DOI: 10.4274/terh.galenos.2021.08683
J Tepecik Educ Res Hosp 2023;33(1):50-8

CLINICAL RESEARCH / KLİNİK ARAŞTIRMA

Collaboration with Medical Education: Board Exams of Medical Specialist' Associations

Tıp Eğitimi ile İş Birliği: Uzmanlık Dernekleri Yeterlik Sınavları

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Cite as: Başer A, Tengiz Fİ, Sezer H, Demir H, Şen E, Şahin H. Collaboration with Medical Education: Board exams of Medical Specialist' Associations. J Tepecik Educ Res Hosp 2023;33(1):50-8

Abstract

Objective: In Turkey, the boards were established in the last twenty years. Collaboration between boards and medical education discipline will lead board exams to be valid, reliable, acceptable, and fair. In this study, it is aimed to reveal the areas where boards can collaborate with the medical education discipline.

Methods: A workshop was held within the scope of a congress held in İzmir in February 2020. In the workshop, it was aimed to raise awareness about the stages of board examination from planning to implementation and the knowledge and skills that board members should have. At the beginning of the workshop, participants were taken to the 5-station Objective Structured Clinical Examination (OSCE). OSCE stations evaluated participants' characteristics, proficiency exam planning, question preparation, question evaluation, and problem-solving. A discussion session was conducted based on the basis of participant performances. The workshop was completed with a presentation on deciding the pass-fail score of an exam.

Results: It was determined that the participants did not have information about board exams and were not involved in planning. It was determined that the participants could not write multiple-choice questions in accordance with the criteria and could not technically evaluate the prepared multiple-choice questions. At the problem-solving OSCE station where performance was evaluated, some participants could not use the time effectively and did not consider the rules. A session was held to decide the passing score of the OSCE that participants were included in. The Angoff technique was used and the scores determined by the participants were visualized, and the importance of reconciliation for the passing score was discussed.

Conclusion: The workshop showed that there are areas that can be collaborated with the medical education discipline in planning and implementing board exams.

Keywords: Medical specialty board exam, medical education, collaboration, faculty development

Öz

Amaç: Türkiye'de son yirmi yıl içinde uzmanlık derneklerinin yeterlik kurulları oluşturulmuştur. Yeterlik kurullarının başlıca işlevi uzmanlık alanına ilişkin yazılı sınav ve sözlü-uygulamalı yeterlik kurulları ile tıp eğitimi disiplinin iş birliği yapması kurul sınavlarının geçerli, güvenilir, kabul edilebilir ve adil olmasına yol açacaktır. Yeterlik kurullarının sınav planlanmasında ve yürütülmesinde tıp eğitimi disiplini ile iş birliği yapabileceği alanların ortaya konması amaçlanmaktadır.

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Received/Geliş tarihi: 27.10.2021
Accepted/Kabul tarihi: 17.12.2021

Öz

Yöntem: Şubat 2020'de İzmir'de düzenlenen bir kongre kapsamında çalıştay düzenlendi. Çalıştayda yeterlik sınavlarının planlanmasından yürütülmesine kadar olan aşamalar ile kurul üyelerinin sahip olması gereken bilgi ve beceri konusunda farkındalık yaratılmaya çalışılmıştır. Çalıştay üç bölüm olarak kurgulanmıştır. Birinci bölümde çalıştay katılımcıları, 5 istasyon OSCE düzeneğinde hazırlanan yeterlik sınavına alınmıştır. Objektif yapılandırılmış klinik sınavı (OSCE) istasyonlarında katılımcı özellikleri, yeterlik sınavı planlama, soru hazırlama, soru değerlendirme ve problem çözme ele alınmıştır. İkinci bölüm olan tartışma oturumunda, her bir OSCE istasyonuna ait kuramsal bilgi aktarılarak katılımcı performansları ve olması gereken performanslar arasındaki farklar tartışılmıştır. Üçüncü bölümde ise bir sınavın geçme-kalma puanına karar verme konusu ele alınmıştır. Çalıştayın tamamında etkileşimli öğrenme stratejileri kullanılmıştır.

