Objective Structured Clinical Examination (OSCE) – Based Assessment in Nursing: Students' and Clinical Instructors' Perception

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Abstract: Background: Objective Structured Clinical Examinations (OSCE) is a common tool used to objectively evaluate clinical competence in medical schools and more recently in nursing profession as well. Few studies, however, have been done to elicit the views of students that method of assessment. **Purpose**: The present study set out to explore, evaluate and analyze the perception of students as well as clinical instructors about Objective Structured Clinical Examination (OSCE) as well as exploring the strengths and weaknesses of this assessment tool as perceived by study subjects. **Methods**: A survey design was utilized in the study which had been carried out in the College of Nursing, KSAU-HS; Saudi Arabia. A convenient sample of seventy-three senior students and sixteen clinical instructors whom were involved in the process of administration and organization of the OSCE were recruited. A modified self-administered version of questionnaire, (developed by Pierre, et al., 2004), was completed by students immediately after final year OSCEs to measure students' perception of examination attributes. Clinical instructors provided their feedback using the clinical Instructors' Perception Questionnaire which was developed by the researchers. **Results**: The study showed overwhelming acceptance of the OSCE with respect to the way of administration (58.9%), structure (63%), minimizing chance of failing (60.3%), chance of compensation for additional marks (64.4%), awareness of information needed (64.4%), awareness of exam nature (80.8%). Majority of students also agreed that tasks reflected skills learnt (65.8%), sequence of stations was logical and appropriate (60.3%) and that OSCE provided opportunity to learn real life scenarios (63%). Authenticity of the required tasks ranged between (30.1–58.9%). However, students felt that it was a strong anxiety-producing experience and intimidating assessment method. Moreover, different concerns were expressed regarding the ambiguity of some questions, inadequacy of time for expected tasks. OSCE implementation was positively perceived by majority of clinical instructors as well and was considered effective in evaluating knowledge and competencies, and perceived as an excellent learning and teaching mechanism. Clinical Instructors provided several suggestions for promoting quality of OSCE in assessment process.
Conclusion: Student feedback is invaluable in influencing faculty teaching and curriculum direction and appreciation of students' opinion and clinical instructors is therefore a must for improving the assessment process.
[Hala M. M. Bayoumy and Hanaa Yousri. **Objective Structured Clinical Examination (OSCE) – Based Assessment in Nursing: Students' and Clinical Instructors' Perception]** *J Am Sci* 2012;8(9):523-540]. (ISSN: 1545-1003). http://www.jofamericanscience.org. 73

Keywords: OSCE, assessment, nursing, clinical instructors, perception.

1. Introduction

The evaluation of nursing students' clinical competencies is essential to the educational process. However, the realization that students gain various incomparable experiences clinically presents a dilemma in measuring both individual and program outcomes (Rentschler, Eaton, Cappiello, McNally & McWilliam, 2007). It is therefore evident that a wide range of evaluative methods are necessary to assess student nurses' clinical competence and greater emphasis should be placed on those methods which encourage the learning of clinical skills and concurrently provide an appropriate mechanism for assessing them (Khattab & Rawlings, 2001). The Objective Structured Clinical Examination (OSCE) is widely used to assess clinical competence (Panzarella & Manyon, 2007). These examinations involve using simulated clinical situations as a tool in conducting summative evaluations of trainee competence (Miller, 2009). It was created to enable better assessment and quantification of clinical skills acquisition by students (Benseñor, 2004).

Since its development in the 1970s by Dr. Ronald Harden, the OSCE has gained acceptance as a benchmark for clinical skills assessment (Bartfay, Rombough, Howse & LeBlanc, 2004). It is widely and increasingly being used as a method of assessment in nursing and allied health curricula (Wessel, Williams, Finch & Gemus, 2003; Bartfay, *et al.*, 2004). Objective Structured Clinical Examination (OSCE) is now established as one of the most valid, reliable and effective tests to measure synthesis of knowledge and clinical skills (Austin, O'Byrne, Pugsley & Munoz, 2003; Rentschler, *et al.*, 2007), and is considered as a fair and comprehensive means of evaluation (Al Omari & Shawagfa, 2010).

OSCEs are examinations in which the student is required to perform specific skills and behaviors in a simulated clinical or patient care environment. Nulty, Mitchell, Jeffrey, Henderson and Groves (2011)

emphasized that OSCEs are a valuable strategy to assess clinical skill acquisition and 'fitness to practice' as long as they are applied at the students' expected level of clinical practice. OSCE is a method of student assessment in which aspects of clinical competence are evaluated in a comprehensive, consistent and structured manner, with close attention to the objectivity of the process. OSCE requires each student to demonstrate specific skills and behaviors in a simulated work environment (Mitchell, Henderson, Groves, Dalton & Nulty, 2009). OSCEs consist of a series of stations that prompt students to perform specified tasks within a defined amount of time (Austin, *et al.,* 2003; Rushfolth, 2007). It typically consists of a series of short assessment tasks (stations), each of which is assessed by an examiner using a predetermined, objective marking scheme (Major, 2005; Ward & Barratt, 2005).

The evidence that OSCEs enhance the quality of health professional education has been supported (Mitchell, *et al.,* 2009). The use of OSCEs has been shown to be an effective means of assessing pregraduate nursing students' clinical skills and clinical reasoning abilities in physical examination (Khattab & Rawlings, 2001) and in postgraduate rheumatology clinical nurse specialists courses (Ryan, Stevenson & Hassell, 2007). Rayan *et al.* (2007); Rentschler *et al.* (2009) reported that the OSCE stations provided the mechanism for assessing the student's application of knowledge as well as his or her psychomotor and interpersonal skills; the opportunity to be evaluated on their interview skills, problem-solving abilities, teaching and assessment skills; and reflect what the student has been taught. Some test the individual's ability to carry out clinical skills, such as aseptic technique, moving and handling techniques, measurement of vital signs and communication skills; others may also examine the underpinning clinical and theoretical knowledge relating to the skills tested (Rushforth, 2007). In addition, through the study of group performances on OSCE, areas of strengths and weaknesses in the educational programs have been identified (Rentschler, *et al.,* 2009). These advantages made OSCE to be extensively used in nursing (Rentschler, *et al.,* 2007; Ryan, *et al.,* 2007).

OSCEs however is being expensive and labour intensive; the delivery of which is complex and resource intensive, usually involving large numbers of examiners, candidates, simulators and patients, and often taking place across parallel sites (Pell, Fuller, Homer & Roberts, 2010). Yet it is still considered as a valuable and beneficial experience for the students and their costs could be outweighed by the educational benefits of such assessments. It is therefore introduced to colleges of Nursing in the context of a desire to improve the quality of the evaluation techniques and, to be abridged of current instructional technologies in nursing education.

The current study is intended to evaluate and analyze the perception of students as well as clinical instructors of objective structured clinical examination (OSCE) used for measuring clinical competence during final nursing courses examinations in order to provide evidence that supports feasibility of its use in nursing for improving students' outcomes.

2. Methodology

Study Aim

Evaluate and analyze the perception of students as well as clinical instructors about Objective Structured Clinical Examination (OSCE) as well as exploring the strengths and weaknesses of this assessment tool as perceived by study subjects.

Specific Objectives

The study specific objectives included the following:

1. Evaluate students' perception of examination attributes which include:
    a. The quality of instructions and organization,
    b. The quality of performance, and
    c. Usefulness of the OSCE as an assessment instrument compared to other format.
2. Assess clinical instructors' feedback about OSCE based assessment in nursing.

Study Design

A survey design was utilized to elicit data pertaining to the current research. This design provides basis for further development of programs and interventions (Wood & Harber, 2010).

Sample and Setting

The study was carried out in the College of Nursing, KSAU-HS; Saudi Arabia. The study sample consisted of two groups of participants: students and clinical instructors. A convenient sample of seventy-three senior students who completed their nursing courses and passed the last year OSCE during the fall semester of academic year 2010-2011 were recruited for the current study. They constituted almost 25% of students in the college.

Clinical instructors involved in the process of administration and organization of the OSCE were asked to respond to the Clinical Instructors' Feedback Questionnaire. They consisted of sixteen instructors with different work experiences and backgrounds.

Tools

For the purpose of the current study, the questionnaires comprised of demographic data of the respondents as well as the following tools:

1. A modified self-administered version of questionnaire from a study by Pierre, Wierenga, Barton, Branday and Christie (2004). This is a

standardized, valid and reliable questionnaire (Pierre *et al.*, 2004). Main outcome measures of this questionnaire were student's perception of examination attributes, which included the quality of instructions and organization, the quality of performance, and usefulness of the OSCE as an assessment instrument compared to other formats. A Five-point Likert-type scale that indicated degrees of agreement were used to assess most of the dimensions in the questionnaire. While rating of OSCE in relation to other assessment formats in terms of difficulty, fairness, degree of learning and preferred frequency of use was done on a 3-points scale. A panel of experts was utilized to assess face validity of the modified questionnaire for reaching a consensus.

In addition, a review of the literature showed that little work had been done on students' attitudes, stress and learning especially during an OSCE examination. Consequently, the student questionnaire incorporated qualitative statements in addition to previously described quantitative ones. The open-ended part queried the students and let them reply in their own words and thus describe their own suggestions regarding the OSCE experience.

