

# Psychosocial effects of the COVID-19 pandemic on staff in a dental teaching hospital

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## Key points

Reveals the psychosocial implications of COVID-19 on the dental team and how this should be explored for symptoms of generalised anxiety.

Highlights the importance of mental preparedness schemes to transcend all health professionals, including the dental team, to minimise the psychosocial impact of virus pandemics on healthcare workers.

Suggests the need to initiate and measure the effectiveness of wellbeing interventions. The task of maintaining the wellbeing of active healthcare workers should not fall to a single organisation, but rather should be a collective effort.

## Abstract

**Introduction** As COVID-19 rapidly developed across the UK, health services were forced to make radical changes. Within the dental department, all elective procedures were cancelled and staff members were redeployed to support other services within the trust. Studies have demonstrated increased prevalence of psychiatric disorders among healthcare workers during virus pandemics.

**Aims** To assess the psychosocial implications of COVID-19 on members of the dental team working within a large dental teaching hospital.

**Methodology** A survey comprising a series of questions (closed and open) and a Generalised Anxiety Disorder assessment (GAD-7) was distributed to members of the dental team between 1–3 April 2020.

**Results** A total of 120 surveys were completed; 53.3% of respondents displayed symptoms of generalised anxiety. The highest average GAD-7 score was noted among dental nurses. The most common concern was the impact of COVID-19 on friends and family followed by personal health and nature of the disease.

**Conclusion(s)** High anxiety levels and significant psychosocial implications were noted among dental staff during this virus pandemic. Our findings add to a growing body of data on the psychosocial impact of virus outbreaks on healthcare workers and highlight the importance of wellbeing initiatives for healthcare workers to be placed at the forefront of future pandemic crisis planning.

## Background

In January 2020, the Chinese Centre for Disease Control and Prevention announced that a coronavirus, SARS-CoV-2, was the causative pathogen in a series of novel pneumonia cases in Wuhan, Hubei Province, later named COVID-19 by the World Health Organisation (WHO).<sup>1</sup> As the number of new cases and deaths from this virus continued to rise, on 30 January 2020, the WHO declared COVID-19 a Public Health Emergency

of International Concern. To control the spread of this virus, many countries imposed measures such as border screening and social distancing. Due to a nationwide mandate that all elective procedures be deferred or cancelled, on 18 March 2020, the dental department officially cancelled all elective assessment and treatment sessions, which included consultant clinics, procedures under general anaesthesia and intravenous sedation, and all student treatment clinics. On 20 March, the UK government imposed restrictions to select businesses, and by 23 March, the UK went into full-scale lockdown. Despite the lockdown, key workers (including staff across the dental departments in Guy's and St Thomas' NHS Foundation Trust [GSTT]) were required to continue to attend work to support the NHS during this critical time. As part of a large trust, our dental department is uniquely positioned to support

other services and, as a result, all staff were added to the pool available for redeployment.

Studies from 2003 SARS and 2014 Ebola virus disease outbreaks suggested an increased prevalence of psychiatric disorders, especially among healthcare workers (HCWs) during virus outbreaks.<sup>2,3,4</sup> Considering this in the context of rapidly changing job roles and working patterns, we were keen to investigate the extent and specific aspects of this virus outbreak that impacted on anxiety levels of members of the dental team. As we continue to face threats of virus pandemics, it is vital that we understand the psychosocial implications of outbreaks on HCWs who will continue to be at the forefront of treating these conditions. Through our findings, we hope to shed light on the impact the COVID-19 outbreak has had on staff within the dental department while highlighting the specific areas to be taken into consideration for future outbreaks.

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Refereed Paper.

Accepted 11 June 2020

<https://doi.org/10.1038/s41415-020-1792-3>

## Methodology

### Survey design

This survey was guided by a survey distributed in Hong Kong between 24 January and 13 February 2020.<sup>5</sup> Respondent demographics, risk perception, redeployment status and anxiety levels were collected. To measure anxiety levels, the Generalised Anxiety Disorder assessment (GAD-7) was used. This scale was selected as it is a validated tool to measure generalised anxiety with high sensitivity and specificity.<sup>6</sup>

### Sample

This survey was targeted at all members of dental departments within Guy's Hospital.

