

Using the objective structured clinical examinations in undergraduate midwifery students

Delavar MA*, Salmalian H**, Faramarzi M**, Pasha H**,
Bakhtiari A**, Nikpour M**, Ledari FM**

* Fatemehzahra Infertility and Reproductive Health Research Center, Department of Midwifery,
Babol University of Medical Sciences, Babol, Iran

** Department of Midwifery, Babol University of Medical Sciences, Babol, Iran

Correspondence to: Mouloud Agajani Delavar, PhD, Assistant Professor,
Fatemehzahra Infertility and Reproductive Health Research Center, Department of Midwifery,
Babol University of Medical Sciences, Ganjafrooze Ave, 47176, Babol/Iran,
Phone: +981113260714, Mobile phone: +989111122866, E-mail: moloodaghajani@yahoo.com

Received: September 24th, 2012 – Accepted: January 29th, 2013

Abstract

The Objective Structured Clinical Examination (OSCE) has been considered a modern type of examination for the assessment of clinical skills within nurse education, but it has been rarely applied in the teaching of midwifery. The aim of the present study was to assess the use of the OSCE as a tool to evaluate the abilities of undergraduate midwifery students and to compare the perspectives of the students regarding the OSCE and traditional examination. Fifty-two midwifery students participated in the study. The expert trainer evaluated the internal consistency of the OSCE stations and it was tested by using Cronbach's alpha. Successive groups of students completed a self-administered questionnaire immediately after the final examination. The students' perspective regarding the traditional final examination ranked as unsatisfactory by more than two thirds of the students, while, the students' perspective regarding the OSCE system was ranked as very satisfactory to satisfactory by more than half of the students ($p=0.001$). There was a significant difference in the students' perspective between the OSCE system and the traditional final examination among the students (49.8 ± 18.3 vs 25.3 ± 18.1) ($p=0.001$). A significant difference was found in being credible ($p=0.0001$), consistent/reliable ($p=0.001$), enhances teaching level ($p=0.011$), and measures the course category ($p=0.008$) between two methods of the final examination. Around half of the students expressed their opinion that the OSCE test was a stressful assessment. Overall, students' evaluation of the OSCE was remarkably encouraging. To this end, we recommend the consideration of the validity and reliability of the process for undergraduate midwifery students.

Keywords: midwifery education program, educational measurement, objective assessment, program evaluation

Introduction

In the Iranian system, the increasing number of midwifery students enrolled in the nursing and midwifery faculties, who trained as midwife without being nurses first (direct entry midwives). Midwifery education takes at least 4 calendar years of study for both classroom instructions and clinical posting in a Medical University. After finishing their remaining studies, midwifery students must take in the clinical final examination. The final exam is the most important examination for midwifery students during 4 calendar years of the study. The successful students at the final examination conducted by nursing and midwifery faculty are designated as graduated of midwife with bachelor's degree. The final examination includes short cases, long cases and oral examination in four fields; delivery room, clinical gynecological unit, prenatal care unit and mothers and children health. The traditional clinical final examination is several problems and is not standardized to assess clinical competency and clinical reasoning skills. The teacher often questions only

regarding his final conclusion and gives summation score and does not observe history taking, physical examination, diagnostic reasoning and management of the student [1,2]. In addition, there is a limited resource from the clinical sites. Thus, practice on patient may not be available for students. As the number of midwifery students is increased, seemingly, this traditional final examination cannot be used to measure the clinical skills. However, one study in Mashhad (Iran) showed that the assessment instruments of the traditional clinical final examination for undergraduate midwifery students was valid and reliable in the assessment of the students at their educational career [3].

The Objective Structured Clinical Examination (OSCE) had been established as part of the repertoire in the clinical assessment skill in a standardized content for over three decades [1,4,5]. Medical faculties in Iran use OSCE for testing medical, dental students' outcome. However, in Iran, there is no available evidence for using

OSCE in midwifery education. Since 1985, OSCE has been adopted for the assessment of the nursing skills in Canada [6]. Researchers have shown that OSCE is a valid and reliable assessment to evaluate the student's clinical performance [3,7-11]. Many studies showed that the OSCE can be used most effectively in nurse undergraduate curricula to assess safe practice in term of performance of skills [12-15]. In 2000, for first time, Hong Kong midwives council used the OSCE as a component of the Certification examination on midwife in the school of midwifery, adapted a new assessment system and reported that the OSCE is a gold standard assessment to assess the clinical competency of midwives. Therefore, we designed the final OSCE method to assess midwifery students in final examination and compared perspectives of undergraduate midwifery students regarding the final OSCE and traditional final examination.

