Peer-reviewed paper; submitted March 2022; accepted September 2023

Risk Perception of COVID-19 Infection in Dental Consultations among Users of the Public Health System of El Salvador 2021

Escobar de González WY, Aguirre de Rodríguez KA, Turcios-Bonilla JE, Santos-Anaya SM, Pérez-Siciliano AL, Pérez-Rodas EA, Rivas-Cartagena FJ

Abstract

Background and objectives: SARS-CoV-2 is the virus responsible for the respiratory disease COVID-19, which has caused fear of contagion in dental offices and in different public establishments worldwide. This study aimed to establish the level of perception of the risk of infection by COVID-19 in dental consultations in users of the public health system.

Methods: A survey was designed using a questionnaire made in Google Forms. A sample of 2,892 patients from the public health system in 2020 was obtained. The perception of risk of contagion in different public establishments was classified according to a Likert scale: (0) = no risk, (1) = low risk, (2) = medium risk and (3) = high risk. SPSS v. 26 was used to calculate frequencies, means, ANOVA, Student's t-test and multivariate analysis; 95% confidence level.

Results: 79.13% of the users of the public and private systems did not perceive a high risk of contagion in dental care. A higher probability of perceiving a high risk of contagion was found in women (OR = 1.29; p = 0.003); rural residents (OR = 1.44; p = 0.000) and healthy people (OR = 1.41; p = 0.002).

Conclusion: Respondents do not perceive dental clinics as places of high risk of contagion.

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus responsible for the disease COVID-19, which was first detected in Wuhan, Hubei province, China, and quickly became a global health problem (Cheng & Shan, 2020), causing the World Health Organization (WHO) to declared it a pandemic in March 2020 (World Health Organization, 2020). In El Salvador, during 2020, approximately 70,380 confirmed cases of COVID-19 were reported (Johns Hopkins University, 2021), similarly to other countries, and containment measures were put in place, such as home confinement and application of social distancing measures, which represented an excessively disproportionate economic and social cost worldwide (Shamsoddin et al., 2021).

Dentist-patient interaction requires a high degree of physical closeness due to the nature of dental treatment (Moffat et al., 2021), therefore there is a risk of transmission, despite the fact that disinfection controls and biosecurity measures are carried out in routine practice (Ather et al., 2020). The dental profession has been identified as high risk for COVID-19 transmission, even though routine practice includes controls and measures for communicable diseases (Peng et al., 2020). The use of aerosols during dental procedures, which is a treatment of high-speed pressurized air, has become a major source of concern for dentists (Bentley et al., 1994) because dental clinics are associated with the generation of potentially hazardous aerosols from various respiratory bacterial pathogens; such as tuberculosis and bacterial pneumonia (Grenier 1995; Kumar y Subramanian 2020), including the SARS CoV-2 virus. Therefore, in order to avoid the spread of the pandemic, several measures were taken, including the suspension of routine private and public dental consultations that were not an emergency (Alharbi et al., 2020). Thus, dental consultations have experienced a strong slowdown that has led to the closure of offices and facilities, as well as the reduction of staff, as an emergency measure to mitigate the risk of cross-infection, impacting both dental health professionals and patients (Gambarini et al., 2020).

The COVID-19 crisis has affected the world's population economically, socially, and psychologically; the latter can be aggravated by risk factors, such as sociodemographic factors, systemic involvement and disability. In addition, those who are disadvantaged by age, gender, family structure, educational level, and physical and/or mental situation or condition, which compromise their health and increase their need for routine oral healthcare, maybe in a situation of increased vulnerability (Ramos-Gomez et al., 2020).

In this sense, the psychological impact of quarantine has affected the general population with reactions of fear and anxiety to contagion and an increase in the perception of risk, which is generally magnified by vague misinformation and inappropriate communications through the media in the initial phase of the pandemic (Dubey et al., 2020), since, through social networks and media, alarming news has been spread about infected people and ways of transmission and infection (González-Olmo et al., 2020), when attending places such as shopping malls, workplaces, means of transport, health centres, and dental clinics. This can be aggravated in those patients with systemic involvement, who perceive themselves as more vulnerable. For years, fear and anxiety have been a source of problems for

normal dental practice and these could be increased with the presence of COVID-19 (Milgrom et al., 1988).

If patients have a high perceived risk of COVID-19 infection in the dental office, this may lead to an aversion toward dental care; people with high dental fear are much more likely to delay or avoid dental visits (Armfield & Heaton, 2013), even if an emergency appointment is available. Since fear of the dentist is considered a barrier to seeking appropriate dental treatment, this can lead to a worsening of the oral condition, impacting public and private dental services, as well as patient health (Silveira et al., 2021).

Therefore, studies to assess the perception of the risk of infection by COVID-19 are essential for the analysis of risk factors associated with fear of infection, since they are very necessary to identify vulnerable populations that should be educated about the biosafety protocols used in dentistry, to offer safety and protection, allowing the correct execution of the required treatment (Qiao et al., 2021). The objective of this study was to establish the level of the perceived risk of COVID-19 infection in dental care among users of the public system in El Salvador, 2021.

Materials and Methods

This cross-sectional analytical study included 2,892 Salvadorans of legal age who were users of dental care in Community Family Health Units (UCSF) during the year 2020.

Bioethical Considerations

The results for the main data of this study were extracted from the database generated via an investigation of the perception of risk of COVID-19 infection developed at the national level by the Faculty of Dentistry of the University of El Salvador. This study was approved by the ethics committee of the Faculty of Dentistry of the University of El Salvador according to Agreement # 3 of session N°9-2021.

All participants were informed of the purpose of the study, making it clear to them that all data provided would be recorded anonymously. Before inclusion in the study, each participant signed an informed consent form.

