



Perspectives of Mexican women dentists on COVID-19: emotional impact

Perspectivas de odontólogas mexicanas sobre el COVID-19: impacto emocional

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Abstract

Introduction: The COVID-19 pandemic has been an unprecedented challenge for health services worldwide. The role of women dentists during the pandemic has received scant attention in Mexico. **Objective:** To identify the emotional impact of the COVID-19 pandemic on female dentists practicing in Mexico City, during the first wave of the pandemic. **Methodology:** Participants in the study group were selected from a list of attendees at a dental scientific conference held in the previous year. Study participants were recruited during the first wave of the pandemic. An online questionnaire was used to obtain information on the emotional impact of COVID-19 pandemic. **Results:** The number of participating female dentists was 172. 79.9% have taken extra precautions to avoid transmission at home. About half of the respondents thought that the cost of treatment was going to increase due to the pandemic; 72.13% experienced an emotionally negative impact of COVID-19 pandemic. Based on the regression model constructed, emotional response (depression, anxiety and emotional instability) to COVID-19 was associated with age (OR = 2.34, $p = 0.013$) and treatment cost perception (OR = 2.30 $p = 0.025$). **Conclusions:** Women dentists experience a negative emotional response to COVID-19 pandemic. Younger age and concern about treatment costs were associated with emotional impact. There is a need to provide mental support with a gender perspective to women dentist.

Key words: COVID-19, SARS-CoV-2, women, dentists, mental health.

Resumen

Introducción: la pandemia de COVID-19 ha sido un desafío sin precedentes para los servicios de salud en todo el mundo. El papel de las mujeres dentistas durante la pandemia ha recibido poca atención en México. **Objetivo:** identificar el impacto emocional de la pandemia de COVID-19 en las mujeres odontólogas que ejercen en la Ciudad de México, durante la primera ola de la pandemia. **Metodología:** las participantes fueron seleccionados de una lista de asistentes a un congreso dental celebrado el año anterior. Las participantes del estudio fueron reclutadas durante la primera ola de la pandemia. Se utilizó un cuestionario en línea para obtener información sobre el impacto emocional del COVID-19. **Resultados:** participaron 172 mujeres, de las cuales 79.9% tomó precauciones adicionales para evitar la transmisión del SARS-CoV-2 en el hogar. Aproximadamente, la mitad de las encuestadas pensó que el costo del tratamiento iba a aumentar debido a la pandemia; 72.13% experimentó un impacto negativo a nivel emocional del COVID-19. Con base en el modelo de regresión construido, la respuesta emocional (depresión, ansiedad e inestabilidad emocional) al COVID-19 se asoció a la edad (OR = 2.34, $p = 0.013$) y al costo del tratamiento (OR = 2.30 $p = 0.025$). **Conclusiones:** una elevada proporción de las dentistas experimentaron una respuesta emocional negativa al COVID-19. Menor edad y preocupación por los costos de tratamiento se asociaron con el impacto emocional. Existe la necesidad de diseñar estrategias para brindar apoyo psicológico con perspectiva de género a las odontólogas.

Palabras clave: COVID-19, SARS-CoV-2, mujeres, dentistas, salud mental.

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INTRODUCTION

On January 30, 2020, the World Health Organization (WHO) considered that the SARS-CoV-2 outbreak had become a public health emergency of international concern.¹ During the last three years, unprecedented clinical, psychological, and emotional damage has been experienced by people with this disease and their families. In addition, it has witnessed the collapse of the health system and the slowdown in the economy.

