











A Multicultural Demographic Study to Evaluate the Impact of the SARS-CoV-2 Pandemic on the Job Satisfaction across the Dental Industry

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ABSTRACT

Objective: To evaluate the difference in working conditions as perceived by dentists during the pandemic and their professional satisfaction levels. **Material and Methods:** An online survey was conducted using the convenience and snowball sampling methods. Two hundred seventy-two respondents across various countries answered information related to socio-demographic data and work satisfaction levels during the SARS-CoV-2 pandemic. **Results:** 40.1% of dentists reported dissatisfied with their current work, while another 13.6% of dentists fell in the extremely dissatisfied category. 22.8% of dentists were significantly dissatisfied with their current income. Furthermore, 38.4% of the dentists were dissatisfied with physical working conditions, while 33.5% reported dissatisfaction with the freedom of working methods. **Conclusion:** This study was focused on the connection between various intrinsic and extrinsic factors affecting working conditions, social interactions, and psychological stresses. From the findings of this multicultural study, we can see that dentists across different countries have been affected and have varying levels of dissatisfaction. Therefore, regulatory authorities must plan for support and interventional programs to help dental professionals pass this difficult period.

Keywords: COVID-19; Infections; Dentists; Personal Satisfaction; Attitude.

Introduction

The SARS-CoV-2 pandemic has impacted the lives and careers of dental professionals, healthcare workers, and other professionals after its universal spread [1]. The novel corona-virus, officially referred to as SARS-CoV-2 (Severe Acute Respiratory Syndrome Corona-virus 2), is a newly discovered virus responsible for upper airway infection [2]. Symptoms of COVID-19 include fever, cough, loss of smell, loss of taste, and difficulty in breathing (up to respiratory failure). Primarily the clinical management is symptomatic therapy. In extreme cases, it requires respiratory assistance in intensive care. There is no precise medication, but antiviral, antimalarial, and biologic medications are used in clinical trials [3]. The rapid spread of COVID-19 has overloaded medical facilities in hospitals and led healthcare systems to collapse around the world [4].

The coronavirus disease COVID-19 pandemic has significantly affected the oral health profession, and dentists are long-established to have a higher risk of transmission [5]. According to the Occupational Safety and Health Administration (OSHA), dental healthcare professionals are classified in a hazardous category of contact, as dentists work near the patient's oral cavity [6]. The fundamental causes for the transmission of this infectious disease are aerosols and droplets [7]. The COVID-19 pandemic has had an impact on dentists, patients, and dental practice, because of their procedures, which include face-to-face contact with patients and regular exposure to saliva, blood, and other body fluids, as well as handling sharp instruments and dental care settings noticeably carry the risk of COVID-19 infection [8].

The highly infectious nature of COVID-19 led the American Dental Association (ADA) to recommend that dental practitioners restrict their interventions to emergency care [9]. It was also required to ensure enough physical distance or separate appointments for patients attending dental settings [10]. There is an immediate need to implement stringent and efficient infection control protocols to restrict the progress of COVID-19, in addition to the guidelines for good hand hygiene and the value of thorough disinfection of all dental clinic surfaces [11]. The financial impact on dental practices will be felt in both the short and long term.

This pandemic could result in some dentists going out of business, leading to an abrupt shortage of dental providers [12]. To distinguish cases and avoid further spread of infection to patients and dental healthcare practitioners, a thorough knowledge of the nature of the virus, ways of spread, disease manifestations, and test procedures are needed, which can help shape protocols for dental practices [6]. Hence the present study was undertaken to assess and identify the impact of COVID-19 on dental practices and the corresponding behavior of dentists. A multicultural approach to the study was adopted to replicate the findings on a larger scale globally. This study aimed to analyze the impact of COVID-19 on the working conditions and the dentists' attitude towards their work. The researchers also wanted to identify if the stressful working conditions led to developing deleterious habits.

Material and Methods

Site, Settings, and Subjects

Data were collected using the questionnaire from February 2021 to May 2021. The respondent dentists were based in India, Malaysia, Saudi Arabia, Pakistan, United Kingdom, and Cambodia. Licensed dental practitioners with work experience of more than a year were selected for this study. For data collection, convenience and snowball sampling was utilized. Convenience sampling involved the questionnaire being sent to the researchers, while snowball sampling encouraged dentists to forward the questionnaire to their friends. The researchers provided the online links to the questionnaire to dental practitioners working in the mentioned countries. Students in dental colleges, dental auxiliaries, and non-qualified dental practitioners were

excluded from data collection. Non-qualified dental practitioners for this study were defined as non-licensed dentists, hygienists, and technicians.

