Bibliometric survey of articles published in *Revista da ABENO* between 2001 and 2019

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ABSTRACT

The present study aims to verify, through bibliometric analysis, the scientific publication profile of *Revista da ABENO*. The search strategy was conducted by two independent researchers on the journal's website, in which all the full published articles between 2001 and 2019 were analyzed. Upon reading the abstracts, the works were characterized according to the category of study, the theme addressed, year and volume of publication, in addition to data from the HEIs to which the authors of the article were linked, such as their status and geographical location. The researchers identified 486 articles published during the studied period. Mostly, the articles presented a methodological design of quantitative research (46.3%), with the addressed themes related to the areas of *Teaching / Learning in Dentistry* (49.8%); *Internship, Extension and PET-Health Activities* (15.2%); and *National Curricular Guidelines* (10.1%). The studies were developed and conducted mostly in public institutions (70%), with a predominance of location in the Southeast region of Brazil (41.4%). In conclusion, it appears that over nearly two decades *Revista da ABENO* has presented an increasing volume of scholarly articles, with a significant participation of tertiary education institutions, especially public ones, and with a concentration of this production in the Southeast region, although with a recent tendency to increase the participation of other geographic regions of the country.

Descriptors: Bibliometrics. Dentistry. Education, Dental.

1 INTRODUCTION

Bibliometric surveys are characterized as studies that evaluate production activities and scientific performance using statistical methods. The term *bibliometrics* was introduced by Otlet in 1934 to describe the study of patterns of behavior in literature and communication, originally known as "statistical bibliography"[1]. The advent of online databases and bibliometric analysis software has led to a considerable popularization of this type of study applied to the most diverse areas of knowledge[2].

Bibliometrics is an important tool in the evaluation of patterns of knowledge production and dissemination[1]. Bibliometric methods allow the mapping of themes, authors and institutions linked to scientific production in a given field of science, as well as enabling the construction of indicators capable of evaluating the patterns and trends related to these parameters, providing useful information in monitoring scientific research[2,3].

During a 1956 meeting of the Coordination for the Improvement of Higher Education Personnel (CAPES), the Specialized Public Health Service (SESP) and Ponto IV, the Brazilian Dental Education Establishment Association (ABEEO) - later known as the Brazilian Dental Education Association (ABENO) - was founded with the objective of outlining solutions to problems in Brazilian dental education. Since then, ABENO has been encouraging and supporting changes in the educational context in dentistry courses at higher education institutions (HEIs) in Brazil[4].

Among other activities, ABENO holds annual national scientific meetings with the objective of sharing experience of changes related to education and dental education, such as academic production trends in the scope of teaching, research and extension in dentistry; the implementation of methodologies; active

teaching and learning; and the perceptions of students and teachers regarding these processes[4].

In 2001, ABENO launched its journal, *Revista da ABENO*, whose main mission is to contribute to determining dental education quality indicators, with a view to ensuring the continuous progress of professional training, producing benefits aimed directly at the community. Since then, *Revista da ABENO* has published issues that address relevant topics for teaching in the dental field, receiving research studies from various HEIs in the country[4].

Thus, *Revista da ABENO* is an official publication of the Brazilian Dental Education Association whose principle is to contribute to the achievement of teaching quality indicators. It started with an annual print edition and from 2005 it started to publish semi-annual issues, offering free print distribution to members and higher education institutions. In 2011, it started its participation in the Rev@Odonto initiative, a portal for Brazilian dentistry journals. As of 2015, the issues started to be published quarterly in electronic media, through the Electronic Magazine Editing System (SEER), with the main objectives being reducing costs, increasing the visibility of the published content and accelerating peer review.

In this context, the pattern of scientific production and dissemination of *Revista da ABENO* makes it possible to identify trends and the growth of knowledge in the field of dental education, supporting the development of institutional strategies for its strengthening. Therefore, this study has aimed to investigate, through bibliometric analysis, the scientific production profile of *Revista da ABENO* in the period between 2001 and 2019.

