

Postgraduate education and employment patterns of dental graduates: a twelve-year analysis (2007 to 2019)

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ABSTRACT

The assessment of dental graduates' trajectory over time is important to ensure a proper alignment of dental curricula with the needs of society. This cross-sectional, observational and descriptive study aimed at characterizing the sociodemographic profile, the postgraduate education choices, and the employment pattern of dental graduates from a public university in the South region of Brazil. Dental graduates from 2007 to 2019 were invited to participate via e-mail. The survey was self-administered and hosted online. The content of the survey encompassed three main spheres of interest - sociodemographic profile, postgraduate education choices, and employment pattern. A total of 245 graduates participated in the study (response rate of 25.7%). The majority were women (68.6%), aged 26 to 32 years old (73.9%), single (71.4%), without children (92.7%), born (51.4%) and residing (59.2%) in Porto Alegre, the city in which the university is located and where they work (67.5%). Monthly income reported was 5 to 10 times the minimum wage (36.7%). Most participants were actively working in Dentistry (97.1%) and were satisfied with the dental profession (79.6%). The majority attended or is currently enrolled in postgraduate courses (94.3%), completed within three years after graduation, mainly specialization courses (62.8%), in the areas of Public Health, Orthodontics and Implantology. Most reported to be working in the private sector (60.8%). However, there was an increase in employment in the public sector among those who graduated between 2010 and 2019 compared to 2007-2008 (from 2.4% to 20.7%). Fundamentally, the continuing assessment of dental graduates' path and perceptions is essential to better adjust and shape dental curricula in the future.

Descriptors: Dental Staff. Education, Graduate. Education, Dental, Graduate. Health Human Resource Training. Job Satisfaction.

1 INTRODUCTION

The number of undergraduate Dentistry courses has been growing exponentially in Brazil. Consequently, a high number of dentists graduate in the country every year¹. This area of knowledge is chosen by students for different reasons, such as their identification with the profession and healthcare in general²⁻⁵, interest in providing care for people³, the perspective of achieving financial independence/earning good wages and social prestige^{3,6,7}, encouragement/influence of family and friends from the same profession^{3,5,7-9}, and the possibility of working independently after graduation⁸.

Concerning the quality of training, public higher education institutions (HEIs) are viewed as being committed to social development, to the association between teaching, research and service, and to the high qualification level of the faculty, composed predominantly educators holding a PhD degree and in full-time employment¹⁰. In addition, public HEIs have had an outstanding performance in national evaluations, with higher average grades in the National Assessment of Student Achievement (Enade), of the Ministry of Education, when compared to private HEIs^{1,10}.

The Federal University of Rio Grande do Sul (UFRGS), a traditional public HEI in the South region of Brazil, started its history of training dentists in 1898. Its trajectory has been constructed by processes of changes and innovations, aiming at the permanent education of the dental workforce¹².

In 2005, the Dentistry course restructured its curriculum, based on the National Curricular Guidelines (known as DCN)¹³. In 2010, the HEIs joined the Support Program for the Restructuring and Expansion Plans of Federal Universities (Reuni). With this, the seats already offered in the day course were expanded and a Dentistry

course in the evening shift was created¹⁴.

Reuni aims to modify a historical context of higher education marked by inequalities and to amplify the access to federal universities¹⁵. The movement to democratize the access to higher education was strengthened by the implementation of the Affirmative Action Policy, which determines quotas for public high school graduates, low-income students, black, brown and indigenous students, and people with disabilities¹⁶. This context has brought the need to monitor and assess both the dental curriculum^{9,17,18,20-22} and the academic trajectory of its students^{14,23-26}.

Research that monitors students during the undergraduate course is necessary; however, studies assessing the graduates' trajectory can contribute information to articulate the university education process with the professionals' inclusion in the job market^{27,28}, identifying tendencies related to curricular changes, work spaces, and graduates' continuing education. In view of the dynamicity of healthcare challenges both in Brazil and in the world, the continuous monitoring of graduates and undergraduate dental courses is of paramount importance.

