REVISTA DE ODONTOLOGIA DA UNESP

ORIGINAL ARTICLE

Rev Odontol UNESP. 2014 Mar-Apr; 43(2): 131-136
Doi: http://dx.doi.org/10.1590/rou.2014.015

Evaluation of scientific production in the field of Dentistry in Public Health from 1999 to 2009

Avaliação da produção cientifica na área da Odontologia em Saúde Pública de 1999 a 2009

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Resumo

Introdução: Estudos que analizam a produção científica são fundamentais para orientar os pesquisadores. **Objetivo**: O objetivo deste estudo foi analisar o perfil da produção científica na área de Odontologia em Saúde Pública, por meio dos resumos publicados nos Anais da Sociedade Brasileira de Pesquisa Odontológica no período de 1999 a 2009. **Material e método**: Foram lidos 22388 resumos publicados nos anais da Sociedade Brasileira de Pesquisa Odontológica desde 1999 até 2009. A amostra foi de 3061 resumos pertencente a área da Saúde Pública. **Resultado**: A participação de estudos em Odontologia em Saúde Pública aumentou, com 113 estudos inscritos em 1999 e 441 em 2009. Houve predomínio de estudos científicos em comparação com revisões sistemáticas, meta-análises ou relatos de casos. Na classificação da natureza geral da pesquisa, 71,28% diziam respeito a pesquisa em seres humanos. O maior peso no número total de pesquisas com seres humanos foi no ano de 2002, contribuindo com 79,79% do total. No que diz respeito ao domínio temático, verificou-se que os estudos envolvendo Epidemiologia foram mais frequentes em todos os anos. Ao analisar a origem institucional dos estudos, verificou-se que em todos os anos estudados, as universidades públicas foram responsáveis pela maioria das publicações científicas, 75,6% (n=2315). **Conclusão**: Os estudos sobre Odontologia em Saúde Pública têm crescido significativamente no período estudado de dez anos. Houve predominância de estudos epidemiológicos, e as do tipo em estudos in vivo e pesquisas científicas.

Descritores: Pesquisa em odontologia; tendências; odontologia; Brasil; saúde pública.

Abstract

Introduction: Studies that analyze scientific production are essential to guide researchers. **Aim**: The purpose of this study was to analyze the profile of scientific production in the field of Dentistry in Public Health, by means of the abstracts published in the Annals of Sociedade Brasileira de Pesquisa Odontológica in the period from 1999 to 2009. **Material and method:** First, the reading of all the 22388 abstracts published in the annals of the Sociedade Brasileira de Pesquisa Odontológica from 1999 to 2009 was undertaken. The sample was 3061 abstract belonging to Public Health area. **Result:** There was growing participation of studies on Dentistry in Public Health with 113 studies having been inscribed in 1999 and 441 in 2009. There was a predominance of scientific studies in comparison with systematic reviews, meta-analyses, or case reports. In the classification of general nature of the research, 71.28% concerned studies with human beings. The greatest weight in the total number of researches with humans was in 2002, contributing with 79.79% of the total. With regard to the area of thematic domain, it was verified that studies involving Epidemiology were more frequent in all the years. When analyzing the institutional origin of studies, it was verified that in all the studied years, the public universities were responsible for the majority of scientific publications, 75.6% (n=2315). **Conclusion:** The studies on Dentistry in Public Health have grown significantly in the studied period of ten years. There was predominance of Epidemiological studies, and those of the in vivo and scientific research type.

Descriptors: Dental research; trends; dentistry; Brazil; public health.

INTRODUCTION

Scientific surveys, particularly in the social field, are fundamental for investigating the problems that affect the population, tracing the morbidity and mortality profile, proposing measures for the evaluation and control of health services, in addition to being useful to public managers, as they are a link between the government and action in health care[1,2]. The increase in the number of researchers, researches and scientific discoveries do not always reflect an improvement in health indicators, particularly because they involve high costs, which reduce the possibility of applying these technologies in the population in general[3].

In Brazil, an outstanding dental research meeting is the Congress of the Brazilian Dental Research Society (SBPqO) representing the largest scientific dental research society in the Southern hemisphere. This meeting gathers a significant sample of the main studies and researches that are being conducted in Brazil, and serves as a reference for scientific production studies[4].

According to Narvai, the framework of the Dentistry in Public health occurred with the publication of "Manual de odontologia sanitária" (The manual of sanitary dentistry) in 1960 by Mario Chaves who establishes that Sanitary Dentistry is "a discipline of public health that addresses the diagnosis and treatment of oral health conditions […] and is an effort undertaken by the community, in the community and for the community to achieve the best average oral health conditions[5]."

