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ORIGINAL ARTICLE

SELF-PERCEIVED ANXIETY AND WORRY AMONG PRIMARY DENTAL CARE PROFESSIONALS DURING THE PANDEMIC

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Highlights:
(1) Dental professionals had to change their work processes during the pandemic.
(2) The prevalence of anxiety and worry at work during the pandemic was high.
(3) Individual and organizational factors were associated with anxiety and worry.

ABSTRACT

The objective of this study was to analyze the factors associated with anxiety and worry about working during the pandemic, as self-perceived by primary care dentistry professionals. This cross-sectional study had a sample of 512 dentists, technicians, and oral health assistants working in the state of Paraná. Data was collected via an online form between August and October 2020. Associations between the outcome (feeling anxious and worried) and individual (sociodemographic, health, and training) and organizational (work process and biosafety measures adopted) explanatory variables were obtained using Poisson regression ($p<0.05$). The prevalence of anxiety and worry about working in that period was 79.4%. Multivariate analysis indicated that assistants and technical professionals were more anxious and worried, reporting a risk of being affected by severe Covid-19, working in settings where patients were not questioned about respiratory symptoms and minimum social distancing was not observed in waiting rooms, and those who did not follow recommended standards for doffing. The conclusion is that there was a high prevalence of professionals who were anxious and/or worried about providing dental care during the first year of the Covid-19 pandemic. Furthermore, individual and organizational factors related to the work process in dental services were associated with anxiety and worry among dental professionals.

Keywords: Covid-19, Primary Health Care, Mental health, Dentistry.

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INTRODUCTION

The 2019 Corona virus illness pandemic (Covid-19) challenged science and public health services worldwide[1]. Health professionals' work processes had to be modified, mainly in the dentistry area, for involving high aerosol generation and close contact with users, consequently, with droplets originated from the respiratory tract[2].

In Brazil, on January 30, 2020, a Technical Note by the Health Services Surveillance and Monitoring Management (GVIMS, Brazilian acronym for Gerência de Vigilância e Monitoramento em Serviços de Saúde) and the National Health Surveillance Agency (Anvisa – Brazilian short for Agência Nacional de Vigilância Sanitária) was published as (GGTES) / (Anvisa) n° 04/2020 (NT04/2020), it was a guideline enforced by the Ministry of Health aiming to set biosafety protocols to reduce the risk of contamination in health services. In March 2020, NT04 was updated including preventive measures in dental care offices to prevent and control the Covid-19 spread[3]. That note defined that throughout the pandemic period, dental procedures should be restricted to urgency and emergency care, and aerosol-generating procedures should be reduced[3]. Although dental care is essential, the control of crossed infection aimed to reduce the risk for professionals and users[4].

In the Brazilian Unified Health System (SUS, Brazilian acronym for Sistema Único de Saúde), Health Units with Oral Health Teams (eSB, Brazilian acronym for Equipes de Saúde Bucal) provide free, effective dental care in primary care[5]. During the pandemic, in the state of Paraná, eSB continued to assist dental urgent cases and emergencies and were reallocated to the front line of the Covid-19 combat, in the fast-track strategy[6].

The eSB reality during the pandemic experienced abrupt changes in the work routine, resulting in high workload, in an environment exposed to a new infectious agent which caused high mortality rates, lack of knowledge and training to provide care to the population, inexistence of specific and efficient treatment, and the exhaustion generated by the inability to meet the demand of dental patients seeking care[7]. Furthermore, the interventions to reduce virus transmission, by means of the proper use of Personal Protective Equipment (PPE), were hampered by the scarcity of such equipment[8]. In addition, eSB had to assist a population with low adhesion to suitable or satisfactory protective measures, which increased their stress levels[9].

The World Health Organization (WHO)[10] defines work-related stress as the response developed by professionals when having to face demands and pressures that do not match their knowledge and skills. Therefore, those workers' adaptive skills are forcefully stretched[11]. The impact on the mental health of health professionals during the Covid-19 pandemic[12] resulted from stress, worry and anxiety[13]. Historically, worry has been seen as a symptom or side effect of anxiety[14]. However, worry is a response that involves several layers of emotional, cognitive and behavioral domains regarding a pattern of response to some threat, and it can be seen as an indication or a factor of anxiety and stress[15].

Although studies have not indicated higher incidence of Covid-19 among oral health professionals in comparison to other health professionals or the general population[16], dental surgeons, their assistants, and oral health technicians are among the professionals that are most exposed to aerosols and had to continue working during all phases of the pandemic[5]. For this reason, fear of high exposure to the virus and the adjustments occurred in the workplace of eSB might have increased these professionals' stress levels and triggered problems such as anxiety, depression and sleep disorders[13].

Most of the studies published on the theme focus on higher education professionals and/or hospital environments[12,16]. Therefore, a study including technicians in Primary Health Care (APS, Brazilian acronym for Atenção Primária à Saúde) addressing specificities of the activity in the

understanding of the phenomenon analyzed might contribute to decision making in public service in other pandemic events. Therefore, this study aims to analyze individual and organizational factors associated with self-perceived anxiety and worry in the performance of outpatient clinic work during the Covid-19 pandemic among dental care professionals working in APS.

