

Assessment of the Midwifery Students' Clinical Competency Before Internship Program in the Field Based on the Objective Structured Clinical Examination

Abstract

Background: One of the important goals of clinical education is to promote the level of students' clinical skills. About 50% of the midwifery education is focused on clinical education, which has a great importance in shaping the professional skills of the students. The aim of this study was to determine the ability of students in some practical skills, before internship program in the field, using objective structured clinical examination (OSCE). **Materials and Methods:** This research was a descriptive cross-sectional study with a single-stage, multivariate prospective design. Twenty-seven midwifery students from the Isfahan University of Medical Sciences who were in their sixth semester were selected by convenience sampling during the second semester of 2015–2016 educational year. OSCE was executed at skill laboratories in 8 stations during one day, and researcher-made checklists were used; their content and face validity were approved and their reliability was confirmed by a Cronbach's alpha coefficient of 0.97. Data analysis was performed by SPSS19. **Results:** Results showed that the level of students' skills at pelvic exam station was 39.97%, at bladder catheterization was 66.92%, at Leopold was 42.7%, at fetal ECG interpretation was 50.49%, at physical examination was 21.30%, at fetal resuscitation was 48.81%, at breast examination was 56.32%, and at answering the questions was 23.49%. **Conclusions:** Results show that students gained a score of less than 50% in most skills. Therefore, they are not efficiently skilled for these essential clinical skills. Nonetheless, these procedures need the minimum skills that are required from students after graduation and before entering the working environment in hospitals and health centers. Therefore, more attention should be paid to these skills while planning internship programs before students enter the field. Also, more attention is required while teachers teach these skills and students are supposed to regard their weaknesses in these skills.

Keywords: *Clinical skills of Iran, internship, midwifery, objective structured clinical examination*

Introduction

Assessment of midwifery students' clinical competency is one of the most difficult responsibilities of the faculty members and teachers of health plans.^[1] Paying attention to the clinical assessment and using techniques to evaluate the students' abilities, competencies, and skills are significantly important.^[2] Midwifery profession particularly has a key role in caring for women and babies during pregnancy, partum and postpartum periods, and promoting the health of the mother and the baby.^[3] Studies have shown that competent midwives can provide 87% of essential cares for women and babies and prevent more than 80% of their fetal ECG interpretation.^[4] Proper clinical training prepares a midwife to provide

desirable care for women at an expert level and emphasizes on the principles of independence and accountability in multidisciplinary and multi-institutional teams.^[5] A midwife must have critical thinking, and a revolution is needed in educational and assessment system to promote critical thinking in students to discern and improve the strengths and weaknesses.^[6] Majority of midwifery and nursing education was clinical before 2001, but this procedure has now changed to include more of theory.^[7] Today, 50% of the midwifery education are clinical in apprenticeship and internship periods, which have a significant role in forming the principal and professional skills of the midwifery students.^[6] The objective

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of medical science education is to prepare the students to develop the desirable competency level in educational programs.^[8] Essentially, the final result of the modern education in midwifery is defined by the level of trainees' learning.^[6] One way to understand the level and degree of trainees' learning is assessment. Assessment is a reliable tool to check students' learning.^[9] On the other hand, assessment of clinical skills and competencies of midwifery students is a challenge itself in their educational programs.^[10] One of the most creditable and valid methods for assessment is technical skills of medical sciences groups and objective structured clinical examination (OSCE); the main goal of this technique is examining individual's "clinical competency".^[11] Osce is an optimal way for assessing individual's "clinical competency".^[12] This examination has global credit^[13] and has been able to attract students', teachers', and many others' satisfaction.^[14] This examination was used by Harden and Glisone for the first time in Scotland in 1975 to evaluate the scientific knowledge of students, and it has been used in medical sciences by different countries including England, Canada, the Netherlands, and the US.^[10] The important thing about holding OSCE examination in midwifery before in-field internship is that internship is, generally, the most essential part of practical education. In this period, students must reach their academic goals.^[15,16] Findings of Mousavi^[15] and Ehsanpour^[8] have shown that the graduated students in this field do not have the necessary skills and efficiency in some essential procedures of midwifery in the real environment. On the other hand, midwifery students must function independently and without any help from their professors in the field of internship. Through a general view to the major of midwifery, it can be concluded that procedures such as pelvic examination, bladder catheterization, Leopold examination, ECG interpretation of fetus, pregnant women, physical examination, fetal resuscitation, and breast examination are the minimum cases that a graduate student of midwifery should be aware of. The aim of the preset research was to study the abilities and weaknesses of the midwifery students in each skill using OSCE examination. However, checking students' marks based on their internship evaluation checklists and their common ordinary exams usually will result in similar scores and no significant difference is observed in their clinical skills. Therefore, OSCE examination was used in this research to show these differences and indicate students' weaknesses to apply the policies for promoting their skills in clinical skills as much as possible based on the obtained results. The objective of this research was to indicate the students' abilities in cases such as pelvic examination, probing, Leopold examination, fetal resuscitation, fetal ECG interpretation, physical exam, and breast exam before internship in the field using OSCE examination.

