Clinical Simulation in Nursing (2017) 13, 531-543

Clinical Simulation in Nursing

www.elsevier.com/locate/ecsn

Review Article

Validity and Reliability of Objective Structured Clinical Evaluation in Nursing

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KEYWORDS
assessment tool;
objective structured clinical evaluation;
competences;
reliability;
reproducibility of results;
undergraduate nursing students;
validity

Abstract

Background: The validity and reliability of the objective structured clinical evaluation (OSCE) with nursing students, accordingly to the published evidence, were analyzed.

Methods: A systematic review was developed. This study followed the methodology proposed in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. The databases searched included PubMed, Embase, Web of Science, Cochrane Plus, Scielo, Dialnet, Lilacs, and Cuiden Plus. Studies were included if they developed an OSCE, described validity and/or reliability of an OSCE, and used nursing student as sample. Studies were excluded when they were written in languages other than English, Spanish, Portuguese, or Catalan. The search was conducted up to and including April 25, 2016.

Results: Nineteen studies were included in the review. The quality of studies was mixed, and risk of bias was moderate to high. The characteristics of the OSCE were variable and move away to the original model. The validity and reliability were adequate in the majority of the studies.

Conclusion: The OSCE is a valid and reliable evaluation system to assess nursing students' competences.

Cite this article:
Navas-Ferrer, C., Urcola-Pardo, F., Subirón-Valera, A. B., & Germán-Bes, C. (2017, November). Validity and reliability of objective structured clinical evaluation in nursing. *Clinical Simulation in Nursing, 13*(11), 531-543. http://dx.doi.org/10.1016/j.ecns.2017.07.003.

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The introduction of the Bologna Process and the European Higher Education Area has supposed one of the major changes in European higher education (Collins & Hewer, 2014). This new paradigm has introduced transformations in educational and evaluative models (Agencia Nacional de Evaluación de la Calidad y Acreditación, 2004). One specific transformation has been focused on the acquisition of competences by the students. Competences has been defined as knowledge, skills, and attitudes that constitute a given profession (Collins & Hewer, 2014). In the same line, González and Wagenaar (2006) defined competences as the dynamic combination of knowledge, skills, abilities, and values that have a professional. According to Pérez Gorostegui and Oteo Ochoa (2006), the competences of

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. Conflicts of interest: none.

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http://dx.doi.org/10.1016/j.ecns.2017.07.003

health professionals are a dynamic and longitudinal process in time, by which a person uses knowledge, skills, attitudes, and judgment associated with their profession, in order to be able to develop their work effectively.

In this changing context, developing a competency-based assessment for their students has become one of the most important challenges for nursing faculties. The development of competency-based assessment requires valid and reliable evaluation tools (González & Wagenaar, 2006). In this way, validity of a measurement is defined as the ability to be able to measure what really wants to be measured. Reliability is understood as the ability to get the same value when measured on the same sample in several occasions (Sánchez-Villegas, Martínez González, & Palma, 2008).

Key points

- OSCE is a valid and reliable method to assess nursing competences.
- Validity and reliability values are similar independently of the used model.
- It would be necessary to unify methodological criteria about OSCE.

Miller (1990) proposed that only one evaluation method cannot provide all the required data in order to assess the health professional competences. Accordingly, he developed an assessment framework represented as a four-level pyramid (Figure 1). The base of the pyramid is formed by what the student "knows." This first stage corresponds to the theoretical knowledge that every professional must dominate to develop a professional practice (Tejada Fernández and Ruiz Bueno, 2016). On the next level, the ability to "know how" is located. This ability refers to apply knowledge in a particular context. At the third level is the ability to "show how," understood as how students use their knowledge in a specific clinical situation. Finally, what professionals "do" in their clinical practice is the last level, placed at the top of the pyramid. Higher levels of this model allow a more complete assessment of student competences. This model became one of the most used in health professionals' education, as it allows specifying the desired evaluation and choosing the most suitable instruments for each situation. Over the last years, several teachers and researchers have developed assessment tools related with these higher levels, like objective structured clinical evaluation (OSCE) and portfolio (Tejada Fernández, 2011; Tejada Fernández and Ruiz Bueno, 2016).

OSCE is an assessment method created by Professor Harden's team in 1975 (Harden, Stevenson, Downie, & Wilson, 1975). Harden and Gleeson (1979) defined OSCE as a "method of assessing a student's clinical competence which is objective rather than subjective, and in which the areas tested are carefully planned by the examiners". A newer definition was provided by Watson, Stimpson, Topping, and Porock (2002), for whom OSCE is an examination where students demonstrate their competences under a variety of simulated conditions.

Harden, Stevenson, Downie, and Wilson (1975) proposed the OSCE after observing methodological and objectivity problems on the assessment of clinical competences in medicine students. Until its appearance, clinical assessment of the students was based on direct observation of their performances on clinical situations with a reduced number of patients. Moreover, each student was assessed with different patients and by different evaluators. These characteristics led the authors to question the objectivity, validity, and reliability of the assessment.

The original OSCE (Harden & Gleeson, 1979; Harden et al., 1975) was composed by 16 stations, and the students had five minutes to complete each one. The students had to pass through the 16 stations to complete the examination. There were two kinds of stations: "procedure stations" and "question stations." At procedure stations, the students were asked to carry out a procedure (like taking a medical history, performing a physical examination, or interpreting laboratory results) in a given clinical situation. At question

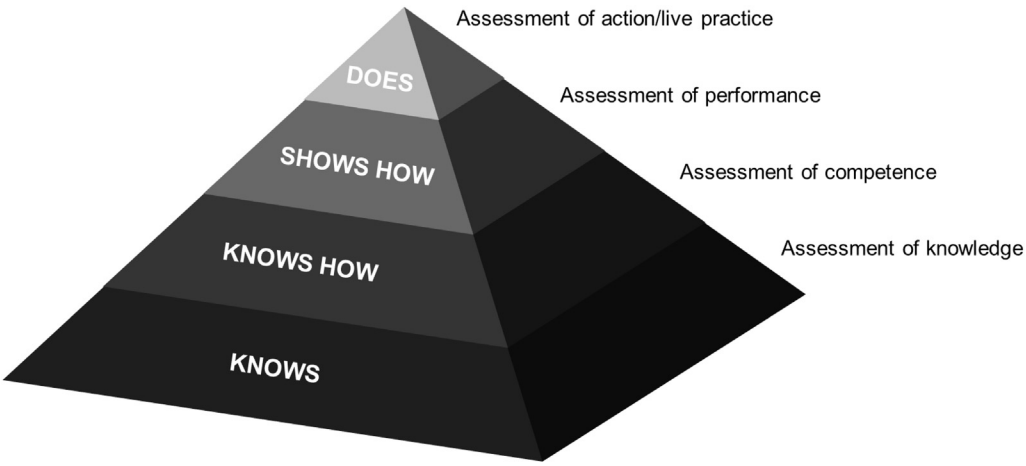

Figure 1 Miller's pyramid. Source: Miller (1990).

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