Bulgular: Katılımcıların hiçbirinin yeterlik sınavının planlanmasında görev almadıkları ve planlamada gerekli olan kriterlere ilişkin bilgi sahibi olmadıkları saptanmıştır. Alanına ilişkin, tek doğru cevaplı, çoktan seçmeli soru yazmaları istenen katılımcıların hiçbiri soru yazma kriterlerine uygun soru yazamamıştır. Katılımcılar kontrol listesi eşliğinde teknik olarak doğru ve yanlış hazırlanan iki adet çoktan seçmeli soruyu değerlendirmiştir. OSCE'nin son istasyonunda bir gözlemci bulunmuştur. Belirlenen kurallar çerçevesinde problemi çözmeleri istenen katılımcıların ikisi verilen süreyi etkin kullanamama ve kuralları dikkate almama nedeniyle başarısız olmuştur. Tartışma oturumunda yeterlik kurulları ve sınavları, öğrenme hedeflerine uygun çoktan seçmeli soru yazma, çoktan seçmeli sorularda teknik analiz ve performans değerlendirme tekniklerinden kuramsal bilgi zemininde tartışma yürütülmüştür. Bir sınavın geçme-kalma puanına karar verme konusunun ele alındığı bölümde; katılımcılara dahil oldukları sınavla ilgili Angoff yöntemi ile uygulama yapılmıştır. Katılımcılardan, her istasyonun toplam puan içindeki ağırlığını ve "sıyırtarak" geçme sınırını belirlemeleri istenmiştir. Geçme puanı için uzlaşmanın önemi tartışılmıştır.

Sonuç: Çalıştay, yeterlik kurullarının sınav planlanması ve yürütülmesinde tıp eğitimi disiplini ile iş birliği yapabileceğini göstermiştir. İş birliğinin etkin olabilmesi için yeterlik kurullarıyla iletişime geçilmesi ve eğitici gelişimi programlarına katılımları gereklidir.

Anahtar Kelimeler: Uzmanlık yeterlik sınavı, tıp eğitimi, iş birliği, eğitici gelişimi

Introduction

Taking part in all levels of medical education is one of the most important duties that falls on medical educators[1]. In Turkey, training of the medical residents was formatted according to the regulations published in 1928[2]. The coordination board of specialty associations was established in 1994 with the work of the Turkish Medical Association to support education by specialist associations, ensure standardization, and reach the standards recommended by the European Medical Professionals Association[2,3]. In the last twenty years, boards have started to operate by the specialty associations in our country. A National Competence Board was established under the coordination board of specialty associations in 2004 to provide consultancy to boards and to monitor their activities[2]. One of the main functions of the specialty committee is to evaluate the physicians who have completed their residency by conducting written/oral/practical exams (board exams) to measure their knowledge, skills, and attitude competencies related to their field of specialization and to issue a qualification certificate[4,5]. In this way, information stays current in expertise, the quality of services, improving patient care, and patient safety is provided[6]. Boards should consider the basic principles of the assessment for the examination valid, reliable, and fair at all steps (planning-implementing-scoring)[1,6]. There is no obligation to attend these board examinations in Turkey. Associations prepare the exams on their own initiatives. Physicians who have this certification are expected to be named as "qualified" in this system developed by specialty associations to encourage professional development, establish a self-regulatory mechanism, and make the profession responsible to the public. Board exams are repeated at regular intervals to ensure that the certificate is updated. In some countries, such as the USA, a board exam certificate is required as a prerequisite for working at a hospital. The proportion of physicians who are certified by a board exam was 90% in the USA[4,7,8].

The standards set for measurement and evaluation are expected to evaluate the knowledge of the physician in a safe and comprehensive manner. Commonly used assessment methods include classical written exams, multiple-choice exams with single correct answers, oral exams, Objective Structured Clinical Examination (OSCE), simulation exercises, a review of case reports (cases), simultaneous surgery follow-ups or records, and patient outcomes. Measurement and evaluation are generally planned as two steps. In the first step, the Objective Structured Multiple-Choice Questions is used to measure the knowledge, while the OSCE technique is frequently used to measure the skills in the second step[4,6,7,9,10]. A reason OSCE is frequently preferred in board exams is that it is a method that can measure different information, performance, and behavior at each station. To reveal a valid and reliable OSCE, a team that has theoretical knowledge about the exam technique and can take responsibility in

