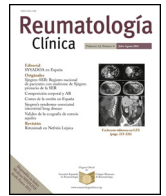




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Original Article

The Method Used to Set the Pass Mark in an Objective Structured Clinical Examination Defines the Performance of Candidates for Certification as Rheumatologists[☆]

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ABSTRACT

Background: The Mexican Accreditation Council for Rheumatology certifies trainees (TR) on an annual basis using both a multiple-choice question (MCQ) test and an objective structured clinical examination (OSCE). For 2013 and 2014, the OSCE pass mark (PM) was set by criterion referencing as ≥ 6 (CPM), whereas overall rating of borderline performance method (BPM) was added for 2015 and 2016 accreditations. We compared OSCE TR performance according to CPM and BPM, and examined whether correlations between MCQ and OSCE were affected by PM.

Methods: Forty-three (2015) and 37 (2016) candidates underwent both tests. Altogether, OSCE were integrated by 15 validated stations; one evaluator per station scored TR performance according to a station-tailored check-list and a Likert scale (fail, borderline, above range) of overall performance. A composite OSCE score was derived for each candidate. Appropriate statistics were used.

Results: Mean (\pm standard derivation [SD]) MCQ test scores were 6.6 ± 0.6 (2015) and 6.4 ± 0.6 (2016) with 5 candidates receiving a failing score each year. Mean (\pm SD) OSCE scores were 7.4 ± 0.6 (2015) and 7.3 ± 0.6 (2016); no candidate received a failing CPM score in either 2015 or 2016 OSCE, although 21 (49%) and 19 (51%) TR, respectively, received a failing BPM score (calculated as 7.3 and 7.4, respectively). Stations for BPM ranged from 4.5 to 9.5; overall, candidates showed better performance in CPM.

In all, MCQ correlated with composite OSCE, $r = 0.67$ (2015) and $r = 0.53$ (2016); $P \leq .001$. Trainees with a passing BPM score in OSCE had higher MCQ scores than those with a failing score.

Conclusions: Overall, OSCE-PM selection impacted candidates' performance but had a limited affect on correlation between clinical and practical examinations.

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El método para establecer el punto de corte en el examen clínico objetivo estructurado define el desempeño de los candidatos a la certificación como reumatólogo

RESUMEN

Antecedentes: El Consejo Mexicano de Reumatología certifica candidatos mediante una evaluación teórica (ET) y un examen clínico objetivo estructurado (ECO). En 2013 y 2014, el punto de corte para acreditar el ECO se estableció por criterio (PC ≥ 6); a partir del 2015, también se estableció por el método del desempeño limítrofe (PDL). Se comparó el desempeño de los candidatos con ambos puntos de corte y examinó su impacto en la correlación entre la ET y el ECO.

Palabras clave:

Competencias basadas en educación
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Material y métodos: En 2015 y 2016, respectivamente, 43 y 37 candidatos aplicaron; ambos ECOE se integraron con 15 estaciones; un evaluador por estación calificó la lista de cotejo y el desempeño global del candidato mediante una escala de Likert (inferior, límite y superior). A cada candidato se le asignó una calificación global del ECOE.

Resultados: El promedio (\pm DE) de la ET fue de 6,6 (\pm 0,6) en el 2015 y de 6,4 (\pm 0,6) en el 2016; 5 candidatos/año no acreditaron. El promedio (\pm DE) del ECOE fue de 7,4 (\pm 0,6) y 7,3 (\pm 0,6), respectivamente; todos acreditaron de acuerdo con el PC, mientras que 21 (49%) y 19 (51%) no lo hicieron de acuerdo con el PDL (7,3 en 2015 y 7,4 en 2016). Los PDL para cada estación variaron.

La ET correlacionó con el ECOE. Los candidatos con ECOE acreditado (por PDL) calificaron mejor en la ET que su contraparte.

Conclusiones: El método para establecer el punto de corte del ECOE afecta al desempeño de los candidatos a una certificación, pero no impacta a la correlación entre la ET y el ECOE.