Methods

In this cross-sectional study, 52 midwifery students participated in the study. All the participants were healthy without any history of severe stress. The data were collected by using a special questionnaire; data of age, mother's and father's educational level, father's and mother's age, and marital status.

Two groups of midwifery students from the Faculty of Midwifery of Babol University of Medical Sciences participated in the process during the final examination, one group in November 2010 and another one in July 2011. The first trial was conducted in November in the delivery room, clinical gynecology unit, prenatal care unit and mothers and children health; 20 students were evaluated by using the traditional method of evaluation in July 2011, 32 students were evaluated by using the OSCE method. Students of the groups had two briefing sessions before the OSCE, and included an orientation about the examination process. In the first step of the study, training of trainers was done for OSCE. Ethical review of the study project was obtained in several workshops. They were held for clinical instructors and faculty members by the Educational Development Center of Babol University of Medical Sciences (EDC) to raise the awareness of OSCE. The panel examiner was selected among the export trainer who held the design and conduct of the OSCE. 16 checklists to assess the student's clinical competence in the OSCE were prepared by the clinical instructors and faculty members. The checklists were mostly developed by the panel examiner. Face and content validity of each check list and the student's perspective questionnaire was the coefficient test, the reliability of the student's perspective questionnaire was of 0.81 and the reliability of the checklists applied in station 1 to 16 were between 0.67 and 0.86.

The standard patients were selected among the expert midwives. They were trained so that the standard patient did not change in each station during the examination. The time of each station was of six minutes. One minute was given between stations to facilitate change and the reading of the instructions. All the students completed the circuit in a period of almost two hours. The aim of each station was to test a particular clinical competence. All the necessary instruments and instructions for the students' performed requested skills and their performances were assessed according to the criterion reference for each station. The criterion based scoring was used with each checklist item. The observer filled the checklist based on the related rating scale, each checklist item score being 0 (omitted incorrect or inadequate) or 1-2 (correct or adequate).

In several questions they were asked to assess the students' perspectives regarding the OSCE and traditional final examination score on the scale was of 0.0 (strongly disagree) to 4.0 (strongly agree). For each subject, the score of subject question was converted into percentage to represent the students' perspective. A score of at least 30% was considered as a "satisfactory" perspective regarding the method of final examination, a score below 30% was considered as "unsatisfactory" and above 50% as "very satisfactory".

All the analyzes were performed with SPSS (version 16.0). The descriptive statistics were used to describe the mean scores and proportion. To compare the students' perspective regarding two methods of final examination, *t* test and qui-square test were done. All the analyses were performed by using two-tailed hypotheses testing the level of significance set at 0.05.

Results

Of 52 midwifery students, all were women; the mean \pm SD age of the study participants was 23.1 ± 0.7 years. Twenty students (38.5%) were married. The mean education of the students' father and mother were 11.6 ± 4.5 and 9.9 ± 4.0 years, respectively. Also the mean age of the students' father and mother was 52.3 ± 3.5 and 47.8 ± 4.9 years, respectively. Half (50.0%) of the students reported that they do not get enough sleep and had stress of final examination. The main cause of stress (53.8%) was reported to be the examination system itself.

Table 1 shows the students' perspective regarding the traditional final examination. It was ranked as unsatisfactory by more than two thirds of the students with a mean score of the students' perspective of 25.3 ± 18.1 . While the students' perspective regarding the OSCE system was ranked as very satisfactory to satisfactory by more than half of the midwifery students with a mean score of the students' perspective of 49.8 ± 18.3 (**Table 2**).

Table 1. Distribution of the students' perspectives regarding the traditional final examination (N=20)

| | Very satisfactory n(%) | Satisfactory n(%) | Unsatisfactory n(%) |
|------------------------------|---------------------------|----------------------|------------------------|
| Is credible | 1(5.0) | 2(10.0) | 17(85.0) |
| Is consistent/reliable | 2(10.0) | 2(10.0) | 16(80.0) |
| Enhances teaching level | 3(15.0) | 4(20.0) | 13(65.0) |
| Measures the course category | 4(20.0) | 2(10.0) | 14(70.0) |
| Mean ± SD | | 25.3±18.1 | |

Table 2. Distribution of the students' perspectives regarding the OSCE system (N=32)

| | Very satisfactory n(%) | Satisfactory n(%) | Unsatisfactory n(%) |
|------------------------------|---------------------------|----------------------|------------------------|
| Is credible | 12(37.5) | 5(15.6) | 15(46.9) |
| Is consistent/reliable | 10(31.2) | 7(21.9) | 15(46.9) |
| Enhances teaching level | 11(34.4) | 7(21.9) | 14(43.8) |
| Measures the course category | 11(34.4) | 9(28.1) | 12(37.5) |
| Mean ± SD | | 49.8±18.3 | |

There was a significant difference in the students' perspective between the OSCE system and traditional final examination among midwifery students (**Table 3**).