Questionnaire

A structured online questionnaire was developed and provided to the participants for data collection. On opening the questionnaire, the 1st page contained a header for patient confidentiality and stated that dentists were willing to participate in the study voluntarily. After this, if the dentists answered the questionnaire, their consent was automatically implied. Before commencing the study, an online questionnaire assessing job satisfaction was developed, pretested, and validated (Cronbach's $\alpha=0.87$). It was then distributed using a Google survey to collect demographic data (gender, location, years of experience, and qualifications-specialists or general dentists), followed by information regarding the working conditions, their situation and attitude as felt by the dentists, and even the development or increase in harmful habits. The participants and the initial records were not used in the final investigation. Only the investigators had access to the data and at no point in time was any identifying data collected from the patients. Only completed responses were considered for the study. The questionnaire contained two sections: the first section contained the personal non-identifying data (location, qualification, and nature of employment), while the second section aimed to assess the attitude and conditions of practicing dentists. Once the demographic data was collected, the latter part of the questionnaire contained information regarding the factors affecting work and their corresponding satisfaction levels on a 5-point scale.

Bias

The questionnaires were designed based on previous evidence-based studies that enabled participants in the study to answer questions related to factors affecting them in the current scenario.

Statistics

A descriptive analysis, sample size calculation, and significance were identified using STATA/IC 16.1 statistical software. Pearson Chi-square test and Fisher's Exact Test were used for inferential statistics. The level of statistical significance was set at $p \leq 0.05$.

Ethical Clearance

The study was carried out with approval from the institutional ethical committee at the Faculty of Dentistry, Jazan University (CODJU-2107F).

Results

A total of 300 dentists were asked to fill up the online questionnaire, and 272 responses were received. Thus, the response rate was found to be 90.7%. Out of the respondents, 54% were females, 44.9% were males, and 1.1% did not respond.

Regarding their qualifying information, dentists responded by confirming that 40.4% held specialist qualifications while 59.6% were practicing as general dentists. Dentists were also requested to reveal the type of job they were holding during data collection. 32% of dentists were employed in the private sector, the same as the percentage of academically employed dentists. Another 29.8% of dentists were employed with private and academic institutions (Figure 1).

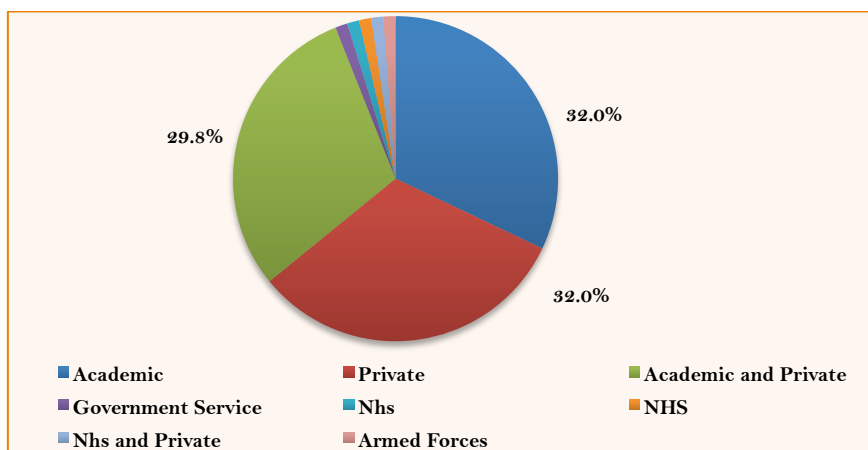


Figure 1. Distribution of participants regarding the nature of the practice.

Dentists were asked about their current work conditions, and 40.1% of dentists responded that they were dissatisfied with their current work, while another 13.6% of dentists fell in the extremely dissatisfied category. Only 13.6% of dentists were satisfied with their employment status, while 4% of respondents were extremely satisfied. In response to working conditions, 38.4% of dentists were dissatisfied with the current scenario, while 19% responded satisfactory. Freedom of working has been impacted worldwide and this was reflected in the responses since 33.5% of dentists were dissatisfied while another 12.9% reported extreme levels of dissatisfaction (Figure 2a-d). Since the pandemic has affected social recognition, 31.6% of dentists felt negatively affected in recognition, 14% were highly impacted, while a low 15.8% of dentists gave a satisfactory response. Since there are added measures for infection prevention and a risk of infection always present, 23.2% of dentists felt dissatisfied with work responsibilities, while 22.4% were satisfied at the time of information collection.