Data Collection

The data were collected from October to December 2020. The forms were designed on the Google Forms platform and included five sections of closed questions: sociodemographic variables, systemic condition of the patient, disability, perception of risk of COVID-19 in public health dental care, and risk of COVID-19 infection in different public facilities.

The sociodemographic variables considered were sex, age, residence, region, educational level. In combination, the presence of a systemic condition of each participant was evaluated, whether this was controlled or not; likewise, the presence of disability was evaluated, classifying it as physical, multiple or sensory (auditory or visual). Regarding the perception of risk for COVID-19 in public health dental care, a series of questions were asked that included different aspects of care, while regarding the risk of contagion by COVID-19 in public establishments, health aspects such as social recreation were included. The perception of risk of contagion was determined using a four-point Likert-type scale ranging from no risk, through low and medium risk, to high risk. Risk of contagion is understood as the probability that a specific person or population will acquire a disease or harm. Therefore, the risk of contagion will be understood as the probability that a person or population acquires a certain disease or damage, which directly affects the decrease in quality of life. Without risk, it is when there is no probability of acquiring a disease nor does it alter the quality of life; low risk, when there is little probability of acquiring a disease and with a slight impact on quality of life. While a medium risk will be understood when a person perceives a greater probability of getting sick when attending an establishment and that it has a significant impact on their quality of life, and high risk will be understood when a person perceives that they have the probability of contracting COVID-19. and that affects their quality of life (Fernández de Pinedo, 2006; Montoya, 1974).

Data Analysis

For data analysis, means were calculated based on the following scores according to a Likert scale: No risk (0), low risk (1), medium risk (2), and high risk (3).

The data were analyzed using the SPSS version 26 program, and frequencies and means were calculated. A univariate analysis (ANOVA and Student's t-test) and a multivariate analysis were carried out, considering as the dependent variable the mean perception of risk by COVID-19 in dental care and as independent variables sex, age, residence, educational level, systemic condition, disability and place of establishment. The confidence interval was 95%.

Results

Of the population, 79.13% did not perceive a high risk of contagion in dental care, neither public (79.26%, mean 1.58; 95% CI) nor private (79%, mean 1.86; 95% CI). Comparatively, the population perceives high risk in bars and discotheques (88.64%; mean = 2.29; CI 95% CI); public transport (83.5%; mean = 2.77; CI 95% CI); hospitals (79.44%; Mean = 2.70; CI 95% CI), supermarkets and markets (76.57%; mean = 2.67; 95% CI); and banks (60.15%; mean = 2.41; 95%CI). The differences in risk perception between establishments were statistically significant ($p<0.05$) (Figure 1).

The perceived level of risk of COVID-19 infection in dental care among users of the different Community Family Health Units of El Salvador was found to be mostly between medium and low risk, with the highest percentage of high risk in Rosario de Mora with 36.89% (medium risk 53.4%; low risk 9.71%) while the lowest percentage of those who perceived high risk are found in San Antonio Pajonal, with 4.76% (medium risk 10.48%; low risk 84.76%) (Figure 2).

Figure 1: Perceived level of risk of COVID-19 infection in different public establishments.

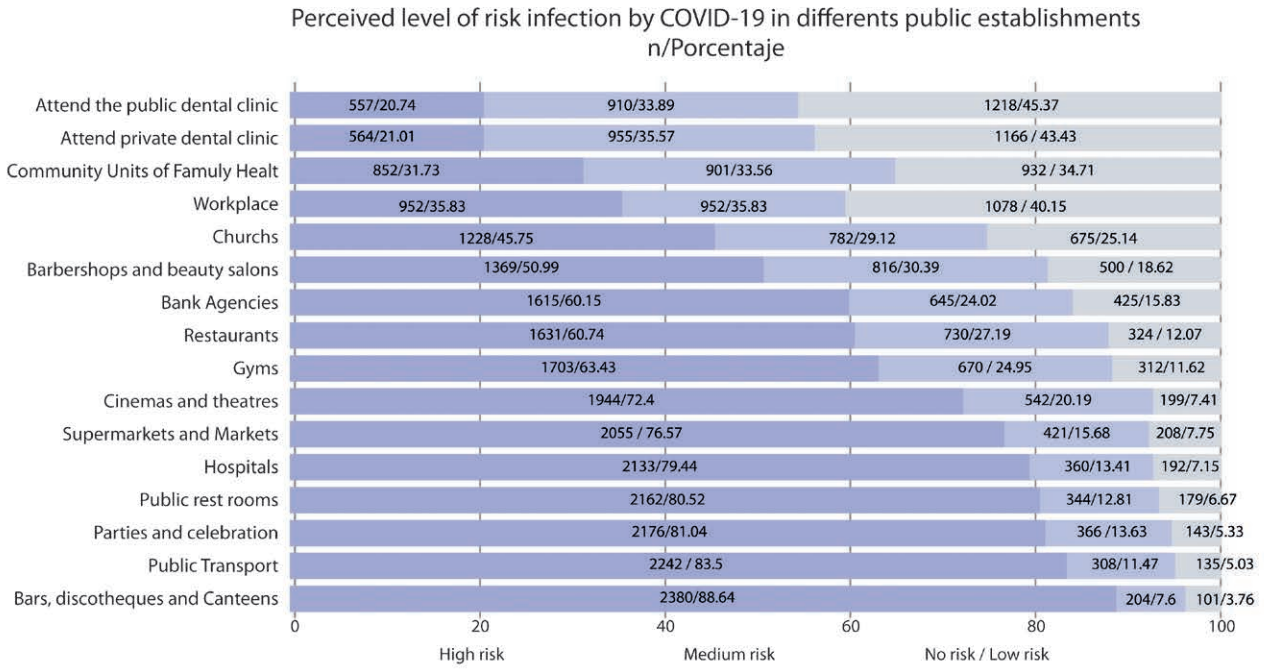

Figure 1. Perceived level of risk of COVID-19 infection in different public establishments.

