



ORIGINAL ARTICLE

Contribution of ANALES DE PEDIATRÍA to the international visibility of Spanish paediatric research in the Web of Science (2010–2014)[☆]



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Abstract

Objective: To describe the role of ANALES DE PEDIATRÍA in highlighting Spanish paediatric research, and to identify the journals with which it competes internationally.

Material and method: Spanish paediatric articles, including those from ANALES DE PEDIATRÍA were identified using the Paediatrics category of the Science Citation Index (2010–2014), and their volume and document type was analysed. For original articles and review articles, the year, the citation and journal of publication was studied. The journals were classified as general and specialised. The productivity of general journals was analysed according to their language, JCR quartile, and article access.

Results: A total of 2701 Spanish paediatric papers were identified, accounting for 2.8% of the paediatrics world output. More than two-thirds (68%) of papers were articles that received an average number of 4.97 citations per article. The 965 papers published in ANALES DE PEDIATRÍA accounted for 38.7% of the Spanish paediatric output, and for 1% of the paediatric world publications. A mean of 1.03 citations per article were received for 439 (45.4%) articles and reviews. Of the 106 journals identified, 82 were classified as specialised (1196 articles) and 24 as general (741 articles). ANALES DE PEDIATRÍA published 60% of the articles in general journals. The rest of articles (309) were published in general journals published in English (82.8%), with a best position in the JCR ranking (83.4%) and mainly by subscription (73.8%).

Conclusions: ANALES DE PEDIATRÍA plays an important role in providing international visibility to a large volume of Spanish scientific production in paediatrics. The results presented are a still only a snapshot of this role that could be used in the near future for assessing its evolution and the changes that could be made in order to improve its quality, positioning and competitiveness. © 2015 Asociación Española de Pediatría. Published by Elsevier España, S.L.U. All rights reserved.

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PALABRAS CLAVE

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Contribución de ANALES DE PEDIATRÍA a la visibilidad internacional de la investigación pediátrica española en la Web of Science (2010–2014)

Resumen

Objetivo: Describir el papel de ANALES DE PEDIATRÍA en la difusión de la investigación pediátrica española e identificar las revistas con las que compite internacionalmente.

Material y método: Se identificó la producción pediátrica española y la de ANALES DE PEDIATRÍA recogida en la categoría Paediatrics del Science Citation Index de la WoS (2010–2014) analizando su volumen y tipo documental. De los artículos originales y revisiones (artículos) se estudiaron el año, la citación y el tipo de revista de publicación (revistas generales y especializadas). De las generales, se analizó su productividad de acuerdo con su idioma, posición que ocupa en los JCR de 2012 y accesibilidad a sus contenidos.

Resultados: Se identificaron 2.701 trabajos pediátricos españoles que representan el 2,8% de la producción pediátrica mundial. El 68% de los trabajos son artículos que recibieron una media de 4.97 citas/artículo. ANALES DE PEDIATRÍA publicó 965 trabajos contabilizando el 35,8% de la producción pediátrica española y el 1% de la mundial; 439 (45,4%) trabajos fueron artículos que recibieron 1,3 citas por artículo. Se identificaron 106 revistas, 82 especializadas (1.196 artículos) y 24 generales (741 artículos). ANALES DE PEDIATRÍA publicó el 60% de los artículos de las revistas generales. Los 302 artículos restantes se publicaron en revistas generales publicadas en inglés (82,8%), con una posición superior en el ranking del JCR (83,4%) y mayoritariamente de suscripción (73,8%).

Conclusiones: ANALES DE PEDIATRÍA contribuye a dar visibilidad internacional a un importante volumen de la producción científica española de pediatría. Los resultados presentados constituyen una foto fija de este papel, que permitirá en un futuro evaluar su evolución y los cambios que en ella se vayan incorporando con la finalidad de mejorar su calidad, posicionamiento y competitividad.