2. The clinical Instructors' Perception Questionnaire: clinical instructors provided their feedback using open ended questions which were developed by the researchers. The clinical Instructors Perception Questionnaire covered the following aspects: a) instructors' general impression of the effectiveness of OSCE preparation and organization; b) influence of the OSCE method on both students' learning as well as teaching process, and c) main perceived disadvantages of that type of examination and suggestions for improvements.

Procedure

Once official permission was granted for carrying out the study from the Nursing College's Research committee, participants were contacted by the investigators to explain the aim and purpose of the study. They were assured that data collection will only be done on a voluntary basis and answers will be kept confidential and anonymous as well as those who decline involvement in the survey would not be penalized.

Student who accepted to participate were handed the demographic data sheet and the likert-style self-administered questionnaire to assess their perception of the OSCE as an assessment strategy. Moreover, clinical instructors (CI) who were actively involved in the organization and conduction of the OSCE and agreed to participate were asked to fill the respective demographic and work experience form as well as the structured Clinical Instructors' Perception Questionnaire. This later consisted of open-ended questions which allowed them to freely provide their perception.

Statistical Method

Data analysis was carried out using the SPSS statistical package version 18. The obtained data were coded, analyzed and tabulated. Descriptive, parametric and nonparametric statistical analysis was carried out accordingly. Qualitative analysis was done through a form of content analysis by identifying themes in participants' responses and grouping responses according to thematic content.

3. Results

The total study population comprised of 73 students and 16 clinical instructors. The mean age for students was 24.7 ± 2.87 years, with a range of 22-32 years. Concerning nursing program, 40 students were from the conventional post secondary 4-years Bachelor program while 33 were from the accelerated Bachelor program who were holder of Bachelor of Science seeking a degree in Nursing. All were females as males are not considered for entry into the program which is only permitting single sex education. Socio-demographic characteristics of the clinical instructors showed a mean age of 36.9 ± 8.81 years (range 23-54 years). Their mean years of experience were 3.5 ± 2.9 years.

Students' perception of the quality of instructions and organization of the objective structured clinical examination (OSCE) ranged between 1.85±0.99 to 2.84±1.19 (Table 1). The majority of students agreed on all the positive aspects of exams instructions and organization. Considerable number of students (38.4%) agreed that OSCE highlighted areas of weaknesses in skills and knowledge while 27.4% disputed this fact. Majority of students provided neutral response with regards to the OSCE being an intimidating assessment method (52.1%) whereas 42.5% agreed on that. In addition, there was a highest percentage on perception of OSCE as stressful and of the time allocated at stations as being inadequate (μ±SD= 2.84±1.19; 2.84±.90; respectively).

As shown in table 2, overall students' assessment of the quality of their performance on the objective structured clinical examination ranged between 2.01 ±0.74 and 3.21±0.97. Total percentage agreement further favored their positive assessment of the quality of performance. Majority agreed that they were fully aware of the exam's nature (80.8% agree versus 4.1% disagree) and that tasks reflected skills learnt (65.8% agree versus 1.4% disagree). Least agreement was on adequacy of time allotted in each station. Only 31.5 percent agreed on adequacy of time per station, almost forty-nine percent disagreed on it while 19.2% were neutral.

Table 1: Nursing Students' Perceived Quality of Instructions and Organization of Objective Structured Clinical Examinations (OSCEs).

Survey Item	μ±SD	Degree of response					Total Agree No. (%)
		Strongly Agree No. (%)	Agree No. (%)	Neutral No. (%)	Disagree No. (%)	Strongly Disagree No. (%)	
The exam was well administered	2.38±0.89	11(15.1)	32(43.8)	21(28.8)	9(12.3)	0(0.0)	43(58.9)
OSCE was fair	2.60±0.85	6(8.2)	27(37.0)	31(42.4)	8(11.0)	1(1.4)	33(45.2)
The exam was well-structured	2.30±0.72	8(11.0)	38(52.1)	24(32.9)	3(4.1)	0(0.0)	46(63.0)
Wide knowledge area covered	2.49±0.78	5(6.8)	35(47.9)	25(34.2)	8(11.0)	0(0.0)	40(54.8)
Wide range of clinical skills covered	2.42±.90	9(12.3)	34(46.6)	21(28.8)	8(11.0)	1(1.4)	43(58.9)
Time allocated at stations was inadequate	1.85±0.99	33(45.2)	25(34.2)	10(13.7)	3(4.1)	2(2.7)	58(79.5)
OSCE was very stressful	1.90±1.04	34(46.6)	20(27.4)	12(16.4)	6(8.2)	1(1.4)	54(74.0)
OSCE less stressful than other exam types	2.84±1.19	10(13.7)	22(30.1)	17(23.3)	18(24.7)	6(8.2)	32(43.8)
There were minimal chances of failing	2.33±.90	12(16.4)	32(43.8)	24(32.9)	3(4.1)	2(2.7)	44(60.3)
OSCE allowed compensation for additional marks	2.34±.77	7(9.6)	40(54.8)	20(27.4)	6(8.2)	0(0.0)	47(64.4)
OSCE is an intimidating assessment method	2.49±.80	10(13.7)	21(28.8)	38(52.1)	4(5.5)	0(0.0)	31(42.5)
I'm fully aware of the level of information needed	2.36±.93	11(15.1)	36(49.3)	16(21.9)	9(12.3)	1(1.4)	47(64.4)
OSCE highlighted areas of weaknesses in skills & knowledge	2.84±.90	4(5.5)	24(32.9)	25(34.2)	20(27.4)	0(0.0)	28(38.4)

Strongly Agree=1, Agree=2, Neutral=3, Disagree=4, Strongly Disagree=5

Table 2: Nursing Students' Assessment of Quality of their Performance on the Objective Structured Clinical Examinations (OSCEs).

Survey Item	μ±SD	Degree of response					Total Agree No. (%)
		Strongly Agree No (%)	Agree No. (%)	Neutral No. (%)	Disagree No. (%)	Strongly Disagree No. (%)	
Fully aware of exam's nature	2.01±.74	16(21.9)	43(58.9)	11(15.1)	3(4.1)	0(0.0)	59(80.8)
Tasks reflected skills learnt	2.22±.69	10(13.7)	38(52.1)	24(32.9)	1(1.4)	0(0.0)	48(65.8)
Time at stations was adequate	3.21±.97	1(1.4)	22(30.1)	14(19.2)	33(45.2)	3(4.1)	23(31.5)
Settings and contexts of stations were authentic	2.64±.79	2(2.7)	33(45.2)	28(38.4)	9(12.3)	1(1.4)	35(47.9)
Instructions were clear and unambiguous	2.51±.85	8(11.0)	29(39.7)	27(37.0)	9(12.3)	0(0.0)	37(50.7)
Tasks asked to perform were fair	2.56±.87	5(6.8)	34(46.6)	23(31.5)	10(13.7)	1(1.4)	39(53.4)
Sequence of stations was logical and appropriate	2.48±.80	4(5.5)	40(54.8)	19(26.0)	10(13.7)	0(0.0)	44(60.3)
OSCE provided opportunity to learn real life scenarios	2.49±1.06	9(12.3)	37(50.7)	13(17.8)	10(13.7)	4(5.5)	46(63.0)

Strongly Agree=1, Agree=2, Neutral=3, Disagree=4, Strongly Disagree=5

Total agreement of students on validity and reliability of the OSCE was high (56.2% for being a true measure of clinical skills, 45.2% being standardized, 58.9% being practical and useful experience versus a disagreement of 23.3%, 17.8%, and 16.4% respectively). Factors of personality, and ethnicity were not seen by thirty-six percent of students to affect scoring compared to only 30.1% who did. (Table 3)

Table 3: Students' Perceived Validity and Reliability of the Objective Structured Clinical Examinations (OSCEs).

Survey Item	μ±SD	Degree of Response					Total Agree No. (%)
		Strongly Agree No. (%)	Agree No. (%)	Neutral No. (%)	Disagree No. (%)	Strongly Disagree No. (%)	
Passing or failing the exam is a true measure of clinical skills	2.66±1.15	8(11.0)	33(45.2)	15(20.5)	10(13.7)	7(9.6)	41(56.2)
OSCE scores were standardized	2.81±.92	0(0.0)	33(45.2)	27(37.0)	7(9.6)	6(8.2)	33(45.2)
OSCE was a practical and useful experience	2.51±.95	7(9.6)	36(49.3)	18(24.7)	10(13.7)	2(2.7)	43(58.9)
Personality and ethnicity will affect the scores	3.15±1.04	2(2.7)	20(27.4)	24(32.9)	19(26.0)	8(11.0)	22(30.1)

Strongly Agree=1, Agree=2, Neutral=3, Disagree=4, Strongly Disagree=5

Looking at students' rating of the different examination formats on the difficulty parameter, there was no clear distinction among responses especially that concerning easiness of MCQ, Essay Questions and OSCE (Table 4). Yet, OSCE was the least rated by students as difficult. Again, the same trend of equal rating was also observed on fairness parameter among MCQ, Essay Questions and OSCE. Almost all the different assessment formats had similar ratings. With regard to degree of learning, OSCE was rated the best on that parameter (56.2%) while Clerkship rating was the least (9.7%). OSCE was also the most highly preferred for use frequently (56.2%) while Clerkship rating was the least preferred for use frequently.