2 METHODOLOGY

This bibliometric research is characterized

as a cross-sectional study with a quantitative approach and began with an analysis of the full articles published in *Revista da ABENO* between 2001 and 2019, which are available for free and immediate access on the organization's website (https://revabeno.emnuvens.com.br/revabeno).

The articles were categorized by reading the titles and abstracts. In cases where it was not possible to identify any of these characteristics by reading the title and abstract, the article was read in its entirety. For the article categorization, the researchers considered the outcome variables of the study category and topic addressed, and the independent variables: year of publication, status and location of all HEIs to which the authors of the article were linked.

The study category was defined based on the methodological design adopted, with articles classified as quantitative research, considering the subcategories of document analysis, intervention studies, prospective studies, retrospective studies and cross-sectional studies; qualitative research; research with hybrid, qualitative and quantitative methodology; literature reviews, including narrative, integrative and systematic reviews in this category; and experience reports. The topic addressed was identified by reading the textual components of the article and, according to its object of study, these were classified as having one of these themes: *teaching / learning in dentistry*; *internship, extension and PET-health activities*; *research and scientific initiation activities*; *national curriculum guidelines*; *teledentistry and telehealth*; *world of work*; and *epidemiology and health services*. In cases where it was not possible to categorize the article under any of these themes, it was classified in the category *other themes*. The legal status of the HEIs was categorized as public or private, with articles linked to HEIs

with a different legal status categorized as a partnership between public and private HEIs. The location of HEIs was categorized by geographic region for Brazilian HEIs, and as international when it was in another country. In cases where there was no record of the authors' affiliation with any educational institution, these articles were considered not to be linked to an HEI.

The database construction process was carried out by two different researchers (A.V.M.B. and B.B.A.), who collected the same data independently, thus building two separate databases, verified through consistency, followed by a comparative evaluation carried out by a third researcher (P.H.S.S.). In cases of divergence between the two evaluators, the article was submitted to a new analysis and it was categorized according to a consensus between the three researchers.

The data were tabulated with the aid of SPSS Software (Statistical Package for Social Sciences) v. 20.0 and, at the end of this stage, the data were treated by means of univariate descriptive analysis. A bivariate descriptive analysis of the distribution of articles by year of publication and location of the HEI was also carried out.

3 RESULTS

A total of 486 articles were identified as being published in *Revista da ABENO* in the period between 2001 and 2019. Regarding the year of publication, the greatest number of works were published in 2018, accounting for 76 articles (15.6%). This year was followed by the years 2019 (n = 57) and 2017 (n = 52), as shown in Table 1 and Figure 1.

Table 1 highlights the distribution of publications according to the geographic regions of the country. The Southeast region represented 41.3% of Brazilian publications in *Revista da*

ABENO, with 201 articles, while the North region had the lowest percentage (2.8%). Ten articles were published linked to international HEIs, equivalent to 2.1% of the total analyzed. Eight of these resulted from a partnership between Brazilian and international HEIs.

Table 1. Distribution of articles published in *Revista da ABENO* between 2001 and 2019 according to year of publication and geographic region of the linked HEIs

