

# Feedback of 5<sup>th</sup>-Year Pharmacy Students About Objective Structured Practical Examination (OSPE) After the Pharmaceutical Care Course in Poland.

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## Research Article

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# Abstract

## Background

An important part of the pharmaceutical study program is a thorough assessment of students' practical skills. The new form of assessing skills in pharmacy teaching is the *Objective Structured Practical Examination* (OSPE).

## Methods

The study was conducted in the winter semesters in the academic years 2018–2019 and 2019–2020. The study was attended by students of the 5th -year of pharmacy who first time taking the OSPE. After the exam, students filled in an anonymous questionnaire about their general approach to OSPE. They assessed each station and the self-assessment. The results were analyzed by performing statistical analyses and compared between years.

## Results

A total of 183 5th -year pharmacy students participated in the study, including 108 students in the 2018–2019 academic year and 75 students in the 2019–2020 academic year. Pharmacy students rated OSPE as a reliable tool for assessing their practical skills. Half of the students had a positive attitude towards OSPE, but the vast majority stated that OSPE was stressful for them. Over 70% of students assessed that stations with simulated patients create real situations in pharmacy. Students found that OSPE is a better form of the exam than the written exam.

## Conclusion

Pharmacy students rated the OSPE exam as a reliable tool for assessing their practical skills. The results of the survey indicate that the students accepted the new form of the examination. As well, they evaluated the OSPEs well in terms of testing their skills.

## Background

In teaching in pharmacy, today's challenge is to provide graduates with a portion of knowledge and provide them tools to acquire this knowledge throughout their future professional life. In addition to knowledge, it is important that graduates also acquire appropriate practical skills that will allow them to provide pharmaceutical services in a pharmacy in the right way of life in the future. Curricula at universities that prepare graduates to provide pharmaceutical services in a pharmacy should be organized in such a way as to allow students not only to acquire knowledge but also to develop practical skills. One of the pharmacist's necessary skills is engaging patient care, monitoring the patient's

pharmacotherapy's safety and effectiveness.<sup>1</sup> Assessment of practical skills is a crucial element of assessment in study programs at medical and pharmaceutical universities worldwide. Pharmacy curricula are still changing, and more and more emphasis is being placed on teaching students the practical skills necessary to provide services according to the national standards. National standards describe learning outcomes that are gained by students while studying pharmacy. Knowledge should be balanced by practical skills in curricula, as both prepare students for their working lives.<sup>2</sup>

Usually, knowledge is verified in a traditional way (e.g., multiple, single choice tests, descriptive reports, etc.). Unfortunately, assessing knowledge methods allows assessing does not practical skills acquired by students during their studies.<sup>3</sup> Practical skills in the pharmacy profession are fundamental aspects. Therefore some universities have implemented in their assessment systems appropriate tools to test specific skills. For some time in pharmaceutical education so-called *Objective Structured Practical Exam* (OSPE) is being used to assess practical skills (including manual, interpersonal, and communication skills). Some studies indicate that 37% of US universities that educate future pharmacists use OSPE extensively to assess students' practical skills.<sup>4</sup> OSPE has become a good assessment tool and has been marked as a gold standard tool to assess students' practical skills around the world.<sup>5-7</sup> A well-constructed and implemented OSPE is the key to achieve the correct and reliable assessment of practical skills.<sup>8-11</sup>

OSPE is conducted with simulated patients' participation in standardized conditions.<sup>12</sup> OSPE requires that each student demonstrates specific skills and attitudes in simulated conditions. It consists of several stations where students' practical competencies are assessed. Students during OSPE have a defined time to perform all procedures. The duration of the station ranges from several to several dozen minutes. An objective grading system is used to assess students.<sup>2</sup> Examiners play a key role in running OSPE. Research indicates that the examiners participating in the OSPE and student assessment agree that OSPE assesses practical skills, while <50% believe that it also tests knowledge. The authors of other publications, based on their experience, believe that OSPE is a crucial tool for assessing skills in patient care, interpersonal and communication skills.<sup>13,14</sup>

