

Willingness and Ability of Dental Healthcare Workers to Work During the COVID-19 Pandemic

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Abstract

Background: The 2019 novel coronavirus pandemic continues to disrupt dental practice in the United States. Dental health care workers (DHCWs) play an integral role in societal health, yet little is known about their willingness and ability to work during a pandemic.

Methods: DHCWs completed a survey distributed on dental specific Facebook groups for an eight-week period (May 2020-June 2020) about their willingness and ability to work during the COVID-19 pandemic, barriers to working, and willingness to take a COVID-19 vaccine.

Results: 459 surveys were returned. Only 53% of dentists, 33% of hygienists, 29% of assistants and 48% of non-clinical staff would be able to work a normal shift during the pandemic, while even fewer (50%, 18%, 17%, 38% respectively) would be willing to work a normal shift. Barriers included caring for family, a second job and personal obligations and were faced by assistants and hygienists. Dentists were more likely than hygienists ($p<0.001$), assistants ($p<0.001$) and non-clinical staff ($p=0.014$) to take a COVID-19 vaccine.

Conclusions: DHCWs have a decreased ability and willingness to report to work during a pandemic, with dentists being significantly more able and willing to work than hygienists and assistants. Dentists are more likely than staff to take a COVID-19 vaccine.

Practical Implications: These results of this study may help inform future initiatives of dental workforce readiness during a pandemic. Dentists should be prepared to discuss alterations to standard operating procedures to allay staff member fears and improve retention rate during pandemics, allowing improved access to oral healthcare.

Background

The coronavirus pandemic began in the city of Wuhan in Hubei Province, China.¹ The central disease of this pandemic, COVID-19 has impacted the world in all realms of life. As of December 30, 2020, the John Hopkins Coronavirus Resource Center reported there have been 19.5 million COVID-19 infections in the United States and 273,799 deaths due to the disease.² Healthcare workers (HCWs) have been one of the highest groups to acquire the infection in the world.³ COVID-19 has put a tremendous amount of physical and mental stress on HCWs worldwide.⁴ China's National Health Commission reported more than 3,300 HCWs were infected in that country and Italy reported that 20% of their HCWs had been infected with SARS-CoV-2, the virus that causes COVID-19.⁵ Damery and colleagues found that a person's sense of duty to work during a pandemic often can become conflicted with their sense of duty to protect their family from such an illness.⁶ Due to the higher risk of infection during pandemics to HCWs, factors affecting the ability and willingness of HCWs to work during a pandemic in the United States have been studied. Gershon and colleagues found in their study, that more than 50 percent of their subjects would have been absent to work due to non-illness related factors.⁷

Similarly, the effects of the COVID-19 pandemic on dentistry in the United States has been ongoing. Disruptions to the supply chain for pharmaceuticals, personal protective equipment, medical devices, medical supplies, and blood have caused stress for the overall healthcare system at large.⁸ After careful analysis in the month of March, 2020, the American Dental Association recommended all dental procedures be halted for patients other than emergency dental care. Offices and clinics eventually re-opened for routine dental procedures in all parts of the country. Spikes in COVID-19 infections continued to rise sporadically within regions and thus different states re-opened their dental offices at different times per local and state health department guidelines.

To meet the oral health needs of the public, United States dental health care workers (DHCWs) must be available and willing to serve during a pandemic. Currently, after an extensive literature review, there

was no literature present about the ability and willingness of U.S. DHCWs to work during a pandemic. The purpose of this research is to assess DHCW's ability and willing to work during the 2020 COVID-19 pandemic and what factors are currently affecting that ability and willingness.

Methods

Design and Sample

The Institutional Review Board of Indiana University, Indianapolis, Indiana, USA granted this cross-sectional study exempt status and consent was obtained by agreeing to participate after reading the study information sheet. Survey questions were adapted from previous research done by Gershom et. al on the ability and willingness of medical healthcare workers to work during a pandemic.⁷ The survey was open to DHCWs of the United States for completion over an 8-week period (May to June 2020). A link to our survey was available via multiple United States dental groups on Facebook as it was posted to those groups' Facebook pages with permission from the groups' administrators. The groups were chosen to reach a wide range of DHCWs including dentists, hygienists, assistants and front office personnel. Groups included: "Dental Peeps Network", "Nifty Thrifty Dentist", "Dental Hygienist, Business Specialist & Dentist in Indiana", and "The Collaborative Pediatric Dentist (iPEDO)". Each Facebook group has administrators that have vetted its members and their affiliation with dentistry.

Variables

Ability of DHCW to work during a pandemic

The ability of dental healthcare workers to work during a pandemic was measured using a Likert Scale of whether the DHCW would be able to report for their usual shift, would be able to report for a condensed shift, would be able to report for emergency dental care only or would not be able to report.

