



Received: 01 May, 2023

Accepted: 12 June, 2023

Published: 13 June, 2023

*Corresponding author: Sara Toema, Temple University Kornberg School of Dentistry, Philadelphia, PA 19140, USA, Tel: 856 500 8577, 9158018008; E-mail: sara.toema0001@temple.edu

Salwa Mekled, Temple University Kornberg School of Dentistry, Philadelphia, PA 19140, USA, Tel: 856 500 8577, 9158018008; E-mail: salwa.mekled@temple.edu

Keywords: Dentistry; Pediatrics; COVID 19; Dental care; Guidelines; Dental protocol

Copyright License: © 2023 Toema S, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

<https://www.peertechzpublications.com>



Check for updates

Research Article

The impact of the COVID-19 pandemic on parents seeking dental care for their children

Sara Toema*, Chukwuebuka Ogwo, Nikita Patel, Caileigh Fritz, Alexandria Catalano, Angelica Saclayan and Salwa Mekled*

Temple University Kornberg School of Dentistry, Philadelphia, PA 19140, USA

Abstract

Many changes in routine dental care were implemented to protect dentists and patients during the COVID-19 pandemic. Pediatric dentists face unique challenges in dealing with parental fears and behavioral changes in pediatric patients. Despite the meticulous infection control protocols that dental offices have implemented during the pandemic, they experienced significant reductions in routine recall. The aim of this study is to assess the impact of the SARS-CoV-2 pandemic on parents seeking dental care for their children at the Temple Kornberg School of Dentistry (TUKSoD).

Parents who currently have their children treated at the TUKSoD were invited to participate in a questionnaire. One hundred and six parents completed the survey anonymously on paper. The survey focused on parents' attitude changes towards dental care for their children post-pandemic. Bivariate analysis followed by a Two-way ANOVA test was used to calculate the association between the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care versus the age of the child. Our results showed that improved dental protocols increased the likelihood of parents bringing their children to the dentist during the COVID pandemic ($p < 0.001$).

The results help pediatric dentists to build trust among their patients during the pandemic. It will also help policymakers understand the pediatric patients' parents' concerns and assess their current safety measures. Ultimately, this study will give practitioners more insight into how to handle outbreaks of new COVID-19 variants that may present in the future.

Introduction

The outbreak of COVID-19 was first reported in December 2019 in Wuhan, China, and has since been declared a global pandemic by the World Health Organization (WHO). The infection is classified as a severe acute respiratory disease, caused by coronavirus 2 (SARS-CoV-2). Worldwide, children have accounted for approximately 1% - 5% of diagnosed cases of SARS-CoV-2. However, when compared to adult cases, children tend to present with milder symptoms and better prognoses [1].

SARS-CoV-2 has a high transmission rate and is rapidly spread via the respiratory droplets of infected individuals. Even asymptomatic patients have the capacity to transmit the virus.

The high degree of uncertainty surrounding the infection, spread, prognosis, and lingering health effects of COVID-19 has led to trends in lifestyle changes for individuals and families across the globe. Governments have implemented stay-at-home orders, school closures, and social distancing rules [2].

Following the approval of the COVID-19 vaccine in the United States. In December 2020, some of these restrictions have been eased over time. Center for Disease Control (CDC) report of vaccine coverage in the U.S. reports that as of April 6th, 2022, 9.7 million or 34% of children ages 5-11 have received their first dose of the COVID-19 vaccine, while 7.8 million or 28% of children ages 5-11 have received the complete 2-dose vaccine series. 17 million or 68% of children ages 12-17 have received their first dose of the COVID-19 vaccine, while 14.5 million



or 58% of children in the same age group have received the complete 2-dose vaccine series [3]. However, the emergence of new COVID-19 variants such as Delta in December of 2020 and Omicron in November of 2021, remains unknown regarding the end of the pandemic and the efficacy of the vaccine against new variants [4].

Developing infection control standards, that included new Personal Protective Equipment (PPE) measures consisting of N95 masks with face shields, head and shoe covers, level 3 gown, gloves, and eye protection, and patients were required to wear a mask to enter the building. The school also implemented a COVID-19 screening questionnaire over the phone before appointments and only patients who were asymptomatic and had no contact with persons with COVID-19 were allowed to enter the building.

Dental anxiety is an important issue that particularly affects pediatric patients. The introduction of advanced Personal Protective Equipment (PPE), social distancing, and sanitary regime could induce public fear including children. Rapidly growing public fear of COVID-19 has caused parents to display varying levels of apprehension when seeking medical and dental care for their children. Pediatric dental offices have experienced significant reductions in routine recall and preventive appointments since the outbreak of the pandemic [2,5-7]. There is heightened concern among the dental community on how the pandemic is negatively impacting parents' approach to providing professional dental care for their children; and thus, consequently affecting children's overall oral health.

While various new safety protocols have been put in place to minimize the spread of SAR-CoV-2 in dental settings, such as personal protective equipment (PPE), pre-appointment screenings, and opportunities for vaccinations, many parents still feel anxious about the idea of scheduling an appointment to bring their child to the dentist [5-7]. This cross-sectional research study will utilize a survey questionnaire to assess the impact of the SARS-CoV-2 on parents seeking dental care for their children at Temple University Kornberg School of Dentistry's pediatric clinic. Implications of this study may then be used to help pediatric dental practices and policymakers understand parents' concerns and assess current safety measures.

Materials and methods

Parents or legal guardians of pediatric patients who agreed to participate in the research, must be fluent in English and sign the informed consent. The participants must fill in a questionnaire developed by the researchers. A structured questionnaire consisting of 10 multiple-choice questions and demographic information. The remaining questions assess the impact of SARS-CoV-2 on the parents/ legal guardians of pediatric patients seeking dental care for their children during the pandemic (Table 1). The study was IRB approved as exempt following all the ethical rules involving human subject research.

Table 1: Questionnaire to assess the impact of the SARS-CoV-2 pandemic on parents seeking dental care for their children .