METHODOLOGY

This is an observational study, developed as a web survey, which is part of a multicenter study on biosafety measures adopted by oral health professionals in public and private services, during the first year of the Covid-19 pandemic, in three states in Southern Brazil (Paraná, Santa Catarina and Rio Grande do Sul). It was developed by a group of researchers from four Brazilian universities, namely, State University of Ponta Grossa, Federal University of Paraná, Federal University of Santa Catarina and Federal University of Rio Grande do Sul.

The multicenter research project was submitted to and approved by the Research Ethics Committees (CEP, Brazilian acronym for Comitês de Ética em Pesquisa) of the higher education institutions involved. Data regarding the state of Paraná was obtained by the State University of Ponta Grossa (UEPG) and the Federal University of Paraná (UFPR). The study was approved by the CEP of UEPG (Certificate of Presentation of Ethical Appreciation: 31720920.5.1001.0105) and UFPR (Certificate of Presentation of Ethical Appreciation: 31720920.5.3001.0102).

The sample selected for this study included oral health professionals from the state of Paraná who answered a questionnaire about their work process at the APS. In August 2020, Paraná had 2,854 dental surgeons, 320 oral health technicians, and 1,106 oral health assistants enrolled with the National Register of Health Facilities (CNES, Brazilian acronym for Cadastro Nacional de Estabelecimentos de Saúde) of the Ministry of Health, who provided outpatient care for SUS, at Basic Health Units and similar, specialist clinics, and emergency service (available at http://tabnet.datasus.gov.br).

According to the last record available in the information system of the Ministry of Health, in December 2019, there were 1,179 eSB in the Family Health Strategy (ESF, Brazilian acronym for Estratégia Saúde da Família) with active funding, corresponding to 2,640 professionals (https://egestorab.saude.gov.br).

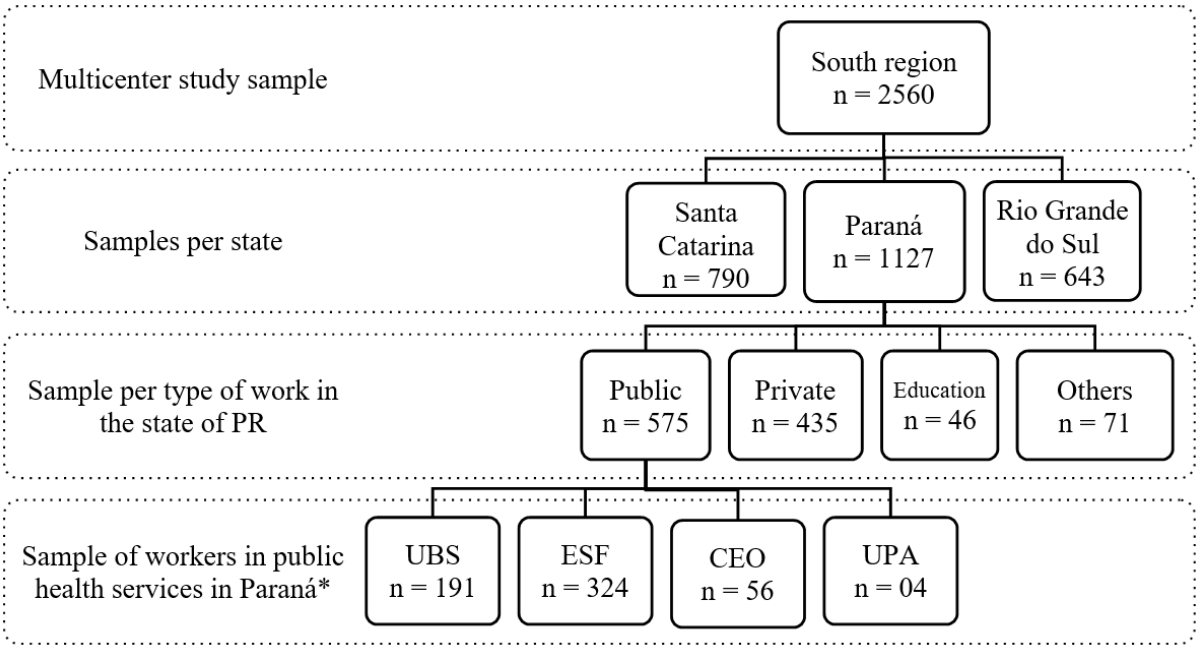
In the period from August to October 2020, an unpublished questionnaire developed for multicenter research was applied and pre-tested. It aimed to collect information about the work process of oral health professionals working in Southern Brazil during the Covid-19 pandemic. Details of the data collection instrument construction and validation were described elsewhere[17].

The questionnaire included questions about: (1) Sociodemographic profile, qualification and work; (2) Availability of inputs and biosafety measures as proposed by the NT 04/2020[3]; (3) Professional practice, management, education and teamwork. The questions elaborated according to the guidelines of NT 04 presented options of answers of the Likert scale type of frequency in 5 points (1 - never, 2 – hardly ever, 3 - sometimes, 4 – almost always, 5 – always), also containing the option “I don’t know”. Questions related to access to information and perception of being well-informed and confident, or anxious and worried about working during the Covid-19 pandemic presented the option of being answered in scale such as the Likert agreement scale, also of 5 points: 1 – Fully disagree; 2 – Partially disagree; 3 – Do not agree or disagree; 4 – Partially agree, 5 – Fully agree, and the option “I don’t know”. The remaining questions presented categorical answer options.