Put into practice, the Sanitary Dentistry lost its original objectives proposed by Chaves and has evolved to Social and Preventive Dentistry. Recently a new bias called Collective Oral Health is growing within Dentistry in Public Health, whose framework is to "replace all types of technicism and de biologism existing in specific formulations in social and preventive dentistry, [....] by carrying out a theoretical reconstruction of collective health thinking[5]."

The new guidelines for the Dental Undergraduate Course, published in 2001[6] recommend a more humanized practice, placing value on studying the health-disease process and develop strategies that improve the levels of health in the population within its diverse lifestyles[7], much more alike to the spirit of collective oral health.

In Brazil, researches that quantitatively evaluate scientific production have indicated that studies on Health Policy fall far short of other themes related to public health, such as Epidemiology and Health Education[8]. Analyses of studies published in the SBPqO Annals of the Annual Meeting in 1997, showed that the social area participated in only 17% of the total number of publications, falling behind all the other areas studied[9]. At the SBPqO Annual Meeting in 2003, Dentistry in Public Health/Collective Oral Health area was ranked in second place with regard to receiving funding, losing only to the basic areas, and the Southeastern region was the one that most contributed with the inscription of 76.4% of the studies[10].

To study the profile of dental researches, particularly those related to Dentistry in Public Health/Collective Oral Health is important, because without knowing which are the deficiencies of the area, researches frequently become repetitive, relevant data are spread out due to the lack of systematic reviews and meta-analysis,[11] unconnected to social reality and cause little impact on public health practices and services[12]. Therefore, studies that analyze scientific production are essential to guide researchers in this field by means of evidence.

The purpose of this study was to analyze the profile of scientific production in the field of Dentistry in Public Health by means of the abstracts published in the Annals of SBPqO Meetings ("Sociedade Brasileira de Pesquisa Odontológica"), in the period from 1999 to 2009.

MATERIAL AND METHOD

For sample selection, prior reading of all the 22388 abstracts published in the annals of the SBPqO meeting in the years from 1999 to 2009 was undertaken. After this 3061 abstracts were classified based on the criteria of Narvai, Almeida[8]: Science and Technology, Health Education, Health Policies and Health Systems, and Epidemiology.

A new classification of the abstracts was made according to the following variables:

a) Types of study: Simple or systematic literature reviews, with or without meta-analysis, case reports and scientific research;
b) General nature of the research: studies involving human beings; animals, *in vitro* that sought to simulate real conditions in laboratories, and *in situ* studies[13]; and field researches, conducted at the site in which the phenomenon occurred and there were elements to explain it[14];
c) Geographic origin: North (N), Northeast (NE), South (S), Southeast (SE) and Midwest (MW); in addition to a record of the institution that produced the study, divided into public Universities (PU), private universities (APU) or public health services (PHS);
d) Sources of Financing: Survey of studies that received funding from the main agencies in the country: CNPQ – ("Conselho Nacional de Desenvolvimento Cientifico e Tecnológico"), FAPESP – ("Fundação de Amparo à Pesquisa do Estado de São Paulo"), CAPES – ("Coordenação de Aperfeiçoamento do Pessoal de Nível Superior").

Due to the careful selection of the studies inscribed in the Annual SBPqO meeting, only 4 abstracts were excluded during the study, because they did not present the proposed objective in a clear manner (n= 1), did not identify the institution of origin (n=2), and because it was not possible to classify them in the proposed categories (n=1).

RESULT

The results showed that there was growing participation of studies on Dentistry in Public Health in the SBPqO Congress throughout the years researched, with 113 studies having been inscribed in 1999 and 441 in 2009.

In spite of the extensive scientific production, the studies on Dentistry in Public Health represented 15.9% of the publications in 2009. It was observed that the articles on Dentistry in Public

Health remained below 30%, except in 2001, in which the result was shown to be 51.7% (n=201) of the total. The year in which there was the smallest participation of studies on Dentistry in Public Health was 2004, in which 11.4% was presented (n=205).

When analyzing the type of study, it was observed that in all the years evaluated there was a predominance of scientific studies of 98.1% in comparison with systematic reviews, meta-analyses, or case reports (Table 1).

In the classification of general nature of the research, 71.28% concerned studies with human beings. The greatest weight in the total number of researches with humans was in the year 2002, contributing with 79.79% of the total. The remainder of the abstracts dealt with *in vitro* researches (12.28%), field researches (12.5%), *in situ* (2.02%) and studies with animals (1.7%). A decrease in researches with animals could be noted during the years, showing 4.4% in 1999 and 0.8% in 2009. The same did not occur with field researches, which showed an increase from 7.07% in 1999 to 15% on 2009. In the *in vitro* researches some variations were observed, reaching 6.62% in 2002 up to 19.53% in 2000.