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Introduction

In the nearly fifty years of history of ANALES DE PEDIATRÍA, its different editorial teams have been working to streamline its management, improve content quality and ensure its international visibility and diffusion.^{1,2} Thus, nowadays the journal fulfill the selection criteria of the most demanding databases, and at the moment it is the only Spanish journal in the field of paediatrics (except for *Cirugía pediátrica*) included in the Medline database, and the only one found in the Web of Science (WoS). It is also one of the 24 Spanish medical journals that is indexed both in the major biomedical databases in Spain (IBECS and MEDES) and abroad (Pubmed-Medline and Embase), as well as in multidisciplinary citation databases (WoS and Scopus).³

The current circumstances result from ongoing efforts in improving the quality of the journal, which require up-to-date data on the performance of the journal and its behaviour among the journals that constitute its competition.

One of the most frequently used approaches to obtain this information is the application of bibliometric indicators.⁴ Our journal has published a considerable number of articles that use this approach to analyse different aspects of its performance, both as a communication medium and in terms of its contents. Chief among them are the works that

assess the journal's productivity in different periods, which afford data on its evolution that span nearly 25 years of its history,^{5–7} and others that have determined the position that it occupies among Spanish paediatrics publications in various databases.⁸

Such evaluations are useful in two ways: on the one hand, their results help guide the decision-making of different editorial management teams, and, on the other, they inform readers of the potential of a journal. However, due to their intrinsic nature these studies have to be repeated periodically, especially when a significant change takes place in the conditions of the editorial environment.

The period analysed in this article (2010–2014) is of particular interest in that it covers the first five years since the inclusion of ANALES DE PEDIATRÍA in the WoS, which follows the flow of the "scientific mainstream", and tracks the publication of the first indicators of its impact in the 2009 Journal Citation Report (JCR). These events have been a turning point for the journal, as these sources serve as a reference in the process of assessing the research outcomes of scientists,⁹ research groups and institutions, making ANALES DE PEDIATRÍA more appealing to authors that are considering where to publish their work. The main objective of this study was to determine the usage of this journal by Spanish paediatricians, the collective that is its main target, and to find out where they publish their work otherwise, as well as the characteristics of competing journals.

Table 1 Distribution by document type of the world paediatrics output, the Spanish paediatrics output and the output of ANALES DE PEDIATRÍA.

Document type	World output	%	Spanish output	%	Output of ANALES DE PEDIATRÍA	%
Article	68,734	72.1	1836	68.0	434	44.8
Letter	6935	7.3	518	19.2	371	38.4
Editorial	11,496	12.1	229	8.5	145	14.6
Review	7021	7.4	101	3.7	5	0.5
Correction	909	1	13	0.5	8	1.3
Bibliographical item	234	0.2	4	0.1	2	0.2
Total works	95,329	100	2701	100	965	

The specific aims of this work were:

1. To analyse the volume and characteristics of the Spanish paediatric research included in the WoS.
2. To analyse the volume and characteristics of the work published in ANALES DE PEDIATRÍA and determine its contribution to the diffusion of Spanish research in paediatrics.
3. To describe the characteristics of the journals that publish Spanish paediatrics research at the international level.

Materials and method

The Spanish scientific output was retrieved using the Science Citation Index of the WoS. We selected the works (excepting meeting abstracts and proceedings papers) published between 2010 and 2014 that were assigned to the subject category of Paediatrics and in which Spain was featured in the Address field. We found the works published in ANALES DE PEDIATRÍA by narrowing the search to this journal.

To assess the Spanish scientific output and the output published in ANALES DE PEDIATRÍA, we analysed their number of publications and document type, and put the results in context by obtaining data for the number and document type of the works indexed by the WoS in the Paediatrics category for the period under study. We then focused on original and review articles (which we will refer to henceforth as "articles"), analysing their publication dates and their impact, using as indicators the mean number of citations per article and the h-index¹⁰ obtained from the citation report provided by the WoS.

For the journals that published Spanish paediatric research works, we described their number, output and degree of specialisation. For the latter variable, we classified journals in the following two categories based on their titles and editorial policy: general paediatrics journals and paediatric specialty journals.

