with respect to training content and time frames, and (d) organization and realism had an effect on the level of OSCE.

9.1 Preparation for the OSCE included practical and clinical support

For the successful completion of the OSCE, it is important for nursing students to have competencies according to the scope of their training program. According to students, training in the simulation center and pre-graduate clinical practice contributed to better preparation for the OSCE.

Positive training experience in the simulation centre. The simulation learning method is used in medical colleges in Kazakhstan before training in a clinical setting. During the interview, nursing students had a positive view of the opportunity to practice in the simulation centre under the guidance of a mentor. They described the training in the simulated conditions as complete and useful.

Students highlighted training in the simulation center as an important stage of preparation for the OSCE, indicating that this is necessary for the successful completion of the exam. Several students in focus groups noted that they were able to assess and understand their skills through the consultation.

Overall, all participants in the study noted an increase in confidence after training in this format. The experience gained during training gave students more confidence in their knowledge and skills.

Students of several focus groups concentrated on group training, while independently practicing skills and clinical situations on the college grounds and beyond. This generalized experience of the focus group participants shows that students agree that preparing for the OSCE with a mentor in the simulation center is effective and necessary. According to students, this option of training increases their level of confidence in their abilities, which in turn will increase the chance of successfully passing the OSCE.

“The role of mentor is very important, it is very important that we had the opportunity to ask a question, get an answer and see how it is done.” (F10)

“The most useful thing in training is when you come and work out all the skills in the simulation room. Then it became clear what is waiting for us and how much we are ready...” (T7)

"I think that the important stage was the preparation, how the consultations were conducted, how the teachers worked with us, it gave confidence." (F5)

But in addition to the positive experience, students reported negative aspects that they had to face during the preparation for the exam. Namely, one of the disadvantages was the lack of information in the preparation of the current classes and preparation for the OSCE.

"What we learned in the course of study was on the exam, but with a slight difference in the order of action." (F1)

"For the station, communication skills and training standards were different, so it was difficult to pass..." (T5)

Thus, students note the influence of insufficient standardization, between practical classes and the exam on the experience of preparing for the OSCE.

Pre-graduate clinical training contributes to better preparation for OSCE. Pre-graduate clinical practice of nursing students of medical colleges in Kazakhstan is held in the last year of training, immediately before the state comprehensive exam. Clinical practice for nursing students is an opportunity to study in hospital departments under the supervision of general and direct managers. In the departments, students work with patients of various profiles and conditions. During the interview, most students agreed that the experience gained during the practice in clinical settings contributed to better preparation for the OSCE. Several students noted that practical training in the clinic and assistance from nurses allowed them to feel more confident when passing the OSCE. At the same time, one participant felt that her clinical training did not provide adequate support for passing the OSCE.

"I didn't worry too much, I knew that I had worked out everything in practice well...when you work with people, it's somehow better to remember something...and the nurses always explained everything..."(F6)

"...practical training took place in different ways...most often I did nothing that could be useful for me..."(S5)

Nursing students should practice their clinical skills based on their pre-clinical training program. Students negatively perceived the differences and expressed their opinion about improving the practice program. Practice programs and exams should be integrated and take into account the respective competencies of students. Students may have problems if the procedures are performed differently in the preclinical and clinical environment.

“of course there are some differences ... but it would be easier if everything was the same” (D1)

“such moments as the number of alcohol cotton balls or hand treatment, it was different as shown in practice and on the OSE...” (R8)

9.2 The emotional environment was considered tense

While taking the OSCE, some nursing students indicated an increased level of stress and anxiety, compared to the traditional form of the exam. This was influenced by factors such as the lack of prior experience in participating in the OSCE, little clinical experience, and insufficient instruction and preparation for the OSCE.

Feeling of fear and anxiety while performing the OSCE. Nursing graduates reported strong anxiety and fear as a result of the lack of training and insufficient information. For all participants, this was the first experience of assessing competence in the OSCE format, which resulted in anxiety and fear due to insufficient experience of participating in the OSCE.

