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The Effect of Implementing OSCE Mandatory Training among Large Numbers of Undergraduate Medical Surgical Nursing Student ontheir Clinical Competencies

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Abstract: *The Objective Structured Clinical Examination (OSCE) is a useful way to assess competence at undergraduate and postgraduate levels. Students and lecturers should be well prepared to make the most of them. OSCE is used increasingly in nurse education, to assess clinical skill proficiency. Good preparation for an OSCE is vital for both those running the assessments and for students. Used effectively, OSCEs can help students gain confidence to use their skills in their clinical work.OSCEas a performance-based assessment method is a well-established student assessment tool. Its popularity in the assessment of clinical competence is well documented and prominent in situations where reliability and content validity are fundamental. Aim: the aim of the study was to evaluate the effect of implementingOSCEfor mandatory training among large numbers of undergraduate medical surgical nursing students on their clinical competencies in the Faculty of Nursing; University of Alexandria. Methods: quasi experimental deign was adopted. The implementation process followed an eight step-approach were drawn and implications were generated. Adequate preparation of faculty and students, which is a fundamental ingredient to ensure reliability of the examination, and in minimizing stress and anxiety respectively. Implementation of the OSCE was carried out on 100 students enrolled in medical surgical nursing course.Students 'achievement and perspectives were investigated. Results: the results indicated that, following the implementation we acknowledged that OSCEs are suitable for testing clinical, technical and practical skills which may not be adequately assessed through traditional assessment methods as they possess the ability to improve the validity and reliability of assessments. There were high statistical significant differences between OSCE and traditional methods in the first and second trial (p< 0.000). The highest rate of satisfaction belonged to OSCE methods of evaluation as the students reported that OSCE measured course objectives (86.0%), enhanced teaching level (99.0%), related theory to practice (99.0%), increased decision-making ability (98.0%), enhanced methods of evaluation (97.0%), and made exam well developed (98.0%) than the traditional method. The mean score of students' opinion was (28.1+ 9.6).Conclusion: OSCE can be used as an appropriate method in evaluating large numbers of undergraduate nursing student's clinicalcompetencies because of various advantages such as improving students' clinical performance, preparing highly qualified and competent graduates, increasing decision making abilities and enhance teaching level.***

Key Words: *OSCE, Innovative Education Strategies, Competency-Based Learning, Simulated Patients, Clinical Learning Environment, /Formative Assessment, Summative Assessment*

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I. Introduction

Clinical Competence is a complex concept and debates continue about the most appropriate definition and method of assessment (Evans, 2008). Watson et al. (2002) suggest that competence is a nebulous concept defined in deferent ways by different people. Its relationship with other concepts such as capability, performance, proficiency and expertise make it even more difficult to define. Earlier Gonzi (1994) described three ways of understanding competence: 1) tasks related skills, 2) patterning to generic attributes essential to performance and 3) the bringing together of a range of general attributes such as knowledge, skills and attitudes appropriate for professional practice. Later the Australian Nurses Council (2005) described competence in a more holistic way as a combination of skills, knowledge, attitudes, values and abilities that underpin effective and/or superior performance in a profession.

The objective structured clinical examination (OSCE), first used in the 1970s, is an assessment of competence carried out in a well-planned, structured and objective way (Harden and Gleeson, 1979). It is well established within medicine and is used increasingly in nurse education (Nulty et al, 2011). The assessment of knowledge and skills plays an important part in student nurses' progression though undergraduate programmes

because they need to demonstrate competency and confidence in the performance of clinical skills (Nursing Council, 2007). OSCEs are used to assess clinical skills in both pre-registration and postgraduate programmes (Rushforth, 2007; Major, 2005). Thus the Aim that OSCE examiners must have standard checklists for each OSCE station/scenario that nursing evaluators fill it out while observing the student of Adult Medical-Surgical Nursing doing a selected competency. These checklists are standardized to reduce examiners' bias. It is including specific points and general performance points to be assessed. Objectives of the designed scenarios are clear and must be performed within specific time which will save time and effort for both the evaluator and the student. Also adding score for each OSCE checklist strengthen the evaluation with restrict & clear objectivity and minimize evaluators' subjectivity toward the students.

Many of Medical-Surgical Nursing Evaluators & Students after using/applying OSCE checklists with clear scenarios reported that it was fair and clear; specially after using the (Promo section) which clarify the Whole OSCE process. Clinical skills and practice play the main roles in training different groups; the success of trainees of these fields depends on what they memorize to some extent (Casey et al. 2009). Effective and accurate clinical evaluation should be of concern to all nursing faculties and clinical instructors. There is a reasonable expectation for evaluation to be objective, fair, specific, and documented. In addition, students need to know, very clearly delineated, the specific objectives by which they are being evaluated. One type of assessment which meets these criteria is a performance based assessment. Traditional clinical nursing examinations are not standardized to assess clinical competency, and clinical reasoning skills. Acquisition of critical thinking and problem solving skills among nursing students are difficult to manage with large groups of students. Furthermore, in traditional assessment method, teachers carrying out the assessment of student performance tend to give summative scores. Therefore, it is challenging to have such an objective assessment tool to comprehensively assess students 'clinical competencies especially with increased students 'number (Health Workforce Development, 2006).

