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RESEARCH ARTICLE

Development of objective structured clinical examination-based assessment methods in drug information services lectures

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Abstract

Background: Research has been carried out on the development of objective structured clinical examination (OSCE)-based assessment methods in Drug Information Services lectures. **Objective:** This study aims to prepare the assessment, and teaching-learning methods to improve student competence. **Method:** This research was conducted in three stages, 1) development of the assessment method; 2) development of the syllabus for Drug Information Services lectures; and 3) trial of the assessment method. For the assessment method and syllabus, validation was carried out by experts based on rubric evaluation. As a benchmark for the acceptance of a limited trial, the value is 56.00. The research subjects were 36 undergraduate students of Sanata Dharma University (SDU). **Result:** The results of the study show that: 1) the assessment method and syllabus have been declared valid by the experts; 2) a limited trial of the assessment method, resulting in an assessment range between 56.39-75.69. **Conclusion:** Based on this research, a valid assessment and teaching-learning method has been produced, and in line with the quality of OSCE-based examination as a national standard, so that they can be used in the next lecture in the 2020/2021 term.

Introduction

In health services, the role of pharmacists is very strategic in supporting the achievement of therapeutic goals. People hope pharmacists have good knowledge about drugs; the treatment goals, drug storage, and possible side effects (Aurelia, 2013; Hartayu *et al.*, 2013). However, the facts found in the field include the following: a) lack of communication skills between pharmacists and patients (Sasanti Handayani *et al.*, 2009; Siahaan & Handayani, 2019); b) pharmacists are less active in assessing the rationale of prescribing and self-medication (Siahaan & Handayani, 2019); c) home care pharmaceutical services have not been optimally carried out either at the Puskesmas or at the hospital (Hartayu *et al.*, 2013; Siahaan & Handayani, 2019).

The possibility of the causes of the above facts is the lack of learning experience and the inappropriateness of the assessment method during lectures at the Pharmacy College, especially related to the provision of the ability to practice communication. To prevent such

incidents from occurring in the coming year, this study was conducted to develop assessment methods and syllabus, as a benchmark for mastery of pharmacy practice competence, especially in conducting Drug Information Services; and make objective structured clinical examination (OSCE) assessment trials to measure the student's competence. The novelty of this research is the use of the OSCE-based assessment method as an adaptive effort to the Indonesian Pharmacist Competency Test with the OSCE method, which in 2023 will be a summative test for student graduation (Maudiarti *et al.*, 2018). Several studies that have been carried out related to the use of the problem-based learning (PBL) method in pharmaceutical care learning innovations have been proven to have increased students' critical thinking and their learning collaboration (Hartayu *et al.*, 2018); OSCE methods have good validity and reliability (Kristina & Wijoyo, 2018).

Methods

Design

This research is included in the development research method. The research location was carried out at the Faculty of Pharmacy, Sanata Dharma University, from April-August 2020. The respondent included 36 students from SDU with a Pharmacy Bachelor's Degree who took the Pelayanan Informasi Obat also referred to as Drug Information Service (PIO) course in the even term of the faculty year 2019/2020. The research instruments were: 1) an expert judgment form for the syllabus for PIO lectures; 2) an expert judgment form for OSCE-based assessment methods and; 3) a validated assessment rubric.

This research obtained ethical clearance from the Health Research Ethics Commission of the University of Respati Yogyakarta with Number: 179.3/FIKES/PL/VIII/2020.

Assessment

The stages of research are carried out as follows: 1) the syllabus development was carried out according to Outcome-based Education standards in Indonesia; the development of OSCE-based assessment methods was carried out according to the national standard; 2)

Validation of OSCE-based assessment methods and syllabus was carried out by expert judgment; student performance assessment was carried out by OSCE trials and expresses quantitatively.

Results

The OSCE-based assessment methods and syllabus have been validated by experts based on rubric evaluation. Improvements in the assessment methods have been made to 1) station objectives; 2) candidate instructions; 3) equipment and material requirements; 4) references; and 5) assessment rubric standardised patient instructions. Meanwhile, improvements to the syllabus were carried out on 1) learning objectives; 2) lecture assignments, and; 3) improvements to practicum materials on the topic of critical appraisal, doctor-pharmacist communication, and the use of social media. Both the OSCE-based assessment methods and syllabus have been declared valid by the expert.

Student performance along with the findings of weaknesses during the OSCE trials are presented in full in Tables I and II.

Table I: Pharmacy student performance scores on the OSCE trials

Student (number) (variant code) (number of respondents)	Score (\pm SD)	
	Code 1	Code 2
M (1-12) (1A and 2A) (n=12)	58.33 \pm 16.67	59.17 \pm 17.70
M (13-24) (1B and 2B) (n=12)	75.56 \pm 16.41	56.39 \pm 7.71
M (25-36) (1C and 2C) (n=12)	70.56 \pm 13.62	62.78 \pm 20.59

Code 1 = Special device case; Code 2 : Medical prescription case

Table II: Number of students who are unable to carry out activities

Number of respondents	Activity information in code 1				Activity information in code 2			
	PD	PM	KE	SP	PD	PM	KE	SP
1-12	5.0	7.0	1.0	1.0	6.0	6.0	6.0	1.0
13-24	3.0	0.0	0.0	0.0	4.0	7.0	12.0	0.0
25-36	0.0	8.0	0.0	1.0	3.0	0.0	9.0	0.0
Amount	8.0	15.0	1.0	2.0	13.0	13.0	27.0	1.0
(%)	(22.0)	(42.0)	(2.7)	(5.6)	(36.0)	(36.0)	(75.0)	(2.7)

PD: information gathering; PM: problem determination; KE: effective communication; SP: professional attitude and behaviour

Discussion

Based on corrective inputs from expert validators, researchers have made changes to the OSCE-based assessment methods which include: 1) editorial changes in writing; 2) changes to participant worksheets; 3) revisions to the assessment rubric and;

4) standardised patient instructions. All inputs have been accommodated which has made the assessment methods better. With the accommodation of all expert input, the OSCE-based assessment methods are declared valid. This valid OSCE-based assessment

method becomes an integrated evaluation process of student performance (Afzal, 2018; Croft *et al.*, 2019).

