

EDUCATIONAL SCIENCES
ORIGINAL ARTICLE**Scientific Research in the Faculty of Dentistry “Raúl González Sánchez”. 2011-2015****La investigación en la Facultad de Estomatología “Raúl González Sánchez”. 2011-2015**

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ABSTRACT

Introduction: Universities are an excellent place to do research. The main function is to generate new knowledge.

Objective: To evaluate the actions developed and the results achieved in the Research Department of the Faculty of Dentistry "Raúl González Sánchez" of the University of Medical Sciences of Havana, in the 2011 – 2015 period.

Materials and Methods: A descriptive study of the actions performed and the results achieved was carried out in the Research Department at institutional level, in the 2011 – 2015 period. Institutional actions carried out in favor of

research were studied, as well as the variables associated with scientific research projects and the publications made.

Results: Training workshops were held for the development of research projects and publications, as well as workshops for the approval of 129 new projects. Of the total number of projects, 25,4% belonged to the Periodontics department, 22,2% to Orthodontics, 18,3% to Prosthodontics, and 16,3% to Comprehensive General Dentistry. There was a total of 581 publications, and 175 were related to projects. The preferred place to publish were the

peer-reviewed journals (52.4%); of which, 22,2% were published in foreign journals. The 67,3% of the articles were original.

Conclusions: Between 2011 and 2015, the research activity in the Faculty studied can be evaluated as satisfactory, since there has been an increase in the number of research projects and the publications have remained at similar levels for years; except 2015, in which they increased.

RESUMEN

Introducción: Las universidades son el espacio por excelencia para la investigación, su función principal es la generación de nuevos conocimientos.

Objetivo: Evaluar las acciones desarrolladas y los resultados alcanzados en el área de investigaciones de la Facultad de Estomatología "Raúl González Sánchez" de la Universidad de Ciencias Médicas de La Habana, de 2011 a 2015.

Material y Métodos: Se realizó un estudio descriptivo a nivel institucional de las acciones y los principales resultados del área de investigaciones de la Facultad en el período 2011-2015. Se estudiaron las acciones institucionales ejecutadas en pro de la investigación, así como variables relacionadas con los proyectos de investigación científica y las publicaciones realizadas.

Resultados: Se realizaron talleres de capacitación para la elaboración de proyectos y publicaciones, así como talleres para la aprobación de 129 nuevos proyectos. Del total de proyectos pertenecieron a Periodoncia,

The number of publications resulting from projects increased, too. More than half of the articles were published in peer-reviewed journals, the number of papers in foreign journals increased, and most of them were original articles.

Keywords: Projects, research, publication, scientific production, Faculty of Dentistry.

25,4%; a Ortodoncia, 22,2%; a Prótesis, 18,3% y a Estomatología General Integral, 16,3%. Las publicaciones fueron 581; las pertenecientes a proyectos sumaron 175. El lugar de preferencia para publicar fueron las revistas arbitradas (52,4%), de ellas, 22,2% en revistas extranjeras. El 67,3% de los artículos fueron originales.

Conclusiones: Entre 2011 y 2015, la actividad de investigación en la Facultad estudiada puede evaluarse de satisfactoria, pues se ha manifestado un crecimiento del número de proyectos de investigación y las publicaciones se mantuvieron en niveles similares por años, excepto 2015, en el que se incrementaron. Aumentó el número de publicaciones salidas de proyectos. Más de la mitad de los artículos se publicó en revistas arbitradas, aumentó el número de trabajos en revistas extranjeras y la mayoría fueron artículos originales.

Palabras clave: Proyectos, investigación, publicaciones, producción científica, facultad de estomatología.

INTRODUCTION

The World Science Conference stated that “scientific research is a fundamental motive power in the health area and the social protection, and a greater use of the scientific knowhow could improve the health level of mankind”.¹ In this respect, the universities are an excellent place to conduct research since their main function is to produce new knowledge that helps to transform their environment.²

Hence, the importance that health research centers focus attention on the development of research projects that present new knowledge about health-disease processes, thus allowing the prevention or the early diagnosis of different pathologies.

