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Evaluation of the Scientific Production in the Field of General Practice and Family Medicine in Portugal

Avaliação da Produção Científica na Área da Medicina Geral e Familiar em Portugal

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ABSTRACT

Introduction: The Portuguese publications in the field of General Practice and Family Medicine have not yet been assessed in bibliometric studies. The aim of this study was to analyze that production between 2012 and 2022.

Methods: The Web of Science Core Collection was used to gather the number of articles, journals and citations obtained; the Journal Citation Reports to obtain the Impact Factor and quartile of journals; and Scimago Journal & Country Rank, for the comparison of data with other European countries. The search was based on the following query: "usf OR unidade de Saude Familiar OR centro de Saude OR ACeS OR medicina geral familiar OR Gen Practice Family SAME Portugal", and a time window between 2012 and 2022 was defined. The study considered the following quantitative indicators: total number of publications, typology, language, affiliation, co-authors, geographical distribution, thematic areas, and the number of publications/inhabitant and publications/physician from European countries; the qualitative indicators selected were the Impact Factor (IF), the quartile and the number of citations.

Results: Between 2012 and 2022, the national scientific production had an average annual growth rate of 36.6%. Of 389 publications, 73.8% were 'Articles' and 11.8% were 'Review Articles', predominantly in English (88.4%). The fields of 'General Internal Medicine' (24.7%) and 'Public Environmental Health' (14.9%) had the highest publication rates among the journals. The 389 publications received 5354 citations, for an average of 13.76 citations per article, and the average yearly citation growth was 115%. According to IF, 22.5% of the 222 journals belonged to Q4, 27.5% to Q3, 29.7% to Q2 and 20.3% to Q1, and therefore no significant bias regarding the journals where Portuguese doctors publish was observed.

Conclusion: The bibliometric analysis allowed us to examine the evolution of the scientific production in the field of Portuguese General Practice and Family Medicine by observing an increasing publication trend and with a high potential for publication growth.

Keywords: Bibliometrics; Family Practice; Portugal; Publishing/statistics & numerical data

RESUMO

Introdução: As publicações portuguesas da área de Medicina Geral e Familiar ainda não foram alvo de estudos bibliométricos. Pretendeu-se analisar tal produção no período entre 2012 e 2022.

Métodos: Usou-se a *Web of Science Core Collection* para obter o número de artigos, as revistas de publicação e as respetivas citações; o *Journal Citation Reports* para obter o Fator de Impacto e o quartil das revistas; e o *Scimago Journal & Country Rank* para a comparação de dados com outros países europeus. Utilizou-se a equação de pesquisa "usf OR unidade de Saude Familiar OR centro de Saude OR ACeS OR medicina geral familiar OR Gen Practice Family SAME Portugal", e selecionaram-se os resultados obtidos no período entre 2012 e 2022. Os indicadores quantitativos selecionados foram o total de publicações, tipologia, idioma, afiliação, coautorias, distribuição geográfica, áreas temáticas e o número de publicações/habitante e de publicações/médico em países europeus. Como indicadores qualitativos escolheu-se o Fator de Impacto (FI), o quartil das revistas e o número de citações.

Resultados: Entre 2012 e 2022, a produção científica nacional teve uma taxa de crescimento médio anual de 36,6%. Em 389 publicações, 73,8% foram de '*Article*' e 11,8% de '*Review Article*', predominando a publicação em língua inglesa (88,4%). As revistas com maior publicação pertencem às áreas '*General Internal Medicine*' (24,7%) e '*Public Environmental Health*' (14,9%). As 389 publicações tiveram 5354 citações, com uma média de 13,76 citações por artigo e a taxa de crescimento médio anual de citações foi de 115%. Em função do FI, das 222 revistas, 22,5% pertenciam ao Q4, 27,5% ao Q3, 29,7% ao Q2 e 20,3% ao Q1, não se observando por isso nenhum viés assinalável relativamente às revistas onde os médicos portugueses publicam.

Conclusão: A análise bibliométrica permitiu avaliar a evolução e o estado da produção científica da área da Medicina Geral e Familiar por investigadores portugueses, observando-se uma tendência de publicação crescente, e com forte potencial de crescimento.

Palavras-chave: Bibliometria; Medicina Geral e Familiar; Portugal; Publicação/estatística e dados numéricos

INTRODUCTION

General and Family Medicine (GFM), like other medical specialties, involves a high research potential, with the subsequent production of knowledge and scientific publications. However, there is no knowledge of this research activity or how it is distributed among the main national institutions, centres, or groups. Bibliometric studies could minimise this.