This study aimed to characterize the sociodemographic profile, the postgraduate education choices, and the employment pattern of professionals who graduated from the Dentistry course at UFRGS from 2007 to 2019.

2 METHODS

This is a cross-sectional, observational and descriptive study carried out with dental graduates from a public university located in the South region of Brazil. All the 954 dentists who completed the undergraduate course in the HEI from 2007 to the first semester of 2019 were invited to participate in the study. The invitation was sent as an individual message by electronic

mail.

Data collection was performed through the self-administration of a previously tested semi-structured survey hosted online. The survey was sent in four stages: 2013 - for professionals who graduated within the period 2007-2011; 2015 - for 2012-2013 graduates; 2018: for 2014-2015 graduates; 2020 - for 2016-2019 graduates. The time frame to collect answers was 30 days. The survey was sent again

three times, within a period of 30, 45 and 60 days, to reach a higher number of respondents.

The survey comprised 22 objective questions and 2 open-ended questions, organized in three structuring dimensions. The open-ended questions approached the graduates' reasons for not pursuing a postgraduate course and their perception of satisfaction with their current employment (box 1).

Box 1. Structuring dimensions of the research instrument

DIMENSION	CONSTITUTIVE DESCRIPTION
Dimension 1 - Sociodemographic profile	Dimension geared to the characterization of the graduate (age, sex, marital status, place of birth, place of residence, monthly income, and parents' level of schooling)
Dimension 2 – Postgraduate education	Dimension geared to the identification of the graduate's choices concerning refresher courses, specialization courses, Master's and doctoral degrees. Reasons for not pursuing postgraduate courses.
Dimension 3 – Employment pattern	Dimension that aimed to investigate the graduate's employment pattern (professional activity in Dentistry, identification of the current employment relationship, perception of the current employment relationship, satisfaction with the profession)

Descriptive statistics was used to present the data collected through the objective questions, utilizing the statistical software IBM® SPSS® Statistics (Armonk, NY, EUA). The answers to the open-ended questions were interpreted according to the method of content analysis²⁹. Initially, the free-floating reading of the textual material was performed, allowing the researchers to delve into the content of the open answers. There were no themes defined a priori. The material was identified by units of analysis and coded by emerging themes.

The study was approved by the Research Committee of the Dentistry School (Project no. 22919) and by the Research Ethics Committee of the University (opinion 4.255.668, CAAE 03448212.6.0000.5347). Informed consent was

collected from the participants.

3 RESULTS

A total of 245 dentists who graduated at UFRGS in the period from 2007 to 2019 participated in the study (response rate: 25.7%).

The results are presented below, based on the dimensions that integrated the research instrument.

Sociodemographic profile of the graduates

Of the 245 graduates who participated in the study, the majority were women (68.6%), aged between 26 and 32 years (73.9%), single (71.4%), and had no children (92.7%). Regarding monthly income, 27% of the graduates reported earning 3 to 5 times the minimum wage and

36.7%, 5 to 10 times the minimum wage. The highest monthly income (more than 20 times the minimum wage) was earned by 2.9% of the studied sample. Parents' level of schooling is high: 54.6% of mothers and 45.7% of fathers had completed higher education. Complete postgraduate courses were observed in 18.8% of fathers and 26.9% of mothers (table 1).