For the general paediatrics journals, with which ANALES DE PEDIATRÍA competes to attract original articles, we described the number of published articles by language, impact factor, quartile and ranking in the category of Paediatrics of the Journal Citation Reports of 2012 (this year was selected because it was in the middle of the study period), and the type of access to the content of the journals. For the latter, we obtained the information from the journal, and classified journals into the following categories: subscription-based access, subscription-based with open

access after an embargo period, and open access to texts. Within the open access category, we specified whether the journal used the "author pays" publication model.

Results

Characteristics of the Spanish paediatrics research output with international visibility: contribution of ANALES DE PEDIATRÍA

Volume of works and document type

We found 2701 Spanish works in the Paediatrics category, which amounted to 2.8% of the world output in this category. The most frequent document types were original articles (68%), followed by letters (19.2%), editorial materials (8.5%) and reviews (3.7%) (Table 1).

The proportion of original articles in the Spanish output is similar to that in the world output, while the proportion of letters nearly triples the world output's (19.2% versus 7.3%) and the proportion of reviews was nearly half (3.7% versus 7.4%).

ANALES DE PEDIATRÍA published 965 works, which account for 35.8% of the Spanish output and 1% of the world output. Of these works, 434 (44.8%) were original articles and 5 (0.5%) review articles. This distribution differed from the distribution of the Spanish paediatric output having a lower proportion of original articles and reviews and a higher proportion of letters.

Yearly distribution of published articles

The mean annual number of original articles and reviews (articles) in the Spanish paediatrics output was 387.4 (Table 2). The number of works was similar in the first three years of the study, with a small increase in the last two years, especially 2013.

When it came to ANALES DE PEDIATRÍA, the mean number of articles per year was 87.8, and there were fluctuations in the annual output, with a decrease in the number of articles in years 2012 and 2014. The contribution of the journal to the Spanish paediatrics output was variable, ranging from 20.9% in 2014 to 24.4% in 2011.

Impact of the Spanish scientific output in paediatrics

There were 9634 citations for the 1937 Spanish articles in paediatrics (4.97 citations per article). The 439 articles published by ANALES DE PEDIATRÍA were cited 451 times (1.03 citations

Table 2 Yearly distribution of Spanish paediatrics articles with international visibility and contribution of ANALES DE PEDIATRÍA.

Year	Spanish output	%	ANALES DE PEDIATRÍA output	%	% contribution of ANALES DE PEDIATRÍA
2010	377	19.5	90	20.5	23.9
2011	369	19.1	90	20.5	24.4
2012	380	19.6	82	18.7	21.6
2013	415	21.4	95	21.6	22.9
2014	396	20.3	82	18.7	20.7
Total articles	1937	100	439	100	22.7

per article). The h-index achieved by Spanish articles was 33, and it was 6 for articles published in ANALES DE PEDIATRÍA.

Journals with international visibility that publish the Spanish paediatrics scientific output

Distribution of journals by number of published articles

The 1937 articles were published in 106 journals. The distribution of the number of articles per journal ranged from the 439 published by a single journal (ANALES DE PEDIATRÍA) to a single published article in 16 different journals (Table 3). Eleven of the 106 journals published 51.8% of the articles; these were the core journals, which published a minimum of 38 articles.

Most productive journals and distribution by specialisation

ANALES DE PEDIATRÍA stands out in the ranking of most productive journals with 439 articles, followed by two specialised paediatric journals, Paediatric *Infectious Disease Journal* and Paediatric *Dermatology*, with 106 and 101 articles, respectively (Table 4).

When it came to the level of specialisation, 24 (22.6%) journals were classified as general and 82 (77.5%) as

specialised paediatrics journals. General journals published 741 articles (38.2%) and specialised journals 1196 (61.8%).

Characteristics of scientific output of general paediatrics journals

Of the 741 articles published in general journals, 439 (59.2%) corresponded to ANALES DE PEDIATRÍA, and the remaining 302 were published in 23 journals (Table 5) of which seven published only one article. We ought to mention that strictly speaking there are 22 journals, as *JAMA Paediatrics* is the title adopted in 2013 by the journal previously known as *Archives of Paediatrics & Adolescent Medicine*. Since the former has not been assigned a quartile, in our analysis of the 2012 JCR tables, we have assigned to it the quartile that the former title had placed at.