Table 4: Students' Ratings of Assessment Methods Used in Nursing Examinations

Parameter		Examination Format			
		MCQ	Essay Questions	OSCE	Clerkship Ratings
Difficulty					
Difficult	No.(%)	15(20.5)	19(26.0)	6(8.2)	11(15.1)
Neutral	No.(%)	28(38.4)	23(31.5)	36(49.3)	45(61.6)
Easy	No.(%)	30(41.1)	31(42.5)	31(42.5)	17(23.3)
Fairness					
Unfair	No.(%)	22(30.1)	15(20.5)	16(21.9)	11(15.1)
Neutral	No.(%)	17(23.3)	25(34.2)	25(34.2)	45(61.6)
Fair	No.(%)	34(46.6)	33(45.2)	32(43.8)	17(23.3)
Degree of Learning					
Learn very little	No.(%)	26(35.6)	10(13.7)	15(20.5)	7(9.6)
Neutral	No.(%)	15(20.5)	24(32.9)	17(23.3)	48(65.8)
Learn a lot	No.(%)	32(43.8)	39(53.4)	41(56.2)	18(24.7)
Preferred Frequency of Use					
Use much less	No.(%)	18(24.7)	21(28.8)	10(13.7)	9(12.3)
Neutral	No.(%)	21(28.8)	24(32.9)	22(30.1)	47(64.4)
Use much more	No.(%)	34(46.6)	28(38.4)	41(56.2)	17(23.3)

Qualitative Feedback from Students and Clinical Instructors:

Students' and clinical instructors' feedback were further explored with open ended questions. Responses were grouped according to thematic contents. From the overall viewpoints of students and clinical instructors, OSCE was perceived as a useful clinical experience, however there were others negativities and more suggestions which are all shown in Tables 5 – 13.

Students were freely allowed to provide more than one response for the overall perception of the OSCE experience. Only some students (N=45) provided answer on their overall feeling of OSCE. Perceptions of OSCE as exciting, useful experience that enhance learning and students' scores were among the positive views of students. While the perception of stress, fear, anxiety, being unfair, not accurate reflection of overall level and performance, and that it might rely on clinical instructors were all among the reported negative perceptions.

Table 5: Students' Overall Perception of the Objective Structured Clinical Examinations (OSCEs).

Positive Perceptions	No Comments	Negative Perceptions	No Comments
- Good; helpful useful experience	9	- Very stressful: feel relieved	7
- Excited; happy; satisfied	7	- Unfair and affect overall grade	6
- learned a lot	2	- Useless, time wasting	1
- Reflect on my clinical learning	2	- Fear and anxiety affect on results	1
- It enhance our scores	1	- Do not like OSCE, never feel well	3
- Feel I can take care of patients	1	- Depend on assessor (CI) can be easy or difficult	2
- Want to engage more in hospital	1	- Clinical instructors not help us to learn	1
		- Unfair judgment from CI	1
		- Not satisfied of own scores in some	1
		- Does not indicate your level of performance	1
		- Regret not practicing more at that time	1

Fifty-two students provided one/more suggestion/s for improvement of OSCE. Majority commented on the time allocated for each station which should be increased and the need for more practice sessions. Other suggestions were related to assessors to be more cooperative, friendly and fair, and giving more consideration regarding use of OSCE for assessing performance in certain courses. Some suggestions addressed the need to provide clearer, organized instructions in all OSCEs, making it less stressful, consideration of: skills included, number of stations, equipments with most updated technology, permitting remedy and corrections and use of real patients.

Table 6: Students' Suggestions for Improvement of OSCEs.

Suggestions	No. Comments
- Time at each station should be increased	26
- Practice: allow more practice sessions before OSCE	12
- Assessors: be more cooperative, friendly, fair and be more respectful with students	10
- Consideration regarding use of OSCE in certain courses: some courses should not utilize OSCE	7
- Instructions: clear, outlined organized OSCE instructions should be provided	5
- Less stressful	5
- Considerations of skills selected in the OSCE: should focus more on important skills	3
- Remedy: give chance to correct mistakes forgotten in the performance of the competency; give chance to review our papers	2
- Number of stations: need more parallel stations to allow more students at a time	2
- Number of OSCEs: divide into two parts to increase marks and be more competent	1
- Equipment: mechanical ventilation machine was old	1
- Use of real patients in OSCE	1

Concerning clinical instructors role in the OSCE, majority participated as assessor (N=13, 81.25%) and/or facilitator (N=11, 68.75%) in the different nursing courses. Analysis of clinical instructors' perception of OSCE's quality of assessment revealed two emerged themes, these were: (a) effective and (b) fair method of evaluation. It was considered effective in evaluating knowledge and competencies by majority as well as in the evaluation of: performance and principle application, critical thinking, safe practice as well as overall learning. One of the comments emphasized that "with the guidelines that were given, the quality of assessment is not an issue". Others added that "fairness is attainable", and "very satisfactory".

Table 7: Clinical Instructors' Perception of OSCE's Quality of Assessment

Effective Method for Evaluation of:	No Comments	Fair	No Comments
- Knowledge and competency (skills) in carrying out procedures	5	- Fair since time constraints is one of the hindrances to do quality assessment	1
- Students' performance with application of principles learned in classroom and clinical exposure	1	- Fair evaluation and assessment of all students	1
		- Was attainable	1
- Safe practice in terms of performance of psychomotor skills as well as knowledge associated with application	1	- Was very satisfactory	1
- Application of critical thinking in real situations	1		
- Students overall learning	1		

Clinical instructors' perceptions of OSCEs preparation and organization showed in tables 8 & 9. Four themes emerged regarding perception of OSCE preparation, specifically related to preparation time, examiners/course coordinators, materials/supplies, and task/competencies. Clinical instructors (CI) emphasized the need for considering enough time for preparing invigilators and for arranging supplies and materials, requiring clinical instructors and examiners planning together since lots of preparations are needed, and provision of detailed instructions for CI. Expectations from students (e.g., required materials) should be well communicated to them as well as consideration of enough functioning supplies for exam which should be adequately prepared ahead of time were all also emphasized. Moreover, they commented on competencies chosen for OSCE: "both the students and examiners see them as measuring skills relevant to clinical practice". On the other side, as shown in table 9, organization of OSCE was perceived positively by majority of CI. Comments like good, excellent, well planned, well organized are repeatedly reported.

Table 8: Clinical Instructors' Perception of OSCE's Way of Preparation

Preparation	No. Comments	Comments

- Preparation time	5	- Ahead of time (4 comments):
		  - Time range between 1 week – 1 month for handing the list of competencies/tasks to clinical instructors for their own preparation.
		  - At least two weeks for handing needed exam supplies to lab custodians for preparation.

- Examiners/Course coordinators	5	- It is O.K. spontaneous if facilitators work in their best. - Course coordinators and teaching assistant prepare and plan together - Require lots of preparation, everybody should be involved - Schedule of CI distribution to courses' OSCEs should be given ahead of time - Course coordinator should explain what they want from CIs who are not on the same course
- Materials/Supplies	4	- Should let students think of kind of materials she is going to use for the procedure. - Remind students what are the things to prepare during OSCE; e.g., bringing own stethoscope in case they will do vital signs. - Time of supplies arrival, sometimes no enough time to prepare. - Needed materials/equipments prepared be complete and functioning
- Tasks/Competencies	1	- Focus on stations, both the students and examiners see them as measuring skills relevant to clinical practice.

Table 9: Clinical Instructors' Perception of OSCE's Organization.

Organization	No. Comments
- Good and well organized	7
- Planned and coordinated well between course coordinators and clinical instructors including lab custodian	2
- Good but sometimes the time period for a student to prepare a certain procedure is either short or long	1
- Good, depends on who is involved in the organization	1
- Consider all factors from exams, availability of manpower, availability of supplies	1

Expectedly, the perceived influence of OSCE on learning process as shown on table 10, revealed four themes as follow: learning, learners, clinical instructors and assessment/evaluation. The influence on learning was that of, integration of knowledge, skills and attitude; application of nursing process; application of skills with integration of principles of safety; and helping demonstration of skills not just describing theory. Perceived influence on learners included: making them motivated to learn; help keeping in mind steps of procedures; putting in their heart each skill; gaining confidence; being more competent; enhance application in real world; be systematic; viewing the hospital setting; and working under pressure. Clinical instructors theme included comments such as: making corrections immediately; benefit from invigilating the procedures; enhancing their own knowledge of procedures; learning some techniques that some students were able to develop and observing the principles that need to be observed in performing a certain procedure/competency.

Finally, the assessment/evaluation theme included such comments as: OSCE help evaluating the learning process of students; students' skills and capabilities; strengths and weaknesses; highlighting areas that need to be enhanced; identifying fast learners; every student have the same exam, OSCE is reusable; let you know how far the student needs to practice; easier and more constructive. Other comments however stated that sometimes OSCE is frustrating because students are not competent to do a certain procedures even if it had been taught/demonstrated many times.