Table 1. Sociodemographic characterization. Dental graduates, 2007-2019

VARIABLES		n	%
<i>Sex</i>	Female	168	68.6
	Male	77	31.4
<i>Age (years)</i>	23-25	49	20.0
	26-28	120	49.0
	29-32	61	24.9
	33-39	15	6.1
<i>Marital status</i>	Single	175	71.4
	Married	29	11.8
	Stable union	41	16.7
<i>Children</i>	No	227	92.7
	Yes	18	7.3
<i>Number of children</i>	One	16	6.5
	Two	2	0.8
	Does not apply	227	92.7
<i>Monthly income*</i>	Minimum wage or less	2	0.8
	From 1 to 2 times the minimum wage	14	5.7
	From 2 to 3 times the minimum wage	33	13.5
	From 3 to 5 times the minimum wage	66	27.0
	From 5 to 10 times the minimum wage	90	36.7
	From 10 to 20 times the minimum wage	27	11.0
	More than 20 times the minimum wage	7	2.9
<i>Father's level of schooling</i>	No personal income at present	6	2.4
	Incomplete elementary/junior high school	17	6.9
	Complete elementary/junior high school	9	3.7
	Incomplete high school	16	6.5
	Complete high school	60	24.5
	Incomplete higher education	31	12.7
	Complete higher education	64	26.1
	Incomplete postgraduate course	2	0.8
	Complete postgraduate course	46	18.8
	<i>Mother's level of schooling</i>	Incomplete elementary/junior high school	16
Complete elementary/junior high school		11	4.5
Incomplete high school		9	3.7
Complete high school		51	20.8
Incomplete higher education		21	8.6
Complete higher education		63	25.7
Incomplete postgraduate course		5	2.0
Complete postgraduate course		66	26.9
TOTAL			245

Minimum wage at the different stages of data collection: 2013 - R\$ 678.00; 2015 - R\$ 788.00; 2018 - R\$ 954.00; 2020 - R\$ 1,045.00.

Most of the graduates (94.3%) reported that they were born and reside in the state of Rio Grande do Sul (93.1%); 51.4% were born and 59.2% reside in Porto Alegre, the capital of the state and the city where UFRGS is located. Concerning employment, 67.5% of the graduates work in Porto Alegre and metropolitan region and 19.1% work in inland cities of the state of Rio Grande do Sul.

Postgraduate education

The majority of the graduates attended or is currently enrolled in postgraduate courses (94.3%), mainly specialization courses (n=155/62.8%), completed within three years after the end of the undergraduate course (58%). Of the 245 graduates who participated in the study, 73 (29.8%) reported they attended and/or are attending more than one postgraduate course (table 2).

The most cited areas by the graduates for postgraduate education were Public Health (n=57, 21.4%), Orthodontics (n=41, 15.4%), Implantology (n=34, 12.7%), Oral and Maxillofacial Surgery (n=30, 11.2%), Prosthodontics (n=27, 10.1%), Endodontics (n = 21, 8.0%), Cariology (n=13, 5.0%), and Pediatric Dentistry (n=8, 3.0%).

All the graduates who have not pursued a postgraduate course yet expressed interest in doing so in the future. The reported reasons for not attending a postgraduate course included lack of financial resources and lack of time.

To keep themselves updated, dentists reported searching for and reading scientific papers (n=195, 36.7%), material available on the Internet (n=193, 36.4%), books (n=124, 23.2%), watching television (n=5, 0.9%), attending courses/congresses/symposia (n=5, 0.9%), consulting with peers (n=3, 0.5%), reading magazines (n=2, 0.3%), listening to the radio (n=2, 0.3%), and consulting with professors (n=1, 0.1%).

Employment

The majority of the graduates (97.1%) exercises Dentistry as a profession. Of the graduates who participated in the study, 79.6% reported being satisfied for having chosen Dentistry and 62% would choose this profession again.

The most frequent employment relationships were in the private sector (60.8%), public sector (17.6%), public sector and private sector (7.8%) and teaching/research (6.5%) (table 3).

Graph 1 shows the current employment relationship of the graduates who attended the Dentistry course before the curricular changes brought about by the 2002 National Curricular Guidelines (graduates 2007-2008) and after the curricular restructuring (graduates 2010-2019). The private sector is the greatest employer of these graduates (66.6%, graduates 2007-2008 and 60.6%, graduates 2010-2019), but the public sector grew in the 2010 to 2019 classes, increasing from 2.4% between 2007 and 2008 to 20.7% between 2010 and 2019. The public-private employment relationship was more frequent in the participants who graduated in 2007-2008 (14.3%) compared to the 2010-2019 graduates (6.2%).

The dentists showed a positive view of the employment relationship they had when data were collected for the study, associated with remuneration adequate to their needs, good work environment/adequate work conditions, autonomy in the workplace (flexible working hours, materials, technique), professional fulfilment/satisfaction, perspective of professional growth, possibility of working in different areas, stable employment relationship, and possibility of performing research and teaching. Being able to work in teams and the effectiveness of the work they perform were also mentioned as positive aspects. Eight graduates who participated in the research reported that

they chose to attend a specialization course in Public Health because of their decision to work in the public sector, due to the stable employment relationship and financial stability.