Figure 2: Perceived level of risk of COVID-19 infection in dental care among public health users.

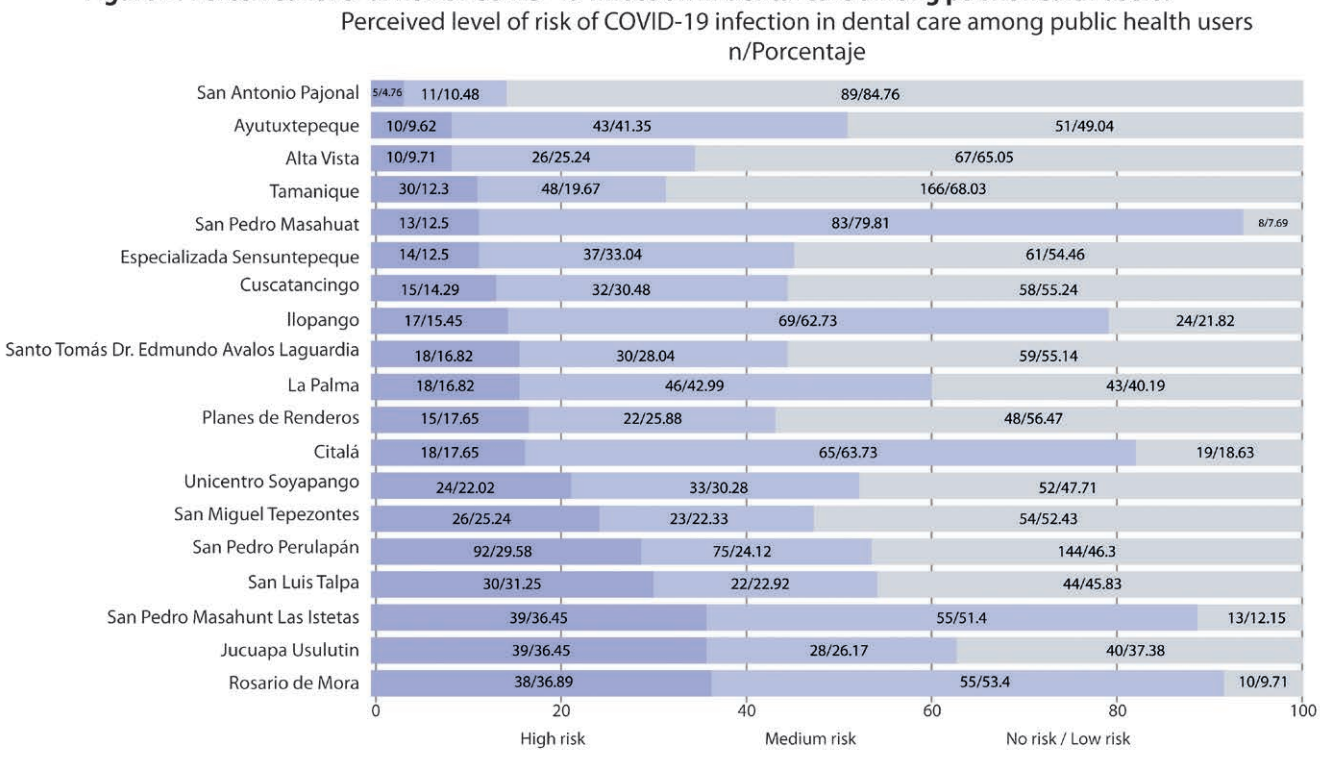

Figure 2. Perceived level of risk of COVID-19 infection in dental care among public health users.

Regarding systemic condition, the population that perceives a greater risk of COVID-19 infection when attending the public dental clinics were those with a controlled systemic condition with 308 persons representing (60.39%), while the corresponding number of healthy patients was 1,108 (57.83%). In the UCSF, there were 354 (69.4%) patients with a controlled systemic condition and 1,293 (67.48%) with no systemic condition. In terms of private dental clinics, 1073 patients (56%) did not present a systemic condition, while 322 (63.14%) did. Meanwhile, the perception of a high risk of contagion in other public establishments was as follows: Supermarkets and markets, 476 (93.3%) presented a controlled systemic condition and 1,774 (92.5%) did not; bank agencies, 433 (84.9%), had a controlled systemic condition and 1,628 (84.9%) did

not; hospitals, 484 (94.9%) present a systemic condition were 1,781 (92.5%) did not; churches, 382 (74.9%) present a controlled systemic condition and 1,479 (77.19%) did not; public transport, 486 (95.2%), present a controlled systemic condition and 1,830 (95.5%) did not; barbershops and beauty parlours, 434 (85.15%) did not. bars and discotheques, 498 (97.6%) present a controlled systemic condition and 1,852 (96.6%) did not. Those with uncontrolled systemic condition showed the lowest percentage of high-risk perceptions (Table 1).