Table 10: Influence of OSCEs on Learning as Perceived by Clinical Instructors.

Theme	No. Comments	Comments
Learning	4	- Enable students to integrate their knowledge, skills and attitudes. - Demonstrate the use of planning, implementing, and evaluating their required actions for each competency. - Application of skills in practical techniques with involved principles for safe practice prior to clinical. - Students demonstrate skill not just describe theory.
Learners	13	- Motivated to learn about the procedures (2 comments) - Will try hard to keep in mind the steps/sequence for each skill. - Train students to prepare themselves and be committed to put in their heart nursing skills/procedures. - Skills of students will be enhanced (2comments). - Become more competent. - Gain more confidence to practice their profession for future. - Enhances students performance and how to apply in real situation - Students become systematic in application of what they have learned in theory. - Changed the way student learnt and approached learning. - Visualize the hospital setting through OSCE. - Train nurse students to work under pressure.
Clinical Instructors	6	- Effective for both instructors and students to have direct observations and possibly make corrections immediately. - Gain benefit of procedures that I am responsible on it in other courses. - OSCE help us enhance our knowledge regarding nursing procedures. - I do belief that teaching is also learning, there are things we learn from OSCE and we have to improve. - I learned some techniques/skills that some students were able to develop that they are comfortable with and find it easier to perform. - Observing the principles that need to be observed in performing a certain procedure/competency.
Assessment/ Evaluation	14	- Help in evaluating the learning process of students (2 comments) - Evaluate students' skills; capabilities; competence - We will come to know the students strength and weaknesses - Highlight areas of student weaknesses in their nursing subjects. - Gives us ideas on things that need to be enhanced more. - Identify students who are fast learners and those who needs more attention and guidelines. - Can directly observe students performing the exam. - Another way for assessing the students, how much they learned in the clinical area. - Every student has the same examinations. - OSCE stations are reusable. - Students and examiners find it to be greater than equivalent length of time spent in traditional group study sessions. Let you know how far the student needs to practice - Easier and more constructive - Sometimes frustrating because students are not competent to do a certain procedures even if you teach/demonstrated many times.

The perceived influence of OSCE on teaching as shown on table 11, revealed two main themes as follow: clinical instructors and teaching adaptation. Regarding influence on clinical instructors, reflected comments were: facilitators need to be equipped with knowledge in order to facilitate learning of students and be more familiar and knowledgeable regarding all procedures and become effective in teaching; sharing techniques learned from students with other students; and enabling them of making improvement. While teaching process adaptation/effectiveness theme emerged from the following: picking students repeated mistakes and focusing on them; points students in need for improvement; learning about students' capabilities' differences; modifying classroom instructions accordingly; good impact on student who are better in applying theory in clinical exams; keeping the process of teaching focused on acquisition of clinical competencies more than old assessment techniques. Other comments included: easier for us to teach in bedside because they already done it in OSCE; students are able to recall steps of procedures and OSCE help them to achieve for better not for the worst.

Table 11: Influence of OSCEs on Teaching as Perceived by Clinical Instructors.

Influence on:	No. Comments	Comments
Clinical Instructors development	3	As facilitators we need to be equipped with knowledge in order to facilitate learning of students…..in doing this we become more familiar and knowledgeable regarding all procedures and become effective in teaching. From the skills/techniques learned from students, I was able to share it with other students. I will make improvement.
Teaching adaptation	10	I can see the repeated mistakes in the student skills and focus on it. Identify factors which are to be given emphasis on teaching; assessment of students skills and knowledge. Serve as a good tool in determining which areas/points students need some reinforcement/improvement. OSCE result will let us know where we are, the difference of students in terms of their skills. Help classroom instructors make some modification depending on student capabilities. It has good impact on the students as some of the students are not good enough with written exams but excellent in application of theories during clinical exams. Helps in keeping the process of teaching focused on acquisition of clinical competencies more than old assessment techniques. Will make easier for us to teach in bedside because they already done it in OSCE but most students tend to forget it after exam. Students are able to recall steps of procedures. To achieve for better not for the worst.

Clinical instructors were further assessed for their perception of possible disadvantages of using OSCE in nursing competency assessment; their comments were shown in table 12. As shown, two main disadvantages were reported: time and stress. Comments that reflected time constraints included: OSCE takes time to prepare, in addition time per station might vary… some stations might required more time or less than planned; while comments which emphasized the stressful nature of OSCE included: if examination is not what they expect, it gives stress to them and sometimes failure; students tend to suffer mental blockout when doing the procedure; students forget during exam, and procedures that require longer time make student anxious specially those who are slow.

Table 12: Disadvantages of the OSCE as Perceived by Clinical Instructors.

Disadvantages	No. Comments	Comments
Time:	5	- Take long time to prepare. - Some stations takes more than planned and some takes less. - Time limit given - Procedures/competency that requires a longer time should be separated from those procedures that require less time.
Stress:	6	- Students tend to have mental blockout when doing a procedure. - Students memorize during examination yet forget it after the exam. - Students becomes very realistic without applying critical thinking - If examination is not what they expect, it gives stress to them and sometimes failure. - Procedures that require longer time make student anxious specially those who are slow.

Clinical Instructors provided different remarkable suggestions for promoting quality of OSCE in assessment process. Five themes emerged which have been shown in table 13. Suggestions related to examiners/ course coordinators focused on: providing clear instructions to assessors; training of assessors and

patient actors. Assessors recommendations included: prior informing for enough preparation; one week is considered a minimum for good preparation; orientation of assessors; meeting with them; increasing number of assessors. While suggestions regarding the exam itself were many: "making the aim clear, need for less number of stations, need for more parallel stations, putting one clear guideline for instructors to follow, more revision of checklists, increase time at stations; importance of providing feedback, planning for students snacks and reliever for the assessors if needed, team evaluation of previous exams, adding new methods and new techniques and needs for improvement when it comes to test distribution, place of OSCE and time".

On the other hand, suggestions pertaining to students included: providing oral re-valider to enhance their critical thinking, letting students verbalize their feeling of anxiety from OSCE, exploring and managing anxiety in transparent and clear way, making students familiar with OSE to decrease the level of anxiety during exam, students should be instructed to be more prepared and actively perform and recite the skill. Finally, supplies related suggestions included: clinical instructors preparing things needed for her assigned task to avoid any delay due to incompleteness or non-functioning equipments ahead of time with collaboration with the lab custodian, presence of someone assigned to fill the supplies during OSCE and checking them even during the OSCE to ensure adequacy of supplies by the custodian to prevent rushing or disorganization and lacking of supplies during OSCE time. (Table 13)

Table 13: Clinical Instructors' Suggestions for Promoting Quality of OSCEs in Assessment Process.

Criteria	No. Comments	Suggestions
Course Coordinators/ examiners' role	2	Coordinators should relay their instructions to all clinical instructors concerned before OSCE starts, example if CIs are allowed to prompt students and how are they scored. Everybody should discuss the points to be considered.
Assessors' Preparation	5	Orientation of assessors: flow of stations and assessor criteria for evaluating students should be discussed to evaluators. Evaluators should be informed prior to OSCE to be able to come up with a consistent and the same basis of evaluating performance. The schedule as assessors for any course should be given one week before OSCE. Meet the people involved in evaluating the students' strength and weaknesses. More assessors.
Exam	16	It should have an aim. Parallel stations for each procedure so that clinical instructors will not be exhausted to be evaluating 6-7 hours of 60 students. Creation of two parallel stations to manage time. Decrease number of stations There should be one guideline for the CIs to follow in administering OSCE. Steps should be more specific on what area/part of the procedure the student needs to be evaluated. Have a standard checklist for evaluation. Review the competency checklist, have uniform teaching in order not to confuse the students prior to having lab skills. Review how it was prepared. Review results to come-up to the objectives The focus on the quality of skills based on the students' level of thinking. Provide more time for students Feedback approach to OSCE exam helps promote and encourage overall acceptance of this new skill testing exam style. There should be snack provided for the students. There should be one available as reliever for the assessor during lunch and tea breaks. Should evaluate previous exams. Effective English communication (Language Latitude) New way and new methods, new skills and new techniques. Needs improvement when it comes to test distribution, place of OSCE and time
Students	5	Oral re-valider to enhance their critical thinking. Students should verbalize their feeling of anxiety providing experience from OSCE explored and explained and managed in transparent and in a clear way. Students should be familiar with OSE to decrease the level of anxiety during exam. Able to demonstrate the students' leadership skills by demonstrating more assertive behavior. Students should be instructed to be more prepared and actively perform and recite the skill.
Supplies	6	Clinical instructors assigned to facilitate/invigilate a procedure/competency should prepare things needed for her assigned task to avoid any delay due to incompleteness or non-functioning equipments. The lab custodian should help in the preparation of materials and equipments needed and so during OSCE time (2 comments) The supplies should be checked even during the OSCE to ensure adequacy of supplies by the custodian. There should be one assigned to fill the supplies during OSCE. Equipments and supplies should be ordered ahead of time to prevent rushing or disorganization and lacking of supplies during OSCE time.

