



Using Objective Structured Clinical Examination (OSCE) in undergraduate psychiatric nursing education: Is it reliable and valid?

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SUMMARY

While there is widespread use of OSCE in general nursing specialties, psychiatric nursing has been slow to adopt this evaluation method and it has only recently been introduced to psychiatric nursing education.

Aim: The main aim of the present study is to test the first application, validity and reliability of the OSCE in undergraduate psychiatric nursing education.

Method: OSCE was developed to assess undergraduate psychiatric nursing students' clinical skills. The students' evaluation of the OSCE process was obtained after the completion of each OSCE circuit.

Results: The psychiatric nursing OSCE proved to be a reliable and valid method in assessing psychiatric nursing clinical competencies. In general, the students perceived OSCE as a positive experience and stressful on the other hand.

Conclusion: OSCE is a reliable and valid method of assessing the students' psychiatric nursing competency skills. It has been shown to have many advantages over traditional methods of assessment and has the ability to objectively assess psychiatric nursing skills.

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Introduction

The measurement of clinical skill performance continues to pose a challenge for nursing educators (Norman et al., 2002). The traditional clinical examination has been criticized for focusing simply on students' knowledge and their abilities to memorize, while ignoring other important characteristics such as problem-solving, critical thinking, and communication skills (Ross et al., 2006). Moreover, the results of many assessment tools tend to be subjective in nature, and many have not been validated (Alinier, 2003). The assessment of clinical competence has been greatly advanced over the past two decades. The advent of several structured performance tests has enabled some of these limitations to be overcome. One of the most popular forms of the structured performance tests is the Objective Structured Clinical Examination (OSCE) (Newble, 2004).

The OSCE was first introduced in medical education in 1975 by Ronald Harden in Scotland at the University of Dundee. It has currently become a popular tool for assessing clinical competence in nursing (Joy and Nickless 2008; Rushforth, 2007). It is carefully

structured to include parts from all elements of the curriculum as well as a wide range of skills for both formative and summative evaluations (Townsend et al., 2001). OSCE consists of a series of time limited clinical tasks through which all students have to perform in a consecutive series of stations (Munoz et al., 2005). At each station, the student is faced with a task or a problem. Students are observed by examiners whose interaction with the students is carefully regulated, usually being limited to providing instructions or asking about predetermined operations (Newble, 2004; Rushforth, 2007; Townsend et al., 2001).

For a long time, Faculties of Nursing in Egypt adopted the traditional practical exams for evaluating students' clinical performance in psychiatric nursing. Within this approach, a group of students would be assigned to one or two instructors who would observe and evaluate students' performance for their entire clinical experience when providing nursing care for different psychiatric patients through the whole semester. The main problem of this approach is the subjectivity in the evaluation. Whereas in an OSCE, all students are assessed using exactly the same stations with the same marking scheme to make the assessment of clinical skills more objective rather than subjective (Rushforth, 2007).

During an OSCE, students are observed and evaluated as they go through a series of stations in which they interview, examine and treat standardized patients who present with some type of health problems. A standardized patient is an actor trained to play the role of a patient with specific complaints (Turner and Dankoski, 2008; Walters et al., 2005). The use of standardized patients has overcome

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the problem faced with real patients. Thus, the validity and reliability of real patients in psychiatric oral and practical examination are under debate, primarily because the number of real patients in psychiatric oral examination is limited to one or two patients. Another critique is whether real patients behave and respond to questions in the same manner in different circumstances (Berkenstadt et al., 2006; Wallace et al., 2002).

In this respect, Kurz et al. (2009) stated that the use of actual patient presents several barriers to objective evaluation. Thus since the use of real patients is not practical and feasible in OSCEs, the use of standardized patients may be a rational and a more practical alternative method for board certification exam in psychiatric nursing (Berkenstadt et al., 2006; Wallace et al., 2002).