Questions	Choices
What is the age of your child?	
What is their ethnicity/race?	American Indian/Alaska Native, Asian, Black, Native Hawaiian or Other Pacific Islander, White
What insurance do you currently have?	Medicaid; private; no insurance
Please describe the current health of your child	Well; fair; poor
If your child has been to the dentist before the pandemic, did they receive regular dental care?	This is my child's first appointment; attends appointments once a year, attends appointments more than once per year
Which activities have you refrained from doing since the beginning of the COVID-19 pandemic?	Essential activities (healthcare related), leisure activities (travel, sports, entertainment), no restrictions
How has the pandemic affected the way you feel about bringing your child to the dentist	Highly concerned; slightly concerned; no concerns
How have the new dental protocols (N95, face shields, COVID screenings, gowns) affected the way you feel about bringing your child to the dentist?	Could be improved; No difference; slightly safer; Significantly safer;
Is your child vaccinated? If yes, do you feel more comfortable bringing your child to the dentist?	Yes; makes no difference; no, I am planning on getting my child vaccinated; I choose not to have my child vaccinated for religious or other reasons.
Would you feel more comfortable bringing your child to the dentist if more children were vaccinated?	Yes; makes no difference

Data collection

The paper questionnaire was distributed to parents or legal guardians of the Temple Kornberg School of Dentistry Pediatric Dental Clinic. No identifying information was collected from participants to ensure their anonymity. Collected data was saved into an Excel sheet database along with patient demographics.

The dependent variable was the effect of the COVID-19 pandemic on parents' willingness to take their children to a dentist. The independent variables were age, race, insurance type, perception of the current health status of the child, frequency of dental visit pre-pandemic, activities stopped due to pandemic, the effect of new COVID dental protocol on willingness to visit, vaccination status, reasons for no vaccination and being comfortable with visiting a dentist if more children were vaccinated.

Statistical data management and analysis

The statistical analysis was done by first exploring the distribution of each of the variables obtained for the study (Table 2). The proportion of individuals in both the dependent and categorical independent variables was assessed. The mean, median, and IQR of the age variable were calculated. Pearson's chi-square tests were used to determine the association between each of the categorical predictor variables and the outcome variable. A two-way ANOVA test was used to calculate the association between the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care versus the age of the child. The alpha level was set at 0.05. All statistical analysis was performed using the statistical software R version 4.1.2 (Figures 1,2).



Table 2: Descriptive statistics of all variables (N = 106).

	Response	N	Percent (%)
Effect of a Pandemic on the Willingness of dental visit	High	10	9.43
	Slight	59	55.66
	None	37	34.91
Race	White	18	16.98
	Asian	11	10.38
	Black	41	38.68
	Hispanic	17	16.04
	Others (Multiracial, AI/AN, Pacific Islander)	19	17.92
Insurance type	Medicaid	81	76.42
	Private	22	20.75
	None	3	2.83
Perception of the current health status of the child	Well	97	91.51
	Fair	9	8.49
Frequency of dental visits pre-pandemic	1st appointment	11	10.38
	Attends more than once/a year	59	55.66
	Attends once/year	36	33.96
Activities stopped due to pandemic	Essential activities (healthcare related)	11	10.38
	Leisure (travel, sports, entertainment)	47	44.34
	None	48	45.28
Effect of New COVID dental protocol on Willingness to Visit	Significantly Safer	46	43.39
	Slightly safer	34	32.08
	Could be improved	3	2.83
	No difference	23	21.70
Vaccination status	Yes	44	41.51
	No	62	58.49
Reasons for no vaccination	Vaccinated	44	41.51
	No, not planning - religious or other reasons	21	19.81
	No, planning on vaccination	36	33.96
	Makes no difference	5	4.72
Comfortable visiting a dentist if more children were vaccinated	Yes	64	60.38
	Makes no difference	42	39.62

