

ORIGINAL REPORT

Doctoral theses in diagnostic imaging: A study of Spanish production between 1976 and 2011[☆]



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KEYWORDS

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Research

Abstract

Objective: To analyze the production of doctoral theses in diagnostic imaging in Spain in the period 1976–2011 with the aim of (a) determining the number of theses and their distribution over time, (b) describing the production in terms of universities and directors, and (c) analyzing the content of the theses according to the imaging technique, anatomic site, and type of research used.

Material and methods: The TESEO database was searched for “radiología” and/or “diagnóstico por imagen” and for terms related to diagnostic imaging in the title of the thesis.

Results: A total of 1036 theses related to diagnostic imaging were produced in 37 Spanish universities (mean, 29.6 theses/year; range, 4–59). A total of 963 thesis directors were identified; 10 of these supervised 10 or more theses. Most candidates and directors were men, although since the 2000–2001 academic year the number of male and female candidates has been similar. The anatomic regions most often included in diagnostic imaging theses were the abdomen (22.5%), musculoskeletal system (21.8%), central nervous system (16.4%), and neck and face (15.6%). The imaging techniques most often included were ultrasonography in the entire period (25.5%) and magnetic resonance imaging in the last 5 years. Most theses (63.8%) were related to clinical research.

Conclusions: Despite certain limitations, the TESEO database makes it possible to analyze the production of doctoral theses in Spain effectively. The annual mean production of theses in diagnostic imaging is higher than in other medical specialties. This analysis reflects the historic evolution of imaging techniques and research in radiology as well as the development of Spanish universities.

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PALABRAS CLAVE

Radiodiagnóstico;
Bibliometría;
Tesis doctoral;
Investigación

Las tesis doctorales en radiodiagnóstico: estudio de la producción española entre 1976 y 2011

Resumen

Objetivo: Analizar la producción de tesis doctorales de radiodiagnóstico en España durante el periodo 1976–2011 para: a) obtener el número de tesis y su distribución temporal; b) describir la producción por universidades y directores, y c) su contenido, según técnica de imagen, localización anatómica y tipo de investigación.

Material y métodos: Se ha realizado una búsqueda en la base de datos TESEO por descriptores ("radiología" y/o "diagnóstico por imagen") y por palabras relacionadas con radiodiagnóstico en el título de las tesis.

Resultados: Se han obtenido 1036 tesis de radiodiagnóstico producidas en 37 universidades españolas, con una media de 29,6 tesis anuales (rango 4–59). Se han identificado 963 directores de tesis, diez de los cuales han dirigido 10 tesis o más. Predomina el género masculino en autores y directores, aunque desde el curso 2000–01 el número anual de autoras es similar o superior al de autores. Las regiones anatómicas más estudiadas fueron abdomen (22,5%), musculoesquelético (21,8%), neurorradiología (16,4%) y cérvico-facial (15,6%). La ecografía fue la técnica más estudiada durante el periodo analizado (25,5%) y la resonancia magnética en los últimos 5 años. El 63,8% de las tesis trataba sobre investigación clínica.

Conclusiones: A pesar de ciertas limitaciones, la base de datos TESEO permite analizar eficazmente la producción de tesis doctorales en España. La media anual de las tesis encontradas supera la de estudios similares de otras especialidades médicas. Su análisis refleja la evolución histórica de las técnicas de imagen y la investigación en radiología, así como el desarrollo de la universidad española.

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Introduction

The doctoral thesis is a directed research work in order to obtain a PhD after presenting a written document followed by an oral presentation before a tribunal made up of experts on the issue at stake. The actual legislation¹ states that the PhD lays at the heart of all R+D+i (research, development, and innovation) initiatives conducted by universities. As a matter of fact, holding a PhD is the maximum academic rank one can achieve and is the official recognition of the full research capacity.

Back in 1975, the Spanish Ministry of Education and Science created a registry of all the Spanish doctoral theses ever conducted that would lead to the creation of the database known as TESEO,² which operates through permanent communication among colleges. All universities are compelled to send the files from all the theses that have been defended at one time or another. This was set forth in the Royal Decree 185/1985³ and further legislations regulating the process of doctoral studies.^{4,5} Article 14.5 from the Royal Decree 99/2011¹ takes one more step and states that once the doctoral thesis has been approved, the university needs to register it in an open electronic format in an institutional repository.

Results from the bibliometric analysis of doctoral theses are a valuable indicator when it comes to assessing and comparing the evolution of the scientific and research activity of countries or institutions, as former studies conducted in Spain^{6–15} and other countries^{16–21} have said in the past.

The present study tries to analyze the production of doctoral theses on radiodiagnosis in Spain during the 1976–2011 period from the information contained in the TESEO database. The goals are: (a) to obtain the number of theses conducted and their distribution through time; (b) to describe the production based on two parameters: universities and directors; and (c) to describe the content of the theses when it comes to the imaging modality picked, the anatomical location, and type of research conducted.

Material and method

A bibliometric, descriptive, retrospective study was conducted between the years 1976–1977 and 2010–2011 using exclusively information contained in the TESEO database. Two research strategies were followed in two successive phases: (a) through descriptors, finding the doctoral theses categorized under the keywords "radiology" and/or "imaging diagnosis" and (b) through words contained in the title associated with radiology in order to find theses on radiodiagnosis not indexed under the aforementioned descriptors. Fifty terms were used, of which the next 25 allowed us to find new doctoral theses on radiodiagnosis that had not been identified in the previous phase: "angioresonance", "angio-resonance", "cholangiography", "Doppler", "densitometry", "ultrasound", "echographic", "ultrasonographic", "hysterosalpingography", "lymphography", "mammogram", "mammographic",

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