It has been claimed that OSCE provides a valid and a reliable means to evaluate psychiatric nursing student's performance in a holistic manner (Wallace et al., 2002). Although several students felt that OSCE was very stressful (Brand and Schoonheim-Klein, 2009; El-Nemer and Kandeel, 2009; Pierre et al., 2004; Ryan et al., 2007), the preliminary findings are promising regarding this evaluation tool. A study by Hodges et al. (2002) and Wallace et al. (2002) showed the majority of students in psychiatry participated in an OSCE rated the scenarios as very realistic, and reflective of clinical situations they had experienced.

OSCE which gained widespread acceptance as a valid academic measurement of nursing competence in North America, Australia and the United Kingdom (Brosnan et al., 2006; Rushforth, 2007), has recently been introduced into the Faculties of Nursing in Egypt in critical care and maternity nursing departments (El-Nemer and Kandeel, 2009) yet it had not been established as a tool for evaluation in psychiatric nursing; accordingly, this study was conducted.

Aim

This study aims to evaluate the first implementation, validity and reliability of OSCE in undergraduate psychiatric nursing education.

Setting

The study was conducted at the Psychiatric Nursing and Mental Health Department – Faculty of Nursing – Alexandria University.

Sample size

Seventy six undergraduate nursing students in the fourth academic year at the Faculty of Nursing – Alexandria University have been chosen randomly to participate in this study through the academic year 2008–2009. Written informed consent was secured from each student who agreed to participate in the study.

Methods

Ethical approval

Ethical approval was obtained from Faculty of Nursing Ethics Committee in order to conduct the study.

The development of the tools

The preparation of OSCE took 4 months, it included the preparation and review of station content, students' answer booklets, simulated patients' scenarios, checklists of simulated patients' stations and model answers. The preparation of OSCE stations was based on clinical psychiatric nursing intended learning outcomes. Face and content validity of each checklist, simulated patient scenario, station task, written assignment, student's answer booklet, model

answer sheets and number of stations were established by review and consensus by a panel of senior teaching staff of Psychiatric Nursing and Mental Health Department at both Alexandria and Mansoura Universities.

Course content and objectives of psychiatric nursing course were reviewed thoroughly to decide on the needed stations based on the intended learning outcomes of the course. Thirteen stations were prepared including 11 working stations and 2 rest stations. The OSCE stations were designed to cover the contents and skills of clinical psychiatric nursing. The OSCE consisted of three interactive simulated patient stations (station 1, 5 and 8), post stations (2, 3, 6, 7 and 9) and the other three stations included a medication classifications and indications (4), a medication side effects (10) and a laboratory investigation results station (11). The first rest station followed station 4, while the second rest station followed station 7 (see OSCE blueprint – Appendix A).

Regarding the simulated patients, the scenarios were created based on real clinical cases and written in detail including the patient's background, chief complaint, facial expression, posture and responses to student's interactions. Training for a role begins with the presentation of written material of real patients. Individuals (actors) were chosen from psychiatric nurses working in psychiatric hospital for more than 5 years. Nurses were trained to act as patients for two days before the exam using data show and role play. They were then observed performing the role by the station's author and a panel of senior faculty staff in the field of psychiatric nursing education to verify the realism of the portrayal and to ensure consistency across the simulated patients training. An agreement upon their performance was obtained to perform the structured scenarios for each station.

Each simulated patient station contained two raters from the teaching staff with checklists to rate the students' performance independently. Each checklist of simulated patients consisted of a series of performance based observations and rated students' performance as done accurately, done inaccurately and not done.

The post stations were written assignments and/or questions concerned with the simulated patient's station. Post station 2 and 3 included writing patient's record, nursing notes and nursing care plan based on the interview and assessment of patient in station 1. Post station 6 and 7, included writing nursing interventions before receiving electroconvulsive therapy and choosing appropriate activity therapy based on assessment of patient in station 5. Post station 9 was concerned with writing nursing management of hallucinations based on interviewing the simulated patient in station 8. Model answers of the previously mentioned stations were structured and reviewed for marking these stations.