The questionnaire was made available in an online form on the Google Forms® platform and the link to participate was sent to the professionals by the Regional Dentistry Councils (CRO, Brazilian acronym for Conselhos Regionais de Odontologia) of each state via e-mail. The strategy of sending

e-mails by the CRO occurred in 3 moments, with 15 days and 45 days of interval after the first email had been sent. Such strategy aimed to increase the possibility of professionals enrolled with the CRO having the chance of getting informed about the research and deciding to participate in it. At the same time, there was wide dissemination through social networks. The answers to the form were monitored all the time as a whole and for each state, while new dissemination strategies were used as needed.

This study was carried out with a convenience non-probabilistic sample of oral health professionals working in APS in the state of Paraná. There were 2,560 answers provided by oral health professionals working in the Brazilian south region. Out of those, 1,127 came from the state of Paraná and among these, 575 worked for SUS. Among the oral health public service professionals, we only included data from those who reported to work in Primary Health Care. The final sample comprised 512 answers, of which 191 worked in Basic Health Units (UBS), while 324 worked in UBS with ESF (Figure 1). Considering the final sample in relation to the total number of oral health professionals enrolled with the CNES, the response rate in the state of Paraná was 12%. The same rate was obtained when considering the total number of respondents and the number of funded eSB in the state.



* UBS: Basic Health Unit; ESF: Family Health Strategy; CEO: Dental Specialist Center; UPA: Emergency Unit.

Figure 1 – Flowchart of the sample of oral health professionals in the states of the South region and final sample of workers in public health services in Paraná, August-October, 2020.

Source: Research data.

The outcome variable for this study was obtained from the item: "I feel anxious and worried about working safely in the dental practice during the Covid-19 pandemic". To obtain the outcome, the variable was dichotomized, and positive answers were considered those marked "yes" (4- partially agree and 5 – fully agree), while negative or neutral answers were "no" (1- fully disagree, 2- partially disagree, and 3- I don't agree or disagree).

Explanatory variables were divided into:

– Individual: a) *sociodemographic*: gender (female or male) and age (up to 39 years old, or 40 and over); b) *health*: risk conditions for severe Covid-19 (yes or no); c) *qualification*: professional category (Dental surgeon – CD or Oral Health Technician- TSB / Oral Health

Assistant - ASB); and, d) *work conditions*: work in the dental clinic was interrupted during the pandemic (yes or no), professional was submitted to Severe Acute Respiratory Syndrome Coronavirus test (Sars-CoV-2) (yes or not), professional had access to official guidelines from governmental agencies or professional council for Covid-19 prevention and control (yes or no), professional was instructed at the workplace about the measures to be taken during the Covid-19 pandemic (yes or no), and felt informed and confident to work safely in the dental practice during the Covid-19 pandemic (yes or no).

– Organizational: a) *work process*: suspension of elective dental procedures, care restricted to urgency/emergency, participation in decision-making about changes in the workplace during the pandemic, investigation of symptoms of respiratory infection when scheduling appointments, keeping the minimum distance of a meter between each person in the waiting room, definition of urgency based on clinical protocols, and use of digital tools for teleguidance and telemonitoring; b) *biosafety measures proposed by NT 04/2020*: Cleaning and disinfection of the rooms carried out by trained professionals, wearing suitable PPE, cleaning and disinfection of suction hoses after each appointment, use of sterile handpieces for each appointment, avoidance of aerosol-generating procedures, doffing carried out following the recommended sequence, wearing N95 mask (or masks similar to N95, such as PFF2 available in Brazil), and waterproof apron available in sufficient numbers. They were all categorized as: always/almost always or sometimes or never/almost never.

The quantitative data was organized in Excel spreadsheets for *Windows*. Descriptive and bivariate analyses were carried out using the program *Statistical Package for the Social Sciences* (SPSS) for *Windows* (version 16.0). Absolute and percentage frequencies were obtained for categorical variables as well as the mean (± standard deviation – SD) and median (± interquartile intervals) for the numerical ones.

In this study, the analysis was carried out comparing two groups according to the professional category: Dental Surgeons (CD) and Oral Health Technicians/Assistants (TSB/ASB). Differences were verified using the Pearson Chi-square test, for nominal variables, and the Mann-Whitney U test, for ordinal variables represented in the Likert scale ($p<0.05$).

The associations between outcome (feeling anxious and worried) and individual explanatory variables (sociodemographic, health, qualification and work) with organizational ones (work process and biosafety measures proposed by NT 04/2020) were obtained. At this point, the answers “I don’t know” were excluded. By means of the Poisson regression analysis with robust, bi and multivariate variance, we obtained the crude and adjusted prevalence ratios (PR), with the respective confidence intervals at a 95% level. This analysis was carried out using the program *Stata* for *Windows*, version 11.1.

RESULTS

The sample comprised 348 dental surgeons (68.0%), 110 ASB (21.5%) and 54 TSB (10.5%). Most of the participants in the study were women up to 39 years old (Table 1). The technicians showed prevalence of risk conditions for severe Covid-19 higher than that of dental surgeons. However, we observed that CD were off work more often and were submitted to more Covid-19 tests than TSB/ASB (Table 1). The latter, however, had less access to the Covid-19 prevention and control guidelines than CD. Despite the high proportion of positive answers regarding the access to Covid-19 prevention and control guidelines (97.3%), having received instructions about protection and biosafety measures in the workplace (84.7%) and feeling properly informed and confident to work in the dental clinic (74.8%), most of the interviewees (79.4%) felt anxious or worried for some time during the first pandemic wave in the state of Paraná (Table 1).

