ISSN: 2651-4451 • e-ISSN: 2651-446X

Turkish Journal of Physiotherapy and Rehabilitation

2022 33(1)11-15

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Received: *10.12.2020 (Geliş Tarihi)*
Accepted: *05.03.2022 (Kabul Tarihi)*

VALIDITY AND RELIABILITY OF AN "OSCE" FOR CLINICAL REASONING IN PHYSIOTHERAPY

ORIGINAL ARTICLE

ABSTRACT

Purpose: The Objective Structured Clinical Examination (OSCE), an evaluation instrument, requires a validation process to guarantee the measurement of skills related to clinical reasoning. The OSCE is relevant for decision-making during the formation process for professional practice, so the purpose of this study is to determine the content validity and inter-rater reliability of an OSCE, during a physiotherapy undergraduate program for clinical reasoning.

Methods: Instrumental design, which identified content validity through internal consistency (Cronbach's alpha), added to recognition of the inter-rater reliability (intraclass correlation coefficient).

Results: The instrument demonstrated good internal consistency (0.98) and its concordance is from a substantial to an almost perfect degree of agreement.

Conclusion: The OSCE proved to be a suitable instrument to assess the clinical reasoning skill of physiotherapy students; nevertheless, this validation process has limitations in the number of stations and the little application in physiotherapy.

Key Words: Clinical Competence, Educational Measurement, Health Education, Physiotherapy, Reproducibility of Results

FİZYOTERAPİDE KLİNİK AKIL YÜRÜTMEYE YÖNELİK "OSCE" DEĞERLENDİRMESİNİN GEÇERLİLİK VE GÜVENİRLİĞİ

ARAŞTIRMA MAKALESİ

ÖZ

Amaç: Bir değerlendirme aracı olan Objektif Yapılandırılmış Klinik Muayene (OSCE)'nin validasyonu, klinik akıl yürütme ile ilgili becerilerin ölçülmesini garanti etmek için gereklidir. OSCE, mesleki uygulama sırasında karar vermekle ilgilidir, bu nedenle çalışmanın amacı, fizyoterapi lisans programında klinik akıl yürütme için OSCE 'nin içerik geçerliliğini ve oranlar arası güvenirliğini belirlemektir.

Yöntem: İç tutarlılık (Cronbach'ın alfası) aracılığıyla içerik geçerliliği ve oranlar arası güvenilirliği (sınıf içi korelasyon katsayısı) ölçüldü.

Sonuçlar: OSCE iyi bir iç tutarlılık (0,98) gösterdi ve uyumu önemli ila mükemmel bir uyum derecesine kadar yüksek olduğu görüldü.

Tartışma: OSCE, fizyoterapi öğrencilerinde klinik akıl yürütme becerisini değerlendirmek için uygun bir araç olduğunu kanıtladı; bununla birlikte, istasyon sayısındaki ve fizyoterapi uygulamalarındaki azlık validasyon sürecinin limitasyonlarındandır.

Anahtar Kelimeler: Klinik Yetkinlik, Eğitim Ölçümü, Sağlık Eğitimi, Fizyoterapi, Sonuçların Tekrarlanabilirliği

INTRODUCTION

The Objective Structured Clinical Examination (OSCE) is a formative and summative assessment tool. It is recognized for its value as a formative strategy (1) because it permits the measurement of skills developed by students through simulated practice strategy (2,3). In physiotherapy, clinical reasoning is determinant as a fundamental part of the clinic skill 'acting as a health professional of first contact to patients/users who seek their clinical services directly and without the remission by another health professional, through the performance, analysis, and interpretation of assessment and tests and diagnosis and with the interaction on the bodily movement, using different strategies to regain health' (4).

According to the Colombian Ministry of Health and Social Protection, clinical reasoning is composed of performance criteria, like analyzing and interpreting the results of the exam/evaluation against values and parameters considered normal, to make a clinical judgment concerning the body's condition of movement from the health and human functioning perspective. Said parameters allow making physiotherapeutic diagnoses based on rigorous professional clinical reasoning on essential systems for the body movement from the health perspective and human functioning. The diagnosis is developed according to the nosological analytical categories, definitions, and models globally defined and accepted by the professional collective implementing the program of interventions/treatment to restore the integrity of essential systems for the body's movement. Additionally, the diagnosis will allow taking actions to maximize the movement function or recover movement, minimize disability, and improve quality of life and self-sufficiency. These actions facilitate the working capacity of individuals with alterations in movement resulting from structural and functional deficiencies, limitations in activity, and restrictions on participation and/or disability – bearing in mind their health condition. The actions are supported by the best scientific evidence available (4).