When the authors did not publish in ANALES DE PEDIATRÍA, they published in one of the 20 journals published in English 82% of the time (250 articles), in one of the journals in Spanish 13.6% of the time (41 articles, in *Archivos argentinos de Pediatría*) and only once each in a journal in French and a journal in German.

The analysis of the JCR quartile of general paediatrics journals other than ANALES DE PEDIATRÍA showed that most articles (144; 37.8%) were published in seven journals in the first

Table 3 Distribution of journals by number of articles published.

No. of journals	No. of articles	%	Cumulative %	No. of journals	No. of articles	%	Cumulative %
1	439	22.7	22.7	2	18	1.9	76.3
1	106	5.5	28.2	1	17	0.9	77.2
1	101	5.2	33.4	2	16	1.7	78.8
1	52	2.7	36.1	2	15	1.5	80.4
1	51	2.6	38.7	4	14	2.9	83.3
2	48	5.0	43.7	4	13	2.7	85.9
1	41	2.1	45.8	1	12	0.6	86.6
2	39	4.0	49.8	4	11	2.3	88.8
1	38	2.0	51.8	1	10	0.5	89.3
1	33	1.7	53.5	5	9	2.3	91.7
1	30	1.5	55.0	1	8	0.4	92.1
2	29	3.0	58.0	4	7	1.4	93.5
1	28	1.4	59.5	6	6	1.9	95.4
1	27	1.4	60.9	2	5	0.5	95.9
2	26	2.7	63.5	6	4	1.2	97.1
3	25	3.9	67.4	6	3	0.9	98.1
1	24	1.2	68.6	11	2	1.1	99.2
2	23	2.4	71.0	16	1	0.8	100.0
3	22	3.4	74.4				

Table 4 Ranking of journals that published more than 25 Spanish paediatrics articles.

Title	No. of articles	%
ANALES DE PEDIATRÍA	439	22.7
<i>Paediatric Infectious Disease Journal</i>	106	5.5
<i>Paediatric Dermatology</i>	101	5.2
<i>European Journal of Paediatrics</i>	52	2.7
<i>Childs Nervous System</i>	51	2.6
<i>Journal of Paediatric Gastroenterology and Nutrition</i>	48	2.5
<i>Journal of Paediatrics</i>	48	2.5
<i>Archivos Argentinos de Pediatría</i>	41	2.1
<i>Acta Paediatrica</i>	39	2.0
<i>Paediatric Allergy and Immunology</i>	39	2.0
<i>Paediatrics</i>	38	2.0
<i>Journal of Child Neurology</i>	33	1.7
<i>Journal of Paediatric Surgery</i>	30	1.5
<i>Early Human Development</i>	29	1.5
<i>Paediatric Research</i>	29	1.5
<i>Paediatric Nephrology</i>	28	1.4
<i>Hormone Research in Paediatrics</i>	27	1.4
<i>European Journal of Paediatric Neurology</i>	26	1.3
<i>Paediatric Pulmonology</i>	26	1.3
<i>Journal of Paediatric Endocrinology Metabolism</i>	25	1.3
<i>Journal of Paediatric Haematology/Oncology</i>	25	1.3
<i>Paediatric Neurology</i>	25	1.3

Table 5 Characteristics of general paediatrics journals.