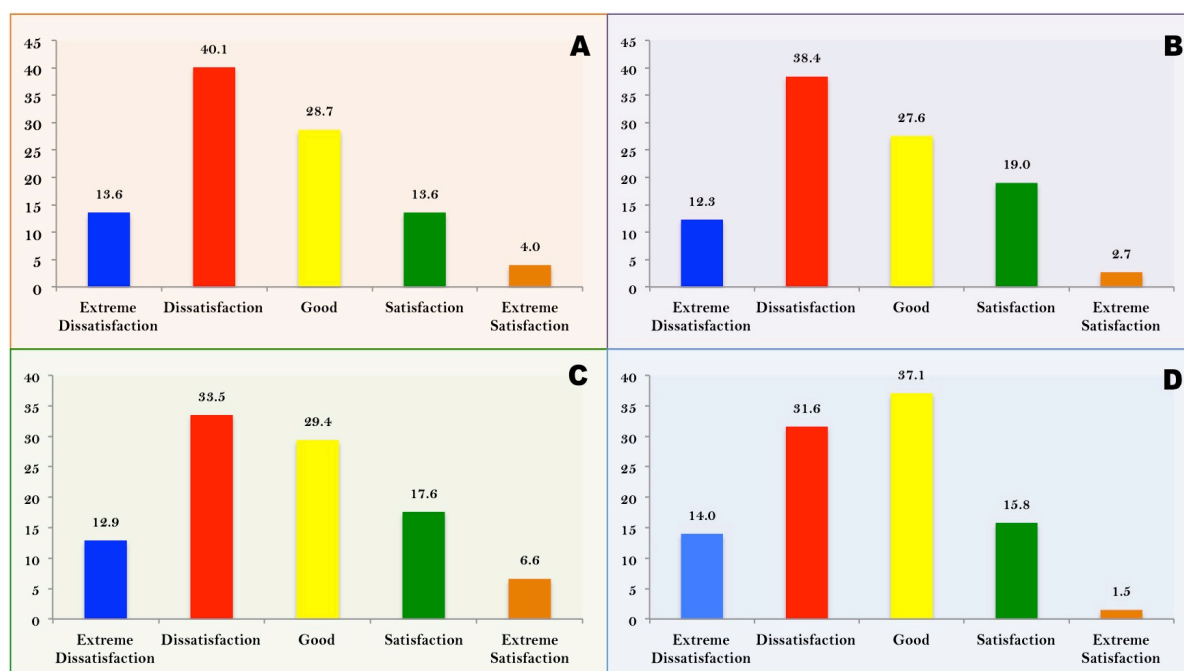


Figure 2. (a) How are the work conditions compared to the year before the pandemic? (b) How are the physical working conditions during the pandemic? (c) How do you feel with regards to the freedom of working methods?; (d) Do you feel satisfied with the recognition for your work during this period?

Finances have been impacted worldwide, which was reflected in the responses given by dentists. 22.8% of dentists were significantly dissatisfied with their current income. Only 22.4% of dentists reported satisfactory income during the pandemic (Figure 3a-b). Regarding work limitations, 32.4% of dentists responded by answering that they were dissatisfied with the limited work opportunities, while 8.1% of dentists replied with an extreme response. Only 19.9% of dentists were reportedly satisfied with the current work opportunities (Figure 3c). With working times extended because of the pandemic high levels of dissatisfaction, i.e., 26.5% were reported by dentists while 8.5% were highly dissatisfied. 20.6% of dentists were reportedly satisfied with the working hours, while 37.5% felt all right (Figure 3d).