The objective structured clinical examination (OSCE) should be integrated within a curriculum in conjunction with other relevant student evaluation methods. Furthermore, as a method of clinical skills assessment; the OSCE possesses a number of intrinsic advantages. Firstly, it can include both summative and formative components, in which a judgment or evaluation of an individual‘s performance is made (summative) followed by the provision of feedback, from which the student can learn (formative). Secondly, because each student is required to demonstrate specific behaviors in a simulated work environment, strict control over the clinical context is possible, while at the same time, reflecting real-life professional tasks. This control eliminates the luck of the draw 'problem that arises when students are assessed within the real world 'clinical environment with actual patients as well as the risk of harm occurring to a patient (Bartfay et al 2004; Major 2005). The use of such sessions may well be a key element to the training of better-prepared healthcare professionals

Evidence for OSCE

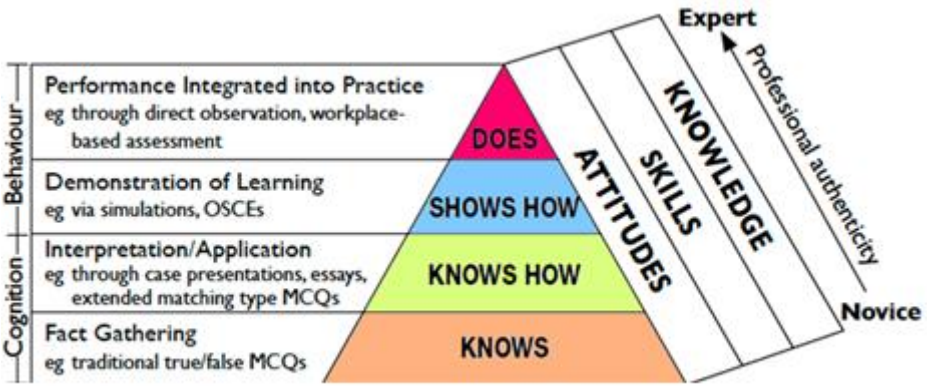


Figure (1): Miller’s Pyramid for Assessing clinical competence

The pyramid of competence (Miller, 1990) (fig: 1) is a framework that identifies the stages of skills students should achieve (Fig 1). In progressing up the pyramid to “shows how”, students demonstrate their knowledge and understanding by performing in a simulated setting such as an OSCE. Also, it may be used as a summative or formative assessment and on their own or with another form of assessment. Summative OSCEs are frequently used at the end of courses or programmes, or on completion of a module to test students against set objectives and learning outcomes. Where they are used as a formative assessment, the feedback provided helps students to progress (Taras, 2005; Alinier, 2003). Formative OSCEs also help to prepare students for placements, encourage them to engage with their learning and help them to achieve their learning outcomes

(Nulty et al, 2011). The NMC (2010) says programme providers for pre-registration nurse education must ensure "the outcomes, competencies and proficiencies of the approved programme are tested using valid and reliable assessment methods". OSCEs assess students' psychomotor, cognitive and affective skills in a simulated environment and various tools score their performance.

In literature, a variety of models have been used in the implementation of OSCE. For example, El Darir and Abd el Hamid (2013) utilized a three-step model which included construction of OSCE schemes and clinical scenario, as first phase, actual conducting of OSCE as second phase, and Evaluation as third and last phase. Many variants exist in the implementation of OSCE. For example, stations may be much longer and examiners may not be present, with the marking being undertaken by the simulated patients on whom the task was performed. In other Situation, there may be stations at which multiple-choice questions are asked or at which other forms of written responses are required, while other stations require performance of a clinical procedure while being observed and evaluated by faculty using a standard checklist (Newbel, 2004; El Darir & Abd El Hamid, 2013).

OSCEs being costly require that ample time is allocated to the preparation process (Evans, 2008; Turner & Dankoski, 2008; Marwaha, 2011; Nulty et al., 2011).Introducing OSCE will require investment in identifying and training simulated and or standardized patients well in advance of the assessment. It has been documented that, when well trained, simulated patients cannot be distinguished from real patients, are stable over time, and can provide accurate feedback and assessments (Vu & Barrows, 1994; Newbel, 2004). There is eminent need to improve the organization of OSCEs to reduce the overall duration, although long examinations contribute to achieving high levels of reliability (Newbel, 2004). Approaches for decreasing the practical challenges that accompany long examinations should be identified and addressed. Organizational issues, which may include the numbers of candidates versus examiners, venues, and resources, influence the quality of the assessments (Newbel, 2004). Despite the above challenges, Newble (2004), recognized that traditional clinical examinations have serious limitations related to validity and reliability issues thus supporting the use of OSCE as an alternative eminent.

Marking OSCEs and Use of Checklists

A checklist is frequently used to mark OSCEs to increase the objectivity and reliability of the assessment, especially when several assessors are required. This consists of the skill broken down into steps, which are marked using a binary rating ("achieved" or "not achieved").The complete OSCE assesses professional behavior, communication, consent, hand washing, temperature, pulse, respiratory rate and manual blood pressure. The student stays in the same room and performs the skills in any order but must cleanse their hands before and after contact with the patient. A global rating scale can be used in combination with a checklist or on its own (Rushforth, 2007). The scale allows the overall quality of the student's performance to be assessed by an experienced and knowledgeable assessor (Rushforth, 2007). Development of OSCE checklists as well as scoring is not as straight forward as it was thought. It appears that this also needs detailed discussion; attention and agreement especially between or among examiners assessing the same skill in cases where students are divided into more than one stream. Assessors should be adequately prepared to ensure consistence in approach and inter-rater reliability (Evans, 2008). It is therefore important that checklists are standardized and comprehensive thereby preventing disadvantaging students.