The World Conference on Higher Education held in 2009 established the following in its final document: “The Higher Education Centers must look for research and teaching areas which focus attention on different issues in relation to population welfare and the establishment of a relevant and solid local base in science and technology”.³ Because of the important role of research, together with teaching and university extension activities, it constitutes one of the three main missions that the Higher Education faces, and one of the most important parameters to be evaluated in the accreditation process in university centers.

The Scientific production is a concrete and objective form of measuring the scientific experience and competence in research, and it is a valuable indicator in the process of university accreditation.²

It can be stated that research is not concluded until the results have been visible in the

scientific community; therefore, the publishing process shouldn't be seen as an independent stage, but as a final result or the last step of scientific activity. A great value is acquired in the biomedical field if research is considered vital for the development of the Medical Sciences, because it presents evidence-based practice applied to welfare services and the teaching practice and, consequently, helps to improve the service given to patients, influencing directly in the teaching/learning process.

All research which is concluded, but not published is often forgotten. The dissemination of research results, particularly in the health care area, is essential.⁴

Scientific publication is the main way to spread knowledge originated from research.⁵ If the result does not transcend and doesn't help to generate a matrix of science-based thinking, its relevance could hardly be validated.⁶

The most objective way to measure scientific production of scientific research is through quantification and analysis of this and its patterns (Sciencimetry). To achieve this, there are different tools and databases at present that allow to know about this behavior quickly.⁵

The use of bibliometric techniques to evaluate the scientific and technical activity is sustained in the written documents through which the researchers communicate their results: books, specialized journals, theses of Doctors of Philosophy, memories of scientific events, news, research reports, and patents. This way, the bibliometric studies have been used as a tool to measure aspects related with evaluation in research.⁷ The universities are in a period in which the introduction of evaluation policies

associated with research as a main part of their management is necessary.⁸

The Faculty of Dentistry "Raúl González Sánchez" of the University of Medical Sciences of Havana, was founded 116 years ago and is now considered as a governing center of the teaching of Dentistry in Cuba that obtained the excellence accreditation in 2007. In 2014, it was

OBJECTIVE

To evaluate the actions performed and the results achieved in the research department of the Faculty of Dentistry "Raúl González Sánchez"

MATERIAL AND METHODS

A descriptive study was carried out at institutional level with regard to the actions performed and the results achieved in the Research Department of the Faculty during the period 2011 – 2015.

The data was collected through the analysis of different reports and the search in the databases of both the Research Department and the journals where the professors have published their articles (Scielo, Pubmed, Scopus).

The variables used were:

- Institutional actions in favor of research. This variable made reference to those actions intended to increase the number and quality of research projects and the publications of the Faculty.
- Research projects: It is related to the projects presented and approved by the Projects Commission of the Scientific Advisory Board, according to the year of approval.
- Scientific articles published: The total number of articles published per year was taken into consideration.

accredited again with the same condition. Taking all this into account, we can assure that the progress of the research process was, undoubtedly, one of the factors that contributed to this achievement.

of the University of Medical Sciences of Havana, during the period 2011 - 2015.

- Scientific articles published according to projects. The articles published as a result of different projects were considered.
- Articles published according to place of publication: The place where the articles were published: journals, websites, repository of thesis, memories of national and international congresses, and Editorials from different textbooks were taken into consideration.
- Articles published according to their type: They were divided into original articles, literature review, case presentations, editorials, and historical notes. The articles were classified according to the regulations for publication of scientific articles from different medical journals. The percentage and frequency of the variables studied were calculated, and the most relevant ones were represented in tables or figures. This research was conducted with the previous approval of the Vice Dean for Academic Affairs, and the Scientific Board of the Faculty of Dentistry "Raúl González Sánchez", University of

Medical Sciences of Havana, to comply with the ethics procedures.