The study participants denied the development of stress during the preparation and conduct of the OSCE, and some considered the OSCE as a method that forms stress resistance. There were participants who noted that the first impression was initially wrong and frightening. This is due to insufficient information and experience of students' participation in the OSCE. Also, the behavior of experts and incidents that occurred during the exam may have had some impact on students' stress. In addition, the conditions in which the exams are held depend on the feelings of students at the station. These factors were noticeable to participants and, in their opinion, affect the level of skill demonstration.

“The most difficult thing is the first station, the unknown... you don't know how they'll rate you... what is going to happen... constant fear of forgetting some point from the algorithm...” (T9)

“The excitement was noted, there were moments of uncertainty. Excitement is associated with a lack of understanding of how we will pass the exam” (F2)

“... in fact, it was not difficult to pass, but if we were doing this in class or previously passed exams in this form, I think there would be no such fear this time...” (S6)

The level of complexity of the stations was different. Nursing students complete their training by passing a unified state comprehensive exam in the form of an OSCE. At each station, students had to demonstrate certain competencies, and experts had to evaluate them. In 2019, the exam included five stations that students took differently. Some students agreed with the opinion that the conditions for organizing and conducting events are equal for all. However, other participants also pointed out that tasks differ in terms of volume and complexity.

“...at the parenteral injection station, one performs intradermal injection and the other intravenous, these are different manipulations in terms of complexity” (T5)

Despite the fact that the exam meets the same requirements, the participants have the opinion that the conditions are still different. Such factors include the difference in tasks at the stations, poor quality equipment preparation for each participant, and the attitude of the expert. These moments can influence the mood of students when passing the OSCE and reduce the level of objectivity of the exam. Students have a sense of unfairness, which reduces student satisfaction with the assessment process.

“when I conducted something similar to a conversation with a mannequin, they said this is not necessary let's go on” (D9)

9.3 Consistency of OSCE station attributes with respect to training content and time frames.

The study participants considered that there was enough time at the stations for a qualitative assessment of skills. The allotted time was enough to study the task,

demonstrate the necessary skills, and often there was free time from the assessment. The situations presented at the exam were considered familiar and the students were ready to perform them.

The content of the OSCE in accordance with the training program. The content of the OSCE is based on the results of teaching nursing students. The used clinical cases at the OSCE stations are intended for the possibility of evaluating the skills of students acquired as a result of mastering the training program.

An important point was the compliance of tasks at the stations with their training program. Some participants of the study found the content of the OSCE not difficult, but appropriate to their training program.

“all the tasks that we performed on the exam, we previously conducted in the classroom” (R5)

Several nursing graduates indicated that they felt it was not possible to demonstrate all the competencies and evaluate them.

“I think that most of the stations that we handed over, except for one, are of such an urgent or emergency nature...” (S1)

“not all the skills that I have I was able to demonstrate here, well, maybe” (D6)

Time allocation. For OSCE stations, a fixed time is used that is optimal for students to demonstrate their skills. Students reported that the allotted time was sufficient to pass the station. Participants had time to familiarize themselves with the task, and directly perform the task. Some participants also indicated that they had some free time after completing the task.

Several participants in the study considered that the allocated time for most stations was sufficient, and even more than necessary.

“I had enough time, I thought about everything, and there was still extra time at the stations” (D12)

9.4 OSCE organization and realistic had an effect on the level of OSCE

In the fourth main topic, students talked about the organization of the OSCE and its proximity to clinical conditions. Participants identified that the level of organization and realism of the OSCE was good but pointed out the lack of instruction.

OSCE organization. The organization of the OSCE is the most important stage that directly affects the implementation of the exam. In general, students were satisfied with the level of organization of the OSCE, paying special attention to the structure of the exam. However, students pointed out that the level of instruction was insufficient and that there were no instructions. This also caused students difficulties and affected their anxiety levels. Participants pointed to the lack of information, and the lack of opportunities to study it in more detail and process the information.