The OSCE Environment

An OSCE can consist of one station where students perform one or a variety of skills and are tested on the underpinning clinical and theoretical knowledge, or multiple stations, each testing a different skill or piece of underpinning knowledge (Mitchell et al, 2009). Examples of practical skills include performing vital signs on a patient and using an aseptic non-touch technique to perform a simple dressing change; an assessor is present during the procedure to mark each student on their skills. The underpinning knowledge, including anatomy and physiology, can be assessed as a paper-based or verbal exercise at a staffed or unstaffed station and marked afterwards. Verbal questions, multiple-choice or short-answer questions might be used. OSCEs simulated clinical skills area that all should students expose to the same environment (Rushforth, 2007; Major, 2005). Scenarios, case studies or simulations are commonly used, and students are expected to perform specific skills, interpret information, make clinical decisions and communicate with patients and other team or family members.

As students' progress to a higher level of study, the stations become more complex (Mitchell et al, 2009; Zaidi, 2006). OSCEs in nursing tends to use role players (actors or academic staff) or manikins as the patient rather than using real patients. The move away from using OSCEs to assess skills in isolation to a more holistic approach where the skills are more integrated into the assessment is intended to make the assessment more realistic (Major, 2005). Filming students' performance in formative and summative OSCEs is common practice. The film can be used to identify areas where students need to improve, or by assessors to resolve a

query regarding a student's performance and as a form of moderation. This should take place for summative OSCEs to avoid any subjectivity, and external examiners should be involved in reviewing the content of the stations, checklists and marking criteria.

Assessor/Role Player Preparation

The assessor and patient need clear guidelines about their roles and how much interaction is allowed with the student. The student must also be made aware of this. The assessor must be totally familiar with and have a good understanding of the marking criteria and guidelines. It is useful for first-time assessors to observe some OSCEs to gain insight into the process.

Student Preparation

Preparation is vital and increases students' confidence and reduce anxiety level in performing skills during the OSCE and in clinical areas (Street and Hamilton, 2010). Formative or mock OSCEs also increase confidence and competence (Alinier, 2003).

Student Feedback

The stressful nature of OSCEs and the impact an unsuccessful outcome can have on students makes early feedback important. However, providing instant or early feedback can prove difficult for staff because of student numbers, staffing levels or exam processes (Nulty et al, 2011). OSCE areas that need improvement should be identified, as well as those that were performed well to motivate students. Some universities encourage students to reflect on their performance during OSCEs. This can be useful for those who are successful to improve their proficiency in a particular skill and also for students who are unsuccessful by identifying areas of the OSCE that require more work.

Pre-testing of OSCE

In order to maintain reliability and validity, the duration, interconnectedness, number and order of OSCE stations need to be carefully examined before to ensure that the potentially competing requirements of validity and reliability are balanced because they all affect students (Rushforth, 2007). Finally, it came to light that the process of OSCE becomes monotonous especially when examiners are dealing with large numbers of students. At the same time, it is recognized that changing examiners for a particular station may compromise the objectivity of the assessment and disadvantage the students.

Advantages of OSCES

OSCEs can complement content and other forms of assessment within a programme. Byrne and Smith (2008) advocate their use throughout the nursing curriculum and Nulty et al (2011) agree, providing the clinical skills and the assessment of fitness for practice are assessed at the right level for the student at that stage in their programme. OSCEs foster a deeper approach to learning and encourage more meaningful learning and reflection (Barry et al, 2012; Jay, 2007; Alinier, 2003). They can be used to assess a range of skills in an objective manner (Watson et al, 2002) but those skills need to be developed in parallel with what a nurse will be doing in the clinical area. Authors agree students are able to make the connection between OSCEs and clinical placements, so they give them confidence in dealing with situations in the clinical field (Barry et al, 2012; Nulty et al, 2011; Jay, 2007; Brosnan et al, 2006; Alinier, 2003). Beckham (2013) concludes OSCEs can identify students who are weak in performing clinical skills early on in their programme. With a raised awareness of this, and the help of tutors, mentors and lecturers, students can be directed to extra sessions, resources and assistance in practice.

Limitations of OSCEs

Researches show students find OSCEs a stressful form of assessment (Barry et al, 2012, Nulty et al, 2011; Jay, 2007). Academic and clinical staff have the challenge of ensuring that the assessment process is valid and reliable (Martensson and Lofmark, 2013; Rushforth, 2007). Some studies have shown that OSCEs do not always indicate students' competence (Major, 2005; Hodges, 2003). External factors can contribute towards poor performance in an OSCE and more than one attempt at a summative OSCE can allow an accurate assessment of competency (Kirton and Kravitz, 2011). Where there are large cohorts of students, OSCEs can become exhausting for staff (Humphris and Kaney, 2001). This, along with other resource and cost implications, raises the question of whether the OSCE is a viable form of assessment for some universities

Aim of the study
This study was aimed to evaluate the effect of implementing innovative education strategies: OSCEfor mandatory training among large numbers on the clinical competenciesof undergraduate medical surgical nursing students.

Research Hypothesis
ImplementingOSCEfor undergraduate medical surgical nursingstudentsis gainful and sustainable tool for estimating the performance of their abilities and clinical competencies.

II. SubjectsandMethods

A convenient sample of 100 students enrolled in medical surgical nursing course and attended the training program of medical and surgical care units was selected. The selected students were evaluated by OSCE method. Data collection was done twice: firstly through assessment of 100 students during the academic year 2016-2017 second semester as a first trial at medical and surgical care units; and during the academic year 2017-2018 first semesters as a second trail. The students were agreed to participate in the study that had undergone their OSCE in the second semester.