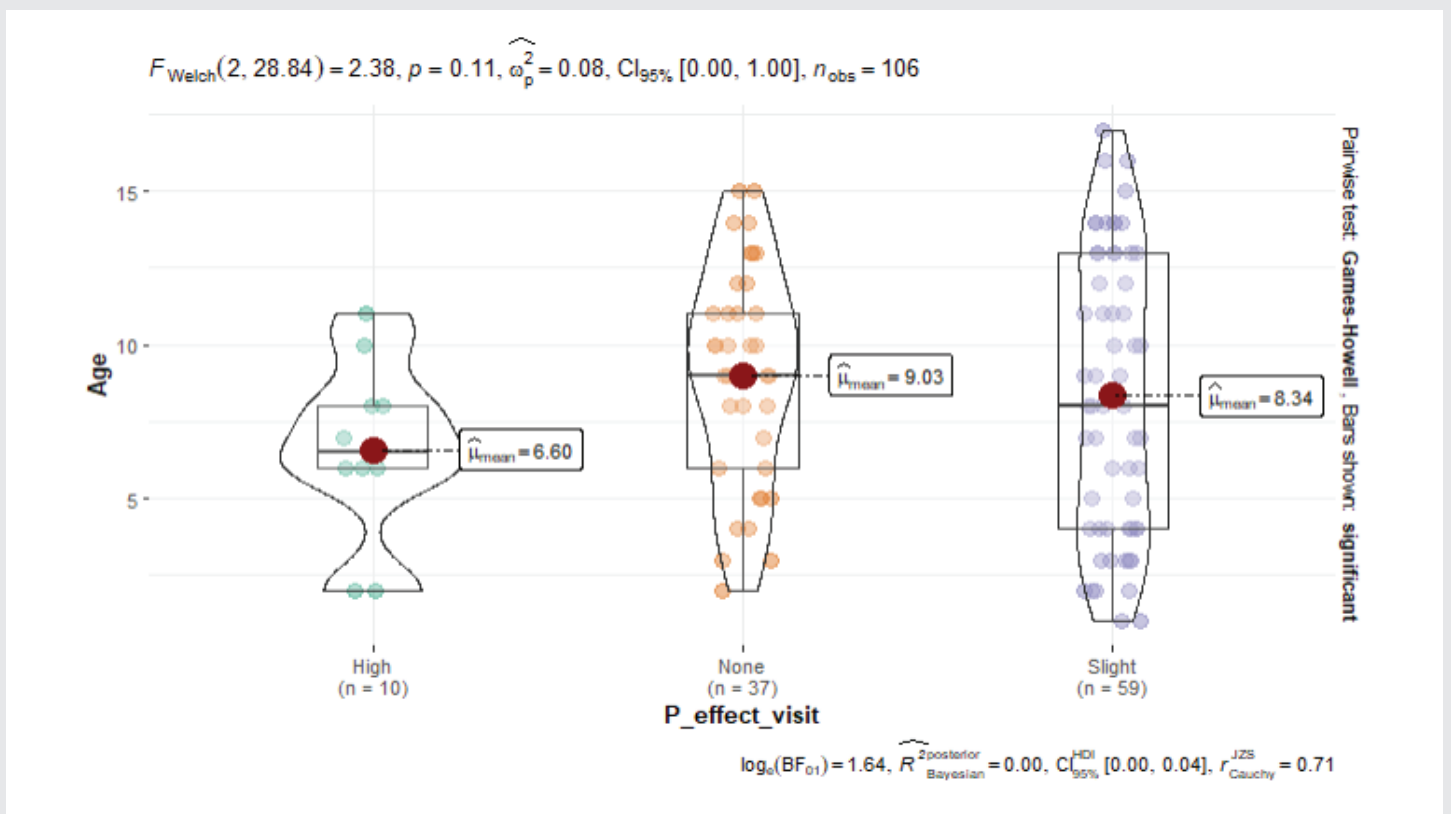


Figure 1: Box plot showing the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care (P_effect_visit) versus Age. A two-way ANOVA test showed no significant association between parents of pediatric patient's decision to seek dental care due to COVID-19 (P_effect_visit) and Age (F = 2.38; p - value = 0.11).

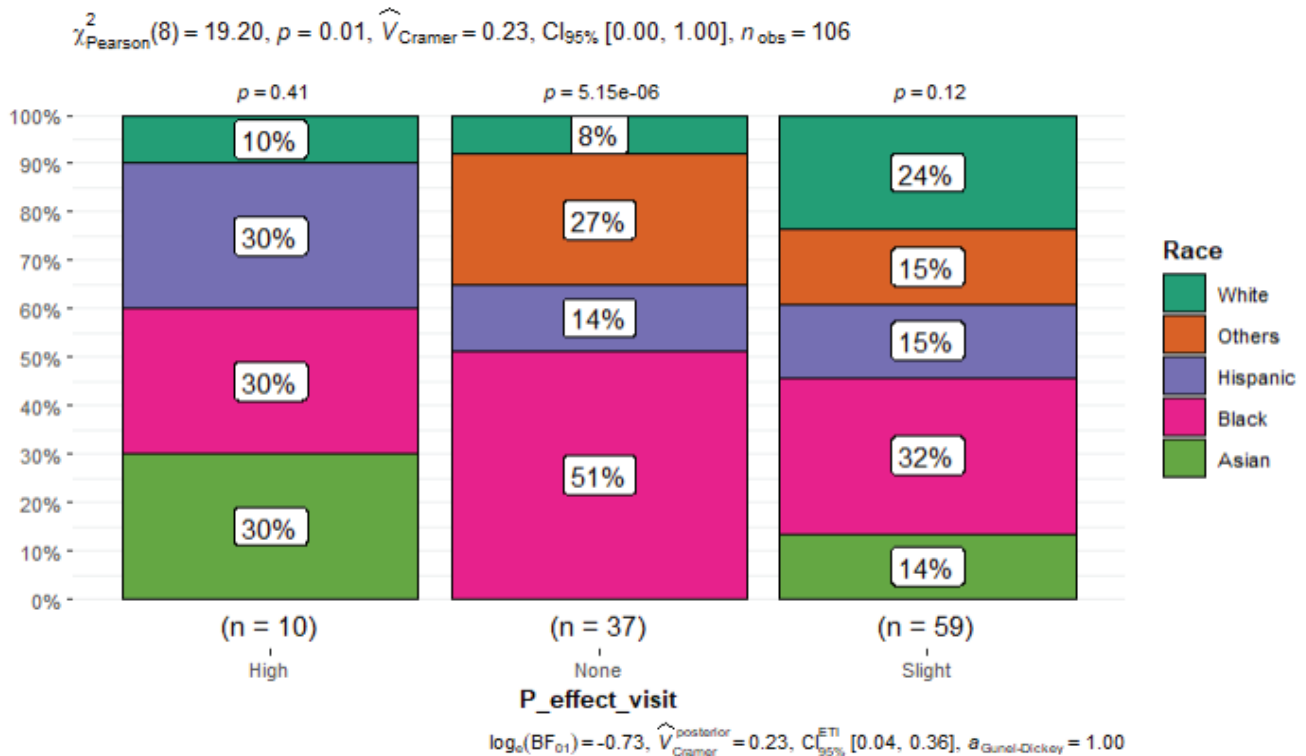


Figure 2: Bar graph showing the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care (P_effect_visit) versus race. The Pearson chi-square test showed a significant association between parents of pediatric patient's decision to seek dental care due to COVID-19 (P_effect_visit) and race (Pearson's chi-square (χ^2) = 19.20; p - value = 0.01).

Results

A total of 106 participants responded to the questionnaire. The Pearson chi-square test showed a significant association between parents of pediatric patients' decision to seek dental care due to COVID-19 and race ($\chi^2 = 19.20$; p - value = 0.01). The effect of the pandemic was slightly high as 55.66% of participants found the pandemic affected their willingness of dental visits. While 34.91% of participants reported that the pandemic had no effect on their dental visits. 30% of participants who found the effect of the pandemic was slightly high were Asians, 30% were Black, 30% Hispanic and 10% were White. Most of the participants 51% who reported that the pandemic had no effect on the dental visits were Black, 27% others, 14% were Hispanic and 8% were white (Table 2). The Pearson chi-square test showed no significant association between the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care and insurance type ($\chi^2 = 5.82$; p - value = 0.21) (Table 2) (Figure 3).

Our results show 85% of the participants who did not find any effect of a pandemic on their dental visits had Medicaid insurance, while 11% of participants with private insurance who did not find an effect of a pandemic on their dental visit, and 3% did not have any insurance (Table 2) (Figure 4). The Pearson chi-square test showed a significant association between parents of pediatric patients' decision to seek dental care due to COVID-19 varied by frequency of dental visits pre-pandemic ($\chi^2 = 10.65$; p - value = 0.03).

Participants who used to attend the clinic once a year pre-pandemic (76%) are more than participants who attend dental visits more than once a year (22%) (Table 2) (Figure 5). The Pearson chi-square test showed a significant association between parents of pediatric patients' decision to seek dental care due to COVID-19 varied by frequency of dental visits pre-pandemic ($\chi^2 = 37.71$; p - value < 0.001). The Pearson chi-square test showed that the parent's perception of the new COVID-19 protocol in the dental setting is significantly associated with parents of pediatric patients' decision to seek dental care due to COVID-19 ($\chi^2 = 24.97$; p - value < 0.001). Participants who limited their activities to essential ones (50%) were more concerned about the effect of the pandemic on their willingness for dental visits (Table 2) (Figure 6).