Most of the population that perceived a high risk of COVID-19 infection had a controlled systemic condition, and the patients were healthy. Statistically significant differences were found in the perception of high risk when attending the following establishments: Bars and nightclubs—those who did not present any condition had a mean of 2.84 (SD = 0.49; 95% CI = 2.82-2.86) and those who presented controlled systemic condition had a mean of 2.89 (SD = 0.41; 95% CI = 2.85-2.93) with a p value of 0.032; public restrooms—those who did not present systemic condition had mean of 2.71 (SD = 0.64; 95% CI = 2.68-2.74) and those who presented controlled systemic condition had a mean of 2.79 (SD = 0.54; 95% CI = 2.74-2.84) with a p-value of 0.016; hospitals—those without a systemic condition had a mean of 2.70 (SD = 0.66; 95% CI = 2.68-2.73), and those with a controlled systemic condition had a mean of 2.78 (SD = 0.56; 95% CI = 2.73-2.83), with a p-value of 0.046; cinemas and theatres—those who did not present a systemic condition had mean of 2.63 (SD = 0.67; 95% CI = 2.60-2.66) and those who presented a controlled systemic condition had mean of 2.74 (SD = 0.55; 95% CI = 2.70-2.79) with a p-value of = 0.003; gyms—those who did not present a systemic condition had a mean of 2.51 (SD = 0.74; 95% CI = 2.48-2.55) and those who presented a controlled systemic condition had a mean of 2.61 (SD = 0.66; 95% CI = 2.55-2.66) with a p-value of 0.021; restaurants, pupuserías (tortilla shop) and canteens—those who did not present a systemic condition had a mean of 2.48 (SD = 0.75; 95% CI = 2.45-2.52) and those who presented a controlled systemic condition had a mean of 2.55 (SD = 0.62; 95% CI = 2.49-2.61), with a p-value of 0.010; UCSF—those without systemic involvement had a mean of 1.91 (SD = 0.99; 95% CI = 1.86-1.95) and those who presented a controlled systemic condition had a mean of 1.96 (SD = 0.94; 95% CI = 1.88-2.04) with a p-value of 0.025; private dental clinics—those without a systemic condition had mean of 1.65 (SD = 0.96; 95% CI = 1.61-1.70) and those with a controlled systemic condition had a mean of 1.80 (SD = 0.93; 95% CI = 1.72-1.88), with a p-value of 0.011; public dental clinics—those who did not present systemic condition had a mean of 1.65 (SD = 1.01; 95% CI = 1.60-1.69) and those who presented a controlled systemic condition had mean of 1.75 (SD = 0.99; 95% CI = 1.67-1.84), with a p-value of 0.026 (Table 2).

Table 1. Perceived level of risk of infection by COVID-19 in different public establishments, according to systemic condition.

Below is a list of establishments. What is your perception of risk in attending these places?	Systemic condition status								P-value
	No conditions		Controlled		Uncontrolled		Total		
	No risk and Low risk	Medium and High Risk	No risk and Low risk	Medium and High Risk	No risk and Low risk	Medium and High Risk	No risk and Low risk	Medium and High Risk	
Attend the public dental clinic	808 (42.17)	1108 (57.83)	202(39.61)	308(60.39)	222 (47.64)	244(52.36)	1232 (42.60)	1660 (57.40)	0.033
Community Units of Family Health	623 (32.52)	1293 (67.48)	156 (30.59)	354 (69.41)	173 (37.12)	293 (62.88)	952 (32.92)	1940 (67.08)	0.077
Private Dental Clinic	843 (44.00)	1073 (56.00)	188 (36.86)	322 (63.14)	195 (41.85)	271 (58.15)	1226 (42.39)	1666 (57.61)	0.015
Supermarkets and markets	142 (7.41)	1774 (92.59)	34 (6.67)	476 (93.33)	39 (8.37)	427 (91.63)	215 (7.43)	2677 (92.57)	0.598
Bank Agencies	288 (15.03)	1628 (84.97)	77 (15.10)	433 (84.90)	66 (14.16)	400 (85.84)	431 (14.90)	2461 (85.10)	0.886
Hospitals	135 (7.05)	1781 (92.95)	26 (5.10)	484 (94.90)	33 (7.08)	433 (92.92)	194 (6.71)	2698 (93.29)	0.277
Public restrooms	128 (6.68)	1788 (93.32)	24 (4.71)	486 (95.29)	29 (6.22)	437 (93.78)	181 (6.26)	2711 (93.74)	0.262
Workplace	726 (37.89)	1190 (62.11)	186 (36.47)	324 (63.53)	179 (38.41)	287 (61.59)	1091 (37.72)	1801 (62.28)	0.795
Public transport	86 (4.49)	1830 (95.51)	24 (4.71)	486 (95.29)	28 (6.01)	438 (93.99)	138 (4.77)	2754 (95.23)	0.384
Barbershops and Beauty Salons	342 (17.85)	1574 (82.15)	76 (14.90)	434 (85.10)	89 (19.10)	377 (80.90)	507 (17.53)	2385 (82.47)	0.186
Restaurants	221 (11.53)	1695 (88.47)	40 (7.84)	470 (92.16)	69 (14.81)	397 (85.19)	330 (11.41)	2562 (88.59)	0.003
Churches	437 (22.81)	1479 (77.19)	128 (25.10)	382 (74.90)	125 (26.82)	341 (73.18)	690 (23.86)	2202 (76.14)	0.146
Gyms	214 (11.17)	1702 (88.83)	42 (8.24)	468 (91.76)	61 (13.09)	405 (86.91)	317 (10.96)	2575 (89.04)	0.047
Cinemas and theatres	145 (7.57)	1771 (92.43)	19 (3.73)	491 (96.27)	38 (8.15)	428 (91.85)	202 (6.98)	2690 (93.02)	0.006
Bars, discotheques and canteens	64 (3.34)	1852 (96.66)	12 (2.35)	498 (97.65)	26 (5.58)	440 (94.42)	102 (3.53)	2790 (96.47)	0.018
Parties and celebrations	103 (5.38)	1813 (94.62)	18 (3.53)	492 (96.47)	28 (6.01)	438 (93.99)	149 (5.15)	2743 (94.85)	0.162

Table 2. Average perception of risk of COVID-19 infection in different public establishments, according to systemic condition.