### Survey distribution

This survey was distributed either in printed or digital format to 125 staff members over a three-day period (1–3 April 2020). One hundred and twenty completed surveys were returned during this period, with an overall response rate of 96%. A short survey period was selected due to the ever-changing nature of events during this disease outbreak and the known impact of global/national/local events in affecting levels of anxiety and personal views/perceptions.

The following staff categories were surveyed: administrative (ie patient coordinators, receptionists, validators, administrative team leaders), dental nurses, dental technicians and dentists (full-time, part-time, locum, dental core trainees, registrars, consultants). No financial compensation for the completion of this survey was provided.

### Ethics approval

This study did not require ethics approval as advised by the local ethics committee and was approved by the Dental Directorate at GSTT. All respondents consented to their information being shared anonymously.

### Analysis

A mixed-method approach was taken, with statistical analysis performed using IBM SPSS software and the qualitative data using a thematic approach in which a series of codes were formulated, revised and finalised. Each response was analysed by two examiners and assigned one or more codes. The final outcomes were compared and discrepancies reconciled.

**Table 1** Characteristics of respondents

Characteristics	Number of respondents (n = 120)	Percentage (%)
<b>Sex</b>		
Male	28	23
Female	87	73
Missing	5	4
<b>Age (years)</b>		
Median age (range) = 35 (19–63)		
18–24	6	5
25–34	50	42
35–44	40	33
45–54	11	9
55+	6	5
Missing	7	6
<b>Speciality</b>		
Oral surgery/acute dental care	42	35
Oral medicine	16	13
Restorative dentistry	25	21
Sedation and special care dentistry	17	14
Paediatric dentistry	4	3
Dental laboratory	12	10
Missing/unspecified	4	3
<b>Role</b>		
Consultant	7	6
Staff Grade Dentist	14	12
Dental Core Trainee	11	9
Speciality-training registrar	4	3
Dental nurse	60	50
Dental technician	8	7
Administrative staff	11	9
Missing	5	4
<b>Days a week in hospital</b>		
Mean days (range) = 4.6 (1–5)		

## Results

A total of 120 questionnaires were completed (115 hard copies and five digital copies). Table 1 shows the demographics of participants. The majority of the participants were female (73%), with a median age of 35 years old and working, on average, for 4.6 days a week in hospital. All the dental departments within GSTT were reflected in this dataset. One-third

of respondents felt that they did not have access to appropriate personal protective equipment (PPE) at work (Fig. 1). Of this group of respondents, 40% represented staff that had been redeployed to other services.

### Redeployment

Over half of respondents reported high levels of anxiety around redeployment to other departments (high/very high = 55%) (Fig. 2).

### Anxiety

Based on Table 2, 16.7% of respondents displayed severe symptoms of generalised anxiety, while about half (53.3%) displayed some symptoms. The mean GAD-7 score was 8.15. Figure 3 displays average GAD-7 scores based on job roles and shows that dental nurses were most affected, followed by speciality training registrars, dental core trainees, dentists, consultants, administrative staff and dental technicians.

As part of the thematic analysis for the open-ended question: ‘What about COVID-19 has worried you most?’, a series of codes were formulated based on a review of answers provided and the outcome was inspected, revised and validated by another investigator. Table 3 outlines the themes selected with a descriptor and select extracts used. Figure 4 demonstrates the prevalence of themes, with the top three concerns being friends and family, personal health and the nature of the disease.

### Discussion

This study highlights the significant impact of COVID-19 on active healthcare staff. While our findings focus on the dental team, they are likely to be applicable to other healthcare services that were similarly redeployed in order to support the care of COVID+ patients. These results add to a growing body of evidence of the psychological impact of virus outbreaks on HCWs, and the importance of learning from this experience for future workforce and crisis planning.<sup>7,8</sup> The survey distribution period was selected in order to reflect anxieties and perceptions among members of the dental team during the COVID-19 outbreak, following a period of national lockdown and before the peak of the disease. Figure 5 illustrates the COVID-19 outbreak timeline, including events that ensued within the dental department in response to this pandemic. The sequence of events leading up to the survey period is likely to have had varying effects on the overall anxiety scores displayed by respondents.

The prevalence of generalised anxiety symptoms among staff is of concern, as high GAD-7 scores have been linked to significant impacts on the service such as functional impairment, including reduced productivity at work and increased sick days.<sup>6,9</sup> Additionally, higher anxiety levels have been shown to influence the inflammatory processes of the body and consequently may affect the immune response system.<sup>10,11</sup> This is of concern as being immunocompromised is linked to worse outcomes in active cases of COVID-19 and

Fig. 1 Distribution of perceived access to appropriate PPE at work

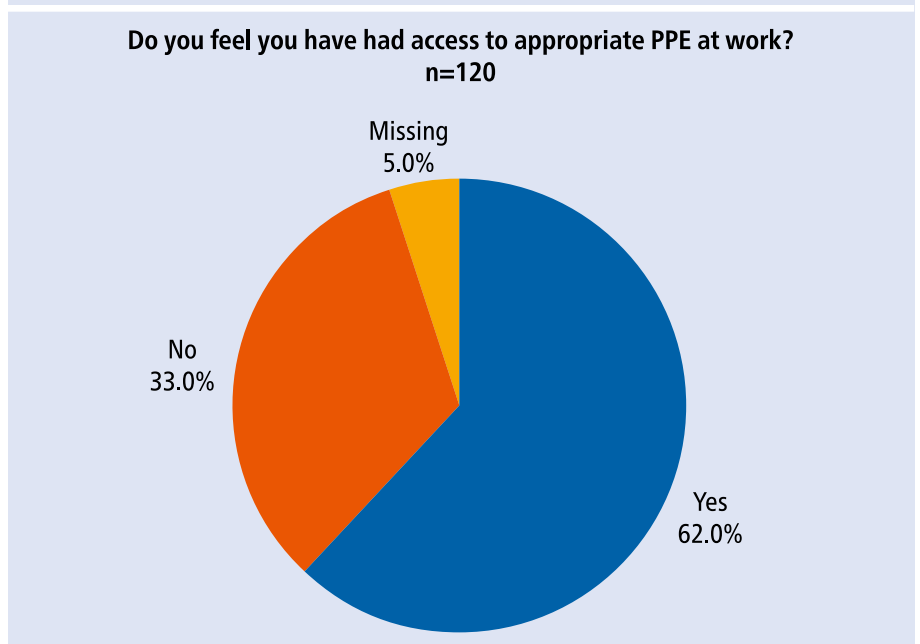


Fig. 2 Likert scores for reported anxiety levels associated with redeployment

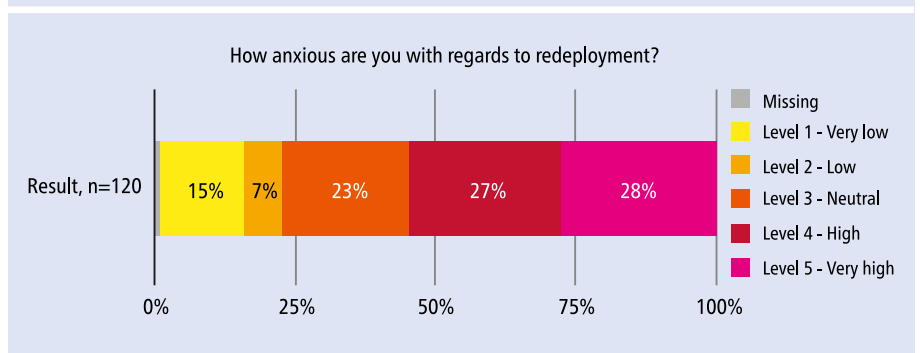


Table 2 GAD severity based on job role

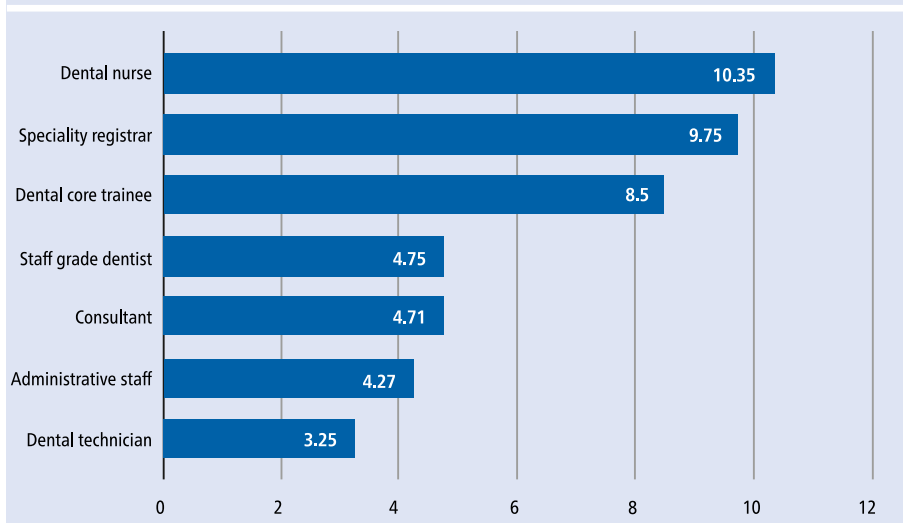
Job role	GAD-7 severity				
	Missing	None	Mild	Moderate	Severe
Missing	1 (20.0%)	1 (20.0%)	1 (20.0%)	1 (20.0%)	1 (20.0%)
Consultant	0 (0.0%)	5 (71.4%)	0 (0.0%)	2 (28.6%)	0 (0.0%)
Dental core trainee	1 (9.1%)	4 (36.4%)	3 (27.3%)	1 (9.1%)	2 (18.2%)
Dental nurse	6 (10.0%)	11 (18.3%)	17 (28.3%)	12 (20.0%)	14 (23.3%)
Dental technician	0 (0.0%)	7 (87.5%)	0 (0.0%)	0 (0.0%)	1 (12.5%)
Administrative staff	0 (0.0%)	8 (72.7%)	1 (9.1%)	2 (18.2%)	0 (0.0%)
Staff grade dentist	2 (14.3%)	8 (57.1%)	3 (21.4%)	0 (0.0%)	1 (7.1%)
Speciality registrars	0 (0.0%)	2 (50.0%)	0 (0.0%)	1 (25.0%)	1 (25.0%)
<b>Total</b>	10 (8.3%)	46 (38.3%)	25 (20.8%)	19 (15.8%)	20 (16.7%)

hospital workers are thought to be at a higher risk of contracting the disease due to greater exposure.

While it was not possible to demonstrate the average rise in GAD-7 scores following

this pandemic due to the absence of a representative baseline score, the qualitative data collected alludes to the direct and indirect impact this virus pandemic has had on respondents. The elaborate and

**Fig. 3 Chart showing the average GAD-7 score based on job role**

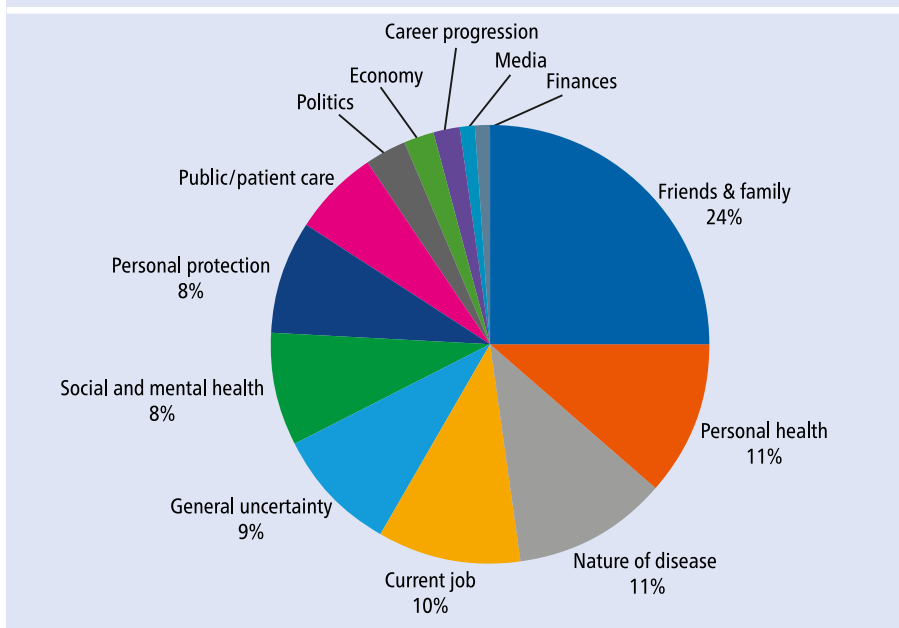


personal responses shared by staff members surrounding their fears associated with this virus offer insight into the profound psychosocial implications of this pandemic and strongly suggest this pandemic to be a source of anxiety during the survey period.

Since the reduction in service across the dental departments on 13 March 2020, staff across the dental teams were redeployed to a range of other services: COVID+ wards, inpatient renal ward, intensive care unit, A&E, pods for testing, satellite dialysis units and the staff food shop. Nurses represented over 50% of those redeployed and this might explain why the average GAD-7 scores were highest among this group compared to other job roles. Fears surrounding redeployment were also reflected in our qualitative analysis, as staff

**Table 3 Themes generated based on open-ended question**

Theme	Description of theme	Selected extracts
<b>Social and mental health</b>	Encompassed the social and mental health implications of self-isolation and social distancing, such as lack of contact with loved ones and limited contact with the public	'Having to maintain social distance from partner and family' 'Self-isolation – not seeing/contacting anyone; not being able to see family. I live alone'
<b>Personal protection</b>	Fears around PPE at work, and challenges with social distancing at work and in public	'All at work at the same time, hard to social distance' 'Being exposed through work and travelling to work on the tube' 'Lack of appropriate PPE to ensure we are protected in workplace'
<b>Personal health</b>	Fears of contracting the virus and the impact of contracting the virus on personal health	'That I may die' 'That so many people already died and that while I am working at the hospital every day it is easy for me to get infected'
<b>Friends and family</b>	Concerns relating to the direct and indirect impact of COVID-19 on family members – this includes impact on health, financial wellbeing, job security and caring needs	'Giving COVID-19 to my family members' 'Worrying about my partner's elderly parents' 'One of my family members/close friend dying from it' 'I may die and leave my two young children alone'
<b>Finances</b>	Includes impact on personal finances and fear around future impact on personal finances due to COVID-19 outbreak	'Money' 'My lack of ability to provide for my family'
<b>Politics</b>	Concerns with regards to effectiveness of government interventions	'Government not taking strict measures like other countries'
<b>Media</b>	Concerns over mass media misinformation and fear-based media	'False media publicity making general public more anxious' 'Media aggravation' 'News coverage is mainly negative, therefore giving me a negative outlook on things'
<b>Economy</b>	The global and national economic impact including loss of jobs and rise in unemployment	'Economic impact to country' 'Losing jobs, less jobs on the market, economy'
<b>Career progression</b>	Impact on training (ie speciality training and dental core training) and uncertainty around the impact this could have on future career plans	'Career progression' 'Worried how this will affect my training contract/career as I had plans from September that I may not be able to do if my contract is extended'
<b>Nature of disease</b>	Concerns over the rate of progression of the disease and the risk of mortality, even among 'low-risk' groups	'The speed and scale of infection and death' 'How contagious it is' 'That healthy and unwell individuals alike can be killed by COVID-19'
<b>Public/patient care</b>	Impact of cancellation of clinics and screening tests on long-term patient care and outcomes – this theme also included concerns surrounding poor compliance of the public with government guidelines and fears around inadvertently infecting members of the public	'Potentially being responsible for causing someone's dead [sic] by spreading the virus without knowing' 'That people are not taking this seriously, not following instructions' 'Patients requiring follow-up with pre-malignant conditions being missed' 'Impact the condition will have as a secondary effect for other conditions not being treated optimally such as cancer'
<b>Current job (in the COVID environment)</b>	Fears surrounding redeployment and job security	'Getting redeployed to other department and not getting proper PPE and training' 'Redeployment into COVID-19-positive wards' 'Changes to working role, site and hours' 'Losing jobs'
<b>General uncertainty</b>	Concerns over the uncertainty of how and when the COVID-19 outbreak will be overcome, and how and when preventive measures (ie restrictions on travel, social distancing) can be eased or removed	'The not knowing when it is going to end' 'Unpredictability in terms of duration/timeframe of current situation' 'When normality will return'

**Fig. 4 Prevalence of themes across the dataset**

reported being worried about changes in work patterns, lack of training, working outside their scope of practice, being placed in a higher risk setting (ie COVID+ wards) and concerns over lack of PPE in such sites. Additionally, we found that even among staff who had already been redeployed, they continued to experience high levels of anxiety associated with redeployment. This could be linked to instances in which some staff members were being reassigned multiple times and across multiple departments. Following dental nurses, the speciality training registrars and dental core trainees displayed high GAD-7 scores. In both cases, the training year has been disrupted and may have contributed to uncertainty around the impact of COVID-19. We found lower GAD-7 scores among dental technicians and administrative staff who were not redeployed and whose role, by nature, involved less patient contact.

The COVID-19 pandemic caused a nationwide review of what was deemed 'appropriate' infection control for a range of settings within hospitals, including direct contact with COVID-positive patients and aerosol generating procedures. Guidelines on PPE changed hourly and were often contradictory.<sup>12,13,14</sup> Consequently, staff were often left with a sense of general uncertainty. This may have contributed to why a third of respondents did not feel as if they had access to appropriate PPE at work.

Based on our qualitative analysis, the most common theme was the fear of spreading this virus to family and friends, and the anxiety that this may have permanent effects. This ranged from the deaths of elderly parents to

leaving behind young children. Personal health and nature of the disease were also common themes. The survey period coincided with the upward trajectory of COVID-19 towards its peak in London, with daily reported increases in the number of deaths and cases of mortality among apparently 'low-risk' groups, which could have aggravated fears of personal health and the nature of the disease. As staff members had job security and guaranteed monthly wages, the theme of personal finance was only reported once. No fears surrounding the stigma of contracting the virus were reported among our respondents, unlike the Ebola outbreak.<sup>15</sup> This is likely due to lower case fatality rate, and transmission through respiratory droplets rather than body fluid exposure.<sup>16,17</sup>

Since the conclusion of the survey period, the trust has acknowledged the anxiety of staff and have implemented multiple trust-wide measures. Changes were implemented both on a local level around various departments but also across the trust to help reduce general anxiety and encourage overall wellbeing. Despite a high intake of patients arriving for emergency care, dental team rotas purposefully incorporated short breaks and time away from clinics. These could be used to catch up on administrative work or engage with any of the trust-wide wellbeing initiatives. Colleagues, patients and local charities donated food to raise staff morale. Accommodation was provided in hotels for those who lived with high-risk family members, and laundry and shower facilities were set up to help reduce transmission. Wellbeing centres were set up at different sites, which included

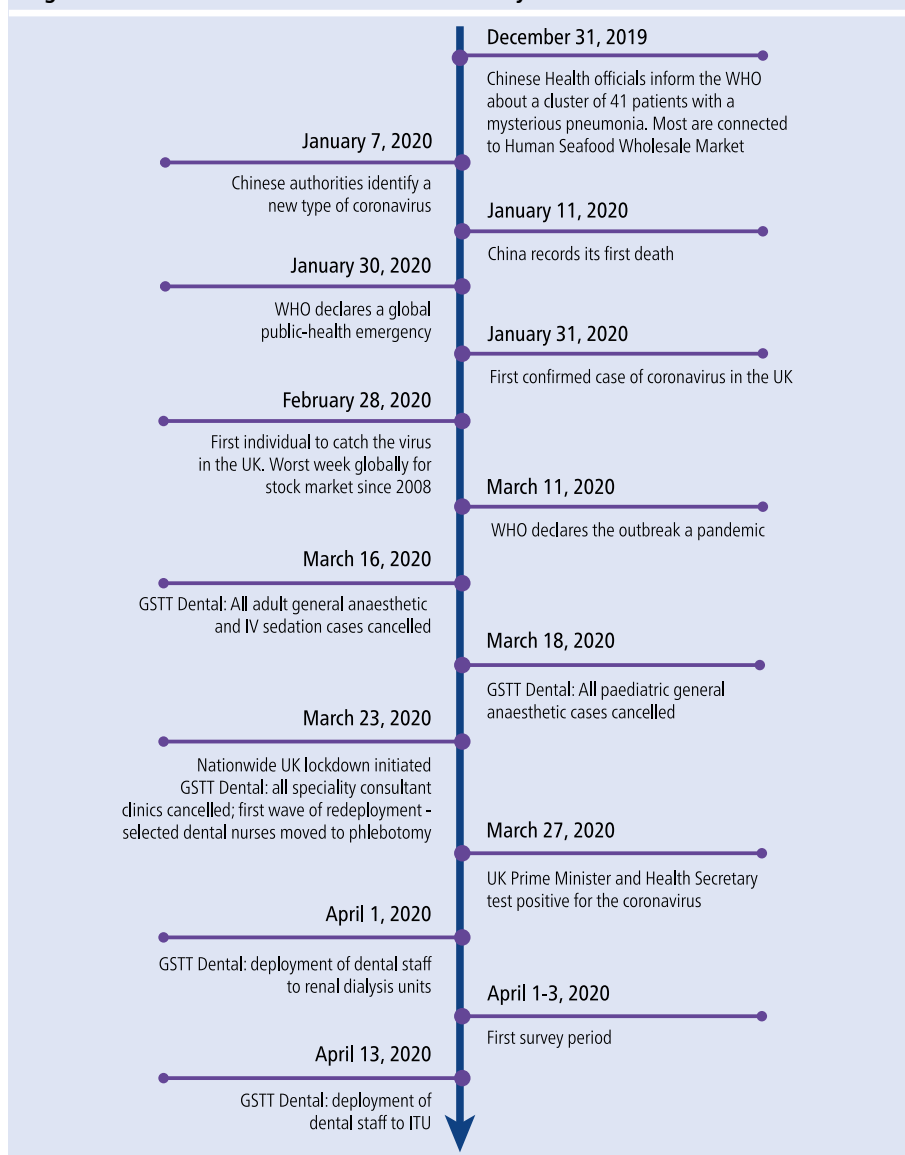
healthy snacks and drinks, exercise machines and physiotherapists, with the aim to maintain health within the confines of social distancing. Finally, national support by various companies was promoted in order to help staff. Certain apps were provided for free to NHS workers, and onsite food and drinks offers were implemented. Local car parks eliminated parking fees for key workers and the trust complimented this by helping with travel options and costs.

## Limitations

Several limitations of this study were noted. Firstly, analysing qualitative data can introduce personal and research bias.<sup>18</sup> This was minimised by repeating analysis over separate days, researchers working independently and blinding to demographics.<sup>19,20</sup> Coding of the data was conducted through open discussion and questioning, ensuring clarity of the thought processes, enabling consistent and accepted interpretation of the data.<sup>19</sup>

Secondly, due to an absence of baseline data on GAD-7 scores, we are not able to conclude that raised anxiety levels are associated with the COVID-19 outbreak. Evidence from surveys of nursing and dentist populations suggest high degrees of stress and burnout within the profession and it is plausible that high GAD symptoms existed before the virus outbreak.<sup>21,22</sup> Ideally, a similar survey would have been conducted before the lockdown when the virus was in its initial stages within the country, which would have provided a fairer method to evaluate the progressive changes in the mindset of individual members of staff. However, at that time, it was difficult to predict the extent to which the virus would impact the national and international stage, both in medicine and the economy, as well as to the individual. The focus of the concerns within the qualitative data was related to COVID-19, as were the reported aspects worrying staff members the most. This suggests that the virus pandemic contributed significantly to the anxiety levels reported. While we cannot definitely conclude this, the nature of the responses shared in itself had a strong sentiment of 'fear', which is a known contributor of anxiety.<sup>23</sup> Respondents shared graphic descriptions of their fears during the survey period and this offers a great deal of insight into the source of their anxiety at the time of assessment.

Finally, while respondents were reassured that all their data would be anonymised, held securely and accessed only by researchers involved in this study, due to the rich demographic data collected,

**Fig. 5 A timeline of the national and local COVID key moments**

fears surrounding disclosed information being attributed to an individual could have impacted the degree of information divulged.<sup>24</sup>

## Conclusions

In summary, dental staff displayed high prevalence of GAD symptoms, with the main reported concern being the impact on friends and family. Our findings add to a growing body of data on the psychosocial impact of virus outbreaks on HCWs. While this is the first published study on the psychological impact of COVID-19 on a dental department within a large health trust, it is likely that further evidence in this area will emerge. The long-term psychosocial impact of this virus outbreak on HCWs is unknown. Future work is needed to follow up on the improvement or resolution of general anxiety symptoms following the

COVID-19 outbreak. Emphasis needs to be placed on measuring the effectiveness of wellbeing measures or mental preparedness schemes in alleviating anxieties among staff, as this will aid in planning for future crises.

### Acknowledgements

The authors would like to acknowledge Joanna Johnson, Clinical Director of the Dental Directorate at Guy's & St Thomas' NHS Foundation Trust, for their support undertaking this project and in the preparation of this manuscript.

### Conflict of interest

No conflict of interests noted.

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