applying this knowledge is needed[11,12]. One of the most important parts of board exams is setting standards. While determining the standard, answer to the question "at what value can the student graze the expected level of success?" is sought. The standard pass-fail score (cut-off value) should be determined and should not cause insufficient participants to pass or qualify to fail. Different passing scores were determined using different standard -setting methods. As with different assessment and evaluation methods, there is no gold standard method for board exams. The method that is trusted, evidence-based, and fit for purpose and known by the board members participating in the standard setting process is the gold standard. It is necessary to ensure that the method is practicality, validity, reliability, cost effectiveness, fairness, educational impact to all, and produces realistic results. Angoff, Ebel, and Nedelsky methods are defined as standard -setting methods in the literature. The most commonly used method among the mentioned methods is the Angoff method[5,13,14]. The collaboration between the boards and the medical education discipline will increase the quality of the exams. In this article, it is aimed to reveal the areas that can be collaborated with the Medical Education discipline in planning and conducting board exams.

Materials and Methods

In this article, This article is presented with a methodological design. The study was conducted according to the Helsinki Declaration, and ethical permission was obtained from the local Ethics Committee of Ege University. (date: 04.03.2021, number: E.74815). The congress of Family Medicine and Health Sciences was held in İzmir. A workshop was planned to address the collaboration areas of the boards and the discipline of medical education. In the workshop, it we raised awareness about steps from planning to implementing the board exams and the knowledge and skills that the board members should have. The workshop is structured into three parts. In the first part, workshop participants were taken to an exam prepared in a five-station OSCE setup. At OSCE stations, participant's demographic data, exam planning, question writing, evaluation, and problem-solving skills were evaluated.

• At the first OSCE station, it was aimed to warm-up the participants to this examination system and they were asked to introduce themselves with three words as a trainer and their age, gender, institution where they work, and their previous experience on board exams.

• At the second OSCE station, it is aimed to provide the participants with exam planning experience as a qualifying board member, and the following directive was given, "you are in charge of the board of a medical speciality related to your area of expertise. You have been given the task of planning the board exams (written, oral) to be held this year. Write down the criteria you considered in planning and their reasons."

• At the third OSCE station, it is expected for the participants to write questions for the exam and the following directive was given, "Write at least one multiple-choice question with one correct answer, five options, about your area of expertise in the board exam. State the reasons for suggesting this question for the exam."

• At the fourth OSCE station, it was expected that the participants would make a technical analysis of two multiple-choice questions that were prepared beforehand for the exam. One was technically correct, and the other was incorrect. The following directive was given to the participants, "evaluate the technical analysis of the following multiple-choice questions written by other faculty members for the board exam in accordance the statements given in the table. The directive and a checklist to be used in technical analysis are provided in the directive's annex."

• At the fifth OSCE station, accompanied by a supervisor, the following directive was given, "one day, Uncle Jack wanted to take a lamb, a tiger, some grass and go to the opposite shore of the stream. By taking the following rules into consideration, ensure that the lamb, tiger, and grass are transported to the opposite shore in the given time". It must apply certain rules and a performance within a limited time. In this station, participants' decision-making, using the time effectively and reasoning skills were evaluated. In the second part of the workshop, a discussion session was held and the theoretical background of each OSCE station and the differences between actual performances and expected performances were discussed.In the third part of the workshop, deciding the pass-fail score of the exam was discussed. The angoff method was used to calculate the pass-fail score of the OSCE exam applied to the participants. Interactive teaching strategies were used throughout the workshop. At the end of the workshop, feedback from the participants was received with an open-ended form.

Statistical Analysis

The socio-demographic data form developed by the researchers was used in the study. There are seven demographic questions such as gender, age, title, institution

where he works, whether he took part in the board exams, whether he participated in the board exam, and his educational characteristics. Measures of central tendency were used in statistical analysis.

Results

The workshop environment has been designed in such a way that the participants will directly encounter the OSCE exam mechanism as they enter the hall to gain a learning experience by living. After the five-station OSCE setup was completed, the participants were taken into the hall, and the information they had stated about themselves at the first station was presented to get to know each other.

a. Findings Regarding the First Part of the Workshop

Five people with an average age of 39.4±9.81 participated in the workshop. Participants have different titles (resident, Junior Prof. and Assoc. Prof.). All the participants work at a state university. None of the participants were previously involved in the planning of any board exam. 80% of the participants do not experience the board exam. When participants are asked to express their own characteristics as an educator; they defined them as observer, calm, curious to learn, disciplined, caring about different ideas, trying to understand the subject, making fun, talkative, adequate, patient, caring, tidy, hardworking, empathetic, and up-to-date (Figure 1).