Tools of Data collection:
After reviewing related literature to fulfill the aim of the study, three tools were developed by the researcher and revised by the consultants. Validity of the developed tools was achieved by 5 panels of experts in the field of medical and surgical nursing and the needed modifications were carried out. These tools were used in this research, including:

I: Students' assessment and evaluation (Achievements) tool which covered the three domains to give an accurate judgment on student adequacy regarding the specified course knowledge, skills and attitudes.

II: Checklist that mostly developed from the checklists and rated as satisfactory, unsatisfactory, and not observed).

III: ClinicalScenarios and student perspective tool regarding OSCE system which used to assess and analyze the information about student feedback and opinion as regard.

Procedure
The data collection procedure has been done through three phases: 1) planning of OSCE scheme and putting clinical scenario phase; 2) Implementation phase; and 3) Evaluation phase.

1) Planning Phase
OSCE was performed as follows; after determining the number and kind of station based on the trained techniques and available facilities, six stations were selected as follow; (Finger Stick Glucocheck, History Taken, Intravenous Cannulation, Blood Extraction, data interpretation of arterial blood gases results and estimation of burn surface and Slide show station). The student's instructions and checklist of each station were provided. Each station (ten-minute each) aimed to test a particular clinical competence.

2) Implementation Phase
A total of 100 first year nursing students at medical and surgical areas which constitute eight weeks for each student enrolled the clinical areas by rotation during the entire semester. First week was considered for orientation about them area competency, aim, methods of evaluation, student activities, caring for the patient without stress and under supervision of clinical instructors. In addition to a small lecture about OSCE system evaluation in the first day. The students were evaluated by both OSCE method and immediate formative feedback was given at the end of exam. For clinical faculty staff who will evaluate the nursing students in OSCE there was a workshop for preparation of them about definition, history, scope, evidence base, development of OSCE stations as a part of faculty and staff development program. Since OSCE was a new concept for most members of staff initial meetings were designed to give an overview of OSCE as an assessment tool, its characteristics in comparison with other clinical assessment tools and in meeting the criteria of validity and reliability. Other meetings dealt with the design of OSCE; including types and numbers of stations. Meetings were also held to discuss and agree on the steps to- wards developing an OSCE.

In our case eight steps were followed during the planning and implementation phases. Following consensus on the outlined steps, four teams were constituted based on subject matter expertise and included; medical surgical nursing. The teams developed scenarios, checklists and identified required resources, both

human and material, after which all developed scenarios and checklist were reviewed by a combined team drawn from the four subject areas. Given that this was the first OSCE, students were given an orientation on the structure and what they should expect and what was expected of them.

OSCE Planning and Implementation Phases.

Step	Description
Step 1	Identification of competencies to be assessed (drawn from the medical surgical nursing curriculum)
Step 2	Development of case scenarios based on identified competences
Step 3	Identification/modification/development of evaluation tools (checklist, rating scales etc.)
Step 4	Identification of assessment sites class rooms and clinical skills laboratory)
Step 5	Planning for resources (human, simulator/models, medical surgical supplies and stationery)
Step 6	Orientation of standardized patients (graduate students and support staff)
Step 7	Mock OSCE (Formative assessment)
Step 8	Implementation (actual conduct of OSCE)

To test the practicality of OSCE, a mock was conducted three days prior to the date of examination. The mock OSCE was used to pilot some of the scenarios and checklists and determine whether the time allocated was adequate for the performance of different skills. The mock OSCE was also used to determine inter-rater variability and provided a platform for consensus building regarding the scoring system and allocation of marks. During the mock OSCE, SDFs acted as students while faculty acted as examiners and standardized patients. Two days before the examination, some postgraduate students were oriented to act as standardized patient during the main OSCE. Marker stations consisted of presentation of data with a request for interpretation, documentation or appropriate clinical action. Each station was allocated 10 minutes. All the students did the techniques equally at the same time and were assessed by the researcher based on the checklist.

Preparation and orientation of students

Important lessons were drawn from the first experience of Al conducting OSCE in the Department of Medical Surgical Nursing. It was clear at the end of the examination that clarity of purpose of OSCE is of almost importance for examiners and especially students considering that they were switching from the traditional kind of assessment. Being the first time students were being assessed through an OSCE, it was very stressful for students. This was evidenced by the questions that were asked by the students during the orientation meeting. Similarly, on the day of the examination, students exhibited stress as they awaited the assessment process. This could have affected their performance. Orientation of students was also done late hence students felt ill prepared.

Practical points for nursing students preparation during OSCE were followed which include:

- Be psychologically prepared
- Be familiar with checklist/marking criteria
- Develop skills on clinical placement
- Use available resources such as guided study, quizzes and videos
- Pay attention to verbal and written instructions and clarify any queries with the assessor before start
- Stay calm and focused
- Communicate with the patient
- Be familiar with how equipment works
- Rehearse skills
- Revise the underpinning theory of skills
- Check whether they should wear uniforms
- Practice answering questions verbally
- Inform the assessor if you forget to do something, as you may still have time to do it
- On completion, take a moment to run through in your mind what you were asked to do and check that you have completed the task
- Know which procedures/guidelines are to be used in the OSCE
- Know the timing of the OSCE
- Use feedback from mock/formative OSCEs
- Confirm the date, time, and venue and allow enough time to get there
- Check all the equipment you will need is present at the station
- Keep an eye on the time

Student Instructions included:

Station Title:	**History Taking**
• Length of Station:	10 minutes
• Venue:	OSCE Lab
• Objective:	This station aims to assess the student's ability to take an appropriate systematic history matched to the situation of a patient and doing a complete analysis of the presenting symptoms.
• Student's Instructions:	• Consider that the examiner is the patient and take the history from her as you are going to take it from the patient • Do not ask the examiner any question other than those related to the history taking. • Introduce yourself and explain to the patient what you are going to do. • Perform hand hygiene

Assessor/Role Player Preparation

The assessor and patient were prepared and clear guidelines about their roles and how much interaction is allowed with the student were given. The assessor was familiar with and had a good understanding of the marking criteria and guidelines.