Bibliometrics is a scientific approach aimed at quantifying the academic output by analysing the different characteristics of written communication,[1] allowing the monitorisation of scientific publication throughout specific timeframes, with comparisons between different scientific areas of medicine, between countries or between any other group.[2] It is often used in assessing the impact of authors, departments, institutions or countries on the production of knowledge.[3] Thus, bibliometric studies are used for the allocation of

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resources to research groups, or for the definition of career progression policies.[4] It is also worth mentioning the potential contribution at the administrative and management level in making decisions that are crucial to the adequate functioning of GFM healthcare units in Portugal - health centres, family health units (*Unidades de Saúde Familiar* - USF) or hospitals.[5]

Scientific research and publication are crucial for the development of medical specialties. It is through research and the sharing of results that we, as doctors, are able to help health promotion, maintenance and follow-up, in addition to becoming a lever for recognition and career progression for researchers.[6] In fact, even though it depends on studies carried out by other areas of medicine, GFM benefits from its own studies, with its own target populations and its own outputs.[7]

A country's healthcare system, among other factors, relates to the adequate functioning and organisation of primary care, which in Portugal is based on family medicine, as well as on the USF model. Primary care is directly based on a sustained and comprehensive research and publication.[8] Publications in this area have increased with the growing number of healthcare centres, physicians specialising in GFM and support for research. Subsequently, there is a greater availability of up-to-date information, leading to the development of the area.[9] However, there is still some discrepancy between countries - apparently similar in development - both in the intensity of their research and in the sharing of outputs.[10] The commitment to publication and its dissemination provides better collaboration at both national and international level, influencing internal healthcare policies and the development of strategies promoting the access to better primary care.[11]

Regardless of these considerations, the number of publications does not in itself reflect the quality of the research. The analysis of the output of these publications is crucial, namely through the journals in which they are published, the number of citations they obtain and their visibility. Publishing articles in scientific journals with international visibility not only increases their visibility and also contributes to the evolution of knowledge and scientific and medical progress worldwide.[7] The impact of a publication is defined as the value and benefit that could be derived from the knowledge obtained through a specific publication, i.e., the influence on subsequent work and on the day-to-day lives of doctors and patients.[12]

In Portugal, there were few studies evaluating scientific results. In medicine, regardless of the results obtained, whether they are positive, negative, or even inconclusive, the task is only complete once they have been published. As Gerard Piel wrote, "without publication, science is dead".[13] Identifying and evaluating studies of scientific merit is therefore a difficult but very important task, providing an insight into the scientific activity carried out in the area and its evolution over time.[14,15]

This study was aimed at assessing the scientific production of family physicians in Portugal between 2012 and 2022, identifying the units with the highest volume of publications and comparing scientific production using quantitative indicators with production in the same area in other European countries.

METHODS

The study was carried out using three bibliographic resources, (i) The Web of Science (WoS) Core Collection, for the assessment of the number of articles and journals where they were published, as well as the citations they obtained; (ii) the Journal Citation Reports (JCR), from which the Impact Factor and the Quartile of the journals were obtained, both from Clarivate Analytics, and (iii) the Scimago Journal & Country Rank (SJR), for the comparison of scientific publication data in GFM with other European countries and for the assessment of the influence and impact of scientific production.

WoS was selected as one of the most widely accepted resources in the field of original academic and scientific references, as well as the longest citation analysis resource and with the greatest editorial impartiality, as Clarivate Analytics is not a journal publisher. A comprehensive analysis of the journals to be included, in addition to monitoring is also carried out.[16] A curation system is involved, in which strict quality and impact standards must be met by each journal, with 28 evaluation criteria (24 for quality and four for impact). Journals can be removed for one year (i.e., no Journal Impact Factor - JIF is provided) whenever exceedingly high self-citation rates are shown and/or whenever there is evidence of cross-citations between journals (cartels) - citation stacking. Since 2022, the WoS Core Collection has been indexing journals with a new metric that allows the evaluation of their impact, in addition to the JIF, called the Journal Citation Indicator. Thus, WoS contains fundamental information for carrying out bibliometric analyses such as the one in this study. WoS did not allow for the comparison between different countries within family medicine worldwide since the analysis was carried out by institutions and the designations vary from country to country. Therefore, we used the Scimago Journal & Country Rank, which allowed for the comparison between countries within family medicine ('Family Practice') (Table 1), specifically countries within the European Union, with a similar cultural and economic reality and in line with Portugal, even though with differences in terms of area and population.

Area delimitation

This study identified all the articles published by Portuguese family physicians between 2012 and 2022, including at least one of these as co-author. The following search key was used in WoS: "*usf OR unidade de saude familiar OR centro de saude OR ACeS OR medicina geral familiar OR Gen Practice Family SAME Portuga*l" in the 'address' field; 178 abstracts of meetings, publications in conference proceedings and book chapters were manually excluded.

Study indicators

A range of quantitative bibliometric indicators was used for the assessment of scientific production in Portugal and the comparison with other European countries. The indicators included the number of publications over the years, the number of articles by type, by language and by institution, co-authorships, geographical distribution, and subject areas. The Impact Factor (IF), the quartile of journals and the number of citations obtained were also used.

The prestige of journals in the scientific community is usually measured by the IF, which is obtained by the ratio between the number of citations of a specific publication in the Clarivate Analytics JCR and the total number of articles published over the past two years.[17,18] Therefore, the IF during a specific year is a measure of the frequency with which the articles of a given journal were cited, on average, throughout that year. Thus, journals are ranked by specific areas by the JCR, assigning each one the corresponding IF, in other words.