With regard to the area of thematic domain, it was verified that studies involving Epidemiology were more frequent in all the years. In a general total, Epidemiology corresponded to 60.7% of the researches conducted, followed by Science and Technology, 21.5% and Health Education, 11.66% (Table 2).

When analyzing the institutional origin of studies, it was verified that the public universities were responsible for the majority of scientific publications, 75.6% (n=2315). More effective participation of the Private Universities was verified in the SBPqO meetings as from 2002 (22.3%), in which the relative frequency remained above 20%, with maximum participation occurring in 2006 with 31.9%.

As regards categorization of the studies according to the region of the country, the Southeast was responsible for 68.32% (n= 2091) of the national production, the South, 14.6% (n=448), Northeast, 13. 8% (n=423), North 1.40% (n=43) and Midwest with a participation of only 1.82% (n=56) of the total.

DISCUSSION

There was significant growth in the number of scientific researches and studies related to health published in Brazil, so that it became relevant to analyze this scientific production in order to guide researches developed in dentistry, based on evidences.

When analyzing the scientific production profile in the field of Public Health from the abstracts published in the Annals of SBPqO ("Sociedade Brasileira de Pesquisa Odontológica") meetings in the period from 1999 to 2009, growing participation of studies on Dentistry in Public Health was observed at the meetings. In 2001, the creation of a new panel modality, the Public Action in Dentistry Panel – POAC for studies that showed clinical relevance with reflection on the quality of life of the population – more focused to Collective Oral Health bias may have influenced this increase[4].

Other relevant aspects that may have contributed to this change in the profile of participation of studies were the appreciation of the public health course as from the publication of the National Guidelines for the Dentistry Course in 2001; implementation of the national oral health policy in 2004, and consolidation of the participation of the Dental Surgeon as team member in the Family Health Strategy in 2000[6,15].

The proposal of the National Guidelines for the Dentistry Course in 2001 is significantly different from the existing model of Dentistry in Public Health also known as Social Dentistry, a concept born from the theoretical concepts of sanitary dentistry,

Table 1. Types of studies presented in the Public Health area

Years	Literature review		Systematic review		Meta-analysis		Case reports		Scientific studies		Total
	n	%	n	%	n	%	n	%	n	%	n
1999	3	2.65	0	0	0	0	0	0	110	97.34	113
2000	1	0.46	0	0	0	0	0	0	214	99.53	215
2001	0	0	0	0	0	0	2	0.99	198	98.50	201
2002	0	0	0	0	1	0.35	2	0.70	283	98.60	287
2003	0	0	0	0	0	0	1	0.39	256	99.61	257
2004	4	0	0	0	0	0	2	0.97	203	99.02	205
2005	1	0.46	0	0	0	0	2	0.50	393	98.50	399
2006	0	0	1	0.32	1	0.32	5	1.61	303	97.74	310
2007	0	0	1	0.29	1	0.29	13	3.84	322	95.26	338
2008	0	0	1	0.29	1	0.29	6	1.79	327	97.61	335
2009	0	0	2	0.49	2	0.49	6	1.49	393	98	401
Total	**9**	**0.29**	**5**	**0.16**	**6**	**0.2**	**42**	**1.27**	**3002**	**98.07**	**3061**

Table 2. Thematic domain area in the Public Health area

Years	Science Technology		Health Education		Public Health		Epidemiology		n
	n	%	n	%	n	%	n	%	
1999	35	30.97	30	26.54	4	3.54	44	38.94	113
2000	62	28.83	28	13.02	2	0.93	123	57.21	215
2001	53	26.37	30	14.92	3	1.50	115	57.21	201
2002	39	13.60	38	13.24	13	4.53	197	68.64	287
2003	52	20.23	34	13.23	10	3.90	161	62.64	257
2004	45	21.95	32	15.61	10	4.88	118	57.56	205
2005	105	26.31	32	8.02	26	6.51	236	59.15	399
2006	68	21.93	35	11.29	23	7.41	184	59.35	310
2007	60	17.75	26	7.69	25	7.39	227	67.16	338
2008	53	15.82	49	14.62	33	9.85	200	59.7	335
2009	87	21.69	23	5.74	35	8.72	256	63.84	401
Total	**659**	**21.52**	**357**	**11.66**	**184**	**6.01**	**1861**	**60.79**	**3061**

most of all based on technicism and de biologism. It's more alike to the concept of Collective Oral Health. According to Narvai[5] "collective oral health (COH) advocates that people's oral health is a result not only of dental practice but also of social constructions consciously created by people in any concrete situation, including health providers and also (or even) dentists."