Willingness of DHCW to work during a pandemic

The willingness of DHCWs to work during a pandemic was measured using a Likert Scale of whether the DHCW would be willing to report for their usual shift, be willing to report for a condensed shift, would be willing to report for emergency dental care only or would not be willing to report at all.

Self-perceived barriers for DHCWs to ability or willingness to work during the pandemic

To determine the self-perceived barriers that may impede DHCW's ability or willingness to work during a pandemic the respondents were prompted to check all the items that may apply. Items were adapted from a previous survey by Gershon et. al.⁷ The list of items (or barriers) can be found in Table 1.

Self-perceived items for DHCWs that would increase their ability or willingness to work during the pandemic

To determine the self-perceived items that may increase the ability or willingness to work during a pandemic the respondents were prompted to check all the items that may apply. Items were adapted from a previous survey.⁷ The list of items can be found in Table 1.

Statistical Analysis

Summary statistics were calculated and summarized using number and percentage. Associations of provider characteristics with outcomes were evaluated using Pearson chi-square tests when both variables were nominal and Mantel-Haenszel chi-square tests for ordered categorical responses when at least one variable had ordered response categories. A 5% significance level was used for all tests.

Analyses were performed using SAS version 9.4 (SAS Institute, Inc., Cary, NC, USA).

Results

Survey responses were received from a total of 459 respondents for an estimated response rate of 1%. Respondents were 88% female, 12% male with 9% less than 30 years old, 39% 30-39 years old, 29% 40-49 years old and 24% 50 years or older. Respondents races included White (87%), Asian (4%), Black or African American (2%), multiracial (2%) with 1% or less of American Indian/Alaska Native, other and not

reported. 3% reported that they were Hispanic or Latino. The majority of respondents were from the Great Lakes and Midwestern region (59%) with 14% from the Pacific Coast, 9% from the South and 5% or less from the Rocky Mountain (5%), Northeastern (5%), Mid-Atlantic (4%) and Southwestern (3%).

Responses were received from dentists (30%), hygienists (49%), dental assistants (14%), mid-level providers (1%) and non-clinical staff (7%). 95% of respondents cannot work from home. For the purpose of further analyses, mid-level provider data was not considered due to the low response rate (n=4).

Bivariate Analysis

Association with Job Title and Ability to Work

Fifty three percent of dentists, 33% of hygienists, 29% of assistants and 48% of non-clinical staff reported that they would be able to report for their usual shift. Only 7% of dentists reported that they would not be able to report to work at all, while 27% of hygienists, 31% of assistants and 34% of non-clinical staff reported that they would not be able to report to work (Table 2). Although between 7% and 34% of participants answered that they would not be able to report to work at all, positive responses to individual reasons were limited.

Association with Job Title and Willingness to Work

The percentage of respondents who would be willing to work during a pandemic were lower than the number who are able to work during a pandemic with 50% of dentists willing to work their normal shift, 18% of hygienists, 17% of assistants and 38% of non-clinical staff. Only 7% of dentists reported that they would not be willing to report to work at all, while 39% of hygienists, 34% of assistants and 17% of non-clinical staff would not be willing to report (Table 2). The survey also showed that dentists were significantly less concerned than hygienists ($p < 0.001$, odds ratio (OR) (95% CI) 0.23 (0.15-0.35)) and dental assistants ($p < 0.001$, OR 0.27 (0.15-0.49)) that they would contract COVID-19 at work.

Association with Job Title and Self Perceived Barriers to Reporting to Work

Reasons for inability to work included can be seen in Figure 1. The most cited self-perceived barriers to reporting work was responsibility for other family members (and/or pets) with 53% of total respondents agreeing. Dentists were significantly less likely than hygienists ($p < 0.001$, OR 0.41 (0.26-0.63)) and dental assistants ($p = 0.003$, OR 0.40 (0.22-0.73)) to agree that caring for family members was a barrier.

Hygienists were more likely to have obligations to a second employer or volunteering than dentists ($p < 0.001$, OR 12.90 (3.05-54.50)) and assistants ($p = 0.002$, OR 12.32 (1.66-91.69)), and more likely than dentists ($p = 0.004$, OR 5.10 (1.50-17.32)) to have other personal obligations that would prohibit their ability to report to work in an emergency situation. Non-clinical staff were significantly more likely to have a personal chronic health problem that would prohibit extra duty than dentists ($p = 0.002$, OR 4.43 (1.66-11.80)), hygienist ($p = 0.018$, OR 2.76 (1.15-6.58)), and dental assistant ($p = 0.010$, OR 4.21 (1.34-13.27)).