Even though the IF was designed for the measurement of the performance and impact of journals, this indicator has been widely used by the community in assessing individual articles according to the IF of the journal in which they were published. One of the biggest distortions caused by the IF valuation is confusing the quality of the article with the IF of the journal. This misuse sometimes leads to irrelevant articles being overvalued and important works being undervalued. It should also be made clear that interpreting the differences between journals' IF by using this indicator for the comparison between journals from different areas, with different citation practices, is not the correct procedure. Generally, journals with a high IF tend to receive many submissions and end up with a high rate of rejected articles.

RESULTS

This study was held in January 2023 and all the documents published between January 1, 2012, and December 31, 2022, retrieved by the defined search expression, were included, with at least one author belonging to a national institution. During this time, a total of 591 publications (WoS) were obtained from which 178 meeting abstracts, 23 conference papers and one book chapter were excluded; 389 publications were included. The data supporting this study, as well as a more detailed description of the methodology used, were part of the master's thesis that led to this publication.[19]

An average 36.6% annual growth rate has been found in national scientific production between 2012 and 2022, which was even higher from 2012 to 2020 (48.2%), with a slight decrease in the number of annual publications, from 70 to 68, between 2020 and 2022. The progression of publications throughout the timeframe of the study is shown in Figure 1, including a linear regression of this evolution, showing an average increase of 7.6 publications per year.

As regards the type of publication, 287 publications were classified as 'Article' (73.8%), 46 as 'Review Article' (11.8%), 33 as 'Editorial Material' (8.5%), 21 as 'Letter' (5.4%), nine as 'Early Access' (2.3%), and two as 'Correction' (0.5%). English was the predominant language used, with 344 articles (88.4%), followed by Portuguese with 42 articles (10.8%) and finally Spanish with three articles (0.8%).

The Northern region had the most articles published with at least one author, with 227 publications, followed by the Central region with 128 publications and finally the Southern region with 103 publications. According to the data

Table 1 – Comparison between countries in the European Union, within the "Family Practice" category, between 1961 - 2021, by Scimago Journal & Country Rank

Country	Population (million)	Physicians/ 1,000 population	Publications	Pub/Pop	Pub/Phy
Germany	83.2	4.2	4866	58.5	1158.6
Spain	47.4	3.8	7273	153.4	1914.0
Greece	10.6	6.2	194	18.3	31.3
Italy	59.1	7.9	443	7.5	56.1
Portugal	**10.3**	**5.3**	**181**	**17.6**	**34.2**
United Kingdom	67.3	5.5	14 121	209.8	2567.5
Czechia	10.5	4.0	26	2.5	6.5
Sweden	10.4	4.3	565	54.3	131.4