Pierre et al. (2004) self-administered questionnaire was adopted in the current study for evaluating the OSCE application by the students. The questionnaire was translated by the researchers into Arabic language and face validity was performed through back translation. The questionnaire's main outcomes were student evaluation of examination attributes, which included the quality of instructions and organization, the quality of performance, authenticity and transparency of the process, and usefulness of the OSCE as an assessment instrument compared to other formats. The reliability of the questionnaire of students' evaluation of the OSCE was calculated using Cronbach α and it scored 0.70.

Data collection

A pilot study was conducted on a group of 13 students in May 2008 to develop and test OSCE stations and to ensure the applicability and feasibility of the tools.

In the actual study, the OSCE was applied on six rotations through the academic year 2008/2009 and from each rotation a group of 13 students was selected randomly. Only thirteen students were

included due to the limited funding, number of teaching staff and the available places for conducting OSCE. Students were assured that scores on OSCE were used for self assessment and research purpose and did not contribute to the final grade of clinical or total grade of Psychiatric Nursing and Mental Health course. In each group, students were given numbers from 1 to 13.

Before starting the OSCE each student received an OSCE answer booklet which included the student's name, number, starting station, exam instructions, expected tasks in each stations and answer sheets for the written assignment and/or question stations. Then an orientation session was provided for each group of students regarding the OSCE application and students were reminded to interact with simulated patients as if they are in real clinical settings. Each student rotated on 13 stations for five minutes each. A schedule for time plan was created indicating the placement of each student by number in OSCE stations every five minutes. The student moved on bell sound and instruction from a coordinator staff member who was assigned to ensure organization and flow of rotation of students on OSCE stations according to the time plan. The grading rubric was used in marking the students' answer booklet with a total score of 60 marks.

The questionnaire was completed by students immediately after the OSCE at the end of each circuit. According to the pilot study and feedback from the students who completed the questionnaire, the rating of questions changed from agree, neutral and disagree to yes, to some extent and no. Some open ended questions addressing the advantage and disadvantages of OSCE were added.

Data analysis

Data were fed and analyzed using SPSS 12.0. Descriptive analyses including frequencies and percentage were performed. Face and content validity of OSCE station were performed by Psychiatric Nursing and Mental Health Nursing Faculty Staff in Faculty of Nursing Alexandria and Mansoura Universities. Criterion validity of OSCE was calculated using non parametrical Spearman's correlation coefficient with traditional clinical evaluation, final oral exam and final written exam. Regarding OSCE reliability, it was measured using inter rater reliability of simulated patient station raters by non parametrical Spearman's correlation coefficient. Cronbach α was used to test the internal consistency of OSCE stations and the reliability of the questionnaire of students' evaluation of the OSCE.

Results

Validity and reliability of the OSCE

Seventy six students had completed the OSCE, they were composed of sixty female students and sixteen male students.

Inter rater reliability was calculated for simulated patient stations (1, 5 and 8) using non parametric Spearman's correlation. The results show statistically significant positive correlations between the two raters of the previously mentioned stations (r_s of station 1 = 0.672; $p = 0.000$, r_s of station 5 = 0.708; $p = 0.000$ and r_s of station 8 = 0.581; $p = 0.000$) (Table 1). Indicating significant agreement between the two raters in simulated patient stations.

Moreover, reliability of the OSCE stations was measured using Cronbach α to evaluate the internal consistency of each station. The internal consistency of OSCE stations was statistically significant and highly reliable as Cronbach α was higher than 0.7 in stations 2, 3, 4, 5, 6, 10 and 11 as shown in Table 2.

Table 3 represents the criterion validity of OSCE evaluated using non parametric Spearman correlation between the OSCE against the traditional clinical evaluation, final oral exam, final written exam and the total grade in Psychiatric Nursing and Mental Health course. The

Table 1
Inter rater reliability of simulated patient stations.

