# Analysis of scientific production in oral pathology: a descriptive study

*Análise da produção científica em patologia oral: Um estudo descritivo*

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## RESUMO

**Objetivos:** Este estudo teve por objetivo traçar um perfil das pesquisas realizadas em um programa de pós-graduação em patologia oral quanto à sua distribuição anual, linhas de pesquisa e apoio financeiro. **Métodos:** Foram analisadas todas as publicações nos Anais da Reunião Anual da Sociedade Brasileira de Pesquisa em Odontologia, de 1984 até 2009, sendo a amostra composta por 116 trabalhos. **Resultados:** No período anterior à criação do curso de doutorado pelo programa foram produzidos 17 (14,6%) trabalhos e a maioria (n=99 / 85,4%) produzida depois. As linhas de pesquisa prevalentes foram: Câncer oral (31,8%), e Cistos e tumores odontogênicos (18,2%). Das agências financiadoras de pesquisa, o CNPq e a CAPES foram as mais proeminentes, com 30,8% e 24,8% de representação, respectivamente. **Conclusões:** O programa avaliado exemplifica a produção científica dos programas de pós-graduação em patologia oral do país, exibindo seu papel na execução e publicação de trabalhos científicos, acompanhando as mudanças em pesquisa que ocorreram no Brasil nas últimas décadas.
**Descritores:** Pesquisa; pós-graduação; agências financiadoras de pesquisa; patologia oral

## ABSTRACT

**Objective:** This research aimed to make a profile of the researches in an oral pathology post graduate program regarding to annual distribution, research subjects and financial support. **Methods**: The publications from the Annals Books from the Annual Session of the Brazilian Society of Research in Odontology (SBPqO) were analyzed, since 1984 until 2009. The sample was composed by 116 works, with the greater part (88) done after the doctoral program creation. **Results:** Seventeen (14.6%) works were made prior to creation of doctorate program, and the major part (n=99 / 85.4%) was done after that. The prevalent research subjects were: oral cancer (31.8%) and odontogenic cysts and tumors (18.2%). CNPq and CAPES were the most remarkable financial support agencies, with 30.8% and 24.8% each one, respectively. **Conclusions:** The program evaluated here exemplifies the scientific production of post graduation programs in oral pathology, showing its role in execution and publication of scientific works, also following the changes in research that occurred in Brazil in the last decades.
**Descriptors**: Research; post graduation; funding agencies of research; oral pathology

## INTRODUCTION

Research could be defined as the group of actions which have the aim to discover some solution for a problem, with systematic and rational proceedings. The research activity is made when a problem exists and somebody looks for solutions that are not available in that moment[1]. Such research influences investigators, and also influences the whole society, dictating the knowledge construction. It also guides the thoughts, reflections and attitudes, beyond molding the tasks in all fields of knowledge[2].

A researcher must have the qualities required to carry out their duties: knowledge of the subject, curiosity, creativity, intellectual integrity and social sensibility. Others characteristics are humility to accept criticism, disciplined imagination, persistence, patience and trust in experience[2].

In the last years, it has been noted the increase of scientific publication of Brazil and its impact in the world. This increase is mainly due to the expansion in number and in quality of *strictu sensu* post graduation programs. Therefore, the publication of any research in a scientific journal is an obligation, even if it is not the result of a master dissertation or a doctoral thesis. These studies could be results of a scientific initiation or an undergraduate course[3].

The post graduation in Brazil has acquired a great relevance in the education system, since last decade, experiencing a growth in that period[4]. Currently in Brazil there are 4.691 courses and post graduation programs that are recommended by Coordination of Improvement of Higher Education Personnel (CAPES), 141 in dentistry area[5,6].

Over the years, the presentation of scientific information at meetings of international profile has proven to be important for the dissemination of new scientific research and their results. In recent years, statistics show an increase in the number of scientific communities and meetings, as well as the number of abstracts presented at these meetings. A recent study states that the information contained in these abstracts is presumed to be subsequently published in scientific journals in its complete form[7].