Examiner Instructions

Station Title:	**History Taking**
• Length of Station:	10 minutes
• Venue:	OSCE Lab
• Overview of Station:	Mr. A.Q is a 59-years-old overweight male presented to the emergency unit with chest pain. He looks pale and he is sweating.
• Objective:	This station aims to assess the student's ability to take an appropriate systematic history matched to the situation of the mentioned patient and doing a complete analysis of the presenting symptoms.
• Examiner Instructions:	• Play the patient's role • Use the attached information to answer students' questions • Give the same answers to all students • Give guidance on timing.

Marking OSCEs

A checklist was used to mark OSCEs. It included the skill broken down into steps, which are marked using a binary rating ("achieved" or "not achieved"). Tables 1 and 2 contain samples of checklists from a year 1 (level 4) pre-registration nursing OSCE. The student stays in the same room and performs the skills in any order but must cleanse their hands before and after contact with the patient. A global rating scale used in combination with a checklist. The global rating score involved the skill performance across the range "excellent/good/satisfactory/borderline pass/borderline fail/fail". A Likert scale of "pass-borderline-fail" was used by the assessor to judge a student's performance.

Items	**2**	**1**	**0**
Station Title:	**History Taking**		
1. Introduces herself			
2. Explains to the patient what you are going to do			
3. Performs hand hygiene			
4. Interview the patient: Ask about the chief complaint (History of Present Illness): Analysis for pain: 4.1- Onset: one hour back 4.2- Location / site: substernal (retrosternal) 4.3- Radiation / referral : radiates to the neck, jaw, and left arm 4.4- Quality / character: tightness, sensation of pressure, heaviness, crushing 4.5- Quantity / severity: using the pain scale = 8 (severe) 4.6- Duration: continuous since its onset 4.7- Frequency: first time to have it. 4.8- Aggravating Factors: (activity and walking) & 4.9- Relieving Factors (partially relieved with rest). 4.10- Associated Symptoms: nausea , palpitations and sweating 4.11- Effect on Function: limits his activity			
5. Thanks the patient			
Summation of scores			
Total score	/ 30		
	/ 10		

Key: 2 = Attempted Satisfactorily, 1= Attempted Not Satisfactorily, 0= not Attempted

Examiner's Signature: ……

Weighting of the Questions/SCENARIOS

All the stations were allocated equal marks despite the fact that some skills on certain stations were more critical than others. This resulted in a situation where a student who fails to perform a critical skill at one

station but performs well in a less critical skill, ends up passing the overall examination after aggregation of scores. This situation entails that a student may progress to the next level of training or graduates without that particular core competence.

How it works?

OSCE Exams consist of several clinical stations with actors playing the role of a patient with some sort of a medical complaint. All the students were divided in sub groups and every group was in a room, then every time the coordinator called around 4 students to start the exam and the coordinator explained the way and the direction should be followed.

OSCE Blueprint Matrix				
Domain: Medical Surgical Nursing				
System	**History Taken**	**Explain**	**Examination skills**	**Practical skills /Use of Equipment**
• Cardiovascular System (CVS)	Chest Pain	Discharge drugs	Cardiac assessment	Measuring the arterial blood pressure
• Respiratory System (RS)	Hemoptysis	Smoking Wheezing	Respiratory assessment	Peak flow measurement
• Gastrointestinal Tract (GIT)	Abdominal Pain Hematemesis Melena	Gastroscopy	Abdominal assessment	Rectal examination (PR)
• Reproductive System	Amenorrhea	Abnormal smear	Cervical Screening Test	
• Nervous System (NS)	Headache		Glasgow Coma Scale (GCS)	
• Musculoskeletal System	Back Pain		Hip replacement	
• Generic	Pre-operative Preparations Post-operative Care	Surgical safety checklist *(Sign in – Timeout – Sign out)*		Intravenous cannulation Blood transfusion reaction

3) Evaluation Phase

After the conduction of the exam, student‘s perspectives tool was distributed to be fulfilled at their own pace and oral feedback was obtained through conducting a focus group for the students.

Statistical Analysis

Collected data were coded and tabulated using personal computer. Statistical package for the social science (SPSS) version 23 was used. Regarding descriptive statistics, data was summarized using 1) the arithmetic mean as an average; 2) The standard deviation as a measure of dispersion of results around the mean;3) The frequency and percentage. Furthermore, inferential statistics included the students'-test for comparison of means of 2 independent groups. Statistical significance was considered at p-value <0.05.