Table 1 – Proportional distribution of sample characteristics according to professional categories. Dental surgeons, Oral Health Technicians and Assistants working in Primary Health Care in Paraná, August-October, 2020

	n (%)			
	CD n=348	TSB/ASB n=164	Total n=512	p-value[a]
Gender				<0.001
Female	273 (78.4)	152 (92.7)	425 (83.0)	
Male	75 (21.6)	12 (7.3)	87 (17.0)	
Age*				0.268
Up to 39 years old	177 (50.9)	92 (56.1)	269 (52.5)	
40 years old or over	171 (49.1)	72 (43.9)	243 (47.5)	
Risk conditions for severe Covid-19				0.015
No	313 (89.9)	135 (82.3)	448 (87.5)	
Yes	35 (10.1)	29 (17.7)	64 (12.5)	
Interruption of work in the dental clinic during the pandemic				0.490
No	169 (48.6)	85 (51.8)	254 (49.6)	
Yes	179 (51.4)	79 (48.2)	258 (50.4)	
Submitted to Sars-CoV-2 test				0.068
No	135 (38.8)	85 (51.8)	185 (36.1)	
Yes	213 (61.2)	79 (48.2)	327(63.9)	
Had access to Covid-19 prevention and control official guidelines (from governmental agencies or professional council)				0.001
Yes	344 (98.9)	154 (93.9)	498 (97.3)	
No	4 (1.1)	10 (6.1)	14 (2.7)	
Was instructed in the workplace regarding the measures to be taken during the Covid-19 pandemic [1]				0.778
Yes	295 (85.0)	137 (84.0)	432 (84.7)	
No	52 (15.0)	26 (16.0)	78 (15.3)	
Felt informed and confident to work safely in the dental practice during the Covid-19 pandemic [2]				0.676
Yes	253 (74.1)	123 (76.0)	376 (74.8)	
No	88 (25.8)	39 (24.0)	127 (25.2)	
Felt anxious and worried about working safely in the dental practice during the Covid-19 pandemic [3]				0.206
Yes	267 (77.9)	134 (82.7)	401 (79.4)	
No	76 (22.1)	28 (17.3)	104 (20.6)	

[a] Chi-square test for differences between professional categories (p<0.05).

* Categorized by the median.

CD – Dental surgeon; TSB/ASB – Oral Health Technician and Oral Health Assistant; 2019 Coronavirus illness – Covid-19; Sars-CoV-2 - Coronavirus 2 Severe Acute Respiratory Syndrome.

[1] 2 answers 'I don't know' (1 CD and 1 TSB/ASB) were considered missing; [2] 9 answers 'I don't know' (7 CD and 2 TSB/ASB) were considered missing; [3] 7 answers 'I don't know' (5 CD and 2 TSB/ASB) were considered missing.

Source: Research Data.

Half of the professionals answered that they had "never" taken part in decision making regarding changes in the workplace during the pandemic, regardless of the professional category. Elective procedures were totally suspended during the pandemic first wave in their workplace for 67.0% of the participants. For 61.5%, the definition of urgency was 'always' based on pre-set clinical protocols (Table 2). High adherence to preventive measures of investigating symptoms of respiratory infection when scheduling appointments and keeping social distancing in waiting rooms were observed. However, high percentage of the professionals informed that they 'never' used digital tools for teleguidance or telemonitoring (Table 2). When comparing professional categories, oral health technicians and assistants shower higher adhesion to the norms introduced than dental surgeons (Table 3).

As regards biosafety measures in the dental clinic, aerosol-generating procedures were 'always' or 'almost always' avoided by most of the respondents (Table 2), with similar answers from CD and TSB/ASB (Table 3).

Table 2 – Sample distribution regarding the adoption of Covid-19 dissemination prevention and control measures in the dental clinic. Dental surgeons, Oral health technicians and assistants working in Primary Health Care in Paraná, August-October, 2020 (n = 512)

During the pandemic, at the workplace:	Always (score 5)	Almost always (score 4)	Sometimes (score 3)	Hardly ever (score 2)	Never (score 1)	I don't know
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Work process organization						
Elective procedures were suspended, appointments were restricted to urgency/ emergency.	343 (67.0)	141(27.5)	19 (3.7)	3 (0.6)	4 (0.8)	2 (0.4)
Took part in decision making about changes in the workplace during the pandemic.	83 (16.2)	48 (9.4)	69 (13.5)	53 (10.4)	256 (50.0)	3 (0.6)
Symptoms of respiratory infection were investigated when scheduling appointments.	330 (64.5)	85 (16.6)	46 (9.0)	21 (4.1)	20 (3.9)	10 (2.0)
The distance of 1 meter was kept between each person in the waiting room.	284 (55.5)	128 (25.0)	49 (9.6)	32 (6.3)	12 (2.3)	7 (1.4)
The definition of urgency was based on clinical protocols.	315 (61.5)	115 (22.5)	39(7.6)	18 (3.5)	15 (2.9)	10 (2.0)
Digital tools were used for teleguidance or telemonitoring.	81 (15.8)	34 (6.6)	62 (12.1)	59 (11.5)	251 (49.0)	25 (4.9)
Biosafety at the dental clinic						
Cleaning/ disinfection of rooms was carried out by trained professionals using proper PPE.	227 (44.3)	81 (15.8)	52 (10.2)	53 (10.4)	92 (18.0)	7 (1.4)
Cleaning/ disinfection of suction hoses occurred after each appointment.	213 (41.6)	69 (13.5)	56 (10.9)	60 (11.7)	91 (17.8)	23 (4.5)
Sterile handpieces were used in each appointment.	180 (35.2)	44 (8.6)	40 (7.8)	53 (10.4)	187 (36.4)	8 (1.6)
Aerosol-generating procedures were avoided.	172 (33.2)	173 (33.8)	84 (16.4)	45 (8.8)	32 (4.3)	6 (1.2)