“The briefing was conducted, we were told verbally on the day of delivery what to do, where to go and how to pass the stations...it was not possible to study the instructions in detail” (F6)

Students noted and considered successful the method of assessment using checklists as well as the timeliness of the assessment. According to students, this reduces the level of concern for the set score and, ensures honesty and motivates them to keep working.

“The evaluation was carried out immediately according to the checklists... and we were given a sheet with our rating” (T1)

However, some students were confused by the work of experts at the stations. Some experts, according to students, had insufficient skills in working with the program for evaluation, which caused inconvenience to students at the station.

“we faced a situation when experts themselves carried out such work for the first time and this led to problems at the station” (R9)

Realism as an indicator of the OSCE level. The study participants considered the exam's realism to be an important criterion for determining the overall level of the OSCE. The realism of the OSCE contributed to the creation of approximate conditions

to real clinical ones, ensuring the reliability of the evaluation results. The students determined the realism of the OSCE at a sufficient level. However, there were opinions that the level of realism is low.

“The exam was not very realistic, in practice in the hospital it is done differently...here you have to simulate many things...” (F1)

Several participants were disappointed with the location of the stations and the conditions for implementing the OSCE. According to the students, the room where the OSCE is held is not very convenient and this hindered the provision of a high-quality examination environment.

“I could hear the expert from another station shouting and it got in the way when I took the exam...” (T7)

“The resuscitation dummy did not show the depth and frequency of compressions...but it was evaluated” (F4)

Some of the students indicated an increase in confidence in their knowledge and understanding of the level of their own competencies. As a result of the OSCE implementation, some students considered their own level of competence sufficient for further clinical activities and demonstrated confidence in their knowledge. Some students said that the OSCE made them aware of the importance of knowledge and skills acquired throughout their studies.

“During the training, I became aware of what we were told all the time by the teachers, I realized that everything we learned is interconnected and this exam allows you to see it, that everything is so complex at the station and you need to know and have skills from different areas to pass” (R8)

10 Discussion

The main purpose of this study was to provide information about the experience of Kazakh students in preparing and passing the OSCE in order to improve the planning and implementation of OSCE in Kazakhstan. As a result of the interviews conducted in focus groups, valuable data was obtained. Four main themes were identified.

The first main theme was "Preparation for the OSCE included practical and clinical support". Nursing graduates considered practical and clinical experience important in preparing and passing the OSCE and positively influencing the results of evaluating their skills. This is also confirmed by Street and Hamilton (2010). Students of nursing were trained in a simulation center, working with dummies and simulators. This type of training was effective and especially important for students (Crafford, Kilian, Moore-Saayman, Dreyer & Rossouw 2019). According to Barry, Noonan, Bradshaw and Murphy-Tighe (2012), training students using simulations is effective. However, it is more useful if simulations are conducted under the guidance of a mentor (Moule, Wilford, Sales & Lockyer 2008). This is because most students do not use simulation for independent training. The task of the mentor is to accompany students at the stage of preparation for the OSCE: explain, answer questions, and give feedback. Thus, the activity of simulation practice with the participation of a mentor has a direct impact on the preparation of students but requires greater standardization in their actions (Longworth 2013).

During the preparation process, some students appreciated the role of pre-graduate clinical practice and considered it a useful supplement for preparing for the OSCE. However, effectiveness depends on the quality of clinical practice. Students noted that clinical pre-graduate practice is useful, but it is not always possible to perform certain skills. According to Quinn and Hughes (2007, 151), a student should be interested in gaining skills in a clinical setting and be active in finding learning opportunities.

Another important issue was the lack of standardization between the practice in the clinic and the delivery of the OSCE. It was noted by students that some of the standards for passing the OSCE could differ from the standards for conducting care in clinical training. This can contribute to the development of stress in nursing graduates due to the discrepancy between the skills being taught and the competencies being evaluated (Silva, Souza, Trentini, Boneti & Matosinho 2010). The study participants also indicated that training before the OSCE contributed to critical self-esteem, which is confirmed in the study Nulty and colleagues (2011). Self-assessment allowed to understand the level of one's own knowledge and skills and

find out the gaps. Thus, preparation for the OSCE in the laboratory is a useful and effective tool, and experience of clinical practice, when properly conducted, contributes to better preparation for the exam.

