Designing and implementing the test Objective Structured Field Examination (OSFE) for improving assessment of internship course of anesthesia students

Mohammad Reza Afhami

Medical Education Research Center, Tabriz University of Medical Sciences, Tabriz-Iran
Afhamy_Dr@yahoo.com

Abstract: Background: One of the main subjects of training and assessing medical science students is to promote their knowledge, attitude, and skills as is too accurately and correctly assess them. Scientific evidence shows that theoretical assessment of students through written and oral exams cannot suffice to determine their skill performance and competence, making it necessary to find a new method. Therefore, we decided to examine internship course in anesthesia through an objective structured field examination (OSFE). The goal was to test clinical skill performance and competence of anesthesia students based on the same criteria, namely, by an instructor's observation of the student's skills and assessment based on pre-designed checklists. **Materials and methods:** This study enrolled 25 anesthesia students who had completed internship course in the form of a final exam at the Nikookari Teaching Hospital in Tabriz - Iran based on using OSFE method. In this study, data collection tool was skill assessment checklists for skills including identifying the patient and controlling their files, preparing the required equipment for anesthesia, intravenous cannulation, maintenance of anesthesia, endotracheal extubation, recovery room care and patient's discharge from recovery room. By scoring each procedure, the results of the checklists were evaluated and analyzed through qualitative statistical methods. **Results:** In this study, the mean of the final score was 16.27±1.41, and that of the following skills was 18.46±1.3 for identifying the patient and controlling their files, 16.67±1.4, preparing the equipment for anesthesia, 17.34±1.8, endotracheal extubation, 16.00±2, maintenance of anesthesia, 17.72±1.2, recovery room care, and 14.00±1.1 for patient's discharge from recovery room. The university examiner for training program approved the examination as excellent. Moreover, the students were content with this assessment method and assess it as excellent with the mean of 72.43±10.18. **Conclusion:** This examination improved assessment methods of skill performance and competence of anesthesia students by means of the same criteria. We suggest that the above-mentioned method, which is a revised version of OSFE be implemented in other fields of medical sciences.

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1. Introduction

Assessment of clinical skills is assessing the ability and competence of a student's function. A student's function should be built upon scientific knowledge, judgments, and inference. However, assessing such skills is complicated (Rezaie, 2007). One of the essential subjects in training and assessing students in medical sciences is promotion of knowledge, attitude and skills, and their accurate and correct assessment. Training and assessing should be conducted to enable students to practice their knowledge and skills at work and to adjust themselves to the workplace after graduation. Thus it is imperative that students in real environments or simulated workplace be trained and be evaluated while under real work conditions or in simulated workplaces. Scientific evidence shows that theoretical assessment of students by written and oral examinations cannot suffice to determine their skills and abilities and those we need alternative methods to achieve our educational goals (Tabrizi, 2011). Harden and et al. (1970) designed the objective structured clinical examination to test students' clinical skill performance and competence. They wanted to examine their clinical competence individually by pre-designed stations and within a specific time limit (Harden and Gleeson, 1999). In 2004, Sharrif and Shadpour conducted a similar method (OSFE) to practically assess skills and competence of medical students in health. The objective for OSFE assessment was to evaluate students' skills and competence based on the same criteria according to which the examiner assess the student while watching the student performing and filling a pre-designed questionnaire. This research aimed at improving the assessment methods for the skills and competence of the undergraduate anesthesia interns at the Tabriz University of Medical Sciences. It was conducted at Nikookari Teaching Hospital.

2. Material and Methods

The examination setting comprised rooms called stations. At each station a general skill including multiple sections was assessed. There was a scenario for each station that was posted on the door. Within the time limit already designated for each station, students had to finish all their tasks. Each station had an instructor who subjectively assessed the performance of the student by filling the checklist. Students did not need the instructor unless they were asked by the instructor to explain what they were doing. As the time was over, the bell rang to mark the end of the examination time at the station. The student had to leave the station for the next one and this was to be repeated until the student had gone to all stations. The stations designed for assessment of skills were as follows: identifying patient and controlling their files, preparing the equipment for anesthesia, intravenous cannulation, and maintenance of anesthesia, endotracheal extubation, recovery room care, and patient's discharge from recovery room. The results were scored for each station and were analyzed by means of qualitative statistical methods. This method was for the first time implemented completely and in accordance with the standards at Nikookari Teaching Hospital in Tabriz-Iran. The university assessment authority evaluated this study on the undergraduate anesthesia students.