In Poland, medical teaching was first implemented and conducted at the Faculty of Medicine of the Jagiellonian University Medical College.<sup>15</sup> For the first time in pharmacy education in Poland, this challenge was faced by the Department of Social Pharmacy at the faculty of pharmacy of the Jagiellonian University Medical College, which conducted the OSPE exam at the end of the Pharmaceutical Care course (PCc). The exam consisted of stations that checked acquired knowledge and skills following the learning outcomes contained in the syllabus for this course. The exam organizers analyzed the learning outcomes skills and separated pharmaceutical services. They created six stations: pharmaceutical interview, advice for self-medication, education about medicines, medical device education, identification, and solving of drug-related problems (DRPs).<sup>16</sup>

The purpose of our study was to evaluate feedback from students who are taking the OSPE exam for the first time about the preparation, organization, and conduct of the exam. The study aimed to assess and analyze students' suggestions to improve future OSPE exams' quality and improve the Pharmaceutical Care course's teaching method (PCc).

## Methods

The study was conducted at the Faculty of Pharmacy of the Jagiellonian University Medical College in the winter semesters in the academic years 2018-2019 and 2019-2020. The 5th year of pharmacy students took part in the study, taking the first OSPE for the first time. This exam completed the PCc. Exams in 2018-2019 and 2019-2020 were carried out in the same way. The number and type of stations and scenarios did not change. The same assessment questionnaires, the same academic teachers, were the examiners. Instructions describing the course and rules of the exam and instructions at individual stations have not changed. Some classes in pharmaceutical care in 2019-2020 were conducted using the PBL (Problem-Based Learning) method. The difference in the teaching method used during the PCc is the only element that may affect the survey results.

### Tools of data collection

The tool for collecting data was a questionnaire allowing to express opinions and assess students' first OSPE. The survey was voluntary and anonymous. The questionnaire consisted of two parts. The first part concerned the general feelings related to the exam, e.g., whether the student had a positive attitude to the exam, how the exam was organized and whether it was run as per student's expectations, whether the instructions at the stations were clear and understandable. Students answered questions about whether the exam allowed them to assess their practical skills, whether there are still areas that the student should complete and whether the OSPE was better than other traditional forms of assessment (e.g., written form).

Part I of the questionnaire was prepared based on the Likert 5-point scale. The respondents defined their attitude to the statements presented in the following way: strongly disagree (SD), disagree (D), neutral (N), agree (A), strongly agree (SA). **Table 1** includes all questions from part I of the survey.

Part II of the survey concerned the students' self-assessment and their feelings related to individual stations. The respondents responded to the statements and indicated all stations (one or more), which information concerned, e.g., whether I expect I was rated high / low at a given station, which station was the most / least stressful for me. **Table 2** includes all questions from part II of the survey. After completing the study, students were able to describe additional comments related to OSPE.

### Statistical analysis

The data were analyzed by using the Statistica (version 12) package. The independent samples T-test were used for statistical analyses. Statistical significance was set at  $p < 0.05$ .

## Results

In the study participated 108 5th-year pharmacy students in the 2018-2019 academic year and 75 students in the 2019-2020 academic year. Researchers analyzed the significance of differences for structural indicators (percentages) of the first part of the questionnaire in the specific years (Table 1). Table 1 includes the questions included in the survey in Part I, together with information on how many students agreed with the declaration (agree / strongly agree). Over 80% of students indicated that the exam and instructions for individual stations were clear and understandable. The course of the exam was as expected by over 70% of students.

**Table 1** Pharmacy students' evaluation of the attributes of the OSPE (part I).

Questionnaire statement	Agree/Strongly agree responses						
	all N=183		2018- 2019 N=108		2019- 2020 N=75		p
	N	%	N	%	N	%	
Positive about the OSPE before it	92	50.3	60	55.5	32	42.7	0,044
The OSPE meet expectations	137	74.9	84	78.0	53	70.7	0,13
Information about the organisation and conduct of the exam were understandable	155	84.7	95	88.0	60	80.0	0,69
Information about the organisation and conduct of the exam were sufficient	144	78.7	84	93.0	57	76.0	0,0006
Instructions on stations were clear and understandable	162	88.5	96	89.0	66	88.0	0,42
Stations with simulated patient gave the feeling of real situations in pharmacy	143	78.1	80	74.0	63	84.0	0,054
The program of the PCc allow to prepare to the OSPE adequately	107	58.5	64	59.0	43	57.3	0,11
Exam helped to assess skills better	132	72.1	72	66.0	60	80.0	0,019
The OSPE helped to recognize issues for further study	138	75.4	32	30.0	63	84.0	<0,0001
The OSPE is better than the traditional form of assessment (ex. written exam)	123	67.2	81	75.0	42	56.0	0,0035
The OSPE was stressful	139	76.0	74	68.0	65	86.7	0,0019