Association with Job Title and Items that would Increase Willingness to Work

Items that would increase DHCWs willingness to work can be seen in Figure 2. Receiving hazard duty pay would increase the willingness to work of hygienists ($p < 0.001$, OR 4.33 (2.33-8.04)), dental assistant ($p < 0.001$, OR 14.89 (7.05-31.46)), and non-clinical ($p = 0.017$, OR 3.17 (1.19-8.44)) significantly more than dentists. Having a steady stream of information during the pandemic would also increase hygienists' ($p < 0.001$, OR 3.55 (2.27-5.55)) and dental assistants' ($p = 0.002$, OR 2.58 (1.41-4.73)) willingness to report significantly more than dentists. Knowing that no aerosols would be produced during treatment would also increase the willingness of both hygienists ($p < 0.001$, OR 2.50 (1.61-3.87)) and dental assistants ($p = 0.007$, OR 2.31 (1.26-4.26)) significantly more than dentists.

Survey participants were asked if they would take a vaccine against COVID-19 if one became available and 78% of dentists were likely to extremely likely to take the vaccine while only 62% of hygienists and

58% of dental assistants were likely or extremely likely to take the vaccine. This difference was significantly different with dentists more willing than hygienists ($p=0.004$, OR 1.79 (1.21-2.66)) and dental assistants ($p<0.001$, OR 3.32 (1.93-5.71)) (Figure 3).

Survey participants were also asked whether they would consider quitting their job or retiring during a pandemic and dentists were significantly less likely to agree than all other groups [hygienists ($p<0.001$, OR 0.23 (0.14-0.37)), dental assistant ($p<0.001$, OR 0.28 (0.15-0.52)), and non-clinical ($p=0.014$, OR 0.36 (0.16-0.83))].

Discussion

This study assessed DHCWs in the United States' ability and willingness to work during a pandemic and, to the authors knowledge, represents the first study to do so. One of the goals of Healthy People 2020 is to increase access to therapeutic and preventive services.⁹ Achieving this goal depends largely on patients having access to trained DHCWs. At the time of this manuscript, COVID-19 infections were increasing daily in the United States with all areas of the country being impacted of by the disease.

The current study suggests that hygienists and dental assistants are more concerned about contracting COVID-19 at work than dentists. Bakaeen found that dentists are neither uncomfortable nor comfortable with the guidance they have received from dental organizations, and somewhat uncomfortable with the availability of personal protective equipment (PPE), the patient screening process and measures to ensure patient safety.¹⁰ That study only surveyed dentists, and did not ask about their willingness to treat patients, however that data combined with the findings of this study suggest that hygienists and dental assistants may be even more uncomfortable with the availability of PPE, patient screening process and measures to ensure patient safety. These responses are likely affected by the timing of the survey (May-June 2020) during which time many dental offices in the US were still only seeing emergency patients or just starting to open for routine care. Follow-up studies are

needed to assess how attitudes have changed as coronavirus is better understood and treatments and vaccines became available throughout the course of the pandemic.

When the availability and willingness of DHCWs to work during a pandemic is lower, access to therapeutic and preventive services could potentially lessen and thus impede the preventive goals as set forth by the dental profession. As Damery and colleagues demonstrated, HCWs are often conflicted with a “sense of duty to work” when it jeopardizes putting their family in harm’s way.⁶ With hygienists performing many important preventive services in the United States, this conflict could cause problems for the overall oral health of the public during a pandemic. Additionally, Moraes et. al found that 90% of dentists in Brazil feared contracting COVID-19 at work with about 70% being moderately or highly concerned.¹¹ This amount is consistent with the 76% of dentists in the United States in the current study who were concerned to extremely concerned about contracting COVID-19 at work. The current study also found that hygienists and dental assistants were more concerned than dentists about contracting the disease.

Per the current study, hygienists found it harder to report to work for emergency dental care during a pandemic than dentists due to obligations to a second employer or voluntary commitments. Hygienists also had other personal obligations that would prohibit their ability to work in an emergency situation. The Health Resources and Services Administration reports prior to the pandemic there were 6,782 dental health professional shortage areas in the United States.¹² The impact of the COVID-19 pandemic on availability of dental healthcare workers during and after the pandemic especially in underserved areas should be a potential topic of research in the future. The results of the current study show, dentists were able and willing to work more during a pandemic than all other DHCWs, this highlights a potential challenge for practices throughout the country. The majority of dental practices rely on team members from all categories of DHCWs to function effectively. If there is a mismatch between ability, willingness, and barriers to present to work or concern over risk and safety at work then there may be a

shortage of certain categories of DHCWs presenting to work. This may lead to a decrease in appointment availability due to lack of working DHCWs. The current study also found that dentists were less likely to quit their job than all other DHCWs during a pandemic, which would further exacerbate a shortage of DHCWs particularly of hygienists, dental assistants and non-clinical staff. Dentists should be aware that the concerns of and barriers for their team members may be perceived by those team members as more severe than dentists' concerns and barriers, and be prepared to discuss alterations to standard operating procedures that have been made to ensure staff safety.

Dentists were also more likely to take an available vaccine against COVID-19 than all other DHCWs.