Participants could not answer the question about the planning task of the board exams (written, oral) in the board

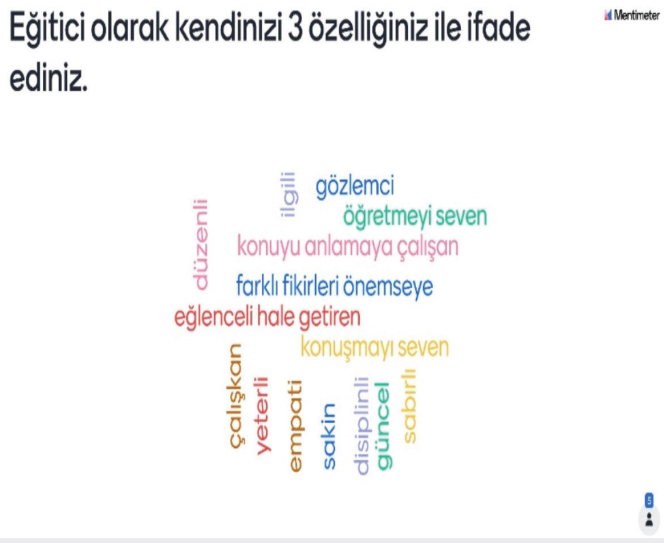


Figure 1. Participants' self-identification as educators.

related to the field of expertise. In the discussion session, it was determined that they could not adopt the planning task, were unaware of the requirements of this task, and did not have the knowledge of the criteria to be used in exam planning. In the station where the skill of writing multiple-choice questions with a single correct answer regarding the field, was evaluated. It was observed that the participants could not write questions that met all of the specified question writing criteria (Figure 2a, 2b). Participants evaluated the technical analysis of the two questions prepared for the board exam using a checklist. Participants could not find the differences in the evaluation between the questions technically correct and incorrect. In the last station of the OSCE, unlike the others, a supervisor was present. Problem-solving performance of the participants was evaluated in line with the directives. It was observed that the participants were satisfied with the presence of a supervisor while demonstrating their performance, and they could ask questions about performance (Figure 3a, 3b). Additionally, while three participants successfully completed the performance defined in the directives at the given time, two participants failed due to not being able to use the time effectively and not paying attention to the directives regarding the performance.

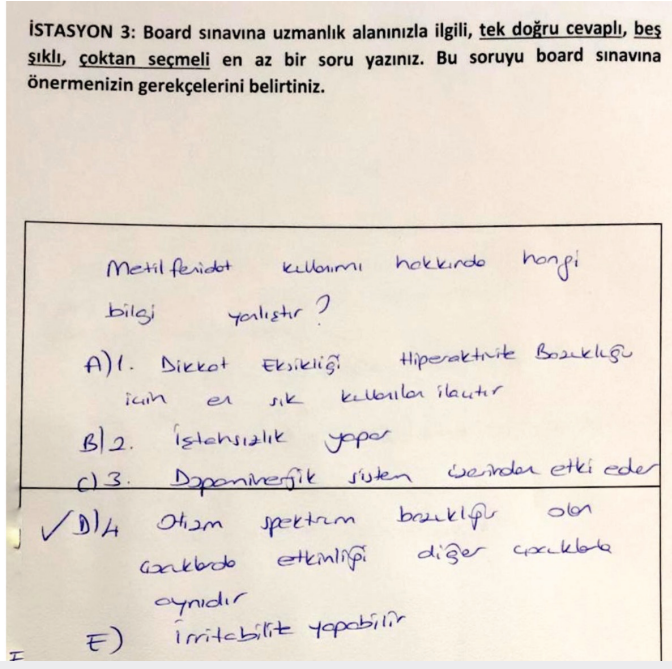


Figure 2a. Example of writing multiple choice questions (Participant A).

b. Findings Regarding the Second Part of the Workshop

After the first part was completed, short presentations and interactive discussion sessions were conducted under the following titles by the trainers (Figure 4a, 4b, 4c).

