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The impact of OSCE test workshop on reducing anxiety in anesthesia and operating room students

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Abstract--Background: Objective Structural clinical evaluation (OSCE) is newly emerging evaluation methods that has been used in recent years in the medical and paramedical fields. However, one of its disadvantages is that it causes anxiety, which, in turn, reduces the

effectiveness of the test. Therefore, the main purpose of the present study was to evaluate the OSCE test familiarity workshop effectiveness on test anxiety in anesthesia students and operating room of Ilam University of Medical Sciences, Iran. Methods: This research was of quasi-experimental study nature performed on 72 students who were studying anesthesia and operating room. In doing so, the students in each class were randomly assigned into control and intervention groups. Then, a workshop was held one hour before the test to familiarize students with OSCE stations, how to ask questions and how to answer students in the intervention group. Then, the Spielberger questionnaire was also completed. Besides, data analysis was performed using SPSS 21 statistical software (Chicago, IL, USA). Results: The highest frequency (52.77%) was related to anesthesia participants, of whom 58.33% were girls. The mean score of anxiety before the intervention was 48.15 $\pm$ 7.15 which decreased to 30.80 $\pm$ 6.98 after the intervention ($P < 0.042$). Conclusion: The OSCE test workshop plays a very important role in minimizing students' anxiety from high-to- moderate to mild degrees.

Keywords---Anxiety, Exam, OSCE test, Spielberger Anxiety Questionnaire

Introduction

Practical training and its consequent evaluation are the most fundamental part of medical, paramedical and nursing education. ^[1] Hence, assessing students' clinical competence is one of the most difficult tasks for faculty members. The European Medical Association Guide recommends a variety of clinical evaluation tools such as Objective Structured Clinical Evaluation (OSCE) tailored to educational goals. ^[2]

This method was first developed by Harden in 1975. In this method, a series of scheduled stations are identified in which test takers are asked to perform specific clinical tasks over a period of time. The test could evaluate basic skills regarding cognitive-emotional and psychomotor fields.^[3] To be accepted, each student should obtain a score of 80-60% in each station.^[4]

Today, medical education professionals believe that objective structural clinical evaluation (OSCE) enjoys an acceptable validity and reliability for measuring clinical skills compared to oral and written exams such that it is proposed as a golden method for evaluating medical and paramedical students.^[5] In fact, the OSCE test evaluates how to perform a required skill based on the Miller pyramid.^[6] Structural clinical evaluation could thoroughly assess students in terms of clinical skills much better than what they might understand.^[7]

Like other evaluation methods, the OSCE test has both a number of advantages and disadvantages and limitations. For example, it measures a wide range of skills. Also, its scoring is proven to be accurate and its feedback is instantaneous.^[8] However, one of the most important disadvantages is that it

makes students anxious (due to time constraints and observation by the assessor), which also results in their dissatisfaction.^[9] Exam anxiety is considered a factor that hinders students' academic achievement, which imposes huge costs on communities. Some factors can aggravate anxiety in students which as a result influence their performance.^[10] Anxiety aggravators may include observation by the evaluator, time constraints and lack of familiarity with each station.^[11] In this regard, there were numerous reports of hand tremors and changes in voice tone and even in some cases, the students were not able to keep on the exam throughout the OSCE test due to severe anxiety.^[12]

Also, different studies reported different causes for students' anxiety, including the presence of professors in the exam session, incomprehensible questions and unfamiliarity with each station.^[13] As a result, it seems that since most students find this exam anxious and on the other hand, a great deal of anxiety is due to professor's feedback and students' unfamiliarity with test stations, certain methods should be devised to minimize anxiety in this evaluation to greater extent.^[14]

Among the methods that researchers have predicted to reduce anxiety are stress training, muscle relaxation, listening to music, voice therapy, and self-encouragement.^[15] Reportedly, each of the above-mentioned methods reveals different effect on reducing students' anxiety. Although some of these methods might reduce anxiety, their impact would be of insignificant degree. As a result, considering the anxiety significance in the final evaluation on one hand, and the fact that so far, to the best of our knowledge, no specific studies have been conducted on holding a workshop to justify operating room, anesthesiologists' students and instructors to perform OSCE test at Ilam University of Medical Sciences, the present study was conducted to evaluate the OSCE workshop effectiveness on students' anxiety.

Methods

Study design

The present study is a quasi-experimental in nature. The study included the intervention and the control groups. In the intervention group, an introductory workshop was held on the OSCE test, whereas, no intervention was performed in the control group. The statistical population also included 72 senior 19–21-year-old anesthesiology and operating room students who participated in the final OSCE exam before entering the internship and after completing the internship.

The students of each class were assigned into two groups of intervention ($n = 36$) and control ($n = 36$) through simple random sampling. Also, anesthesia and operating room students were divided into two sub-groups of 19 and 17, respectively. Then, a group of 19 anesthesia students and a group of 17 operating room students were exposed to intervention protocol.