Below is a list of establishments. What is your perception of risk in attending these places?	Systemic condition status								P-value
	No conditions		Controlled		Uncontrolled		Total		
	Mean (SD)	CI (95%)	Mean (SD)	CI (95%)	Mean (SD)	CI (95%)	Mean (SD)	CI (95%)	
Attending the public dental clinic	1.65 (1.01)	(1.60, 1.69)	1.75 (0.99)	(1.67, 1.84)	1.59 (1.04)	(1.49, 1.68)	1.65 (1.01)	(1.62, 1.69)	0.026 *
Community Units of Family Health	1.91 (0.99)	(1.86, 1.95)	1.96 (0.94)	(1.88, 2.04)	1.79 (1.04)	(1.70, 1.89)	1.90 (0.99)	(1.86, 1.93)	0.025 *
Private Dental Clinic	1.65 (0.96)	(1.61, 1.70)	1.80 (0.93)	(1.72, 1.88)	1.68 (0.98)	(1.59, 1.77)	1.68 (0.96)	(1.65, 1.72)	0.011 *
Supermarkets and markets	2.67 (0.65)	(2.64, 2.70)	2.73 (0.62)	(2.68, 2.79)	2.68 (0.67)	(2.62, 2.74)	2.68 (0.65)	(2.66, 2.70)	0.14
Bank Agencies	2.43 (0.81)	(2.39, 2.46)	2.46 (0.80)	(2.39, 2.53)	2.45 (0.83)	(2.38, 2.53)	2.44 (0.81)	(2.41, 2.47)	0.581
Hospitals	2.70 (0.66)	(2.68, 2.73)	2.78 (0.56)	(2.73, 2.83)	2.73 (0.62)	(2.68, 2.79)	2.72 (0.64)	(2.70, 2.75)	0.046 *
Public restrooms	2.71 (0.64)	(2.68, 2.74)	2.79 (0.54)	(2.74, 2.84)	2.77 (0.58)	(2.72, 2.83)	2.74 (0.62)	(2.71, 2.76)	0.016 *
Place of work	1.83 (1.10)	(1.79, 1.88)	1.88 (1.14)	(1.79, 1.98)	1.80 (1.11)	(1.70, 1.90)	1.84 (1.11)	(1.80, 1.88)	0.5
Public transport	2.78 (0.56)	(2.75, 2.80)	2.79 (0.55)	(2.74, 2.84)	2.77 (0.58)	(2.72, 2.82)	2.78 (0.56)	(2.76, 2.80)	0.822
Barbershops and Beauty Salons	2.31 (0.84)	(2.27, 2.35)	2.38 (0.78)	(2.31, 2.45)	2.29 (0.86)	(2.21, 2.37)	2.32 (0.84)	(2.29, 2.35)	0.157
Restaurants, pupuseries and canteens	2.48 (0.75)	(2.45, 2.52)	2.55 (0.67)	(2.49, 2.61)	2.41 (0.81)	(2.33, 2.48)	2.48 (0.75)	(2.46, 2.51)	0.010 *
Churches	2.19 (0.90)	(2.15, 2.23)	2.19 (0.92)	(2.11, 2.27)	2.13 (0.98)	(2.04, 2.22)	2.18 (0.92)	(2.15, 2.22)	0.387
Gyms	2.51 (0.74)	(2.48, 2.55)	2.61 (0.66)	(2.55, 2.66)	2.49 (0.77)	(2.42, 2.56)	2.53 (0.73)	(2.50, 2.55)	0.021 *
Cinemas and theatres	2.63 (0.67)	(2.60, 2.66)	2.74 (0.55)	(2.70, 2.79)	2.63 (0.69)	(2.57, 2.70)	2.65 (0.65)	(2.63, 2.68)	0.003 *
Bars, discotheques and canteens	2.84 (0.49)	(2.82, 2.86)	2.89 (0.41)	(2.85, 2.93)	2.81 (0.56)	(2.76, 2.86)	2.84 (0.49)	(2.83, 2.86)	0.032 *
Parties and celebrations	2.74 (0.59)	(2.71, 2.77)	2.81 (0.51)	(2.76, 2.85)	2.74 (0.58)	(2.68, 2.79)	2.75 (0.58)	(2.73, 2.77)	0.058

Anova significant at 95%

The multivariate analysis showed statistically significant results in the perception of risk when attending dental care related to the following sociodemographic variables: female sex (OR = 1.29; 95% CI = 1.095-1.531; p = 0.003); rural residence (OR = 1.44; 95% CI = 1.24-1.67; p = 0.000); controlled systemic condition (OR = 1.39; 95% CI = 1.054-1.849; p = 0.020), and no systemic condition (OR = 1.41; 95% CI = 1.37- 1.76; p = 0.002). (Table 3).

Discussion

The purpose of this study was to determine the perceived risk of infection by COVID-19 among users of public dental care in El Salvador, since the pandemic caused by the SARS-CoV-2 virus has impacted medical and dental care throughout the world (Allison et al., 2021) and our country has been no exception.

The results of this research has allowed us to compile data that are of the utmost importance for dental care, since scientific evidence reports that, as with other viruses, there is a risk of cross-infection in the dental office due to aerosol-generating procedures, such as those in the oral cavity that contain blood, saliva, and various pathogenic microorganisms (Kobza et al., 2018). It is important that in the dental practice, we have a balance between providing the necessary services and minimizing any risk of contagion for patients and health care personnel ("Guidance for Dental Settings: Interim infection prevention and control guidance for dental settings during the COVID-19 response", 2020).

In a global survey on COVID-19 and its effects on dental practice, it was concluded that the provision of dental services was not significantly affected despite the decrease in routine consultations due to the confinement periods decreed in each country (Campus et al., 2021).

Some of the measures used to mitigate the risk of contagion for procedures with a high risk of aerosol generation include hygiene measures and environmental controls, the use of isolated rooms, and high-level respiratory protection (Davies et al., 2009).

Meethil et al. (2021) conducted a study during the COVID-19 pandemic where they performed procedures with ultrasound and implant therapy, while Van Doremalen et al. (2020) performed restorative procedures to estimate the spread of SARS-CoV-2 within dental clinics. In another study, according to Estrich and coworkers (Estrich et al., 2020), 72.8% of dentists used personal protective equipment in line with the Center for Disease Control and Prevention's guidelines, and the prevalence of COVID-19 and the positivity rate were low among dentists in the United States, revealing extremely low COVID-19 transmission among dental personnel.