The second main topic of the study was that the emotional situation was tense. The results of the study indicate the development of stressful situations in nursing students due to “unknown” and insufficient experience of participation in the OSCE, which is confirmed by many studies on stress during the OSCE (Johnston, Weeks, Shuker, Coyne, Mitchell, & Massey 2017; Muldoon, Biesty & Smith 2014; Mårtensson & Löfmark 2013; Baid 2011). This affects the objectivity of students' skills assessment. However, fear and excitement can also develop due to a student's low academic performance, and this calls into question the effectiveness of the OSCE since the difficulty lies in the inability to distinguish these points (Taylor et al., 2019).

Some students pointed out that OSCE contributes to the development of stress tolerance, which is useful in clinical practice. According to Rushfort (2007), stress during the OSCE is a useful property that affects the validity of OSCE results. According to Mårtensson and Löfmark (2013), high-quality preparation for OSCE can help reduce stress (Mårtensson & Löfmark 2013) and using written instructions will avoid the fear of the unknown (El-Nemer & Kandeel 2009). According to Merriman and Westcott (2010, 46) booklets should contain detailed information about the process of preparing and passing the OSCE.

The use of the OSCE can be effective not only in the process of assessing competencies but also as a formative tool during the training of students (Walsh et al., 2010). This decision will enhance the students' experience of participating in the OSCE and will also help reduce fear and anxiety. McWilliam and Botwinski (2010) believe that the results of student participation will be much better if the OSCE is implemented periodically, rather than once at the end of training.

Another important aspect that affects the emotional environment of the OSCE was the different level of tasks. After a discussion in the focus group, it was found out that at some stations, students were given tasks of different volumes and requiring different time to complete. Students experienced a sense of unfairness, which may

lead to a decrease in satisfaction with the grade level. Nursing teachers trust the OSCE because all students are evaluated by the same observers on the same parameters (Kurz, Mahoney, Martin-Plank & Lidicker 2009). According to Harden (2015), students are evaluated at the same stations under equal conditions, which ensures the objectivity of the OSCE. Thus, it would be advisable to equalize the chances of students' success and standardize clinical cases at the stations.

According to the results of the study, students indicated that the content of the OSCE corresponded to the training program. According to McWilliam and Botwinski (2010), when creating scenarios for OSCE, it is necessary to use knowledge and skill complexes according to the students' training program. All participants in the study indicated that they were familiar with clinical cases and knew how to deal with such situations.

However, the demonstration of competence was limited to five stations, which only superficially concerned nursing. Most of the students agreed that most of the scenarios are aimed at emergency medical care. According to McWilliam and Colleagues (2010), the more stations used in the OSCE, the greater the chance of an objective assessment of competencies. According to Gupta and colleagues (2010), the small number of stations makes the OSCE less reliable. Epstein (2007) and Turner and colleagues (2008) recommend using at least 10 stations to ensure valid evaluation results. Thus, the expansion of the number of stations will cover all the competencies of nursing graduates.

Another important aspect was the allocation of sufficient time for each station. Many students indicated that there was enough time to complete tasks and demonstrate skills, or even an excess of time. According to some studies, the time allocated to the station is based on the goals and objectives, and the optimal time is 5 to 10 minutes. (Harden 2015; Epstein 2007). Some students pointed to the excess time they used to rest, but within the station, or the time to wait before moving to the next station. According to Khan and colleagues (2012), a rest station is required if 20 or more stations are used for the exam. Thus, for the rational use of time, it is advisable to limit the station time to 5 to 7 minutes.

The fourth main theme is the organization and realism of the OSCE. According to a study by Rushfort (2007), the organization of an OSCE is a complex process, and often problematic. Participants in this study expressed their satisfaction with the quality of the exam organization. According to a study by Mårtensson and Löfmark (2013), the opinions of students and experts should be taken into account when conducting the OSCE.