Station 1 rating			Station 5 rating			Station 8 rating		
Item	r_s	P value	Item	r_s	P value	Item	r_s	P value
1	1.000	0.655	1	0.389	0.001*	1	0.817	0.000*
2	0.722	0.000*	2	0.711	0.000*	2	0.854	0.000*
3	0.655	0.000*	3	0.607	0.000*	3	0.746	0.000*
4	0.250	0.030*	4	0.653	0.000*	4	0.227	0.049*
5	1.000	0.000*	5	0.172	0.000*	5	0.523	0.000*
6	0.755	0.000*	6	0.512	0.152	6	0.665	0.000*
7	0.586	0.000*	7	0.221	0.062	7	0.478	0.000*
8	0.833	0.000*	8	0.701	0.000*	8	0.382	0.001*
9	0.464	0.000*	9	0.627	0.000*	9	0.657	0.000*
10	0.666	0.000*	10	0.206	0.081	10	0.354	0.002*
11	0.381	0.001*	11	0.211	0.069	11	0.747	0.000*
12	0.363	0.001*	12	0.534	0.000*	12	0.817	0.000*
13	0.490	0.000*	13	0.333	0.003*	13	0.236	0.041*
14	0.611	0.000*	14	0.479	0.000*	Total	0.581	0.000*
15	0.740	0.000*	Total	0.708	0.000*			
16	1.000	0.000*						
17	0.504	0.000*						
18	0.646	0.000*						
19	0.781	0.000*						
20	0.945	0.000*						
21	0.452	0.000*						
22	0.865	0.000*						
Total	0.672	0.000*						

* $P < 0.05$.

results show a statistically significant correlation between the OSCE and clinical evaluation (total score: 60 mark) ($r_s = 0.536$; $p = 0.000$), final oral exam (total score: 60 mark) ($r_s = 0.337$; $p = 0.000$), final written exam (total score: 80 mark) ($r_s = 0.593$; $p = 0.000$) and total grade in Psychiatric Nursing and Mental Health course (total score: 200 mark) ($r_s = 0.794$; $p = 0.000$).

Students' evaluation of the OSCE – Table 4

Out of seventy six students who completed the OSCE, only 49 students completed the OSCE evaluation questionnaire. The majority of the students consistently appraised the OSCE and reported that it was fair (88.4%), covered a wide area of knowledge (93.9%), well administered (76.6%), well structured and sequenced (89.8%), allowed students to compensate in some areas (89.4%), highlighted areas of weakness (93.8%), covered a wide range of clinical skills (87.8%), the tasks reflected those taught (87.8%), instructions were clear and unambiguous (89.8%), tasks were fair (89.6%), the sequence of stations was logical and appropriate (89.8%), the exam provided them with an opportunity to learn (83.7%), was a practical and useful experience (91.8%) and did not allow any chance for bias (89.4%) and that they were oriented with the nature of the exam (89.8%).

Table 2
Reliability–internal consistency of OSCE stations.

Station	Cronbach's α	P value
Station 1	0.607	0.000*
Station 2	0.791	0.000*
Station 3	0.802	0.000*
Station 4	0.764	0.000*
Station 5	0.736	0.000*
Station 6	0.753	0.000*
Station 7	0.331	0.013*
Station 8	0.290	0.016*
Station 9	0.582	0.000*
Station 10	0.707	0.000*
Station 11	0.732	0.000*

* $P < 0.05$.

Table 3
Correlation between OSCE scores and other exams' scores: validity of OSCE.

Station	r_s	P value
Clinical evaluation	0.536	0.000*
Final oral exam	0.337	0.003*
Final written exam	0.593	0.000*
Total grade in psychiatric nursing	0.794	0.000*

Total number = 75 (one student did not attend the final written exam).

* $P < 0.05$.

On the other hand, majority of the students stated that the OSCE was very stressful (75.5%) and more than half of them found the exam more stressful than the other exams (51.1%).

Discussion

One of the major challenges facing nursing educators is the evaluation of clinical competencies in psychiatric nursing education. Despite significant developments in assessment methods that probe competence, nursing educators continue investigating other assessment methods that best enhance students' development of clinical skills in psychiatric nursing. OSCE is a well established students' assessment tool which is competency-based. It is being assessed by nursing educators in different specialties. The feedback received regarding the OSCE supports the feasibility of this method in assessing the performance of nursing students. Hence the present study was done to better understand the applicability and the validity of "OSCE" in the field of psychiatric nursing.

