THE IMPACT OF COVID-19 PANDEMIC IN THE DELIVERY OF DENTAL TREATMENT FOR PEOPLE WITH DISABILITIES – MALAYSIAN EXPERIENCE

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ABSTRACT

The Coronavirus disease 2019 (COVID-19) pandemic has had a huge impact on the delivery of healthcare across the globe. This includes the delivery of oral health care in Malaysia. Special Care Dentistry (SCD), a dental specialty which focuses exclusively on delivering dental treatment for people with disabilities (PWDs) and frail elderly, has also been affected without any exception by the pandemic. The implementation of the Movement Control Order (MCO) and the requirement for strict adherence to Standard Operating Procedures (SOPs) are among the initiatives taken to control the spread of infection in the public as well as in the healthcare facilities which have indirectly led to undesirable impacts on the oral health of PWDs. Aims: To highlight the impacts, challenges and barriers faced by PWDs and oral health team in delivering care during the pandemic. Materials and methods: The reported data comprised all patients attending SCD clinics in 2019, 2020 and January till May 2021 aged 16 years old and above which was recorded in a standard format of excel spreadsheet. Descriptive analysis was done using the extracted data needed for the report by means of tables, graphs and charts. Results: Taking 2019 as a point of reference (before the pandemic was announced), the number of patients attending SCD clinics in the whole country had experienced a decrease by 33.7% in 2020. Similar trend was also observed when comparing the data from January till May 2021 and 2020 by which the service reported a decrease in attendance by 10.6% in 2021. There was also a reduction in DOHS visits in 2020 (21 visits) and 2021 (9 visits) in comparison with 2019 (39 visits). The similar reduction trend was also noted in the number of patients receiving dental treatment under general anaesthesia (GA) in 2019 (110 cases), 2020 (96 cases) and from January till May 2021 (37 cases). Conclusion: The pandemic has given rise to a multitude of changes that pose a challenge for PWDs to adapt, thus creating a barrier for them to receive dental treatment in these current norms. The suspension of all elective dental procedures, disruption of visiting clinics as well as the domiciliary oral healthcare service and remobilization of the dental workforce to help combatting the pandemic has affected the specialty and patients significantly.

Keywords: Special Care Dentistry, COVID-19, people with disability/ies

INTRODUCTION

The impact of coronavirus disease 2019 (COVID-19) in the delivery of health care including dentistry is beyond the initial expectation. Apart from that, the disease, caused by the SARS-CoV-2 virus originating from Wuhan, China has affected many aspects of our daily routine globally. These include socio-economic activities, cultural and religious practices and the political climate in some countries. The worst of the impact would be the unprecedented scale at which lives have been lost to the virus (Meng et al, 2020, Kathree et al, 2020). It has been documented that the main mode of virus transmission involves direct human-to-human interactions (such as sneezing, coughing, talking) and indirect contact (e.g. with contaminated surfaces and contact with infected mucous membranes) (Secon, 2020, Zemouri, 2017). Unfortunately, the delivery of oral health care service allows for potential spread through these two modes of transmission (Peng et al, 2020). The spread of infection can also occur via aerosolized droplets suspended in the air generated by dental procedures (AGPs) (Peng et al, 2020). In addition, the majority of dental procedures generate aerosols, such as scaling and polishing as well as dental restorations.

In Malaysia, the Special Care Dentistry (SCD) service, which focuses on the delivery of oral health care for people with disabilities aged sixteen years old and above, has been significantly affected since the emergence of the virus in the country in December 2019. The population cared for by this service, including people with intellectual and developmental disabilities, physical disabilities, medical issues, and psychiatric and also psychological disorders, have been categorized as high-risk groups for poor clinical outcomes on contracting COVID-19. Medically compromised patients who either have severe respiratory conditions, malignancies, neurological conditions, survivors of stroke and diabetes are in particularly at an increased risk of morbidity and mortality following infections (Harrison et al, 2020,Yang et al, 2020).

All patients attending SCD clinics are those with various types of disabilities mentioned above, referred by general dental practitioners or medical counterpart for the management of their dental problems either seen as out-patients or in-patients. Prior to the pandemic, SCD clinics throughout the country ran busy clinical schedules with centres operating daily and were able to treat more than twenty patients a day. Some centres also had multiple visiting clinics within the region and were also able to

provide dental treatment under general anaesthesia at visiting hospitals. The domiciliary oral health service was also able to see multiple patients on a single day trip covering distances of up to hundred kilometres a day.

The implementation of the Movement Control Order (MCO) in March 2020 and strict Standard Operating Procedures (SOPs) to control the spread of infection in the public and health care facilities have led to undesirable impacts on SCD services and the oral health of people with disabilities (PWDs). The SOPs instituted have led to restrictions in the number patients that could be seen in the dental clinic with some centres only allowing up to six patients to be treated a day. The restriction in number of patients is in line with regulations to ensure physical distancing is maintained in the facilities and to allow sufficient time to clean and disinfect the dental surgery (Oral Health Programme, 2021). General anaesthetic services for elective dental treatment are cancelled to enable the medical teams to focus on the pandemic. Domiciliary oral health care services are also affected as inter-state and inter-district travel are not allowed. These disruptions in the SCD services have led to accumulation of chronic untreated oral diseases such as progressing tooth decay and gum disease and ultimately hampering the delivery of oral health services for PWDs.