- Boards and board exams

- Writing multiple -choice questions in line with learning goals

- Technical analysis in multiple -choice questions

- Performance evaluation techniques

- Standard-setting and angoff technique

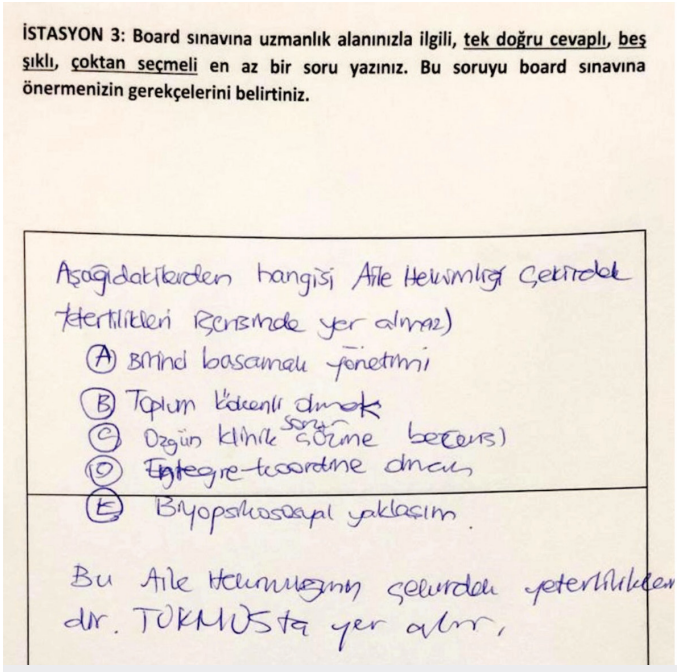
Resources about the presentations were shared to the participants.

c. Findings Regarding the Third Part of the Workshop

In the third part of the workshop, where the topic of deciding the pass-fail score of an exam was discussed, a deciding session on the success level of the OSCE exam they just experienced was conducted. The Angoff method was used because it is the most commonly used standard setting method in the literature.

Participants were asked to determine the weight of each station in the total score and the limit for "cut-off". The scores they indicate are visualized. Participants determined an average score of 71.8 (minimum: 53, maximum: 83) for the pass-fail score in the first round (Table 1).

Due to the wide pass-fail score range, the importance of reconciliation was emphasized, and a discussion was conducted. In this discussion, the requirement of reconciliation in the pass-fail score has emerged. For this purpose, the participants tried convincing each other by expressing the reasons for the points they gave. Participants agreed with an average of 73 points (minimum: 68, maximum: 78) in the second round (Table 2). Although the pass- fail score increased compared with the first round because of the reconciliation, the score differences between participants were minimized.


İSTASYON 3: Board sınavına uzmanlık alanınızla ilgili, tek doğru cevaplı, beş şıklı, çoktan seçmeli en az bir soru yazınız. Bu soruyu board sınavına önermenizin gerekçelerini belirtiniz.

Aşağıdakilerden hangisi Aile Hekimliği Çekirdek Yeterlilikleri içerisinde yer almaz)
(A) Birinci basamak yönetimi
(B) Toplum odaklı olmak
(C) Özgün klinik sorun çözme becerisi
(D) Entegre-koordine olmak
(E) Biyopsikososyal yaklaşım.

Bu Aile Hekimliğinin çekirdek yeterliliklerinden dir. TÜKMÜS'te yer alır.

Figure 2b. Example of writing multiple choice questions (Participant B)

Figure 3a. Performance stations.

Figure 3b. The last performance station.

At the end of the workshop, when the participants were asked about their opinions on OSCE stations, they stated that they found it "interesting" and especially the fifth station was "different from other stations". When asked about their thoughts on having a supervisor at the station, one person described the supervisor as a "cause of stress", while the other participants stated that having a supervisor had a "relaxing effect" and that they could "ask questions". At the end of the workshop, feedback was also received from the participants with an application that creates a word cloud (Figure 5). In the feedback, they stated that they learned the subjects of preparing questions in accordance with the learning goal, writing questions with the appropriate technique, and determining pass-fail scores. Participants stated that they were aware of their learning needs in item analysis, the Angoff technique, writing questions with appropriate techniques, OSCE planning, and skill assessment (Figure 6).

Figure 4a. Discussion session 1.

Figure 4b. Discussion session 2.

