BRAZILIAN JOURNAL OF DENTAL EDUCATION
ASSOCIAÇÃO BRASILEIRA DE ENSINO ODONTOLÓGICO

A survey on the oral radiologists' career profile

Vinicius Escórsio[1]
0009-0008-3294-554X

Hugo Gaêta-Araujo[2]
0000-0001-5087-5022

[1]Faculdade de Odontologia, Universidade de São Paulo (USP), São Paulo, São Paulo, Brasil.
[2]Faculdade de Odontologia de Ribeirão Preto, Universidade de São Paulo (USP), Ribeirão Preto, São Paulo, Brasil.

Correspondence:
Hugo Gaêta-Araujo
E-mail: hugo.gaeta@usp.br

Received: Apr 10, 2025
Approved: Dec 02, 2025
Last revision: Dec 02, 2025

Abstract Understanding the profile of a profession can contribute to improving the career by addressing its contemporary positive and negative aspects. The aim of the present study was to survey the career profile of oral radiologists and assess training needs and their level of satisfaction. This cross-sectional survey was applied to oral radiologists in Brazil. A web-based questionnaire was developed comprising 40 questions divided into 9 sections focusing on demographic data, educational background, workload, reports of imaging modalities, income, training, legal worries, and level of satisfaction. Descriptive analysis and the chi-square test were used to compare responses. Logistic regression determined significant predictors of professional and financial income satisfaction (α=5%). The final sample consisted of 181 participants, and a margin of error of 2.8%. One-hundred and thirty-three females and 48 males participated in the survey, most of them aged between 31-40 years old (44%), and dedicating over 40 hours per week (26%) to the reports. There is a balanced number of professionals issuing radiographic (65-73%), and tomographic (73%) reports. Training for 3D imaging reports was considered insufficient in postgraduate courses, which resulted in the pursuit of additional training. Professional satisfaction is higher than the financial income satisfaction (p<0.001), and the last is influenced by working hours, volume of reports and issuing intraoral radiography reports (p<0.001). Oral radiologists' career was outlined, and the trends are demonstrated. Attention should be given to 3D reports training in postgraduate courses to better prepare the oral radiologists.
Descriptors: Career Choice. Education, Dental, Graduate. Radiology. Surveys and Questionnaires.

Encuesta sobre el perfil profesional de los radiólogos orales

Resumen Comprender el perfil de una profesión puede contribuir a mejorar la carrera profesional al abordar sus aspectos positivos y negativos actuales. El objetivo del presente estudio fue analizar el perfil profesional de los radiólogos orales y evaluar las necesidades de formación y su nivel de satisfacción. Esta encuesta transversal se aplicó a radiólogos orales de Brasil. Se elaboró un cuestionario en línea compuesto por 40 preguntas divididas en 9 secciones centradas en datos demográficos, formación académica, carga de trabajo, informes de modalidades de imagen, ingresos, formación, preocupaciones legales y nivel de satisfacción. Se utilizaron análisis descriptivos y la prueba de chi-cuadrado para comparar las respuestas. La regresión logística determinó los predictores significativos de la satisfacción profesional y económica (α=5 %). La muestra final estuvo compuesta por 181 participantes, con un margen de error del 2,8 %. Participaron en la encuesta 133 mujeres y 48 hombres, la mayoría de ellos con edades comprendidas entre los 31 y los 40 años (44 %) y que dedicaban más de 40 horas semanales (26 %) a los informes. Hay un número equilibrado de profesionales que emiten informes radiográficos (65-73 %) y tomográficos (73 %). La formación en informes de imágenes 3D se consideró insuficiente en los cursos de posgrado, lo que dio lugar a la búsqueda de formación adicional. La satisfacción profesional es mayor que la satisfacción económica (p<0,001), y esta última se ve influida por las horas de trabajo, el volumen de informes y la emisión de informes de radiografías intraorales (p<0,001). Se ha esbozado la carrera profesional de los radiólogos orales y se han demostrado las tendencias. Se debe prestar atención a la formación en informes 3D en los cursos de posgrado para preparar mejor a los radiólogos orales.
Descriptores: Selección de Profesión. Educación de Posgrado en Odontología. Radiología. Encuestas y Cuestionarios.

Um levantamento sobre o perfil de carreira dos radiologistas odontológicos

Resumo Compreender o perfil de uma profissão pode contribuir para melhorar a

carreira, abordando seus aspectos positivos e negativos contemporâneos. O objetivo do presente estudo foi pesquisar o perfil profissional dos radiologistas odontológicos e avaliar as necessidades de treinamento e seu nível de satisfação. Esta pesquisa transversal foi aplicada a radiologistas odontológicos no Brasil. Foi desenvolvido um questionário online com 40 perguntas divididas em 9 seções, com foco em dados demográficos, formação acadêmica, carga de trabalho, laudos de modalidades de imagem, renda, treinamento, preocupações legais e nível de satisfação. A análise descritiva e o teste qui-quadrado foram usados para comparar as respostas. A regressão logística determinou preditores significativos de satisfação profissional e financeira (α=5%). A amostra final consistiu em 181 participantes e uma margem de erro de 2,8%. Cento e trinta e três mulheres e 48 homens participaram da pesquisa, a maioria com idade entre 31 e 40 anos (44%) e dedicando mais de 40 horas por semana (26%) aos laudos. Há um número equilibrado de profissionais que emitem laudos radiográficos (65-73%) e tomográficos (73%). O treinamento para laudos de imagens 3D foi considerado insuficiente nos cursos de pós-graduação, o que resultou na busca por treinamento adicional. A satisfação profissional é maior do que a satisfação financeira (p<0,001), e esta última é influenciada pelo horário de trabalho, volume de laudos e emissão de laudos de radiografia intraoral (p<0,001). A carreira dos radiologistas odontológicos foi descrita e as tendências são demonstradas. Deve-se dar atenção ao treinamento em laudos 3D em cursos de pós-graduação para melhor preparar os radiologistas odontológicos.
Descritores: Escolha da Profissão. Educação de Pós-Graduação em Odontologia. Radiologia. Inquéritos e Questionários.