Doffing was carried out following the recommended sequence.	270 (52.7)	103 (20.1)	56 (10.9)	22 (4.3)	55 (10.7)	6 (1.2)
N95/PFF2 masks were available, in sufficient numbers.	284 (55.5)	87 (17.0)	71 (13.9)	32 (6.3)	32 (6.3)	6 (1.2)
Waterproof aprons were available, in sufficient numbers.	232 (45.3)	60 (11.7)	57 (11.1)	36 (7.0)	118 (23.0)	9 (1.8)

PPE – Personal Protection Equipment. N95 mask: Mask with 95% particle filtering. PFF2 mask: Class 2 filtering facial piece.

Source: Research data.

Cleaning and disinfection of rooms and suction hoses, doffing according to the recommended sequence of biosafety protocols were always carried out, as well N95/PFF2 masks or equivalent were always available for at least half of the participants (Table 2). The least available PPE was the waterproof apron, and the procedure with the least adhesion was sterilization of pens and handpieces after appointments, while 36.4% of professionals affirmed it was 'never' carried out (Table 2). Except for the availability of waterproof aprons, oral health technicians and assistants shower greater adherence to the procedures and practices than dental surgeons (Table 3).

Table 3 – Adoption of Covid-19 dissemination prevention and control measures at the dental clinic. Comparison according to professional categories. Dental surgeons, oral health technicians and assistants, working in Primary Health Care in the state of Paraná, August – October, 2020

During the pandemic, in the workplace:	**CD n=348**		**TSB/ASB n=164**		**p-value****
	M_e (sd)*	**M_d (IQR)***	**M_e (sd)***	**M_d (IQR)***	
Work process organization					
Elective procedures were suspended, appointments were restricted to urgency/emergency care.	4.6 (0.7)	5 (1)	4.6 (0.7)	5 (1)	0.390
Took part in decision making about changes in the workplace during the pandemic.	2.3 (1.5)	2 (3)	2.3 (1.6)	1 (3)	0.716
Respiratory infection symptoms were investigated when scheduling appointments.	4.3 (1.1)	5 (1)	4.5 (1.0)	5 (0)	0.002
The distance of 1 meter was kept between each person in the waiting room.	4.1 (1.2)	4 (1)	4.4 (1.0)	5 (1)	<0.001
The definition of urgency was based on clinical protocols.	4.3 (1.0)	5 (1)	4.5 (0.9)	5 (1)	0.019
Digital tools were used for teleguidance or telemonitoring.	2.1 (1.4)	1 (2)	2.5 (1.7)	2 (4)	0.016
Biosafety in the dental clinic					
Cleaning/ disinfection of rooms carried out by trained professionals using proper PPE.	3.5 (1.5)	4 (3)	3.8 (1.6)	5 (3)	0.002
Cleaning/ disinfection of suction hoses occurred after each appointment.	3.2 (1.6)	4 (3)	4.1 (1.3)	5 (2)	<0.001
Sterile handpieces were used in each appointment.	2.8 (1.7)	2 (4)	3.3 (1.7)	4 (4)	<0.001
Aerosol-generating procedures were avoided.	3.8 (1.1)	4 (2)	3.7 (1.3)	4 (2)	0.836
Doffing was carried out following the recommended sequence.	3.8 (1.4)	4 (2)	4.4 (1.2)	5 (1)	<0.001
N95/PFF2 masks were available, in sufficient numbers.	4.1 (1.2)	5 (2)	4.3 (1.1)	5 (1)	0.003
Waterproof aprons were available, in sufficient numbers.	3.5 (1.6)	4 (3)	3.7 (1.6)	5 (3)	0.266

M_e (sd) – mean (standard deviation); M_d (IQR) – median (interquartile interval);
CD – Dental Surgeon; TSB/ASB – Oral Health Technician and Oral Health Assistant. PPE – Personal Protection Equipment. N95 mask: Mask with 95% particle filtering. PFF2 mask: Class 2 filtering facial piece.
* Excluding answers 'I don't know';
** Mann-Whitney U test for independent samples (p<0.05).

Source: Research data.

In the adjusted analysis of individual characteristics of the sample, oral health technicians and assistants, and the professionals that presented risk conditions for severe Covid-19, were seen to be more anxious and worried during the appointments (Table 4A). Regarding the work process organization, professionals working in places where the patients were not questioned about possible Covid-19 symptoms when scheduling an appointment and in places where the distance of 1 meter between individuals in waiting rooms was not observed reported being more anxious and/or worried (Table 4B). As for the biosafety issues, professionals that "never" or "almost never" followed the NT 04/2020 doffing recommendation were seen to be more anxious and worried than those who "always" or "almost always" followed the sequence suggested (Table 4C).