It should be noted that the Spielberger questionnaire was first administered and completed by all the intervention and control students on the exam day. Then, a workshop was held one hour before the test for students in the intervention group. Also, a briefing session was held for the trainers one hour before the test.

The students were taught to maintain their physical tidiness, how to enter each station, how to deal with the instructors of each station, and to get familiar with the number and duration of the station, and the type of questions, as well as the practical skills. Also, the briefing session of the instructors included establishing an intimate relationship with the student and sequentially asking simple to difficult questions.

Then, the intervention group sat the test session with important information. After the test, the demographic and Spielberger anxiety questionnaires were completed again by the intervention and control groups. The Spielberger questionnaire contained 40 questions, of which 20 questions were about state anxiety and the other 20 questions were about trait anxiety. State anxiety questions were scored on a four-point Likert scale (by no means - sometimes - generally - too much), and trait anxiety questions were scored on a four-point scale (almost never - sometimes - most of the time - almost always).

Finally, according to the scores, the first score indicated state anxiety and the second score indicated trait anxiety. Interpretive criteria for overt and covert anxiety based on the normative research of overt and covert anxiety test are shown in Table 3. Also, the reliability of the questionnaire in various studies is calculated %87. [16]

Statistical analysis

To compare the mean between the study and control groups, the t-test was used. Also, the risk ratio (RR) and 95% confidence interval (CI) were used to measure the intervention. Statistically significant level was considered less than 5%. Furthermore, SPSS Version 16 (SPSS, Chicago, IL, USA) statistical software was used to analyze the data.

Ethical considerations

The present research plan was granted an ethics code number: IR.MEDILAM.REC.1398.189.

Results

According to the results of the intervention group, 52.77% of students were studying anesthesia and 47.23% of students were studying operating room. In the intervention group, also, 80.55% of students were single and 19.44% were married. Besides, 58.32% of students were female and 66.66% were male. In terms of economic status, 47.22% of the students in the intervention group were in average economic status. Furthermore, as for father education, students were divided into 7 groups, with diploma status representing the highest frequency with 41.66%. In case of maternal education, the level of secondary education and diploma presented the highest frequency. Also, Kolmogorov-Smirnov test showed that there was no statistically significant difference between groups regarding individual characteristics (Table 1).

At the onset of the study, the overall mean of anxiety was 48.15 $\pm$ 7.15, which was classified into moderate to high anxiety group based on the interpretive

criteria of Spielberger questionnaire. Also, the mean anxiety score of the participants was not significantly different between both groups, while, the mean anxiety score decreased to 30.80 $\pm$ 6.98 after the workshop for the intervention group (Table 2). In addition, at the beginning of the study, the mean anxiety score in the control group was 46.9 $\pm$ 10.01. However, the overall anxiety score decreased to 43.2 $\pm$ 5.09, which was not statistically significant at the study termination (Table 2). Also, feelings of calm, safety, self-confidence, and satisfaction after the intervention were 10.7, 10.5, 16.7, and 12.8 times higher than before the intervention. This difference was statistically striking. Other items of anxiety shown in Table 4.

Table 1
Frequency distribution of study units according to demographic characteristics

	Study group, n (%)	Control group, n (%)	p value
Field of Study			
anesthesia	52, 2 (38)	52, 7 (19)	0.182
Operating room	47, 2 (34)	47, 2 (17)	0.179
Gender			
Female	55, 5 (40)	58, 3 (21)	0.540
Male	44, 4 (32)	41, 6 (15)	0.512
Marital status			
Single	81, 9 (59)	80, 5 (29)	0.520
Married	18, 1 (13)	19, 4 (7)	0.480
Monthly income status			
Low	47, 2 (34)	25, 0 (9)	0.415
High	52, 2 (38)	75, 0 (27)	0.560
Father's education			
Lower diploma	61 (84, 7)	31 (86, 1)	0.21
Higher diploma	11 (15, 2)	5 (13, 7)	0.23
Mother's education			
Lower diploma	59 (71, 8)	29 (91, 2)	0.172
Higher diploma	13 (18, 1)	7 (19, 4)	0.21

Table 2
Comparison of mean and standard deviation of anxiety levels between the two groups at the beginning and end of the study

	Study group	Control group	p value
Overall anxiety score at the beginning of the study	48.53 $\pm$ 7.15	46.9 $\pm$ 1.10	0.04
Overall anxiety score at the end of the study	30.8 $\pm$ 6.98	43.2 $\pm$ 5.9	0.87

Table 3
Interpretive criteria for overt and covert anxiety based on the normative research
of overt and covert anxiety test