Aurajo et al (2021) conducted a study evaluating participation in specific clinical infection control practices over a six-month period and found that with optimal personal protection during aerosol-generating procedures, dentists have low COVID-19 infection rates. This allows us to conclude that aerosols do not increase the likelihood of contracting COVID-19,

Table 3. Bivariate and multivariate analyses of the perception of risk of attending dental care establishments.

Variables	Categories	n	Perceived risk of attending the dental clinic n (%)		Mean (SD)	Bivariate Analysis		Multivariate Analysis Δ		
			Medium and High Risk	No risk and Low risk		CI (95%)	P-value	OR	CI (95%)	P-value
Sex	Female	2389	1373 (82.71)	1016 (82.47)	1.66 (1.02)	(1.62, 1.70)	0.339	1.295	(1.095, 1.531)	0.003
	Male	503	287 (17.29)	216 (17.53)	1.62 (0.98)	(1.53, 1.71)				
Age group	18 a 20	318	154 (9.28)	164 (13.31)	1.45 (1.00)	(1.34, 1.56)	0.004 *			
	21 a 30	1094	629 (37.89)	465 (37.74)	1.64 (1.00)	(1.58, 1.70)				
	31 a 40	618	373 (22.47)	245 (19.89)	1.73 (1.00)	(1.65, 1.81)				
	41 a 50	404	240 (14.46)	164 (13.31) □	1.70 (1.01)	(1.60, 1.80) □				
	51 a 60	272	159 (9.58)	113 (9.17)	1.74 (1.07)	(1.61, 1.87)				
	61 a 70	124	70 (4.22)	54 (4.38)	1.60 (1.02)	(1.42, 1.79)				
	71 to more	62	35 (2.11)	27 (2.19)	1.60 (1.14)	(1.31, 1.89)				
Current residence:	Rural	1383	858 (51.69)	525 (42.61)	1.76 (1.00)	(1.71, 1.81)	0.000 **	1.44	(1.24, 1.67)	0.000
	Urbana	1509	802 (48.31)	707 (57.39)	1.56 (1.02)	(1.51, 1.61)				
Region	Occidental	104	15 (0.9)	89 (7.22) □	0.79 (0.78)	(0.64, 0.94)	0.000 *			
	Central	1595	795 (47.89)	800 (64.94) □	1.49 (1.03)	(1.44, 1.54)				
	Oriental	3	0 (0)	3 (0.24)	0.33 (0.58)	(-1.10, 1.77)				
	Paracentral	241	142 (8.55)	99 (8.04)	1.66 (0.87)	(1.55, 1.77)				
	North	209	147 (8.86)	62 (5.03)	1.82 (0.77)	(1.72, 1.93)				
	Coast	740	561 (33.8)	179 (14.53)	2.08 (0.92)	(2.01, 2.15)				
Educational level	No Schooling	251	135 (8.13)	116 (9.42)	1.64 (1.05)	(1.51, 1.77)	0.025 *			
	Basic	1414	809 (48.73)	605 (49.11)	1.66 (1.02)	(1.61, 1.72)				
	Baccalaureate	979	555 (33.43)	424 (34.42)	1.60 (1.00)	(1.54, 1.67)				
	University	248	161 (9.7)	87 (7.06) □	1.82 (0.99)	(1.70, 1.95)				
Systemic condition	Controlled	510	308 (18.55)	202 (16.4)	1.75 (0.99)	(1.67, 1.84)	0.026 *	1.396	(1.054, 1.849)	0.020
	Uncontrolled	466	244 (14.7)	222 (18.02) □	1.59 (1.04)	(1.49, 1.68)				
	No conditions	1916	1108 (66.75)	808 (65.58)	1.65 (1.01)	(1.60, 1.69)		1.415	(1.137, 1.760)	0.002
Disability	Yes	100	59 (3.55)	41 (3.33)	1.69 (1.14)	(1.46, 1.92)	0.742			
	No	2792	1601 (96.45)	1191 (96.67)	1.65 (1.01)	(1.62, 1.69)				
Type of disability	None	2792	1601 (96.45)	1191 (96.67)	1.65 (1.01)	(1.62, 1.69)	0.932			
	Physical disability	24	13 (0.78)	11 (0.89)	1.67 (1.37)	(1.09, 2.25)				
	Sensory Impairment (Visual or Hearing)	76	46 (2.77)	30 (2.44)	1.70 (1.07)	(1.45, 1.94)				

ANOVA analysis significant at 95%.
Student's t-analysis significant at 95%.
□ Z-analysis of proportions (Proportion significant at 95%)
Δ Model value: $\chi^2 = 227.938$; P-value = 0.000

as the risk of transmission of SARS-CoV-2 and other microbial pathogens are moderately low, and with the use of infection control practices such as mouth rinsing before procedures, the microbial load can be reduced. Additionally, the competent and consistent use or high-level protective equipment protects both staff and patient (Zhao et al., 2020).

In the present study, 79.13% of the population did not perceive a high risk of contagion in dental care, compared to other public establishments; these results include both the public and private sectors. In the case of the multivariate analysis, it was reported that there is a higher perceived risk of COVID-19 infection in female patients, in patients in rural areas, and in healthy patients and patients with a controlled systemic condition; on the contrary, uncontrolled sick patients perceived lower risk of infection.

These results differ from those of other studies that do perceive a risk of infection in dental care; such is the case of the study by Gambarini et al. (2020), in which they conducted a survey of 700 people through social networks on the perceived risk of COVID-19 in dentistry and the possible use of rapid tests to detect it, with 78% of the study participants perceiving high risk of COVID-19 infection in dental settings. Moffat et al. (2021) positively reported a perceived susceptibility

to contracting COVID-19 in dental clinics; they also reflected caution when attending dental visits in an electronic survey of 464 adults in the United States in April 2020. González Olmo et al (2020) showed high levels of vulnerability to contracting COVID-19, mostly in the female population and in people aged over 60 years, through a survey of passers-by in Madrid, Spain, between 1 and 8 March 2020.