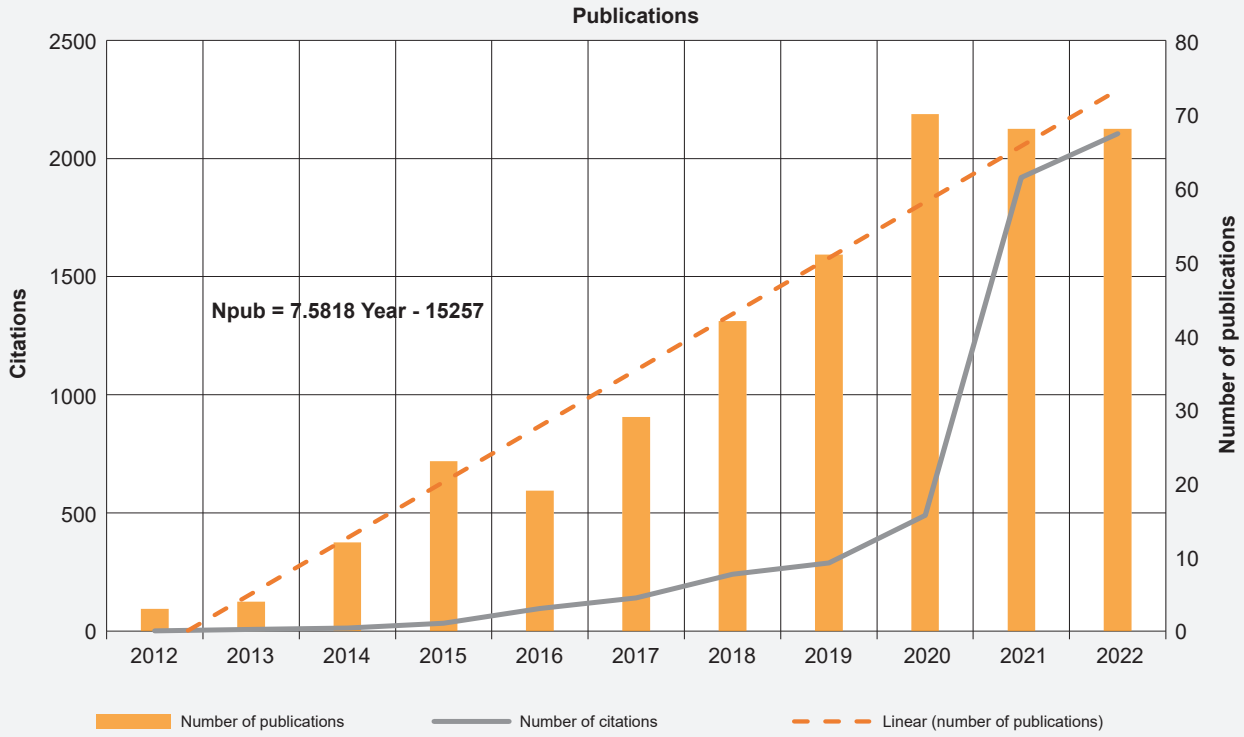

Figure 1 – Distribution of the number of publications per year (bars), the number of citations obtained by these publications (continuous line) and linear regression of the number of publications (dashed line). Source: Web of Science Core Collection.

collected, the most prolific Portuguese institutions were the University of Porto, with 149 publications (38.1%), followed by the University of Coimbra, with 60 articles (15.3%), the University of Lisbon, with 45 publications (11.5%), and finally the University of Beira Interior with 38 publications (9.7%) (Fig. 2).

Nationwide, excluding all publications with any international collaboration, a total of 305 publications were found. Many articles were the result of collaborations with national institutions other than USFs and *Agrupamentos de Centros de Saúde* (ACeS), namely universities and hospitals. The greatest collaboration was found with the University of Porto, with the participation in 101 publications (33.1%). Among this group of collaborations, *ACeS Porto Ocidental* stood out, with 17 articles (5.6%) (Fig. 3). The collaboration between different USFs and ACeS led to 45 articles (14.8%). Considering the publications in which a USF, ACeS or ARS was described by the authors as their only affiliation, *ACeS Cascais* and *USF Infante D. Henrique* stood out as the units that published the most, with both presenting two publications (4.4%).

The five authors with the most published works included João Vasco Santos (*ACeS Grande Porto VIII Espinho Gaia* - 33 publications); Alberto Freitas (*ACeS Maia Valongo*, 25 publications - both authors are associated with the University of Porto); followed by Luiz Miguel Santiago (*USF Topázio - ACeS Baixo Mondego* - 24 publications, associated with the University of Coimbra); Romeo Mendes (*ACeS Marão e Douro Norte* - 17 publications) and José Augusto Simões (*AceS Baixo Mondego* – 12) completed the top 5.

A broader analysis showed that 10 authors were responsible for 168 publications, while 43.2% of the researchers were responsible for at least 10 articles.

There was a growing trend towards international co-authorship. The countries with which Portuguese authors collaborated the most included Spain (21 publications - 5.4%), England (20 - 5.1%), the USA (18 - 4.6%), Belgium and Brazil (15 - 3.9%) (Fig. 4).

The authors in our study have published in journals in different WoS categories. The areas with the most publications included Internal Medicine (96 publications - 24.7%), followed by Public Health (58 publications - 14.9%), Healthcare Services (33 publications - 8.5%), Nursing (24 publications - 6.2%) and Endocrinology (20 publications - 5.1%) (Fig. 5).