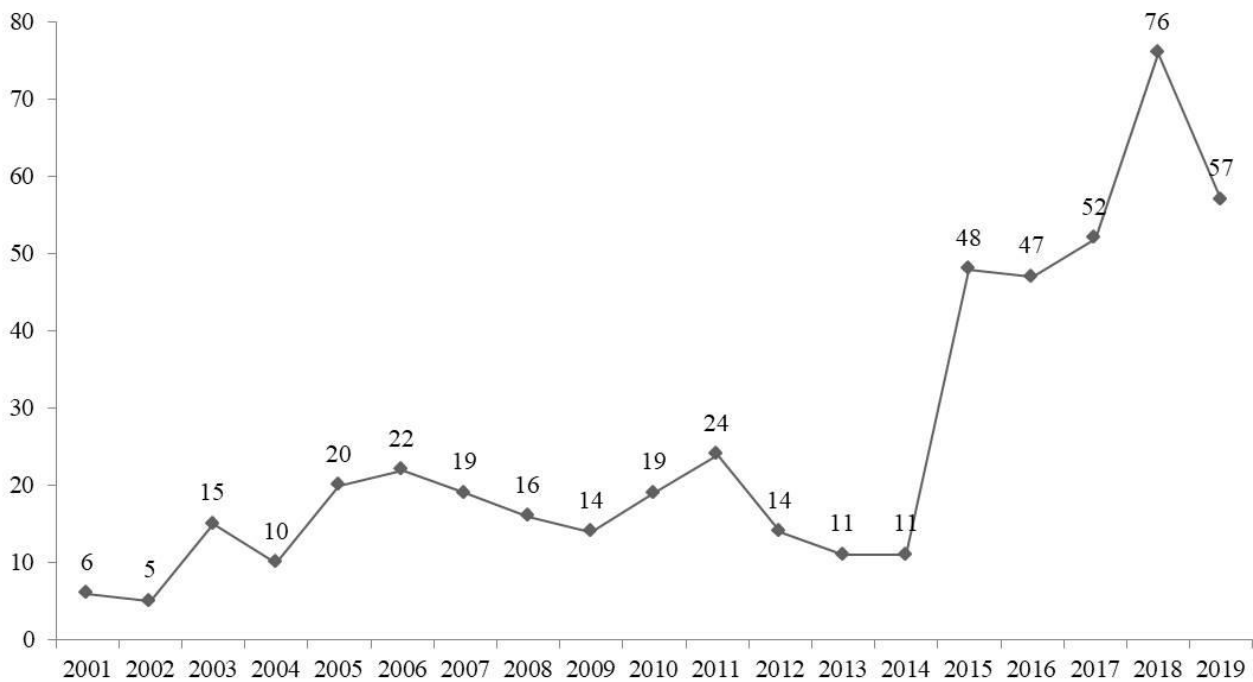| Year | Geographic region of the linked HEI | | | | | | | | | | | | | | |
| | North | | Northeast | | Center-West | | Southeast | | South | | International | | No HEI | | Total | |
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2001	00	0.0	00	0.0	02	33.3	04	66.6	00	0.0	00	0.0	01	16.6	06	100.0
2002	00	0.0	00	0.0	01	20.0	03	60.0	01	20.0	00	0.0	01	20.0	05	100.0
2003	00	0.0	00	0.0	01	6.6	06	40.0	03	20.0	01	6.6	04	26.6	15	100.0
2004	00	0.0	01	10.0	02	20.0	04	40.0	03	30.0	00	0.0	00	0.0	10	100.0
2005	00	0.0	02	10.0	03	15.0	12	60.0	02	10.0	00	0.0	01	5.0	20	100.0
2006	00	0.0	03	13.6	00	0.0	12	54.5	06	27.2	00	0.0	02	9.0	22	100.0
2007	00	0.0	02	10.5	02	10.5	12	63.1	03	15.7	00	0.0	00	0.0	19	100.0
2008	00	0.0	03	18.7	02	12.5	10	62.5	02	12.5	00	0.0	00	0.0	16	100.0
2009	01	7.1	01	7.1	00	0.0	06	42.8	07	50.0	00	0.0	00	0.0	14	100.0
2010	00	0.0	04	21.0	01	5.2	08	42.1	05	26.3	00	0.0	01	5.2	19	100.0
2011	00	0.0	03	12.5	01	4.1	11	45.8	10	41.6	00	0.0	00	0.0	24	100.0
2012	02	14.2	03	21.4	00	0.0	03	21.4	06	42.8	00	0.0	00	0.0	14	100.0
2013	00	0.0	02	18.1	00	0.0	06	54.5	04	36.3	00	0.0	00	0.0	11	100.0
2014	00	0.0	02	18.1	00	0.0	04	36.3	05	45.4	00	0.0	00	0.0	11	100.0
2015	03	6.2	14	29.1	00	0.0	16	33.3	19	39.5	02	4.1	01	2.0	48	100.0
2016	02	4.2	15	31.9	02	4.2	18	38.2	21	44.6	01	2.1	00	0.0	47	100.0
2017	02	3.8	06	11.5	08	15.3	21	40.3	25	48.0	01	1.9	00	0.0	52	100.0
2018	01	1.3	23	30.2	13	17.1	26	34.2	25	32.8	03	3.9	00	0.0	76	100.0
2019	03	5.2	13	22.8	08	14.0	19	33.3	20	35.0	02	3.5	00	0.0	57	100.0
Total	14	2.8	97	19.9	46	9.4	201	41.3	167	34.3	10	2.0	11	2.2	486	100.0