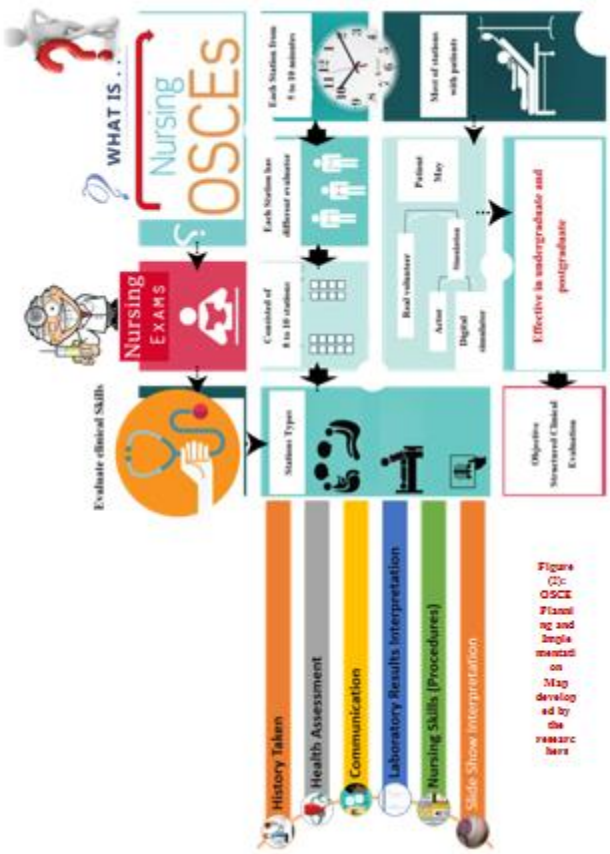
III. Limitations of the Study

There are certain limitations of this research. ***Firstly*** OSCE was being introduced for the first time and used for summative assessment of clinical competencies. This could have affected both students and examiners in some unique way as there was no prior experience with this type of testing during formative assessments. For students, introduction of a new assessment technique could have increased the levels of anxiety in addition to the usual anxiety associated with examination consequently affecting performance. Therefore, the obtained performance level could not have reflected the actual levels of competencies in the tested clinical skills. For examiner, switching from traditional clinical evaluation to OSCE could have affected inter-rater reliability. Despite the orientation some examiners could not confine to the structured checklist, they still asked additional questions to some and not all students as is the case in traditional clinical evaluation. ***Second*** limitation was the use of untrained standardized patients. In cases where standardized patients were required, Postgraduate students were used. Although the standardized patients were oriented to their role, the orientation was not adequate such that they varied their responses in some cases, thus infringing on standardization which is a critical component in ensuring objectivity in OSCE.

It was discovered during the examination that some checklists used in the examination were not exhaustive. This could have introduced some bias as it prompted some assessors to begin probing for more answers from the students. Therefore, thorough preparation and pretesting of the checklists is required to avoid introducing bias and subjectivity.

Furthermore, during the implementation, it was discovered that a lot of time, material and human resources were required to conduct effective OSCEs. This was compounded by a large number of students that were examined. Additionally, there were limited number of assessors and standardized patients. This could

have affected the results and performance of students as some students were assessed outside the scheduled examination time. This could have resulted in fatigue in both the students and assessors thereby affecting the validity and reliability.



IV. Results

A- Students' Achievements

Regarding the effectiveness of OSCE, the current study indicated that, the medical surgical nursing students obtained higher mean scores in OSCE medical surgical nursing exams (26.003± 2.99) with highly statistically significant differences($p<0.00$) (table1) in the first trail. Also, with a high statistical significant difference in second trail ($p< 0.00$) (table, 1).

Table (1): Students' OSCE Evaluation System Mean Scores in First &Second Trail (N=100)

Item	OSCE Evaluation Mean ± SD	t	P
1st trail	26.003 ± 2.99	3.702	0.00
2nd trail	26.11 ± 2.26	4.68	0.00
Total mean scores	26.18 ± 4.18	6.23	0.00

B-Students' Perspectives

Table (2) shows the students 'opinion regarding advantages of OSCE compared with the traditional method of evolution. The highest rate of satisfaction belonged to OSCE methods of evaluation as the students reported that OSCE measure course objectives (86.0%), enhancing teaching level (99.0%), relate theory to practice (99.0%), increased decision-making ability (98.0%), enhanced methods of evaluation (97.0%), require analytical questions (99.0%) and makes exam well developed (98.0%) than the traditional method. The mean score of students' opinion was (28.1± 9.6).

In relation to student's perspectives regarding OSCE preparation, table (3) revealed that preparation to OSCE was ranked as very satisfactory to satisfactory by more than one third of the students. The same rank was given to obvious preparation of OSCE by approximately more than half of the student's (46.3%), time tables were available and known to students (33.0%) with a mean of 4.8± 2.03. As regards OSCE‘s laboratories, more than one third of the students indicated that they were suitable, lighted and ventilated, clean, calm, with availability of the needed equipment and simulators.

Table (2): Frequency Distribution of Students' Perspectives Regarding the OSCE System (N=100)

Item	Very Satisfactory		Satisfactory		Unsatisfactory	
	NO.	%	NO.	%	NO.	%
Measure the course clinical Objectives	86	86.00	6	6.00	8	8.00
Is credible	93	93.00	3	3.00	4	4.00
Is consistent/reliable	81	81.00	15	15.00	4	4.00
Requires analytical questions	98	98.00	2	2.00	0	0.00
Relates theory to practice	99	99.00	1	1.00	0	0.00
Lead to increased decision making ability	98	98.00	1	1.00	1	1.00
Increased knowledge and understanding	90	90.00	8	8.00	2	2.00
Enhance teaching level	99	99.00	1	1.00	0	0.00
Enhance methods of evaluation	97	97.00	3	3.00	0	0.00
Makes exams well developed	98	98.00	2	2.00	0	0.00
Makes exams/questions clear	81	81.00	19	19.00	0	0.00
Makes exams/questions suitable for different students level	79	79.00	20	20.00	1	1.00
Makes exams/questions to cover most of course clinical contents.	80	80.00	14	14.00	6	6.00
Mean ± SD 28.1± 9.6						