Covert Anxiety	Overt anxiety:
Anxiety rate of 20-31 mild anxiety	Anxiety rate of 20-31 mild anxiety
Anxiety rate from 32-42 moderate to low anxiety	Anxiety rate from 32-42 moderate to low anxiety
Anxiety rate from 43-53 moderate to high anxiety	Anxiety rate from 43-53 moderate to high anxiety
Anxiety rate from 54-64 relatively severe	Anxiety rate from 54-64 relatively severe
Anxiety rate from 65-75 severe	Anxiety rate from 65-75 severe
Anxiety is very high from 76 up	Anxiety is very high from 76 up

Table 4
Comparison of anxiety type between the two groups at the beginning and end of
the study

Type of anxiety	Study group		Control group		Risk ratio (95% CI)	P value
	Before intervention	after intervention	Before intervention	after intervention		
Lack of calm	21	1	16	18	10.7 (1.5-74.1)	0.001<
Lack of Security	23	1	23	20	10.5 (1.5-72.6)	0.001<
Excitement	12	2	21	20	0.4 (0.9-16.1)	0.02
Nervousness	26	1	20	25	6.5 (2.1-19.7)	0.001<
Lack of Vitality	36	3	26	31	6.5 (2.1-19.7)	0.001<
Having stress	29	2	24	23	6.2 (1.6-24.1)	0.001<
Lack of satisfaction	36	3	29	24	4.9 (1.6-14.8)	0.001<
Lack of self-confidence	32	1	31	22	16.7 (2.3-117.2)	0.001<
Having doubts	24	2	15	11	4 (1.09-14.6)	0.004
Worry	22	3	14	20	4.6 (1.5-13.8)	0.003
Being confused	25	1	23	6	3.6 (0.5-22.8)	0.06
Being steadfast	28	2	23	31	9.05 (2.3-35.5)	0.001<
Being satisfied	20	1	19	24	12.8 (1.8-89.6)	0.001<

Discussion

The findings showed that workshop on OSCE test one hour before the test reduced the test anxiety of students in terms of the study units. Also, the mean anxiety score of the participants at the beginning of the study was moderate to high, which increased compared to the control group. In addition, students' anxiety in the study units was mild at the end of the study which revealed a significant reduction (Table 2). This study also showed that there was no relationship between field of study and anxiety. Furthermore, the severity of anxiety significantly decreased after the intervention (Table 4).

One of the broadest areas of research in recent decades has been anxiety and related areas. Recent studies show that anxiety disorders specially exam anxiety are the most common in the general population. Numerous studies have highlighted the importance of exam anxiety. Some researchers believe that exam anxiety prepares people for better study, while other researchers believe that reducing anxiety improves performance. For example, Mohammadi et al. showed that 60% of students had moderate to severe anxiety, which was consistent with our study.^[17] Also, Clark's study revealed that most of the participants reported severe exam anxiety.^[18] Various studies show that 10-30% of all students feel anxious when they are confronted with an activity that evaluates their performance.^[19] The study of Bohr et al. indicates a high intensity of anxiety in the face of performance appraisal situations that is consistent with our study.^[20] It should be noted that the differences amongst different studies on students' exam anxiety can be attributed to the impact of exam anxiety on various factors as well as people's perceptions of these factors. In this regard, Ghazanfari et al. believe that the factors such as exam questions preparation and the educational system can affect students' anxiety.^[21]

Various studies show that the Holy Quran and music can reduce anxiety. For instance, Mirbagheri's research showed that the Holy Quran reduces anxiety before surgery.^[22] Also, Majidi and Najafi et al. studied the patients referred to the coronary angiography and myocardial infarction wards and confirmed the reduction of anxiety in patients by listening to the Holy Quran.^[23] Numerous international studies have examined the effect of music on reducing anxiety, including Wang's research on the effect of music on patients undergoing mechanical ventilation^[24] and Chank on the severity of gynecological anxiety during Mandel surgery^[25] after cardiac surgery.^[26]

Also, a literature review of different studies shows that various methods have been used to reduce anxiety (exam anxiety, disease anxiety, etc.). For example, Akbari's study confirmed the reduction of anxiety in students after listening to the Holy Quran.^[27] The present study showed that arranging a workshop to familiarize students and instructors one hour before the OSCE test would reduce the anxiety score from moderate to mild anxiety. Additionally, instructors were more justified as how to prepare and handle test environment and atmosphere optimally.

Conclusion

The results of the present study showed that OSCE test workshop one hour before the final exam reduces students' anxiety score from moderate to high anxiety to mild anxiety. In general, the high level of anxiety necessitates calculated intervention to improve mental health programs, implementation of prevention programs, continuation of psychological services, establishment of a close relationship between students and professors and identification and planning to deal with the resulting anxiety and its consequences. Also, it is recommended that orderly and chronological sequences of questions is observed such that first simple questions are put forward followed with more difficult ones in order to reduce students' anxiety as much as possible.

Declaration of interest

The authors declare no conflicts of interest.

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