Figure 1. Historical series of articles published in *Revista da ABENO* between 2001 and 2019

Regarding the variable *study category*, of the 486 studies analyzed, 225 (46.3%) dealt with quantitative research, with cross-sectional studies being the most frequent (n = 91; 39.3%), while 121 (24.9%) were experience reports and 71 (14.6%) were literature reviews (Table 2).

The distribution of works according to the legal status of the HEI administration to which the authors were linked (public, private or partnership between the two types), shown in Table 2, illustrates that the majority of published articles came from public institutions, representing 340 (70%) of the total. Eleven (2.3%) articles had no authors linked to an HEI.

Table 2 also illustrates the distribution of works according to the topics covered. The largest number of publications was concentrated in the area of *teaching / learning in dentistry* (49.8%), followed by works that addressed *internship, extension and PET-health activities* (15.2%) and *guidelines of the national curriculum* (10.1%). Works addressing other less frequent themes and, therefore, not listed, corresponded to 2.3% of the total files, and among these, the topics related to the *infrastructure of dentistry courses* and *human teeth bank* were the most addressed.

4 DISCUSSION

Bibliometrics is a basic tool for the evaluation of science, and studies that use quantitative methods to measure scientific production are expanding in several countries[5]. Some applications of bibliometric techniques that we highlight are the possibility of determining trends and growth indicators in any field of knowledge. These signs are based on the chronological variation of the number of published works and their geographical distribution, as well as the productivity of authors and HEIs, and the collaboration between researchers and institutions, as measured by the

Table 2. Categorization of articles published in *Revista da ABENO* between 2001 and 2019 according to the status of the affiliated HEI, type of study, and topic covered

	Articles	
Legal status of the HEI administration	**n**	**%**
Public	340	70.0
Private	91	18.7
Partnership between public and private	44	9.0
No HEI	11	2.3
Study Category	**n**	**%**
Quantitative research	225	46.3
Document Analysis	14	2.9
Intervention study	02	0.4
Prospective study	13	2.7
Retrospective study	05	1.0
Cross-sectional study	191	39.3
Qualitative research	49	10.1
Quantitative and qualitative research	20	4.1
Experience reports	121	24.9
Reviews	71	14.6
Topics covered	**n**	**%**
Teaching/learning in dentistry	242	49.8
Internship, extension and PET-health activities	74	15.2
Research and Scientific Initiation Activities	19	3.9
Guidelines of the national curriculum	49	10.1
Epidemiology and Health Services	42	8.6
World of Work	39	8.0
Teledentistry and Telehealth	10	2.1
Other Themes	11	2.3
Total	**486**	**100.0**

quantity of their publications[6].

Thus, the bibliometric survey of articles published in *Revista da ABENO* allows the characterization of its production and scientific dissemination pattern and an analysis of the main topics addressed and trends in the production of

knowledge regarding dental education and the productivity profile of authors and HEIs. This is the first bibliometric analysis of this scientific journal that is now in its 20th year of publication.

Currently, *Revista da ABENO* publishes on average 12 articles per issue, in addition to supplements, classified as B3 according to the Qualis system, written in Portuguese, English or Spanish[7]. The evolution regarding the quantity of publications can be seen in this historical series, which shows the gradual increase in the number of articles published per year.

Hilu and Gisi (2011)[8] point out that Brazilian scientific research is still hierarchical and is concentrated in a few top HEIs, with over 90% of publications generated in public universities and with a low participation of private HEIs in this process. In this sense, the publications of *Revista da ABENO* follow this same pattern, as observed in the present study. The high index of publications linked to public institutions may be related to the greater receipt of support from funding agencies, the large number of researchers that congregate in these institutions and the greater tradition in conducting research, mainly by prestigious universities linked to graduate programs[9]. Based on these data, the observed results point to the importance of investment in public universities and research institutes, in view of their role in Brazilian research production, including the field of dental education[10].