3. Results

According to data analysis, all the students were discontent with the method and quality of the written and oral exams due to the deficiency of the tools to correctly assess their competence. Majority of the students in this study were content with the objective field structured examination and considered it a good method to assess practical skills because they implemented how to use their skills in a real environment. They confessed that this method was fair and that it could provide a good means to distinguish good and bad students. The students were content with the good attitudes of the professors and personnel at the examination location saying that their friendly and good attitudes made it less stressful. In table 1, the results of the examination are displayed.

The students were content with this assessment method (the mean: 72.43±10.18). The results of data analysis showed that majority of anesthesia students were highly satisfied with the OSFE and they agreed that the new method was proper for assessing skills in internship courses. As we mentioned earlier in the introduction, Shariff and et al. (1994) designed this method to practically evaluate social medicine students' competence (Sharife and Shadpour, 1992). In 2001, Tabrizi and et al. used OSFE to assess the graduating rehabilitation students in a standard manner. It was also used at the rehabilitation educational center in the province of the Eastern Azerbaijan (Tabrizi, 1999).

Table 1. The mean of results in examination

Station	Station name	Total score of students in each station out of 20
1	Identifying the patient and controlling their file	18.46±1.3
2	Preparing the equipment for anesthesia	16.67±1.4
3	Intravenous Cannulation	15.72±1
4	Maintenance of anesthesia	16.00±2
5	Tracheal extubation	17.34±1.8
6	Recovery room care	17.72±1.2
7	Patient's discharge from recovery room	14.00±1.1

4. Discussion

There were no operative challenges or difficulties; however, some students were stressed. For the examiners, the problem was how to keep calm and patient for all students equally during the scenarios. The examiners had to be patient, emotionally stable and knowledgeable. They could not be substituted. Another challenge was the difference between what they had learned theoretically and what was available in the field (assessment setting). To solve this problem, the students were asked to report the discrepancies by making a note, putting them on the table or mentioning them orally. Our literature review proved that there are not many articles on this method, but various studies in 1975 showed that objective structured clinical examination was effective for assessing students of medicine, occupational therapy, physiotherapy etc. (Minion, 2002; Major, 2005). The results indicated that majority of the students were greatly satisfied with OSFE method as a substitute for oral and written

examinations. The new method was a proper means to assess achieved skills through internship course. At the University of California, Perisil and et al. (1998) used OSCE for the final exam of family medicine students. This study proved students' excellent function and their high satisfaction with the assessment method. The content validity for the examination was high (Prislin, 1998). Furthermore, Hugs believes that this method is focused on students' function and that it is a comprehensive and accurate method to assess clinical skills and competence of students and their interaction with patients and their companions (Hodges, 2003). One of the advantages of this assessment method was its fairness and use of pre-designed standard checklists for all students. Majority of the students believed that the OSFE was scored to focus on learning goals and expected skills.

Figure 1- Snapshots of one of the workshops

Also they believed that the examination was fair and indiscriminate. Another advantage of this method was its objectiveness and its avoidance from arbitrary and subjective matters. The positive thing about this examination was the promotion of students' abilities.

As the evidence showed, the assessment method affects students' studying and learning methods (White and Ewan, 1995). One of the disadvantages of this method could be the stress that students felt during the exam. They also found it highly time-consuming, expensive, and tiresome. In this study students complained about the stressful conditions, which has been already discussed (Townsend, 2001).

It is recommended that the recorded videos be watched for the next examination as it is suggested that the examination procedure be rehearsed by students prior to the exam and to ask for their feedback after each station on the examination day. It is important to say that we should use a method that can improve as time passes, and instructors develop their skills by attending workshops. In the end, the findings showed that OSFE could be a very suitable tool to assess skills, competence and capabilities of all medical students.

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Corresponding Author:
Dr. Mohammadreza Afhami
Department of Anesthesiology, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran.
E-mail: Afhamy_Dr@yahoo.com

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