The Brazilian Society of Research in Odontology (SBPqO) is the main representative entity of dental research in Brazil. It promotes annual meetings of researchers with works carried out in several areas of dentistry. Since its first edition, occurred in 1984, the entity publishes in its Annals Books all abstracts from works presented during the event. In these books, there are studies made by undergraduates, professionals and post graduate students from dentistry areas[8].

The oral pathology area, in a recent study, was in third place with regard to the most researched issues by doctors with a grant from Brazilian National Research and Development Council (CNPq). This fact emphasizes the importance of characterizing the researches from this area[9]. Another study evaluated the presentation of research projects on "Universal Edicts" from Foundation for Research Support of Minas Gerais (FAPEMIG). It showed that the greatest amount of proposal presented was from oral pathology and restorative dentistry areas[10].

In view of previously cited data, the aim of this study was to analyze quantitatively and qualitatively the researches in the oral pathology post graduation program from Federal University of Rio Grande do Norte. Therefore, all works presented by this program at annual meetings from SBPqO, since 1984 from 2009, were analyzed.

## METHODS

This study was exploratory, retrospective, with bibliographical techniques and quantitative approach.

All abstracts published in annual meetings from SBPqO were analyzed, since 1984 from 2009. They are available on site of entity on internet (www.sbpqo.org.br). During this analysis, works developed by oral pathology post graduation program of UFRN (Federal University from Rio Grande do Norte) were selected, accounting 116 publications.

Then, the works were classified in accordance with six research themes: 1) oral cancer, 2) salivary glands, 3) odontogenic cysts and tumors, 4) inflammation and repair of oral tissues, 5) oral manifestations of systemic diseases, 6) benign neoplasms and proliferative lesions of oral cavity, 7) others, for works not classified in the others themes previously cited. After the classification of studies by subject, the occurrence of financial support was verified and the most frequent financial support entities were observed.

Data were analyzed through Microsoft Excel software (2007), and the main characteristics were represented in graphics and tables using absolute and relative numbers.

## RESULTS

Works were analyzed and classified according with year of publication, evidencing a major incidence of publication in 2002 (n=14 / 12%) and 2008 (n=14 / 12%) years. The quantity of works presented in this period is shown in Figure 01.

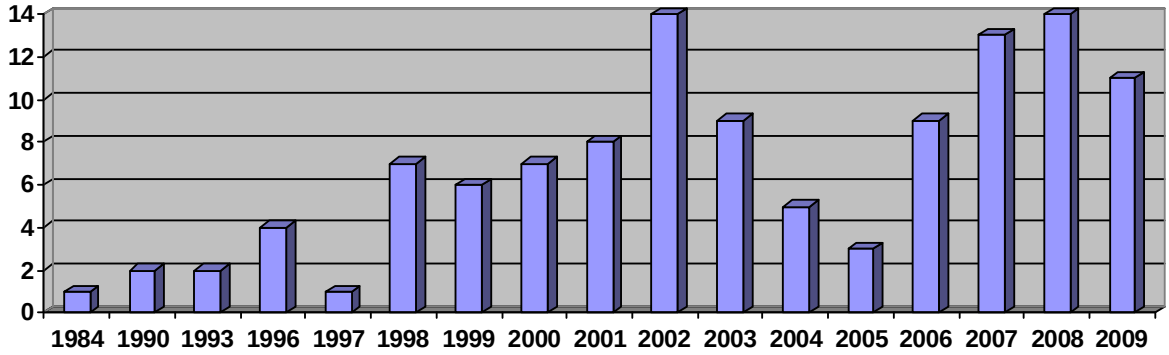


**Figure 01**. Distribution of the sample according to the years. Natal/RN – 2011.

In accordance with date of publication of works, it could be observed that since year 1997, the production of these studies by oral pathology post graduation program increased in number. This increase is constant from 1999 until 2002, the year that showed the highest number of publications. Since then, the scientific production is growing only from 2005 until 2008 and then decreasing again (Figure 01).

