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Lead Organization:	University of Split
Participating Organization:	University of Sarajevo, University of Tuzla, University of Banja Luka, University of Mostar
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	Description	<p>Implementing compulsory OSCE for the last year students at all the BiH participating faculties will be performed in the third year of project implementation.</p> <p>Testing will be performed in accordance with a schedule most suited for teachers and students at individual institutions in BiH in line with the academic calendar.</p>	
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Dissemination level	<input checked="" type="checkbox"/> Department/Faculty <input type="checkbox"/> Local <input checked="" type="checkbox"/> National <input checked="" type="checkbox"/> Institution <input type="checkbox"/> Regional <input type="checkbox"/> International		
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Participating Organization	UNSA, UNTZ, UNB, SUM		
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v.00	1.12.2023.	Darko Modun, Fahir Bečić, Elma Veljović, Esmeralda Dautović, Martin Kondža, Nataša Bubić Pajić, Ana Šešelja Perišin	UNIST, UNSA, UNTZ, SUM, UBL	Document preparation
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TABLE OF CONTENTS

1. INTRODUCTION	4
2. OSCE implementation	4
2.1. OSCE implementation at the University of Sarajevo	4
2.2. OSCE implementation at the University of Banja Luka	7
2.3. OSCE implementation at the University of Tuzla	9
2.4. OSCE implementation at the University of Mostar	12
3. CONCLUSIONS	14

1. INTRODUCTION

OSCE is considered as the preferred method for evaluation of learner performance across various health professions and it is also the gold standard for the evaluation of practical skills of students of pharmacy worldwide. Interpersonal and communication skills, professional judgment, skills of the resolution, etc. may be best assessed through a well-structured OSCE in comparison to oral examinations, multiple-choice tests and other methods of assessment. Pilot OSCE conducted earlier at the University of Sarajevo helped teachers from the partner universities in Bosna and Herzegovina to identify potential problems in organization and implementation of the OSCE at their institution and helped them to remove those before conducting the OSCE on a large number of students. Therefore, according to the project proposal an OSCE implementation was planned at University of Sarajevo, University of Tuzla, University of Banja Luka and University of Mostar as one of the goals in the third year of project implementation and the final goal in work package 2.4. OSCE development.

2. OSCE IMPLEMENTATION

2.1. OSCE implementation at the University of Sarajevo

The OSCE implementation was carried out at the University of Sarajevo - Faculty of Pharmacy from May 29 to June 1, 2023, according to the Agenda (Table 1). The implementation of OSCE, which was carried out within the work package WP 2.4.6. of the IQ Pharm Erasmus+ project, was attended by 37 teachers from University of Sarajevo-Faculty of Pharmacy. Professor Josipa Bukić from the University of Split supervised the exam.

Before the OSCE implementation itself, teachers from University of Sarajevo - Faculty of Pharmacy were assigned to teams (7 teams) to prepare questions that were in individual stations (7 stations) in accordance with the OSCE blueprint (5 interactive and 2 non-interactive stations).

On the first day of the OSCE implementation (May 29th 2023), a meeting was held where the Introductory remarks to the first full OSCE implementation at the University of Sarajevo and OSCE corrective meeting conclusions were presented.

On the second day, team members from individual stations presented the prepared questions for each station, which were planned in the OSCE implementation and the preparation of each individual station was discussed.

Discussions about conducting and evaluations of the OSCE exam were activities on the third day and Stations were set up, also, on the third day of the OSCE implementation. Also, the scenarios for the actors who were in the interactive stations and the technical needs of each station were determined in detail once again.

The OSCE exam was conducted on the fourth day (June 1st 2023) starting at 9 am. Fifth-year students took the OSCE exam (91 students). After the OSCE exam, the results were evaluated, and the process of implementing the OSCE exam itself was discussed and how to improve the implementation of the OSCE exam in the future.