Poor validity and reliability of clinically based evaluation led Harden et al. (1975) to design OSCE in the first place. In the same line the emergence of the current study was preceded by unsatisfactory experience of clinical evaluation in psychiatric nursing by both faculty staff and students. The traditional clinical evaluation was characterized by high level of subjectivity based on unstructured and inconsistent assessment of clinical competencies, very limited number of assessors; one or two assessors, the luck of the draw or

chance for assessing competencies and assessing limited number of clinical skills. These characteristics apply to oral exams and explain why they were less correlated to OSCE in comparison with other evaluation tools.

The present results indicate that all the OSCE stations are reliable to evaluate psychiatric nursing students (see Tables 1 and 2). Additionally there was a greater agreement among raters in the most rated items during the evaluation of the students in simulated patient stations. This is explained in the light of intense preparation of the OSCE which include: gathering a team, intense preparation of blueprint, creating a bank of stations, creating scenarios, training of actors in simulated patient stations, preparation of checklists of rating, training of raters, using two raters in each simulated patient station, creating post simulated patient stations, preparing model answers, reviewing the contents of OSCE by faculty teaching staff and comparing the OSCE content with the intended learning outcomes of psychiatric nursing curriculum and orienting the students with the nature of OSCE. On the same line, Anderson and Stickley (2002) found that the OSCE was a reliable and valid assessment instrument for testing acquisition of clinical skills. Also, Hodges et al. (1997) found that inter-station reliability was reasonably and acceptably high.

Regarding validity, the OSCE is valid against other assessment tools used in evaluating students, including final written exam and total grade which were more correlated to OSCE than oral exam and clinical evaluation (see Table 3). Elements increasing the validity of OSCE include: high objectivity, testing wide range of skills and competencies, using wide range of examiners and hence reducing bias, different students undergo the same questions and examiners and consistency (Rushforth, 2007). These advantages apply to some extent to the final written exam. Additionally face and content validity performed through reviewing the content of stations by experts in the field added to the overall validity of OSCE against other evaluation tools.

Several studies used various methods to evaluate the OSCE (Larsen and Jeppe-Jensen, 2008; McWilliam and Botwinski, 2008; Pierre et al.,

Table 4
Students' evaluation of OSCE.

Items	Students' responses (n = 49)						Missing data
	Yes		To some extent		No		
	n	%	n	%	n	%	
Exam was fair	38	88.4	2	4.7	3	7.0	6
Wide knowledge area covered	46	93.9	2	4.1	1	2.0	0
Needed more time at stations	31	63.3	6	12.2	12	24.5	0
Exam well administered	36	76.6	5	10.6	6	12.8	2
Exam very stressful	37	75.5	4	8.2	8	16.3	0
Exam well structured and sequenced	44	89.8	3	6.1	2	4.1	0
Exam minimized chance of failing	23	56.1	4	9.8	14	34.1	8
OSCE was less stressful than other exams	17	36.2	6	12.8	24	51.1	2
Allowed student to compensate in some areas	42	89.4	1	2.1	4	8.5	2
Highlighted areas of weakness	45	93.8	1	2.1	2	4.2	1
Exam intimidating	31	63.3	7	14.3	11	22.4	0
Student aware of level of information needed	32	65.3	5	10.2	12	24.5	0
Wide range of clinical skills covered	43	87.8	1	2.0	5	10.2	0
Fully aware of nature of exam	44	89.8	2	4.1	3	6.1	0
Tasks reflected those taught	43	87.8	3	6.1	3	6.1	0
Time at each station was adequate	5	10.2	12	24.5	32	65.3	0
Setting and context at each station felt authentic	31	63.3	5	10.2	13	26.5	2
Instructions were clear and unambiguous	44	89.8	2	4.1	3	6.1	0
Tasks asked to perform were fair	43	89.6	2	4.2	3	6.3	1
Sequence of stations logical and appropriate	44	89.8	1	2.0	4	8.2	0
Exam provided opportunities to learn	41	83.7	0	0.0	8	16.3	0
OSCE exam scores provide true measure of essential clinical skills in psychiatric nursing	28	58.3	2	4.2	18	37.5	1
OSCE scores are standardized	30	61.2	1	2.0	18	36.7	0
OSCE practical and useful experience	45	91.8	3	6.1	1	2.0	0
OSCE eliminated any chance for bias	42	89.4	0	0.0	5	10.6	2