When comparing the 28 countries of the European

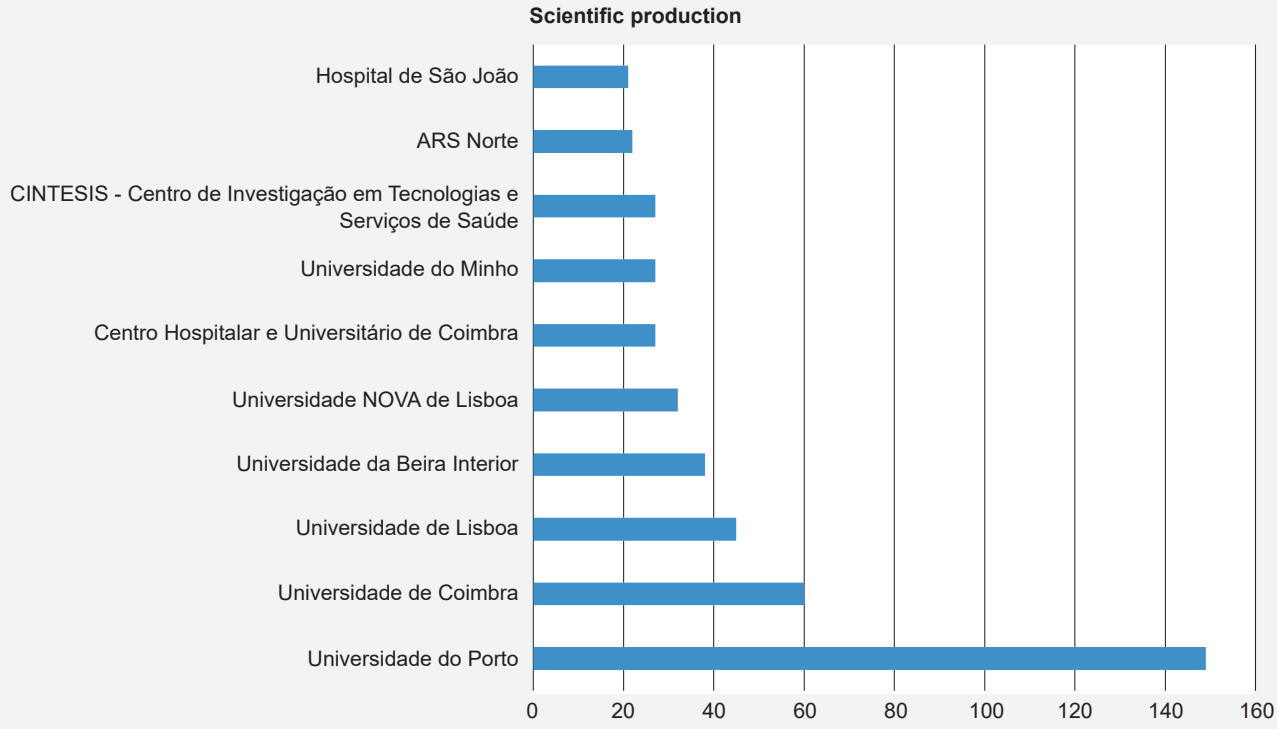

Figure 2 – Scientific production per institution. Source: Web of Science Core Collection.

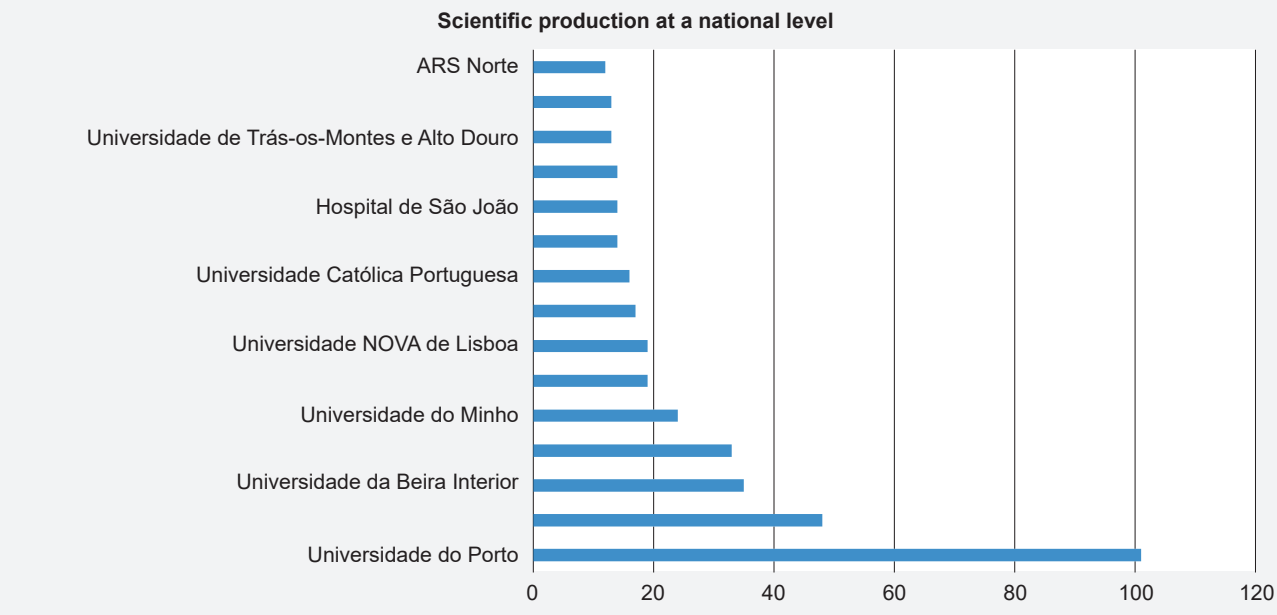

Figure 3 – Scientific production per institution, at a national level. Source: Web of Science Core Collection.

Union (EU) and the United Kingdom, Portugal was ranked on average 14th between 1961 and 2021 (database threshold at the time of the search), with 181 documents in 'Family Practice'. In terms of citations, there were 1,525, with Portugal ranking 16th. However, when individually considering the 2012 and 2021 data, there was a rise from 17th in 2012 (four documents) to 12th in 2021 (19 documents).

The SJR allowed Portugal to be compared directly with other EU countries using a logical criterion such as the country's population. With Portugal having a population of 10.3 million, numerically like Greece, Sweden, and Czechia, with 10.6, 10.4 and 10.5 million, Greece ranked on average 13th (194 documents), Sweden 7th (565 documents) and Czechia 23d (26 documents) in the number of publications per population between 1961 and 2021, as shown in Table 1.

Worldwide, 166 countries were found in the 'Family Practice' area of the SJR, with the USA leading the table, followed by the United Kingdom, Spain, Canada, and Australia, with Portugal ranking 36th with 181 documents. Portuguese scientific production in family medicine between 1996 and 2021 corresponded to 0.197% of the world total.

