REVIEW
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The Neuropsychiatric Implications of Coronavirus Disease 2019 and their Impact on the Provision of Dental Care

Wei Cheong Ngeow[1], Ghee Seong Lim[2], Su Ee Khoo[1], Ting Jing Kweh[2,3]

[1]Department of Oral and Maxillofacial Clinical Sciences, University of Malaya Faculty of Dentistry, Kuala Lumpur, Malaysia
[2]Department of Restorative Dentistry, University of Malaya Faculty of Dentistry, Kuala Lumpur, Malaysia
[3]Division of Restorative Dentistry, International Medical University, School of Dentistry, Kuala Lumpur, Malaysia

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic is spreading like wildfire and has posed significant challenges to the delivery of healthcare in all affected countries. Populations worldwide are vulnerable to the virus, which is highly infectious in nature. With the consequential lifestyle changes resulting from lockdown and quarantine, compromised mental health was part of the repercussions that affected most people, including the public, healthcare workers, and those unfortunate ones who fell victim to the COVID-19 infection. This is a narrative review article that aims to dwell into and discuss the impact of COVID-19, focusing on neuropsychiatric implications and the subsequent provision of oral care. Articles were searched from online databases such as MEDLINE, ScienceDirect, and Google Scholar, and the keywords used to identify the papers were "COVID-19," "Neuropsychiatry," and "Dental care delivery." Any conventional and effective prevention of oral diseases and self-administered care may be doubtful considering dental care access and delivery are not operating in the usual way during this trying time.

Keywords: COVID-19, pandemic, neuropsychiatry, dental care delivery

INTRODUCTION

Dr. Wenliang Li, a renowned ophthalmologist in Wuhan Province, China, raised the first alarm of the Coronavirus Disease 2019 (COVID-19) in December 2019.[1] Thereafter, with human mobility, SARS-CoV-2 virus has stormed through globally, causing a pandemic that chooses its victims regardless of races, sexes, and age groups. It not only posed a huge impact on the world economy and the people's livelihood, but also strains the health care system and disrupts people's daily lives.

Coronavirus disease 2019 is caused by the SARS-CoV-2 virus, which has been known to involve the respiratory system, primarily presenting as flu-like symptoms, and can be fatal in high-risk patients. Therefore, to contain the infection, WHO has recommended restrictions on movement and home quarantine for suspected COVID-19 cases and close-contact patients. Previously, a handful of countries had imposed total lockdowns to restrict the movement of the people and break the infection chain. The former is imposed to limit transmission and spread, while the latter approach has been adopted to deal with patients who are asymptomatic, or those with mild symptoms. There are various clinical manifestations that might present in the infected patients that include mild pneumonia, dyspnoea, hypoxia, or > 50% lung involvement on imaging among those with severe symptoms. All of them require quarantine and hospitalization.

Symptoms of a critical illness can affect other systems, leading to shock or multi-organ system dysfunction. Due to the consequences of the long and exhaustive lockdown, as mentioned earlier, the pandemic has caused tremendous stress, anxiety, and neuropsychiatric implications to both the healthy (family and society) and patients who survived the infection.[1] One particular study has reported that 28.9% of subjects showed symptoms of posttraumatic stress disorder post-quarantine,

Corresponding author: Ghee Seong Lim
e-mail: g.s.lim@um.edu.my

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while 31.2% showed symptoms of depression.[2] There is also growing evidence regarding neurological complications associated with COVID-19. This can be physical or psychological in nature. Nonspecific mild neurological symptoms reported include headache (8%-42%), dizziness (12%), anorexia (40%), myalgia and/or fatigue (11%-44%), anosmia (5%), and hypogeusia or ageusia (5%).[3] Varatharaj et al.[4] reported that the most common presenting neuropsychiatric disorder was exhibition psychosis, neurocognitive syndrome, and affective disorders in 59% patients, and altered mental status in the remaining 31%. Another study on postintensive care patients reported that between 8% and 57% of them were reported to suffer from significant levels of psychologically related problems such as depression, anxiety, symptoms of posttraumatic stress disorder, or sleep disturbances.[5] Neurocognitive impairments, including brain fog, impaired concentration, memory, comprehension, or mental processing speed, are seen in 30%-80% of patients.[5]