Evaluating the scientific production in the country, it is possible to identify that the geographical distribution of the researchers' institutional link is strongly concentrated in the Southeast region, with emphasis on the state capitals. The city of São Paulo, for example, was responsible for about 20% of the Brazilian scientific production during the last decade[11]. Such findings are corroborated by the results of the present research, considering that 41.3% of national publications in *Revista da ABENO* have their origin in the Southeast of the country. This heterogeneity can be explained by the greater concentration of undergraduate and graduate courses in this region[9], which conducts about 43.6% of dentistry courses. According to the Ministry of Education [13], the distribution of HEIs in the national territory, considering only the location of their networks, shows that 49% of the total institutions are located in the Southeast region. However, a recent tendency is to increase scientific production in other regions, driven by government action seeking to expand the offer and democratization of higher education, with the aim of reducing the overdependence on the national territory. The trend towards decentralization is also observed in this study, which shows an increasing participation of the North, Center-West and, more markedly, the Northeast region throughout the historical series of articles in this journal.

The increase in the number of trained professionals associated with the significant expansion of undergraduate and graduate courses tend to drive the growing development of research in the field of dentistry, this being an important factor responsible for the significant increase in the production of national science in all areas[14,15].

Among the topics most addressed by *Revista da ABENO*, almost half of the articles in this historical series had the *teaching / learning process in dentistry* as the object of study. The themes related to *the internship, extension and PET-health activities* and the *national curriculum guidelines* were also highlighted, which is in line with the profile of the journal, which is directly focused on the study of dental education.

Other frequently addressed themes included *the world of work*—portraying the expectations and perspectives of undergraduate

students regarding their future professional performance—in addition to studies of graduates from dentistry courses and their introduction into the profession. Likewise, studies of *epidemiology and health services* were frequent. In this category, most articles focused on the study of the prevalence of diseases and health problems among students and teachers of dentistry, the profile of patients seen at school clinics and the evaluation of the quality of dental care services offered by HEIs.

Throughout its 20 years of existence, *Revista da ABENO* has developed a fundamental role in the production and dissemination of scientific knowledge related to the multiple facets of the teaching–learning process in dentistry nationwide.

5 CONCLUSION

For almost two decades, Revista da ABENO has presented an increasing flow of publications, whose themes have adhered to the scope of the journal. The articles have emanated from a significant number of HEIs, especially public ones, and with a concentration of this production from the Southeast region of Brazil, although a tendency to increase participation of other geographic regions has appeared recently

RESUMO
Levantamento bibliométrico dos artigos publicados na Revista da ABENO no período entre 2001 e 2019

O presente estudo objetivou traçar, por meio de análise bibliométrica, o perfil de produção científica da Revista da ABENO. A estratégia de busca foi conduzida por dois pesquisadores independentes no sítio *web* da revista, no qual foram analisados todos os artigos completos publicados no período entre 2001 e 2019. Mediante a leitura dos resumos, os trabalhos foram caracterizados de acordo com a categoria de estudo, a temática abordada, ano e volume de publicação, além de dados das IES às quais os autores do artigo eram vinculados, tais como natureza jurídica e localidade geográfica. Foram identificados 486 artigos publicados no período estudado. Majoritariamente, os artigos apresentaram delineamento metodológico de pesquisa quantitativa (46,3%), cujas temáticas abordadas estavam relacionadas às áreas de "Ensino/Aprendizagem em Odontologia" (49,8%) "Atividades de Estágio, Extensão e PET-Saúde" (15,2%) e "Diretrizes Curriculares Nacionais" (10,1%). Os estudos foram desenvolvidos em sua maior parte em instituições públicas (70%), com predominância de localização na região Sudeste (41,4%). Em conclusão, verifica-se que, ao longo de quase duas décadas, a Revista da ABENO apresentou volume crescente de publicações, com participação expressiva de IES, em especial das públicas, e com concentração desta produção na região Sudeste, embora com tendência a um aumento na participação das demais regiões geográficas.

Descritores: Bibliometria. Odontologia. Educação em Odontologia.

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