All participants (100%) who found an effect of the pandemic on dental visits, felt more comfortable when others are vaccinated. While 75% of participants who did not have an effect of the pandemic, were not concerned about others being vaccinated. While 75% of participants who had a slight effect of the pandemic on the dental visit, found comfort when others are vaccinated and 25% found no difference (Table 2) (Figure 7). The Pearson chi-square test showed no significant association between parents of pediatric patient's decision to seek dental care due to COVID-19 and vaccination status ($\chi^2 = 2.12$; p - value = 0.35).

For participants who thought the pandemic had a high impact on their dental visits, 70% found the new protocols significantly safer; 20% found those protocols slightly safer,

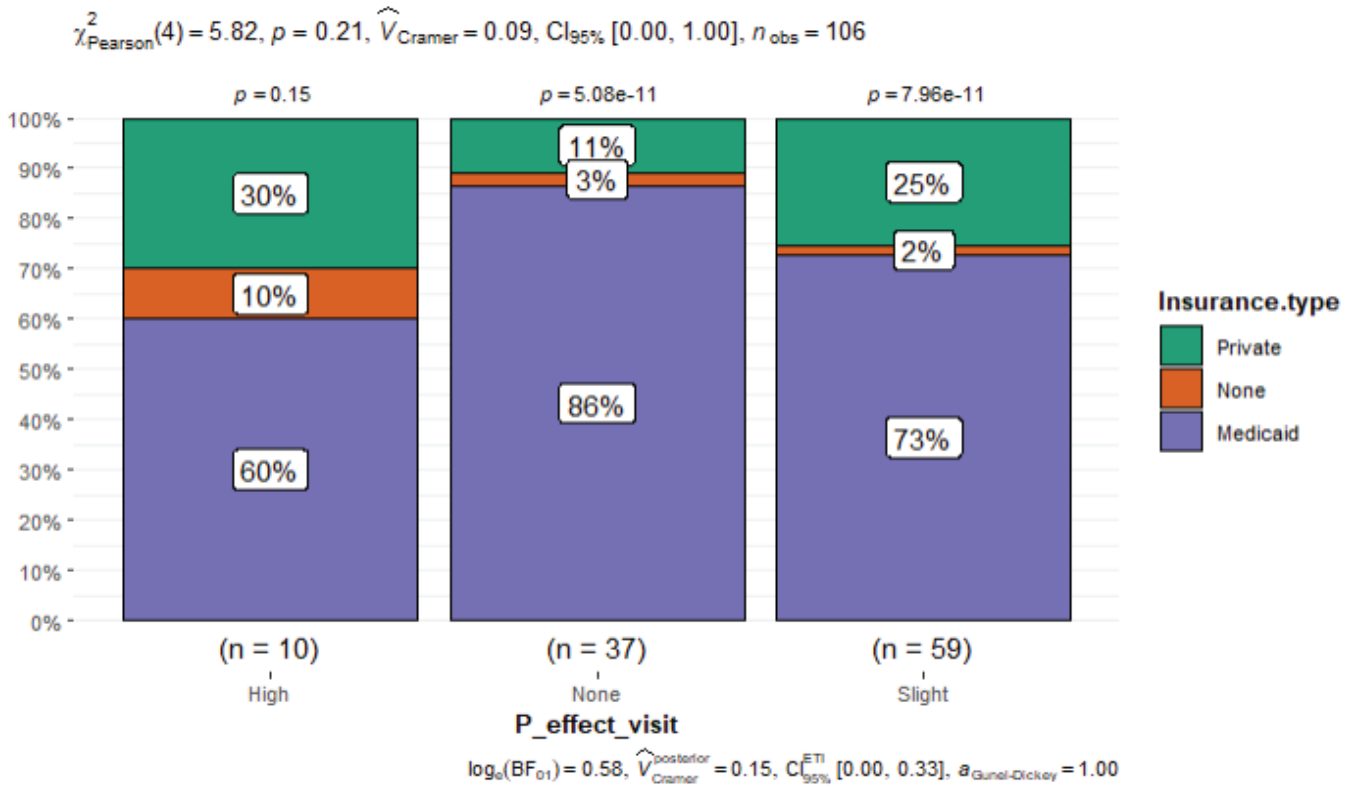


Figure 3: Bar graph showing the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care (P_effect_visit) versus insurance type. The Pearson chi-square test showed no significant association between the effect of the COVID-19 pandemic on parents of pediatric patient's decision to seek dental care (P_effect_visit) and insurance type (Pearson's chi-square (χ^2) = 5.82; p - value = 0.21).