These impairments are often prolonged, which may hinder their ability to perform dental care or affect their ability to follow instructions postdental treatment, including compliance to medications. Usually, some of these patients would be the subject of counseling and psychiatric therapy, both of which may affect their management in the dental office. Therefore, the aim of the present article is to describe the neuropsychiatric implications of COVID-19 on the provision of dental health care in an outpatient setting. This would allow the dental practitioners to be more prepared to accept this subset of patients in their practice.

NEUROPSYCHIATRIC IMPLICATIONS OF CORONAVIRUS DISEASE 2019

Mental disorder can be defined as "a syndrome characterized by clinically significant in an individual's cognition, emotion regulation, or behavior that reflect a dysfunction in the psychological, biological, or developmental processes underlying mental functioning." Significant social distress or disability, occupational, or other important activities related to stress are among the associations with mental disorders. Neuropsychiatric consequences, on the other hand, are psychiatric, neurological, and cognitive problems that result from direct brain damage, disease, or indirectly effecting the central nervous system (CNS) through an immune response or medical therapy.[6] This COVID-19 viral pandemic has significantly contributed to multiple neuropsychiatric illnesses, both directly and indirectly, for several groups, including the general population, patients infected with COVID-19, and the health care personnel who are taking care of COVID-19 patients.

The General Population

The general population globally was momentously affected since the first reported COVID-19 case. Undeniably, various psychological outcomes such as fear, anger, boredom, confusion, depression, anxiety, frustration, irritability, stress, emotional exhaustion, and a feeling of uncertainty were reported;[7,8] and the long-term psychological effects on many individuals may be directly linked to critical illness due to the pandemic.[9,10] On the other hand, the indirect effect of social disruption cannot be taken lightly as well. These are often seen following prolonged social seclusion, working from home and physical distancing, loss of livelihood, and financial burden in response to prolonged movement control orders or lockdown.[11] Ettman at al[7] concluded that individuals with lower socioeconomic status and those who are at greater exposure to stressors had a threefold higher risk of depression syndrome associated with the COVID-19 pandemic. Besides that, stress from family members who were infected or deceased due to the infection had significantly incurred a cost on the psychosocial well-being of an individual. The psychological implications of all these various issues can lead to the increase risk of psychiatric disorders, e.g., chronic trauma and stress, which eventually increase suicidal thoughts and nonfatal suicide attempts.[12,13] The prevalence of these psychiatric symptoms during a pandemic may exceed the baseline prevalence.[7,8] For example, in June 2021, the Malaysian Ministry of Health director-general announced a shocking increased suicidal trend related to pandemic-related stress, whereby the cases increased from 609 cases in 2019 to 631 cases in 2020 and a dreadful 336 suicide cases (about 4 suicide cases per day) in the first 3 months of year 2021.[14]

The Coronavirus Disease 2019 Patient

Conversely, among the patients infected with COVID-19, it was noted that more than a third of those hospitalized presented with acute neurological manifestations such as altered sensorial headache, acute cerebrovascular incidents, ataxia, and convulsion.[15-17] Other acute cognitive complications, like attention and dysexecutive symptoms, were also reported.[6] Interestingly, while the coronavirus affects mainly the respiratory tracts, it can also be detected in the brain and cerebrospinal fluids of the infected patients.[18] It was noted that during the acute phase of the disease, about 34% of the patients showed brain abnormalities, including white matter hyperintensities and hypodensities, as well as internal bleeding such as micro-hemorrhages, hemorrhages, and infarcts.[18] Although the exact pathophysiology of the neuropsychiatric and cognitive consequences following COVID-19 is still unclear, the 2 main primary pathophysiological mechanisms were believed to occur through the neuronal pathway through the olfactory nerve or via binding to the angiotensin-converting enzyme. Other possible mechanisms are direct infection injury, hypoxic injury, or immune injury.[17] Another contributing factor to the neuropsychiatric illness can be seen among these patients when they were treated with various off-label prescription drugs that were used for other disease. These medications, including antiretroviral drugs (lopinavir-ritonavir, darunavir, and remdesivir), antiparasitic drugs (hydroxychloroquine and nitazoxanide),