Table (3): Frequency Distribution of Student's Perspectives Regarding Preparation to OSCE and Venue (N=100)

Item	Very Satisfactory		Satisfactory		Unsatisfactory	
	NO.	%	NO.	%	NO.	%
Preparations for OSCE						
Was obvious before establishing OSCE	53	53.00	30	30.00	17	17.00
Time table were available and known to students	33	33.00	52	52.00	15	15.00
Satisfaction of number of exam	31	31.00	65	65.00	4	4.00
Mean ± SD 4.8±2.03						
Measure the course clinical Objectives	86	86.00	10	10.00	4	4.00
Is credible	93	93.00	4	4.00	3	3.00
Is consistent/reliable	81	81.00	14	14.00	5	5.00
Requires analytical questions	98	98.00	2	2.00	0	0.00
Relates theory to practice	96	96.00	3	3.00	1	1.00
Lead to increased decision making ability	98	98.00	2	2.00	0	0.00
Increased knowledge and understanding	90	90.00	7	7.00	3	3.00
Enhance teaching level	99	99.00	1	1.00	0	0.00
Enhance methods of evaluation	97	97.00	3	3.00	0	0.00
Makes exams well developed	98	98.00	2	2.00	0	0.00
Makes exams/questions clear	81	81.00	13	13.00	6	6.00
Makes exams/questions suitable for different students level	79	79.00	18	18.00	3	3.00
Makes exams/questions to cover most of course clinical contents.	80	80.00	12	12.00	8	8.00
Mean ± SD 28.1±9.6						
OSCE lab						
Suitable for learning	46	46.00	45	45.00	9	45.00
Lighted and ventilated	45	45.00	50	50.00	5	50.00
Clean setup	45	45.00	52	52.00	3	52.00
Calm	43	43.00	48	48.00	9	48.00
The needed equipment and simulators are available	41	41.00	47	47.00	12	47.00
Suitable for students number	45	45.00	50	50.00	5	50.00
Mean ± SD 10.2±4.2						

V. Discussion

OSCE as a performance-based assessment method is a well-established student assessment tool for many reasons: competence-based, valid, practical and effective means of assessing clinical skills that are fundamental to the practice of Nursing and other health care related professions (Association of American Medical Colleges, 2008; El Darir & Abd El Hamid, 2013). Its popularity as a major tool in the assessment of clinical competence is well documented as being specifically prominent in assessing situations where reliability and content validity are fundamental elements for making the results of such assessments justifiable to both examinees and external agencies (Newbel, 2004; Rushforth, 2007; Selim et al., 2011; El Darir & Abd El Hamid, 2013).

A review of the literature showed that since 1975, when the first objective structured clinical examination was introduced, there has been a growing interest in the assessment utilization of clinical skill competence of nursing students. This method of assessment included direct evaluation of clinical skills in the classroom or hospital room. Application of objective structured examination required a good organization, prepared checklists, as well as a number of examiners, time and money. By analyzing the efficiency of this method some authors have pointed out that the use of this method could lead to considering health care as a simple set of tasks to be performed, while others have emphasized that by a customized implementation of this method other clinical skill competence of nursing students can be also evaluated. Students' opinion about this method of assessment is different.

The popularity of OSCE resulted from concerns that were raised about the traditional clinical and oral examinations used for assessing clinical competence (Rushforth, 2007; Holmboe & Hawkins, 2008; Levette-Jones et al, 2010; Marwaha, 2011; El Darir & Abd El Hamid 2013). The concerns were triggered by the discovery of low correlations between examiners mark allocation, which resulted in unacceptable reliability. However, change in some parts of the world took long to occur due to a general lack of an optional assessment method for clinical competence. The introduction of OSCE has provided benefits in clinical testing to that of objective written examinations in knowledge testing. The use of marking which is based on a checklist has been lead to improved inter-rater consistency (Rushforth, 2007). Testing students' performance on numerous stations has also contributed to the increase in the number and range of competencies that could be sampled thus improving on content validity (Downing, 2003; Bhat & Anald, 2006). It is these benefits of OSCE that outweighs its cost (Selim et al., 2011; El Darir & Abd El Hamid, 2013).

Regarding students' opinion of OSCE, a study conducted by Turner and Dankoski, to assess the validity, reliability and feasibility, majority of students felt that they had been fairly marked (Turner & Dankoski, 2008). Similarly, OSCEs are regarded by most students as comprehensive-covering a range of knowledge and clinical competences and useful practical experience (Piere, 2004). Similar assertions were made by Eldarir and Abd el Hamid (2013) where students reported to have had positive opinion of OSCE when they isolated a number of ad- vantages of OSCE compared to traditional evaluation; measuring of course objectives, enhancing teaching level, relating theory to practice, making examinations well developed, in-creasing decision making abilities and an enhanced method of evaluation (El Darir & Abd El Hamid, 2013). On the other hand negative student opinions on OSCE have also been reported for example in a study by Moudoon, Biesty and Smith (2013), 57% students either disagreed or strongly disagreed to the statement that OSCE reflected real life clinical situation.

