

## Revista Chilena de Pediatría/Andes Pediatría in the new millennium. Bibliometric analysis

### Revista Chilena de Pediatría/Andes Pediatría en el nuevo milenio. Análisis bibliométrico

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Received: July 5, 2021; Approved: July 13, 2021

#### What do we know about the subject matter of this study?

In 2020, Revista Chilena de Pediatría/Andes Pediatría completed a cycle. A bibliometric analysis is essential for adequate planning of the editorial work

#### What does this study contribute to what is already known?

There is a steady increase in the number of manuscripts and original articles published, with a low frequency of experimental designs. Original articles constitute one-third of the visits and almost half of the citations, with no relation to the descriptors.

#### Abstract

Andes Pediatría/Revista Chilena de Pediatría (AP/RChP), maintains a document profile that covers all scientific publication formats, from Original Articles (OAs) to Letters to the Editor. Adequate editorial planning requires a long-term bibliometric analysis. **Objective:** To describe the profile of OAs published in AP/RChP in the last two decades. **Methodology:** From a controlled vocabulary list, the thematic and methodological descriptors of the documents from 2000 to 2020 were standardized. Nationality, sex, and profession of the authors, document typology, and design of the OAs were analyzed, as well as the descriptors cited in Google Scholar and the most visited descriptors on the journal's website in recent years. **Results:** 1738 manuscripts were published, 580 (33.4%) were OAs,

#### Keywords:

Scientific Publication;  
Bibliometrics;  
Authorship;  
Original Manuscript;  
Pediatrics

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with an increase from 59 to 129 OAs between the first and last three years. The average number of authors was higher for OAs (4.7) than for non-originals (3.0). In 2020, there were nine multicenter collaborations from different countries. The number of OAs by foreign authors increased from 3.3% to 28.7%, the first authorship by non-medical professionals increased from 15% to 31%, and there was a predominance of female first authors (ratio 1.4/1). Of the OAs, 9.1% were experimental, 3.3% were qualitative and the rest were quantitative observational. The most published descriptors were Nutrition, Infectious Diseases, Neonatology, and Pneumonology, while the most cited descriptors were Nutrition, Neonatology, and Oral Health, with no trend among the most visited. 44% of the most cited articles and 35% of the most visited articles were OAs. **Conclusions:** A significant increase in published OAs stands out, with a low frequency of experimental designs. Authors of different nationalities and professions participated. OAs represent one-third of the visits and almost half of the citations, with no correlation between the most published and most cited descriptors.

## Introduction

Research constitutes the core of scientific progress, and its dissemination is fundamental for the broadening of knowledge. Different institutions and scientific societies have been creating their journals in search of spaces for the dissemination of local research. In 2019, there were 303 active research journals in mainstream pediatrics, with 11 of them from Latin America<sup>1</sup>.

In Latin America, the scientific publishing industry is mainly funded by public agencies, higher education institutions, or scientific societies, which has allowed maintaining free and open access policies<sup>2,3</sup>. However, its sustainability has been threatened by competition with journals from international commercial publishers and the high cost of production<sup>4</sup>. Therefore, it is necessary to generate different strategies to attract quality manuscripts that go hand in hand with greater visibility and citation.

In 1930, *Revista Chilena de Pediatría*, currently *Andes Pediatrica* (AP/RCHP) was created as the official media of the Chilean Society of Pediatrics (SOCHIPE). In 1998, it was incorporated into the Scientific Electronic Library Online (SciELO) and in 2014 to the National Library of Medicine (NLM). In addition, it is fully indexed in SCOPUS.

The journal started publishing reflection papers, analysis of clinical cases, and minutes of the board sessions<sup>v</sup> and to date has maintained a profile of documents that covers all formats of scientific publication. Original Articles (OA) are the core of the journal since they are the final process of a research process<sup>6,7</sup>.

In 2020, AP/RCHP completed a cycle that leads to its expansion and acceptance within the disciplinary community beyond national borders and medical specialty<sup>8</sup>. In order to adequately plan the editorial work, it is extremely important to rely on the evidence provided by bibliometric analysis. The only previous

analysis corresponds to the five years between 2001 and 2006, with no subsequent publications<sup>9</sup>. The main objective of this manuscript is to describe the profile of AP/RCHP OAs in the last 2 decades, analyzing them according to their design, subject area, profession, and authors' nationality.