Materials and Methods

The present research was a descriptive cross-sectional study with a single-stage, multi-variate prospective design. The statistical population of this study was 42 students who started their Bachelor's degree in midwifery in October 2013, and finished the 6th semester of midwifery and were in the period of before midwifery internship. Simple sampling method was used as the statistical population was small, and 27 members of the population who were studying at the 3rd to 6th semesters in this faculty participated in the researcher-made OSCE examination. With a 95% confidence interval, the variance value of 0.5, and the permitted error value of 0.05, the sample size was calculated. The questionnaire that was used in this research to collect the data had two parts: a) personal characteristics including age, marital status, interest in the field of study, and employment status; (b) related questionnaire to the OSCE station. Validity of these questionnaires was determined using face and content validity, and they were modified by the midwifery faculty members and medical education team after developing the questionnaires based on the courses' references. The reliability was confirmed by a Cronbach's alpha coefficient of 0.97. Scoring the related questionnaires to the OSCE examination stations was based on a five-point Likert scale from 5 (highest score) to 1 (the smallest score). In this test, scores higher than 50% was considered acceptable for the students. Before holding the tests, samples were in clinical skill laboratories and randomly received identity numbers for participation in examination. Then, they were divided into three groups of 9 members and entered the clinical skill laboratories. After entering the laboratory, the methodology and stations' turnings were explained to them. Then, each student entered the station and was asked to perform the task. They were guided to the next station after finishing the task from the previous station. Students did not contact each other during the examination. Then, each student passed the OSCE examination at each of the 8 stations and left the examination place without any contact with other students. Then, the next group entered the laboratory. This examination was designed at 9 stations (7 practical station, one reception station, and one knowledge station) with equal 7-minute time for each station. Samples' skills at 8 stations were assessed by the observing professors. Finally, the obtained scores from the related questionnaires to the OSCE examination stations were analyzed using SPSS version 19 (IBM Spss statistical, prentice hall, USA).

Ethical considerations

An authorization with the ethical code 395097 was obtained from the research chancellor of the Isfahan University of Medical Sciences for executing the test. The goals of the study were explained to the participants and informed consent was obtained from them. In the present study, general results are published and the results of individuals

are not stated. Finally, all the participants in this research were appreciated for their cooperation.

Results

The mean age of participants was 20.4 years. Overall, 77.77% of the students stated that they were interested in their educational field, and 95.59% of them were unemployed. Results revealed consistency in the samples regarding their individual characteristics. Reviewing the score of clinical ability of the students at each OSCE station showed that the mean score of the students at pelvic examination was 57.96 from a total of 145 (39.97%) with 17.63 standard deviation (SD); the students' mean score at bladder catheterization was 76.96 out of 115 (66.92%) with 19.19 SD; students' mean score at Leopold examination was 53.40 out of 125 (66.92%) with 10.40 SD; students' mean score at Fetal ECG interpretation was 45.44 out of 90 (50.49%) with 22.26 SD; students' mean score at physical examination was 40.48 out of 185 (21.30%) with 12.45 SD; students' mean score at fetal resuscitation was 48.81 out of 100 (48.81%) with 10.08 SD; students' mean score at breast examination was 56.36 out of 120 (56.36%) with 15.24 SD; and students' mean score at answering the questions was 46.99 out of 200 (23.49%) with 12.87 SD. In addition, results showed no significant relation between the score of students' clinical abilities in the examination and their personal characteristics such as age, interest in their education field, and job.

Discussion

Results of the present study showed that students gained a score of less than 50% at pelvic examination, Leopold examination, fetal resuscitation, and responding to midwifery clinical questions, while these procedures are the least minimum that must be known by graduated students who are intended to work at hospitals, health centers, and medical centers. Also, Mousavi *et al.* (2015) in their research revealed that the level of achieving the minimum of learning in the midwifery students at the neonates ward was relatively desirable in the range of 30% of the cases and undesirable in 70% of the cases, at the maternal-fetal health promotion and family planning was desirable in 58.33% of the cases and relatively desirable in 25% of the cases, and was undesirable for other cases and wards.^[15]

In the present study, scores higher than 50% were considered as desirable and acceptable for this group of students and students only received a desirable score at breast examination and bladder catheterization stations. Thus, it was revealed that midwifery students before starting their internship in the field were not efficiently skilled in many essential clinical skills. Therefore, more attention should be paid to these skills in the internship programs or trainings by the professors, and also, students are expected to consider their weaknesses.