4. Discussion

Objective structured clinical examination (OSCE) has been used to assess medical students since the mid 1970s, and in more recent years has been increasingly utilized to assess students from nursing and the allied health professions; a matter which has led to considerable debate within the literature pertaining to the optimal use of OSCE in the assessment process (Rushforth, 2007). Few studies, however, have been done to elicit the views of students that method of assessment. The present study therefore explored nursing students' as well as clinical instructors' feedback of objective structured clinical examination (OSCE) use in nursing. The discussion of the present research quantitative results as well as emerging subthemes from structured interview will focus: firstly on students' responses towards the OSCE as a method of clinical assessment and secondly on clinical instructors' feedback (perception) of OSCE based assessment in nursing.

Students' Perception of OSCE Attributes:

Overall, students were satisfied with OSCE as an assessment strategy and appreciated the learning experience. Majority agreed on all the positive aspects of exams instructions and organization, including perception of exam as well administered, well structured, fair, covering a wide area of knowledge and skills, allowed compensation of additional marks, minimized chance of failing and increased awareness of level of information needed (58.9%, 63.0%, 45.2%, 54.8%, 58.9%, 64.4%, 60.3%, 64.4%; respectively). The findings in current study are congruent with previous research on OSCEs in the medical literature and support the depth of learning associated with the use of OSCEs (Furlong, Fox, Lavin & Collins, 2005; Rentschler, *et al.*, 2007; Iqbal, Khizar and Zaidi, 2009; Barry, Noonan, Bradshaw & Murphy-Tighe, 2012). Rentschler *et al.* (2007) reported that faculty, students, and standardized patients found OSCE a worthwhile experience and students overall perceptions of the experience was positive. On the same vein, Awaisu, Mohamed and Al-Efan (2007), in a cross-sectional survey conducted on a 41 students to assess perception of pharmacy students in Malaysia on the use of objective structured clinical examinations, revealed almost similar results. Seventy-eight percent of students agreed that OSCE exam was comprehensive, 34% agreed that it was well administered, overwhelming proportion of the students (66%) believed it was fair. Brosnan, Evans, Brosnan and Brown (2006) added that OSCEs were meaningful and fair form of assessment, and students identified that they felt more prepared for and more confident about forthcoming placements. Furthermore, Imani and Tabatabaie (2005) showed that there was overwhelming acceptance of the OSCE in Pediatric with respect to the comprehensiveness (90%), transparency (87%), and fairness (57%).

Concerning knowledge and skills included, students agreed that a wide area were covered. In congruence, Rentschler *et al.* (2007) stated that through the study of group performances on OSCE, areas of strengths and weaknesses in the educational programs could be identified. Problematic skills can be identified and appear to respond to curriculum revision and innovation by using the OSCE instrument for diagnosis and follow-up evaluation (Fields, Rowland, Vig & Hujac, 2007).

Students were further asked to add comments about overall feelings toward their OSCEs experience which provided further insight regarding their reasons for agreeing/disagreeing with the statements. Favorable responses concerning OSCE were demonstrated. Students remarked that OSCEs were "good; helpful useful experience (9), excited; happy; satisfied (7), learned a lot (2), reflect on my clinical learning (2), it enhanced scores (1), feel I can take care of patients (1), want to engage more in hospital (1)". Our research findings are in line with the research by El-Nemer and Kandeel (2009). In their study of 724 undergraduate nursing students at Faculty of Nursing, Mansoura University, Egypt; the authors reported that most students viewed OSCE as a fair assessment tool which covered a wide range of knowledge, and going through OSCE perceived as a useful practical experience. On the same vein, Kurz, Mahoney, Martin-Plank and Lidicker (2009) compared outcomes of 37 graduate nursing students completing a traditional methods health assessment course to those students using OSCE. Research group's course scores were higher for the final practical examination grades, clinical preceptor evaluations, satisfaction scores, and self evaluations of skills than the control group.

Further support of the current research study results was achieved based on Alinier's research study (2003) of nursing students and lecturers' perspectives of OSCE, conducted at the University of Hertfordshire. Alinier showed that OSCE sessions were generally appreciated by students and examiners, who rated them respectively with means of 1.58 and 1.82 on a five point Likert scale. A similar positive feedback was reported by Khattab and Rawlings (2001) concerning the perception of students and examiners of the educational benefits of OSCE as a formative and summative assessment.

On the other hand, students believed that OSCE was an intimidating assessment method. Awaisu *et al.* (2007) showed that 20% of the students indicated that the OSCE was an intimidating method of assessment as compared to 42.5% in our study. On same line, El-Nemer and Kandeel (2009) also showed that OSCE was perceived as a stressful experience and intimidating by a considerable percentage of students, particularly first year nursing students. Suggestions made by many students stating: 'assessors must be

more cooperative, friendly, fair and more respectful', reflect some of their inner feelings and the stressors associated with that form of assessment. In addition, considerable students had several negative experiences regarding OSCEs, they perceived this assessment strategy as: "very stressful (7), unfair and affect overall grade (6), do not like OSCE, never feel well (3), unfair judgment from teaching assistant (1), depend on assessor (CI) can be easy or difficult (2)". These qualitative students' statements were congruent with the quantitative data which revealed that, majority of students perceived OSCEs as a stressful and of the time allocated at stations as being inadequate (74.0%; 79.5%; respectively). Perhaps this was also due to the fact that students were expecting clinical instructors to provide some explanations or help, a matter which might violate objectivity and fairness of the exam.

Our research findings are echoed in many other researches (Troncon, 2004; Brosnan, *et al.,* 2006; Awaisu, *et al.,* 2007; Ryan, *et al.,* 2007; El-Nemer & Kandeel, 2009). Troncon (2004) reported that substantial proportions of students found difficulties with both time management (70%) and stress control (70%). Iqbal *et al.* (2009) showed that only twenty-eight percent of students perceived OSCE as stressful, which is a lower proportion than reported in the current study. Marshall and Jones (2003) contended that OSCE is indeed anxiety provoking and emphasized the need that the anxiety provoking potential of assessments should not be underestimated.

Reasons cited for current finding of students reported difficulties with time management and stress control are multiples. In one hand, possible explanation provided by Benseñor (2004), is that it becomes very embarrassing when student expertise in analyzing a clinical situation is assessed by an observer inside the room verifying if he/she is doing the right thing. The presence of an observer may, in these cases, be a stressful situation. In the other hand, students expressed considerable concern that the time allocated to performance was inadequate and remarked that they were stressed by the lack of enough time to deal with the scenario in some stations. This is congruent with Awaisu *et al.* (2007) who found about 46% dissatisfied with allocated per station and explained that it was practically difficult to allocate different time limits at different stations during the OSCE. In consistence, qualitative data from current study revealed that twenty-six students requested that time should be increased. Comments from some clinical instructors further stated that: 'need to provide more time for students', 'some stations takes more than planned and some takes less', 'time limit given', while other suggested that: 'procedures/competency that requires a longer time should be separated from those procedures that require less time'.

Troncon (2004), however, demonstrated that the difficulties on the part of students in managing time during the work at the OSCE stations could not be ascribed to excessively short lengths of time at stations and might also be related to different factors, including student immaturity and lack of specific training in time management skills. Another possible explanation as provided by Troncon (2004). The author explained: "it is conceivable that student stress could be related to fears concerning possible failure, and it could also originate from local cultural factors as students might tend to perceive assessment procedures and tests as something aiming only at rewarding a few students and punishing others"

Finally, Iqbal *et al.* (2009) added that reasons for stress may also include receiving inadequate prior instructions, the newness of the format to students and their inexperience with it. Street and Hamilton (2010) emphasized that adequate preparation and sufficient practice are not only the keys to passing OSCE, but also an important part of their ongoing development as a skilled and knowledgeable practitioner. Suggestions made by considerable number of students lend some support for that explanation as well: 'time at each station should be increased (26)'; 'allow more practice sessions before OSCE (12); 'clear, outlined organized OSCE instructions should be provided (5)'; asking for increasingly positive attitude of them. These reservations were shared by few clinical instructors as well: 'should provide more time for students', 'students should be familiar with OSE to decrease the level of anxiety during exam', 'students should be instructed to be more prepared and actively perform and recite the skill'. In congruence, Troncon (2004); Imani and Tabatabaie (2005) reported that lack of practice at being examined in the OSCE format might also contribute to both the dissatisfaction with the time available and the perceptions of the OSCE as a highly stressful examination, particularly in competences not previously assessed in the 'traditional' examination. Furthermore, Barry *et al.* (2012) stated that preparation for the OSCE's was considered central to the process as practicing with peers enables confidence and skill acquisition in a nonthreatening, safe environment without fear of making mistakes that compromise client safety.