Journal	Language	IF-2012	Q-2012	Ranking (out of 122)	Access	No. of documents
ANALES DE PEDIATRÍA	Spanish	0.867	Q3	91	Open	439
<i>European Journal of Paediatrics</i>	English	1.907	Q2	40	Subscription	52
<i>Journal of Paediatrics</i>	English	4.035	Q1	4	Subscription	48
<i>Archivos Argentinos de Pediatría</i>	Spanish	0.323	Q4	114	Open	41
<i>Acta Paediatrica</i>	English	1.974	Q3	38	Subscription	39
<i>Paediatrics</i>	English	5.119	Q1	2	Subscription	38
<i>BMC Paediatrics</i>	English	1.982	Q2	36	Open access paid by author	23
<i>Archives of Disease In Childhood</i>	English	3.051	Q1	10	Subscription	14
<i>Paediatrics International</i>	English	0.875	Q3	90	Subscription	7
<i>JAMA Pediatrics</i> ^a	English	-	Q1	3	Subscription/Open after 12-month embargo	6
<i>World Journal of Paediatrics</i>	English	1.084	Q3	75	Subscription	6
<i>Journal of Paediatrics and Child Health</i>	English	1.254	Q3	67	Subscription	6
<i>Archives of Paediatrics & Adolescent Medicine</i>	English	4.282	Q1	3	Subscription/Open after 12-month embargo	5
<i>Indian Journal of Paediatrics</i>	English	0.715	Q4	102	Subscription	4
<i>Jornal de Pediatria</i>	English	1.154	Q3	74	Open access	2
<i>Current Opinion in Paediatrics</i>	English	2.634	Q1	20	Subscription	2
<i>Archives de Pediatrie</i>	French	0.357	Q4	113	Subscription	2
<i>Academic Paediatrics</i>	English	2.328	Q1	28	Subscription	1
<i>Klinische Pädiatrie</i>	German	1.904	Q2	41	Subscription	1
<i>Hong Kong Journal of Paediatrics</i>	English	0.068	Q4	119	Open	1
<i>Indian Paediatrics</i>	English	1.036	Q3	78	Open	1
<i>Paediatric Clinics of North America</i>	English	1.782	Q2	45	Subscription	1
<i>Turkish Journal of Paediatrics</i>	English	0.558	Q4	107	Subscription	1
<i>Clinical Paediatrics</i>	English	1.267	Q3	66	Subscription	1

^a For the analysis, we considered that *JAMA Pediatrics* inherited the JCR quartile and ranking of its former title *Archives of Paediatrics & Adolescent Medicine*.

quartile, followed by 77 (25.5%) published in four journals in the second quartile, 62 (20.5%) published in seven journals in the third quartile (the same quartile as *ANALES DE PEDIATRÍA*) but always in journals that ranked higher. Only 49 articles (16.2%) were published in journals in the fourth quartile.

When it came to the type of access, 223 articles (73.8%) were published in subscription-based journals, and 10 in a journal that offers open access following a 12-month embargo period (*Archives of Paediatrics & Adolescent Medicine*, currently *JAMA Paediatrics*). The remaining 68 articles (22.5%) were published in five journals that offer open access to the texts, of which only one (*BMC Paediatrics*) charges authors an article-processing fee.

Discussion

The Spanish output in paediatrics amounts to 2.8% of the works in the paediatrics category of the WoS for this period, a figure above the 1.52% corresponding to the 2001–2005 period,¹¹ and we attribute the increased visibility of Spanish works in this database to the inclusion of *ANALES DE PEDIATRÍA*, a journal that conveys 35% of this output.

While the document type pattern of the world paediatrics output is similar to that of the indexed contents of the WoS in the 2004–2007 period,¹² the Spanish paediatrics output and the works published in *ANALES DE PEDIATRÍA* had particular patterns when it came to letters and reviews.

Thus, the proportion of letters in the Spanish paediatric output (19.2%) is much higher than that in the world output (7.3%), which is probably influenced by the amount of letters published in *ANALES DE PEDIATRÍA*, which account for 71.7% of the total number of Spanish letters. The publication of a high percentage of letters in *ANALES DE PEDIATRÍA* has been observed in the past, as it amounted to 33.9% of works in the 2003–2009 period.⁷

As for reviews, their proportion of the Spanish paediatrics output was half of the proportion of the world output, and in the case of *ANALES DE PEDIATRÍA*, this type of document was nearly nonexistent, which diverges from the 2003 to 2009 period, in which 6.7% of the articles published by the journals were categorised as reviews.

The main focus of the study was the publication of original and review articles, as these are the works that WoS considers of highest academic interest and they are the citable items par excellence used to calculate the denominator of the journal impact factor.¹³ In the WoS, these two document types constitute 79.7% of the world paediatrics output and 71.7% of the Spanish paediatrics output.