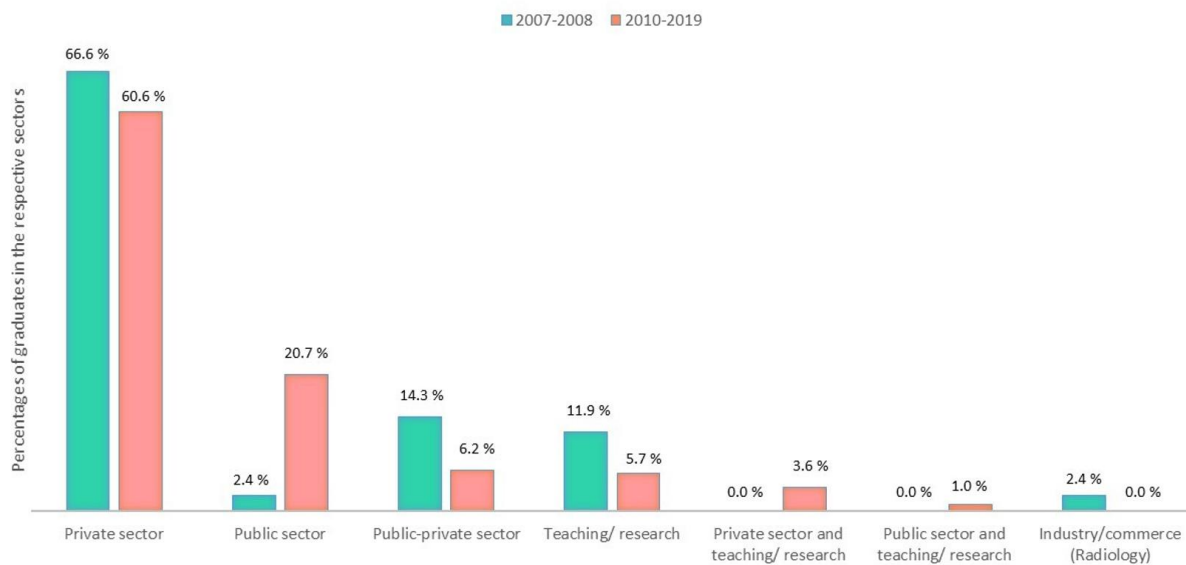
Table 2. Choices related to postgraduate education. Dental graduates, 2007-2019

POSTGRADUATE EDUCATION	n	%
<i>Postgraduate courses</i>		
Yes, ongoing	131	53.5
Yes, complete	100	40.8
No	14	5.7
<i>Modality of postgraduate course</i>		
Specialization	90	36.7
Residency	30	12.2
Specialization and Refresher/Improvement	25	10.2
Specialization and Master's Degree (academic)	21	8.6
Master's Degree (academic)	17	7.0
Refresher/Improvement	16	6.6
Doctoral Degree	7	3.0
Specialization and Residency	6	2.4
Specialization, Master's and Doctoral Degree	4	1.6
Specialization, Refresher and Master's Degree (academic)	2	0.8
Specialization, Improvement/Improvement and Residency	2	0.8
Residency and Master's Degree (professional)	2	0.8
Master's (academic) and Doctoral Degree	2	0.8
Refresher and Residency	1	0.4
Refresher and Internship	1	0.4
Specialization, Refresher/Improvement and Master's Degree (academic)	1	0.4
Specialization, Refresher and Internship	1	0.4
Specialization, Refresher, Master's (academic) and Doctoral Degree	1	0.4
Specialization, Residency, Master's (professional) and Doctoral Degree	1	0.4
Does not apply	14	5.7
Did not answer	1	0.4
<i>Completion of the postgraduate course after the undergraduate course</i>		
Up to 1 year	9	3.7
From 2 to 3 years	133	54.3
From 4 to 5 years	57	23.3
More than 6 years	22	9.0
Does not apply	14	5.7
Did not inform	10	4.0
TOTAL	245	100.0