These differences compared to our study may be due to the timing of the surveys and the target population: the study of González-Olmo et al (2020) was conducted in the pre-confinement period, while the other two studies took place at the beginning of the confinement. Given the circumstances in this phase of the pandemic, there was little information and knowledge about this new outbreak of the virus and its routes of transmission, taking into account that they suspended dental consultations that generated aerosols. In contrast, the present study was conducted between October and December 2020, after confinement, and was directed to patients of the dental office after reopening, therefore, the results cannot be extrapolated to the general population, which turns out to be a limitation; while one of the scopes was to know that a high percentage of users did not perceive the dental office as a place with a high risk of contagion. There is now more knowledge about COVID-19, and scientific evidence reports low rates of aerosol transmission in the dental offices, provided that high-level protective equipment is used and strict biosafety protocols are in place.

Conclusion

The population does not perceive dental clinics as place with a high risk of contagion compared to other public facilities; therefore, we must continue to comply with strict biosecurity protocols to maintain public confidence in dental services.

Funding This research received no external funding.
Institutional Review Board Statement This study was approved by the ethics committee of the Faculty of Dentistry of the University of El Salvador according to Agreement # 3 of session N°9-2021.
Informed Consent Statement Informed consent was obtained from all subjects involved in the study.
Conflicts of Interest The authors declare no conflict of interest.
Author Contributions Conceptualization, G.A.A and W.Y.E; Investigation, G.A.A, W.Y.E, S.M.S and J.E.T; Methodology, G.A.A, W.Y.E, K.A.A, S.M.S, J.E.T, E.A.P, A.L.P.S and F.J.R; Visualization, G.A.A, W.Y.E and K.A.A; review and editing, G.A.A and W.Y.E Supervision, G.A.A and W.Y.E

References

Alharbi, A., Alharbi, S., & Alqaidi, S. (2020). Guidelines for dental care provision during the COVID-19 pandemic. *Saudi Dental Journal*, *32*(4), 181–186. https://doi.org/10.1016/j.sdentj.2020.04.001

Allison, J. R., Currie, C. C., Edwards, D. C., Bowes, C., Coulter, J., Pickering, K., Kozhevnikova, E., Durham, J., Nile, C. J., Jakubovics, N., Rostami, N., & Holliday, R. (2021). Evaluating aerosol and splatter following dental procedures: Addressing new challenges for oral health care and rehabilitation. *Journal of Oral Rehabilitation*, *48*(1), 61–72. https://doi.org/10.1111/joor.13098

Armfield, J., & Heaton, L. (2013). Management of fear and anxiety in the dental clinic: a review. *Australian Dental Journal*, *58*(4), 390–407. https://doi.org/10.1111/adj.12118

Ather, A., Patel, B., Ruparel, N. B., Diogenes, A., & Hargreaves, K. M. (2020). Coronavirus Disease 19 (COVID-19): Implications for Clinical Dental Care. *Journal of Endodontics*, *46*(5), 584–595. https://doi.org/10.1016/j.joen.2020.03.008

Bentley, C. D., Burkhart, N. W., & Crawford, J. J. (1994). Evaluating Spatter And Aerosol Contamination During Dental Procedures. *The Journal of the American Dental Association*, *125*(5), 579–584. https://doi.org/10.14219/jada.archive.1994.0093

Campus, G., Diaz Betancourt, M., Cagetti, M., Giacaman, R., Manton, D., Douglas, G., Carvalho, T., Carvalho, J., Vukovic, A., Cortés-Martinicorena, F., Bourgeois, D., Machiulskiene, V., Sava-Rosianu, R., Krithikadatta, J., Morozova, N. S., & Acevedo, A. (2021). The COVID-19 pandemic and its global effects on dental practice. An International survey. *Journal of Dentistry*, *114*, 103749. https://doi.org/10.1016/j.jdent.2021.103749

Cheng, Z. J., & Shan, J. (2020). 2019 Novel coronavirus: where we are and what we know. *Infection*, *48*(2), 155–163. https://doi.org/10.1007/s15010-020-01401-y

Davies, A., Thomson, G., Walker, J., & Bennett, A. (2009). A review of the risks and disease transmission associated with aerosol generating medical procedures. *Journal of Infection Prevention*, *10*(4), 122–126. https://doi.org/10.1177/1757177409106456

Dubey, S., Biswas, P., Ghosh, R., Chatterjee, S., Dubey, M. J., Chatterjee, S., Lahiri, D., & Lavie, C. J. (2020). Psychosocial impact of COVID-19. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, *14*(5), 779–788. https://doi.org/10.1016/j.dsx.2020.05.035

Elisa Gambarini, Massimo Galli, Dario Di Nardo, G. miccoli. (2020). A Survey on Perceived COVID-19 Risk in Dentistry and the Possible Use of Rapid Tests. *The Journal of Contemporary Dental Practice*, *21*(7), 718–722. https://doi.org/10.5005/jp-journals-10024-2851

Estrich, C. G., Mikkelsen, M., Morrissey, R., Geisinger, M. L., Ioannidou, E., Vujicic, M., & Araujo, M. W. B. (2020). Estimating COVID-19 prevalence and infection control practices among US dentists. *The Journal of the American Dental Association*, *151*(11), 815–824. https://doi.org/10.1016/j.adaj.2020.09.005

Fernández de Pinedo, I. (2006). NTP 15 : Construcción de una escala de actitudes tipo Likert. *Instituto nacional de seguridad e higiene en el trabajo*, 1–8. https://doi.org/NTP 15

Gambarini E, Galli M, Di Nardo D, Miccoli G, Patil S, Bhandi S, Giovarruscio M, Testarelli L, Gambarini G. A survey on perceived COVID-19 risk in dentistry and the possible use of rapid tests. J Contemp Dent Pract 2020 21(7):718–22.