Table 4 – Bivariate and multivariate Poison regression analysis for self-perceived anxiety and worry about working in the dental clinic during the Covid-19 pandemic. Dental Surgeons, Oral Health Technicians and Oral Health Assistants working in Primary Health care in the state of Paraná, August – October, 2020 (n = 512)

	Felt anxious and worried*		RP_{br} (IC95%)	p-value	RP_{aj} (CI95%)	p-value
	N	%				
4A. Individual characteristics						
Gender						
Male	63	73.3	1.0		---	
Female	338	80.7	1.10 (0.96 – 1.26)	0.165		
Age**						
40 years old or over	184	77.3	1.0		---	
Up to 39 years old	217	81.3	1.05 (0.96 – 1.15)	0.275		
Professional category						
Dental surgeon	267	77.8	1.0		1.0	
Oral Health Assistant/Technician	134	82.7	1.06 (0.97 – 1.16)	0.188	1.10 (1.00 – 1.20)	0.048
Risk conditions for severe Covid-19						
No	347	78.0	1.0		1.0	
Yes	54	90.0	1.15 (1.05 – 1.27)	0.004	1.12 (1.00 – 1.25)	0.052
Work in the clinic interrupted during the pandemic						
No	191	76.1	1.0		---	
Yes	210	82.7	1.09 (0.99 – 1.19)	0.069		
Was submitted to the Sars-CoV-2 test						
No	142	78.0	1.0		---	
Yes	259	80.2	1.03 (0.93 – 1.13)	0.570		
Had access to Covid-19 prevention and control official guidelines (from governmental agencies or professional councils)						
Yes	389	79.2	1.0		---	
No	12	85.7	1.11 (0.91 – 1.34)	0.303		

Was instructed in the workplace regarding the measures to be taken during the Covid-19 pandemic						
Yes	336	78.7	1.0		---	
No	65	83.3	1.06 (0.95 – 1.08)	0.311		
Felt informed and confident to work safely in the dental practice during the Covid-19 pandemic						
Yes	291	78,0	1,0		---	
No	105	82,7	1,06 (0,96 – 1,17)	0,237		

	Felt anxious and worried*		RP_{br} (IC95%)	p-value	RP_{aj} (IC95%)	p-value
	n	%				
4B. Work process organization						
Elective procedures were suspended, appointments were restricted to urgency/ emergency care.						
Always/ almost always	380	79.7	1.0		---	
Sometimes	15	78.9	0.99 (0.78 – 1.25)	0.990		
Never/ almost never	4	57.1	0.72 (0.38 – 1.36)	0.312		
Took part in decision making about changes in the workplace during the pandemic						
Always/ almost always	96	74.4	1.0		---	
Sometimes	53	79.1	1.06 (0.91 – 1.25)	0.453		
Never/ almost never	249	81.4	1.09 (0.97 – 1.23)	0.127		
Respiratory Syndrome symptoms were investigated when scheduling appointments						
Always/ almost always	316	77.1	1.0		1.0	
Sometimes	40	88.9	1.15 (1.03 – 1.29)	0.016	1.15 (1.03 – 1.28)	0.016
Never/ almost never	38	92.7	1.20 (1.09 – 1.33)	<0.001	1.13 (1.00– 1.26)	0.044
The distance of 1 meter was kept between each person in the waiting room.						
Always/ almost always	311	76.6	1.0		1.0	
Sometimes	44	89.8	1.17 (1.05 – 1.31)	0.004	1.16 (1.05 – 1.29)	0.003
Never/ almost never	40	90.9	1.19 (1.06 – 1.31)	0.002	1.14 (1.01 – 1.28)	0.028
The definition of urgency was based on clinical protocols.						
Always/ almost always	336	79.1	1.0		---	
Sometimes	32	84.2	1.06 (0.92 – 1.23)	0.398		

Never/ almost never	24	72.7	0.92 (0.74 – 1.14)	0.446		
Digital tools were used for teleguidance or telemonitoring						
Always/ almost always	89	78.8	1.0		---	
Sometimes	50	82.0	1.04 (0.89 – 1.21)	0.607		
Never/ almost never	241	78.5	1.00 (0.89 – 1.11)	0.954		

	Felt anxious and worried*		RP_{br} (IC95%)	p-value	RP_{aj} (IC95%)	p-value
	N	%				
4C. Biosafety in the dental clinic						
Cleaning/ disinfection of rooms carried out by trained professionals using proper PPE.						
Always/ almost always	235	78.1	1.0		---	
Sometimes	40	76.9	0.98 (0.84 – 1.16)	0.847		
Never/ almost never	121	83.4	1.07 (0.97 – 1.17)	0.171		
Cleaning/ disinfection of suction hoses occurred after each appointment.						
Always/ almost always	216	77.4	1.0		---	
Sometimes	43	79.6	1.03 (0.88 – 1.19)	0.712		
Never/ almost never	126	84.0	1.08 (0.99 – 1.19)	0.090		
Sterile handpieces were used in each appointment.						
Always/ almost always	175	79.5	1.0		---	
Sometimes	33	84.6	1.06 (0.92 – 1.24)	0.419		
Never/ almost never	186	77.8	0.98 (0.89 – 1.08)	0.653		
Aerosol-generating procedures were avoided.						
Always/ almost always	273	80.1	1.0		---	
Sometimes	66	80.5	1.00 (0.89 – 1.13)	0.930		
Never/ almost never	57	74.0	0.92 (0.80 – 1.07)	0.282		
Doffing was carried out following the recommended sequence						
Always/ almost always	285	77.2	1.0		1.0	
Sometimes	44	80.0	1.04 (0.90 – 1.19)	0.631	1.02 (0.88 – 1.17)	0.808
Never/ almost never	69	89.6	1.16 (1.06 – 1.27)	0.002	1.11 (1.00 – 1.23)	0.051
N95/PFF2 masks were available, in sufficient numbers						
Always/ almost always	286	78.1	1.0		---	