corticosteroids, biological treatments (tocilizumab), and antibiotics (azithromycin), may produce certain adverse drug reactions that may result in various neurological and psychiatric outcomes.[19,20]

Patient with Preexisting Psychological Problems

In addition, COVID-19 may also increase the relapse rates of all preexisting mental health-related problems. For example, patients with obsessive-compulsive disorder are prone to contamination obsessions and washing compulsions; for recurrent depressive disorder patients, quarantine will increase their psychiatric morbidity through various pathways by disrupting their normal daily routine and social rhythm and thereby increasing their stress level. This would eventually increase the hormone cortisol level, manifesting in a vicious exacerbation cycle of depressive symptoms.[21,22] If not managed appropriately, it might escalate to a worse extent, leading to suicidal thoughts, the outcome of which is strongly related to social isolation among this group of patients.[13] Furthermore, the nonavailability of substances or medicines to help with withdrawal symptoms among substance abuse patients could be debilitating. In fact, Gosh et al.[23] reported a case of multiple suicidal attempts in an opioid-dependent patient owing to limited access to his psychiatric treatment following the lockdown during the COVID-19 outbreak in India.[23]

The Health Care Worker

Various surveys conducted among the healthcare workers who were engaging directly in the examinations and diagnosis, treatment execution, and care for patients with COVID-19 revealed that they had experienced various psychological burdens, including anxiety (20%-45%), depression (25%-50%), insomnia (8-34%), post traumatic distress (49%-72%), and stress (22%).[24-26] Often, these are more prevalent among those who are at relatively high risk of exposure involving direct contact with the affected patients. A study conducted among 356 dental practitioners in Italy revealed that 89.6% of them were concerned about their professional future, almost 85% of them worried about contracting the infection during clinical activity, and 9% reported to show severe anxiety based on the General Anxiety Disorder-7.[27] Despite these, fortunately, some of these had reported a positive psychological outcome whereby they felt greater sense of meaning or purpose in their efforts during the battle with COVID-19.[25]

In relation to dental health professionals specifically, the mediated impacts are related to the closure of dental clinics, which affected them financially and psychologically.[28] A few months after the WHO declared COVID-19 a global pandemic, interim guidance on the provision of essential oral health services was released, advising "routine nonurgent oral health care, which usually includes oral health check-ups, dental cleanings, and preventive care, be delayed".[29] Dentists are considered to be at greatest risk of being exposed to the COVID-19 infection, in view of the dentistry-associated transmission of the infection.[30] Ironically, with vast dental knowledge and skillset at their disposal, the only effective way to stop virus transmission is by suspending most routine dental procedures.

PERCEIVED NEEDS FOR ORAL HEALTH CARE

Coronavirus disease 2019 has necessitated a radical change in people's lifestyles, ranging from social distancing and movement restrictions to nationwide lockdown, though the last appears to be easing recently. For some time, almost all aspects of life, such as education, business, commerce, socialization, etc., were either shifted online or switched to distance working (work from home); all of these were described as the "new normal." However, this new normal is bound to be abnormal, as the long-term restrictions have taken a toll on the physical and mental health of many. This so-called "lockdown fatigue" may influence the perception of health as well as the anticipated need for health care. The perceived need for healthcare refers to an individual's own judgment about the necessity of personal and medical care, subsequently achieving and maintaining an acceptable level of quality of life. While there is a correlation between perceived needs for health services and mental health,[31,32] the implications of COVID-19 on behavioral factors related to oral healthcare is worth discussing.