## Methodology

Using the Quick submit plug-in of Open Journal Systems (OJS), the entire AP/RCHP manuscript collection was incorporated into the OJS platform. The typology of the manuscripts was reviewed according to the publication format of the journal, classifying them as original and non-original articles. Non-original articles included cases and clinical series, review and current events manuscripts, expert recommendations, and editorials, among others. Letters to the editor corresponding to acknowledgments, congratulations, obituaries, and errata were excluded.

The descriptors of the manuscripts published in AP/RCHP were standardized. Each manuscript was associated with one or more keywords from a controlled vocabulary list, after a consensus process of the research group, based on the Health Sciences Descriptors (DeCS) 2020 or its equivalence with the Medical Subject Headings (Mesh) of the National Library of Medicine Thesaurus 2020 (USA).

Based on the review of the material and methods section of the abstract, as indicated by the authors, the original manuscripts were classified according to their design as qualitative, quantitative, or mixed. quantitative-qualitative studies were categorized as quantitative when it was the dominant design. When the design was not explicitly described, the publication was reviewed in full text and the design was defined after deliberation of the authors of this analysis. OAs were further

classified according to their temporality (retrospective, cross-sectional or prospective) and degree of intervention (observational or experimental).

Observational studies were defined as descriptive or analytical<sup>x</sup>. Descriptive studies included cross-sectional studies, ecological studies, population-based studies, and case series were included if they were classified among the OA typology. Case-control designs, diagnostic test studies, and instrument validation studies were classified as analytic studies. Experimental studies included clinical trials, pseudo-experimental, and animal experiments.

The number of authors and the origin by country were tabulated, and the gender and profession of the first author were tabulated for the OAs.

Finally, through a search in Google Scholar, we identified the most cited documents among those published in the last 5 years, which corresponds to the h5 index<sup>xi</sup>. We decided to use Google Scholar as a source due to its wide coverage of citation sources and accessibility. A similar analysis was performed with the most visited in 2020, using the analysis of server logs with the open-source application AWStats (<https://awstats.sourceforge.io>) and the Google Analytics tool (<https://analytics.google.com>). Also, the subject matter and typology were analyzed.

### Statistical Analysis

Three-year periods were considered for the analysis of published manuscripts, using absolute and relative frequencies. For the analysis of quantitative variables, central tendency statistics were used, such as mean and standard deviation. The most relevant results were represented in tables and graphs.

## Results

Between 2000 and 2020, 1738 documents were published, of which 580 were classified as OA, accounting for 33.4% of the total number of published manuscripts. In the same period, 146 editorials, 367 cases/series/clinical experiences, 233 updates/reviews, and 46 recommendations from experts, branches, or committees were published, among other types of manuscripts.

The highest number of publications was reached in the last triennial (2018-2020), with 358 publications and the lowest number of publications was between 2009 and 2011 with 189 (Figure 1). The percentage of OA has shown a sustained upward trend in terms of the number of contributions, which increased from 59 to 129, in the first and last triennial, respectively. Regarding the proportion of OAs, the lowest was in the years 2000-2002 with 26%, remaining stable at

35-36% in the last 4 triennials (Figure 1).

The average number of authors was higher for OAs (4.7) than for non-original ones (3.0), with an upward trend in the study period (Figure 2). In 2020, there was an important contribution of multicenter research, with authors from different countries, which corresponded to 9 manuscripts.