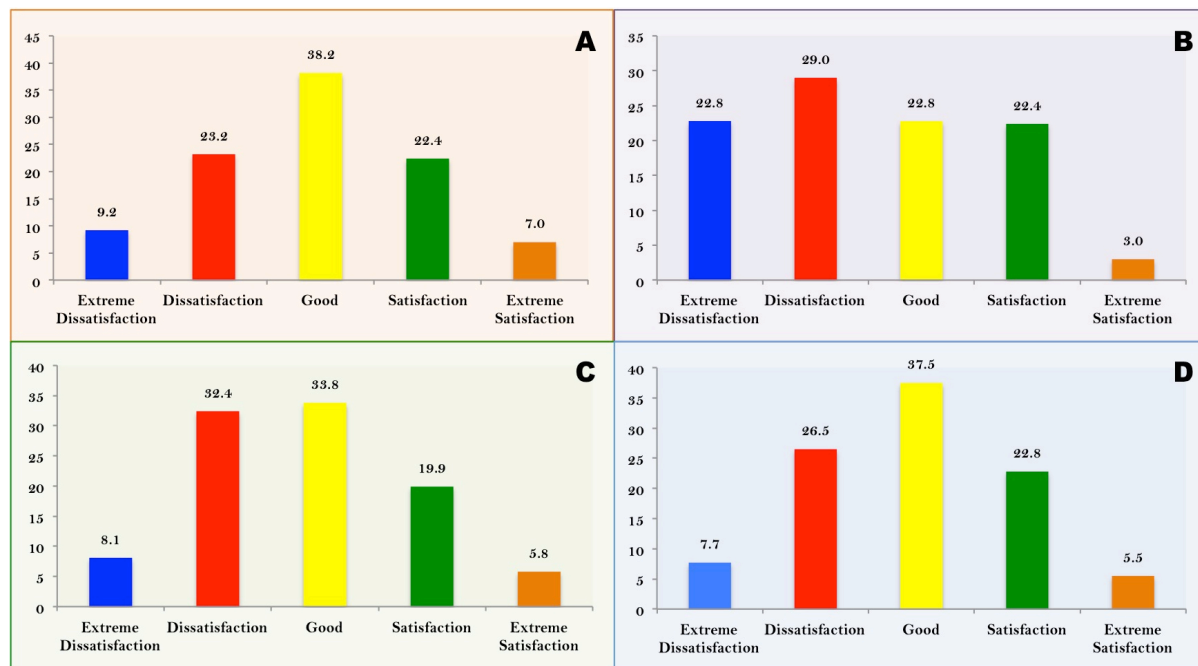


Figure 3. a) How satisfied are you with the amount of responsibility during this period? b) How satisfied are you with your income during the pandemic period? c) Are you satisfied with the current opportunity to use your abilities? d) How do you feel with regards to your current hours of work?

Job variety for a significant part of the pandemic has been limited to handling dental emergencies worldwide. Therefore 33.8% of dentists reported dissatisfaction with the variety of work, 20.6% of dentists responded with a satisfactory reply, while 8.5% gave an extremely negative response (Figure 4a). 32.7% of dentists answered that they were dissatisfied with their job, while 9.6% of dentists filled in a highly negative response. Only 21% of dentists reported satisfaction in their work, while 34.6% of respondents said their satisfaction levels were good (Figure 4b).

A high percentage of 27.5% dentists responded by answering that they had lost their jobs during the pandemic because of financial issues. On the other hand, 57.5% of the dentists managed to retain their jobs, while 15% declined to answer this question (Figure 4c). A significant adverse finding of this study was that 15% of dentists reportedly started smoking or reported increasing their smoking habit during the pandemic because of stress. 6.8% of respondents were unsure if their habits became worse, while another 5% did not reply in the affirmative (Figure 4d). This question was included to gauge the stress levels of dentists during the pandemic and if there were any negative implications of the stress caused due to unfavorable working conditions during the pandemic.