Table 1. Links to the OSCE implementation materials from University of Sarajevo

Name of the file/resource	Mentioned in section	Found on the Confluence platform (link)
Agenda of meeting	2.1	https://docs.google.com/document/d/1M4joQDOflqr5quVFUkBVrdgXPe5Qater/edit
List of participants	2.1	https://drive.google.com/drive/folders/1XSVnFA6V7b7Viy0M8ZTPPTawve41PW0l
Event gallery	2.1	https://drive.google.com/drive/folders/1nLa0c_QUT0eY7e58KfVckq4urOKAqMc
Exam materials	2.1	https://drive.google.com/drive/folders/1SnnZ7m2vDkgAc9yuPY8diRnL_cPv8pgW

EVENT EVALUATION BY PARTICIPANTS *in percentage*

Out of all the attending participants, 10 of them answered the Evaluation form, and the answers (%) were:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
What is your opinion of the general organization and facilities exploited during the event?	90.00	10.00	0.00	0.00	0.00
To which extent did the event cover the announced title?	80.00	10.00	10.00	0.00	0.00
What is your opinion of the presenters/facilitators?	80.00	20.00	0.00	0.00	0.00
Level of quality of presentations given by speakers?	80.00	20.00	0.00	0.00	0.00
To what extent did the event cover your professional needs?	80.00	10.00	10.00	0.00	0.00
What is your opinion of the material that was distributed before or during the event? (if there was any)	90.00	0.00	10.00	0.00	0.00
How do you evaluate the agenda of the event?	80.00	0.00	20.00	0.00	0.00
How do you evaluate the technical resources used?	90.00	0.00	10.00	0.00	0.00
To which extent did the event live up to your expectations?	80.00	20.00	0.00	0.00	0.00
How satisfied are you from the level of participation to the event proceedings?	80.00	20.00	0.00	0.00	0.00
Communications for preparation of the event was satisfactory?	90.00	10.00	0.00	0.00	0.00
The targets of the meeting were fulfilled?	80.00	20.00	0.00	0.00	0.00

2.2. OSCE implementation at the University of Banja Luka

The OSCE implementation was carried out at the University of Banja Luka-Faculty of Pharmacy from May 22nd to May 26th 2023, according to the agenda (Table 2). The implementation of OSCE, which was carried out within the work package WP 2.4. of the IQ Pharm Erasmus+ project, was attended by 7 teacher representatives and 5 actors from participating institutions - the University of Banja Luka. Professor Josipa Bukić from the University of Split supervised the exam.

Before the OSCE implementation itself, teachers from the Faculty of Medicine, Pharmacy Department in Banja Luka were assigned to prepare questions that were in individual stations (7 stations) in accordance with the OSCE blueprint (5 interactive and 2 non-interactive stations).

On the first day (May 22nd 2023), assist. prof. Nataša Bubić Pajić presented the OSCE blueprint to all participants. On the second day of the OSCE implementation (May 23rd 2023), members from individual stations presented the prepared questions for each station, which were planned in the OSCE implementation and the preparation of each individual station within the OSCE exam was also discussed.

Stations were set up on the third day (May 24th 2023) of the implementation. Also, the scenarios for the actors who were in the interactive stations and the technical needs of each station were determined in detail once again. The OSCE exam was conducted on the fourth day (May 25th 2023) starting at 9 am. For the purposes of the implementation of the OSCE exam, fifth year students participated (23 students).

After the OSCE exam, the results were evaluated, and the process of implementing the OSCE exam itself was discussed, as well as guidelines on how to improve the implementation of the OSCE exam in the future.

Table 2. Links to the OSCE pilot implementation materials from the University of Banja Luka

Name of the file/resource	Mentioned in section	Found on the Confluence platform (link)
Agenda of meeting	2.2.	https://docs.google.com/document/d/1jmLDPIP_cnLhH29YN1UhYg7IEHbP_0MUU/edit
List of participants	2.2.	https://drive.google.com/drive/u/3/folders/1r0MuMgSgEpDry4Wbo75U8h_oVvGm4D7VR
Event gallery	2.2.	https://drive.google.com/drive/u/3/folders/10tIRsk5vRN1Br3OHdKBCcHj_L-BehqZk
Exam materials	2.2.	https://drive.google.com/drive/u/3/folders/1Not6rnTrmssOZgn-jYDQw7mbmYe7ff0p

Given that only 23 students participated in the implementation of the OSCE exam, it was possible to organize the event at UBL - Faculty of Medicine, Pharmacy Department. However, if there are more students, a larger space or modality of conducting the OSCE exam itself must be considered so that it can be completed within one or two days. Also, considering that according to the current curriculum, students are not prepared for the OSCE exam, in the future it is necessary for students to familiarize themselves with the way of conducting the OSCE exam within the curriculum and to be prepared for it.

Additionally, students who participated in the implementation of the OSCE exam were not prepared for it. Therefore, they stated it was very stressful for them.

Considering that in the OSCE exam there was one guard in the main hall from where the entrance for each station was observable, it should be considered in the future to increase the number of guards.