Sometimes	58	81.7	1.04 (0.92 – 1.18)	0.479	
Never/ almost never	53	84.1	1.08 (0.95 – 1.21)	0.229	
Waterproof aprons were available, in sufficient numbers					
Always/ almost always	222	77.1	1.0		---
Sometimes	49	86.0	1.11 (1.00 – 1.26)	0.081	
Never/ almost never	123	80.9	1.05 (0.95 – 1.16)	0.340	

RP_{br} – Crude prevalence ratio. RP_{aj} – Adjusted prevalence ratio. CI95% - 95% confidence interval. CD – Dental Surgeon; TSB/ASB – Oral Health Technician and Oral Health Assistant. PPE – Personal Protection Equipment. 2019 Coronavirus illness – Covid-19; SARS-CoV-2 – Coronavirus 2 Acute Severe Respiratory Syndrome. N95 mask: Mask with 95% particle filtering. PFF2 mask: Class 2 filtering facial piece.

* Yes = I fully agree, partially agree; ** Categorized by the median;

Source: Research data.

DISCUSSION

This study showed that most oral health professionals working in APS had access to biosafety norms and instructions regarding the measures to be taken and feel informed and safe to work. However, they also presented high prevalence of self-perceived anxiety and worry during the Covid-19 pandemic, mainly among technicians (ASB and TSB) when compared to dental surgeons. Due to the impossibility of comparing it with other studies focusing on dentistry professionals at the technical level, the results of this research are close to the CD's reality as reported in other studies developed with dental surgeons in Brazil and worldwide, which revealed that those professionals fear to get infected, to infect the health service users, co-workers and/or family members[18,19].

The results of this study must be interpreted in the Covid-19 context and phase, since there were several phases in the epidemic curve. The results presented express data referring to a specific moment and might not represent the current reality of facts. When the research data was collected, from August to October 2020, Brazil was experiencing decrease in the number of new cases and deaths from the first wave of the Covid-19 pandemic; however, still without any positive news about vaccines available for the population.

It is worth noting that the stressful routine of health services, with work overload and occupational risks inherent in the work process of oral health teams are known[20]. They usually result from the impact of austere policies experienced in APS in the last few years in Brazil, such as the approval of the Constitutional Amendment number 95, with the maintenance of the funding ceiling for health, and the new National Primary Care Policy (PNAB, Brazilian acronym for Política Nacional de Atenção Básica), which provides flexibility to municipalities to open up the possibility of organizing the local health system without implementing basic dental care[21]. This has impacted the composition and number of eSB, alongside changes in people's life and work conditions which have increased the demand for public dentistry services. The pandemic situation and its development worldwide, since its announcement by the World Health Organization in March 2020 has worsened its signals and symptoms, such as anxiety and worry[18,19].

Therefore, eSB was already inserted into a weakened work environment, with sudden work changes, resulting from the pandemic and contributing to the high prevalence of anxiety and worry, as shown in the results of this research. Due to the changes provoked by the Covid-19, which resulted in recommendations by municipalities, states and the Ministry of Health, the eSB have played new roles inside the APS health teams[21]. The state of Paraná Health Secretariat sent an instruction to all

regional health offices in the state to include oral health teams in fast-track actions to identify and evaluate symptomatic patients[6]. Thus, dental surgeons had to perform Reverse Transcription Followed by Polymerase Chain Reaction tests (RT-PCR)[6,21].

One of the main factors related to changes in mental health during the pandemic derived from great changes introduced in the health professionals' routine[19]. As verified in this study, the most anxious and worried professionals were those with technical qualification, with some risk condition for severe Covid-19, and in services where some of the biosafety measures were not followed. Therefore, public health services need to be better prepared to meet the new requirements of their human resources, with permanent psychological support to their professionals. Moreover, the need for efforts to consolidate and reinforce the importance of biosafety measures in the whole dentistry work process, with the purpose of protecting and keeping oral health teams safe in their workplace and protecting their patients.

The demographic characterization showed greater participation of women. This might be explained by the process of femininization of health workers, mainly in oral health[22] and greater adhesion of women in Brazilian virtual research in the pandemic period[23]. The participation of adult professionals over 39 years old in the study revealed that even if this was an online study, it was possible to have a high response rate from health professionals via council email or in lives streaming, thus reinforcing that the recruitment strategies employed in the research were suitable to reach a large age group in the target population.

The distribution into professional categories, with greater participation of dental surgeons, followed by oral health assistants and technicians, matched the proportionality of professionals enrolled with the Regional Dentistry Council (CRO) of Paraná[17]. Although most studies addressing biosafety in Dentistry only include dental surgeons[23,24], this study was different for including all professionals working in the eSB at the APS level, as the only study of reduced sample size in Brazil[25]. This is justified since they are all in contact with the service users and with aerosol-generating procedures in the dental clinic[26].