RESULTS

The actions designed to increase the number of projects and publications of the professors of the Faculty were performed during the period under analysis, including:

- Organization of training workshops for the development of projects (1 or 2 per academic year), where professors and residents were trained in the methodological format of research projects.
- Planning and implementation of a monthly workshop by the project commission of the scientific board to approve projects. In these workshops, new projects were presented, and the members of the commission pointed out on the main deficiencies for their improvement and final approval. If the projects had some difficulties in the objectives or in the methodological conception, they had to be reviewed and presented in another workshop. The commission was formed by the research consultants of the Postgraduate and Research Department (members of the Scientific Board), professors from the computer science department, and a member of the ethics committee.

- Implementation of a five-year strategic plan for publication in the Faculty, which included the tutoring and control actions to be carried out by the Postgraduate and Research Department, as well as the commitments of the Teaching Departments regarding the time when the articles had to be submitted, taking into account that each professor must submit three articles during a five-year period.
- Implementation of workshops on the production of scientific articles for professors and residents (one or two per academic year).
- Methodological review of the great majority of articles submitted by professors and residents, and review of the different journals, which was carried out by the Methodology Advisor of the Postgraduate and Research Department.

The results of the above actions are stated below: Figure 1 shows the behavior of the scientific project of the Faculty of Dentistry "Raúl González Sánchez", according to years of approval. The years when the most projects were approved were 2012 with 30 projects; 2014 with 31 ones, and 2015 with 35 projects. In this period 129 new projects were added, resulting the sum of 153 projects in the five-year period analyzed.

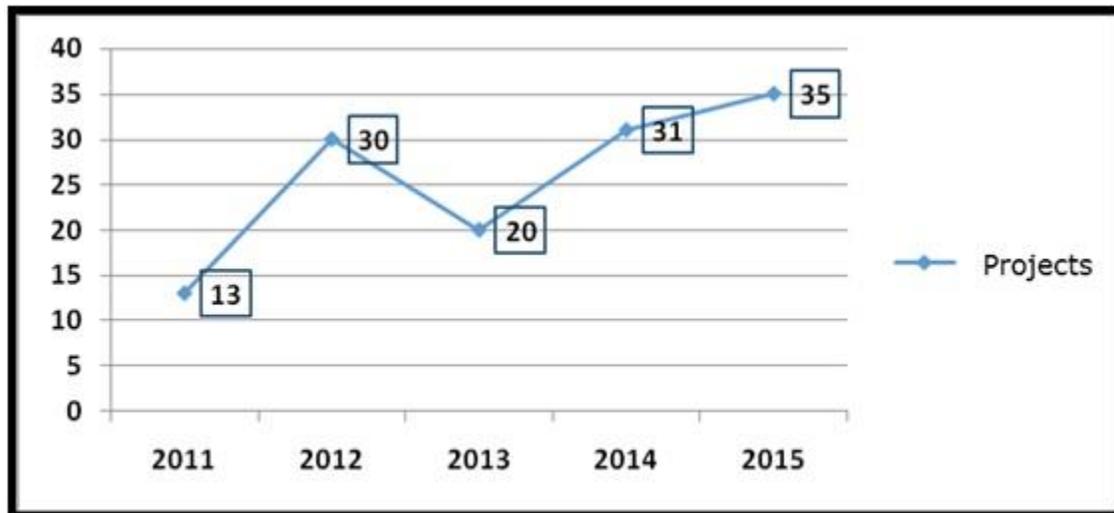


Figure 1. Distribution of Research Projects according to the years of approval

Table 1 shows the distribution of Research Projects according to different departments, in which 25,4% were from the Periodontics Department, 22,2 % from the Orthodontics

department, 18,3% from the Prosthodontics one and 16,3% from the Department of Comprehensive General Dentistry.

Table 1. Distribution of Research Projects according to different departments

Departments	Projects	
	No.	%
Maxillofacial Surgery	9	5,8
Physical Education	3	1,9
General Comprehensive Dentistry	25	16,3
Philosophy-History	5	3,2
Language	1	0,6
Computing	2	1,3
Morphophysiology	3	1,9
Orthodontics	34	22,2
Pathology	1	0,6
Periodontics	39	25,4
Prosthodontics	28	18,3
Health	3	1,9
Total	153	100

Figure 2 shows the scientific production according to the years when the articles were published and their connection with research projects. In the year 2015, a total of 226 articles were published; in 2013, 100 ones; whereas in

2014, only 74 ones were published. The publications corresponding to Research Projects in the period under study included 175 works; whereas in 2011, 16 works were finished; and in 2015, this number raised up to 81.