The psychosocial and behavioral changes related to confinement during the COVID-19 pandemic are worrying. Multiple studies showed similar findings that the COVID-19 pandemic caused increased stress levels regardless of sociodemographic factors such as age groups, genders, and ethnicities worldwide,[33-35] which may influence dental care-seeking behavior. To make matters worse, the high infectious rate of the COVID-19 virus resulted in people being reluctant to visit dental clinics, considering that most of the dental procedures are aerosol-generating procedures. In fact, there are indications of a significant decrease in oral hygiene measures, self-perceived need for dental treatment, and the use of oral health care service,[36] which may cause permanent damage if this trend continues. A study in China found a 38% reduction in the usage of emergency dental services at the beginning of the pandemic.[37] Another study in Brazil showed a similar finding: there is a reduction in the number of visits to the primary oral healthcare centers, including visits considered of urgency.[38] Furthermore, the COVID-19 pandemic could reduce the negative perception of oral health problems,[39] masking the true clinical need for dental treatment.

MANAGEMENT OF PSYCHOLOGICAL PATIENT

It is common practice for patients with psychiatric illnesses to be treated with long-term psychoactive drug. Generally, psychoactive drugs can be classified into antidepressants, mood stabilizers, antipsychotic, and anxiolytics.[40,41]

Table 1 summarizes the various commonly used psychoactive drugs, including their mechanism of action and adverse drug reaction. Antidepressants are mostly used for clinical depression as well as for anxiety. Mood stabilizers are usually prescribed for patients with bipolar disorder. Antipsychotics are used for psychotic disorder, especially in schizophrenic patients, while anxiolytics, including sedatives, are used for anxiety patients as well as related problems such as insomnia. It is worth noting that there is a significant overlap between the different groups of psychoactive drugs, and the drugs may be used to treat more than 1 type of disorder. Hence, it is not uncommon for a psychiatric patient to be prescribed a combination of these psychoactive drugs or other nonpsychiatric drugs. For instance, antipsychotic drugs are used primarily to treat schizophrenia patient. In addition to that, some of these schizophrenic patients do not respond well to antipsychotics. Hence, occasionally, benzodiazepines are being prescribed either alone or as adjunct on top of the antipsychotic drugs for sedation, relaxation of the muscles, and calming down agitated people with difficulty sleeping, anxiety, epilepsies, alcohol withdrawal, and acute mental health problems.[42]

Although this is not the main part of the discussion, it is interesting to see that various groups of patients diagnosed with COVID-19 were also treated with psychoactive drugs. The first group were psychiatric patients who were infected by SARS-CoV-2; the second group was given as a treatment to counteract the adverse neuropsychiatric effect of the medication used to treat COVID-19 infection; and lastly, to patients who had experienced social and psychological impact following the viral infection.[19,43]

Various profound adverse effects can be seen following the use of these psychotropic agents. The most common effect is xerostomia (dry mouth) due to the anticholinergic and antiadrenergic effects that induce hyposalivation, which eventually further increases the risk of other related oral complications such as periodontitis, dental caries, and oral candidiasis.[41,44] It is worth mentioning more about extrapyramidal symptoms (EPS), one of the well-known adverse drug reactions following consumption of antipsychotic drugs. It is a drug-induced movement disorder affecting the motor control whereby the symptoms are akathisia (may manifest as motor restlessness), dystonia, which presents as continuous muscle contractions and spasms; tremor; parkinsonism, characteristic symptoms such as rigidity, bradykinesia, and tardive dyskinesia (irregular, jerky movements).[45] Oral manifestations include bruxism, orofacial dystonia, oromandibular dyskinesia, and rabbit syndrome.[41,44] In order to treat or prevent the EPS, some psychiatrists may prescribe patients anticholinergic drugs such as trihexyphenidyl. These drugs, however, have a variety of distressing peripheral side effects and central adverse effects, and the long-term concomitant administration may exacerbate the underlying cognitive impairment in patients with schizophrenia and subsequently affect patients' quality of life.[46] These combinations of multiple drugs may exert a significant drug-drug interaction effect on the central and peripheral neurotransmitter and ionic mechanisms.[20,41,46] Hence, it is crucial for the health care provider to be able to have a deep understanding of these drugs' interactions and give consideration during management.

