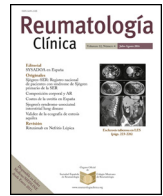




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Original Article

Progress of the Attractiveness of Rheumatology Among Medical Speciality Training Candidates (MIR) in Spain[☆]



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ABSTRACT

Objective: To describe the progress of the attractiveness of rheumatology at successive MIR calls, from 1983 to 2014.

Methods: Candidates in the Spanish training system for medical doctors choose their specialties sequentially, ordered by their ranking in the qualifying exam (MIR). The highest, median and lowest rank of candidates choosing rheumatology training positions in every MIR call from 1983 to 2014 was requested from the Department of Management of Specialized Medical Training (General Department of Professional Regulation; Spanish Ministry of Health). To compare, the same data was requested for other specialties. In order to define and analyze the attractiveness of each specialty we introduce an 'index of attractiveness', based on the normalized difference of the actual median rank reported for each year and the average median obtained in 1000 simulations in which candidates choose specialties at random.

Results: Regarding the median of the election of rheumatology, the range went from 244th in 1983 to 3394th in 2008, showing a progressive increase over the years in absolute figures. A mathematical simulation allowed quantifying the difference between the observed median and what would have happened if specialties had been chosen by pure chance. Results show a tendency to recover the attractiveness of rheumatology in recent years.

Conclusions: After a sharp decline in the attractiveness of rheumatology during the last years of the 20th century, there seems to be a recovery.

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Evolución del atractivo de la Reumatología entre los electores a plazas de médico interno residente

RESUMEN

Objetivo: Describir la evolución del grado de atractivo de la Reumatología en las sucesivas convocatorias MIR de 1983 a 2014.

Métodos: Se solicitó al servicio de Gestión de Formación Sanitaria Especializada de la Subdirección General de Ordenación Profesional del Ministerio de Sanidad español datos de elección de Reumatología de las convocatorias MIR de 1983 a 2014: número de orden de elección de la primera y última plazas de Reumatología, así como la mediana. A efectos de comparación, se solicitó la mediana de elección de otras especialidades. Para definir el grado de atractivo de cada especialidad, se realizó un análisis matemático de 1.000 simulaciones sobre la mediana que habría obtenido cada especialidad si se hubieran elegido al azar y se calculó la desviación entre la mediana observada y la mediana por azar generada mediante las simulaciones.

Palabras clave:

Reumatología

Especialización

Atractivo

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Resultados: La mediana de elección de Reumatología presentó un rango desde el número 244 en la convocatoria de 1983 al número 3.394 en la convocatoria del año 2008, observándose, en términos absolutos, un progresivo incremento a lo largo de los años. La simulación matemática permitió cuantificar la desviación entre la mediana observada y la que habría ocurrido si las especialidades se hubieran elegido al azar. Se objetivó una tendencia a la recuperación del atractivo de Reumatología en los últimos años.

Conclusiones: Tras un acusado descenso en el atractivo de la Reumatología entre los electores a plazas MIR durante los últimos años del siglo pasado, parece evidenciarse una recuperación.

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Introduction

Rheumatology is the specialty that concerns the study, prevention, diagnosis and treatment of medical diseases of the musculoskeletal system and systemic autoimmune diseases (SAD). The definition of the specialty is provided in the order from the Spanish ministry that regulates the training that residents should receive to be granted official accreditation as specialists in rheumatology recognized by the Spanish government.¹

Rheumatology practice has undergone significant changes in recent years, including the introduction of biological therapies or the widespread implementation of musculoskeletal ultrasound in routine clinical practice. On the other hand, the presence of rheumatologists in the body of professors teaching undergraduate and graduate medical studies appears to have shown a substantial increase in the last few years. Thus, it is to be hoped that there will have been greater exposure to the specialty by the most recent classes of medical undergraduates and graduates.²

The choice of a position for specialization using the ranking in the qualifying examination for Spanish medical residents (MIR) represents a unique and accurate observatory of the preferences of Spanish physicians toward the different specialties—medical, surgical and procedural—offered annually in the successive MIR calls.

The objective of this report was to describe the changes in the attractiveness of the specialty of rheumatology in successive MIR calls from 1983 to 2014, and to compare them with those observed in other specialties.

Methods

Every year, the Spanish Ministry of Health announces a call for specialized medical training. Both the total number of positions offered and those available for each specialty change from one year to another. The choice of a position on the part of candidates is sequential, according to the ranking of each in the year that the call is posted. Thus, once all of the positions in a specialty have been chosen, this option is no longer available for candidates whose rank is higher.

The median rank of the candidates who choose a certain specialty in each call could be understood to be an indicator of the popularity of said specialty in that year. The median is the rank of the candidate who chose the position in rheumatology that occupied the mean position of those places offered for said specialty. For example, if there are 50 available positions for a specialty in a given year and the 50 best candidates in that call choose that specialty, the median rank for that year would be 25. In practice, the real median would typically be higher, as it is not very likely that all the best candidates would choose the same specialty. In general, it can be understood that the lower the median rank of a specialty indicates a greater attractiveness of that specialty in that given year.

It is necessary to be cautious in properly interpreting this estimator of attractiveness. For example, if, for a certain specialty, there are 100 positions one year and 50 the next, the median in the case that all the best candidates chose that specialty would be 50

and 25, respectively. This indicates that the median by itself is not a valid quantitative indicator of attractiveness for comparing the popularity of specialties over the years.

To rectify this situation, we created a normalized popularity index based on the difference between: (1) the mean median obtained by 1000 computer simulations in which the candidates chose the specialty at random and (2) the real median of each specialty for each year. This difference was appropriately normalized in relation to the total number of positions for each year.

To carry out this simulation, we asked the Department of Management of Specialized Medical Training of the General Department of Professional Regulation of the Spanish Ministry of Health, Social Services and Equality to provide data on the choice of the specialty of rheumatology in the MIR calls from 1983 to 2014. Specifically, we requested the number of positions of rheumatology offered each year and the highest and lowest ranks, as well as the median rank, of candidates choosing rheumatology in each MIR call. To enable comparisons with other specialties, we also asked for the number of positions offered and the median rank for cardiology, dermatology, endocrinology, internal medicine and allergology, as well as the total number of positions offered encompassing all of the specialties in each call (N_{tot}). The simulation shows the choice of the best N_{tot} of the MIR candidates for each year. In the simulation, the candidates choose a specialty of among the 6 named above on which they had data, and a seventh option referred to as “other”, which includes all the other specialties available for the MIR on which there was no data, and including those candidates who opted for not choosing a position in each call.

In the simulation, the candidates chose the specialty at random. The possibility of choosing a certain specialty, including “other”, concludes when all the available positions for that specialty have been chosen. From that point on, the random selection in the simulation is restricted to the other specialties. At the end of each simulation round, each candidate of the N_{tot} will have been assigned a specialty (including the possibility of “other”).

After each simulation, the median rank for each specialty was calculated. As the choice was random, this median varied from one simulation to another. Subsequently, we calculated the mean of the medians of 1000 independent randomly assigned simulations. This generated a mean median for each specialty for each year.

The popularity index was generated by comparing the median obtained at random with the real median for each specialty for each year. If the real median was lower than the randomly produced median, it could be considered that the specialty was popular; otherwise, if the real median was higher than the randomly generated median, it could be considered that the specialty was not popular.

To achieve a normalized quantitative measure that can be compared over a period of years, we utilized the following popularity index:

$$I = \frac{\text{Mean median of the simulations} - \text{Real median}}{N_{\text{tot}}}$$

It could be that the outcome numerical measure of the simulation would change if we utilized the data relative to all of the

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