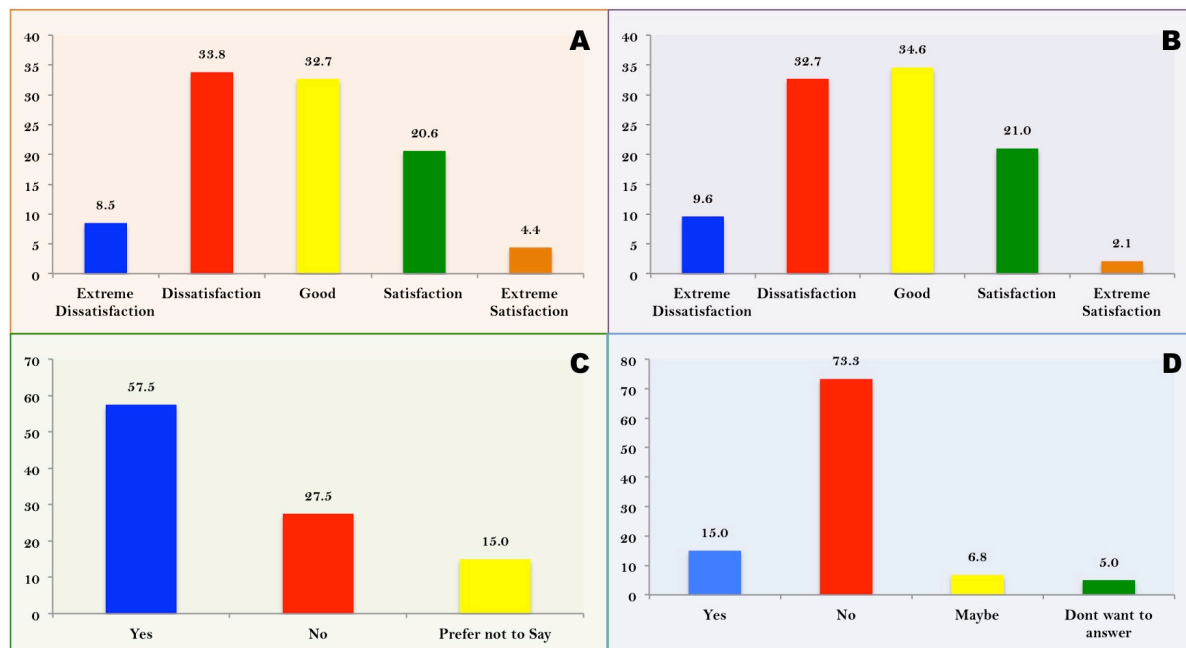


Figure 4. a) Are you satisfied with the variety in your work during the pandemic? b) What are your overall satisfaction levels during the COVID-19 period? c) Are you continuing in the same workplace or were you forced to leave because of COVID-19 related financial problems? d) Have you indulged in smoking since the onset of the pandemic due to stress or, if you did before, has the habit increased?

Pearson chi-square test was used to analyze the results and determine if there were any significant differences in the impact of the pandemic felt by general dentists and specialists. There was no significant difference seen between specialists and general dentists regarding the impact measured across various questions. To analyze the situation across different countries and locate significant findings between dentists' dissatisfaction levels, Fisher's exact test was done. Significant differences were seen when dentists were questioned on the change in conditions compared to the previous year and their relationships with colleagues and co-workers ($p=0.00$). Significant differences were also observed between dentists from different countries when they were questioned on their income ($p=0.00$), recognition ($p=0.004$), and overall work satisfaction ($p=0.025$).

Discussion

Job satisfaction levels have been impacted globally since the onset of COVID-19, and dentistry is no exception. The employment industry has been affected negatively worldwide, and people have lost jobs throughout the pandemic. Dentists are more exposed to various stress factors under clinical conditions, which has only increased during the COVID-19 pandemic both in the pre-lockdown and the post-lockdown period. It has been seen in previous studies that the SARS-CoV-2 outbreak has led to the development of psychological problems [13]. The strenuous working conditions have compromised the mental status of patients as well as those in isolation. The consequences of stressful working conditions and social isolation have increased the incidence of TMD problems as well [13,14]. The psychological impact of this pandemic has been profound, with studies demonstrating a high prevalence of anxiety and depression among patients and healthcare workers [15]. Studies conducted across different countries have demonstrated significant anxiety levels among healthcare workers with an urgent need for interventions [15].

According to previously published literature, the novel coronavirus is directly transmitted through respiratory droplets and fomites. Furthermore, the incubation period is about 7 to 24 days, with some patients reporting to clinics for dental treatment without any symptoms [16,17]. Hence, both the dentist and the patients are at bilateral risk of transmitting the novel coronavirus because of the closed working environment and through the oral cavity during dental treatment procedures.

The questions regarding job satisfaction of dentists were aimed at evaluating their cognition, mental status, and the emotional experience of their jobs and all related aspects. During the epidemic, few researchers have analyzed the job satisfaction levels among manufacturing industry workers and even medical healthcare workers in the Iranian region [18,19]. During the lockdown and the post-COVID-19 lockdown period, dentists' job satisfaction levels might directly connect with the planning and implementation of any infection control strategies. Therefore, such research is essential to understand the current working conditions of dentists to plan for the most effective measures for infection control.