INTRODUCTION

Oral Radiology and Imaging is a specialty of Dentistry recognized in Brazil by the Federal Council of Dentistry (CFO) since 1968. According to the CFO, there are currently 5,539 dentists registered as specialists in Oral Radiology and Imaging. This constitutes 4% of the total specialists, making it the 9th most populated specialty among the twenty-three recognized areas of specialization in Brazil[1].

The CFO defines the specialty of Oral Radiology and Imaging as "the specialty that aims to apply exploratory imaging methods for the purpose of diagnosing, monitoring, and documenting the oral and maxillofacial complex and surrounding structures"[2]. This document also establishes that the competence of oral radiologists includes complementing the diagnostic process by obtaining, interpreting, and issuing a report of the dentomaxillofacial region in imaging exams. These exams can include radiography, ultrasonography, computed tomography, magnetic resonance imaging, nuclear medicine, and others [2].

According to the Brazilian Dentistry Code of Ethics (approved by CFO Resolution 118/2012) [3], it is considered an ethical infraction not to issue a report of imaging examinations performed in Oral Radiology clinics (Chapter VII, Art.18, item VI). This means that in Brazil, every dental imaging examination must be accompanied by a report, preferably issued by a dentist who has training or is specialized in Oral Radiology. This underscores the importance and responsibility of the oral radiologist in Brazil, emphasizing their crucial role in adhering to these ethical obligations.

The transition from analog radiology (film-based) to digital radiology (using sensors and phosphor storage plates) has indeed changed the work dynamics of oral radiologists[4,5]. The advent of digital images has facilitated electronic storage and transfer, enabling radiologists to analyze images and issue reports remotely. This eliminates the need for their physical presence at Oral Radiology clinics[6,7]. In the private sector, nearly all Oral Radiology clinics in Brazil have adopted digital systems[5], making remote work or 'home-office' work regimen a reality for oral radiologists in the country.

In Brazil, a significant majority of dental students, ranging from 72.6% to 80.2%, at certain dental schools intend to pursue a specialization after graduation[8,9]. This pursuit of specialization may be driven by aspirations for financial return and professional status, compared to general practitioners[9]. However, there are limited reports on the career trajectory of oral radiologists[4,10]. Identifying the work profile of specialists in Oral Radiology and Imaging, in terms of working hours, financial return, and job satisfaction, is crucial to understanding this career[4]. It can provide valuable information on job

opportunities for newly graduated dentists. Additionally, it may help to identify potential weaknesses in education and career training, especially considering the increasing adoption of three-dimensional imaging into dental practice and more complex interpretation and issuing of these reports.

Therefore, the aim of the present study was to trace the career profile of oral radiologists in Brazil with regards to the educational background, workload, reports of imaging modalities, income, training weaknesses, legal worries, and level of satisfaction.

METHOD

This was a cross-sectional, observational, and qualitative survey with the application of an online questionnaire about the profile of oral radiologists working in Brazil in 2024. The research was approved by the local Research Ethical Committee (protocol CAAE: 67532023.0.0000.5419). The manuscript was developed following the Checklist for Reporting of Survey Studies (CROSS)[11].

Questionnaire development

A descriptive questionnaire on the profile of dentists working as oral radiologists in Brazil was developed by the researchers to cover the objectives of the research. The questionnaire comprises 40 questions divided into 9 sections: 1 - Informed Consent Form; 2 - Demographic data and educational background; 3 - Professional practice; 4 - Intraoral radiography reports; 5 - Panoramic radiography reports; 6 – Lateral cephalometric radiography reports; 7 – Cone-beam computed tomography (CBCT) reports; 8 – Training; and 9 – Legal worry and satisfaction.

The questionnaire was pre-tested in a pilot study, with application to 10 oral radiologists (5 males and 5 females, with age ranging from 30-40 years old), to verify their cognitive understanding and comprehension of the questions. Questions that were indicated with low understanding by the pilot participants were reformulated and reevaluated. Once this step was completed, the final questionnaire form was built electronically in Google forms (Google LLC, Mountain View, CA, USA).

Participants and questionnaire application

A minimum number of 160 participants was intended according to the sample size calculation. The sample size was calculated considering a significance level of 95%, margin error of 3%, the population size of oral radiologists in Brazil (n=5,539), and the population proportion of oral radiologists among dentists with specialization in Brazil (4%).