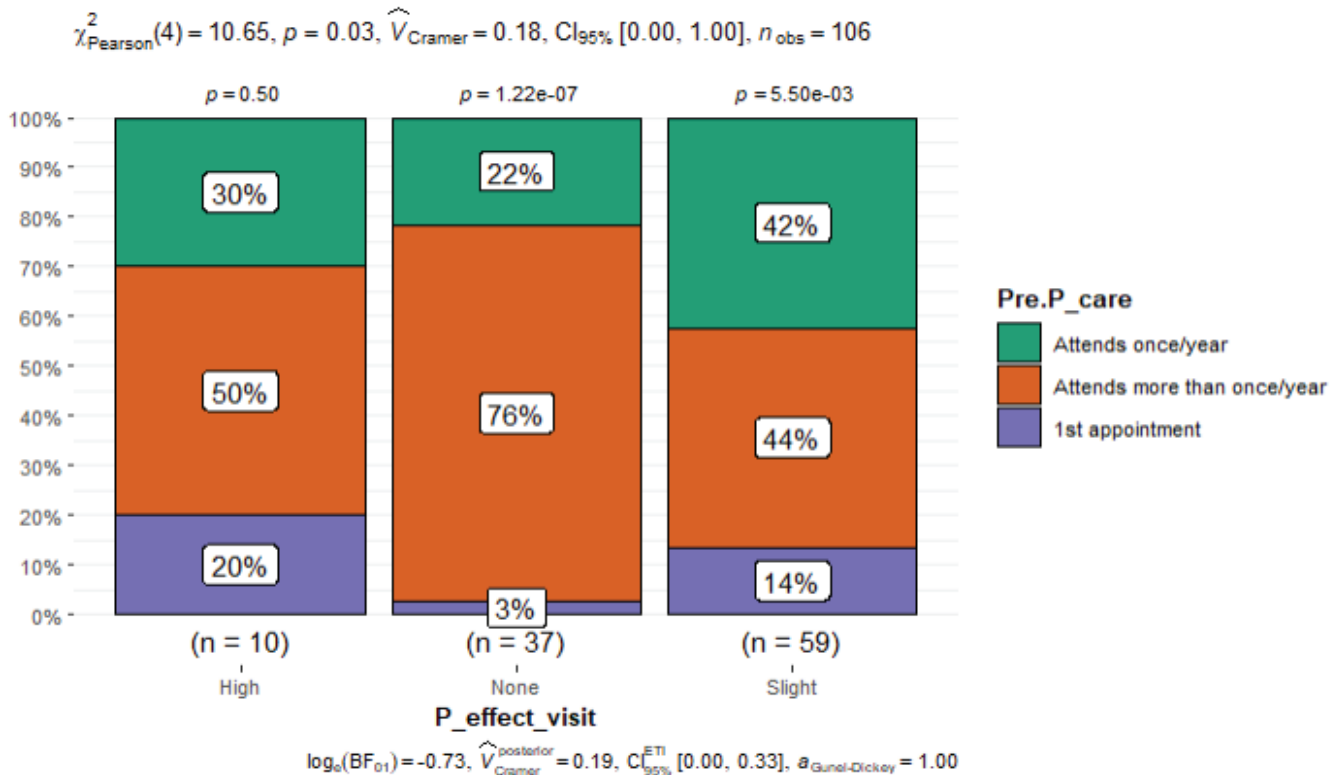


Figure 4: Bar graph showing the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care (P_effect_visit) versus frequency of dental visits pre-pandemic (Pre.P_care). The Pearson chi-square test showed a significant association between parents of pediatric patient's decision to seek dental care due to COVID-19 varied by frequency of dental visits pre-pandemic (Pearson's chi-square (χ^2) = 10.65; p - value = 0.03).

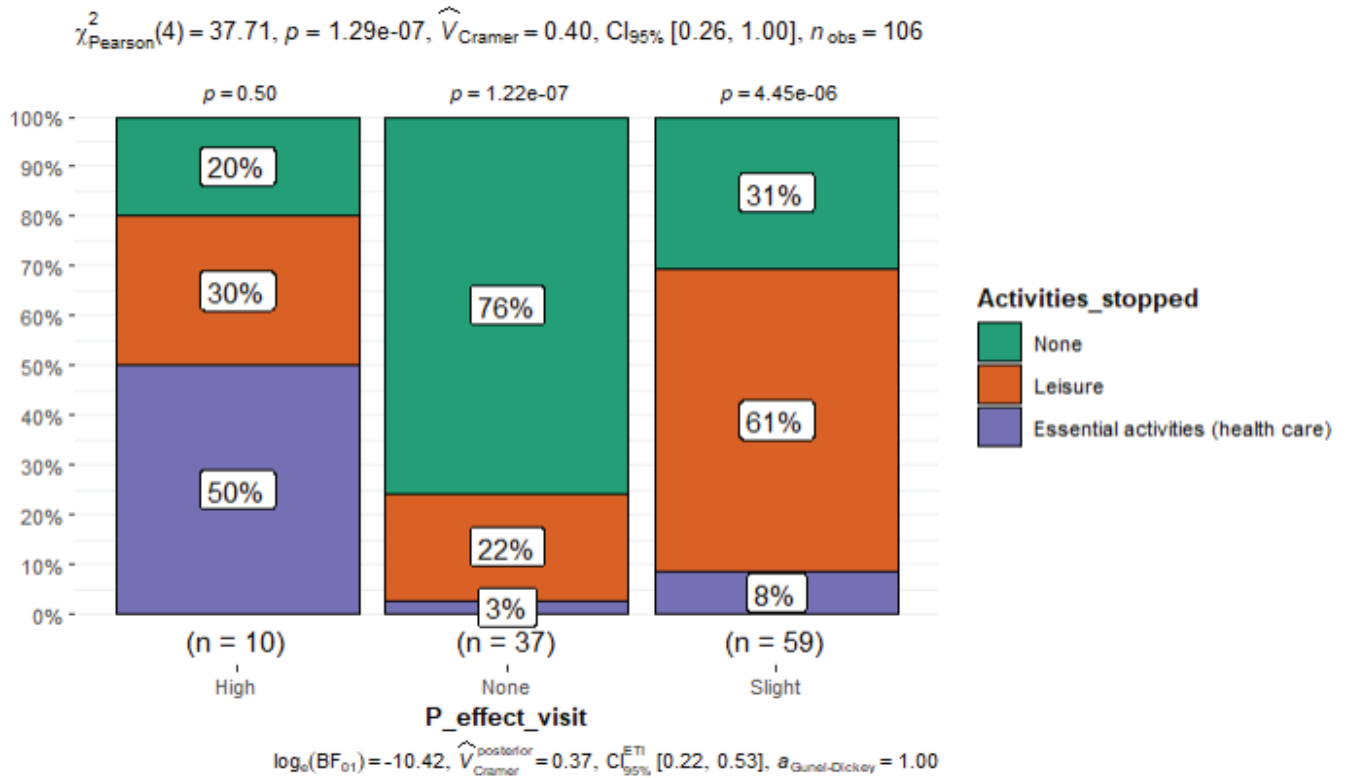


Figure 5: Bar graph showing the association between the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care (P_effect_visit) and the type of activities stopped during the pandemic (Activities_stopped). The Pearson chi-square test showed a significant association between parents of pediatric patient's decision to seek dental care due to COVID-19 varied by frequency of dental visits pre-pandemic (Pearsons chi-square (χ^2) = 37.71; p - value < 0.001).