The participants of the study positively perceived the structure of the OSCE and the objectivity due to the use of checklists when evaluating skills. According to Harden and Colleagues (2016, 130), the use of checklists ensures objectivity and transparency. However, the role of an expert also affects objectivity. (ibid., 109). Also, graduates of nursing expressed and their opinion about the realism of the OSCE, their opinions were divided. Some participants perceived the exam as not realistic due to the simulation of many points, which is consistent with the study (Miller & Carr 2016). At the same time, another part of the participants appreciated the independence and increased personal responsibility during the OSCE. According to Rushfort (2007), simulation can threaten low validity, and vice versa, the use of standardized patients will increase the reliability of results.

The current study highlights the importance of OSCE for nursing graduates, as well as the participants' views on increasing confidence in their own knowledge and skills for preparing and passing the OSCE (Barry et al. 2012). Another important aspect was defined as feedback. Participants in the study cited insufficient or no feedback. According to a study by McWilliam and Botwinski (2010), feedback for students is useful regardless of the goal. According to Khan, Payne, and Chahine (2017), feedback should be of a qualitative nature, and Smith, Muldoon, and Biesty (2012) determined that it would be optimal to provide two minutes at the end of the station for commentary. The study participants suggested providing individual access to video recordings from the station, which is also consistent with Harden and Colleagues (2016, 152).

11 Conclusion

As a result of the research, the experience of students of nursing in medical colleges of Kazakhstan participating in the OSCE was studied. Based on the results of the study, we can say that the OSCE had a positive impact on the students' experience, contributed to the development of clinical skills and increased confidence in their knowledge. At the same time, certain problems were identified in the organization and implementation of the exam: an increased level of stress for students, insufficient training of exam participants, partial assessment of competencies, mismatch of the content of pre-graduate practice and OSCE, and some technical shortcomings. Based on the results of the research, there is a need to improve and integrate the exam programs, practice and training, and to thoroughly prepare students for the OSCE methodology itself. This methodology should be used not only to evaluate skills but also to develop them in order to ensure reliable professional fitness, in accordance with current health requirements and aimed at ensuring the safety of patients.

Recommendations

Based on the results of the study, the following recommendations are made.

1. Conducting OSCE examinations should be carefully planned in each stage.
2. To improve the reliability of assessment results the number of OSCE stations should be increased according to international requirements and diversity planned based on learning outcomes.
3. The level of OSCE simulation environment should be improved to increase the realism of the OSCE stations.
4. In the OSCE sessions, the students' previous experience must be taken into account, and the students must be provided with feedback after the OSCE.
5. The examiners and examinees should be provided with preparatory activities to better organize the OSCE.
6. Improvement and integration of the OSCE and the practice and training program.

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Appendices

Appendix 1. Search strategy

Name of the database	Search terms/key words and combining terms (or/and/not) ²	Search from the year to year ³	Language ⁴	Date of search ⁵	Results (number) ⁶
janet.finna.fi library collections	objective structured clinical examination	2008-2018	english	15.10.2018	3
janet.finna.fi	OSCE, Clinical Competence nursing.	2008-2018	english	15.10.2018	78
Academic Search Elite	objective structured clinical examination AND clinical competence AND nursing.	2008-2018	english	15.10.2018	49
CINAHL Plus with Full Text	objective structured clinical examination AND clinical competence AND nursing.	2008-2018	english	15.10.2018	63
CINAHL Plus with Full Text	nursing education AND objective structured clinical examination	2008-2018	english	15.10.2018	77
Scholar.google.ru	nursing education AND objective structured clinical examination	2008-2018	english	16.10.2018	18

http://web.b.ebsco host.com.	OSCE OR objective structured clinical examination AND nursing education	2008- 2018	english	6.12.2018	9
9. CINAHL Plus with Full Text	osce AND standards AND education medical	2008- 2018	english	13.12.2018	16
10. CINAHL Plus with Full Text	Competencies and Nursing Students and final exam	2008- 2019	english	16.01.2019	1
11. CINAHL Plus with Full Text	Competencies and Nursing Students and osce or objective structured clinical examination	2008- 2019	english	23.01.2019	53
12. CINAHL Plus with Full Text	nursing students AND competence AND assessment AND objectives AND OSCE	2008- 2019	english	11.02.2019	39
Total=					
After de-dublication					