The acquisition of clinical skills is paramount to the development of a safe and competent practitioner (Brookes, 2007). OSCE as a performance-based assessment is a well-established student‘s assessment tool for many reasons: competency- based, valid, practical and wise effective mean of assessing clinical skills that are fundamental to the practice of nursing and other health care related professions (Alinier, 2003). Regarding the effectiveness of OSCE, the current study pointed out that, the comparison between OSCE versus traditional method of evaluation revealed higher mean OSCE scores with a high statistical significant difference in first trail. This finding is congruent with Smith et al., (2012) who compared different methods of assessing midwifery students 'clinical skills, the results indicated that none of the assessment methods of clinical skills can provide complete information about the students 'skills but OSCE method can be used as a very valuable method for assessing clinical competency of students because of appropriate reliability in comparison to methods such as worksheet, clinical observance, and etc. As well, the mean scores of students who undergone OSCE in the second trial were high as compared to the group who undergone traditional method of evaluation with high statistical significant difference ($p< 0.000$). This is in the same line with Huang et al (2007), who studied medical students 'satisfaction with OSCE method. The result showed that the majority of students were satisfied and expressed that its effect on improving clinical skills was pleasing. Also, Brosnan et al. (2006) studied the effect of using OSCE on the self-confidence of nursing students and their point of view toward clinical practice. The results showed that the students who got higher scores in OSCE assessment method had more self-confidence for doing clinical practice. Also, students mentioned that OSCE was a meaningful and the fairest method of assessing clinical skills.

In relation to the students‘ opinion regarding advantages of OSCE compared with the traditional methods of evaluation, they indicated that, OSCE measure course objectives, enhancing teaching level, relate theory to practice, makes exam well developed, increased decision making ability and enhanced methods of evaluation, than the traditional method. The students' opinion about the OSCE system was ranked as very satisfactory to satisfactory by more than two thirds of the students. This feedback can suggest that OSCE is an

objective tool for evaluating clinical skills. These findings are in agreement with a study conducted by El Nemer & Kandeel, (2009) who reported that most students viewed OSCE as a fair assessment tool which covered a broad area of knowledge, allowed them to compensate in some areas and minimized their chances of failing. Moreover, Nolti et al (2011) studied 58 nursing students 'opinions that were assessed by OSCE. The researchers had wanted the students to express the best and worst characteristics of this exam. The results were as follows: the best specifications included the student being aware of the examiner‘s exact expectations, has the chance to express all aspects of his ability in performing a technique, and the student feels that everything is provided for him to express his knowledge. The worst parts included: stress and anxiety of student before the exam.

As well, in a study conducted by Turner & Dankoski, (2008) to assess the validity, reliability and feasibility of OSCE team, the majority of students felt that they had been marked fairly. Most students provided positive feedback about the quality of OSCE performance in terms of the clarity of the instructions of the exam, the sequence of OSCE stations, the reflection of the tasks taught and the time at each station. These findings are consistent with Pierre et al. (2004) who indicted that most students viewed OSCE as comprehensive, covered a wide range of knowledge and clinical competencies and a useful practical experience. As well more than two thirds of students believed that the assessment was fair and they reported their need for more time to complete the stations. In another study done by Alinier (2003), nursing students perceived OSCE as a favorable experience that should be repeated regularly. However, Mitchell et al. (2009) mentioned that in contrast withvarious positive specifications of OSCE, for better usage of this method in assessing clinical skills of nursing students, it is essential that this method is used besides other methods of assessment so that more accurate and favorable results will be found for judgment.

VI. Conclusion

- The widespread use of OSCE for the assessment of clinical skill competence also imposes a number of questions for those involved in its planning, implementation and assessment. Based on the findings of the results of the present study and reviewing the related studies, it can concluded that with better planning in performing OSCE and familiarizing the students with the stations and limitations of OSCE through practice during the term, stressors could be decreased.
- OSCE can be used as an appropriate method in evaluation nursing clinical skills because of various advantages such as improving students‘ clinical performance, preparing highly qualified and competent graduates, increasing decision making abilities and enhance teaching level. Therefore improving the quality of evaluation as OSCE is a valid and reliable technique uniquely capable of assessing many fundamental clinical skills that are not being assessed in a rigorous way in most undergraduate. OSCE examination offers an attractive option for evaluating practitioner competency.

VII. Recommendations

Based on findings of the current study, it is recommended that:

1. OSCE must be used as an integral part of the clinical evaluation system / students 'assessment at the under graduate.
2. OSCE should be used as a method of evaluating clinical practice in a combination with traditional method. It can be suggested that OSCE has the potential to make a very effective and meaningful contribution to fitness for practice‘.
3. The level of competency in OSCE should be tested not only for nurses using the traditional methods of learning, but also for distance learning students.
4. An OSCE committee should be appointed with an exam coordinator to supervise the delivery process helped by a support team.
5. A suitable exam venue should be chosen, prepared and tested well ahead of the exam day with sufficient space for patients, examiners at their stations and briefing and quarantine rooms for candidates.
6. The selection of examiners should be based on specific criteria, including training and contribution/participation in previous OSCEs.
7. To reduce variability and improve inter-rater reliability, workshops/training courses must be organized for the purpose of training and orientation of examiners and simulated patients.
8. The entry and collation of candidate marks should only be done by support team staff as soon as possible after each OSCE session.
9. The evaluation of students at each station could be done by examiners physically present at the station or through a closed-circuit video system.
10. Instructions, answers and reflection could be done on papers posted and located at each station or preferably in an examinee’s OSCE book distributed to candidates at the beginning of the exam.

11. Debriefing of examiners, patients, candidate representatives and support staff should be done as soon after the day of the OSCE as is convenient.
12. Some of the stations should be videoed for standardization purposes and to give further feedback to examiners.
13. A workshop has to be delivered by continues education unit to train examiners and station developers.

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