There is no other literature available about the likelihood of different DHCWs to take a vaccine, however, about 71% of general medical practitioners in Malta reported that they were likely to take a COVID-19 vaccine which is similar to the current findings of 78% of dentists.¹³ In a French study, physicians were more likely to take a vaccine against COVID-19 than nurses or assistant nurses which is similar to the current findings of this study in regards to dentists versus other DHCWs.¹⁴

Damery et. al found that nearly 25% of doctors in their study did not consider it was their duty to work if it would pose risk to themselves or their families.⁶ Similarly, 83% of respondents in this study stated that they would be more willing to report for work if they knew they would be safe from infection. Many recommendations have been made from the ADA to increase the safety of providing dental care during the COVID-19 pandemic, including screening patients for symptoms and increased use of personal protective equipment (PPE).¹⁵ Thus, providing adequate PPE for the profession of dentistry is essential to the protection of the overall oral health of the country. Increased costs and pent up demand for PPE due to the pandemic may hinder some dental practices to function during this time. Specifically, practices that see a higher volume of patients per day or accept lower reimbursement insurance plans such as Medicaid may not be able to continue "normal" practice due to lack of PPE. With dental care already presenting the highest level of financial barrier compared to other health services,¹² this could

be detrimental to the care provided for our most vulnerable populations and underserved who often use these practices as their dental home.

Of the respondents in our survey, 95% of respondents could not work from home. This poses a significant challenge to their ability to work if a dependent would require care from them at home due to illness from the pandemic.

A major limitation of the study was the very low estimated response rate. The response rate can only be estimated due to the dynamic nature of social media and social media groups and people joining and leaving. It is also not possible to know how many of the members of each group are also part of another group that was sent the survey, or how many members are actually active in the groups and viewed the call for surveys.

The use of Facebook also limited the study to only those DHCWs that had access and ability to navigate to Facebook were able to participate in our study, however the use of social media to distribute surveys during the pandemic is not unprecedented, and have similarly low response rates.^{10,11} Due to the quickly evolving nature of the pandemic, social media offered a unique opportunity to gather data quickly. Additionally, although the survey had respondents from throughout the country, the proportion of the respondents was a higher from the Midwest region. This may have affected findings in correlation with the timing of the survey (May-June 2020) when COVID-19 cases were increasing in that region of the country. The timing of the survey may also have affected responses. The ADA released guidance prior to the survey window, however some states were still restricting dental care to emergencies only and dental offices were facing shortages of PPE. This study gives a snapshot of dental healthcare workers' attitudes at that specific time during the pandemic. A 1-year follow-up study will assess if more information, access to PPE and actual vaccine availability has changed these attitudes.

This study sets the groundwork for future research into the dental healthcare workforce during and after the coronavirus pandemic and future pandemics. It brings to light that different sectors of the workforce may have different viewpoints which must be explored in future studies. Strategies must be implemented to ensure continued access to care for patients' oral health from the entire dental healthcare team.

Conclusion

Within the limitations of this study, the following conclusions can be made:

1. DHCW have a decreased ability to report to work during a pandemic, with dentists being significantly more able to work than hygienists and dental assistants.
2. DHCW have a decreased willingness to report to work during a pandemic, with dentists being significantly more willing to report to work than hygienists and dental assistants.
3. The most frequently reported barrier to report to work was the obligation to care for a family member, a barrier that was more frequently cited by hygienists and dental assistants than dentists.
4. Dentists are more likely than hygienists and assistants, and hygienists are more likely than assistants to take a COVID-19 vaccine.
5. Dentists are the least likely DHCW group to consider quitting their job or retiring during a pandemic.
6. Dentists should be aware of the differences in ability and willingness to present to work and perceived barriers and concerns between dentists and staff members and be prepared to discuss alterations to standard operating procedures to allay staff member fears and improve retention rate during pandemics.