The Spanish articles in paediatrics included in the WoS are just the tip of the iceberg of the total Spanish output in the field, as it only amounts to 29.1% of the articles on paediatrics-related subjects published in the 2006–2010 period included in the Spanish IME and IBECs databases and the multidisciplinary SCI and Scopus databases.⁹

Original and review articles accounted for 45.3% of the works published in *ANALES DE PEDIATRÍA*, a figure that is 24% less than the percentage of the Spanish articles in paediatrics published in the WoS and 27.5% less than the percentage of the world paediatrics output.

The percentage of articles published in *ANALES DE PEDIATRÍA* has fluctuated through time; it was 41% in the 1994–2000

period⁵ and 54.8% in the 2003–2009 period,⁷ with current figures showing a decrease in the number of articles published in the journal compared to the period immediately preceding it.

We also assessed the contribution of *ANALES DE PEDIATRÍA* in terms of the frequency of citations. In this regard, our results show that while the journal contributes to the diffusion of 22.7% of Spanish articles, the number of citations of works published in the journal account for only 4.7% of the total citations of Spanish articles in paediatrics published in the WoS. In fact, the mean number of citations for articles published in *ANALES DE PEDIATRÍA* was 1.03, while the mean for the Spanish paediatric output overall is of 4.97.

Spanish authors chose 106 journals out of the 222 included in the JCR for the publication of their works during the period under study, which shows a wide spread. However, the distribution of works based on productivity shows a core of 11 journals that were favoured by Spanish authors and account for 50% of the overall output.

Overall, the profile of the Spanish paediatrics output is specialised, as 61.7% of the articles were published in paediatric subspecialty journals.

ANALES DE PEDIATRÍA plays an important role in the publication of Spanish paediatrics articles. In fact, authors have chosen it one out of four times they selected a journal included in the WoS. When this role is considered in the context of articles published in general journals, which is our journal's natural niche due to its editorial policy, this contribution rises to 60% of the articles.

In order to determine the characteristics of the journals that compete with *ANALES DE PEDIATRÍA*, we analysed the scientific output published in general journals based on variables that are often taken into account by authors when they choose a journal. Thus, when authors published their work in a general journal other than *ANALES DE PEDIATRÍA*, it was in journals published in English (82.8% of articles) with a higher JCR ranking than *ANALES DE PEDIATRÍA* (83.4% of articles) and mostly consisted of access-by-subscription journals (73.8% of articles).

Of all the characteristics of competing journals, the one that may pose the greatest challenge to *ANALES DE PEDIATRÍA* is the journal quartile score. In this regard, the 91st position (Q3) of *ANALES DE PEDIATRÍA* in the journal ranking evinces the need to continue making improvements that will attract more and better original articles and promote its diffusion and visibility.

One such strategy would be the adoption of the bilingual Spanish–English publication format made by the journal in 2014.² This format is becoming more frequent in Spanish journals,³ since the use of English promotes the international diffusion of the publications, increasing both the likelihood of receiving articles from foreign authors¹³ and of being read and cited by a larger population of researchers, while maintaining the Spanish allows the diffusion of the journal in Spain and other Spanish-speaking countries. The figures obtained in this study can be used in the future to assess the effectiveness of this measure.

Furthermore open access to the texts is another factor that promotes the diffusion and visibility of the works published in the journal. Of the 23 journals of general paediatrics, only six are open-access, of which only one

charges publication fees (*BMC Paediatrics*). Overall, immediate access to the texts is available for 68.4% of the articles published in these journals, most of which have been published by ANALES DE PEDIATRÍA.

The results presented here provide a snapshot of the role of ANALES DE PEDIATRÍA in attaining international visibility for Spanish paediatrics publications that will allow the future assessment of its evolution and the changes applied to it with the purpose of improving its quality, positioning and competitiveness.

Conflict of interests

María Francisca Abad-García is a member of the Editorial Team of ANALES DE PEDIATRÍA.

Gonzalo Solís Sánchez is an Associate Editor of ANALES DE PEDIATRÍA.

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