The 389 publications with at least one Portuguese co-author in family medicine received a total of 5,354 citations, corresponding to an average of 13.76 citations per article. A +115 average annual citation growth has been found, unevenly throughout the timeframe of the study (Fig. 1). However, 2,675 (49.7%) out of these were registered in only three publications in the Lancet journal, where the most cited article obtained 1,569 citations. One hundred and forty-one articles had no citations and 56 articles had one citation only. As shown in Table 2, out of the 222 journals including at least one article in which an author was a Portuguese family physician, between 2012 and 2022, 50 (22.5) ranked in Q4 (22.5%), 61 (27.5%) in Q3, 66 (29.7%) in Q2 (29.7%) and 45 (20.3%) in Q1.

An average 6.012 IF value was found in the journals in which Portuguese family medicine researchers and physicians tend to publish, in which the Lancet had the highest IF (202.731), while the International Journal of Andrology was the journal with the lowest IF (0.66). The median impact factor of the journals is 3.726.

It was in the International Journal of Environmental Research and Public Health that Portuguese authors

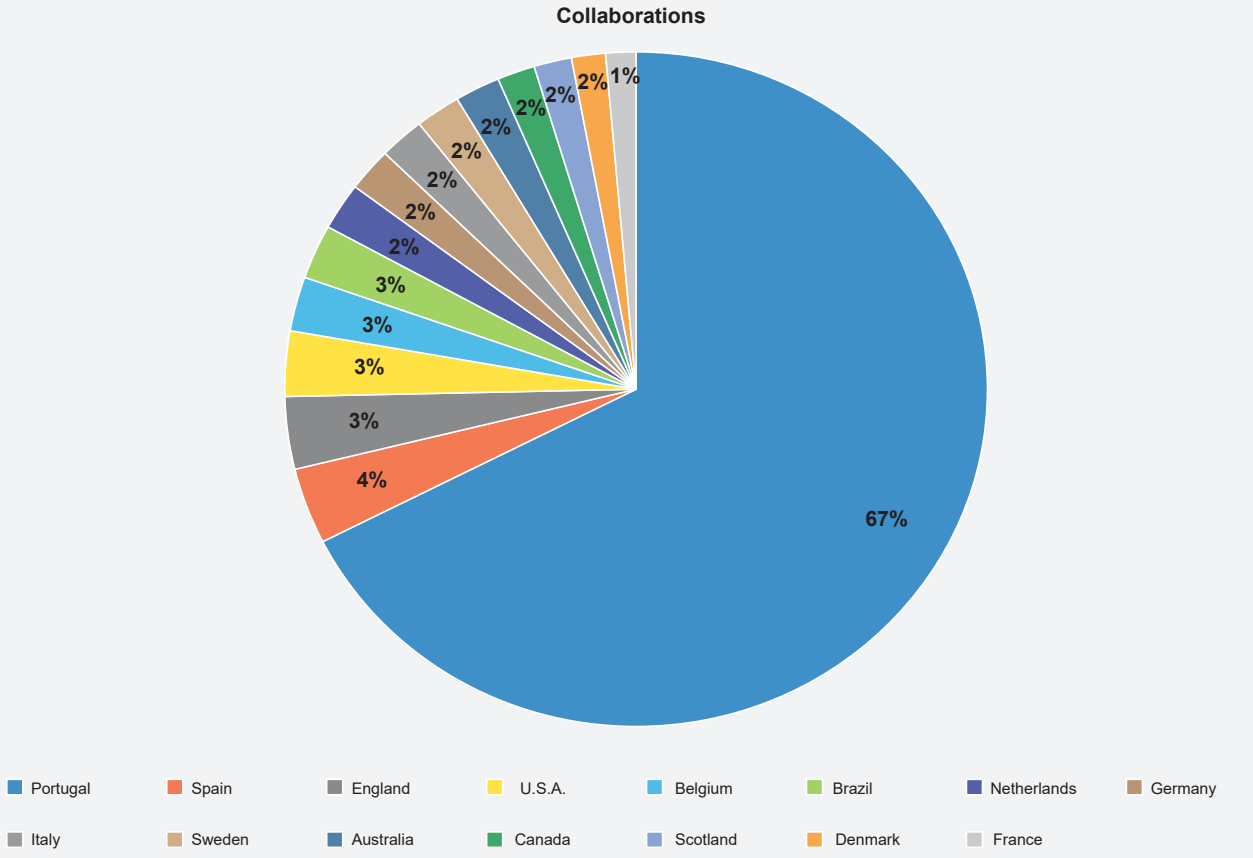

Figure 4 – Rates of collaboration and co-authorship with Portugal. Web of Science Core Collection.