SARS-CoV-2 is highly virulent and pathogenic with an incubation period of two to fourteen days. It belongs to the genus *Coronavirus* and has a high-rate characteristic mutation of the *Coronaviridae*. The period where the highest viral load is observed is possibly at the onset of symptoms.² SARS-CoV-2 is transmitted by breathing infected droplets or by contact with objects that have retained infected droplets,³ and saliva.⁴

There are at least three different pathways causing the presence of SARS-CoV-2 in oral fluids: i) SARS-CoV-2 lodges in the lower and upper respiratory tract due to the exchange of fluids in this region with the oral cavity; ii) SARS-CoV-2 in blood entering the mouth through crevicular fluid; and iii) SARS-CoV-2 infection of the major and minor salivary glands with subsequent release of particles into the saliva through the salivary ducts.⁴

Dental practices throughout the world have been severely affected by the pandemic. Dentists are health professionals who are likely to be infected with SARS-CoV-2 at work.⁵ High-speed equipment leads to a substantial quantity of oral fluids being spread; professional protective equipment (PPE) is thus required to prevent the spread of viruses. Dentists perceive a high risk of infection associated with treating COVID-19 patients.⁶ They must use PPE and take extra care to reduce the spread of saliva and aerosols while treating patients.

A systematic review manifested the high level of concern of dentist in several countries related with the pandemic.⁷ The COVID-19 emotional impact among dentists in Northern Italy indicated a high level of anxiety and fear. Dental offices in the first trimester of 2020 were mostly closed or had a significant reduction in patients.⁸ Additionally, dentists and dental hygienists in Israel identified high levels of psychological distress that were associated with subjective overload and low self-efficacy.⁹

A multinational study of dentists in eleven Latin American countries, including Mexico, identified a high emotional impact of COVID-19; most of the participants experienced distressing feelings about the pandemic such as fear, worry, stress, and anxiety. Interestingly, female dentists had more negative feelings about the pandemic than men. This suggests that women may be particularly vulnerable to the psychological effects of the pandemic and require extra emotional support during these difficult times.¹⁰

Women are subjected to a double workload, as they are expected to take on the traditional role of caregiver and homemaker, while also entering the workforce and taking on the responsibilities of a breadwinner. A systematic literature review revealed that women experienced work-family conflicts more frequently than men.¹¹ Maintaining the health of a family requires the participation of women. They also, have a responsibility to create an environment of respect and support for their family members.

There is scant information on the impact of the COVID-19 pandemic on women dentists in Mexico. Data regarding the latter may contribute to developing policies supporting women in their double role, as dental service providers and taking care of their families. The objective of the study was to identify the emotional impact of the COVID-19 pandemic on female dentists practicing in Mexico City during the first wave of the pandemic. A deeper understanding of the difficulties female dentists face in Mexico will allow effective strategies to be developed to address the challenges posed by epidemics.

MATERIAL AND METHODS

Study group. The group was selected from a list of dentists attending a congress organized by a public university in Mexico City, which took place in February 2019. The number of female dentists on this list was 205 and all of them were dentistry graduates or some had a postgraduate degree. On May 2020, by email, each dentist was invited to answer a survey related to the impact of COVID-19 on their dental practice and their emotional stability. Respondents answered the questionnaire during the first COVID-19 wave in Mexico.¹² The study protocol was approved by the Ethics Committee for Research of the Division of Biological Science and Health, Metropolitan Autonomous University (UAM-Xochimilco), (CEI.2020.012).

The dentists asked structured questions through Google's questionnaire app. It was clearly stated at the beginning of the survey that participation would imply consent upon completion and return of the form. The participants were assured that the data provided by them was strictly confidential and was only intended to be used for research purposes. The questionnaire platform is designed to protect participants' privacy by ensuring that the data was encrypted and stored securely. Also, the survey was conceived to ensure that all the questions were answered in a consistent manner so that the data collected would be accurate and reliable.