From 1984 until 1998, when the doctoral course was implemented in the program, 17 (14.6%) researches were presented. After creation of that course, 99 (85.4%) abstracts were published (Figure 02). Considering research subjects, the most prevalent was oral cancer, with 29.5% of works. The second was odontogenic cysts and tumors, with 19%, as is showed in Table 01. In accordance with financial support entities of scientific research, the works were classified into four categories. The most prevalent category was from works that did not mentioned financial support 49 (36.8%), followed by CNPq (n=41 / 30.8%) and CAPES (n=33 / 24.8%) as is showed in Table 02.

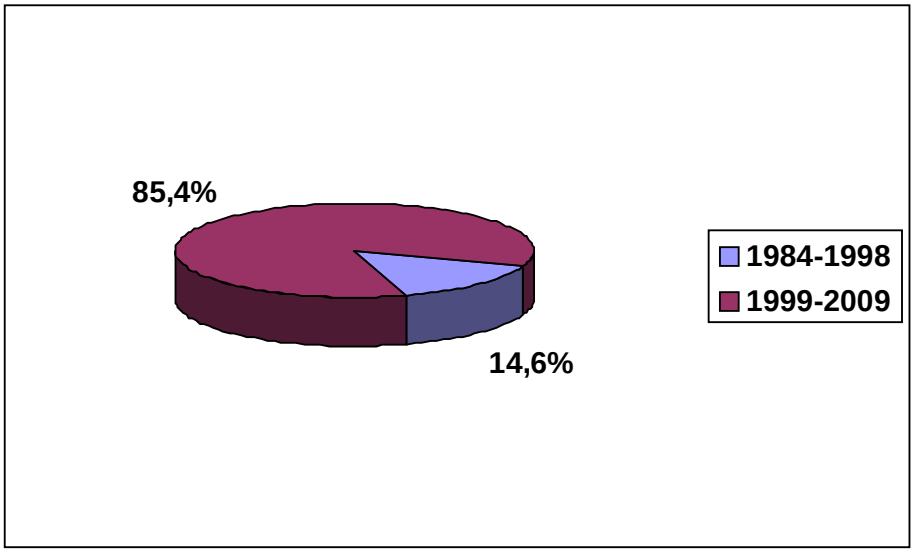


**Figure 02**. Distribution of the sample in the period from 1984 until 1998 and 1999 until 2009. Natal/RN – 2011.

**Table 1**. Distribution of the studies according to the research subjects. Natal/RN – 2011.

| Research subjects | Frequencies n (%) |
|---|---|
| **Oral cancer** | 37 (31.8) |
| **Salivary glands** | 11 (9.4) |
| **Odontogenic cysts and tumors** | 21 (18.2) |
| **Inflammation and repair of oral tissues** | 10 (8.7) |
| **Oral manifestations of systemic diseases** | 10 (8.7) |
| **Benign neoplasms and proliferative lesions of oral cavity** | 14 (12) |
| **Others** | 13 (11.2) |
| **Total** | **116 (100)** |

**Table 02**. Distribution of the studies according to funding agencies. Natal/RN – 2011.

| Agencies | Frequencies n (%) |
|---|---|
| **CAPES** | 33 (24.8) |
| **CNPq** | 41 (30.8) |
| **Others** | 10 (7.6) |
| **Not specified** | 49 (36.8) |
| **Total** | **133 (100)** |

## DISCUSSION

The process of knowledge construction is named research. This process has, as main aims, the generation of new knowledge, or even refute or corroborate any pre-existing knowledge. The researcher and also the involved society are both learner in this system. Among authors, it is consensus that all research must be reported to scientific community, independently of their results[11]. Brazil has experienced an increase in scientific production in the last decades, mainly because of national post graduation system[9].