EVENT EVALUATION BY PARTICIPANTS *in percentage*

Out of all the attending participants, 11 of them answered the Evaluation form, and the answers (%) were:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
What is your opinion of the general organization and facilities exploited during the event?	90.91	0.00	9.09	0.00	0.00
To which extent did the event cover the announced title?	81.82	9.09	9.09	0.00	0.00
What is your opinion of the presenters/facilitators?	90.91	0.00	9.09	0.00	0.00
Level of quality of presentations given by speakers?	90.91	0.00	9.09	0.00	0.00
To what extent did the event cover your professional needs?	81.82	9.09	9.09	0.00	0.00
What is your opinion of the material that was distributed before or during the event? (if there was any)	72.73	18.18	9.09	0.00	0.00
How do you evaluate the agenda of the event?	90.91	0.00	9.09	0.00	0.00
How do you evaluate the technical resources used?	63.64	27.27	9.09	0.00	0.00
To which extent did the event live up to your expectations?	81.82	9.09	9.09	0.00	0.00
How satisfied are you from the level of participation to the event proceedings?	90.91	0.00	9.09	0.00	0.00
Communications for preparation of the event was satisfactory?	90.91	0.00	9.09	0.00	0.00
The targets of the meeting were fulfilled?	81.82	9.09	9.09	0.00	0.00

2.3. OSCE implementation at the University of Tuzla

From 5th June to 9th June 2023, the OSCE was held for the first time at the Faculty of Pharmacy, University of Tuzla. The exam is implemented as a result of the IQPharm project-Innovating quality assessment tools for pharmacy studies in Bosnia and Herzegovina. Professors, assistants and technical staff from the Faculty of Pharmacy, University of Tuzla participated in the organization of the exam. The implementation was supervised by professor Josipa Bukić from the University of Split.

Before the OSCE implementation itself, professors were assigned to teams (7 teams) to prepare questions that were in individual stations (7 stations) in accordance with the OSCE blueprint (5 interactive and 2 non-interactive stations).

On the first day (June 5th, 2023) team members from individual stations presented the prepared questions for each station, which were planned in the OSCE implementation.

On the second day the preparation of each individual station was discussed. Participants also discussed conducting and evaluations of OSCE exam Stations were set up, also, on the third day of the OSCE implementation. OSCE rehearsal was on the third day.

The OSCE exam was conducted on the fourth day (June 8th, 2023) starting at 8 a.m. Fifth-year students took the OSCE exam (49 students). Results of the OSCE exam were evaluated on the fifth day, and the process of implementing the OSCE exam itself was discussed and how to improve the implementation of the OSCE exam in the future.

Table 3. Links to the OSCE implementation materials from University of Tuzla

Name of the file/resource	Mentioned in section	Found on the Confluence platform (link)
Agenda of meeting	2.3.	https://drive.google.com/drive/folders/1Gq5cUU0pBRqRx8UXNkV9nO0JHJOnYn1Y
List of participants	2.3.	https://drive.google.com/drive/folders/1cfESVu40DKXOD7kj-NMNg-z_A5noukuL
Event gallery	2.3.	https://drive.google.com/drive/folders/1cGPlbaOTQGpyuZyvROCvt4TXlv_z8tOa
Exam materials	2.3.	https://drive.google.com/drive/folders/1iN7NG6rJVGpX60zZwrd_cH2YiitHU9FI

EVENT EVALUATION BY PARTICIPANTS *in percentage*

Out of all the attending participants, 11 of them answered the Evaluation form, and the answers (%) were:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
What is your opinion of the general organization and facilities exploited during the event?	100	0.00	0.00	0.00	0.00
To which extent did the event cover the announced title?	100	0.00	0.00	0.00	0.00
What is your opinion of the presenters/facilitators?	100	0.00	0.00	0.00	0.00
Level of quality of presentations given by speakers?	100	0.00	0.00	0.00	0.00
To what extent did the event cover your professional needs?	100	0.00	0.00	0.00	0.00
What is your opinion of the material that was distributed before or during the event? (if there was any)	100	0.00	0.00	0.00	0.00
How do you evaluate the agenda of the event?	100	0.00	0.00	0.00	0.00
How do you evaluate the technical resources used?	100	0.00	0.00	0.00	0.00
To which extent did the event live up to your expectations?	100	0.00	0.00	0.00	0.00
How satisfied are you from the level of participation to the event proceedings?	100	0.00	0.00	0.00	0.00
Communications for preparation of the event was satisfactory?	100	0.00	0.00	0.00	0.00
The targets of the meeting were fulfilled?	100	0.00	0.00	0.00	0.00