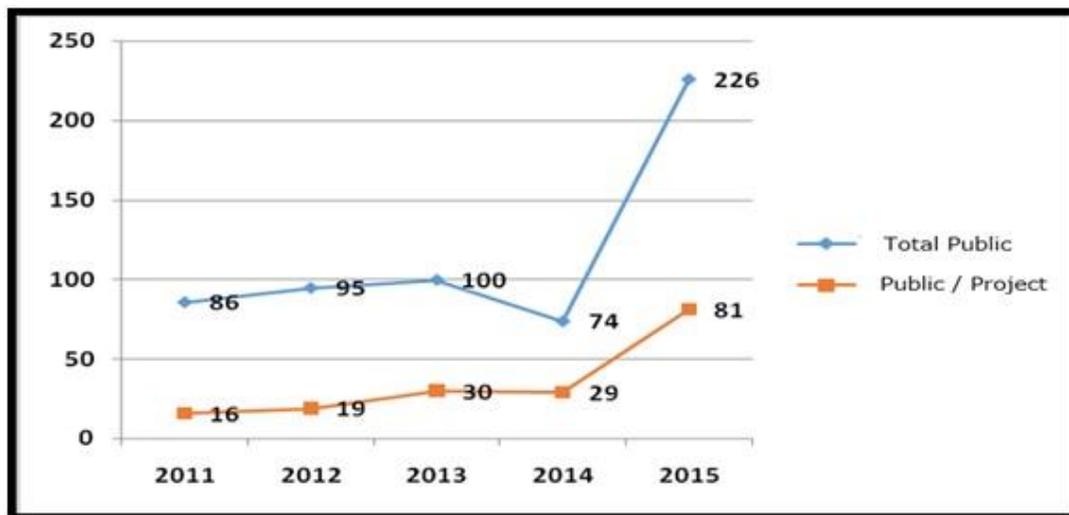


Figure 2. Publications according to years and pertinence of research projects

Table 2 indicates the place where the scientific articles were published: 42,5% were presented in the memories of national and international congresses, and 52,5% in peer-reviewed journals. Of the last ones, 29,8% were published in the

Revista Cubana de Estomatología, and 21,3% in the Revista Habanera de Ciencias Médicas. 26, 5% of them were published in other Cuban journals. From the 305 articles published, 68 ones (22,2%) were published in foreign journals.

Table 2. Scientific production according to place of publication

Place of publication	No.	%
Journals		
<i>Revista Cubana Estomatología</i>	91	29,8
<i>Revista Habanera de Ciencias Médicas</i>	65	21,3
Other Cuban journals	81	26,6
Foreign journals	68	22,3
Total	305	52,5

Memories of national or international events	247	42,5
Websites or Web pages	5	0,9
Repositories of theses	4	0,7
Editorials (Books)	20	3,4
TOTAL	581	100,0

Figure 3 shows the articles published according to type. Of the 552 articles, 372 (67,3%) were original articles; 100 (18,1%) were bibliographic

reviews, and 58 (10,5%) corresponded to case presentations.