References

1. Wu F, Zhao S, Yu B, et al. A new coronavirus associated with human respiratory disease in China. *Nature* 2020; 579(7798): 265-9
2. John Hopkins University and Medicine. Dec 30,2020. "Coronavirus Resource Center". Retrieved from <https://coronavirus.jhu.edu/> Accessed on Dec. 30, 2020.
3. Koh D. Occupational risks for COVID-19 infection. *Occup Med (Lond)*. 2020; 70(1):3–5).
4. Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ*. 2020;368:m1211.
5. COVID-19: protecting health-care workers. *Lancet*. 2020;395(10228):922)
6. Damery S, Draper H, Wilson S, Greenfield S, Ives J, Parry J, Petts J and Sorell T. Healthcare workers' perceptions of the duty to work during an influenza pandemic. *Journal of Medical Ethics*, Vol. 36, No. 1 (January 2010), pp. 12-18
7. Gershon RR, Magda LA, Qureshi KA, Riley HE, Scanlon E, Carney MT, et al. Factors associated with the ability and willingness of essential workers to report to duty during a pandemic. *J Occup Environ Med*. 2010;52(10):995–1003.
8. Mirchandani P. Health Care Supply Chains: COVID-19 Challenges and Pressing Actions.*Ann Intern Med*2020; 173:300-301
9. US Department of Health and Human Services. Healthy People 2020: topics and objectives. 2014. <http://www.healthypeople.gov/2020/topicsobjectives2020/>. Accessed on Dec. 4, 2020.
10. Bakaeen LG, Masri R, AlTarawneh S, Garcia LT, AlHadidi A, Khamis AH, Hamdan AM, Baqain ZH, Dentists' knowledge, attitudes, and professional behavior toward the COVID-19 pandemic: A multisite survey of dentists' perspectives, *The Journal of the American Dental Association*, 2020
11. Moraes RR, Correa MB, Queiroz AB, Daneris Â, Lopes JP, Pereira-Cenci T, D'Avila OP, Cenci MS, Lima GS, Demarco FF. COVID-19 challenges to dentistry in the new pandemic epicenter: Brazil. *PLoS One*. 2020 Nov 30;15(11):e0242251. doi: 10.1371/journal.pone.0242251. PMID: 33253213; PMCID: PMC7703993.
12. Surdu S, Mertz E, Langelier M, Moore J. Dental Workforce Trends: A National Study of Gender Diversity and Practice Patterns. *Med Care Res Rev*. 2020 Aug 28:1077558720952667. doi: 10.1177/1077558720952667. Epub ahead of print. PMID: 32856551.
13. Grech V, Bonnici J, Zammit D. Vaccine hesitancy in Maltese family physicians and their trainees vis-à-vis influenza and novel COVID-19 vaccination,*Early Human Development*, 2020
14. Gagneux-Brunon A, Detoc M, Bruel S, Tardy B, Rozaire O, Frappe P, Botelho-Nevers E. Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: a cross sectional survey, *Journal of Hospital Infection*, 2020.
15. ADA develops guidance on dental emergency, nonemergency care: Recommendations part of dentists' response over COVID-19 concerns. *ADA News* April 18, 2020
16. Vujcic M, Buchmueller T, Klein R. Dental care presents the highest level of financial barriers, compared to other types of health care services. *Health Aff (Millwood)*. 2016;35(12):2176-2182.

Figure Legends:

Figure 1: Self-perceived barriers to reporting to work during the COVID-19 pandemic by job title. P-values calculated using Pearson chi-square tests. * denotes significant difference from dentists, ^ denotes significant difference from hygienists, # denotes significant difference from dental assistants and + denotes significant difference from non-clinical staff.

Figure 2: Items that would increase the willingness of DHCW to report to work during the COVID-19 pandemic by job title. P-values calculated using Pearson chi-square tests. * denotes significant difference from dentists, ^ denotes significant difference from hygienists, # denotes significant difference from dental assistants and + denotes significant difference from non-clinical staff.

Figure 3: Likelihood to take a COVID-19 vaccine if a safe and effective vaccine becomes available during the pandemic. P-values calculated using Mantel-Haenszel chi-square tests. Dentists are significantly more likely than both hygienists and dental assistants to take a COVID-19 vaccine.

Information about Practical Implications:

Recommendations related to practice staff and patient safety during the COVID-19 pandemic have been published by both the ADA and CDC. These recommendations can be found at:

- https://success.ada.org/en/practice-management/patients/safety-and-clinical?utm_source=cpsorg&utm_medium=covid-nav&utm_content=nav-safety-clinical&utm_campaign=covid-19
- <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>

Practitioners are also encouraged to stay updated with recommendations of their state and local health departments. The CDC Health Department Directory can be found at:

- <https://www.cdc.gov/publichealthgateway/healthdirectories/index.html>

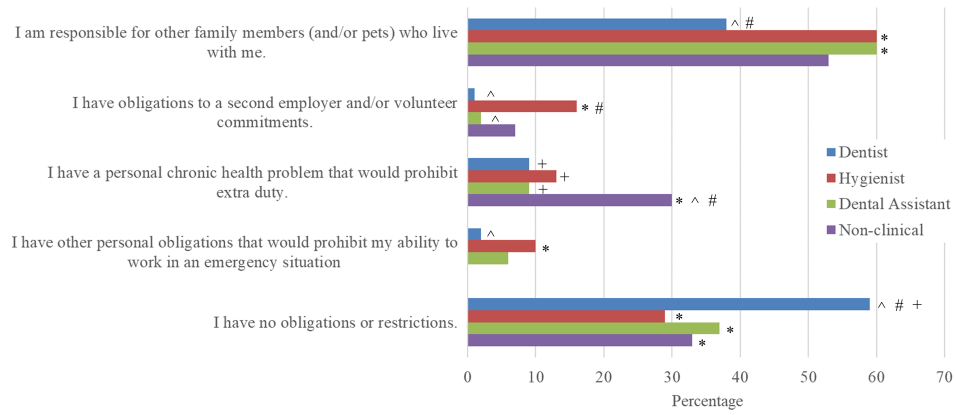
Resources related to COVID-19 vaccine have been provided and summarized by the ADA. They can be found at the following links:

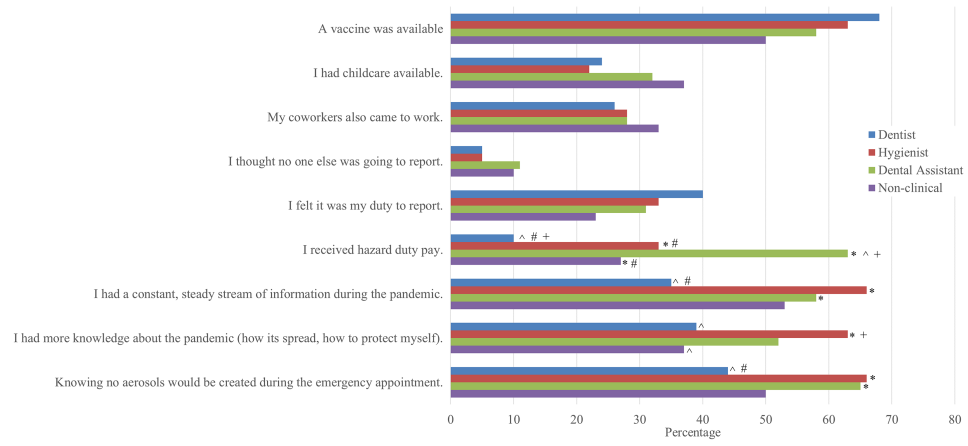
- https://success.ada.org/~media/CPS/Files/COVID/ADA_Vaccine_Insight_Key_Facts
- <https://success.ada.org/en/practice-management/patients/covid-19-vaccine-regulations-for-dentists-map>

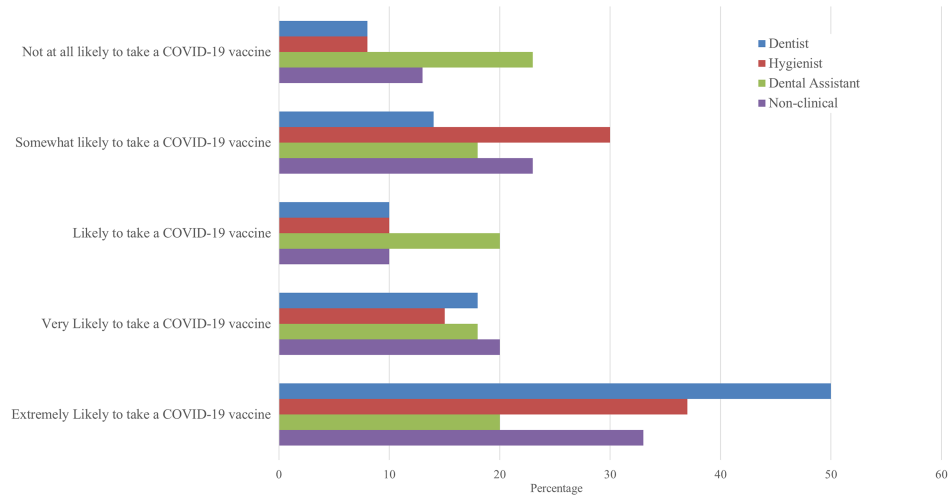
Table 1. Self-Perceived Barriers and Factors that Would Affect Dental Healthcare Workers Ability and Willingness to Work During the Pandemic
<p>Barriers to Reporting to Work</p> <p>I am responsible for other family members (and/or pets) who live with me</p> <p>I have obligations to a second employer and/or volunteer commitments</p> <p>I have a personal chronic health problem that would prohibit extra duty</p> <p>I have other personal obligations that would prohibit my ability to work in an emergency situation</p> <p>I have no obligations or restrictions</p>
<p>Factors that Would Increase Ability and Willingness to Report to Work</p> <p>A vaccine was available</p> <p>I knew I would be safe from infection</p> <p>I could stay in touch with my family</p> <p>I had childcare available</p> <p>I had care for elders or other family members available</p> <p>I had pet care available</p> <p>I could leave work when I needed to</p> <p>My coworkers also came to work</p> <p>I thought no one else was going to report</p> <p>I felt it was my duty to report</p> <p>I received hazard duty pay</p> <p>My employer gave me an N95-type respirator</p> <p>I was trained properly to use an N95-type respirator</p> <p>I had a constant, steady stream of information during the pandemic</p> <p>I had more knowledge about the pandemic (how it's spread, how to protect myself)</p> <p>Knowing no aerosols would be created during the emergency appointment</p> <p>Other</p>