PCc = Pharmaceutical Care course; OSPE = Objective Structured Practical Examination

In the 2018-2019 academic year, about 56% of students had a positive attitude towards OSPE before it began, and in the 2019/2020 academic year, only 43% of students had a similar opinion ( $p = 0.044$ ). Over 86% of students from 2019-2020 admitted that the exam was stressful, but at the same time, students declared that OSPE helped them assess their skills (80%) and recognize issues for further study (84%). For students from the 2018-2019 academic year, significantly fewer students agreed with these statements (68%, 66%, 30%, respectively).

Table 2 contains the questions included in the second part of the study and information on what percentage of students agreed with each station's statement. Over 60% of students from the 2018/2019 academic year and over 50% from 2019/2020 expected that they would be highly rated at *station 1* and indicated that the PCc prepared them the most to pass this station. Simultaneously, students showed this station as the least stressful for them (over 50% of respondents). Over 60% of students chosen *station 5* where they expect to be rated the least and as the most stressful station (over 40%).

**Table 2** Pharmacy students' evaluation of the attributes of the OSPE (part II).

Station		I expect that I will be highly rated	I expect that I will be low-rated	The most stressful station	The least stressful station	PCc prepared me the best to pass the station	PCc prepared me the worst to pass the station
Station 1	2018-2019	60,19%	10,19%	12,04%	52,78%	65,74%	5,56%
	2019-2020	56,00%	9,33%	13,33%	54,67%	54,67%	5,33%
Station 2	2018-2019	30,56%	18,52%	25,93% <sup>a</sup>	12,04%	22,22%	26,85%
	2019-2020	28,00%	26,67%	37,33% <sup>a</sup>	5,33%	28,00%	21,33%
Station 3	2018-2019	43,52% <sup>b</sup>	13,89%	12,96%	22,22% <sup>a</sup>	18,52%	18,52% <sup>a</sup>
	2019-2020	24,00% <sup>b</sup>	22,67%	17,33%	9,33% <sup>a</sup>	13,33%	32,00% <sup>a</sup>
Station 4	2018-2019	45,37% <sup>b</sup>	11,11% <sup>a</sup>	23,15%	25,00%	25,93%	18,52% <sup>a</sup>
	2019-2020	22,67% <sup>b</sup>	21,33% <sup>a</sup>	32,00%	21,33%	20,00%	30,67% <sup>a</sup>
Station 5	2018-2019	9,26%	62,96%	44,44%	7,41%	30,56%	28,70%
	2019-2020	6,67%	60,00%	46,67%	13,33%	22,67%	25,33%
Station 6	2018-2019	18,52%	38,89% <sup>a</sup>	20,37%	18,52% <sup>a</sup>	40,74% <sup>a</sup>	17,59%
	2019-2020	16,00%	26,67% <sup>a</sup>	20,00%	30,67% <sup>a</sup>	24,00% <sup>a</sup>	9,33%
<sup>a</sup> p<0.05; <sup>b</sup> p<0.005; PCc = Pharmaceutical Care Course; OSPE = Objective Structured Practical Examination							

Table 3 shows points obtained by students at individual stations. The highest average number of points students were scored (> 70% of points) at *station 1*, *station 3* (2018-2019), and *station 6* (2019-2020). Students obtained the lowest average number of points at *station 5*. The average percentage of ratings for *station 1* was statistically significantly higher in 2019-2020 (75.90%) compared to the results from 2018-2019 (72.03%). Similarly, the average percentage of ratings at *station 3* in 2018-2019 (73.71%) was statistically significantly higher than in 2019-2020 (69.34%). Survey forms contained additional student comments (posted under the survey). Students in this place most often referred to the time provided for the exam. The comments prevailed that the time provided for *station 5* and *station 6* was too short (stations with documentation). Students had no objections to the exam duration at *stations 1-4* (stations with the simulated patient).

