Brief Communication

Reliability and Validity of the Objective Structured Clinical Examination in the Evaluation of Clinical Skills of Midwifery Students (Kashan, 2014)

Saeideh Nasiri M.Sc.[1], Fatemeh Abbaszadeh M.Sc.[1][*], Mahboobeh Kafaei Atrian M.Sc.[1], Gholamabbas Mousavi M.Sc.[2]

1. School of Nursing & Midwifery, Kashan University of Medical Sciences, Kashan, Iran

2. Trauma Research Center, Kashan University of Medical Sciences, Kashan, Iran

*Address for Correspondence: School of Nursing & Midwifery, Kashan University of Medical Sciences, Kashan, Iran, Zip-code: 87461-45766, Tel: +983155540021, Fax: +983155546633, Email: abbaszadeh_fa@kaums.ac.ir

Abstract

This study was conducted to determine the validity and reliability of Objective Structured Clinical Examination in evaluating the clinical skills of midwifery students at Kashan University of Medical Sciences in 2014. This descriptive-correlational study was carried out on 23 senior midwifery students. The Objective Structured Clinical Examination scores were calculated according to the structured objective checklists. Content and criterion validity and reliability were also assessed. The obtained data were analyzed by SPSS-16 using ANOVA and Spearman correlation coefficients. There was a significant relationship between the clinical scores and the Objective Structured Clinical Examination score (r=0.45, P=0.03). The reliability results of the evaluation of stations by two observers showed that the lowest and highest correlation coefficients between observers were 0.58 and 1.00, respectively. Owing to good reliability and validity of this test in the first period of its implementation in Kashan, it can be recommended for subsequent periods as part of the final exam for midwifery students.

Keywords: Midwifery student, OSCE, Evaluation, Validity, Reliability, Clinical skills

Introduction

Assessment of the students' clinical competence and performance is one of the most difficult tasks for the faculty members and educators of health programs (1). To this end, several methods have been proposed currently. Despite the availability of different methods of clinical assessment, the evidence suggests that student assessment is restricted to the assessment of subjective information and does not involve the precision assessment of their clinical skills.

The Objective Structured Clinical Examination (OSCE) is a good technique that provides fairly satisfactory results. The OSCE is a clinical competency assessment test and has the criteria of a fair test, luding validity, reliability, objectivity and practicality (2).

The OSCE is not suitable for the assessment of all aspects of clinical activity, because it has administrative problems, such as requiring skilled manpower, resources and facilities, and is time consuming. Furthermore, its success is dependent upon careful planning and proper measuring tools and resources for student assessment (3, 4).

In Noohi et al. (2008) and Al-Osail et al. (2015) studies, it was found that although there were obstacles and problems in implementing the OSCE, especially in terms

of its features and time consuming nature, owning to certain features and benefits or evaluation of clinical skills, such problems and weaknesses were negligible and this technique was recommended to be applied in all educational groups (5, 6).

A study by Shobeiri et al. (2012) showed that the mean scores of OSCE regarding principles and techniques in midwifery lessons was significantly higher than that of the scores of students assessed in conventional methods. The study recommended that midwifery students should be evaluated by the OSCE in all sectors (7).

Midwifery students must obtain high score in the final exam for graduation. The final exam is held in the form of practical and theoretical tests that investigate the skills earned by midwifery students. Unfortunately, because of the diverse collaborative and uncooperative patients, practical tests are not performed for all students in the same conditions; therefore it is not possible to compare students' scores in this exam. So far the OSCE has not been implemented for students in Kashan Faculty of Nursing and Midwifery. Due to the importance and necessity of implementation of a valid test for evaluating the clinical skills and the diversity in the basic structure of the OSCE from place to place, this research was conducted to determine the validity and reliability of OSCE in evaluating the clinical skills of midwifery students at Kashan Faculty of Nursing and Midwifery.

Methods

This research was a descriptive-correlational study that evaluated the OSCE among midwifery students. 23 senior midwifery students (ranging from 21 to 24 years old) who had passed all the theoretical and clinical courses were selected by the census method to estimate their overall performance. The study used fourteen stations designed for this test. Two stations were designed for students to rest. Total score of OSCE was sum of the scores of twelve stations. The maximum total score was 180.

The criterion validity of the OSCE was measured by determining the correlation between the mean scores of students in theoretical and practical lessons and the OSCE score. The reliability of the checklist was computed through internal consistency and inter-rater reliability.

For measuring the inter-rater reliability, students' competencies were assessed by two independent examiners simultaneously; both for written and interactive stations and the coefficient of correlation were calculated and categorized to excellent (>0.9), good (0.7-0.89), borderline (0.5-0.69), acceptable (0.3-0.49), and poor (<0.3). After completing the stations, each student was able to leave the skill lab. Evaluation was performed based on the checklist immediately after the student left the station. The data obtained in this study were analyzed by SPSS software using descriptive statistics, ANOVA and Spearman correlation coefficients.