Table 2. Job Title and Ability and Willingness to Work during the COVID-19 Pandemic					
	Dentist N (%)	Hygienist N (%)	Dental Assistant N (%)	Non-clinical N (%)	P-value *
Ability to Work					0.001
Report for my usual shift	71 (53%)	73 (33%)	19 (29%)	14 (48%)	
Report for a condensed shift	10 (7%)	54 (25%)	5 (8%)	2 (7%)	
Report for emergency dental care only	44 (33%)	32 (15%)	21 (32%)	3 (10%)	
Not report at all	9 (7%)	59 (27%)	20 (31%)	10 (34%)	
Odds ratio vs Dentist (95% CI)		0.50 (0.34-0.75)	0.33 (0.19-0.57)	0.56 (0.27-1.17)	
Willing to Work					< 0.001
Report for my usual shift	66 (50%)	40 (18%)	11 (17%)	11 (38%)	
Report for a condensed shift	15 (11%)	47 (22%)	6 (9%)	3 (10%)	
Report for emergency dental care only	43 (32%)	46 (21%)	25 (39%)	10 (34%)	
Not report at all	9 (7%)	85 (39%)	22 (34%)	5 (17%)	
Odds ratio vs Dentist (95% CI)		0.25 (0.17-0.38)	0.23 (0.13-0.39)	0.57 (0.28-1.19)	

* Mantel-Haenszel chi-square test used to calculate P-value.







Factors Affecting Dental Healthcare Providers' Ability and Willingness to Work During a Pandemic

Please complete the survey below.

Thank you!

INDIANA UNIVERSITY STUDY INFORMATION SHEET FOR RESEARCH

"Factors Affecting Dental Healthcare Providers' Ability and Willingness to Work During a Pandemic" IRB# 2004297133

About this research

You are being asked to participate in a research study. Scientists do research to answer important questions which might help change or improve the way we do things in the future. This form will give you information about the study to help you decide whether you want to participate. Please read this form, and ask any questions you have, before agreeing to be in the study.

Taking part in this study is voluntary.

You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with Indiana University School of Dentistry.

This research is intended for individuals 18 years of age or older. If you are under age 18, do not complete the survey.

Why is this study being done?

There exist many articles in the literature that investigate essential workers' ability and willingness to report for job duties during a pandemic. However, there is a lack of literature regarding dental providers in the same situation. The CDC has recommended that non-urgent dental appointments be rescheduled, but urgent and emergent appointments are still occurring. Therefore, this research aims to investigate how dental providers (i.e. assistants, hygienists, dental therapists, dentists) respond in a similar situation.

You were selected as a possible participant because you responded to a request on a social media platform for participants who are dental personnel.

The study is being conducted by Dr. Ajay Joshi of the Indiana University School of Dentistry.

What will happen during the study?

You will do the following if you decide to be in this study:

- 1) Read this Study Information Sheet and ask any questions you have before agreeing to be in the study (about five minutes).
- 2) Complete an electronic survey in RedCap (about 10 minutes).

What are the risks and benefits of taking part in this study?

The risks of participating in this research are:

- 1) Loss of Confidentiality**
- 2) Potentially feeling uncomfortable when answering a question.**

To reduce the risk of loss of confidentiality you will complete the electronic survey without giving any identifiable information like your name or birthdate. To reduce the risk of feeling uncomfortable answering a question, you may skip any question you are uncomfortable answering.

We don't expect you to receive any benefit from taking part in this study, but we hope to learn things which will help scientists in the future.

How will my information be protected?

All research includes at least a small risk of loss of confidentiality. Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published and databases in which results may be stored.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees and any state or federal agencies who may need to access your research records (as allowed by law).

Will I be paid for participation?

You will not be paid for participating in this study.

Who should I call with questions or problems?

For questions about the study, contact the researcher, Dr. Ajay Joshi, at 765-667-0158 or at the email address of ajpjoshi@iu.edu .

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, please contact the IU Human Subjects Office at 800-696-2949 or at irb@iu.edu.

How old are you in years?

Please indicate your gender

- Male
 Female

Please indicate your race/ethnicity (Please check ALL that apply)

- Hispanic/Latino
- White (Includes Middle Eastern and North African)
- Black/African-American
- Asian (includes Asian Indian and Filipino)
- Hawaiian/Other Pacific Islander
- American Indian/Alaska Native
- Other

Please indicate your highest educational degree.

- Did not graduate from high school
- High school diploma or GED
- Associate's degree or some college
- Bachelor's degree
- Post-graduate/professional degree

Please indicate your marital status

- Married/Partner
- Unmarried/No Partner

Is your spouse/partner an essential worker (as defined by your state's governor) who would be expected to report to duty during a pandemic?

- No
- Yes
- Not applicable (N/A)

Are there any children under 18 living in your home?

- No
- Yes

In general, how would you rate your health?

- Excellent
- Very Good
- Good
- Fair
- Poor
- Very Poor

Do you have any of the following health problems? (Please check ALL that apply)

- Arthritis/joint pain
- Heart disease
- High blood pressure
- Mental health problems
- Respiratory problems
- Diabetes
- Obesity
- Otherwise Immunocompromised
- Chronic kidney disease
- Liver disease
- Other chronic health problems

For the following questions, please consider your primary dental practice location...