The establishment of post graduation courses in Brazil initiated the formation of a strong scientific community in this country that is exemplified by expressive increase in scientific production in the last 15 years[6]. These data corroborate the finds of this study: from 116 works, the greatest part was produced in last decade.

Also in Brazil, as in other Latin American countries, there was a considerable increase in investment for science in the 70$^{th}$ and 80$^{th}$ decades, but it was in the last decades that the scientific production has grown significantly[6]. This increase was also verified in this research, considering the evident growth of scientific production in the post graduation program here analyzed, since 90 years.

From 1984 until 1998 only 17 works were presented by this program in a period of 14 years. From 1999 to 1998, 99 works were presented, in a period of only ten years. This fact is due to the implantation of doctoral course in the program what occurred in 1999, causing a growth in scientific production. Thereby, it is known that Brazilian science also experienced a growth in scientific production in the last two decades, which is three times higher than global growth. These results are, without doubt, the consequences of investments made by the Science and Technology Ministry in the training of new doctors[12].

Concerning about research subjects of presented works, the most prevalent was oral cancer with 31.8%. This interest in oral cancer research is justifiable, since this type of cancer is the fifth in incidence worldwide, representing over than 50% of all cancers diagnosed in Asia, and the most incident malignant neoplasm in men and the third among women in India. In Brazil, this neoplasm is the fifth in incidence among men and the seventh in women. The National Cancer Institute (Brazil) estimates a rate of 14.88 new cases of cancer per 100.000 individuals in the near future. The literature

affirms that the cultural characteristics of population, the social-economic level of society, the treatment accessibility and the technology in health public services are determinants for variation of this disease occurence. These factors influence the incidence in both developed countries and those in development[13].

The second highest frequency of presentation according to the research area was odontogenic cysts and tumors, with 18.2%. Odontogenic cysts affect only the oral and maxillofacial region, and the developing cysts do not have a known etiology yet. Although some of these injuries are common and present simple diagnostic, others are rare and may be misdiagnosed. In such cases, an accurate diagnosis is essential, considering that some of these lesions are known for their aggressive behavior and recurrence[14].

Odontogenic tumors represent a group of lesions with diverse features. Some seem to be hamartomas, while others are truly benign or malignant neoplasms with different grades of aggressiveness. These lesions are rare, they occurs in mandible and maxilla and comprise 1% of all maxillary tumors[15]. Despite rarity of these tumors and good prognosis of the majority of odontogenic cysts, studies in this area are justifiable. This is due to the uncertain etiology of some of these lesions and the malignant features, aggressiveness and recurrence of some others.

With respect to the funding agencies, CNPq was the most prevalent with 30.8% from funded works. CNPq is a Brazilian agency of Science and Technology Ministry that has the purpose of promoting scientific and technologic research and forming human resources for research in the country. Thus, the agency promotes research projects that contribute to the production of scientific knowledge and generation of new opportunities for the growth of the country[6].

CAPES was the second agency in financial support, with 24.8%. Expansion of scientific production and formation of human resources, through post graduation, produce an increase in financial resources. Most of these are for investigation works and productivity grants from CAPES[9].

Most of the analyzed works cited financial support (36.8%), and only 7.6% cited others funding agencies. These data are similar to other work which observed that most of the studies did not mention the funding agencies[8].

## CONCLUSIONS

The subject Oral Pathology has a considerable importance in the execution and publication of scientific works, following the changes in research that occurred in the last decades in Brazil. These changes are the support of researches provided by funding agencies like CNPq and CAPES, and the production of studies in themes like oral cancer and odontogenic cysts and tumors that present high complexity and necessity. The results of this research suggest that the creation of doctoral courses and the support from funding agencies are the main factors for the increase of scientific production in the program analyzed here. Thus, we suggest that an increase in the research investments will guarantee the scientific progress of our country in a global context. Finally, we emphasize the need for new studies about the role of funding agencies.

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