In the questionnaire respondents were asked about their experience with the COVID-19 pandemic, including whether they believed the cost of treating dental patients would increase because of the pandemic, whether infection control measures were implemented at home, and whether they had experienced emotional consequences

such as depression, anxiety, or instability. The responses were rated on a Likert scale of five levels, ranging from strongly agree to strongly disagree. Further, sociodemographic information was collected. Items on the survey were selected based on previous COVID-19 surveys of dental professionals.^{13,14}

The study questions were translated to Spanish and back translated to English to ensure consistency; additionally, a focus group of dentists discussed each item to develop face validity of the questionnaire. Sample size was calculated for the measure of association (OR) using $\alpha = 0.05$ and a power = 0.80. The prevalence of having emotional impact in the group perceiving increased in treatment cost was 0.75 and those not perceiving an increased was 0.50.¹⁵ The sample size was calculated as 160 participants. From July 10 to 15, 2020, an email containing a link to the questionnaire was sent out. The number of completed questionnaires received was 173. The response rate was 84.4%. One questionnaire was excluded because the dentist had retired, thus data from 172 female dentists were analyzed.

Statistical analysis. Data were described using mean and standard deviation (SD) for continuous variables and frequencies were calculated for categorical variables. The Pearson χ^2 test was applied for comparing categorical variables, and t-Student for continuous variables. The emotional impact perception of female dentists participating in the study was categorized into those with medium to high impact compared with those with low or no impact. A multiple logistic regression model was fitted for this variable. Moreover, variables with p-values less than 0.20 in the bivariate analysis were included in the multiple logistic regression model. The level of statistical significance was set at $\alpha = 0.05$. The statistical analysis was performed using STATA-16 (Stata Corporation, College Station, Texas, USA).

RESULTS

A total of 172 women dentists participated in the study. The mean age was 41.0 (SD 12.2). More than two thirds of the participants worked in general practice (70.5%) and 29.5% had a specialist practice. **Table 1** presents the responses to the questions regarding the COVID-19 pandemic. Most participants (90.12%) indicated that they used personal protection equipment when treating patients in their dental offices. Most women dentists (79.07%) reported that they had taken additional precautions at home to prevent the transmission of the SARS-CoV-2. However, 6.97% stated that the idea of taking extra precautions at home is one they disagree with or strongly disagree with.

More than half (54.07%) of women dentists believe that the cost of patient treatment will increase due to

the pandemic, and 11.63% do not agree with this point. According to the survey responses, 39.55% of women dentists reported that the COVID-19 pandemic had a high emotional impact, 29.07% were undecided and approximately one third (31.39%) did not experience an emotional impact (disagree or strongly disagree) of the pandemic (**table 1**).

An association between emotional response and age was observed. **Figure 1** depicts the distribution of women dentist according to their level of emotional impact perceived because of the pandemic. The mean age of those who strongly agree was 38.62 years (SD 4.0) and 46.27 years (SD 3.1) for those who strongly disagree ($p = 0.034$). **Table 2** presents the results of the logistic regression model for emotional impact. Women dentists who thought the cost of treating patients increased were more likely (OR = 2.30 $p = 0.025$) to suffer an emotional impact. Furthermore, age was significant in the model (OR = 2.34, $p = 0.013$). Young and middle-aged women dentists were more likely to agree or strongly agree that the presence of the pandemic had an emotional impact on them. Taking additional precautions at home ($p = 0.152$) and having personal protective equipment (PPE) available ($p = 0.528$) were not significant in the model.

DISCUSSION

In the present study, around 70% of the female dentists felt emotionally affected by COVID-19. The type of emotional impact reported was significant and related to depression symptoms, anxiety and psychological instability. A systematic review of the literature revealed that dentist experience a high prevalence of fear and anxiety because of COVID-19.¹⁶ In addition, a large meta-analysis using data from more than 200 countries identified that the pandemic has increased the prevalence of depression and anxiety. Major depressive disorder caused 49.4 million disability-adjusted life years (DALYs) and anxiety disorders caused 44.5 million DALYs globally in 2020. Moreover, major depressive disorder was more frequent in women than in men.¹⁷

Dentists, like other healthcare workers, are at an increased risk of contracting SARS-CoV-2 due to their close contact with patients. For instance, in Italy, dentists were afraid to work in the dental office because they considered their job to be a high risk to their health, and transmitting the infection to their families was also a concern.¹⁸ According to a study of Turkish dentists, 84.1% of female dentists and 70.7% of male dentists answered affirmatively to the question Do you think that current COVID-19 events affect you spiritually?¹⁹