González-Olmo, M. J., Ortega-Martínez, A. R., Delgado-Ramos, B., Romero-Maroto, M., & Carrillo-Diaz, M. (2020). Perceived vulnerability to Coronavirus infection: Impact on dental practice. *Brazilian Oral Research*, *34*, 1–9. https://doi.org/10.1590/1807-3107

Grenier, D. (1995). Quantitative analysis of bacterial aerosols in two different dental clinic environments. *Applied and Environmental Microbiology*, *61*(8), 3165–3168. https://doi.org/10.1128/aem.61.8.3165-3168.1995

Guidance for Dental Settings: Interim infection prevention and control guidance for dental settings during the COVID-19 response. (2020). *Centers for Disease Control and Prevention*. https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html

Johns Hopkins University. (2021). *COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University.* Coronavirus Resource Center. https://origin-coronavirus.jhu.edu/map.html

Kobza, J., Pastuszka, J. S., & Brągoszewska, E. (2018). Do exposures to aerosols pose a risk to dental professionals? *Occupational Medicine*, *68*(7), 454–458. https://doi.org/10.1093/occmed/kqy095

Kumar, P. S., & Subramanian, K. (2020). Demystifying the mist: Sources of microbial bioload in dental aerosols. *Journal of Periodontology*, *91*(9), 1113–1122. https://doi.org/10.1002/JPER.20-0395

Milgrom, P., Fiset, L., Melnick, S., & Weinstein, P. (1988). The prevalence and practice management consequences of dental fear in a major US city. *The Journal of the American Dental Association*, *116*(6), 641–647. https://doi.org/10.14219/jada.archive.1988.0030

Moffat, R. C., Yentes, C. T., Crookston, B. T., & West, J. H. (2021). Patient Perceptions about Professional Dental Services during the COVID-19 Pandemic. *JDR Clinical & Translational Research*, *6*(1), 15–23. https://doi.org/10.1177/2380084420969116

Montoya, C. (1974). Aplicación del concepto de riesgo en salud Maternoinfantil. *Boletin de la Oficina Sanitaria Panamericana*, *77*(2), 93–102. https://iris.paho.org/handle/10665.2/10758?show=full&locale-attribute=es%0Ahttps://iris.paho.org/bitstream/handle/10665.2/18062/v77n2p93.pdf?sequence=1&isAllowed=y

Peng, X., Xu, X., Li, Y., Cheng, L., Zhou, X., & Ren, B. (2020). Transmission routes of 2019-nCoV and controls in dental practice. *International Journal of Oral Science*, *12*(1), 1–6. https://doi.org/10.1038/s41368-020-0075-9

Qiao, S., Li, Z., Liang, C., Li, X., & Rudisill, C. A. (2021). Risk perception of COVID-19 and its socioeconomic correlates in the United States: A social media analysis. *medRxiv*, 1–18. https://doi.org/https://doi.org/10.1101/2021.01.27.21250654

Ramos-Gomez, F., Oluwatoyin Folayan, M., Diaz-Betancourt, M., Kumar, G., Gerhard Wolf, T., dent Priv-Doz, M., Fontana, M., & Campus, G. (2020). Global Impact of COVID-19 on Service Delivery and Vulnerable Populations' Access to Dental Care. *CDA Journal*, *48*, 469–514. https://issuu.com/cdapublications/docs/cdapubs_journal_2020_october/s/11074146

Shamsoddin, E., DeTora, L. M., Tovani-Palone, M. R., & Bierer, B. E. (2021). Dental Care in Times of the COVID-19 Pandemic: A Review. *Medical Sciences*, *9*(1), 13. https://doi.org/10.3390/medsci9010013

Silveira, E. R., Cademartori, M. G., Schuch, H. S., Armfield, J. A., & Demarco, F. F. (2021). Estimated prevalence of dental fear in adults: A systematic review and meta-analysis. *Journal of Dentistry*, *108*(March), 103632. https://doi.org/10.1016/j.jdent.2021.103632

van Doremalen, N., Bushmaker, T., Morris, D. H., Holbrook, M. G., Gamble, A., Williamson, B. N., Tamin, A., Harcourt, J. L., Thornburg, N. J., Gerber, S. I., Lloyd-Smith, J. O., de Wit, E., & Munster, V. J. (2020). Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *New England Journal of Medicine*, *382*(16), 1564–1567. https://doi.org/10.1056/NEJMc2004973

World Health Organization. (2020). *Archived: WHO Timeline–COVID-19*. world Health Organization. https://doi.org/https://www.who.int/news/item/27-04-2020-who-timeline—-covid-19

Zhao, S., Cao, J., Sun, R., Zhang, L., & Liu, B. (2020). Analysis of anxiety-related factors amongst frontline dental staff during the COVID-19 pandemic in Yichang, China. *BMC Oral Health*, *20*(1), 1–7. https://doi.org/10.1186/s12903-020-01335-9

Author details

Guillermo Alfonso Aguirre Escobar
Wendy Yesenia Escobar de González
Katleen Argentina Aguirre de Rodríguez
Jenniffer Elizabeth Turcios Bonilla Correspondending author: jenniffer.turcios@ues.edu.sv
Stefany María Santos Anaya
Ana Lourdes Pérez Siciliano
Ester Abigail Pérez Rodas
Francisco José Rivas Cartagena
Research Center, Faculty of Dentistry of the University of El Salvador, Ciudad Universitaria "Dr. Fabio Castillo Figueroa", Final Av. Mártires y Héroes del 30 de julio, San Salvador, El Salvador, América Central.