Table 3. Comparison of the OSCE versus traditional final examination among undergraduate midwifery students

| Score category | OSCE (N=32) n(%) | Traditional final examination (N=20) n(%) | p-value |
|-------------------|---------------------|---|---------|
| Unsatisfactory | 6(18.8) | 11(55.0) | 0.001 |
| Satisfactory | 13(40.6) | 9(45.0) | |
| Very satisfactory | 13(40.6) | 0(0.0) | |

Table 4 illustrates the comparison between the mean students' perspective and the students who underwent OSCE and traditional final examination. The significant difference was found in being credible ($p=0.0001$), consistent/reliable ($p=0.001$), enhancing the teaching level ($p=0.011$), and measuring the course

category ($p=0.008$) between the two methods of final examination. In addition, students who underwent the final OSCE reported that the final OSCE is more stressful ($p=0.0001$) and is a more fearful form of assessment ($p=0.0001$) compared with the traditional final examination.

Table 4. Comparison of the students' mean perspectives of the OSCE versus the traditional final examination among undergraduate midwifery students

| | OSCE mean ±SD | Traditional final examination mean ±SD | P-value |
|------------------------------|------------------|---|---------|
| Is credible | 19.2±25.8 | 21.3±29.3 | 0.0001 |
| Is consistent/reliable | 22.5±2 | 22.5±28.8 | 0.007 |
| Enhances teaching level | 49.2±27.3 | 28.15±27.7 | 0.001 |
| Measures the course category | 51.3±26.5 | 28.8±34.7 | 0.008 |
| Is stressful | 53.1±29.6 | 86.3±23.6 | 0.0001 |
| Is fearful | 42.2±29.4 | 82.5±28.2 | 0.0001 |

Discussion

In this study, around half of students expressed their opinion that the OSCE test was a stressful assessment. Moreover, 40 percent of the students felt that the final OSCE process was fair and they reported that the time allocated to each station was not satisfactory. These results were consistent with many studies that a considerable percentage of students viewed OSCE as a stressful assessment [9,15-17]. A possible explanation for the perception is the new experience among students with increased anxiety. The anxiety is related to the students' stress [18-20].

In relation to the students' perspective regarding the OSCE system, more than half of the students indicated that the OSCE system is credible, consistent, reliable, enhances the teaching level and also measures the course category. The findings were somewhat similar to the view of students at Cairo and Ain Shams Universities of Egypt [21]. However, the midwifery students' perspective was positive in some area but seemingly, the OSCE had few limitations including insufficient time for each station that, in some studies, was one of the students' complains [19-22] and stressful.

Student perception of the OSCE however may have been influenced by anxiety, in adequate preparation

for the examination, and lack of confidence was associated with a new assessment. Also the students completed the questionnaire immediately after the final examination, hence the students' stress and fatigue should be taken into consideration.

Conclusion

Our results showed that a new assessment tool in the final examination is needed for midwifery curricula. The traditional final examination is not a suitable tool in the evaluation of the clinical competence in midwifery. In this study, the students' evaluation of OSCE was encouraging. We would like to recommend the OSCE; it could be used to evaluate the skills of undergraduate in the future final examination. It requires the consideration

of validity and reliability of the process for undergraduate midwifery students.

Acknowledgment

We wish to thank Dr. Iman Jahanian, Maryam Ghaemi and Kolsoum Vajedi for the professional advice and permission to use the OSCE in this study. We also express our gratitude to the participating students and lecturers in the midwifery department who contributed to the implementation of the OSCE in the department. We also appreciated the standard patients, observed while including Sayed Zahra Banihoseini, Hamide Abdollahzade and all the students who participated in giving their feedback.

Competing interests

The authors declare that there is no conflict of interest.