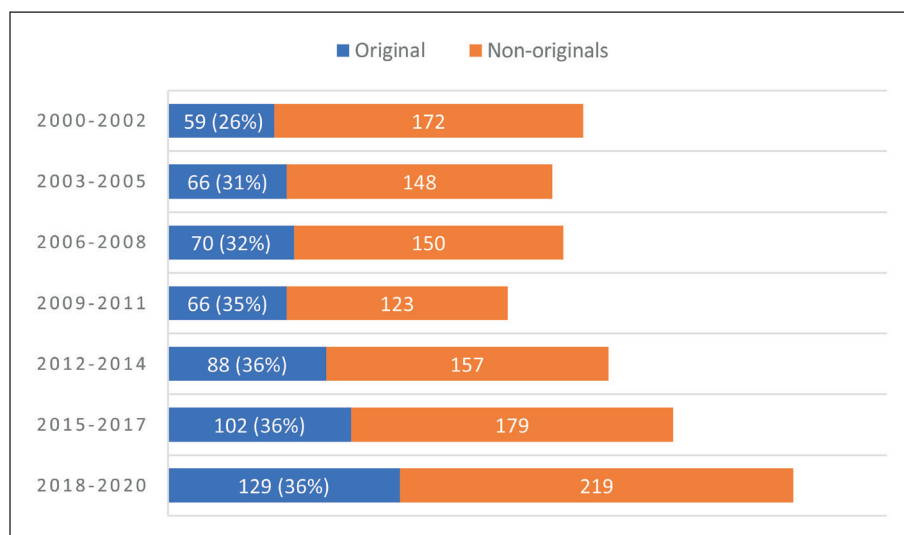
In the 21 years studied, there was a trend towards an increase in manuscripts by foreign authors, with a peak of 28.7% of OAs in the last triennial (Figure 3). The largest international collaboration of OAs was from Colombia with 26 contributions, followed by Argentina with 14, Spain with 10, and Mexico with 8 manuscripts.

In the gender analysis of the first author, there is a higher proportion of female authors throughout the study period, except for the second triennial, with an average female/male ratio of 1.4/1 (Figure 4). Regarding the profession of the first author, we observed that the proportion of physicians as the first author decreased from 85% to 67%, with a progressive increase in contributions from authors of other professions from 15 to 31%, and that of undergraduate students ranged from 0 to 4% (Figure 5) (Table 1).

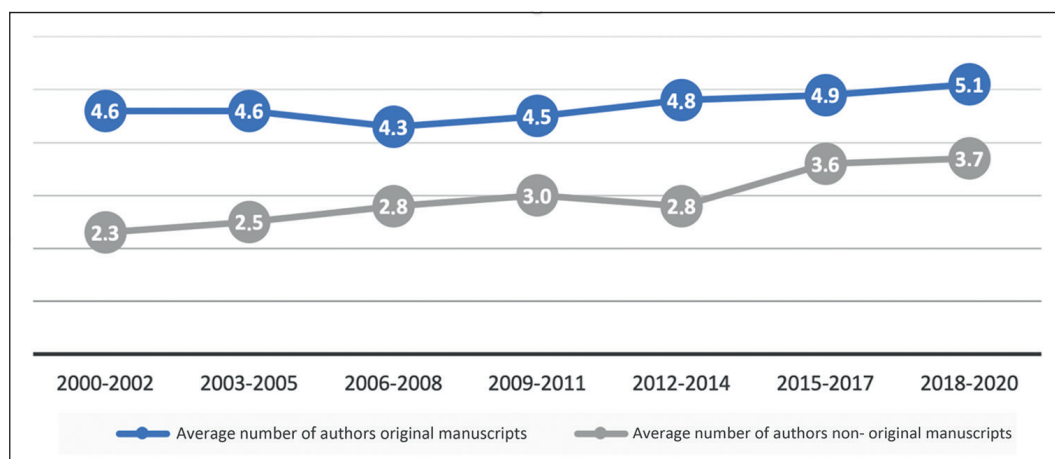
In the analysis of OAs according to design, 9.1% were experimental, including 15 randomized clinical trials, 4 experimental studies with animals, and 34 pseudo-experimental studies. Most of the original manuscripts corresponded to cross-sectional observational studies (39.3%), retrospective observational studies (31.9%), and prospective observational studies (15.5%) (Figure 6). Among the observational studies, 93 were analytical and 410 were descriptive observational. 3.3% of the OAs were qualitative, which showed a clear tendency to increase, especially in the last triennial. Five of the OAs were Systematic Reviews of the literature.

Regarding the authors, 40 of the 53 experimental studies had a physician as the first author (75.5%), 4 were nutritionists, 3 were nurses, and 3 were kinesiologists, among others. In relation to the 19 qualitative studies published, 7 of them had a physician as first author (36.8%), 5 nurses or nurse-midwives, 3 psychologists, and the rest were divided between nutritionists, medical technologists, and sociologists. There was no clear trend according to the profession of the first author in the other OA designs.