2.4. OSCE implementation at the University of Mostar

The University of Mostar, Faculty of Pharmacy, hosted an important event from September 4th 2023 to September 8th 2023 - the implementation of the OSCE exam as part of the work package WP 2.4.6. as part of the IQPharm project (Innovating quality assessment tools for pharmacy studies in Bosnia and Herzegovina). This initiative marks a significant step towards improving the quality of knowledge assessment of pharmacy students and their preparation for future professional practice. OSCE is a structured exam consisting of a series of stations where students perform various practical tasks. This exam is of key importance for evaluating the competencies of pharmacy students and preparing them for real situations that await them in the profession. The implementation of the OSCE examination at the Faculty of Pharmacy in Mostar represents a key step towards raising the standards of pharmaceutical education in Bosnia and Herzegovina.

The guests who contributed to the successful implementation of this project were members of the teaching staff from the Department of Pharmacy, Faculty of Medicine, University of Split. Their rich experience and expertise were invaluable for the students of the Faculty of Pharmacy in Mostar. Full Professor Ivica Brizić, PhD, dean of the Faculty of Pharmacy expressed his satisfaction that the Faculty of Pharmacy in Mostar hosted this extremely important event. "This implementation of the OSCE exam represents a big step forward for our faculty and the future of our students. We are grateful to the professors from Split, assistant professor Šešelja Perišin and assistant professor Bukić, for their support and cooperation," said the dean during his lecture as part of this assignment. This event marks the beginning of a new era for pharmaceutical education in Bosnia and Herzegovina, where students will be better prepared for the challenges and responsibilities that await them in their future professional practice. The IQPharm project continues its mission of improving pharmaceutical education and the quality of professional practice, thereby ensuring a better future for the pharmaceutical industry in the country. The agenda of the meeting, the list of participants, event gallery and exam materials are all available on the online platform (Table 4).

Table 4. Links to the OSCE implementation materials from the University of Mostar

Name of the file/resource	Mentioned in section	Found on the Confluence platform (link)
Agenda of meeting	2.4.	https://drive.google.com/drive/folders/1jU0z6v6S_vCqfbqsUgLnASBOgegg6Mcy
List of participants	2.4.	https://drive.google.com/drive/folders/1twMdMvoaz86Tdw5VAVT8ZdU8BgclRQzd
Event gallery	2.4.	https://drive.google.com/drive/folders/1G99PJqWWHOD5MK3CC2Io5OqQC0uxvCO5
Exam materials	2.4.	https://drive.google.com/drive/folders/1H5S-YMUpd5M95edKCVZ9uvvNJQBfj8ch

EVENT EVALUATION BY PARTICIPANTS *in percentage*

Out of all the attending participants, 7 of them answered the Evaluation form, and the answers (%) were:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
What is your opinion of the general organization and facilities exploited during the event?	85.71	14.29	0.00	0.00	0.00
To which extent did the event cover the announced title?	71.43	28.57	0.00	0.00	0.00
What is your opinion of the presenters/facilitators?	71.43	28.57	0.00	0.00	0.00
Level of quality of presentations given by speakers?	71.43	28.57	0.00	0.00	0.00
To what extent did the event cover your professional needs?	57.14	42.86	0.00	0.00	0.00
What is your opinion of the material that was distributed before or during the event? (if there was any)	57.14	14.29	28.57	0.00	0.00
How do you evaluate the agenda of the event?	100.00	0.00	0.00	0.00	0.00
How do you evaluate the technical resources used?	71.43	28.57	0.00	0.00	0.00
To which extent did the event live up to your expectations?	71.43	28.57	0.00	0.00	0.00
How satisfied are you from the level of participation to the event proceedings?	71.43	28.57	0.00	0.00	0.00
Communications for preparation of the event was satisfactory?	71.43	28.57	0.00	0.00	0.00

The targets of the meeting were fulfilled?	100.00	0.00	0.00	0.00	0.00
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3. CONCLUSIONS

The OSCE implementation was successfully completed. Participants were satisfied with the organization and all provided materials, which is evident from the results of the meetings evaluation surveys. All students rated the test as a very stressful experience, but they are grateful for the opportunity to test their clinical and practical knowledge in the field of pharmacy. The teaching staff included in pharmacy studies from the University of Sarajevo, University of Tuzla, University of Banja Luka and University of Mostar will use the results gain through OSCE implementation to improve the current curriculum of teaching subjects and to ensure high standards and quality of pharmacy studies in Bosnia and Herzegovina.