Our study results revealed that 73.2% of dentists were not indulging in smoking due to the stress and this agrees with the findings of Gorter et al. [20]. The prevalence of smoking among dentists was low (15%) in proportion to the general public. The participation rate of Pakistani dentists (40.5%) was high compared to other nationalities, and 54% were male, and 46% were female dentists. Similar results were reported by Sarfaraz et al. [21] and Singh Gambhir et al. [22]. A total of 59.6% of the participants were general dentists, and 32% had private and academic practice. Concerning the work conditions compared to the year before the pandemic, 40.1% of dentists showed dissatisfaction. This agrees with a previous study done among Indian dentists, which shows working as dentists and academicians were more stressful and led to dissatisfaction [23]. Nevertheless, when the COVID-19 outbreak intensified, triggering a national lockdown, general dentists with new practices were more dissatisfied. Further, 38.4% of the dentists were dissatisfied with physical working conditions, while 33.5% were dissatisfied with the freedom of working methods. Specialist dentists who can manage stress effectively than inexperienced dentists have higher clinical decision-making skills, work satisfaction, and familiarity with multiple clinical circumstances and face challenges clinically and personally [24]. This can enable them to be more self-assured and less stressed.

Furthermore, our results show that 39.7% of dentists had good relations and were satisfied with their colleagues and co-workers, and only 37.1% of dentists thought their work was being aptly recognized. Walton et al. [25] reported similar findings in their previously published research. Having co-workers and colleagues who can help each other would be critical to preserving good health and solidarity during the pandemic. 29% of the dentists were dissatisfied with the income during the COVID-19 situation. The loss of income was seen as a crucial part of the situation, and the government's response was deemed insufficient from both a community health and economic standpoint [26]. On the other hand, 37.5% of dentists were happy with the working hours because of nationwide lockdown and the potential risk of COVID-19 spread. Throughout the first peak of the COVID-19 pandemic, 71.2% of the participating dentists suspended their practice, like the findings in a study conducted among Polish dentists [27]. This research may also indicate a decrease in the number of patients and a lack of appropriate personal protective measures. The overall job satisfaction among the dentists was found to be dissatisfying (42.3%) during this COVID-19 outbreak. These findings were similar in a study done by Collin et al. [28]. Nearly half of the dentists said the pandemic had brought about abnormally high-stress levels damaging their mental health, with a vast majority (77%) claiming it had harmed their financial condition. The pandemic has affected dentists' daily lives and posed many obstacles to the profession [28-31].











Many dentists are vulnerable after the resumption of their practices as previous studies have shown that a high number were not receiving salaries during the lockdown period and in the post-lockdown period, they are unsure how to continue to operate [32]. The primary point of contention has been whether to offer regular dental treatment or only see cases in an emergency [33]. All dentists will almost certainly have to adapt to a new way of operating, navigating problems such as decreased patient numbers and increased costs [34]. As a result, it would be wise to track the impact of intrinsic and extrinsic factors on job satisfaction among dentists during and post COVID-19 and dentists' mental health during and after the current pandemic to see any long-term consequences. It would also be helpful to provide a more rigorous research program that looked at different aspects of intrinsic and extrinsic factors on dentists' job satisfaction and mental health.

One of the limitations of this study was the cross-sectional design, which cannot evaluate dentists' changes in perception and attitude during the entire pandemic period as these may change over time. Cross-sectional studies can depict an association but cannot help establish an exact cause-effect relationship. While convenience and snowball sampling may be a statistical limitation in many cases, it was the only feasible method to gather data from different regions in this study. The number of responses was gathered by sending reminders that may be low for a study of this magnitude, but previous literature has shown that health professionals usually respond in low numbers to online surveys [35]. However, the data collected from ethnically and culturally diverse environments should ensure the generalizability of the results obtained from this study. Since this questionnaire was designed in English, there could have been questionnaire bias experienced by the participating dentists. However, to eliminate this kind of bias, it was ensured that all questions were neutral and constructed in simple language from the validation stage.

Conclusion

To ensure the safety of the dental staff and personnel during the pandemic, various health regulatory bodies have set down guidelines and recommendations. However, with such regulations and guidelines, the stress levels of practicing during the pandemic are bound to rise. From the findings of this multicultural study, we can see that dentists are being affected and have varying levels of dissatisfaction. This study was focused on the connection between various intrinsic and extrinsic factors affecting working conditions, social abilities, and psychological stresses. These factors must be studied further to understand the short- and long-term effects of the COVID-19 pandemic among dentists globally. Hence, a better understanding of regional situations will ensure that the dental community can provide the best healthcare services to patients during the pandemic.

Authors' Contributions

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All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.

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None.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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