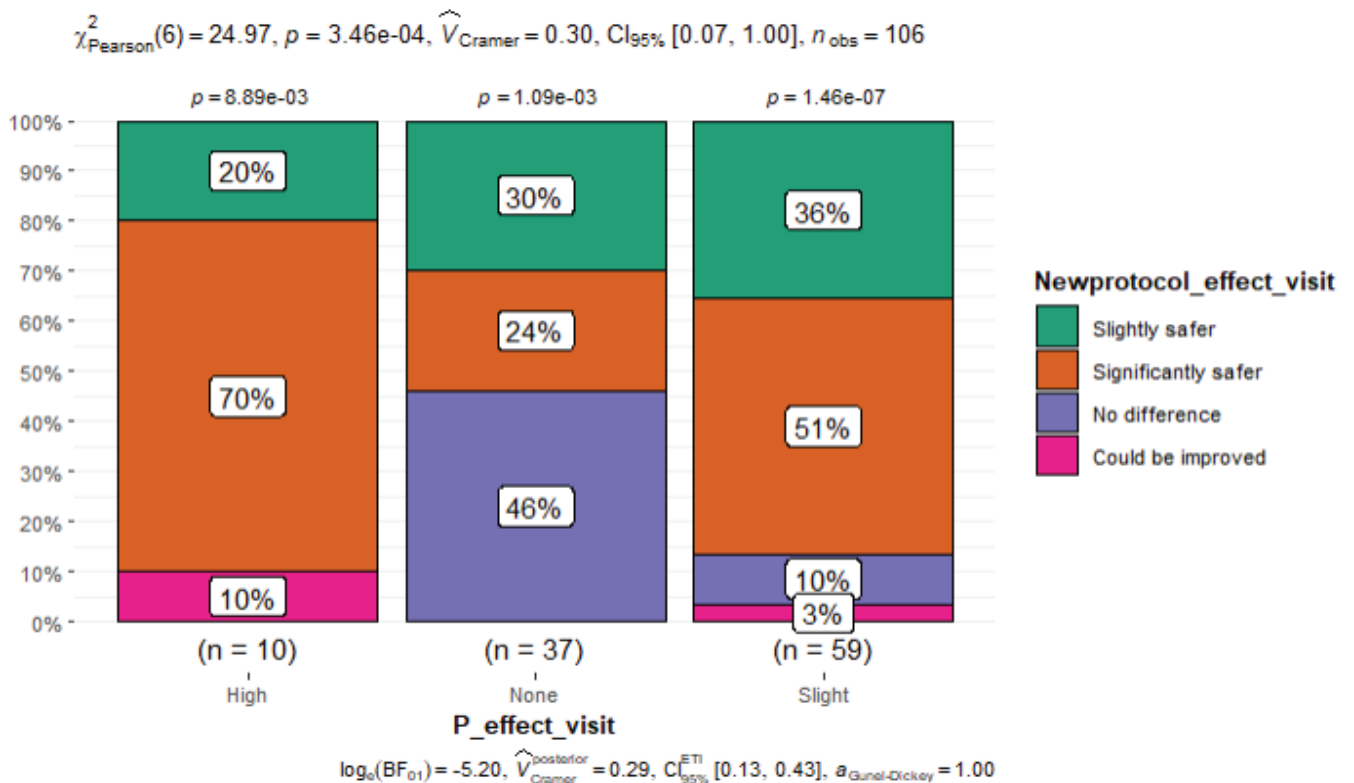


Figure 6: Bar graph showing an association between the effect of the COVID-19 pandemic on parents of pediatric patient's decision to seek dental care (P_effect_visit) and the effect of the new COVID-19 protocol in the dental setting (Newprotocol_effect_visit). The Pearson chi-square test showed that the parent's perception of the new COVID-19 protocol in the dental setting is significantly associated with parents of pediatric patient's decision to seek dental care due to COVID-19 (Pearson's chi-square (χ^2) = 24.97; p - value < 0.001).

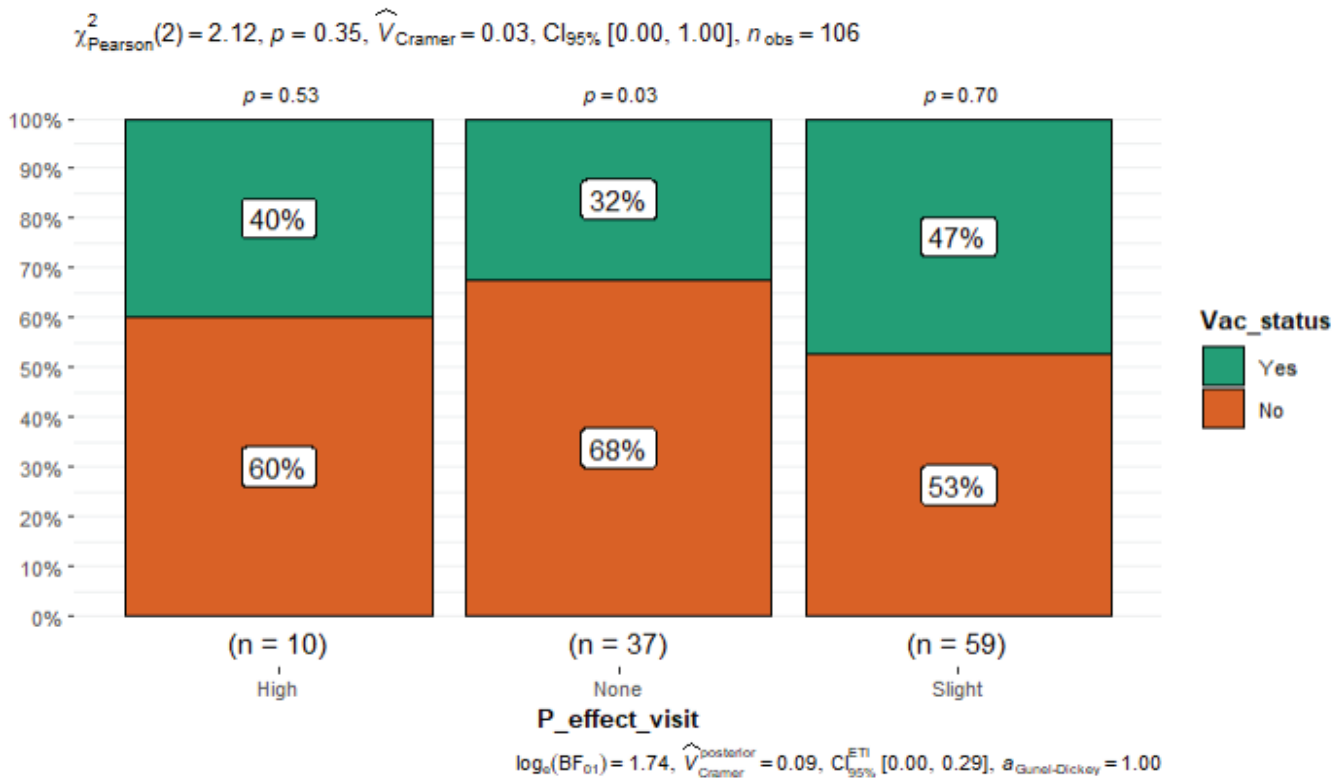


Figure 7: Bar graph showing the association between the effect of the COVID-19 pandemic on parents of pediatric patients' decision to seek dental care (P_effect_visit) and vaccination status (Vac_status). The Pearson chi-square test showed no significant association between parents of pediatric patient's decision to seek dental care due to COVID-19 and vaccination status (Pearson's chi-square (χ^2) = 2.12; p - value = 0.35).

while 10% found them could be improved (Table 2) (Figure 8). Of participants who thought the pandemic had no effect on dental visits, 40% thought the new protocol did not make any difference, 24% thought they are significantly safer, and 24% thought they are slightly safer. On the other side, of participants who thought the pandemic had a slight effect on dental visits; 51% found the new protocols significantly safer, 30% found them slightly safer, 10% found no difference, lastly 3% thought it could be improved.