Dadvar *et al.* (2013), by holding OSCE for nursing students, found that they had significant defects in their basic clinical skills as 8.3% of the students were weak at bladder catheterization for women, 16.7% were good, and none of them could reach the excellent level.^[17] Results of the present study are also in agreement with the results of Dadvar *et al.* study. Although, students can perform the catheterization well enough, their scores were lower than 50% and they were considered weak.

Natalian Villegas *et al.* (2016) in their research also showed that the highest OSCE score for nursing students at the pre-graduation period was at the stations of confrontation with nipple crack and depressed nipple (Min = -2.57, SD = -0.84, range = 1-3). The lowest score was at the station of pumping the breast, how to remove the nipple from infant's mouth (Min=-7.96, SD=-1.745, range=4-10), and infant's position while breastfeeding (Min=-1.65, SD=-0.714, range=0-2). Finally, they found that OSCE is a valuable method for assessing clinical competency, and should be considered as a part of the educational curriculum.^[18]

Although, the results of Michael and Villegas studies are different in the type of the assessed skills, in the general conclusion of the present research which mentioned OSCE as a proper method to identify students' strengths and weaknesses, the studies are in agreement with each other. Michael and Villegas (2014) held the OSCE examination to prepare the first year undergraduate students of midwifery in Australia at stations such as assessment of the infants who were delivered by caesarean section and monitoring the mothers after giving birth. At the end of the examination, after taking the opinions of the midwifery students, it was revealed that the students believed that OSCE has increased their self-confidence and ability to perform in clinical environment.^[19]

Yagzava *et al.* (2015) were able to find the weaknesses of the midwifery students in a series of procedures related to various birthing steps, neonate resuscitation, and maternal-fetal health care.^[4] Therefore, it was observed that the studied cases in the present study, like other studies, have encountered weaknesses in the main procedures of midwifery. This problem would indicate that making more efforts for clinical education of the midwifery students is essential.

Moreover, high standard deviation of the scores at each OSCE station showed that learning levels are not integrated with students' abilities in the clinical skills, and a great difference exists between the minimum and the maximum scores. Of course, this depends on various factors such as students' abilities or lack of similar conditions for teaching all of the students; but the interpretation of this fact is not the aim of the present research. However, the difference in students' scores in the results of the present study could indicate the appearance of students' strengths

and weaknesses, which are very essential for the students, professors, and their educational planners to become aware of them.

Malekzadeh *et al.* (2015) held the OSCE examination for nurses, midwives, and anyone who passed the resuscitation course. They found that the participants' ability in resuscitation was less than the expected level.^[20] Results of the present study are similar to the results of the study by Malekzadeh. The OSCE examination of both studies was able to show the real clinical abilities of the students, while weaknesses of the students could not be determined by reviewing their scores based on their internship checklist and common theoretic exams of the students in the faculty; because the students' scores are so close to each other. Valeria Smith *et al.* (2012) in a review article an Ireland-based study, showed the clinical competency of midwifery students using the OSCE examination for skills such as midwifery emergencies, pharmacology and drug administration, breastfeeding, and supplementary food for the infant. They mentioned OSCE examination as a valuable strategy to assess the clinical competency and knowledge promotion of the students, and also a motivation for creating a variation in the education of midwifery students.^[21] The results are different in the type of measured skills between the two studies, but they are in agreement in the manner of finding the students' strengths and weaknesses.

Thus, according to the results of the present research, the designed OSCE examination could obtain the clinical condition of the students along with their strengths and weaknesses. Therefore, it can be predicted that, by performing this OSCE examination, students can practice to compensate their weaknesses and have more self-confidence and ability when entering the workplace. Florence *et al.* (2012) stated that OSCE examination is a golden standard assessment method that is proper both for clinical competency and psychomotor skills assessment.^[22] The limitations of the present study were tiredness of the assessment professors and students' concerns about leaving a negative impact on their professors by not being efficiently ready for the tests. It was not possible to execute this research in the hospital due to lack of necessary facilities for executing each OSCE station procedure for all the participating students.

Conclusion

In the present study, students achieved scores less than 50% for skills of pelvic examination, Leopold examination, physical examination, and neonate resuscitation, while these procedures are the minimum skills that the students must be aware of after graduation and before entering to hospitals, health centers, and medical centers; so more attention should be paid to them while planning internship programs. Moreover, achieving scores higher than 50% in skills such as bladder catheterization, fetal ECG interpretation, and breast examination showed the

acceptable level of students' skills; by finding the reason for these higher scores, students' performance could be improved as much as possible in clinical performance, and it should be considered in suggested plans to the authorities and planners of this field.

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Conflicts of interest

There are no conflicts of interest.

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