Table 3. Current employment relationship. Dental graduates, 2007-2019

CURRENT WORK	n	%
Exclusively in the private sector	149	60.8
Exclusively in the public sector	43	17.6
Public and private sectors	19	7.8
Teaching/research	16	6.5
Private sector and teaching/research	7	2.9
Public sector and teaching/research	3	1.2
Public sector, private sector and teaching/research	1	0.4
Currently not working	5	2.0
Does not work as a dentist	2	0.8
TOTAL	245	100.0

Graph 1. Employment relationship of the dental graduates educated within the curriculum preceding the National Curricular Guidelines (2007-2008) and within the restructured curriculum (2010-2019).



4 DISCUSSION

This study aimed to characterize the sociodemographic profile, the postgraduate education choices, and the employment pattern of dental graduates from a public university located in the South region of Brazil.

The findings corroborated the dominant presence of women in Dentistry, which has been

previously described in the literature³⁰⁻³³ and has consolidated as a tendency in the profession³⁴. The feminization of Dentistry is connected not only with the Brazilian population proportion of men and women, but also with the rise of women in the labor market and with the fact that women have a greater disposition to listen attentively to the patients while providing health care, a

characteristic targeted at the needs of people and of the health system³⁰.

In modern societies, the increased level of schooling is related to economic and social mobility, and the parents' level of schooling is an important factor in their children's education^{35,36}. The high level of schooling of the parents in the present study (the majority of them completed higher education) shows that the graduates carry with them, predominantly, the experience and guidance of families that attended undergraduate and postgraduate courses.

Most of the graduates reported they were working as dentists in the capital or metropolitan region of the state where they attended the undergraduate course, which shows little geographical dispersion and preference for working in large urban centers³⁷. This finding involving graduates from the South region is different from what happens with dentists who work in other regions of Brazil. Studies carried out with graduates from public universities located in the Northeastern region of the country showed a higher number of professionals working in inland cities instead of the state capital³², and a comparable percentage of professionals who established themselves in the metropolitan region (52.6%) and in inland cities (47.4%)³³. In addition, the majority of the professionals investigated in this study presented a monthly income of up to ten times the minimum wage. This finding corroborates studies that investigated the reality presented by dentists who graduated from other HEIs in Brazil^{32,38} and the expectations of Dentistry students regarding their earnings after they graduate³⁹.

The vast majority of the dentists who participated in this study attended postgraduate courses, mainly in the first years after the completion of the undergraduate course. Newly graduated professionals are more willing to attend specialization courses and acquire knowledge, as

technical expertise and a high number of previous clinical practice experiences facilitate their entrance and establishment in the job market⁴⁰.

Of the areas of preference in postgraduate education, Public Health, Orthodontics and Implantology were the most mentioned by the participants. The areas of Orthodontics, Endodontics, Surgery and Prosthodontics have previously been cited in studies with dental graduates and students in Brazil^{4,23,25,31,32,41}. The frequent mention to the area of Public Health stood out, as it shifted from one of the least cited by the dentists⁴¹ to one of the most chosen by the graduates in postgraduate education⁴². This finding can be related to the students' integration into the healthcare network and the period of curricular placements in the Brazilian National Health System (known as SUS) during the last year of the course, one of the positive aspects of the curricular restructuring brought by the DCN^{9,19-21}. These changes in education have been driven by the inclusion of the oral health team in Primary Care⁴³ and by the establishment of the National Oral Health Policy – Brasil Sorridente^{44,45}, which have enable dentists to work in the public service. This was also observed in this study, in the group of participants who graduated after the curricular restructuring.

The employment relationship of the graduates deserves a careful analysis of these dentists' work itinerary. This research with dentists who graduated from a public university in the South region of Brazil confirmed that the private service still is an important employer for these professionals in the country^{31,42}. In addition, individuals working exclusively in the public sector increased in number and the double employment relationship (public-private) decreased over the analyzed years. This increase in public service employment, especially among those who graduated after 2010, indicates a promising possibility for the Brazilian dentist,

reflecting the investment in oral health public policies geared to the consolidation of SUS⁴³⁻⁴⁵.