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Introduction

Councils that certify health specialists are committed to society, to ensure that certified physicians possess the clinical skills and necessary knowledge to practice their profession. As a part of this commitment, they develop and apply evaluation tools, establish pass marks and, finally, draft critical decisions, not only for those involved but also for the medical community and society. Thus, the choice of the pass mark must be robust from the methodological point of view, since this varies substantially depending on the method applied to calculate it.¹

For years, the Mexican Accreditation Council for Rheumatology (CMR) has certified all the residents who have completed their studies as rheumatologists on an annual basis; certification is carried out at the end of training and consists of a written test with multiple-choice questions that evaluates theoretical knowledge (MCQ) and an examination to test clinical skills. The latter was traditionally based on a single case; due to the limitations inherent to said assessment tool modality,^{2,3} in 2013 we implemented and subsequently began to apply an objective structured clinical examination (OSCE) as part of the certification process.⁴

For certification in 2013 and 2014, the OSCE pass mark for accreditation was established "by criterion" as being 6 or more (in a scale of 0 to 10, in which 0 represented the worst performance); a session held expressly for this purpose was devoted to discuss and agree on the minimum number of items on a validated checklist to thus consider whether the skills of a rheumatologist were adequate and safe. Beginning in 2015, the evaluators assigned to each OSCE station were instructed and trained to complete the checklist, as well as to evaluate the general performance of the candidate using a Likert scale for the purpose of establishing the OSCE pass mark on the basis of the overall borderline performance (BPM).⁵

The objectives of the exercise were:

1. To compare the OSCE performance of the candidates for certification as rheumatologists, using pass marks established by 2 different methods, by criterion (CPM) and by the BPM method.
2. To examine whether the correlation between the MCQ and the OSCE is affected by the pass mark selected.

Material and Methods

In Mexico, there are 16 centers accredited to prepare specialists in rheumatology. In 2015 and 2016, 43 and 37 candidates, respectively, applied for certification in rheumatology over 2 consecutive days; all of the candidates had completed a training program with a duration of at least 4 years in their respective educational institutions and had been recommended by their professors.

The 2 versions of the MCQ consisted, respectively, of 222 and 200 questions, mostly presented in the format of case reports and posed by experienced certified rheumatologists, and reviewed by a council subcommittee formed by 4 certified rheumatologists. Both OSCE circuits were comprised of 15 stations designed by members of the council; each station was validated by a subcommittee of at least 6 certified rheumatologists who had not been involved in the design of the stations, provided that at least 80% of the evaluators approved the inclusion of each item on the checklist; each station had a duration of 8 min and the circuits included 4 rest stations. An external evaluator was assigned to each station. He or she was duly trained to score the checklist and the Likert scale concerning the overall performance of the candidate (fail, borderline and above range). The checklists of each station included a number of items that ranged from 5 to 21.

The following pass marks were established for those 2 years: the process of certification in 2015 required a score ≥ 5.7 for the MCQ and ≥ 6 for the OSCE; the process of certification in 2016 required a score ≥ 6 for both the MCQ and OSCE evaluations. In all cases, the possible maximum score was 10.

The BPM was calculated as follows: for each station, we selected the checklists of the candidates scored as "borderline" according to the Likert scale for overall performance. Then, we determined the mean score obtained in those checklists, which was the BPM for the station being evaluated. Finally, we obtained the BPM for the overall OSCE by averaging the BPM of the 15 stations.

Each candidate was given a score for BPM and another for the OSCE (overall), by averaging the scores for the 15 stations.

Statistical Analysis

Descriptive statistics were employed and the tests appropriate for the variable distribution were utilized. For construct validity, we correlated the BPM and OSCE scores using the Pearson correlation coefficient; likewise, we compared the BPM scores of those whose OSCE scores were above and below the pass mark with the Mann-Whitney *U* test. The analyses were carried out with the SPSS/PC v20 statistical package.

Results

Table 1 summarizes the relevant data of the certification processes of 2015 and 2016. The average BPM scores were similar in the 2 years and close to 6.5, as were the percentages of candidates whose scores were below the pass mark, 12% and 14%, respectively.

The scores of the candidates in the OSCE were higher than those of the BPM in both years and close to 7.4; no candidate failed the OSCE according to the CPM. In both scores, the BPM of the OSCE was calculated to be 7.3 (in 2015) and 7.4 (in 2016), respectively.

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