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ORIGINAL ARTICLE

Ranking Spain's Medical Schools by their performance in the national residency examination

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KEYWORDS
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Abstract
Background: Medical school graduates in Spain must take a uniform national exam (called ''examen MIR'') in order to enter postgraduate training in a specialty. Its results offer a unique opportunity to rank medical schools according to this exam.
Objectives: We measured differences in the MIR exam results among Spanish medical schools and assessed the stability of the MIR-based rankings for the period 2003–2011.
Results: In the year 2011 a total of 6873 residency positions nationwide were offered by the Spanish Ministry of Health, Social Services and Equality. These positions covered 47 specialties distributed over 231 training centers. A total of 11,550 medical graduates (including 1997 foreign graduates) took the MIR examination. Marked differences among medical schools were evident. The median graduate from medical school #1 and #29 occupied the positions 1477 and 5383, respectively. These figures correspond to a standardized ranking of 21 out of 100 for medical school #1 (that is, 1477/6873; half of medical school #1 obtained better [below position 21%] and half worse [over position 21%] results) and a standardized ranking of 70 out of 100 for medical school #29. While 81% of the medical school #1 graduates were amongst the best 3000 MIR exams and only 5% above the 5000 position the corresponding figures for medical school #29 graduates were 21% and 44%, respectively. The ranking position of the 29 medical schools was very stable between the years 2003 and 2011.
Conclusion: There are marked differences in medical schools in Spain and these differences are very consistent over the years 2003–2011.

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PALABRAS CLAVE
Educación médica;
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Ranking de universidades

Clasificación de las facultades de medicina españolas según sus resultados en el MIR

Resumen
Antecedentes: En España, los graduados de las Facultades de Medicina deben tomar someterse a nacional uniforme (llamado «MIR») con el fin de ingresar a la formación de posgrado en una especialidad médica. Sus resultados ofrecen una oportunidad única para clasificar las Facultades en términos de calidad.
Objetivos: Medir la presencia y la significación de las diferencias en los resultados del MIR entre las facultades de medicina españolas, y evaluar la estabilidad de las clasificaciones basadas en los resultados de la prueba MIR para el período 2003–2011.
Resultados: Se observaron diferencias significativas, persistentes y consistentes en los rankings basados en los resultados de la prueba MIR. El graduado promedio de la Facultad con mejores resultados queda clasificado en el percentil 21 en todo el país, mientras que el graduado promedio de la Facultad con peores resultados queda clasificado en el percentil 70.
Conclusión: Existen marcadas diferencias en las Facultades de Medicina en España, y estas diferencias son muy consistentes durante los años 2003 a 2011.

Introduction

The international ranking of universities has attracted considerable attention since 2003, when the Academic Ranking of World Universities (ARWU), also known as the Shanghai Ranking, first appeared. Since then, the Leiden Ranking, the QS World University Ranking, the Times Higher Education Ranking, the CHE-Ranking, the SCImago Institutions Rankings, and the Ranking Web of World Universities[1–3] have attempted to compare universities by quality, output or excellence.

In Spain, as in several other European countries, medicine is the only university degree that is followed by a uniform national examination. The MIR (for *Médico Interno Residente*) exam is the Spanish national examination provided by the Ministry of Health, Social Services and Equality and that determines the employability of the medical school graduate to select his or her specialty.[4,5] Students in Spain desiring to be doctors go directly from secondary school to a medical school (*Facultad de Medicina*) at a university, the equivalent of an extended undergraduate course of study in an American university. The medical curriculum is expected to last six years and ends with a *licenciatura* or degree in medicine. To obtain a residency place in any specialty, the candidate must take the MIR exam and based on the score the specialty and Hospital is chosen. Before 2010, the candidate's score on the national MIR exam contributed 75% to his overall ranking in the national competition for residency training positions, while his medical school grade point average determines the remaining 25%. Afterwards those percentages changed to 90% and 10%, respectively.

The results of the national MIR exam offer a unique opportunity to make quantitative, objective comparisons among Spanish medical schools. No inter-university comparison based on the MIR exam, nor any study of the trends in MIR scores over time, have been published. This study's aims are to assess the presence and magnitude of differences in the MIR exam results among Spanish medical schools and to analyze the variability of Spain's medical schools ranking based on the MIR exam results between 2003 and 2011.

Data and methods

Data

The main database is an archive of individual choices of residency training programs in the annual competitions from 2003 through 2011, provided by Spain's Ministry of Health, Social Services and Equality. The data were provided with the condition of not identifying medical schools, except for the medical school that obtained the best result. For each candidate in each year, the archive contains the candidate's national ranking (an ordinal number ranging from 1 up to the total number of candidates), the residency program chosen (including specialty and medical center), the candidate's residential postal code, sex, nationality, and medical school attended.

Methods

First, we focused on a descriptive analysis of the national rankings in relation to the candidate's medical school, according to the 2011 national competition. For each medical school, we computed the mean and standard deviation of graduates' national ranking, and then employed nonparametric tests to assess differences in the observed mean rankings between medical schools.

To analyze the temporal stability of the rankings during 2003–2011, we first standardized the rankings as percentiles in order adjust for differences in the number of candidates electing residency positions in each year, and then calculated the mean percentile ranking for each university in each year. We then examined the trends in the mean percentile rankings of the highest- and lowest-rank universities.