MANAGEMENT OF DENTAL PATIENTS WITH COVID RELATED NEUROPSYCHOATIC DISORDER

Coronavirus disease 2019 pandemic could put the population at an increased risk of developing oral diseases, attributed to stress, poor nutrition, substance abuse, neuropsychiatric impact, and lower socioeconomic status, to name a few.[47] Disproportionate incidence of COVID-19 infection and disparities in access to oral health care due to different geographic locations are among the challenges faced in overcoming inequality in providing oral health services. Most of the dental clinics adopted the policy to manage emergency patients in the low-risk category, which is complicated by the population's lack of understanding about dental emergencies, and may suspend the provision of optimal dental care. The shortened dental treatment time and prolonged duration of disinfection protocols warrant a focus on preventive care, especially among those with preexisting psychiatric condition. Maximum intervention procedures, such as fluoride application, diet improvements, behavioral modifications, and oral health self-care, as well as minimally invasive dentistry with the use of atraumatic restorative techniques, are critical in the attempt to provide appropriate dental care. In times of pandemic, the lost art of nonsurgical and nonaerosolizing procedures, which are preventive and financially sustainable, is rediscovered and appreciated. This includes the reintroduction of chisels and mallets for third-molar surgery.

PROVISION OF ORAL CARE

The COVID-19 pandemic had significantly changed how we function daily as well as our routine clinical practice. It is crucial for us to have an idea of what precautionary measures to take to curb the spread of COVID-19 and provide an optimum care level for all our patients. The provision of oral care to a patient with a behavioral disorder or neuropsychiatric illness is an important discussion as well.

Good communication between the patient, psychiatrist, and dentist is of utmost importance. Special management considerations should be practiced for optimal patient care during dental treatment. It is crucial to obtain the medical history and nature of the problem from the psychiatrist to understand any of the patient's abnormal behavior or complaints about an unexplainable or peculiar condition. This is particularly true because these psychiatric patients are at a higher risk of dental issues, mainly due to both modifiable patient-related and service-related risk factors owing to their comorbid somatic disease, specific characteristics of existing mental disorders, unhealthy lifestyle, cultural practice,

Table 1. Psychoactive Drugs: Mode of Action, Adverse Drug Reactions, and Dental Considerations