Among the Mexican women dentists surveyed, emotional distress was associated with age. Young women dentists were more affected than older practitioners; this

could be because are more likely to be in their first years of practice and may be overwhelmed by the demands of the profession. They may also be less experienced and have fewer coping mechanisms than their older counterparts. A multi-country study in Spanish speaking Latin American countries, identified that dentists who had relatively few years of experience found it difficult to balance their practice with household responsibilities.¹⁰ The pandemic affected every aspect of life. The Mexican women dentists studied were affected psychologically. It is essential that

the need for gender-sensitive mental health services is addressed, to ensure that both men and women have access to the care they need.

In this survey, 90.12% of the respondents indicated using PPE following Mexican regulations.²⁰ Also, they had to adjust their practice protocols to comply with the new regulations. Accordingly, a survey of Mexican dentists, conducted in June 2020, showed that most dentists (70 to 96%) wore the different components of PPE.²¹ Due to the way in which respiratory viral infections are transmitted,

Table 1. Responses from participating women dentists regarding the COVID-19 pandemic.

Items included in the questionnaire	n	(%)
Do you have the PPE ¹ required for treating patients in your dental office?		
Yes	155	(90.12)
No	17	(9.88)
Taken additional infection control measures at home		
Strongly agree	139	(79.07)
Agree	15	(8.72)
Undecided	9	(5.23)
Disagree	2	(1.16)
Strongly disagree	10	(5.81)
The cost patient's care increases due to COVID-19		
Strongly agree	93	(54.07)
Agree	32	(18.06)
Undecided	27	(15.70)
Disagree	7	(4.07)
Strongly disagree	13	(7.56)
Emotional impact due to COVID-19 (depression, anxiety and emotional instability)		
Strongly agree	39	(22.69)
Agree	29	(16.86)
Undecided	50	(29.07)
Disagree	23	(13.37)
Strongly disagree	31	(18.02)

¹PPE: personal protection equipment.

Table 2. The odds ratios of the logistic regression model for emotional impact on women dentists in the first Mexican outbreak of COVID-19.

	Crude OR (95% CI)	P	Adjusted OR (95% CI) ¹	P
Age (> 45 years) ²	2.44 (1.26-4.71)	0.008	2.34 (1.19-4.59)	0.013
Additional measures at home ³	0.56 (0.24-1.32)	0.186	0.52 (0.21-1.27)	0.152
Having required PPE ^{3,4}	1.22 (0.42-3.48)	0.187	1.43 (0.47-4.31)	0.528
Cost of treatment increases ³	2.52 (1.12-4.53)	0.023	2.30 (1.11-4.75)	0.025

¹ OR adjusted for all variables in the model.

² Reference category: ≤ 45 years-old.

³ Reference category: disagree or strongly disagree.

⁴ PPE: professional protection equipment.

dentists can play an active role in fighting epidemics caused by infectious diseases. Additionally, they have extensive training in infection control procedures.^{22,23}

Most of the participants have taken additional infection control measures at home. In several countries, dentists have expressed concern about the health of their families. In Turkey, more than 90% of dentists who participated in a large COVID-19 survey were concerned about themselves and their families.¹⁹ In addition, a sample of Spanish-speaking dentists, most of whom practiced in Mexico, reported that their families were concerned about them becoming infected at work.⁹

In the present study, approximately three quarters of the women dentists surveyed felt that COVID-19 would increase treatment costs. A study of German health providers showed that income from insurance and out-of-pocket expenses decreased by approximately 20% during the pandemic.²⁴ Also, Iranian dentists considered that their income decreased during the pandemic;²⁵ similarly, 90% of Brazilian dentists surveyed identified a decreased income associated with the COVID-19. They reported a high level of concern regarding the negative economic impact of the quarantine.²⁶ This suggests that COVID-19 had drastically reduced the financial stability of dental practices, with possibly serious consequences for both providers and patients. It is not surprising that Mexican dentist also experience economic difficulties and no significant financial help was available to mitigate the problem.