It is important to identify validity and reliability as requirements of the tests and measurements to reflect the veracity of the data obtained through them, thus contributing to the curricular processes from the evaluation and learning (5,6). Therefore, the prior criteria of skills are reflected in the OSCE structure, which for this study was organized into seven stations (7,8): anamnesis, analysis of information through the selection of categories to examine, application of tests and measurements, registry (diagnosis, prognosis), intervention, evidence-based physiotherapy, and education in physiotherapy (9). These stations support the characteristics of the OSCE as a planned or structured and objective instrument, which was designed in coherence with the contents developed in assignments of the disciplinary professional areas of pathology, semiology, evaluation, and investigation, among others. This instrument promotes feedback on the learning process and, in turn, optimizes the time required for the evaluation, allowing alignment with educational trends in the health professions (1). Stations are based on that proposed by the American Physical Therapy Association (APTA) (10) and by Durante et al (11), who highlight the importance of the OSCE to evaluate the components of clinical skills, including a detailed history, physical exam, differential diagnosis, identification of appropriate investigations with their interpretation, education, and recommendations. The purpose of this study was to determine the content validity and inter-rater reliability of an OSCE in undergraduate physiotherapy to favor clinical reasoning.

METHODS

The results are the product of the project 'Simulated Practice in Physiotherapy Students for Decision Making in Clinical Skills while Caring for a Person with Low back pain. The study was carried out in Bogotá and Tunja (Colombia) in 2017, where the OSCE with the long case was designed for low back pain (LM).

The stations were determined from a theoretical revision of the intervention process, considering an LM to, subsequently, select the important aspects at the moment of interaction with the client within the framework of the clinical practice. In addition, to structure the OSCE, we must; first, organize a committee in charge of its elaboration and execution; second, establish competencies according to learning objectives; third, elaborate a clinical case

for the evaluation, structured in stations; fourth, establish the number and type (interpretation and procedure) of the stations; fifth, write the items that comprise the stations; and sixth, weigh the stations and items.

In the first moment, there were six stations (12), from which the fourth and fifth, were joined, they became apart for getting seven stations (13), based on the care model proposed by the APTA (10): 1) anamnesis, 2) information analysis through the selection of categories to examine, 3) application of tests and measurements, 4) registry (diagnosis, prognosis and intervention plan) 5) intervention, 6) evidence-based physiotherapy, and 7) education in physiotherapy. The instrument must be valid and reliable to guarantee objective and generalizable measurements.

Statistical Analysis

This study used an instrumental design (14), which identified the content validity with recognition of the internal consistency through Cronbach's alpha, and the reliability with the inter-rater intraclass correlation coefficient (ICC) to calculate internal consistency and inter-observer reliability. The data obtained in the OSCE were registered and stored in a Microsoft® Excel 2016 spreadsheet, which included the scores of the stations by two evaluators. Lastly, Cronbach's alpha coefficient was obtained; values >0.70 were considered for interpretation (15,16), and the ICC was analyzed with the classification by Landis and Koch.

RESULTS

Taking as a reference the results of validity of the OSCE with Kappa index of 0.82 (almost perfect) for six stations (12), the instrument was adjusted to seven stations in response to the results of the judgment of experts, who considered that due to the implications of the station "Intervention", it was worth including as independent, once this process was carried out, the validity and reliability analysis was carried out.

The analysis of content validity showed good internal consistency, resulting from the contrast of the scores obtained by the students of the two evaluators (Table I). In relation to reliability, the inter-rater ICC was identified, which demonstrated the inter-rater degree of agreement or concordance that, as observed in Table II, displayed a degree of agreement that ranged from substantial to almost perfect; due to the aforementioned, it is considered to have excellent reliability (17). (Table II)

DISCUSSION

The OSCE, as a valid and reliable instrument according to the results from this study and as stated by diverse authors, without ignoring some aspects like the number of stations, time of each one, and interdependence among them (18), is ratified as an adequate evaluation tool. However, according to Wessel et al. (19), who evaluated the skills required to manage people with chronic musculoskeletal conditions, it has poor internal consistency (0.48), since the number of stations can be a limitation.