Psychoactive Drug	Drug Classification	Mode of Action	Adverse Drug Reactions and Dental Considerations	Withdrawal Syndrome	Preoperative Discontinuation Recommendations
Antidepressant	SSRI e.g., escitalopram, citalopram, sertraline, fluoxetine, paroxetine	SSRI increase the extracellular level of neurotransmitter serotonin via blocking/ inhibit the reuptake of serotonin at the presynaptic membranes	• Oral manifestation: Xerostomia • Nausea, vomiting, and blurred vision • Serotonin syndrome features such as anxiety, restlessness, hyperreflexia, agitation, and hyperthermia. • Increase bleeding risk especially in combination with NSAIDs, aspirin, warfarin, or other blood thinners. • Reduced the analgesic effect of certain analgesia such as tramadol, codeine, oxycodone, morphine	Yes	Can continue
	SNRI e.g., levomilnacipran desvenlafaxin, duloxetine	Unlike SSRI which act on serotonin alone, SNRI are monoamine reuptake inhibitors which inhibit the reuptake of norepinephrine and serotonin.		Yes	Can continue
	TCAs e.g., amitriptyline, imipramine, dosulepin. desipramine, and doxepin, nortriptyline	TCAs block the serotonin transporter and norepinephrine transporter which inhibit the reuptake of norepinephrine and serotonin. Other neurochemical systems such as the cholinergic and histaminergic may be affected. TCA is now largely replaced by SSRI or SNRI.	• Oral manifestation: Xerostomia • Postural hypotension, • Urinary retention • Nausea, vomiting, blurred vision • Cardiac dysrhythmias • Increase side effect and cardiovascular risk with epinephrine or another vasoconstrictor	Yes	Discontinue
	MAOIs Selective & reversible MAOIs: e.g., moclobemide. Irreversible MAOIs: e.g., tranylcypromine, phenelzine.	MAOIs inhibit the activity of monoamine oxidase enzyme (MAO-A and MAO-B) preventing metabolic breakdown of their neurotransmitters, hence causing elevation of norepinephrine and serotonin at the receptor site. The selective & reversible inhibitors selectively & reversibly inhibit MAO-A enzyme	• Oral manifestation: Xerostomia • Postural hypotension • Urinary retention • Nausea, vomiting, blurred vision • Tachycardia • Increase side effect and cardiovascular risk with epinephrine or another vasoconstrictor	Yes	Selective & reversible MAOIs: Stop on day of surgery Irreversible MAOIs: Stop 2 weeks before surgery
Mood Stabilizers	Lithium compounds (Mineral)	The exact mechanism is unknown and poorly understood. It may alter the metabolism of neurotransmitters and receptors in the central nervous system causing reduction of norepinephrine and increasing serotonin synthesis. Lithium also acts as a neuroprotective factor via the inhibition of N-methyl-D-aspartate receptor. It may also increase level of GABA in plasma and cerebral spinal fluid.	• Oral manifestation: Xerostomia, Stomatitis • Nausea, vomiting, diarrhea, blurred vision, polyuria, polydipsia • Ataxia, Cardiac dysrhythmias • Increased effect when use together with NSAIDs	No	Stop for 1 day prior surgery
	Anticonvulsants e.g., valproate, carbamazepine, lamotrigine	All anticonvulsants are sodium channels blockers or enhance the GABA function. The anticonvulsant mood-stabilizing effects may be more related to effects on the GABA ergic system	• Nausea, vomiting, diarrhea • Sedating effect such as drowsiness, confusion • Ataxia, Nystagmus, Diplopia • Dermatological issues like rashes or risk of Steven Johnson syndrome • Increased effect when use together with NSAIDs	No	Can continue

(*Continued*)

Table 1. Psychoactive Drugs: Mode of Action, Adverse Drug Reactions, and Dental Considerations (*Continued*)

Psychoactive Drug	Drug Classification	Mode of Action	Adverse Drug Reactions and Dental Considerations	Withdrawal Syndrome	Preoperative Discontinuation Recommendations
Antipsychotics	Typical antipsychotic (first generation antipsychotic) e.g., prochlorperazine, chlorpromazine, haloperidol, and trifluoperazine.	Both types of typical and atypical drugs inhibit the D2 receptors in the brain causing tranquilizing effect. They also have inhibition effect on the alpha adrenergic, histamine, and cholinergic receptors. Besides blocking on the D2 receptors, the atypical antipsychotic (second generation) also acts on serotonin receptors	Generally atypical antipsychotics have lesser side effect compared to typical antipsychotics, however former may still induce the side effects. All may produce • Antihistaminergic effect such as sedation such as drowsiness, dizziness, reduce concentration and alertness • Antidopaminergic effect such as extrapyramidal symptoms (as discussed in article) • Anticholinergic effect such as xerostomia, urinary retention, constipation, xeropthalmia, blurred vision, mild tachycardia, sexual dysfunction • Anti-a1-adrenergic effect like postural hypotension • Neuroleptic malignant syndrome with hyperthermia, autonomic dysfunction, muscle rigidity	Yes	Can continue
	Atypical antipsychotic (Second/new generation antipsychotic) e.g., risperidone clozapine, amisulpiride olanzapine, quetiapine, aripiprazole			Yes	Can continue
Anxiolytics / Antianxiety	BZD e.g., diazepam, lorazepam, alprazolam, temazepam	BZD act selectively but indirectly on the GABA receptors which increase in neuronal receptor sensitivity to GABA, causing the sedative, hypnotic, anxiolytic, anticonvulsant, and muscle relaxing effect.	• Sedating and muscle relaxing effect such as drowsiness, dizziness, reduce concentration and alertness • Cognitive impairment such as anterograde amnesia • Paradoxical effect such as violence, aggressive and impulsive behavioral responses • Tolerance or withdrawal syndrome like vomiting, amnesia, anuresis	Yes	Can continue