Appendix 2. Informed consent

Dear Student

The purpose of this study is to increase the objectivity of assessment of competences of nursing students during the final complex exam and experiences of student's in order to improve the level of materials and examination environment. The aims of the study is to evaluate the materials and environment of the OSCE for compliance with international standards & assess the experiences of students on preparation and implementation of objective structured clinical exam.

I ask your consent to conduct an interview with you. Participation in the study is completely voluntary, and refusal to participate in the interview does not affect the learning outcomes and competency assessment. In the interview we want to get information about the students experience. Students are selected by volunteers, who have given their consent and contact details, they will be contacted in the summer of 2019. The interview is conducted in the focus group, during which the audio recording is made. The conversation is conducted without mentioning the names and other possible identifiers of the person. An interview can be terminated and renewed only with the consent of the respondent. On average, the interview takes about an hour. During the conversation, participants will be asked to answer a series of open-ended questions on the research topic.

The materials collected during the interviews with students will be fully coded, so that all information will be impersonal and it will be impossible to identify the students. The research material is kept in a closed cabinet, only the researcher has the key. The researcher undertakes to comply with existing guidelines for the preservation of patterns in research and data protection. According to the results a master's thesis will be completed, and the articles will be published in Kazakhstan and international scientific journals. After completing the work, the research material will be deleted accordingly after the completion of the research.

Sincerely:

Stogniyev Ivan

KazMuce

Supervisors:

PhD Ospanova D.A.

KazMUCE

PhD, Principal lecturer Hanna Hopia

JAMK University of Applied Sciences

Appendix 3. Consent of student information

I was asked to agree to an interview and further use of the data in the study, by interviewing. Purpose of research is to increase the objectivity of assessment of competences of nursing students during the final complex exam and experiences of student's in order to improve the level of materials and examination environment. The aims of the study is to evaluate the materials and environment of the OSCE for compliance with international standards & assess the experiences of students on preparation and implementation of objective structured clinical exam. I read the research information and I understood the purpose of the research. I had the opportunity to ask additional questions related to the research, and I received a satisfactory answer. I understand that my participation in the research is voluntary and my refusal or withdrawal of consent does not affect the results of my training and competency assessment.

Name: _____

Date of birth: _____

Address: _____

Date and Location: _____

Signature _____

Clarification of signature _____

I get interviewed:

Yes, phone number for interview:

No

Appendix 4. Example interview questions

Focus group interview questions about perception about OSCE experience presented to 67 students in six focus groups.

1. Tell me about your experience in preparing and passing the OSCE?
2. Tell me about your feelings and emotions when preparing and passing the OSCE?
3. What is the most important point from your experience in OSCE?
4. Which OSCE station do you think was the most useful for you?
5. If you were asked to invite a friend to participate in an OSCE, how would you describe it?
6. What ideas do you have for improving the OSCE process for nursing students ?
7. If you had the opportunity to make the OSCE better, what would you change?

Appendix 5. Request for permission to conduct an interview

To the director
Republican Higher
Medical College
N. B. Ruzdenova

Dear Naylya Beksautovna,

We ask you to allow the research to be conducted on the basis of the Republican Higher Medical College, undergraduate of the jointly implemented Kazakhstan-Finnish Master of the 1st year of study in the specialty “Nursing” by I. M. Stogniyev in the framework of the thesis on the “ Objective structured clinical examination in assessing the practical skills of graduates in nursing ” the supervisor of the doctor of medical sciences, professor Ospanova D.A.

Rector - Chairman of the Board

JSC “KazMUCE”

Ismailov Zh.K.

perf. Slavko E.A.

tel.