When reviewing the subject area, the most published descriptors of all manuscripts were Nutrition (187), Infectious Diseases (186), Neonatology (153), Bronchopulmonary (152), Surgery (137), Neurology (129), Genetics (128), Gastroenterology (124), Epidemiology and Public Health (120), and Intensive Care and Urgent Care (113). Figure 7 shows the keyword clusters.



**Figure 1.** Total of manuscripts published on Revista Chilena de Pediatría, absolute number and proportion of original articles and non-originals.



**Figure 2.** Average number of authors by manuscript, Revista Chilena de Pediatría period 2000-2020 comparison between originals and non-originals.

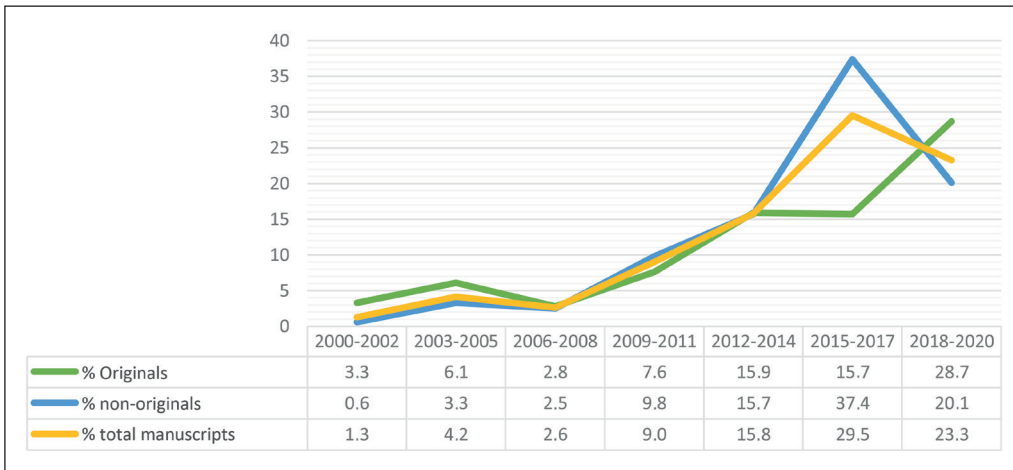
The most cited manuscripts by other journals according to Google Scholar Metrics were 16, seven of which were original articles and nine were review articles, current events, or branch recommendations. The main subject was Nutrition, followed by Neonatology and Oral Health. In the analysis of the 20 most visited manuscripts in 2020, there was no trend by subject area, highlighting that the most visited were review manuscripts or branch recommendations (13 manuscripts) and 7 were OAs.

## Discussion

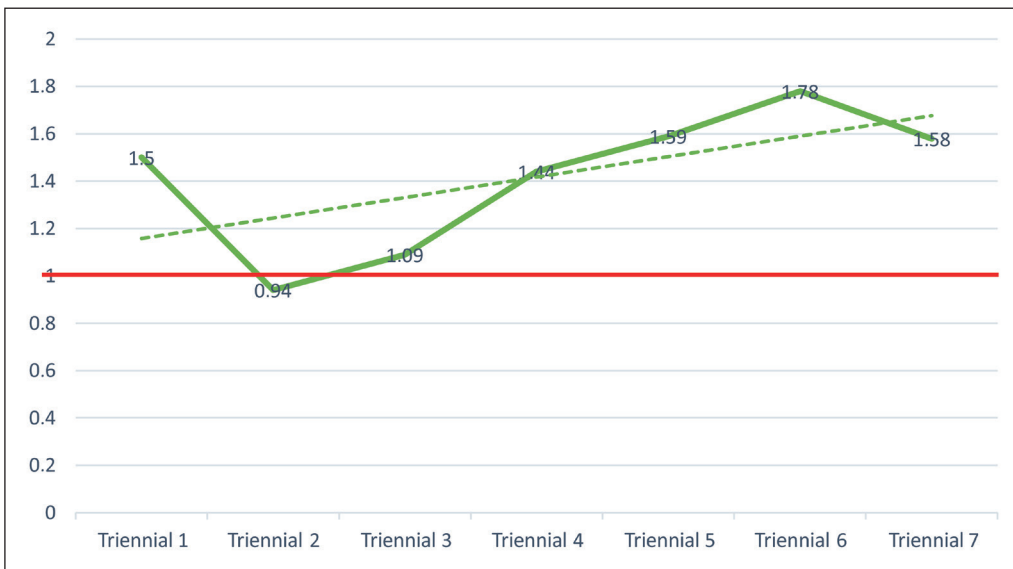
This research presents a bibliometric analysis of the publication patterns of AP/RCHP in the new millennium. It highlighted a steady increase in the number of published papers, as well as the number and per-