Results

The mean age (±SD) of the participating midwifery students was 22.34 (±0.83) years. Around sixty nine percent of the students were single. The means of the theoretical, clinical and OSCE scores of the students were 16.40 (±0.95), 18.02 (±0.36) and 106.48 (±15.58), respectively.

There was no significant relationship between the theoretical scores and the OSCE score (r= 0.17, P=0.29), while there was a significant relationship between the clinical scores and the OSCE score (r= 0.45, P=0.03).

To check the internal consistency, the correlation of total OSCE score with the mean score of each station was calculated. The child care station had the highest correlation coefficient (r=0.8, P<0.001), while the interpretation station of the non-stress test had the lowest correlation coefficient (r=0.44, P=0.03).

Table 1. The correlation coefficient between scores of stations with a total score of OSCE and scores of two observers at each station

Stations	OSCE score	P-Value	Observer scores (Correlation coefficient)	P-Value
Leopold maneuvers	0.36	0.08		
Obstetric history	0.13	0.54	0.61	0.002
Pap smear	0.05	0.79	0.82	<0.001
Child care	0.80	<0.001	1.00	-
Breast pain	0.34	0.10	0.86	<0.001
Vaginal discharge	0.53	0.008		
Abnormal bleeding	0.79	<0.001	0.86	<0.001
Family planning counseling	0.17	0.43		
Preeclampsia	0.46	0.02	0.58	0.004
Non stress test	0.44	0.03		
Bimanual examination	0.70	<0.001	0.86	<0.001
Induction of labor	0.55	0.006	0.98	<0.001

There weren't significant correlations between score of OSCE and scores of Leopold maneuvers, obstetric history, Pap smear, breast pain and family planning stations, but there were significant correlations between the total score of OSCE and the scores of other stations (Table 1). After separating the items related to professional and communication skills in the checklists, a significant correlation was found between the total score of OSCE and performance of Leopold maneuver (r=0.47, P=0.02) and the ability to do Pap smear test (r=0.42, P=0.04). This research found a significant association between the assessments of the two observers at each station. The correlation coefficients between the scores of the two observers ranged from 0.58 to 1.00. The highest and lowest correlation coefficients between the observers were reported for the Pap smear test and preeclampsia stations, respectively (Table1).

Discussion

The study showed that the OSCE held in the School of Nursing and Midwifery of Kashan had good validity and reliability.

Moreover, the results showed no significant relationship between the theoretical scores and the OSCE scores, but there was a significant and weak relationship between the clinical scores and the OSCE scores. According to these results, it can be argued that there was gap between OSCE and clinical exams. In a study by Farajzadeh et al. (2011) the OSCE had acceptable criterion validity. In this study, there was a significantly positive correlation between the theoretical and clinical lessons and OSCE scores (8). Although, there was a significant relationship between the theoretical lessons and the OSCE scores in the aforementioned studies, the correlations were weak because of the gap between theoretical and clinical courses that needs to be considered in teaching.

According to the results, the reliability of the observers' assessment was 0.58- 1.00; therefore, the OSCE in this study was reliable. In typical assessments, the examiners gave different grades to a performance. According to experts in medical education, the OSCE exhibits strong validity and reliability in measuring clinical skills in comparison with written and oral sorts (9). In a study by Pourmirza Kalhori et al. (2012) the reliability of OSCE was reported to be 0.53, which is an average index of reliability; researchers, however, have proposed using training simulators (standardized patients) to enhance reliability (10).

Levitin et al. in their study on 22 midwifery students, reported a high reliability for OSCE exam. The reliability of the test based on Cronbach's alpha was 0.9. Students stated that the OSCE could help prepare them for real clinical settings. The researchers recommended the use of OSCE for assessing the future courses in midwifery (11).

Our results confirmed the validity and reliability of OSCE. OSCE with more stations tend to show higher reliability, therefore, OSCE is recommended to be used during all stages of the internship for midwifery students in order to assess their clinical training with more stations. The researchers recommend that students become familiar with how to use mannequin and how to perform procedures in a real clinical environment at the beginning of their training and the OSCE be held at the end of their training. As such, from the beginning of participation in a clinic, they should become familiar with the test, and they will be exposed to fewer problems if the OSCE is held as the final exam. It is better to consider minimum score for passing OSCE for more favorable assessment of students in subsequent periods.

Conclusion

The OSCE is expensive and time-consuming. Besides, training the observers and designing the stations require much time and cost a lot. Nonetheless, the results of this study indicated a good validity and reliability for the test in the first stage of its implementation. Therefore, this test is advised to be used in future periods as part of the final examination for midwifery students. The next periods of the OSCE should be more similar to the actual situations to meet the objectives of the evaluation of OSCE. The results of further tests should be compared with existing tests to identify and resolve the problems associated with holding the OSCE. It would be better to compare other methods of clinical evaluation such as DOPS with the OSCE in order to identify a preferred method for evaluating the students.

Acknowledgments

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