There may be several reasons causing dentists to experience financial difficulties, for example, increases in supplies costs, increases in operating costs, continuous payment of fixed expenses; in addition, the reduced demand for dental services may contribute to financial difficulties as well. The pandemic has also resulted in

an economic recession and high unemployment rates in many countries, which limit access to dental care.²⁷ Bastani *et al*,⁷ based on a systematic review, found four main areas of concern for dentists: ethical, social, professional and economic.

Several strategies have been adopted to address dentist concerns during COVID-19, including improving information regarding patient management and infection control practices, as well as utilizing the latest technologies to increase the knowledge of COVID-19 and virtual clinics addressing dental problems of patients.⁷ Some of these strategies may have been used by the women dentists in this study who were not severely affected by the pandemic. By providing adequate information, dentists could better understand the risks associated with treating patients and take appropriate steps to protect themselves. Additionally, virtual clinics have allowed dentists to provide advice to patients without having to be in close contact with them.

An association was observed between the perception of higher costs and experiencing more emotional impact of the pandemic. Consistently, concerns about the negative impact of the pandemic on income were present among dentists in Italy, more Italian female dentists than men dentists responded affirmatively to the question How worried are you about the consequence of income loss for you and/or your family because of lockdown?²⁸

Women carried a double burden, Biroli *et al*,²⁹ analyzed data from UK, Italy and US, households and it was found that men's collaboration inside the household was low, and it was associated with increased stress in the couple relationships. This discrepancy in workload caused tension in relationships and put a strain on women's mental health. Moreover, a study performed in Spain identified that women were more likely to lose their jobs than men during the pandemic, most of the burden in the household felt on the women; however, men have increased their participation at home and in taking care of children during the pandemic. Therefore, policies that favor men working at home may have a positive impact on reducing the gender gap.^{30,31}

Among the limitations of the study is that the sample was taken from dentists attending a dental conference in the year before the pandemic, so its representability is limited. However, we obtained a good response rate, suggesting adequate internal validity. Also, we collected information from dentists with different specialists and a variety of ages. The survey had a small number of questions and did not allow an in-depth exploration of the psychological response to COVID-19; nevertheless, longer surveys may result in a lower number of participants answering the questionnaire. Further studies are required regarding the long-term emotional effects of the COVID-19 among women in healthcare services. This could give insight into the most effective ways to improve the government and community's response to pandemics.

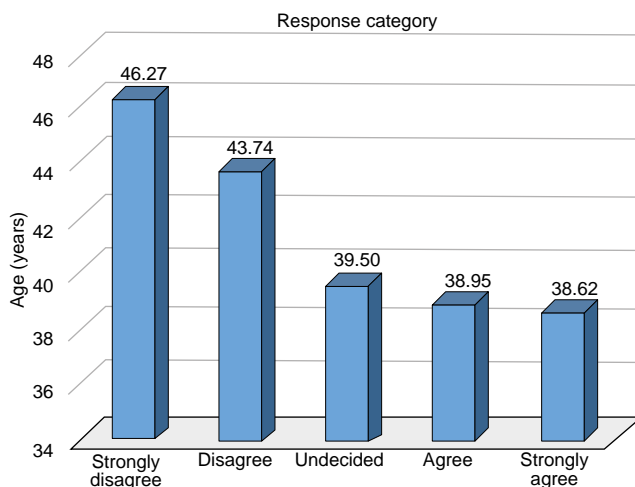


Figure 1. Response to COVID-19 emotional impact on women dentists (depressive symptoms, anxiety and emotional instability) and category mean age.

CONCLUSIONS

A large proportion of female dentists were mentally affected by the COVID-19, younger dentists were more frequently affected as well as those considering that the cost of treatment was increased due to the pandemic. Most women dentist had the PPE available, and they increased their infection control measures at home during the first wave of the pandemic. Mental health services should be improved and easily available during life challenges, thus guarantee the adequate function of the individual, the families, and the society in general during critical periods.

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