centage of OAs, which in the last 4 triennials accounted for 35-36%. The visibility of the journal and the granted citations increased exponentially over the last 2 decades, especially in recent years<sup>12,13</sup>, with OAs contributing 44% of citations and 35% of visits, probably associated with the preferential clinical and academic activity of our readers.

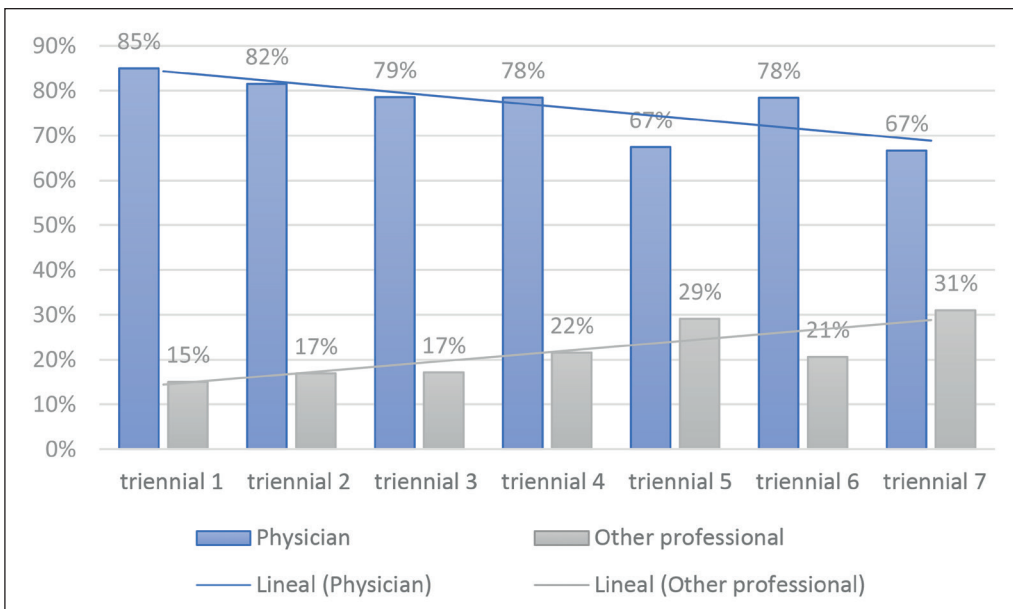
The OAs correspond to the final process of a research process and are considered the backbone of scientific journals<sup>7</sup>. The OAs were grouped into qualitative and quantitative. The quantitative ones were classified according to their temporality and design<sup>10</sup>. It could be seen that in AP/RCHP there is an inverted pyramid between the quality of evidence generated and the number of publications, thus, there were no meta-analyses, few systematic reviews, and experimental studies represented 9.1% of all publications. On the other hand, among the observational studies, there was