Interestingly, however, conflicting views reported in the literature regarding effects of students' level of preparation for the OSCE. Furlong *et al.* (2005) indicated that while students felt they were well prepared and appreciated the efficacy and relevance of this assessment method, majority of students found the OSCE too 'anxiety-provoking' and did not want this method of assessment to be used in other modules. Nulty *et al.* (2011) added that removing anxiety from the examination process is difficult even when additional practice and feedback sessions are

incorporated. On the other hand, many students perceived it as stressful yet others found it a good experience. In concordance, Byrne and Smyth (2008); Barry *et al.* (2012) reported that some of the participants acknowledged that the level of stress experienced interfered with their performance, yet they felt that it prepared them for the realities of practice and benefited students' overall performance in clinical settings.

Usefulness of the OSCE as an Assessment Instrument Compared to Other Format:

It was worth noting that despite the stressors associated with OSCE, most students (56.2%) reported that they preferred OSCE as compared to traditional evaluation of practical skills. All examinations and assessment processes have the potential to be anxiety provoking and stressful for students (Furlong, *et al.*, 2005) and OSCE is no exception (Ryan, *et al.*, 2007; El-Nemer & Kandeel, 2009; Brand & Schoonheim-Klein, 2009). Fields *et al.* (2007) contended that OSCE examination proved to be a useful outcome measure for evaluating graduate proficiency levels in students' clinical skills and revising the curriculum. Field added that data yielded from exams provide strong evidence to support outcomes assessment, curriculum evaluation and innovation, and continuous quality improvement for accreditation and program development purposes. Moreover, Huang *et al.* (2010) stated that compared with the traditional written test, the OSCE can better examine students' performance levels of clinical competence by combining various aspects of clinical knowledge and competencies into a single examination.

In their comparison of difficulty level of different exam format, students considered the OSCE to be the least difficult, only smallest number of students (8.2%) rated OSCE as difficult. This finding is in congruence with a prior study by Al Omari and Shawagfa (2010). The authors in their evaluation of use of objective structured clinical examination (OSCE) in Jordanian medical schools showed that in comparison to the other formats, only 12% of participants considered the examination as difficult in contrast to 68% who rated the conventional clinical examination as difficult.

Moreover, there was no clear distinction among students' responses concerning fairness of MCQ, Essay Questions and OSCE, yet, OSCE was the least rated by students as unfair (15.1%). Similarly, Awaisu *et al.* (2007) reported that only 10% of examinees thought the OSCEs were unfair. Imani and Tabatabaie (2005) stated that students perceived the OSCE not to be fairer than any other assessment method to which they were exposed. Consistently, majority of students also viewed the tasks asked to perform as fair as well (53.4%).

With regard to degree of learning, OSCE and Essay Questions were rated the best on that parameter. On the same vein, Brosnan *et al.* (2006) showed that mature students claimed that more practice effort was required but also felt more prepared for placements and achieved higher OSCE scores. Ryan *et al.* (2007) stated that students rated the OSCE a worthwhile experience reflecting the learning outcomes of the module and recommended that the OSCE should be used to assess the next cohort of students.

Students' Perceived Quality of Performance:

Concerning quality of performance on the objective structured examinations, most of students provided positive feedback. Majority agreed that they were fully aware of the exam's nature and tasks reflected skills learnt (80.8%, 65.8%, 50.7%, respectively), yet least agreement was on adequacy of time allocated at each station (31.5%). The majority of the students stated that they found it was very useful in helping them to understand what is expected in an OSCE. Moreover, a main emphasis elicited from the clinical instructors' feedback was that: 'students should be instructed to be more prepared and actively perform and recite the skill', another also recommended that: 'course facilitators: 'should let students think of kind of materials she is going to use for the procedure'.

Additionally, more than half of students agreed that instructions given were clear and unambiguous. A small number of comments (5) from qualitative responses, however, highlighted what was thought to be lack of clarity in relation to instructions given and commented that: 'clear, outlined organized OSCE instructions should be provided'. On the other hand, a few appeared to have problems undertaking the required activities and requested: 'considerations of skills selected in the OSCE: should focus more on important skills'. A similar comment from one of the clinical instructors recommended that: 'there should be more focus on stations that both students and examiners see them as measuring skills relevant to clinical practice'. On that matter, Jones, Pegram and Fordham-Clarke (2010) explained that nursing practice consists of a wide variety of different skills that are frequently performed together, and as such students need to be reminded that most skills are actually made up of several discrete parts and it should, however, be made clear what skill or component of the skill they are specifically being tested on.

Majority of students perceived sequence of stations as logical and appropriate. Participants' responses focused mainly on the need for creations of more parallel stations. Students suggested: 'more parallel stations to allow more students at a time', 'divide OSCEs into two parts to increase marks and be more competent'. Similarly, clinical instructors requested: 'use parallel stations for each procedure so that clinical instructors will not be exhausted to be evaluating 6-7 hours of 60 students', 'creation of two parallel stations to manage time'. Moreover, further comments requested: 'decrease number of stations',

which is actually not recommended in the literature. The OSCEs used in current study consisted mainly of four to five active stations, which is fewer than have been used in other examinations (Ryan, *et al.,* 2007). Ryan *et al.* (2007) emphasized that the number of stations should be increased to incorporate a wider representation of stations and increase reliability of the examinations. McWilliam and Botwinski (2010), further, stated that evaluation of nursing students' clinical competencies in a wide array of situations is essential to the educational process because students are exposed to various patient health issues in the clinical area. Mitchell *et al.* (2009) added that to ensures acceptable reliability and content validity of the examination, a recurring recommendation in the literature is to include a larger number of short stations.

In the current study, although the majority of respondents felt that the OSCE was a stressful experience, 63% agreed that this type of assessment motivated them to learn real life scenarios. McWilliam and Botwinski (2010) stated that the use of the OSCE has much to offer in evaluating clinical competencies because it reflects real-life tasks that nurses will face in the clinical arena. McWilliam and Botwinski (2010) further emphasized that OSCE can provide students with an opportunity to experience many more clinical situations than would be available in the natural clinical setting and receive feedback about their clinical performances with review of their strengths and weaknesses. Some responses from students, which further emphasized the benefits of OSCEs, included: 'I feel I can take care of patients', 'want to engage more in hospital'. Casey *et al.* (2009) further added that, unlike a real patient encounter, OSCE occur in a lower risk setting and provide an innovative method to assess learners' clinical skills, in addition to factual memorization.

Validity and Reliability:

Objective structured clinical examinations (OSCEs) are highly recommended as valid and reliable method of assessment in nursing competence evaluation (Walsh, Bailey & Koren, 2009; Palese, *et al.,* 2012). As evidenced by the feedback from students, validity and reliability of the OSCE was highly supported. The majority of students felt that the OSCE was indeed a true measure of clinical skills being evaluated. These findings are in line with previous research studies (Brosnan, *et al.,* 2006; Takasaki, Namba, Yoneda & Nakao, 2007; McWilliam & Botwinski, 2010). McWilliam and Botwinski (2010) stated that unlike an OSCE used for assessment purposes only, reliability and validity concerns are foremost in importance because of the definitive role the OSCE plays in whether a student may progress to the next level of education in nursing. Ryan *et al.* (2007) also reported that the use of an OSCE ensured that all nurses were assessed using the same criteria and all examiners were confident that the variety of stations enabled an assessment of the nurses' level of competence in clinical assessment.

The present study revealed that large proportion of students (58.9%) perceived OSCE as a useful and practical learning experience. This is consistent with Awaisu *et al.,* (2007). Nulty *et al.* (2011) argued that OSCEs present one viable educational strategy to promote student engagement and the achievement of desired learning outcomes, notably including clinical competence. Furthermore, factors of personality, and ethnicity were not seen by many to affect scoring (36% compared to only 30.1% who did). On the same vein, findings by El-Nemer and Kandeel (2009) concluded that feedback from nursing students suggests OSCE is standardized, and not affected by student's personality or social relations.

Yet, it was somewhat surprising to detect an undercurrent of students' dissatisfaction from the free response feedback given. Tsai *et al.* (2008) stated that qualitative information extracted from the feedback and comments may uncover the truth behind the quantitative data. Comments from students included: 'OSCE unfair and affect overall grade' (6), 'depend on assessor (CI) can be easy or difficult' (2), 'clinical instructors not help us to learn' (1), 'unfair judgment from CI' (1), 'not satisfied of own scores in some' (1), 'does not indicate your level of performance' (1). Guraya, Alzobydi and Salman (2010) found that examiner bias affects the overall validity of OSCE assessment. In an effort to minimize this element, checklists for practical and technical skill stations are being used for OSCEs in current study. Tsai, et al. (2008) stated that using checklists for practical and technical skill assessment was primarily intended to overcome the issue of interrater variability of OSCEs that may limit the reliability of clinical examination. Students' concern about clinical instructors and requests for: 'assessors: be more cooperative, friendly, fair and be more respectful with students' (10), actually reflected their confusion about the role of the assessors and this might account for some of the SAID comments. As Barry *et al.* (2012) identified that the role of the examiner is to observe and record the student's performance without providing assistance, and students therefore need to be precisely briefed about the role of assessors and the type of interaction to expect during the assessment. In addition and as commented by one of the clinical instructors: 'feedback approach to OSCE exam helps promote and encourage overall acceptance of this new skill testing exam style'. Students' perceptions could in fact also be attributed to the effect of differences in rater stringency/leniency effect on candidate scores that has been reported by Lawson (2003).