Nevertheless, the OSCE is widely used in health education, as reported by Trejo et al., who employed the OSCE to assess clinical skills in physicians (20), or Bujack et al.(21), who established the content validity by carefully training simulated patients and showed that normalized evaluation criteria and cross-marking procedures improve inter-marker reliability, with the use of simulated patients being common in simulated practice as a pedagogic

Table 1. OSCE Internal Consistency

Dimensions	Items	Alpha value
Anamnesis	13	0.93
Information Analysis through the Selection of Categories to Examine	12	0.90
Application of Tests and Measurements	12	0.97
Registry (Diagnosis, Prognosis, and intervention plan)	6	0.93
Intervention	9	0.93
Evidence-based Physiotherapy	2	0.71
Education in Physiotherapy	8	0.94
TOTAL	69	0.98

Table 2. Inter-rater ICC

DIMENSIONS	Intraclass Correlation[b]	95% Confidence Interval		F test with True Value 0			Sig
		Lower Limit	Upper Limit	Value	gl1	gl2	
Dimension. Information analysis through the selection of categories to examine							
Single Measurements	0.809[a]	0.667	0.893	10.408	45	45	0.000
Average Measurements	0.895[c]	0.800	0.943	10.408	45	45	0.000
Dimension. Registry (Diagnosis, Prognosis and intervention plan)							
Single Measurements	0.558[a]	0.325	0.728	3.693	45	45	0.000
Average Measurements	0.717[c]	0.490	0.843	3.693	45	45	0.000
Intervention							
Single Measurements	0.668[a]	-0.070	0.889	14.082	45	45	0.000
Average Measurements	0.801[c]	-0.151	0.941	14.082	45	45	0.000
Evidence-based Physiotherapy Dimension							
Single Measurements	1.000[a]	.	.	.	45		.
Average Measurements	1.000[c]	.	.	.	45		.

A two-factor model of mixed effects, in which the effects of people are random and the effects of measures are fixed.

a. The estimator is the same, whether or not the interaction effect is present.

b. Type A intraclass correlation coefficients that use a definition of absolute agreement.

c. This estimation is calculated supposing that the interaction effect is absent because, on the contrary, it cannot be estimated.

strategy accompanied by the use of the OSCE for evaluative follow-up. This practice responds to the educational trends in health by using clinical simulation, a pedagogic strategy in physiotherapy that facilitates skill development and grants security in clinical performance (18,22). To complement Bujack et al., Ward and Willis (23) highlight the importance of preparation in the success of the OSCE validation, criteria considered in our study, in which an OSCE was conducted as a pilot test carried out with fourth-semester physiotherapy students which were then peer-reviewed.

Likewise, Harden and Gleeson (24), propose eliminating the variability resulting from the patient and the examiner; this recommendation was followed, bearing in mind that our study used a simulated patient with prior training and had the same evaluators in the different OSCE, which was evidenced in the ICC that exhibited a degree of agreement ranging from substantial to almost perfect.

Clinical reasoning, a skill of thought that permits analysis and interpretation of evaluative and diagnostic tests to design interventions that result in improving or maintaining the health condition of the population, requires development and measurement. The OSCE, as a didactic and evaluative strategy, facilitates planning and follow-up of the learning process. As an evaluative instrument, it is valid and reliable.

Having a valid instrument to evaluate the skill of clinical reasoning supposes the standardization of processes for professional performance, which leads to the development of practices based on a sequence of integration of knowledge and abilities.

Author Contribution: All authors contributed to the design, collection, and analysis of data. Additionally, they contributed to the writing of the article.

Declaration of Interest: None declared.

Acknowledgments: The authors thank the students from the Physiotherapy Programmes at Universidad de La Sabana and Universidad de Boyacá.

Funding: The research results are part of the project 'Simulated Practice in Physiotherapy Students for Decision Making in Clinical Skills while Caring for a Person with Low Back Pain. Colombia', funded by the Colombian Association of Physiotherapy Faculties (ASCOFAFI, for the term in Spanish), Universidad de La Sabana, and Universidad de Boyacá, entities that did not influence the study design.

Informed Consent: For this study, the informed consent of the participating students was obtained.

Ethical Approval: The study was approved by the ethics committee of the Universidad de Boyacá (CB N. 194, 09 June 2016).

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