Generally speaking, in this study there was predominance of studies in the Epidemiology area, which is the most common study area concerning public health,[16] studies with human beings and of the scientific research type. The literature has shown low frequency of studies of the systematic review type, simple literature review and meta-analysis[13,17] in detriment to studies of the scientific research type, which may be justified by the profile of publication demanded by the main journals in the area because, although the reviews are important for adequate referral of a problem, researches are published with greater frequency.

Epidemiology is considered to be an important tool on Social Dentistry, an area connected to public health. Nevertheless it is fundamental to achieve the knowledge concerning population's health and social determinants of health to organize further actions in Collective Oral Health[13].

The change from Technicist dentistry to dentistry based on health promotion may have been reflected by the reduction in studies with themes directed towards Science and Technology at the SBPqO Congress, as shown in the results of this research, with 21.52% of the studies with this theme[3].

On the other hand, few studies were found directly related to health policies, corresponding to 6.01% of the total number of publication. This result may be due to the fact that in Brazil there are other congresses with impact on the area of public health and collective health such as EPATESPO, ABRASCO, Brazilian Public Health Congress, Paulista Public Health Congress and National Public Health Congress with preference for publication of these subjects at the more specific meetings of this field.

There is a scarcity in the literature of studies such as the present one, which evaluate the general nature of research. The study of Leles et al.[17] and Dias et al.[13] have shown the predominance of *in vitro* laboratory researches (60.34%) in the field of health in general, however, the results found differed from this study, since researches *with humans* were more prevalent. The emphasis on studies in humans may be justified by the high predominance of studies with the thematic domain of Epidemiology[1,18,19]

The thematic domain most found in research was Epidemiology, corresponding to over half of the total number (60.79%), as was found in the results of Barreto[1], Egry et al.[18] and Barreto[19] who concluded that in Brazil, scientific production in Epidemiology is higher than it is in other countries in Latin America and is growing constantly. The results of epidemiologic studies are of extreme importance, above all to enable understanding of the diseases in population bases, and should be used for planning, evaluating actions and managing health services[20].

There was a reduction in laboratory research with animals over the course of the ten studied years; moreover, it was the least used methodology (1.7%). The main focus of experimental researches with animals has been to perfect knowledge about the physiopathological mechanisms of diseases, conduct therapeutic trials with new drugs, study biological markers and evaluate new techniques from the perspective of applicability in the human species[21].

The great participation of public universities in national research coincides with the studies of Cavalcanti et al.[10] and Taitson, Cruz[22], and according to Morel et al.[23] this is a remarkable characteristic of developing countries, the majority

of which receive support from funding agencies arising from the government, such as CNPq, FAPESP and CAPES.

Nevertheless, there was a significant increase in the participation by private universities in the SBPqO Congress throughout these ten studied years, from 5.31% in 1999 to 23.7% in 2009. The incentive to private institutions to conduct scientific research has been evaluated by the Ministry of Health in the last decade [24].

Although there has been growth in the granting of scholarships at master's, doctoral and post-graduate level in Dentistry[25], in this study, fewer than half the articles analyzed received support from some funding agency, a result similar to that found by the research of Cavalcanti et al.[10] Only a small part of the total amount of resources destined for Dentistry are directed towards the social area[12], confirming that environmental, epidemiological and social researches, also useful and efficient in improving human health, receive little incentive and poor financing[26].

The social area appears to be hardly attractive to financers, due to the little financial return for the sponsors, differently from investments in drugs and health equipment involving high technology, with greater financial return, frequently benefiting the industries that produce these products[27].

In Brazil, the social area has been prioritized by the Ministry of Health, and an example of this is the national health system research program: shared health management - PPSUS ("Programa Pesquisa para o SUS: gestão compartilhada em saúde) which was instituted in 2004 to fund research in the social field, with a view to contributing to the reduction in inter-regional inequalities in the area of public health,[28] and the scientific output in oral health within social field has increased significantly[13] and continues in evidence[29,30].

The large majority of studies presented at the SBPqO Congress come from the Southeastern region, with these data being confirmed in others studies[10,28,31]. The Southeastern region is considered the cradle of Dental research in Brazil; the institutions in the State of São Paulo alone are responsible for 37% of the doctorates obtained[32] and present research centers that are among the most developed in the country[33], such as USP, UNICAMP and UNESP.

CONCLUSION

Based on the studied sample and the results obtained, it was concluded that the studies on Dentistry in Public Health have grown significantly in the studied period of ten years. There was predominance of Epidemiological studies, and those of the *in vivo* and scientific research type. The majority of studies come from public institutions in the Southeastern region.

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CONFLICTS OF INTERESTS

The authors declare no conflicts of interest.

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Received: June 25, 2013
Accepted: February 5, 2014