Moreover, other comments from clinical instructors for enhancing OSCE validity and reliability

suggested: 'always considering use of new way and new methods, new skills and new techniques', 'needs improvement when it comes to test distribution, place of OSCE and time', 'there should be one guideline for the CIs to follow in administering OSCE', 'parallel stations for each procedure so that clinical instructors will not be exhausted to be evaluating 6-7 hours of 60 students'. These recommendations are supported in literature. Rushforth (2007) in his review of literature pertaining to the reliability and validity of the OSCE emphasized the need to carefully prepare and pilot new OSCE examinations and marking tools in order to ensure reliability and validity is optimized, and also the need to carefully consider the length, number and interdependence of OSCE stations to ensure that the potentially competing requirements of validity and reliability are balanced.

Clinical instructors' Perception about OSCE Based in Nursing:

Finally, attention should be drawn to the content, structure and organization of the OSCE as perceived by the clinical instructors, interpretation of the current research findings that emerged from the qualitative study of clinical instructors' experiences and perspectives of assessing students' clinical competence using an objective structured clinical examination and to address the challenges pertaining to that form of assessment.

Clinical instructors who played the main roles of assessors as well as facilitators in the OSCE administration process, generally perceived OSCE as a good way of increasing students' confidence and preparing them for future practice. Two main themes of comments were obtained from clinical instructors:

- Effective in evaluation: comments (9) included; 'students' performance with application of principles learned in classroom and clinical exposure', 'knowledge and competency (skills) in carrying out procedures', 'application of critical thinking in real situations'.
- Fair: comments (4) included 'evaluation and assessment of all students', ''was attainable', 'was very satisfactory'.

Moreover, comments from clinical instructors that reflected the success of the OSCE implementation included: good, excellent, well planned, and well organized which were repeatedly reported. Also clinical instructors (CI) emphasized: 'clinical instructors and examiners planning together since lots of preparations are needed', 'the need for considering enough time for them preparing supplies and materials', and 'provision of detailed instructions for CI and communicating expectations to students' as well as 'consideration of enough functioning supplies for exam'. Turner and Dankoski (2008) added that successful OSCEs are often the result of significant planning, coordination of multiple resources, commitment to large-scale testing, and judicious use of assessment data.

OSCE was seen to greatly influence learning. Nulty *et al.* (2011) argued that OSCE present one viable educational strategy to promote student engagement and the achievement of desired learning outcomes, notably including clinical competence, and to thereby meet the challenges arising out of the restricted access to clinical areas. Four themes emerged from CI feedback included: learning, learners, clinical instructors and assessment process. Remarked comments from CI's responses included: 'enable students to integrate their knowledge, skills and attitudes', 'demonstrate the use of planning, implementing, and evaluating their required actions for each competency', 'application of skills in practical techniques with involved principles for safe practice prior to clinical', 'train students to prepare themselves and be committed to put in their heart nursing skills/procedures', 'students become more competent', 'gain more confidence to practice their profession for future', 'train nurse students to work under pressure'. Barry *et al.* (2012) reported that learning via OSCEs was perceived to be more effective in comparison to other forms of assessment and prepared students for clinical practice. Barry et al. further contended that using OSCE's increased the depth of learning for the students with the steps taken in preparation for the OSCE's proving to be a valuable learning tool. Nulty *et al.* (2011) added that the participant-observer nature of students' involvement in OSCEs axiomatically develops their skills in self-reflection — and thus, engagement in learning.

Clinical instructors also emphasized the positive impact of OSCE on assessment, remarkable comments included: 'highlights areas of student weaknesses in their nursing subjects', 'gives us ideas on things that need to be enhanced more', 'identify students who are fast learners and those who needs more attention and guidelines', 'every student has the same examinations', 'OSCE stations are reusable', 'students and examiners find it to be greater than equivalent length of time spent in traditional group study sessions…. let you know how far the student needs to practice', 'easier and more constructive'. Troncon (2004) reported that faculty members acknowledged the high educational value of the OSCE as feedback information that may potentially lead to improvements in both student learning and clinical teaching.

This was consistently supported in literature (Ryan, *et al.*, 2007; Iqbal, *et al.*, 2009), OSCEs actually can be used most effectively in nurse undergraduate curricula to assess safe practice in terms of performance of psychomotor skills. Ryan *et al.* (2007) stated that OSCE stations provided the mechanism for assessing the student's application of knowledge as

well as his or her psychomotor and interpersonal skills and reflect what the student has been taught on the module and practised in their own clinics. Turner and Dankoski (2008) emphasized that direct observation in clinical simulations provides many opportunities for assessment and learning that other traditional evaluation methods also do not afford.

Moreover, the benefits of the OSCE method to faculty, and institutions are great. Clinical instructors reports of perceived professional development as reflection of getting involved in the OSCE process; included comments like: 'I do belief that teaching is also learning, there are things we learn from OSCE and we have to improve', 'I learned some techniques/skills that some students were able to develop that they are comfortable with and find it easier to perform', 'as facilitators we need to be equipped with knowledge in order to facilitate learning of students…..in doing this we become more familiar and knowledgeable regarding all procedures and become effective in teaching'. Ryan *et al.* (2007) stated that effective learning and effective assessment should be part of the same process with the assessment strategy employed reflecting the learning that has taken place in the module.

The potential of OSCE as a flexible teaching method had been recognized by many of clinical instructors. Comments made by participants included: 'I can see the repeated mistakes in the student skills and focus on it', 'serve as a good tool in determining which areas/points students need some reinforcement/improvement', 'help classroom instructors make some modification depending on student capabilities', 'helps in keeping the process of teaching focused on acquisition of clinical competencies more than old assessment techniques'. On the same vein, Iqbal *et al.* (2009) reported that teachers perceived OSCE to be an excellent tool for both summative and formative assessment that enabled them to identify gaps in the students' knowledge and skills to be addressed in subsequent teaching and curricular reforms.

In fact, the overall given perceptions of clinical instructors about OSCE reflect and proof that OSCE in current study comply with the Best Practice Guidelines (BPG) for use of OSCEs which have been developed by Nulty *et al.* (2011); especially those BPG recommendations that states OSCE should: focus on aspects of practice related directly to delivery of safe client/patient care; focus on aspects of practice which are most relevant and likely to be commonly encountered; require students to perform tasks in an integrated rather than piecemeal fashion; be structured and delivered in a manner which aligns directly with mastery of desired knowledge and skill; and be appropriately timed in the sequence of students' learning to maximize assimilation and synthesis of disparate course content.

Clinical instructors further provided different suggestions for promoting quality of OSCE in assessment process. Five themes of comments emerged, these were:

- Course coordinators role: comments (2) included: 'coordinators should relay their instructions to all clinical instructors concerned before OSCE starts, example if CIs are allowed to prompt students and how are they scored'.
- Assessors preparation: comments (5) included: 'orientation of assessors…. flow of stations and assessor criteria for evaluating students should be discussed to evaluators', 'the schedule as assessors for any course should be given one week before OSCE', 'meet the people involved in evaluating the students' strength and weaknesses', 'more assessors'.
- Exam: comments (16) included: 'it should have an aim', 'parallel stations for each procedure so that clinical instructors will not be exhausted to be evaluating 6-7 hours of 60 students', 'creation of two parallel stations to manage time', 'decrease number of stations', 'there should be one guideline for the CIs to follow in administering OSCE', 'steps should be more specific on what area/part of the procedure the student needs to be evaluated', 'have a standard checklist for evaluation', 'review the competency checklist, have uniform teaching in order not to confuse the students prior to having lab skills', 'review results to come-up to the objectives', 'should evaluate previous exams', 'provide more time for students', 'feedback approach to OSCE exam helps promote and encourage overall acceptance of this new skill testing exam style', 'there should be snack provided for the students', 'there should be one available as reliever for the assessor during lunch and tea breaks'.
- Students: comments (5) included: 'oral re-valider to enhance their critical thinking, 'Students should verbalize their feeling of anxiety providing experience from OSCE explored and explained and managed in transparent and in a clear way', 'students should be familiar with OSE to decrease the level of anxiety during exam', 'able to demonstrate the students' leadership skills by demonstrating more assertive behavior', 'students should be instructed to be more prepared and actively perform and recite the skill'.
- Supplies: comments (6) included: 'clinical instructors assigned to facilitate/invigilate a procedure/competency should prepare things needed for assigned task to avoid any delay due to incompleteness or non-functioning equipments', 'lab custodian should help in the preparation of

materials and equipments needed and so during OSCE time (2 comments)', 'supplies should be checked even during the OSCE to ensure adequacy of supplies by the custodian', 'there should be one assigned to fill the supplies during OSCE'.

Conclusion and Recommendations

The feedback received from nursing students and clinical instructors showed that OSCE was favorably perceived as an effective method of clinical assessment. The OSCE is a valuable assessment method to aid development of professionalism, and clinical competence and knowledge. OSCE was perceived as an excellent learning and teaching mechanism. The overall study findings are congruent with previous research. Participants in the study however criticized the stress associated with the exam and time allocated to each station. Student feedback is invaluable in influencing faculty teaching and curriculum direction. To improve the OSCE, it is important to consider the demands that have been raised by study participants.