Our results indicate that 43.39% of participants (N:46) found the new COVID dental protocol significantly safer, while 32.08% of participants (N: 34) found it slightly safer, and 3 participants thought it could be improved. Most participants are comfortable during the dental visit if more children were vaccinated, while 39.62% of participants did not find any difference (Table 2) (Figure 8). The Pearson chi-square test showed that the parent's comfort in the dental clinic if other patients are vaccinated, is significantly associated with parents of pediatric patients' decision to seek dental care during COVID-19 ($\chi^2 = 28.74$; p - value < 0.001).

Discussion

Dental treatments that generate aerosol can cause a high risk for COVID transmission. Saliva droplets or aerosols can be the main reason for the transmission of the disease [8]. This can happen through coughing, sneezing, saliva, or contaminated instruments [9]. Personal protective measures for the dentist

are required to reduce the risk of transmission [3]. To reduce the transmission of viral microorganisms via body fluids or air, the level of risk of the planned dental procedures would directly influence the selection of PPE [10]. Additional protective measures with personal protective equipment (PPE) are recommended when performing aerosol generating procedures (AGP). Personal protective equipment (PPE) includes surgical masks, face shields, protective eyewear, gloves, hair cap, and protective suits [7,11].

The pandemic impacted the seeking dental treatments, as 66.6% of parents seek only urgent dental care according to a study that was done to assess the impact of the pandemic on the perceptions of parents [5]. Most parents limit their visits to only emergency care, they did not take their child to the dentist during the pandemic (83%), and other parents missed their dental appointments (24%) [12]. Our results found similar results as 55% of parents found that the pandemic affects their willingness to seek dental treatment.

Fear of contracting COVID-19 can be a barrier to pediatric dental visits. A study found 82% of mothers reported that wearing personal protective equipment (PPE) and changing gloves frequently were extremely important during the dental visit. A study was conducted to measure patient satisfaction regarding the implementation of COVID-19 protocols in the dental office. Patient satisfaction was 44.6% with a confidence interval (95% CI 40.1–49.6) when 96.5% and 86.5% of dentists were wearing gloves with masks and face shields, respectively,

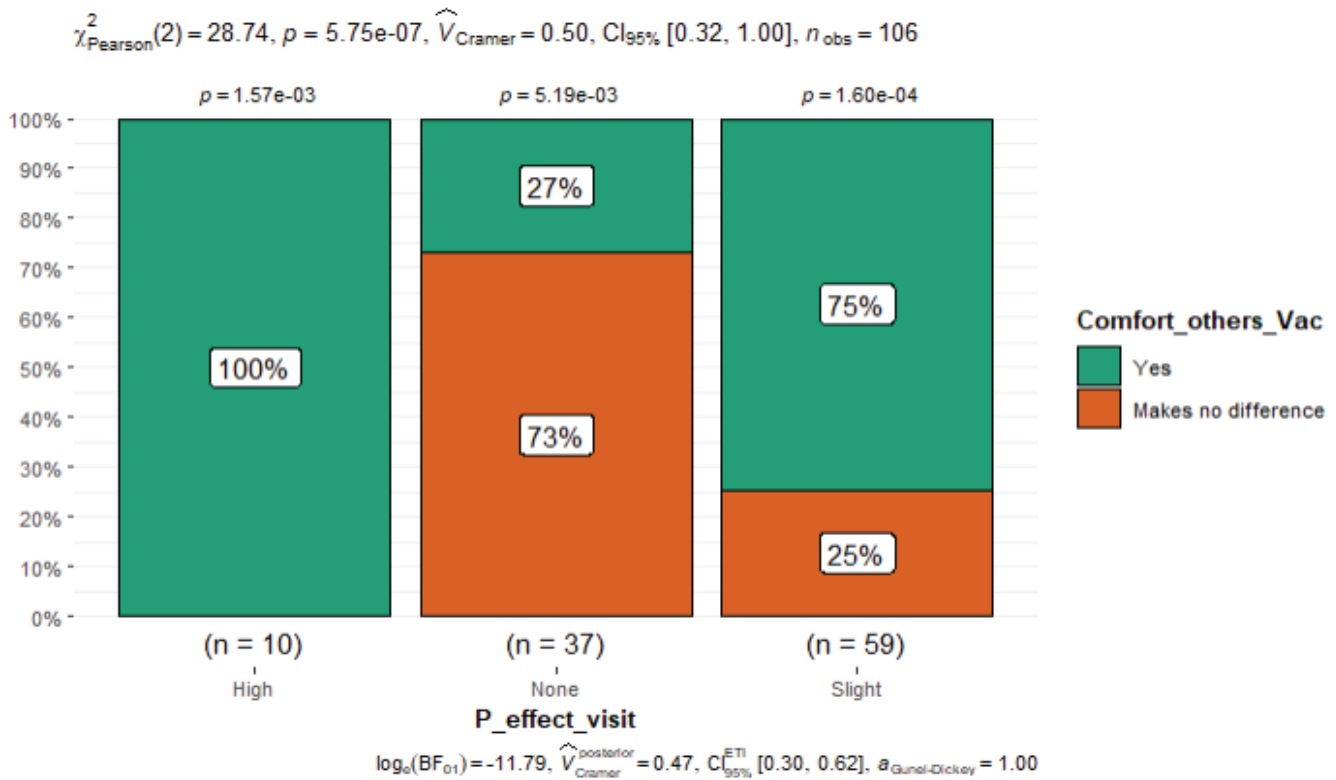


Figure 8: Bar graph showing an association between the effect of the COVID-19 pandemic on parents of pediatric patient's decision to seek dental care (P_effect_visit) and comfort in dental clinic if other patients are vaccinated (Comfort_others_Vac). The Pearson chi-square test showed that the parent's comfort in the dental clinic, if other patients are vaccinated, is significantly associated with parents of pediatric patient's decision to seek dental care during COVID-19 (Pearson's chi-square (χ^2) = 28.74; p - value < 0.001).

during dental treatments [12]. Our study also showed that parents were comfortable bringing their children back to the dentist after implanting the new dental protocols including N95 masks, face shields, COVID screenings, and gowns. Most parents who found the impact of the pandemic on their dental visits felt more comfortable seeking dental treatments with the new protocol. This study finds that improved dental protocol facilitates dental visits during the COVID pandemic ($p < 0.001$). This reduces anxiety about dental visits during the pandemic or any future COVID-19 variants, thus helping to maintain proper oral health for patients.