Anxiety and worry were more prevalent among oral health professionals at the technical level. This finding provoked some reflection on the attributions of TSB/ASB, since these professionals' work involves cleaning, asepsis, disinfection, and sterilization of instruments and the maintenance of dental equipment and the workplace[27]. This means that they are exposed before, during and after the dental appointment. This result shows the need for public managers to create workers' health policies considering that dentistry professionals at the technical level are exposed to higher risk of respiratory diseases, not only inside, but also outside the workplace. These professionals were also vulnerable due to the means of transportation used to go to work[25] and the type of social vulnerabilities they are exposed to. Besides considering the impact of higher biological risk according to the different work processes in different professional categories in dentistry[5], different impacts on mental health must also be considered.

As a complementary finding, in this study, there was a higher proportion of TSB/ASB reporting some risk condition for severe Covid-19. In addition, being at higher risk was associated with the presence of anxiety and worry. Individuals affected by comorbidities such as hypertension, diabetes, cardiac and respiratory diseases, obesity and kidney illnesses show greater potential to develop more severe types of the disease[28]. Therefore, we raise the hypothesis that self-perception of greater work exposure and greater prevalence of risk condition for severe Covid-19 might increase feelings of worry and anxiety related to the work routine among professionals at the technical level.

Those risk and safety markers might also justify the fact that TSB/ASB reported adopting Covid-19 dissemination prevention and control inside the dental clinic much more frequently than dental surgeons, as observed in this study. Greater concern with biosafety for the users and the

clinical environment might result from the recognition of a professional category in greater risk[25]. This reinforces the fundamental role of technicians and assistants in oral health teams, who contribute to a more efficient and biosafe work process.

This study found higher prevalence of anxiety and worry about providing dental care among professionals working in environments where some of the biosafety procedures were not followed. This scenario includes measures taken before the appointment such as not asking patients about respiratory symptoms when scheduling an appointment and lack of adhesion to the minimum distance between patients in the waiting room, as well as measures during and after the appointment such as doffing following the recommended sequence. Considering the Covid-19 illness, adopting and following properly the set of biosafety norms was fundamental to prevent and control its dissemination in health services[3].

Lack of adherence to the biosafety norms might be partly justified by the lack of information about how to do it safely[29]. However, most professionals reported having access to the biosafety norms, having been instructed at the workplace and feeling safe to work during the pandemic. However, despite the continuous education and guidance through institutions or online courses mentioned by the participants, which could foster theoretical learning during the time of restriction of physical contact[25,29], it seems to have had lower impact on practical behavior changes[30].

In addition, the lack of adherence to biosafety norms, mainly in the public service, might reveal more complex aspects such as the organizational factors involved in the process. In this study, great part of the oral health professionals answered that they “almost never” or “never” took part in decision making about the changes in the workplace during the pandemic. The decisions made by managers, without the participation of other agents involved such as these professionals, might reduce their understanding or adhesion as well as create feelings of tension at the workplace[31], thus hampering the understanding between managers and professionals. Therefore, managers should rethink the logic of decision making in a more participant way, aiming to listen to others, decide and manage the health work.

Other factors that might influence lack of adherence to biosafety measures and/or failure in execution include the access and quality of inputs made available[29]. Before the pandemic, biosafety in dental clinic focused on some PPE such as procedure gloves, disposable surgical masks, cap and protection goggles[20]. However, during the pandemic, items considered of low use started to be mandatory, as for example waterproof aprons and masks with 95% particle filtering (N95)/ Class 2 Filtering Facial Piece (PFF2) or similar. However, due to the limited production capacity and high consumption of PPE in health services, there was an increase in costs and lack of such materials in the domestic and international markets of routine PPE and the new equipment required[32]. This study found, for example, greater access to routine PPE when compared to the new items, which was also verified in the study developed in the APS in São Paulo[25].

When analyzing the results of this study, we must consider its limitations, among those is the cross-sectional design of the study, since the results obtained allow the confirmation of hypotheses related to the associated factors, but lack the power of causal inference. Furthermore, we must consider the bias of participation inherent in web survey research with online questionnaires, which also characterizes convenience samples. To broaden its scope and minimize possible bias, we employed several strategies to reach the target audience, for example, sending the questionnaire using the professionals’ email registered at the CRO on three different occasions during the research and the dissemination via social networks (Instagram®, Facebook® and Whatsapp®) and lives streaming during the data collection period. Therefore, we reinforce that the sample reached proportionality among the participants regarding professional categories, age groups, and gender[17].

CONCLUSION

Most professionals in oral health teams at the technical and higher level working in Primary Health Care reported to be feel anxious and/or worried about providing dental care during the first year of the Covid-19 pandemic.

The highest self-perceived anxiety and worry among oral health professionals working in APS was associated with individual factors such as professional category and health conditions. This means that Oral Health Technicians and Assistants and those presenting risk conditions for severe Covid-19 felt it more strongly. Organizational factors related to the work process such as working in places where patients were not asked about respiratory symptoms before the appointment, where the minimum distance between individuals in the waiting room was not observed or the recommended doffing sequence was not followed also affected those professionals self-perception of anxiety and worry.

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