What state is your practice located in?

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Washington
- West Virginia
- Wisconsin
- Wyoming

What type of area is your primary practice located in?

- Urban
- Suburban
- Rural

What is your job title/role?

- Dentist (DDS, DMD or equivalent)
- Hygienist
- Dental Assistant
- Mid-level provider
- Lab technician
- Non-clinical (including administrative, reception, managerial, etc.)

Please indicate your specialty (Select all that apply)

- Dental Anesthesia
- Dental Public Health
- Endodontics
- General Dentistry
- Oral and Maxillofacial Pathology
- Oral and Maxillofacial Radiology
- Oral and Maxillofacial Surgery
- Orthodontics
- Pediatric Dentistry
- Periodontics
- Prosthodontics

Are you able to work from home?

- Yes
- No

How many years have you worked in your job/position?

- 0 to 1 year
- 2 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21+ years

When do you plan to retire?

- 0 to 1 year
- 2 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21+ years

Please indicate how much you agree with the following statements about your current job:

Employees are told when they do not follow good safety and health practices.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I feel free to report safety or health violations where I work.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

The health and safety of workers is a high priority with management where I work.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

At my workplace, all reasonable steps are taken to minimize my risk of exposure to occupational hazards.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

The next few questions deal with COVID-19.

Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread from person to person. The virus that causes COVID-19 is a novel coronavirus that is highly contagious and its symptoms can range from mild to severe. There is currently no vaccine to protect from COVID-19. As a result of the current COVID-19 pandemic, many state governors have issued stay at home orders and the American Dental Association has recommended dental practices close for all but emergency dental treatment.

How concerned are you that COVID-19 will come back within the next year?

- Not at all concerned
 Somewhat concerned
 Concerned
 Very Concerned
 Extremely Concerned

During a pandemic, if a safe & effective COVID-19 vaccine became available, how likely would you be to take it?

- Not at all likely
 Somewhat likely
 Likely
 Very Likely
 Extremely Likely

During the COVID-19 pandemic, how would you rate the risk of infection to the following:

	Not at risk	Slight Risk	Moderate Risk	High Risk	Extremely High Risk
Individuals who perform jobs like mine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My personal risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How concerned are you about catching COVID-19 during an outbreak?

	Not at all concerned	Somewhat concerned	Concerned	Very Concerned	Extremely Concerned
At home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next few questions are about personal protective equipment (PPE)

Which forms of personal protective equipment are available to you at work? (Please check ALL that apply)

	Available	Not available	Not sure
Surgical mask	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N95-type respirator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face shield	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surgical cap	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gown/jacket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Gloves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety glasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have you received any training on respiratory protection (e.g., N95-type facemasks)?

No
 Yes

Have you been fit-tested for a respirator (e.g., N95-type facemask)?

No
 Yes

On the job, how often do you wear the following types of protection when they should be worn?

	Never	Sometimes	Often	Always	Not required
Surgical mask	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protective eyewear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gloves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gowns/jackets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face shields	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surgical caps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate your level of agreement with the following statements.

	Strongly Disagree	Disagree	Agree	Strongly Agree
During a pandemic, I believe my employer will be concerned about my safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During a pandemic, my employer will have the necessary ability/expertise to make sure I am protected at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During a pandemic, I believe that my employer will be concerned about my family's safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My employer and I share the same values.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Regarding your ability and willingness to report to duty during a pandemic...

What might make it difficult for you to report to work for emergency dental care during a pandemic? (Please check ALL that apply)

- I am responsible for other family members (and/or pets) who live with me.
- I have obligations to a second employer and/or volunteer commitments.
- I have a personal chronic health problem that would prohibit extra duty.
- I have other personal obligations that would prohibit my ability to work in an emergency situation
- I have no obligations or restrictions.

During a pandemic, what is the type shift you would be:

	Report for my usual shift	Report for a condensed shift	Report for emergency dental care only	Not report at all
Able to work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Willing to work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate which of the following items would increase your willingness to report for work to treat a dental emergency: (Please check ALL that apply)

If...

- A vaccine was available
- I knew I would be safe from infection.
- I could stay in touch with my family.
- I had childcare available.
- I had care for elders or other family members available.
- I had pet care available.
- I could leave work when I needed to.
- My coworkers also came to work.
- I thought no one else was going to report.
- I felt it was my duty to report.
- I received hazard duty pay.
- My employer gave me an N95-type respirator.
- I was trained properly to use an N95-type respirator.
- I had a constant, steady stream of information during the pandemic.
- I had more knowledge about the pandemic (how it's spread, how to protect myself).
- Knowing no aerosols would be created during the emergency appointment.
- Other

Please Specify

During a pandemic, would you consider quitting your job or retiring?

- No
 Yes

Additional comments or concerns about reporting to work during a pandemic:
