

## Survey of Mental Health of Dentists in the COVID-19 Pandemic in the UK

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Received : 23-10-20  
Revised : 15-12-20  
Accepted : 15-12-20  
Published : 30-01-21

## ABSTRACT

**Aim:** To assess the impact of work-related changes on the mental health (MH) of dentists during the peak of COVID-19 pandemic in the UK. **Materials and Methods:** Dentists involved in certain treatments, for example, high-speed drilling procedures, generate infectious aerosols. These Aerosol Generating Procedures (AGPs) are at the highest risk of transmission of coronavirus. During the COVID-19 pandemic, a significant number of dentists in the UK were restricted from providing treatments to reduce the risk of viral transmission. Some of the dentists providing urgent dental treatment were involved in AGPs. Significant and sudden changes in the delivery of dental care in the current pandemic may have impacted the MH of dentists. An online survey was conducted, using validated tools to measure the MH symptoms and stress. Pearson's chi-squared test of independence was used for statistical analysis. **Results:** Overall, 123 dentists participated in the survey. The prevalence of anxiety-related symptoms was 71% (95% CI 0.62–0.78), depression-related symptoms was 60% (95% CI 0.51–0.68), and stress was 92% (95% CI 0.86–0.96). Dentists working in the independent sector had more psychological symptoms compared with those in the public sector ( $P = 0.014$ ). **Conclusions:** Working in the public sector appeared to have a protective effect. Almost all the dentists in this survey were experiencing MH symptoms and stress. Further research is needed to assess the long-term effect of the COVID-19 pandemic on dentists.

**KEYWORDS:** Covid-19, dentist, mental health, pandemic, stress

## INTRODUCTION

COVID-19 is a highly contagious disease creating havoc worldwide; it is caused by the Coronavirus, which is referred to as SARS-COV-2. It was estimated that approximately 6% (16/254) of deaths occurred in physicians worldwide, and these were dentists.<sup>[1]</sup> Dentistry, as a profession, is in a unique and challenging position as dentists work at a close distance to the patient; social distancing in the chair is not possible and, hence, the risk of transmission of respiratory infections, including COVID-19, is very high, particularly when AGPs are carried out. Dental care in the UK is provided in National Health Services (NHS) hospitals, in practice with an NHS contract, and in the independent sector. NHS is the state-sponsored public sector body. Most dental practices in the UK

providing primary care were closed from late March 2020 due to the main concern of risk of transmission of the pandemic virus to the patients and the dental teams from AGPs. All routine care was stopped and deferred until otherwise advised.<sup>[2]</sup> Only a small number of public sector dentists, specialists, and consultants in hospitals were mainly involved in hands-on dentistry compared with even fewer independent sector dentists at work. Most public and independent sector dentists were providing remote advice or were redeployed to work in alternative medical/dental roles.

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**How to cite this article:** Ranka MS, Ranka SR. Survey of mental health of dentists in the COVID-19 pandemic in the UK. J Int Soc Prevent Communit Dent 2021;11:104-8.

## Access this article online

## Quick Response Code:



**Website:** www.jispcd.org

**DOI:** 10.4103/jispcd.JISPCD\_401\_20

Research into the MH of dentists in the UK started in the year 1999.<sup>[3]</sup> A survey of 1000 UK dentists in 2005 highlighted a number of factors causing work-related stress, including workload, poor interpersonal relationship, increased demand, and loss of control.<sup>[4]</sup> They even reported suicidal thoughts in 12% of the dentists surveyed. Studies in different parts of the world have raised similar concerns.<sup>[5-7]</sup> A 2019 survey of 2053 dentists in the UK found that dentists experienced significant stress and the general dental practitioners were most vulnerable.<sup>[8]</sup> During this pandemic, a combination of the pandemic burden and changes in the daily work routine may have caused psychological ill health and stress to the dentists in the UK. Hence, this survey was conducted to gain further insight into the levels of MH symptoms and stress experienced by the dentists in the UK during this period.

## MATERIALS AND METHODS

A closed e-survey link was sent to 200 dentists in the UK, in three social media dentistry groups and personal communications, as power calculations using Cohen effect size suggested that a minimum of 117 responses were needed for an effect size of 0.9 for this survey. The probability sampling method was used to select the dentists. Initial contact with the research participants was not made before sending the survey link. The social media dentistry group included a wide variety of professionals such as hospital consultants, trainees, general dental practitioners, and specialty dentists, working in the public and the independent sectors. Participants' consent was taken after informing them that the survey had six questions and would take less than 2 min to complete. Participants were informed that the survey was voluntary, without incentives and no personal data would be collected. The IP addresses of the respondents captured by the survey website were immediately deleted after downloading the survey data. The survey link expired after each participant completed the survey. Participants were informed that anonymous response data would be available to them on application to the authors. The survey was checked for usability and technical functionality in a pilot study involving 15 dentists. Option to review the survey response for the participants was available at the end of the survey. Ethical approval was sought from the NHS Health Research Authority. The survey was conducted approximately two months after the peak of the COVID-19 pandemic in the UK. Appendix depicts the list of the survey questions.

PHQ-4 was used to screen for anxiety and depression symptoms.<sup>[9]</sup> Two questions each for Anxiety (A1: Nervous and A2: Worried) and Depression (D1: Little

Interest and D2: Feeling low) were administered with a 4-point scale ranging from "never" to "always" for each question.

Numeric Rating Scale (NRS) was used to capture stress levels.<sup>[10]</sup> Stress was captured on a horizontal scale of 0–10, with 0 being no stress, 1–3 being mild stress, 4–6 being moderate stress, and 7+ being severe stress.

## STATISTICAL ANALYSIS

Statistical Package for the Social Sciences software was used to perform Pearson's chi-squared test of independence to explain the differences in means between the dentists in the independent and public sectors.

## RESULTS

Overall, 124 dentists took part in the survey. One dentist did not complete the survey and was excluded from the study. The response rate was 61.5% (123/200). The average time to complete the survey was 1 min. Only 45% (95% CI 0.36–0.54) of the dentists were working at the time of the survey. Of these, 18% (95% CI 0.11–0.30) were working in the public sector, 27% (95% CI 0.17–0.40) in the independent sector, and 55% (95% CI 0.42–0.67) in both sectors.

## PHQ4

Overall, 92% (95% CI 0.86–0.96) of the dentists were experiencing some form of psychological symptoms. Of these, 74% (95% CI 0.66–0.81) were nervous/ anxious, 68% (95% CI 0.60–0.76) were worried, 60% (95% CI 0.51–0.68) lost interest/ pleasure in doing things, and 60% were feeling low or depressed. The differences in the severity scores of psychological symptoms associated with their working status and their place of work are shown in Table 1. Dentists who were not working had more depressive symptoms than those who were at

**Table 1: Differences in severity of psychological symptoms according to working status and place of work**

Variable	$\chi^2$	P value
Working or not working, <i>n</i> = 123		
A1	3.44	0.067
A2	2.14	0.143
D1	6.12	0.013
D2	9.22	0.002
Place of work, <i>n</i> = 123 independent vs public		
A1	1.78	0.183
A2	1.86	0.174
D1	5.98	0.014
D2	5.98	0.014

A1 = anxious; A2 = worried; D1 = little interest; D2 = feeling low.

**Table 2: Odds of the likelihood of development of MH symptoms according to working status and place of work**

	Odds ratio	95% Confidence interval	
		Lower	Upper
<b>Working or not</b>			
A1	2.13	0.93	1.84
A2	1.76	0.82	3.77
D1	2.52	1.20	5.29
D2	3.13	1.48	6.62
<b>Public vs independent</b>			
A1	3.45	1.34	8.91
A2	4.42	1.71	11.44
D1	4.64	1.74	12.38
D2	4.43	1.67	11.82

A1 = anxious; A2 = worried; D1 = little interest; D2 = feeling low.

work ( $P = 0.013$  and  $0.002$ ). Dentists working in the independent sector had more psychological symptoms compared with those in the public sector ( $P = 0.014$ ).

#### RISK OF MH SYMPTOMS

Table 2 shows the Odds Ratio of developing MH symptoms in the various groups of dentists. Dentists who were working had two to three times increased odds of not feeling anxious or depressed. Dentists working in the public sector had three to four times increased odds of not feeling anxious or depressed.