**Figure 3.** Percentage of number of manuscripts with foreign authors, Revista Chilena de Pediatría 2000-2020.



**Figure 4.** Analysis by gender of first author. Revista Chilena de Pediatría 2000-2020. Female/Male ratio.

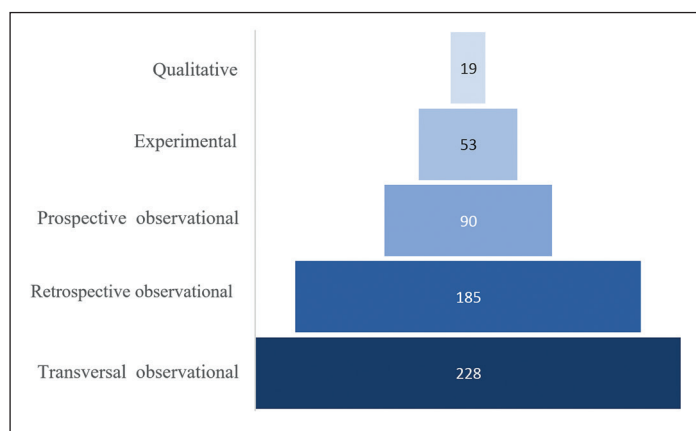


**Figure 5.** Profile of professionals signing as first authors. Revista Chilena de Pediatría 2000 a 2020.

**Table 1. Distribution of first author of original articles by profession**

First author profession	n	Percentage
Physician	431	74.3
Nurse/Nurse-midwife	29	5
Psychology	26	4.5
Nutrition	18	3.1
Kinesiology	15	2.6
Undergraduate student	11	1.9
Physical education teacher	7	1.2
Medical Technology	7	1.2
Odontology	6	1
Chemistry and pharmacy	5	0.9
Statistic	3	0.5
Sociology	3	0.5
Anthropology	2	0.3
Biochemist	2	0.3
Phonoaudiology	2	0.3
Occupational therapy	2	0.3
Other*	4	0.7
Total	574	99

\*In other are included professions of author that only were signed once as first authors, like: Biology, Demography, Physics and Veterinary medicine. In 6 author the profession couldn't be found.



**Figure 6.** Original articles distribution on Revista Chilena de Pediatría 2000 a 2020, by design in absolute numbers.

a predominance of descriptive studies, both cross-sectional and retrospective, with a lower representation of prospective and analytical studies. This proportion is similar to that described in other mainstream journals, regardless of the impact factor of each journal<sup>14,15</sup>.

Although efforts have been made to attract experimental publications due to their greater relevance in terms of evidence and because they are associated with a greater number of granted citations<sup>16</sup>, this collaboration is still scarce, probably because of the lower participation of children in experiments due to the ethical regulation of research in the pediatric population<sup>17</sup>.

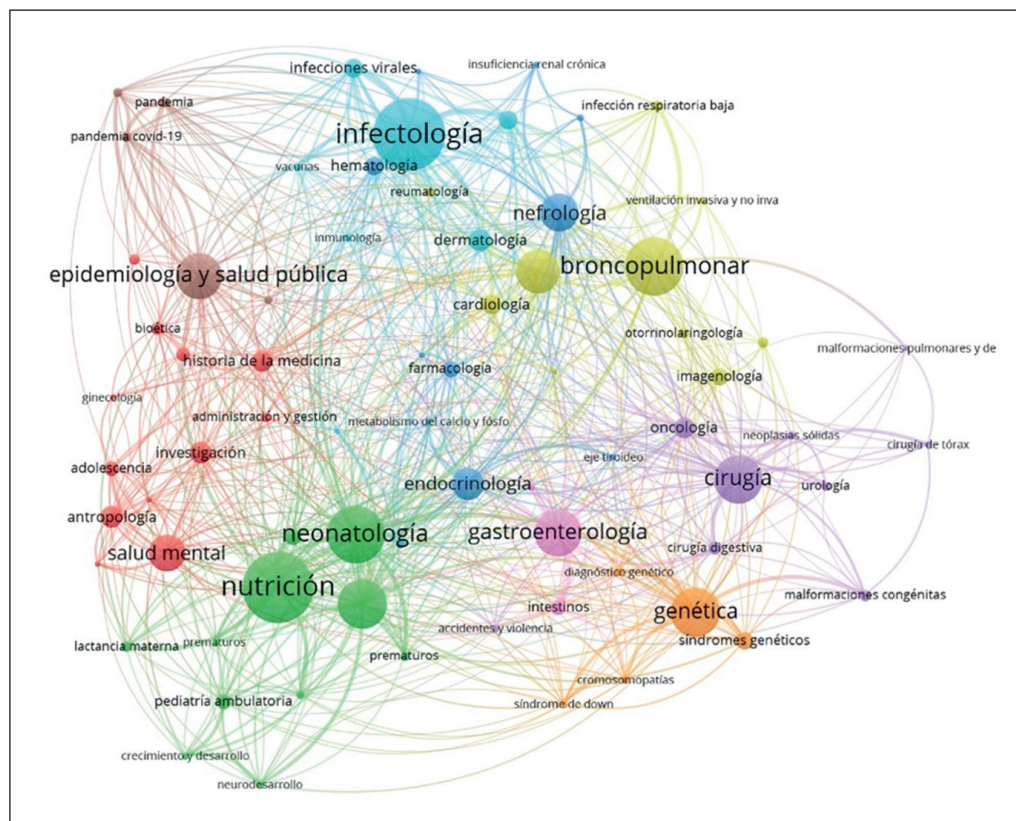
The only design that showed a clear tendency to increase was the qualitative one, which is related to the new paradigms of health research and the changes in the profile of authors. Although a physician is generally the first author of the OAs, there has been a tendency to decrease proportionally, with an increase of other health professionals and related careers. Authorship analysis of the 4 pediatric journals with the highest impact reported 79.5% of physicians as first authors<sup>18</sup>.