Discussion

In this study, it is aimed to reveal the areas that can collaborate with the medical education discipline in planning and conducting board exams. With a workshop, awareness was raised about planning board exams and different measurement techniques. Board exams conducted by specialist associations must be valid, reliable, cost-effective, applicable, practical, effective, and fair for each physician. Some specialist associations have developed checklists to conduct exams in accordance with these standards[5,15]. The evaluation of the competencies of physicians in medical education was determined by the Miller pyramid. Miller competence areas in the pyramid know what it is, knows how, and shows how it is done and does. The evaluation of physicians' competencies is carried out according to the Miller pyramid. One of the performance evaluation methods is OSCE. OSCE was first performed by Harden in 1975 to increase the validity and reliability of the current clinical performance evaluation. Since then, the use of OSCE has become widespread in both undergraduate and graduate clinical education[12,16]. OSCE was used for the first time in 1992 to evaluate the specialty competencies of physicians for performance evaluation in pre-graduate education[17,18]. Studies have shown that OSCE is used in board exams[19,20]. OSCE participants stated that they found the exam reliable and impartial because of the evaluation, and that they were satisfied with the evaluation of not only their knowledge but also their performance[17]. In our study, the process from

Figure 4c. Discussion session 3.

the planning of a board exam to its implementation was applied to the participants with the OSCE mechanism. Thus, the participants made a performance and performance evaluation regarding the planning and administration of the exam based on experience. When our workshop is evaluated as an educator development activity, it sets an example in terms of its design and implementation.

Studies have reported that faculty members are insufficient in preparing multiple-choice questions for learning goals and in determining the pass-fail score of the exam[21,22]. In our study, it was determined that the workshop participants could not write multiple-choice questions with a single correct answer and could not define the methods for determining the pass-fail scores of the exam in accordance with the literature. The fact that the participants cannot make technical analysis of the prepared questions shows that there is a lack of knowledge and skills in preparing the correct questions and using the checklist for technical analysis.

The characteristics, duties, and terms of office of the members to be included in the committee are specified with the "Qualification Board Directive" of the boards. Trainers who meet the criteria specified in the directive take part in the boards[5,15]. Specialization associations have prepared a question preparation guide for the board exam and guided the trainers who will write questions with examples of positive and negative questions[23,24]. One of the important factors determining the quality of the board exam is the question-writing skills of the trainers. In our study, in accordance with the literature, it was determined that the workshop participants did not take part in the competence committees related to their field of expertise, they did not plan the board exam, and they did not have experience in technical analysis of the questions. It is known that some

Table 1. Distribution of passing and failing points in the first round

	1. Station	2. Station	3. Station	4. Station	5. Station	Total
1. Member ratio	5	30	30	25	10	100
1. Member cut-off score	3	25	25	22	8	83
2. Member ratio	5	25	25	30	15	100
2. Member cut-off score	3	20	20	25	10	78
3. Member ratio	8	20	23	17	32	100
3. Member cut-off score	5	15	17	12	21	70
4. Member ratio	5	25	25	20	25	100
4. Member cut-off score	4	18	18	15	20	75
5. Member ratio	5	25	25	25	20	100
5. Member cut-off score	3	14	12	14	10	53
					Mean	71.8

Table 2. Pass/fail score distribution in the second round

	1. Station	2. Station	3. Station	4. Station	5. Station	Total
1. Member ratio	5	30	30	25	10	100
1. Member cut-off score	3	20	23	20	8	74
2. Member ratio	5	25	25	30	15	100
2. Member cut-off score	3	20	20	25	10	78
3. Member ratio	8	20	23	17	32	100
3. Member cut-off score	5	15	17	12	21	70
4. Member ratio	5	25	25	20	25	100
4. Member cut-off score	4	18	18	15	20	75
5. Member ratio	5	25	25	25	20	100
5. Member cut-off score	3	20	20	15	10	68
					Mean	73