A high percentage of the graduates - approximately 80% - stated they are satisfied with the profession and this was connected to pay and personal wellbeing, which has also been found in the literature^{38,39}.

The limitations of the study are related to the number of participants and to the composition of the sample. The low response rate could be attributed to graduates that may have changed their electronic addresses after graduation, and to the fact that re-engaging former students in activities connected with the university where they graduated can be a challenge²⁷. In addition, the most recent invitations to participate in the study were sent at the beginning of the COVID-19 pandemic, which may have affected the response rate. Although the response rate is within expectations for surveys hosted online, it is necessary to be cautious regarding the generalization of the findings to the population in question.

Further research is needed to monitor these graduates over time, amplifying the research objectives. Studies that can provide information on graduates from the evening course, on graduates who participated in the University's Program of Affirmative Actions, and on the impact of the pandemic on the inclusion of these professionals in postgraduate education and in the job market, are needed to assess the course and the contextual demands/challenges that characterize the dental profession in Brazil.

5 CONCLUSION

This study showed that the dentists who graduated from a public university in the South region of Brazil have a sociodemographic profile mostly formed by women, aged between 26 and 32 years, single, without children, born and residing in the city where they attended the undergraduate course, and whose parents have a high level of

schooling. The most frequent monthly income was 5 to 10 times the minimum wage. These professionals work in the area of Dentistry, in the same city/metropolitan region where they attended the undergraduate course, and are satisfied with the profession they chose. They have completed or are enrolled in a postgraduate course, mainly specializations and residencies in the areas of Public Health, Orthodontics and Implantology. Although these graduates reported that they work predominantly in the private sector, an important increase in the number of participants who work in the public sector and graduated between 2010 and 2019 was observed, compared to previous years.

RESUMO

Trajatória de educação na pós-graduação e atuação profissional de egressos de Odontologia: uma análise de doze anos (2007 a 2019)

Avaliar a trajetória de graduados em Odontologia é importante para garantir o alinhamento adequado dos currículos odontológicos às necessidades da sociedade. Este estudo observacional transversal descritivo teve como objetivo caracterizar o perfil sociodemográfico-familiar e a trajetória de educação na pós-graduação e de atuação profissional de cirurgiões-dentistas egressos de universidade pública do Sul do Brasil. Foram convidados a participar do estudo todos os egressos que concluíram a graduação em Odontologia nesta universidade, entre 2007 e 2019. A coleta de dados aconteceu pelo autopreenchimento de instrumento semiestruturado *online*, pré-testado, organizado em três dimensões (perfil sociodemográfico-familiar, educação na pós-graduação e atuação profissional). A análise das questões objetivas foi realizada por estatísticas descritivas e as abertas pela análise temática de conteúdo. Participaram do estudo 245 cirurgiões-dentistas (percentual de resposta: 25,7%). A maioria eram mulheres (68,6%), com 26 a 32 anos (73,9%), solteiros (71,4%), sem filhos (92,7%), naturais (51,4%) e residentes (59,2%) na cidade onde cursaram Odontologia e trabalham (67,5). A renda pessoal mensal foi de 5 a 10 salários mínimos (36,7%). Atuam na Odontologia (97,1%)

e estão satisfeitos com a profissão (79,6%). Realizaram ou estão realizando cursos de pós-graduação (94,3%), concluídos em até três anos após a graduação (58%), principalmente especialização (62,8%), nas áreas de Saúde Coletiva, Ortodontia e Implantodontia. Setor privado mostrou-se o maior empregador dos cirurgiões-dentistas (60,8%), entretanto, a atuação no serviço público cresceu entre os egressos de 2010-2019 (2,4% para 20,7%). Estudos de acompanhamento destes egressos são recomendados para avaliação do curso e das demandas/desafios contextuais que caracterizam a profissão de cirurgião-dentista no Brasil.

Descritores: Recursos Humanos em Odontologia. Educação de Pós-Graduação em Odontologia. Educação em Odontologia. Capacitação de Recursos Humanos em Saúde. Satisfação no Emprego.

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