There were five learning objectives in the development of the syllabus, namely: 1) being able to understand the drug information service system; 2) being able to access and provide evidence-based medicine; 3) being able to carry out drug use review; 4) being able to perform analytical critical drug information in the form of advertisements and; 5) being able to understand standard operating procedures regarding PIO implementation (Herman & Susyanty, 2012; Ghaibi *et al.*, 2015). The learning experiences carried out are 1) online lectures (video conference); 2) group discussions and; 3) individual performance. The tasks given are web searching, critical appraisal, and drug counseling which were carried out individually or in groups.

Then for the practicum, there were also four learning objectives, namely: 1) the ability to access; sort and select information sources correctly and responsibly; 2) the ability to make a critical appraisal of scientific articles or journals; 3) the ability to conduct drug information services; 4) ability to provide drug information services in Hospital Pharmacy and Therapy Committee meetings (Ghaibi *et al.*, 2015; Singh Ahirwar *et al.*, 2017). The learning experiences carried out were: 1) group discussions and 2) independent work. The coursework given was critical appraisal (Kennie *et al.*, 1998; Shimizu *et al.*, 2017), a case study on the patient care process (Burns, 2018) as well as special device counseling (Nastaravičius & Ramanauskiene, 2018; Mobark *et al.*, 2019), which was done in groups and made in the form of videos uploaded on YouTube. Both the teaching-learning and the assessment methods given during lectures and practicums are at the level of higher-order thinking skills (Peeters *et al.*, 2016), as well as integrating soft skills in the form of creativity, collaboration, communication, and critical thinking, where this is relevant to the expected outcomes of Outcome-based Education (Doria, 2017) inline with the 2019 DIKTI guidance.

Based on the results of the assessment in Table I, the range of values was from 56.39-75.56. The value accepted were the ones with an average score of 56.00. This value is taken as a benchmark, according to the University standard. As an initial OSCE trial for students who are still taking undergraduate courses, this score is quite encouraging, considering that these students had to move from physical to online lectures due to the COVID-19 pandemic. However, this online learning was able to meet the learning objective but the score obtained is not optimal.

The OSCE trials for students are performing at the level of "show-how" on the Miller pyramid (Cruess *et al.*, 2016). This level requires an examinee to be able to

demonstrate knowledge, skills as well as a professional attitude in a practical simulation. Through these OSCE trials, students gain experience to behave professionally in certain situations (Croft *et al.*, 2019), which will be of great use after they graduate. Through this assessment, students are able: 1) to deal with real-world situations that are full of tension, unfamiliar or complex so that students use all the knowledge gained to overcome the simulation problems given (K Mohiuddin, 2018); 2) to think critically and see problems from different perspectives (Martin *et al.*, 2016); 3) to develop meaningful skills (e.g. communication skills and problem-solving) based on simulation of real problems (K. Mohiuddin, 2020); 4) to gain insight into the gap between science and its application and; 5) to integrate knowledge, skills, and attitudes to have a deep understanding of pharmaceutical care (Nash *et al.*, 2015; Afzal, 2018). The lack of communication and problem-solving skills indicates changes in the learning process (Toklu & Hussain, 2013) especially related to the provision of modules (Fejzic & Barker, 2015) and online learning methods that are following current conditions (Hamilton *et al.*, 2020) is an important matter that needs to be followed up. The next action plan is to provide learning modules and intensify human simulation activities on offline learning.

Based on Table II, various gaps were found in OSCE trials, namely: questions with code 1 (A, B, C) containing questions about special devices, with test materials namely birth control pills, swingers, and metered-dose inhalers. In this test, it turned out that the dominant limitation of students was in information gathering (22%) and determining the problem (42%). Of the three variants of code 1, students experienced a major limitation in information gathering and determining the problem majorly in variant 1A which contains material about birth control pills. This is probably because as students, they have not been fully exposed to information or experience in the use of birth control pills. The next question with code 2 (A, B, C) contains material on prescription screening with (Angiotensin Converting Enzyme) ACE-inhibitor and (Angiotensin receptor blockers) ARB as a hypertension drug. In these trials, it turned out that the dominant limitation of students was in information gathering (36%), problem determination (36%), and effective communication (75%). The major limitation was in variants 2A and 2B, which contained material about the antihypertensive drugs lisinopril and valsartan. These three limitations can be resolved immediately by modifying the learning experience process in the future; finding relevant, reliable, and up-to-date information on the website; practice problem-solving skills. This ability is very important to support the

pharmacist's ability to solve health problems in the community (Martin *et al.*, 2016). Therefore, in the future, improvements to these three aspects can be made through the creation of a communication module during the practicum to improve their practical pharmacy skills in the delivery of pharmaceutical services (Fejzic & Barker, 2015).

Conclusion

In this research, OSCE-based assessment methods have been developed according to national standards and proven valid. Also, a limited trial has been able to capture the competence of pharmaceutical services and the lack of specific competencies of students. This method is also able to measure learning objectives in the practicum.

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