The range of professionals could be related to a higher proportion of female first authors throughout the study period, except for the second triennial. In other mainstream pediatric journals, a lower female representation has been seen, with a tendency to greater participation of women as first authors over time<sup>18-20</sup>. This has been interpreted as a female underrepresentation, especially if we consider that in pediatrics there is greater participation of women<sup>21</sup>.

On the other hand, the meticulousness of the research could explain the increase in the average number of authors or collaboration per manuscript. In this context, in the new author guidelines, AP/RCHP has requested justify the participation of each of the signatories since the greater demand of institutions to demonstrate productivity could encourage researchers to invite others to participate without complying with the requirements of authorship, which constitutes a lack of ethical integrity of the publication<sup>22</sup>.

Our analysis highlighted a trend towards an increase in foreign articles, especially OAs, finding in 2020 nine multicenter manuscripts with authors from several countries. According to the Scimago Journal & Country Rank (SJR), AP/RCHP has an average international collaboration index of 11 manuscripts per year<sup>12</sup>, which reflects the visibility and interest generated by the journal, being its greatest presence in large cooperative projects. The largest foreign collaboration in OAs was from Colombia, Argentina, Spain, and Mexico.

In the analysis by subject area, the main topics published were related to Nutrition, Infectious Diseases, Neonatology, and Bronchopulmonary, while the most cited were manuscripts related to Nutrition, Neonatology, and Oral Health, coinciding with those that have traditionally been the most visited<sup>9</sup>.



**Figura 7.** Association Cluster of code words published on Revista Chilena de Pediatría 2000-2020. The size of the nodes correspond to the terms that repeat the most, and the thickness of the line to the quantity of times its associates with another code word. It was only considered terms that repeated at least 25 times for the graphic. Source: Web of Science.

## Conclusions

The bibliometric analysis of AP/RCHP showed a sustained increase in the number of manuscripts published in the last triennials, as well as an increase in the number and percentage of OAs, however, the frequency of experimental designs is still low. OAs represented one-third of the visits and almost half of the citations, with no correlation between the descriptors. At the same time, there was an increase in the participation of authors of different nationalities and professions, with a predominance of females as first authors.

Knowing the bibliometric indicators of the journal will allow adequate planning of the editorial work in the long term to maintain and improve the quality of the contents, the subject relevance, appreciation of the researchers, and consequently the positioning of AP/RCHP as a quality journal for Latin America and worldwide.

## Acknowledgments

We thank Ms. Jennifer Montecinos Candia, Editorial Assistant of Andes Pediátrica/Revista Chilena de Pediatría, and the Board of Directors of Chilean Society of Pediatrics for their constant support to the improvement of the Journal.

## Funding

ANID fund for publications of scientific journals, Project FP190006

## Conflict of interest

Luisa Schonhaut B., Paul R. Harris and Francisco Cano Sch. are members of the Editorial Board of Andes Pediátrica/Revista Chilena de Pediatría. Mr. Italo Costa-Roldan is a consultant to Andes Pediátrica/Revista Chilena de Pediatría on editorial matters.

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