BZD, benzodiazepines; D2, dopamine 2; GABA, gamma-aminobutyric acid; MAOI, monoamine oxidase inhibitors; NSAID, nonsteroidal anti-inflammatory drugs; SNRI, serotonin-norepinephrine reuptake inhibitors; SSRI, selective-serotonin reuptake inhibitors; TCA, Tricyclic Antidepressants.

stigma, and social economics.[48] In addition to that, patients treated with psychoactive medications usually had direct or indirect oral and dental manifestations.[44]

Additionally, some antipsychotic drugs have the potential to interact adversely with vasoconstrictors like adrenaline in local anesthetic agent. Besides that, it may also produce unwanted oral effects such as hyposalivation or xerostomia.[41] This may complicate the dental treatment. Some patients may showe anxiety and apprehension about dental treatment, requiring stress-relieving measures.[49] In certain mental health issues, the patient might not be fit to provide consent for the procedure, or the medications being prescribed to manage the psychiatric problem may interact with those used during dental treatment. The importance of assessment of mental health status is equally important to the delivery of health care, including dental care.

During the COVID-19 outbreak, screening patients with a prescreening questionnaire prior to any procedure is advisable. However, it is essential to emphasize that, as a consequence of the various stigmatas by society, such as stereotyping, discrimination, isolation, discrediting, devaluation, prejudice, humiliation, or aggressive attitudes by all parties, it is crucial for the oral practitioner to understand that some patients might refuse to reveal their relevant history, including their history of infection, close contact, or any other related odontogenic issues that have similar signs and symptoms to COVID infection.[50]

Therefore, strict universal precautions for protection with the use of personal protection equipment (PPE) with the use of goggles or face shields and N95, or filtering facepiece respirators, were the most recommended. Others include the use of mouth rinses like chlorhexidine, essential oils, and cetylpyridinium, chloride, and povidone iodine prior to dental treatment.[51,52] In order to reduce the transmission of the virus between healthcare providers and patients, as well as the risk of a shortage of PPE, another alternative for provisional oral healthcare services namely telemedicine, which utilizes electronic telecommunications, is effective in providing remote clinical services to patients without time and space restrictions.[53-56] Teledentistry, a subunit of telemedicine, can be used as a remote triage for the provision of dental consultation, care, or advice through the use of information technology.[53] Although teledentistry is not a new concept and has been reported to be used among various dental specialties, including periodontics, preventive dentistry, pediatric dentistry, oral medicine, oral surgery, orthodontics, endodontics, and prosthodontics, this means of application was rather limited or impossible previously in view of the diagnosis or treatment cannot substitute the face-to-face consultation and subsequent clinical management. Nevertheless, the adoption of teledentistry is valuable as another option or solution to provide a continuation of oral care, especially for less complex consultations or for follow-up visits among patients, including those with behavioral disorders or neuropsychiatric illnesses, during this COVID-19 pandemic.[54,56]

CONCLUSION

The COVID-19 pandemic has undoubtedly left a strong, unavoidable impact on different aspects of dentistry, affecting the general population, patients requiring treatments, and healthcare providers. Even though the pandemic situation is transitioning into a more endemic stage, the neuropsychiatric implications are long-term with lingering effects. The way dentistry is practiced and the delivery of dental care are being transformed to adapt to adverse situations. Teledentistry, preventive-centric approaches, and nonaerosolizing procedures are among the few opportunities presented during this trying time.

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