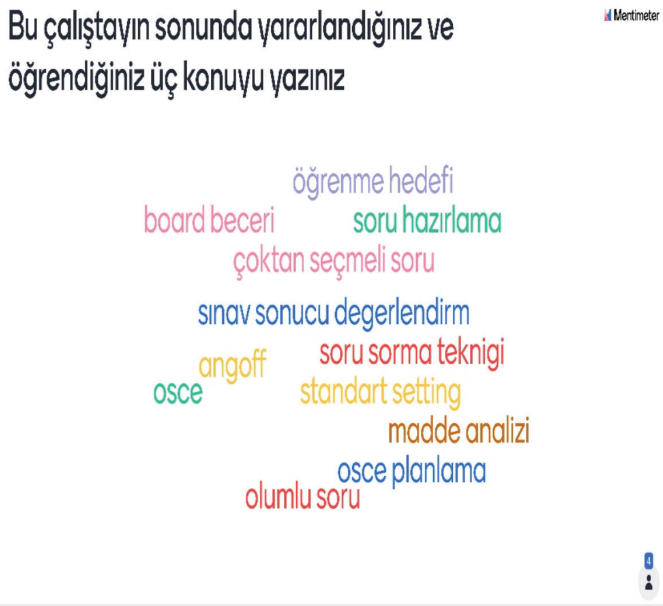


Figure 5. Topics mentioned learned during the workshop.

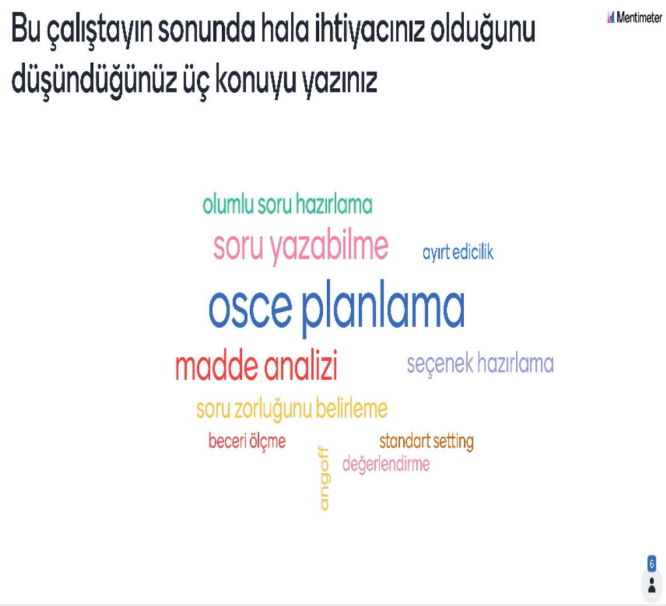


Figure 6. The subjects that the workshop made you feel the need to learn.

speciality associations competency committees collaborate with Medical Education Departments in planning and implementing the board exams[23,25,26]. In our study, the learning needs of the participants determined in the subjects of item analysis, determining the pass-fail score, writing questions with the appropriate technique, OSCE planning, and performance evaluation are important to show the necessity of collaboration with the departments of medical education.

Study Limitations

The fact that the data cannot be generalized due to the small number of participants was considered a limitation.

Conclusion

The workshop showed that competence committees can collaborate with the medical education discipline in exam planning and implementing. As areas of collaboration; It is recommended to focus on planning the exam, writing questions with appropriate techniques, question technical analysis, OSCE planning, and performance evaluation. For this purpose, educational development programs should be planned in collaboration with specialty associations and medical education disciplines. Assessment and evaluation methods that evaluate the performance of trainers together with their theoretical knowledge should be used in educational development programs. The support of the specialty associations from the medical education discipline will improve the quality of the board exams. For collaboration, it is necessary for the parties to be in contact with each other and to encourage participation in trainer development programs.

Acknowledgments

The authors want to thank the congress editors and workshop participants.

Ethics

Ethics Committee Approval: The study was conducted according to the Helsinki Declaration, and ethical permission was obtained from the local Ethics Committee of Ege University (date: 04.03.2021, number: E.74815).

Informed Consent: N/A

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: A.B., F.İ.T., H.S., H.D., E.Ş., H.Ş., Concept: A.B., F.İ.T., H.S., H.D., E.Ş., H.Ş., Design: A.B., F.İ.T., H.Ş., Data Collection or Processing: A.B., F.İ.T., H.S., H.D., E.Ş., Analysis or Interpretation: A.B., F.İ.T., H.S., H.D., E.Ş., H.Ş., Literature Search: A.B., F.İ.T., H.S., Writing: A.B., F.İ.T., H.S., H.D., E.Ş., H.Ş.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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