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5. References

Alinier, G. (2003). Nursing students' and lecturers' perspectives of objective structured clinical examination incorporating simulation. Nurse Education Today, 23: 419–426.

Al-Omari, A. and Shawagfa, Z.M. (2010). New experience with objective structured clinical examination in Jordan. Rawal Medical Journal, 35(1): 82-84.

Austin, Z., O'Byrne, C.C., Pugsley, J. and Munoz, L.Q. (2003). Development and validation processes for an objective structured clinical examination (OSCE) for entry-to-practice certification in pharmacy: the Canadian experience. American Journal of Pharmaceutical Education, 67(3): Article 118.

Awaisu, A., Mohamed, M.H.N. and Al-Efan, Q.A.M. (2007). Perception of pharmacy students in Malaysia on the use of objective structured clinical examinations to evaluate competence. American Journal of Pharmaceutical Education, 71(6): 1-8.

Barry, M., Noonan, M., Bradshaw, C. and Murphy-Tighe, S. (2012). An exploration of student midwives' experiences of the Objective Structured Clinical Examination assessment process. Nurse Education Today, 32(6):690-694.

Bartfay, W.J., Rombough, R., Howse, E. and LeBlanc, R. (2004). The OSCE approach in nursing education: Objective structured clinical examinations can be effective vehicles for nursing education and practice by promoting the mastery of clinical skills and decision-making in controlled and safe learning environments. The Canadian Nurse, 100(3): 18-25.

Benseñor, E.M. (2004). How to evaluate the acquisition of clinical skills at medical school: A tough question. Sao Paulo Medical Journal, 122(1):12-17.

Brand, H., and Schoonheim –Klein, M. (2009). Is the OSCE more stressful? Examination anxiety and its consequences in different assessment methods in dental education. European Journal of Dental Education, 13: 147–153.

Brosnan, M., Evans, W., Brosnan, E., and Brown, G. (2006). Implementing objective structured clinical skills evaluation (OSCE) in nurse registration programmes in a centre in Ireland: A utilization focused evaluation. Nurse Education Today, 26: 115-122.

Byrne, E. and Smyth, S. (2008). Lecturers' experiences and perspectives of using an objective structured clinical examination. Nurse Education in Practice, 8: 283–289.

Casey, P.M., Goepfert, A.R., Espey, E.L., Hammoud, M.M., Kaczmarczyk, J.M., Katz, N.T., Neutens, J.J., Nuthalapaty, F.S., and Peskin, E. (2009). To the point: Reviews in medical education—the Objective Structured Clinical Examination. American Journal of Obstetrics & Gynecology: 15-34.

El-Nemer, A. and Kandeel, N. (2009). Using OSCE as an assessment tool for clinical skills: Nursing students' feedback. Australian Journal of Basic and Applied Sciences, 3(3): 2465-2472.

Fields, H.W., Rowland, M. L., Vig, K.W. L. and Hujac, S. S. (2007). Objective structured clinical examination use in advanced orthodontic dental education. Am J Orthod Dentofacial Orthop,131: 656-63.

Furlong, E., Fox, P., Lavin, M. and Collins, R. (2005). Oncology nursing students' views of modified OSCE. European Journal of Oncology Nursing, 9: 351–359.

Guraya, S.Y., Alzobydi, A.H. and Salman, S. (2010). Objective structured clinical examination: Examiners' bias and recommendations to improve its reliability. J. Med. Med. Sci, 1(7): 269-272.

Huang, Chin-C., Chan, Cho-Y., Wu, Chun-L., *et al.* (2010). Assessment of clinical competence of medical students using the Objective Structured Clinical Examination: First 2 years' experience in Taipei Veterans General Hospital. J Chin Med Assoc, 73(11):589–595.

Imani M. and Tabatabaie, H. (2005). Is OSCE successful in pediatrics? Journal of Medical Education, 6(2): 153-158.

Iqbal, M., Khizar, B. and Zaidi, Z. (2009). Revising an objective structured clinical examination in a resource-limited Pakistani medical school. Education for Health, 22(1): 1-9.

Jones, A., Pegram, A. and Fordham-Clarke, C. (2010). Developing and examining an Objective Structured Clinical Examination Nurse Education Today, 30: 137–141.

Khattab, A.D. and Rawlings, B. (2001). Assessing nurse practitioner students using a modified objective structured clinical examination (OSCE). Nurse Education Today, 21: 541-550.

Kurz, J.M., Mahoney, K., Martin-Plank, L. and Lidicker, J. (2009). Objective structured clinical examination and advanced Practice nursing students. Journal of Professional Nursing, 25:186–91.

Lawson, D.M. (2003). Use of the multifacet Rasch model to adjust for the error variance due to the examiner stringency/leniency effects in OSCEs. Calgary University of Calgary, Faculty of Graduate Studies.

Major, D. (2005). OSCEs — seven years on the bandwagon: the progress of an objective structured clinical evaluation programme. Nurse Education Today, 25 (6): 442–454.

Marshall, G. and Jones, N. (2003). A pilot study into the anxiety induced by various assessment methods. Radiography, 9: 185-191.

McWilliam, P. and Botwinski, C. (2010). Developing a Successful Nursing Objective Structured Clinical Examination. Journal of Nursing Education, 49(1): 36-41.

Miller, J.K. (2009). Competency-based training: objective structured clinical exercises (OSCE) in family therapy. Journal of Marital and Family Therapy, 53: 23–34.

Mitchell, M.L., Henderson, A., Groves, M., Dalton, M. and Nulty, D. (2009). The objective structured clinical examination (OSCE): Optimising its value in the undergraduate nursing curriculum. Nurse Education Today, 29(4): 398–404.

Nulty, D.D., Mitchell, M.L., Jeffrey, C.A., Henderson, A. and Groves, M. (2011). Best Practice Guidelines for use of OSCEs: Maximizing value for student learning, Nurse Education Today, 31: 145–151.

Palese, A., Bulfone, G., Venturato, E., *et al.* (2012). The cost of the objective structured clinical examination on an Italian nursing bachelor's degree course. Nurse Education Today, 32(4):422.

Panzarella, K.J. and Manyon, A.T. (2007). A Model for Integrated Assessment of Clinical Competence. Journal of Allied Health, 36:157–164.

Pell, G., Fuller, R., Homer, M. and Roberts, T. (2010). How to measure the quality of the OSCE: A review of metrics – Medical Teacher: 802-811.

Pierre, R.B., Wierenga, A., Barton, M., Branday, J.M. and Christie, C.D. (2004). Students evaluation of an OSCE in paediatrics at the University of the West Indies, Jamaica. BMC Medical Education, 4(22): 1-7.

Rentschler, D.D., Eaton, J., Cappiello, J., McNally, S.F. and McWilliam P. (2007). Evaluation of undergraduate students using objective structured clinical evaluation. Journal of Nursing Education, 46(3): 135-139.

Rushforth, H.E. (2007). Objective structured clinical examination: review of literature and implications for nursing practice. Nurse Education Today, 27(5): 481-490.

Ryan, S., Stevenson, K. and Hassell, A.B. (2007). Assessment of clinical nurse specialists in rheumatology using an OSCE. Musculoskeletal Care, 5(3): 119–129.

Street, P. and Hamilton, L. (2010). Preparing to take objective structured clinical examinations. Nursing Standards, 24(34): 35-39.

Takasaki, H., Namba, T., Yoneda, T. and Nakao, Y. (2007). Introducing objective structured clinical examination for undergraduate orthopedic education. Kawasaki Journal of Medical Welfare, 13(1): 51-58.

Troncon, L.E. (2004). Clinical skills assessment: limitations to the introduction of an "OSCE" (Objective Structured Clinical Examination) in a traditional Brazilian medical school. São Paulo Medical Journal, 122(1):12-17.

Tsai, Jer-C., Liu, Keh-M., Lee, Kun-T., *et al.* (2008). Evaluation of the effectiveness of postgraduate general medicine training by objective structured clinical examination: Pilot study and reflection on the experiences of Kaohsiung Medical University Hospital. Kaohsiung Journal of Medical Science, 24: 627–33.

Turner, J.L. and Dankoski, M.E. (2008). Objective structured clinical exams: A critical review. Family Medicine, 40(8):574-578.

Walsh, M., Bailey, P.H. and Koren, I. (2009). Objective structured clinical evaluation of clinical competence: An integrative review. Journal of Advanced Nursing, 65 (8): 1584–1595.

Ward, H. and Barratt, J. (2005). Assessment of nurse practitioner advanced clinical practice skills: using the objective structured clinical examination (OSCE): Helen Ward and Julian Barratt examine how OSCEs can be developed to ensure a robust assessment of clinical competence. Primary Health Care, 15 (10): 37–41.

Wessel, J., Williams, R., Finch, E. and Gemus, M. (2003). Reliability and Validity of an Objective Structured Clinical Examination for Physical Therapy Students. Journal of Allied Health, 32(4): 266 – 271.

Wood, G. and Harber, J. (2010). Nursing research: Methods and critical appraisal for evidence-based practice. (7th ed.). Elservier.

7/8/2012