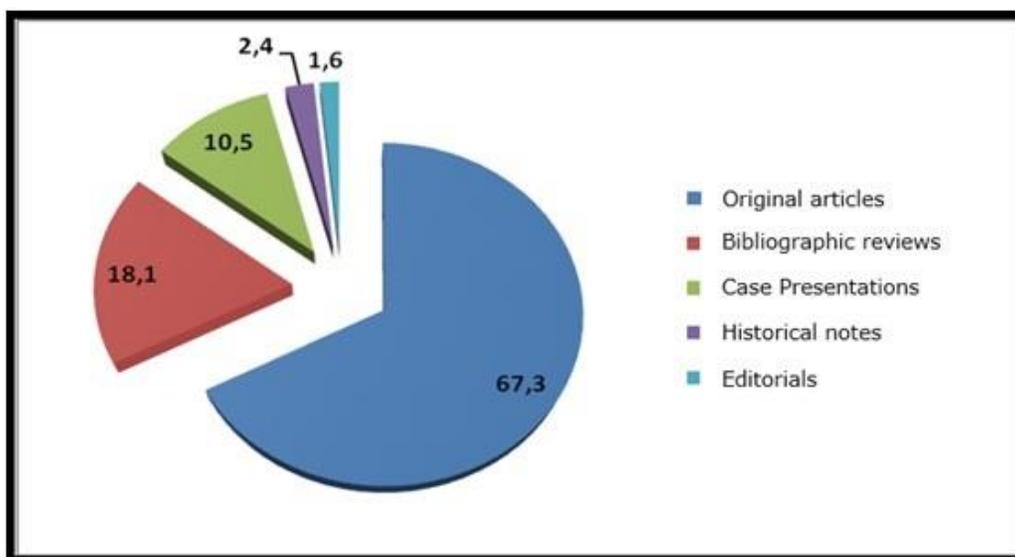


Figure 3: Publications of scientific articles according to type

DISCUSSION

During the first accreditation and evaluation of dental schools, which was carried out in 2004 by the National Accreditation Board that belongs to the Ministry of Higher Education (MES), the category of Certified Career was reached, and one of the reasons why excellence could not be achieved was the low number of research projects and publications that the Faculty had in the period 1999-2003 (Self-assessment report in dental education, 2004)

The actions carried out at the faculty allowed that the scientific production of the teaching staff increased significantly;⁹ mainly, the projects and publications (Figures 1 and 2). It was considered a strength during the second and third evaluation and accreditation of the dental studies, carried out in 2008 and 2014, respectively. At that moment, the Faculty received the Excellence Award Category, which was given by the National Accreditation Board.

The incorporation of research projects carried out by the residents and students enrolled in master's degree programs who hold the post of head of these projects in the Faculty has influenced on this result.

We must point out that in 2012 and 2013, the presentation of projects that corresponded to the Works of Completion of the Specialty of only one resident was also considered. This aspect changed in 2014 and mainly in 2015, when some projects corresponding to the final results of different residents' theses, allowed to make a significant progress in order to achieve that all the research works performed at the Faculty were supported by projects approved by the Scientific Board.

With regard to the distribution of projects according to different departments (Table 1), some departments such as the Periodontics, Orthodontics and Prosthodontics ones have advanced in the presentation of new projects, which have increased the number of new projects in which all their residents were supported by their tutors' projects. Although the number of projects has increased, the Maxillofacial department does not include all the residents in the approved projects, aspect in which they are working on, by implementing new projects conducted by professors who work at different hospitals where these residents reside.

Comprehensive General Dentistry has the most complex situation; this department presented a great number of projects in the last two years, but because of the great number of residents in this specialty and the dispersal of the teaching places in which the residents are located, it was not possible to include them in all the approved projects. However, this department has designed

a strategy to present projects in several municipalities to study the most general scientific problems in order to incorporate the new residents.

Although, the number of professors incorporated to some projects was not considered a variable in the study, we have to remark that this number has increased considerably, and several professors of the Faculty participated in projects carried out in others institutions and Faculties in the study period, which shows a greater collaboration in this area.

When observing the scientific production of the Faculty of Dentistry "Raúl González Sánchez" (Picture 2) we have to remark that 2015 had the greatest increase. This was due to the celebration of the International Congress on Dentistry, in commemoration of the 115 anniversary of the foundation of the Faculty, in which the majority of the teaching staff published the results of their investigations in the website of the event and in the Virtual Center for Health Conventions (CENCOMED). The presentation of the scientific article was a requirement to participate in the Congress. The year 2013 also presented a slightest increase due to the celebration of a National Conference on Medical Education, in which many professors of the Faculty published their projects. Despite the documents published in the Congress are primary sources of information and they are submitted to peer-review, this is not subjected to a double-blind process, and it is not so rigorous as the one carried out in scientific peer-reviewed journals.