**Table 3** The average percentage of points obtained by students at individual stations.

Station	2018-2019		2019-2020		t	p
	Mean %	SD	Mean %	SD		
Station 1	72,03	11,65	75,90	12,40	2,16	0,032
Station 2	65,93	11,13	67,70	13,41	0,98	0,330
Station 3	73,71	11,91	69,34	12,95	-2,37	0,019
Station 4	65,11	11,16	64,66	11,95	-0,26	0,792
Station 5	59,37	16,53	58,47	14,72	-0,38	0,705
Station 6	69,30	19,67	71,22	14,42	0,72	0,470

## Discussion

The study was conducted among 5<sup>th</sup>-year pharmacy students who took the OSPE for the first time. An anonymous survey on the preparation, organization, and conduct of OSPE was chosen as a tool to learn students' opinions about the exam.

The literature indicates the usefulness of such a tool for modification and quality improvement of OSPE. It gives opportunities to improve and develop OSPE. Student feedback after the exam may contribute to changes in the manner and form of teaching.<sup>17-19</sup>. In our study, most students (67.2% of all students surveyed) recognized OSPE as a better form of the exam than other traditional assessment methods,

including a written form. A similar opinion was noticed in other studies, which may be related to the documented objectivity and credibility of OSPE.<sup>20-22</sup> Our study also confirmed that pharmacy students accept this form of the exam in assessing practical skills. Positive opinions have already appeared in the literature on this acceptability of OSPE among medical students.<sup>23,24</sup>

Seventy-five percent of students in our study agreed that OSPE, due to its form, allows them to assess their practical skills and identify areas that require them to supplement their knowledge. Similar results were obtained by *Yaqinuddin et al.*<sup>25</sup> in a study, where 74% of students admitted that the exam allowed them to verify what they should supplement and improve in terms of their knowledge and skills in the field of anatomy. Other articles in the literature confirm that OSPE, due to its form, is considered a good, valuable tool for assessing students' practical skills.<sup>22-24</sup> For 76% of students participating in our study, the exam was stressful. Due to similar conditions for conducting the exam and the fact that the OSPE was carried out for the first time, our result can be compared with the *Manjula et al.* study results. Students' opinions appeared for the stressful nature of the exam.<sup>23</sup> *Manjula et al.* pointed out that this fact can cause stress for students. In 2019-2020 OSPE, after PCc was conducted for the second time for examiners, for the students joining it, it was still a new form of exam, previously not practiced at our faculty.

*Wadde et al.* made quite the opposite conclusions in a study in which students participating in the OSPE found that the exam was not stressful for them, while the examiners were experiencing stress.<sup>26</sup> In our study, some students admitted that the time allocated to perform tasks at *stations 5* and *6* was insufficient for them, with no comments related to the exam duration at the other four stations. Similar feelings of students appear in the study of *Manjula et al.*, where for 60% of students, the exam time could be longer. In the *Chandelkar* study, only 0.69% of students were unhappy with the time allocated for OSPE. In the *Deshpande* study, every student (100%) admitted that sufficient time was given to each student.<sup>20,24</sup>

The issues related to time at individual stations in our study are not so obvious. While students scored the lowest average number of points at *station 5*, they scored 70% on average at *station 6* (2nd best result). This may be since students taking our exam do not have time management experience in this form of assessment. *Wadde et al.* also pointed to this problem in their observations.<sup>26</sup>

## Conclusions

Fifth-year pharmacy students positively evaluated OSPE as a method of assessing practical skills, reflecting real situations in the pharmacy. They also found that OSPE was better than other traditional assessment methods, but most students said that the OSPE form was stressful for them. In their comments on the quality of OSPE, students referred primarily to the time provided for individual stations' solution.

# Declarations

## Acknowledgments

Not applicable.

## Authors' contributions

DJ: methodology, data curation, formal analysis, interpretation of data, investigation, writing – review & editing, visualization; KT: formal analysis, investigation, data curation, writing – original draft, visualization, funding acquisition; SA: conceptualization, methodology; interpretation of data, writing - review & editing, supervision; NM: supervision

## Ethics approval and consent to participate

All methods were carried out in accordance with relevant guidelines and regulations. The informed consent was obtained from all study participants and the study was approved by the Jagiellonian University Ethics Committee (Approval No.: 1072.6120.123.2018).

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## Availability of data and materials

The datasets generated during and analyzed during the current study are not publicly available due to the Local Ethics board requiring these to be held securely by the research team members. Still, aggregate data are available from the corresponding author on reasonable request.

## Consent for publication

Not applicable.

## Competing interests

The authors declare that they have no competing interests.

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