References

- Bakhsh TM, Sibiany AM, Al-Mashat FM, Meccawy AA, Al-Thubaity FK. Comparison of students' performance in the traditional oral clinical examination and the objective structured clinical examination. *Saudi Med J*. 2009 Apr;30(4):555-7.
- Tabatabai K, H BSM, Yazdi M, Ebrahimzadeh S, Bahreini Toosi V, Bahreini Toosi K. Medical students viewpoints about the evaluation methods at internship stage (Mashhad University 2001). *MUMS*. 2002;45(76):97-103.
- Shoorab NJ, Golmakani N, Mazluom SR, Mirzakhani K, Azhari S, Navaiyan A. A review of the validity and reliability of assessment instruments for the final examination for the midwifery students of nursing and midwifery faculty of Mashhad. *AJS*. 2011;7(8):504-10.
- Hickling FW, Morgan KA, Abel W, Denbow CE, Ali Z, Nicholson GD, et al. A comparison of the objective structured clinical examination results across campuses of the University of the West Indies (2001 and 2002). *West Indian Med J*. 2005 Mar;54(2):139-43.
- Hodges B. OSCE! Variations on a theme by Harden. *Med Educ*. 2003 Dec;37(12):1134-40.
- Ross M, Carroll G, Knight J, Chamberlain M, Fothergill-Bourbonnais F, Linton J. Using the OSCE to measure clinical skills performance in nursing. *JAN*. 1988;13(1):45-56.
- Tudiver F, Rose D, Banks B, Pfortmiller D. Reliability and validity testing of an evidence-based medicine OSCE station. *Fam Med*. 2009 Feb;41(2):89-91.
- Brown G, Manogue M, Martin M. The validity and reliability of an OSCE in dentistry. *Eur J Dent Educ*. 1999 Aug;3(3):117-25.
- Florence HAU. Midwifery Education in Hong Kong-Implementation of a New Assessment System Hong Kong. *J Gyn Obstet Midwifery*. 2002;3(2):103-6.
- Martin IG, Jolly B. Predictive validity and estimated cut score of an objective structured clinical examination (OSCE) used as an assessment of clinical skills at the end of the first clinical year. *Med Educ*. 2002 May;36(5):418-25.
- Varkey P, Natt N, Lesnick T, Downing S, Yudkowsky R. Validity evidence for an OSCE to assess competency in systems-based practice and practice-based learning and improvement: a preliminary investigation. *Acad Med*. 2008 Aug;83(8):775-80.
- Mitchell ML, Henderson A, Groves M, Dalton M, Nulty D. The objective structured clinical examination (OSCE): optimizing its value in the undergraduate nursing curriculum. *Nurse Educ Today*. 2009 May;29(4):398-404.
- Khattab AD, Rawlings B. Use of a modified OSCE to assess nurse practitioner students. *Br J Nurs*. 2008 Jun 26-Jul 9;17(12):754-9.
- Ryan S, Stevenson K, Hassell AB. Assessment of clinical nurse specialists in rheumatology using an OSCE. *Musculoskeletal Care*. 2007 Sep;5(3):119-29.
- Brosnan M, Evans W, Brosnan E, Brown G. Implementing objective structured clinical skills evaluation (OSCE) in nurse registration programmes in a centre in Ireland: a utilisation focused evaluation. *Nurse Educ Today*. 2006 Feb;26(2):115-22.
- Allen R, Heard J, Savidge M, Bittergler J, Cantrell M, Huffmaster T. Surveying Students' Attitudes During the OSCE. *Adv Health Sci Educ Theory Pract*. 1998;3(3):197-206.
- Ei-Nemer A, Kandeel N. Using OSCE as an assessment tool for clinical skills: nursing students' feedback. *AJBAS*. 2009;3(3): 2465-72.
- Pierre RB, Wierenga A, Barton M, Branday JM, Christie CD. Student evaluation of an OSCE in paediatrics at the University of the West Indies, Jamaica. *BMC Med Educ*. 2004 Oct 16;4:22.
- Byrne E, Smyth S. Lecturers' experiences and perspectives of using an objective structured clinical examination. *Nurse Educ Pract*. 2008 Jul;8(4):283-9.
- Imani M, Tabatabaie H. Is OSCE successful in pediatrics?. *J Med Edu*. 2005;6(2):153-8.
- Eldarir SA, Sebaae HAE, Feky HAE, Hussien HA, Fadil NAE, Shaeer IHE. An Introduction of OSCE versus Traditional Method in Nursing Education: Faculty Capacity Building & Students' Perspectives. *A J S*. 2010;6(12):1002-14.
- Sturpe DA. Objective structured clinical examinations in doctor of pharmacy programs in the United States. *Am J Pharm Educ*. 2010 Oct 11;74(8):148.