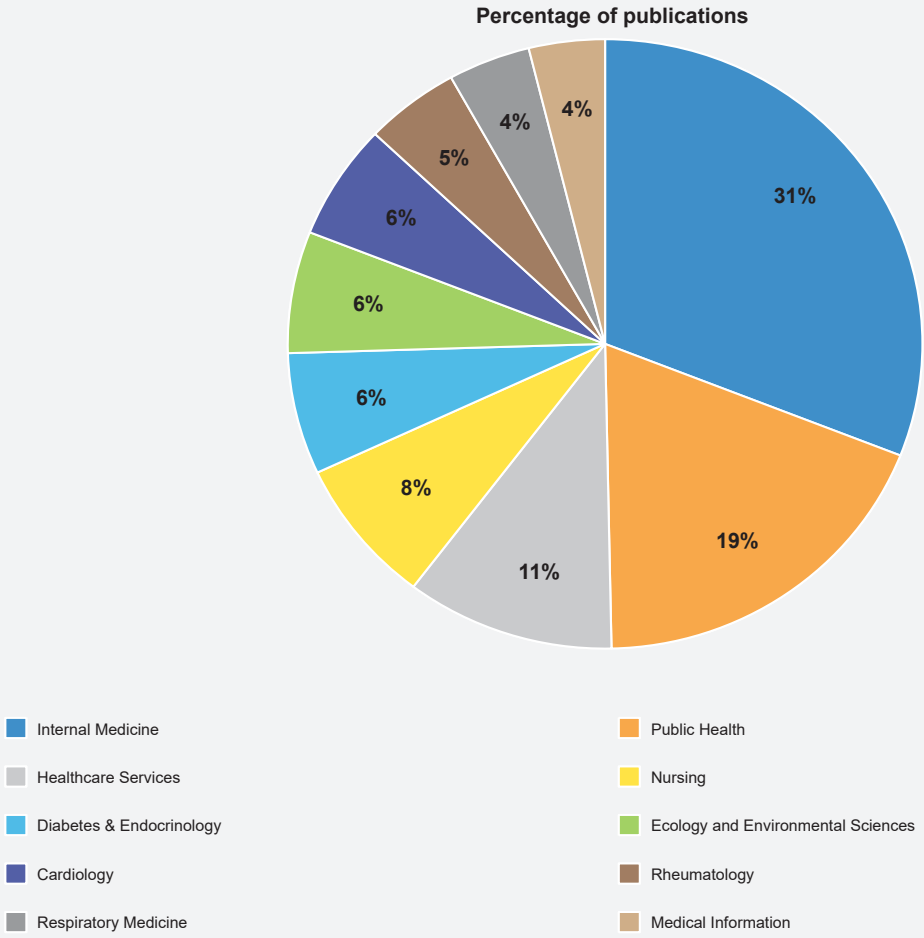

Figure 5 – Medical areas with the highest publication by family physicians. Web of Science Core Collection.

published the most (19 articles). However, it should be noted that the number of publications considered in the study is less than double the number of journals, with a significant dispersion of publications, with only 14 journals having at least five articles by Portuguese co-authors.

DISCUSSION

The development of the scientific component of family medicine in Portugal, reflected by research activities and the publication of outputs of this research, has been thriving in recent years.[20] However, and especially when comparing with other European countries using specific indicators, there is a significant potential for growth. Three publications and one citation represented the starting point in 2012, which has influenced the significance of the growth.

As shown in Fig. 1, there was a strong growth in the number of publications from 2012 to 2019, followed by stabilisation throughout the following three years, with 2020 as the year with the highest absolute number of publications. Drawing parallels with the reality of society that year, it is worth mentioning that family physicians, in general, were also in isolation, cut-off from their face-to-face professional lives due to the COVID-19 pandemic. At a time when health was the topic of the day, it's only natural that the motivation and focus on publishing and research would follow this spotlight. The 2020 results will perhaps reflect what was being increasingly produced in 2019 and which was affected by the pandemic.

Table 2 – Quartile of the journals with at least one article in which one author is a Portuguese family physician

Quartile	Number of journals	
Q1	45	20.3%
Q2	66	29.7%
Q3	61	27.5%
Q4	50	22.5%
Total	222	

An analysis of nationwide publications shows that 14.8% of national publications in family medicine are exclusive to USFs and ACeS. Given that these are the institutions most interested in publishing in their field, it is surprising that they account for such a low proportion of total national publications. Many researchers affiliated, for example, to CINTESIS and the University of Porto in parallel, will have at their disposal conditions and resources that a doctor solely associated with a healthcare centre will not have. There seems to be a significant reliance on larger institutions with more resources, including hospitals and universities. Geographically, the Northern region was the most productive region, with almost as many publications as the rest of the country put together. This is accompanied by the fact that five of the 10 institutions that publish the most in Portugal are from this region, with the University of Porto standing out at the top of the table. However, as might have been expected, researchers and physicians linked to the University of Porto are also linked with hospital centres in this region or ACeS of the Northern Regional Health Administration, increasing the results of these institutions. This reinforces the need to use a single affiliation to better reflect the reality of each author and their institution. In Medicine, the collaboration between groups is the rule and the subsequent co-authorship of papers: Portuguese authors follow this international trend, not only due to the increasing complexity and cost involved in research - which explains the greater collaboration between specialties, national institutions, and international collaboration - but also because of the need to publish in obtaining a good professional position.