Conclusion

Our study finds an association between implemented new protocols and parents seeking dental treatments. This protocol will strengthen dental providers' trust and improve dental visits during any future pandemic. A larger sample size is needed to clearly determine the correlation between dental protocols and the effects on parents bringing their children to the dentist during the pandemic. The risk of sample bias is a possibility as the participants were parents who are already seeking dental care for their children and volunteered to participate. Valuable input from parents who refuse to take their children to the dentist would help explore obstacles to dental care. We recommend further research to investigate other variables such as socioeconomic status and dental literacy. These studies will give practitioners more insight into parents' perspectives on how to handle outbreaks of infectious diseases that may

present in the future so they can improve protocols in dental settings.

References

1. Benahmed AG, Gasmi A, Anzar W, Arshad M, Bjørklund G. Improving safety in dental practices during the COVID-19 pandemic. *Health Technol (Berl)*. 2022;12(1):205-214. doi: 10.1007/s12553-021-00627-6. Epub 2022 Jan 10. PMID: 35036281; PMCID: PMC8743069.
2. Bhumireddy J, Mallineni SK, Nuvvula S. Challenges and possible solutions in dental practice during and post COVID-19. *Environ Sci Pollut Res Int*. 2021 Jan;28(2):1275-1277. doi: 10.1007/s11356-020-10983-x. Epub 2020 Oct 7. PMID: 33026622; PMCID: PMC7539276.
3. Kumar Mallineni S, Chandra Bhumireddy J, Nuvvula S. Dentistry for children during and post COVID-19 pandemic outbreak. *Child Youth Serv Rev*. 2021 Jan;120:105734. doi: 10.1016/j.chilgyouth.2020.105734. Epub 2020 Nov 19. PMID: 33235401; PMCID: PMC7676364.
4. Luo W, Lee GHM, Nalabothu P, Kumar H. Paediatric dental care during and post-COVID-19 era: Changes and challenges ahead. *Pediatr Dent J*. 2021 Apr;31(1):33-42. doi: 10.1016/j.pdj.2021.01.003. Epub 2021 Jan 28. PMID: 33531735; PMCID: PMC7843058.
5. Campagnaro R, Collet GO, Andrade MP, Salles JPDSL, Calvo Fracasso ML, Scheffel DLS, Freitas KMS, Santin GC. COVID-19 pandemic and pediatric dentistry: Fear, eating habits and parent's oral health perceptions. *Child Youth Serv Rev*. 2020 Nov;118:105469. doi: 10.1016/j.chilgyouth.2020.105469. Epub 2020 Sep 15. PMID: 32952248; PMCID: PMC7490252.
6. Children and COVID-19 Vaccination Trends. (n.d.). *Www.aap.org*. Retrieved December 5, 2021, from <https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/children-and-covid-19-vaccination-trends/>.



7. Ismail AF. Managing pediatric dental patients during the SARS-CoV-2 pandemic. *J Int Oral Health* 2020; 12, Suppl S2:80-4
8. Parvaie P, Osmani F. Dentistry during COVID-19: patients' knowledge and satisfaction toward health protocols COVID-19 during dental treatment. *Eur J Med Res.* 2022 Jan 11;27(1):3. doi: 10.1186/s40001-021-00629-0. PMID: 35016707; PMCID: PMC8749922.
9. Luzzi V, Ierardo G, Bossù M, Polimeni A. Paediatric Oral Health during and after the COVID-19 Pandemic. *Int J Paediatr Dent.* 2021 Jan;31(1):20-26. doi: 10.1111/ipd.12737. Epub 2020 Oct 16. PMID: 33012056; PMCID: PMC7675493.
10. Melo P, Afonso A, Monteiro L, Lopes O, Alves RC. COVID-19 Management in Clinical Dental Care Part II: Personal Protective Equipment for the Dental Care Professional. *Int Dent J.* 2021 Jun;71(3):263-270. doi: 10.1016/j.identj.2021.01.007. Epub 2021 Jan 18. PMID: 33531145; PMCID: PMC7834330.
11. Kochhar AS, Bhasin R, Kochhar GK, Dadlani H, Thakkar B, Singh G. Dentistry during and after COVID-19 Pandemic: Pediatric Considerations. *Int J Clin Pediatr Dent.* 2020 Jul-Aug;13(4):399-406. doi: 10.5005/jp-journals-10005-1782. PMID: 33149414; PMCID: PMC7586470.
12. Farsi D, Farsi N. Mothers' Knowledge, Attitudes, and Fears About Dental Visits During the COVID-19 Pandemic: A Cross-sectional Study. *J Int Soc Prev Community Dent.* 2021 Jan 30;11(1):83-91. doi: 10.4103/jispcd.JISPCD_395_20. PMID: 33688477; PMCID: PMC7934827.

Discover a bigger Impact and Visibility of your article publication with Peertechz Publications

Highlights

- ❖ Signatory publisher of ORCID
- ❖ Signatory Publisher of DORA (San Francisco Declaration on Research Assessment)
- ❖ Articles archived in worlds' renowned service providers such as Portico, CNKI, AGRIS, TDNet, Base (Bielefeld University Library), CrossRef, Scilit, J-Gate etc.
- ❖ Journals indexed in ICMJE, SHERPA/ROMEO, Google Scholar etc.
- ❖ OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting)
- ❖ Dedicated Editorial Board for every journal
- ❖ Accurate and rapid peer-review process
- ❖ Increased citations of published articles through promotions
- ❖ Reduced timeline for article publication

Submit your articles and experience a new surge in publication services (<https://www.peertechz.com/submission>).

Peertechz journals wishes everlasting success in your every endeavours.