The inclusion criteria of the participants were: to work as oral radiologist in Brazil, issuing any type of radiographic or tomographic reports, and with any educational background (i.e., specialization, master's degree, and/or doctorate). Volunteer participants were invited to anonymously complete the electronic questionnaire via digital contact, after providing digital and online consent for their participation in the study. No incentives were offered for participation.

The use of an electronic questionnaire allows for virtual snowball sampling, leading to greater accessibility and dissemination via social media and messaging groups. The dissemination was carried out in four waves of invitations to participate on WhatsApp, Instagram, and Facebook, with an interval of 15 days between them. After the fourth wave, the number of respondents was verified. To prevent multiple participation of participants, their e-mail addresses were checked with the responses.

Data analysis

The data was tabulated in spreadsheets and then analyzed in SPSS version 25.0 (IBM SPSS, Armonk, NY, USA) and GraphPad Prism version 8.0 (GraphPad Software, Boston, MA, USA), with a significance level of 5%. Incomplete questionnaires and missing data were excluded from the analysis. Questionnaire responses were observed in terms of absolute and relative frequencies, with descriptive analysis of the findings. The chi-square test was used to compare responses frequencies in each section. Likert scale variables were compared by Kruskal-Wallis or Mann-Whitney test. Ordinal logistic regression was used to determine significant predictors of professional and financial income satisfaction among oral radiologists working in Brazil. For overall comprehension of the values practiced in Brazil, a simplified conversion rate of R$6 = US$1 was adopted.

RESULTS

A total of 183 responses were received. Two participants were excluded from the sample because of missing data in the questionnaires. The final sample consisted of 181 participants. As the virtual snowball sampling method was used, it is not possible to calculate the response rate. The actual margin of error is 2.8%, considering the 181 respondents and the population size, population proportion, and confidence level used for sample size calculation.

One-hundred and thirty-three females and 48 males participated in the survey (Table 1). Most of the participants were aged between 31-40 years old (44.8%) and from the Southeast region of Brazil (57.5%), with no difference in the distribution between sex (p=0.350 and p=0.901, respectively). There was no difference between the highest educational degree between females and males (p=0.093). There was no difference among Oral Radiology and Imaging specialists, master's degree (MSc), and doctorates (Ph.D.) between sex (p>0.267).

The professional practice responses are also displayed in Table 1. There were no differences between females and males for the professional practice (p>0.095). Most of the participants worked both in office and home-office (49.2%), followed by home-office only (40.3), receiving images to make the reports directly from the oral radiology clinics (70.2%). There was no statistically significant difference in the distribution of the responses regarding working hours (p=0.059), however, most of the participants dedicated between 21-30 hours (22.1%) or over 40 hours (26.5%) to the reports per week. Only 32.6% of the participants declared that issuing reports was their exclusive source of income.

Table 1. Absolute and relative frequencies of the demographic data of the participants, according to sex.

Demographics		Female N (%)	Male N (%)	Total N (%)	p-value*
Age group					
	20-30	25 (18.8)	9 (18.8)	34 (18.8)	0.350
	31-40	63 (47.4)	18 (37.5)	81 (44.8)	
	41-50	28 (21.1)	9 (18.8)	37 (20.4)	
	51-60	14 (10.5)	9 (18.8)	23 (12.7)	
	61+	3 (2.3)	3 (6.3)	6 (3.3)	
	Total	133 (100)	48 (100)	181 (100)	
Region of Brazil					
	North	1 (0.8)	1 (2.1)	2 (1.1)	0.901
	Northeast	23 (17.3)	7 (14.6)	30 (16.6)	
	Middle west	15 (11.3)	7 (14.6)	22 (12.2)	
	Southeast	77 (57.9)	27 (56.3)	104 (57.5)	
	South	17 (12.8)	6 (12.5)	23 (12.7)	
Higher educational degree					
	Specialist	56 (42.1)	17 (35.4)	73 (40.3)	0.093
	MSc degree	41 (30.8)	10 (20.8)	51 (28.2)	
	Ph.D. degree	36 (27.1)	21 (43.8)	57 (31.5)	
ORI background[¥]					
	ORI specialist	102 (76.7)	34 (70.8)	136 (75.1)	0.421
	ORI MSc degree	34 (25.6)	11 (22.9)	45 (24.9)	0.716
	ORI Ph.D. degree	21 (15.8)	11 (22.9)	32 (17.7)	0.267
Workplace					
	In office	15 (11.3)	4 (8.3)	19 (10.5)	0.686
	Home office	55 (41.4)	18 (37.5)	73 (40.3)	
	Both	63 (47.4)	26 (54.2)	89 (49.2)	
Images inbound					
	Direct contact with the clinics	96 (72.2)	31 (64.6)	127 (70.2)	0.324
	Online report platform	37 (27.8)	17 (35.4)	54 (29.8)	
Hours/week dedicated to reports					
	Up to 10h	22 (16.5)	10 (20.8)	32 (17.7)	0.510
	11-20h	29 (21.8)	6 (12.5)	35 (19.3)	
	21-30h	30 (22.6)	10 (20.8)	40 (22.1)	
	31-40h	20 (15.0)	6 (12.5)	26 (14.4)	
	40h+	32 (24.1)	16 (33.3)	48 (26.5)	
Exclusive source of income					
	Yes	48 (36.1)	11 (22.9)	59 (32.6)	0.095
	No	85 (63.9)	37 (77.1)	122 (67.4)	

ORI: Oral Radiology and Imaging; MSc: Master of Science; Ph.D.: Doctor of Philosophy. *According to chi-square test. Bold values represent statistically significant differences between sex.
[¥] Each participant could declare more than one ORI background.