Another noteworthy aspect is the lack of standardisation of the authors' names, as these appear in variants and a uniform heading for the name is rarely used, making data collection and any comprehensive analysis more difficult given the dispersion of works by variants of names, such as João Vasco Santos, who has been found under the signature 'Santos, João V' and 'Santos, João Vasco'. It is worth mentioning that the different institutions - universities, institutes, and research centres - collaborate actively, either in common working groups or as the authors linked with more than one institution. Thus, separating the different institutions has become difficult. In most of the papers where the first author is linked to a university, there is also a link with a hospital or primary care centre. We also found that there were still few authors who used an individual persistent identifier (ID) - a digital name, such as ORCID (open researcher and contributor ID), allowing authors to disambiguate their name, changing their affiliation, and creating a public profile bringing all their work together by assigning a unique numerical code.

The small number of family physicians devoted to research and publication is quite impressive. The fact that 10 physicians are responsible for 43.2% of all Portuguese medical publications in this area should be a reason for consideration. The interest in publishing and reinforcing its importance should be the subject of political analysis, with practical and objective measures to attract the interest of researchers. There is also an inequality in publication between the different authors or the institutions they represent. The creation of funds to support research must be a priority and is finally being carried out by the Agency for Clinical Research and Biomedical Innovation (*Agência de Investigação Clínica e Inovação Biomédica*).[21] Research is also a medical obligation.

The analysis of the results showed that co-authorship was the rule. In an increasingly globalised world, with increased access to information, co-authorship involves advantages. This practice allows for the exchange of up-to-date knowledge between countries, both on each social reality, and the analysis of constraints to medical work, from screening programs to clinical guidelines, to new methods of teamwork or the internal organisation of healthcare centres. The awareness of what is happening across borders brings significant advantages to development. In addition, co-authorship leads to a greater number of citations. Taking the example of the Lancet article with the most citations, 1,487 different institutions took part in the same work.[21] In such a large group of researchers, the number of citations will also increase, even considering self-citation. However, the question remains as to what role each researcher played in such a large group of authors.

The SJR plays an interesting role when it comes to evaluating publications, as it allows specific areas to be directly compared between countries, thus facilitating the role of the analyst, who only needs to apply logical grouping criteria to draw useful conclusions. In this case, Portugal was compared with some European countries with roughly the same population or a similar cultural reality (Mediterranean countries or Northern-Central European countries). The number of publications per physician and per million population was also considered. Therefore, very low figures remained - despite the upward trend – when compared, for example, with Spain. Compared to Greece, although it appears in a higher position in the SJR ranking in terms of the number of published documents, when considering the relationship between the number of publications and the population, an almost similar value was found, with Portugal having a higher number of physicians. Overall, except for Czechia, a greater production of published documents was found in Northern and Central European countries, as well as a higher publication/physician and publication/population ratio, showing the country's potential for growth. It is therefore important understanding whether the stabilisation found from 2020 onwards was due to some disturbing factor

(such as the pandemic), or whether there is in fact still room for growth in the total number of annual publications, an issue that should be further analysed. There was a difference in the number of documents presented between 1996 and 2021 in the Scimago Journal & Country Rank compared to the Web of Science Core Collection between 2012 and 2022, perhaps because the documents presented in the SJR are selected based on the subject area rather than the WoS affiliation.

English was mostly used in publications. As the main international language and the most widely shared by the scientific community, this predominance is expected. However, it would be interesting to analyse the average number of citations obtained by articles published in the different languages, to determine whether the greater target audience for English-language writings corresponds to a greater impact reflected in citations.

In this study, due to the methodology used, some works and publications by Portuguese family physicians were possibly not included in the results, since some national journals are still not indexed in the databases used.

This pioneering study was focused on a decade in which scientific publication in family medicine took its first steps, going through a sharp growth and finally reaching stabilisation in the number of articles published annually, even under the influence of the COVID-19 pandemic. The analysis on the way this trend will evolve from this point on is very relevant, as well as analysing the practical effects on improving healthcare systems and primary care.

CONCLUSION

This study described the evolution in Portugal of scientific publication in family medicine. The main conclusions to be drawn from this study are that, even though a low number of publications was found when this study was started, with only three articles published in 2012, there was a significant growth in the number of publications throughout the timeframe of the study, with an average 36.6% annual growth rate, leading to 68 publications by the end of the study. The analysis also showed that the growth in the number of publications seems to have levelled off throughout the final two years of the study. However, this could have been related to the effect of the COVID-19 pandemic rather than a break in the growth dynamics that was found in previous years.

The volume of scientific publications in this area was also compared with that of other countries, and it was found that, despite the growth, the volume of publication by Portuguese groups in this area is still significantly lower than what has been found in other similar European countries, supporting the hypothesis that the drop in growth is due to the pandemic rather than to a decrease in scientific research in this area.

AUTHOR CONTRIBUTION

JPFM, HD: Study design and implementation, result analysis and writing of the manuscript.

LMS: Study design and critical review of the manuscript.

HUMAN AND ANIMAL PROTECTION

The authors declare that this project complied with the regulations that were established by the Ethics and Clinical Research Committee, according to the 2013 update of the Helsinki Declaration of the World Medical Association.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

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