#### NUMERIC RATING SCALE

Overall, 92% (95% CI 0.86–0.96) of the dentists were stressed. Of these, 24% (95% CI 0.18–0.33) dentists were mildly stressed, 23% (95% CI 0.16–0.31) were moderately stressed, and 45% (95% CI 0.36–0.54) were severely stressed. There was no statistical difference in the stress levels of the dentists regardless of whether they were working or not ( $P = 0.17$ ) and their place of work ( $P = 0.32$ ).

#### DISCUSSION

The findings of this survey suggest that almost all the dentists were experiencing some form of MH symptoms and stress because of changes in their daily work routine due to the pandemic situation in the UK. Statistically significant associations between the MH and stress levels of dentists in this survey were discovered due to work-related changes implemented during the peak of the pandemic to reduce the transmission of the virus. Dentists who were not working had more anxiety and depressive symptoms compared with the working group. Although both places of work (independent and public sector) had a statistically significant risk of poor MH, dentists working in the public sector were less affected and had reduced odds of developing MH symptoms. Dentists in the independent sector had

statistically significant depressive symptoms compared with those in the public sector. Working in a public-funded sector seemed to have a protective effect.

As the restrictions in the pandemic were slowly relaxed from July 20 onward, the inflow of patients was likely to increase. A recent study from China found that the number of nonurgent dental consultations fell by 70% and dental and oral infections increased by more than 20% during the pandemic.<sup>[11]</sup> A survey by Toon *et al.* in 2019 found a statistically significant relationship ( $P < 0.01$ ) between work-related stress and burnout in UK dentists, among other factors.<sup>[12]</sup> Thus, the rebound phenomenon of patients visiting dentists after the ease of restrictions on practice could hit the dentists harder and there could be a perception of fear and anxiety about increased exposure to the pandemic virus, leading to further psychological trauma. Also, personal protective equipment constraints and fallow period between dental AGPs could add to the stress.

This survey gives a snapshot of the exposure and is unable to establish a causal link between the exposure (pandemic virus) and the outcome (MH). However, given the high levels of MH symptoms and psychological stress in this group of dentists, it is unlikely that preexisting MH problems could be significant confounding factors. We are unable to distinguish which group of dentists, such as general dental practitioners or specialists, experienced the most stress and psychological symptoms due to limited nature of the data collection.

In conclusion, there was a significant deterioration in the MH of dentists in the UK during the pandemic due to a change in their working pattern, impacted by loss of work, income, and lack of hands on dentistry. Dentists throughout the world may be experiencing similar psychological symptoms and stress due to the ongoing pandemic. This needs further investigations with epidemiological studies to recognize the long-term impact of psychological ill health, such as adjustment and mood disorders. Strategies to prevent and support the stressed dentists will help the dental profession in the long term.

#### ACKNOWLEDGMENT

Not applicable.

#### FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

#### CONFLICTS OF INTEREST

There are no conflicts of interest.

#### AUTHORS' CONTRIBUTIONS

Not applicable.

**ETHICAL POLICY AND INSTITUTIONAL REVIEW BOARD STATEMENT**

Not applicable.

**PATIENT DECLARATION OF CONSENT**

Not applicable.

**DATA AVAILABILITY STATEMENT**

Not applicable.

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## APPENDIX: SURVEY QUESTIONS AND RESPONSES

1. Over the past two weeks, how often have you been bothered by feeling nervous, anxious, or on edge? Not at all/ several days/ more than half the days/ nearly every day. (A1)
2. Over the past two weeks, how often have you been bothered by not being able to stop or control worrying? Not at all/ several days/ more than half the days/ nearly every day. (A2)
3. Over the past two weeks, how often have you been bothered by little interest or pleasure in doing things? Not at all/ several days/ more than half the days/ nearly every day. (D1)
4. Over the past two weeks, how often have you been bothered by feeling low, depressed, or hopeless? Not at all/ several days/ more than half the days/ nearly every day. (D2)
5. Are you currently working? Either in dentistry or redeployed? Yes/No
6. You practice: Exclusively in the independent sector, public sector, or both.