Table 2 shows data regarding issuing of two-dimensional (2D) and three-dimensional (3D) reports, professional experience, and reports/week according to the imaging modalities. Less than half of the participants (48.1%) issue reports of lateral cephalometric radiography (p<0.001), while there is a balance prevalence for professionals issuing intraoral radiography (64.6%), panoramic radiography (72.9%), and CBCT (72.9%) reports. More experienced professionals (over 10 years of experience) issues more 2D (37.6-40.2%) reports in comparison to 3D (21.9%) reports, while less experienced professional (less than 5 years) commonly issue 3D reports (52.3%) (p=0.028). There was a higher prevalence of over 81 reports per week for intraoral radiography and panoramic radiography in comparison to lateral cephalometric radiography and CBCT (p<0.001).

Table 2. Absolute and relative frequencies of issuing of reports, professional experience, and reports per week, according to the different imaging modalities.

Questions	Responses	Intraoral radiography	Panoramic radiography	Lateral cephalometric radiography	Cone-beam computed tomography
Issuing of reports	Yes	117 (64.6)	132 (72.9)	87 (48.1)	132 (72.9)
	No	64 (35.4)	49 (27.1)	94 (51.9)	49 (27.1)
	p-value*			**<0.001**	
Professional experience	<5yrs	46 (39.3)	47 (35.6)	30 (34.5)	69 (52.3)
	5-10yrs	27 (23.1)	34 (25.8)	22 (25.3)	34 (25.8)
	10yrs+	44 (37.6)	51 (38.6)	35 (40.2)	29 (21.9)
	p-value*			**0.028**	
Reports/week	Up to 40 reports	62 (53.0)	61 (46.2)	65 (74.7)	87 (65.9)
	41-80 reports	26 (22.2)	30 (22.7)	11 (12.6)	32 (24.2)
	Over 81 reports	29 (24.8)	41 (31.1)	11 (12.6)	13 (9.9)
	p-value*			**<0.001**	

*According to chi-square test. Bold values represent statistically significant differences in response frequency among imaging modalities.

Payment for issuing each type of report is shown in Figure 1. For a single intraoral radiography, the price of a report was mostly between up to US$1 to US$2, while for a full mouth series it was mostly between US$2 to US$3. Likewise, for panoramic radiography and lateral cephalometric radiography reports the payment was mostly between US$1 to US$2. For CBCT reports, the payment was higher. For a small field-of-view report it was between US$6 to US$10, for a medium field-of-view US$8 to US$10, and for a large field-of-view it was over US$10.

The perception of training received by the respondents in the postgraduate courses was measured in a 10-point Likert scale (Figure 2). Regarding 2D reports, the median was 7 for specialization and 6 for MSc courses, while it was 8 for Ph.D. courses. There was a statistically significant difference between specialization and master's courses (p=0.004). Those medians were markedly lower for 3D reports training: 4.5 for specialization, 3 for MSc, and 5 for Ph.D., with no statistically significant difference among postgraduate courses (p=0.262).

The seek for additional training according to the type of report (2D or 3D) and educational background is shown in Figure 3. For 2D reports, specialists tended to pursue additional training more often than MSc and Ph.D., usually for not feeling prepared. Nevertheless, a significant percentage of the participants sought additional training even feeling prepared, regardless of the educational background. On the other hand, for 3D reports, regardless of the educational background, most of the participants sought additional training as they did not feel prepared for it.

The median worry of being held legally responsible for the reports (Figure 4A) was equal for 2D and 3D reports (median = 8), with no statistically significant difference between them (p=0.789). The overall median professional satisfaction was 8, which was higher (p<0.001) than the overall median financial income satisfaction (6) of the participants (Figure 4B).

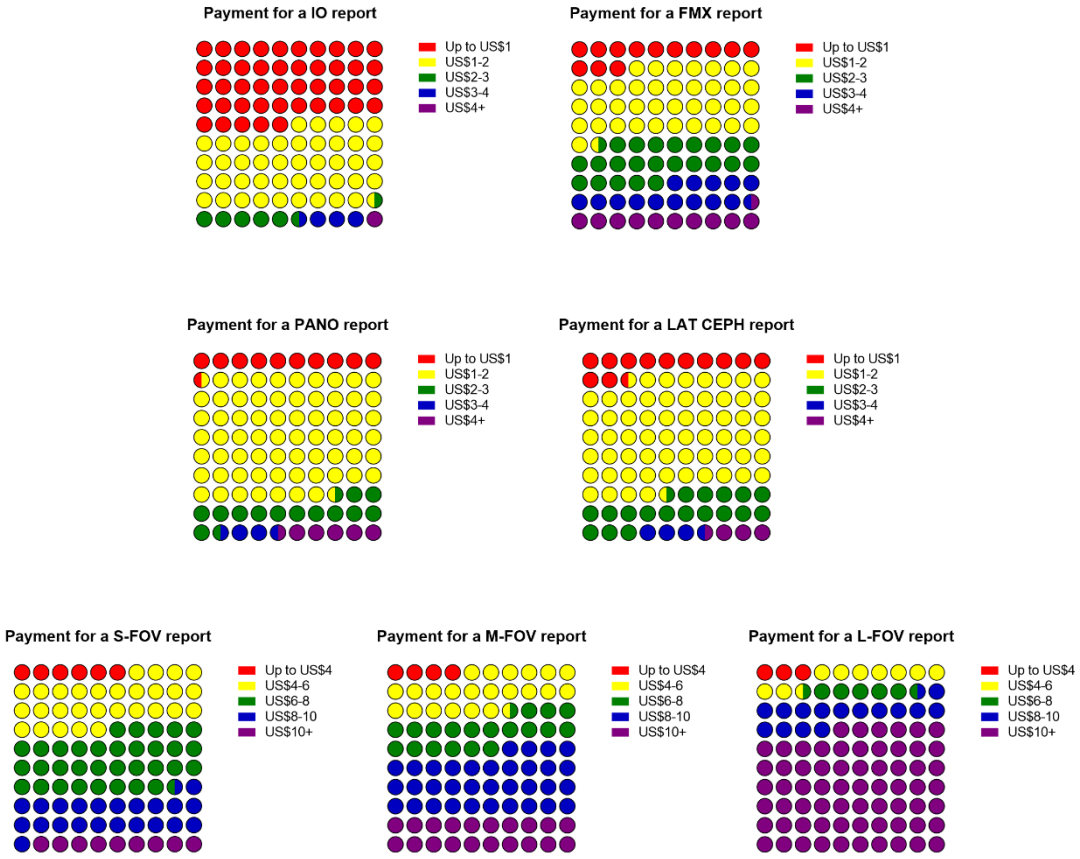

Figure 1. Payment for issuing reports of the different imaging modalities. In the first row, a single intraoral (IO) radiograph on the left and full-mouth series (FMX) on the right. Extraoral radiographs are in the second row, as panoramic (PANO) radiograph (on the left) and lateral cephalometric (LAT CEPH) radiograph (on the right). In the third row, the payment for cone-beam computed tomography (CBCT) considering the field of view (FOV): small FOV (SFOV) on the left, medium FOV (MFOV) in the middle, and large FOV (LFOV) on the right.

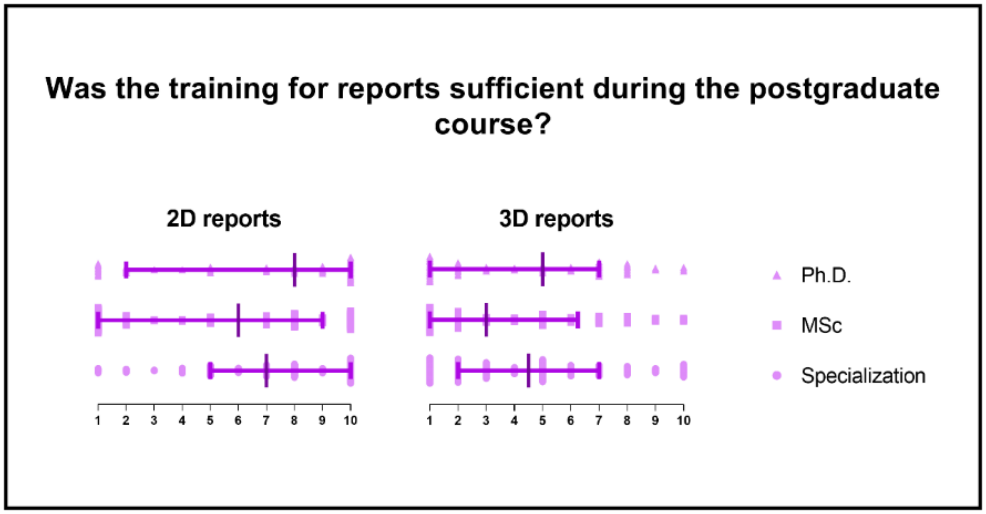

Figure 2. Likert-scale (from 1 – totally insufficient; to 10 – totally sufficient) for the training for issuing reports of 2D and 3D imaging, considering different post-graduate courses: specialization, master's degree (MSc), and doctorate (Ph.D.). The vertical line represents the median of the responses, while the horizontal bar represents the interquartile range.

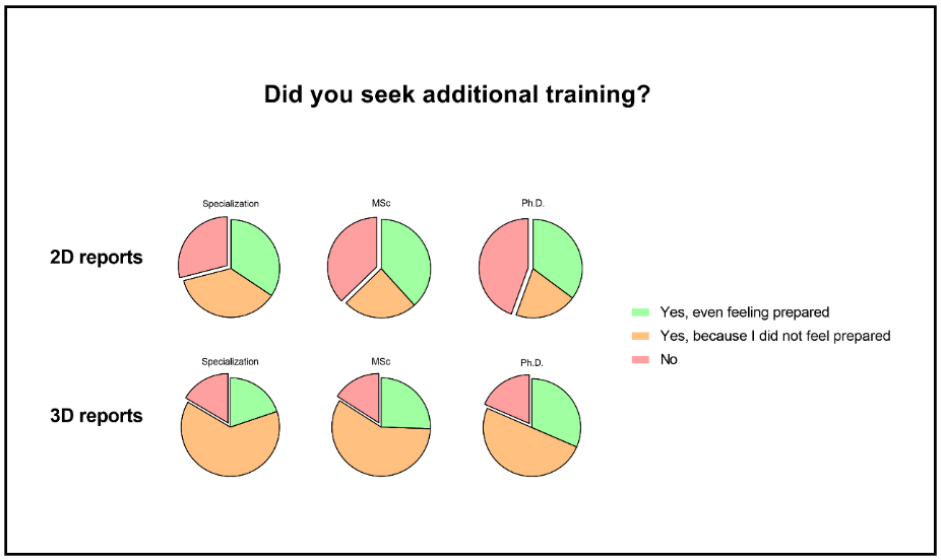

Figure 3. Distribution of the demand for additional training in issuing reports of 2D and 3D images, according to the educational background: specialization, master's degree (MSc), and doctorate (Ph.D.).

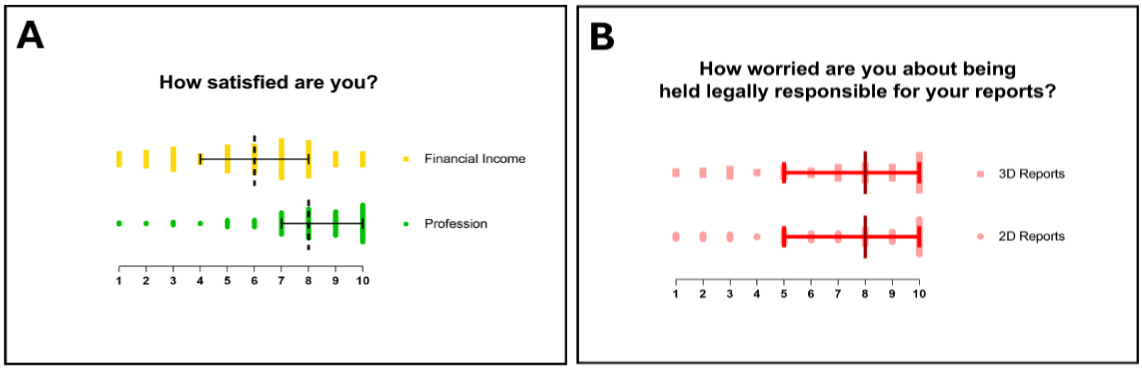

Figure 4. A – Likert-scale (from 1 – totally unsatisfied; to 10 – totally satisfied) for the satisfaction regarding the financial income and the profession of oral radiologist. B – Likert-scale (from 1 – Not worried at all; to 10 – Totally worried) for the worrying of the being held legally responsible for issuing reports on 2D and 3D imaging.

Ordinal logistic regression did not show significant improvement in fit of the final model over the null model for professional satisfaction (chi-square (20) = 29.469; p=0.078; Nagelkerke pseudo-R^2 = 0.154) but showed for financial income satisfaction (chi-square (20) = 55.049; p<0.001; Nagelkerke pseudo-R^2 = 0.266). For professional satisfaction, none of the independent variables were statically significant predictors (p>0.059). Significant predictor variables in the financial income satisfaction model were the time dedicated to reports per week (p=0.032), volume of reports per week (p=0.025), and issuing of intraoral radiography (p=0.048). There is a decrease in financial income satisfaction by dedicating up to 20h compared to over 40h per week (odds ratio = 0.323), issuing up to 60 reports per week compared to over 100 reports (odds ratio = 0.314), and an increase for those who issue intraoral radiography reports compared to those who do not (odds ratio = 2.663).

DISCUSSION

This study, based on a questionnaire, aimed to outline the profile of dentists working as oral radiologists in Brazil. Understanding the profile of a profession can not only inform those considering it about what to expect but also contribute to improving the career by addressing its contemporary positive and negative aspects.

Two previous studies have investigated the career of oral radiologists through questionnaire-based surveys, both focusing on professionals in North America (USA and Canada)[4,10]. Therefore, it appears that this study is the first to explore the career of oral radiologists in South America, Brazil. It is important to highlight the significant differences between the

countries. Unlike in the USA[10], it is quite rare in Brazil for dentists to have an in-office extraoral imaging machine, either panoramic/cephalometric or CBCT. Consequently, dentists must refer their patients to Oral Radiology clinics to acquire these images when needed. In line with this, it is not at the discretion of the dentist to have the images interpreted by an oral radiologist, as is mandatory. This is indeed a positive aspect in Brazil, as imaging exams acquired in Oral Radiology clinics must be interpreted by an oral radiologist.

With the advancement of technology, particularly in dental imaging, the demand for qualified oral radiologists is on the rise[4]. Previous studies have highlighted the low number of oral radiologists in the USA and the need to increase this number to expand opportunities for private practice[4,10]. In contrast, Brazil has a relatively high number of oral radiologists (5,539), which is linked to the high number of dentists in the country (403,575). The higher number of specialists in Brazil may be attributed to the absence of a board exam to receive the specialization certificate. Moreover, unlike what has been reported in previous studies[4,10], most oral radiologists in Brazil may not be pursuing academic career opportunities.

The questionnaire covered various aspects of the profession, which may have been lacking in previous studies (e.g., types of reports). Interestingly, less than half of the participants were found to issue reports for lateral cephalometric radiographs. In contrast, approximately 65% of the participants issued reports for intraoral radiography, 73% for panoramic radiography, and 73% for CBCT. This discrepancy can be attributed to the fact that intraoral and panoramic radiographs are the most frequently prescribed imaging exams in dentistry, while cephalometric radiographs are typically requested for specific cases, predominantly orthodontic[12]. On the other hand, although CBCT exams are becoming increasingly used in dentistry, it may be less commonly requested due to their stringent selection criteria and higher radiation dose[13]. Consistent with these trends, the volume of weekly reports was found to be higher for intraoral and panoramic radiography compared to lateral cephalometric radiography and CBCT. This aligns with the established imaging prescription criteria in dentistry.

Almost 80% of the oral radiologists issuing CBCT reports have less than 10 years of experience. This may be related to the relatively recent introduction of CBCT in dentistry (i.e., late 1990s, early 2000s)[14]. On the other hand, 40% of the lateral cephalometric radiography reports are issued by the most experienced radiologists. This may indicate a trend for the newer generation of oral radiologists to pursue CBCT reports, as this modality was already part of their routine during undergraduate and postgraduate courses. Another reason may be that issuing CBCT reports is more profitable than the other imaging modalities.

In the realm of radiography, reports are typically paid for between US$1 and US$3. However, for CBCT, the scenario is quite different. The payment noticeably exceeds US$6 and escalates with the field of view (FOV) size, peaking at over US$10 for a large FOV that encompasses both dental arches. Drawing from the authors' familiarity with the pricing structure in Brazil for imaging exams conducted in Oral Radiology clinics, it is estimated that oral radiologists receive between 10 to 20% of exam price for their report contributions. Despite some respondents indicating a higher pay scale for their reports, there is a concerning trend of underpayment for others, with compensation dipping to as low as US$1 for radiographic reports and US$4 for tomographic reports. The current payment structure suggests a potential undervaluation of the oral radiologist's role, particularly given that every imaging exam conducted in these clinics necessitates an accompanying report, a responsibility frequently shouldered by the oral radiologist. This could also account for the high level of concern among oral radiologists about being held legally responsible for their reports.

Another alarming finding pertains to the adequacy of training in postgraduate courses. The doctorate was consistently deemed more sufficient for training for both 2D and 3D imaging reports. For 2D reports, high medians were observed, as these exams are the most common since the undergraduate course. However, it is worrying that the specialization course had the same median as the master's course, given that the former is intended to train oral radiologists for issuing reports while the latter is focused on education and scientific research. For 3D reports, even the doctorate showed an intermediate median. Indeed, the pursuit of additional training was more prevalent for 3D reports, with similar frequencies observed among specialization, master's, and doctorate programs, which was more common among those who did not feel prepared for it. Only a small proportion did not seek additional training. These findings suggest that oral radiologists' training courses in Brazil may need to revise their programs to provide them with proper training for issuing reports. Moreover, this underscores the need for comprehensive and effective training programs that adequately prepare oral radiologists for their roles, particularly in the realm of 3D report generation; especially considering the growing indications

and usage of CBCT in dentistry[10]. This is a critical area that needs attention to ensure the quality and effectiveness of oral radiology services.

Professional satisfaction among oral radiologists was found to be higher than financial income satisfaction. This high level of satisfaction with the profession aligns with findings from previous studies[4,10]. Interestingly, this satisfaction was positively associated with the time dedicated to issuing reports, which was mostly over 21 hours. Accordingly, Pacheco-Pereira et al. (2021) [4], found that, on average, oral radiologists dedicated 28 hours to practice, producing 22 reports per day, although the imaging modality was not specified. Interestingly, the participants reported that producing reports was their least enjoyable activity compared to teaching, working in industry, and research [4]. In the present study, different activities were not included in the questionnaire as the focus was to understand the career profile of oral radiologists regarding reports, which is their main activity. However, future studies should consider this, as 67% of the respondents in this study declared that issuing reports was not their exclusive source of income. This suggests a diverse range of activities and income sources within the profession, which could be further explored in future research.

The time dedicated to reporting was found to be positively associated with financial income, as was the volume of reports per week, and production of intraoral radiography reports. This is likely due to the higher income given greater time dedicated to it. Financial considerations were also observed in the study by Pacheco-Pereira et al. (2021)[4], which revealed that one-third of oral radiologists in private practice had an annual income lower than $100,000. Interestingly, one-third of these radiologists considered this salary range adequate for a comfortable lifestyle. However, 37% of them estimated that experienced oral radiologists should have an income of over $200,000[4].

Surveying an ascending career in dentistry is indeed intriguing, and while more questions could have been asked, the length of the questionnaire could potentially limit the commitment and time availability of the respondent[4]. Despite achieving a representative sample, there are many oral radiologists in Brazil who did not participate, so the results should not be generalized. Differences may also be expected in different regions of the country, which could not be assessed in the present study. Future studies should aim to assess disparities in careers across the country. Finally, it would be beneficial to carry out such surveys in other countries that recognize oral radiology as a specialization in dentistry. This could corroborate the findings of the present research, provide different perspectives, and contribute to the valorization of the profession worldwide. This would help in creating a more comprehensive and global understanding of the field of oral radiology.

CONCLUSION

In conclusion, this survey has outlined the profile of oral radiologists in Brazil. Although report production is not the primary source of income for most oral radiologists, they dedicate over 20 hours per week to this activity. Most oral radiologists issue reports for panoramic radiography and CBCT. However, less than half of them issue reports for lateral cephalometric radiography. The compensation for 2D reports is relatively low, while 3D reports are better paid. The training provided in postgraduate courses appears to be insufficient for 3D reports, leading most oral radiologists to seek additional training. There is a high level of satisfaction with the career among oral radiologists. Financial income satisfaction is related to the time dedicated per week and the volume of reports per week. These findings provide valuable insights into the profession of oral radiology in Brazil and can inform future research and policy decisions in this field.

REFERENCES

1. Conselho Federal de Odontologia. Quantidade geral de cirurgiões-dentistas especialistas. 2025 [cited 2023 Nov 10]. https://doi.org/10.33448/rsd-v9i7.4520
2. Conselho Federal de Odontologia. Consolidação das normas para procedimentos nos Conselhos de Odontologia. 2005 [cited 2023 Nov 10]. Available from: https://transparencia.cfo.org.br/wp-content/uploads/2018/03/consolidacao.pdf
3. Conselho Federal de Odontologia. Código de Ética Odontológica. 2012 [cited 2023 Nov 10]. Available from: https://website.cfo.org.br/wp-content/uploads/2018/03/codigo_etica.pdf
4. Pacheco-Pereira C, Diogenes AR, Moore W, et al. Trends in oral and maxillofacial radiology career: A survey. J Dent Educ [Internet]. 2021;85(10):1565-1573. doi: https://doi.org/10.1002/jdd.12641
5. Sampaio-Oliveira M, Lima MPM, Doriguêtto PVT, Americano JP, Devito KL. Impacts of the COVID-19 pandemic on the routine of Brazilian oral radiologists. Oral Radiol [Internet]. 2023;39:570-575. doi: https://doi.org/10.1007/s11282-023-00673-y

6. Doriguêtto PVT, Americano JP, Devito KL. Challenges for the dental radiology clinic in times of the COVID-19 pandemic. Oral Radiol [Internet]. 2020;36:404-405. doi: https://doi.org/10.1007/s11282-020-00456-9
7. Villoria EM, Rodrigues RCV, Pereira CHN, Conceição GSA, Soares RV. The importance of digital radiographic systems in dental schools and oral radiology centers as part of reopening during the COVID-19 pandemic. Imaging Sci Dent [Internet]. 2021;51(1):1-2. doi: https://doi.org/10.5624/isd.20200216
8. Freire M do CM, Jordao LMR, Ferreira NP, Nunes MF, Queiroz MG, Leles CR. Motivation towards career choice of Brazilian freshman students in a fifteen-year period. J Dent Educ [Internet]. 2011;75(1):115-121. doi: https://doi.org/10.1002/j.0022-0337.2011.75.1.tb05030.x
9. Santos BF, Nicolau B, Muller K, Bedos C, Zuanon ACC. Brazilian dental students' intentions and motivations towards their professional career. J Dent Educ [Internet]. 2013;77(3):337-344. doi: https://doi.org/10.1002/j.0022-0337.2013.77.3.tb05475.x
10. Pakchoian AJ, Dagdeviren D, Kilham J, Mahdian M, Lurie A, Tadinada A. Oral and Maxillofacial Radiologists: career trends and specialty Board Certification status. J Dent Educ [Internet]. 2015;79(5):493-498. doi: https://doi.org/10.1002/j.0022-0337.2015.79.5.tb05908.x
11. Sharma A, Minh Duc NT, Thang TLL, Nam NH, Ng SJ, Abbas KS, et al. A Consensus-based checklist for reporting of survey studies (CROSS). J Gen Intern Med [Internet]. 2021;36:3179-3187. doi: https://doi.org/10.1007/s11606-021-06737-1
12. Tanna NK, AlMuzaini AAAY, Mupparapu M. Imaging in Orthodontics. Dent Clin North Am [Internet]. 2021;65(3):623-641. doi: https://doi.org/10.1016/j.cden.2021.02.008
13. Sedentexct. Radiation Protection 172: Cone Beam CT for Dental and Maxillofacial Radiology - Evidence-based Guidelines. Office for Official Publications of the European Communities [Internet]. 2012.156 [cited 2023 Nov 10]. Available from: http://www.sedentexct.eu/files/radiation_protection_172.pdf
14. Gaêta-Araujo H, Alzoubi T, Vasconcelos K de F, et al. Cone beam computed tomography in dentomaxillofacial radiology: a two-decade overview. Dentomaxillofac Radiol [Internet]. 2020;49(8):20200145. doi: https://doi.org/10.1259/dmfr.20200145

Conflict of Interest: The authors declare no conflict of interest.

Funding: No funding to declare.

Authors' Contributions: Study design and planning: VE, HGA. Data collection, analysis, and interpretation: VE, HGA. Manuscript drafting or revision: VE, HGA. Final version approval: VE, HGA. Public responsibility for the content of the article. VE, HGA.