2004). The most popular method was to examine the attitudes of students. The results of this study revealed that most of the students reported 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 covering a wide range of clinical skills, highlighting the areas of weakness and the fairness of the exam. These findings go with the previous studies which reported that OSCE was seen as a positive and a useful practical experience by most students and staff (El-Nemer and Kandeel, 2009; Rasoulia et al., 2007).

In the current results, OSCE was perceived as a stressful experience by a high percentage of students. This perception could be due to the first OSCE experience for Psychiatric Nursing students at Faculty of Nursing, Alexandria University. Hence, it was a new experience for all nursing students which made them feel anxious about it. Additionally, the students did not undergo any OSCE in other courses before. These findings were in agreement with other studies, which found that students' stress and anxiety are related to the new experience with OSCE among students (Pierre et al., 2004; Ryan et al., 2007; Brand and Schoonheim-Klein, 2009; El-Nemer and Kandeel, 2009).

Also in the present study, students reported that they were stressed by the lack of enough time to deal with the scenario in some stations. This explains why some students were not interested to be evaluated by OSCE. However, most students reported that they preferred OSCE as compared to traditional evaluation of practical skills. Although, OSCE has been regarded as an expensive (Wallace et al., 2002; Turner and Dankoski, 2008) and time consuming method of evaluation (Byrne and Smyth, 2008; Major, 2005), in other studies it has been shown to be cost effective due to the out weight of educational benefits (Poenu et al., 1997; Khatabb and Rawlings, 2001). In the same line Walters et al. (2005) argued that OSCE in psychiatry is considered a feasible, valid and reliable method of assessing clinical skills on a constricted budget.

Limitations of the study

The study was a summative evaluation and did not provide post examination feedback to the students due to the shortage in the faculty staff and time constraints. The lack of video recording of simulated patient interaction due to limited budget and the presence of raters added to students' anxiety and stress regarding OSCE and did not allow for objective feedback to students.

Conclusion

The implementation of OSCE in psychiatric nursing for the first time at the Faculty of nursing, Alexandria University, in Egypt provides evidence on the reliability and validity of this tool in assessing the students' competency skills. The running cost of the OSCE is outweighed by the educational benefits as well as the students' satisfaction. It has many advantages over other traditional methods of assessment. Hence, OSCE is a worthwhile experience, which could make a significant contribution to maintaining high standards of future psychiatric nurses.

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Appendix A. OSCE blueprint

Stations	Evaluated tasks	Items evaluated	Duration of station
Station 1 – interactive simulated patient – two raters	Assessing symptomatology using communication and interview skills	22	5 min
Station 2 – post station of station 1	Written questions	24	5 min
Station 3 – post station of station 1	Written questions	10	5 min
Station 4 – psychiatric medications	Recognizing classification and indication of psychiatric drugs	8	5 min
Rest			5 min
Station 5 – interactive simulated patient – two raters	Assessing suicidal patient	14	5 min
Station 6 – post station of station 5	Written questions	7	5 min
Station 7 – post station of station 5	Written questions	6	5 min
Rest			5 min
Station 8 – Interactive simulated patient – Two raters	Intervening with auditory hallucinations and verbal aggression	13	5 min
Station 9 – post station of station 8	Written questions	6	5 min
Station 10 – extra pyramidal side effects photo	Recognizing the extra pyramidal side effect and its management	4	5 min
Station 11 – laboratory investigation	Written questions	5	5 min
	Assessing early lithium toxicity from laboratory investigation results report		

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