In relation to the number of publications that constitute project outcomes (Figure 2), a constant increase was established in the study period, which can be attributed to the strategy of

the publication of research results; process that starts with the approval of the project and its inclusion in the schedule, and continues with the production stage, and the final presentation of the publication. We consider that this increase is still insufficient because some projects finish before the publication of the article.

The scientific peer-reviewed journals were the most preferred place by researchers to publish their articles (Table 2). According to Casterá et al.,¹⁰ they constitute a decisive instrument for the development of society. They are also the most common place chosen by researchers for the process of scientific communication, since they provide visibility and impact to their results; that is, there is a recognition to their contribution to the development of science.

The Revista Cubana de Estomatología was the most used by professors in this research, which was to be expected, because this investigation belongs to the Cuban Society of Dentistry; therefore, it is the most accessible for the specialists in this field of medical sciences. Cañedo et al.,¹¹ in his article entitled "Cuban Scientific Production about Health in International databases" stated that the journal has a privileged position to spread scientific results in the health area, for being included in the Scopus database, which is the largest reference collection related to the scientific and technical literature worldwide.

The selection for publication in this journal has been constant over the time. In a study made by Rodríguez¹² about the five-year period 2007-2011, it was demonstrated that the Dental School of Havana contributes with more than 16% of publications in this journal, whereas in the study

performed by Miranda et al.,¹³ from 2009 to 2013 this percentage has increased by 33,2%.

Another journal where researchers published their manuscripts was the Revista Habanera de Ciencias Médicas, advertising space from the University of Medical Sciences of Havana, institution to which the Faculty under study is subordinated.

It should be noted that the training given to the authors based on the designed methodology for the advice and control of publications, has led to an increase in the publication of articles in peer-reviewed journals, since it has allowed the review of articles previous to their sending to the journals, which guarantees a higher quality and adjustment to the submission guidelines of those journals where publications are more likely to be recommended. Another factor that has favored this result is the close link that exists among the editors of these journals, which allows a feedback of the course of the peer-reviewed process and a more specific help to the authors.

According to Dorta Contreras,¹⁴ the level of quotation increases when an article is made in collaboration with other centers in different countries, because science makes synergy with the strengths of different research groups, which brings about higher quality results. Examples of these foreign journals are the Clinical Oral Implant Research, and the Spanish journal Revista de Medicina Oral, Patología Oral y Cirugía Bucal. This author also adds that the university is more known in the international scene as its results become more visible and measurable in the field of science.¹⁴ The collaboration with other institutions is a quality indicator in the different databases, so strategies must be drawn

up to achieve better results in this respect at the Faculty.

In relation to the different types of articles (Figure3), it is observed that the results of original research works are more frequent. This coincides with the studies of Miranda et al.¹³, Avila et al.¹⁵, Suarez et al.¹⁶, Corrales et al.¹⁷, Clavera et al.¹⁸, and Fernández.¹⁹ The bibliographic reviews and the case presentations are located in a second place, and the editorials and the biographical notes are less represented.

There are authors^{15,20}, that point out the case presentation as the second most frequent form of publication, since it shows a scientific result in a brief and concise way, to present either a surgical technique or a new procedure or material resource. These articles are shorter and

CONCLUSIONS

From 2011 to 2015, the research activity in the Faculty of Dentistry "Raúl González Sánchez" can be evaluated as satisfactory; the number of research projects increased. The most active departments were Periodontics, Prosthodontics, and Orthodontics. The levels of publications were similar per year, except in 2015, when the

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easier to write, and they need less bibliographic references. These results do not match up with the ones obtained in the present study in which the bibliographic reviews were the second more frequent types of articles.

Although this research is limited by its descriptive nature, it can initiate a future line of research for the development of more complex studies which include other indicators; among them, the presentation of research results in different congresses or other events, their introduction in the practice of Dentistry, multi authorship, and a degree of collaboration, in such a way that they allow to go in depth in the process analysis of the evaluation of scientific activity of the Faculty in a more comprehensive way.

publications increased because an international congress was held that year. More than half of the articles were published in peer-reviewed journals, the number of papers published in foreign journals also increased, and most of them were originals articles.

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