In addition, the needs to adhere to the current infection control guidelines for the practice of dentistry call for modifications in the delivery of service (Oral Health Programme, 2021). These modifications involve the reorganization of appointment schedules in such a way to allow sufficient physical distancing of patients in the waiting area and time for appropriate disinfection and sanitization of the dental surgery room and the surrounding environment after each patient. In addition, necessary equipment such as air purifiers with high efficiency particulate air (HEPA) filter and extra oral vacuum suctions (EOVS) devices must be installed in the dental surgery. These new changes and specialised equipment required to provide care can be disturbing to PWDs due to their size and noise produced. All these changes are difficult for PWDs to adapt and thus leading to huge challenges for them to receive dental treatment in these new norms. Henceforth, this paper aims to shed some light and discuss the impacts and challenges faced by PWDs and oral health practitioners in delivering care during the pandemic era.

MATERIALS AND METHODS

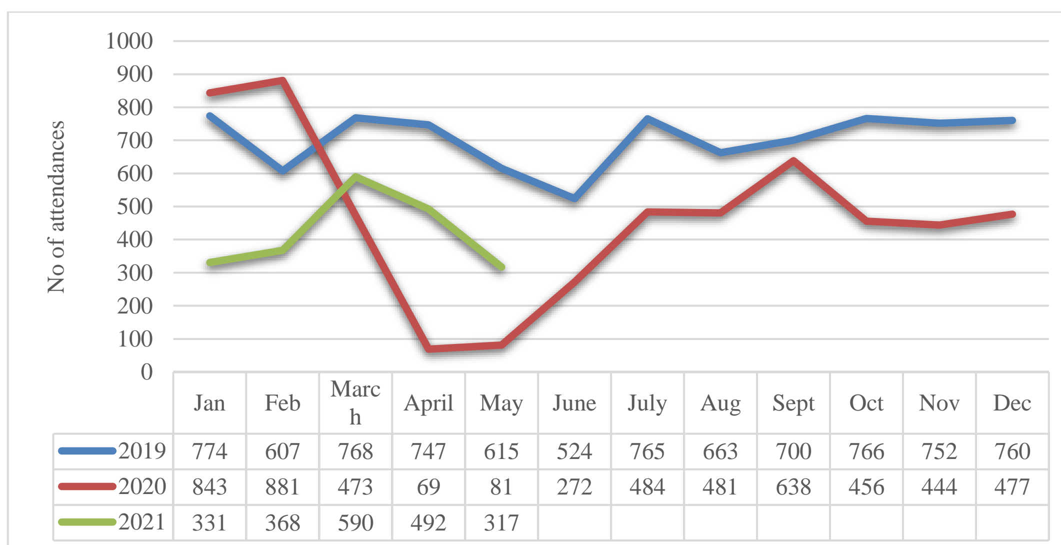
Patients attending SCD clinics are monitored daily as part of the usual standard administrative procedure. Other data such as the number of domiciliary visits, the number of patients treated under general anaesthesia (GA), the category of disabilities, the dental diagnosis and the management of clinical treatment provided are also recorded. An excel spreadsheet is used by all the SCD clinics to collect these data which is then reported every 6 monthly to the Oral Health Programme, Ministry of Health Malaysia. The data collected has been analysed and tabulated to study the impacts of the pandemic on patient attendance to SCD clinics, domiciliary oral health care visits and the number of patients treated under GA. Descriptive analysis has been used to analyse the collected data for the year 2019, 2020 and until May 2021. The data is presented in the form of tables, graphs, and charts.

IMPACTS OF COVID-19 PANDEMIC TO SCD SERVICES

PATIENTS' ATTENDANCE

The SCD service, mainly provided in the hospital setting, has experienced a dramatic decrease in patient's attendance during the pandemic. There are seven SCD clinics throughout the country which operate as usual from 8 am till 5 pm, but bounded with the current orders and instruction from the Ministry of Health, Malaysia and the National Security Council (NSC) depending on the current situation related to COVID-19. Taking 2019 as a point of reference, the number of patients attending SCD clinics in the whole country had experienced a decrease by 33.7% in 2020. Similar trend was also observed when comparing the data from January till May 2021 and 2020 by which the service reported a decrease in attendance by 10.6% in 2021. However, comparing the data from April till May 2021 and 2020, there was a significant increase of attendance in 2021 by 439.3% during the Recovery Movement Control Order (RMCO) phase, when the country experienced a drop in COVID-19 cases, while the public were allowed to cross districts and states borders and all sectors including essential services such as dentistry were allowed to operate as usual. This is shown in **Figure 1** below.

Figure 1: Total patient attendance in SCD clinics in 2019, 2020 and Jan-May 2021



The reduction in the number of attendances to SCD clinic was partly due to the change in appointment scheduling. Before 2020, each SCD clinic was able to see at least 10 patients per dental chair per day. Since March 2020, a smaller number of patients could be seen, as each appointment slot requires at least one-and-half-hour. That length of time is allocated to allow for dental treatment, fallow time, as well as disinfection/sanitization of equipment and the dental surgery (National Health Service (NHS), 2020, Malaysian Dental Council, 2017). As a result, only about a maximum of 5 patients can be seen per dental chair per day. **Table 1** displays the mock schedule of appointments on a daily basis.

Table 1: The mock schedule of appointment in SCD clinics

Time \ Day	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8.30-10.00 am	New patient(consultation and examination only)	Emergency Procedure/ In Patient	Non-AGPs	Emergency Procedure/ In Patient	Non-AGPs
10.00-11.30 am	New patient(consultation and examination only)	Non-AGPs	Non-AGPs	Non-AGPs	Non-AGPs
11.30-1.00 pm	New patient(consultation and examination only)	Non-AGPs	**AGPs (1 case)**	Non-AGPs	11.30-12.15pm Emergency procedure
1.00-2.00 pm	Break/Lunch time				12.15-12.45pm Break/Friday prayer
2.30-4.30 pm	**AGPs (2 cases)**	**AGPs (2 cases)**	**AGPs (2 cases)**	**AGPs (2 cases)**	2.45-4.45 CME/meeting

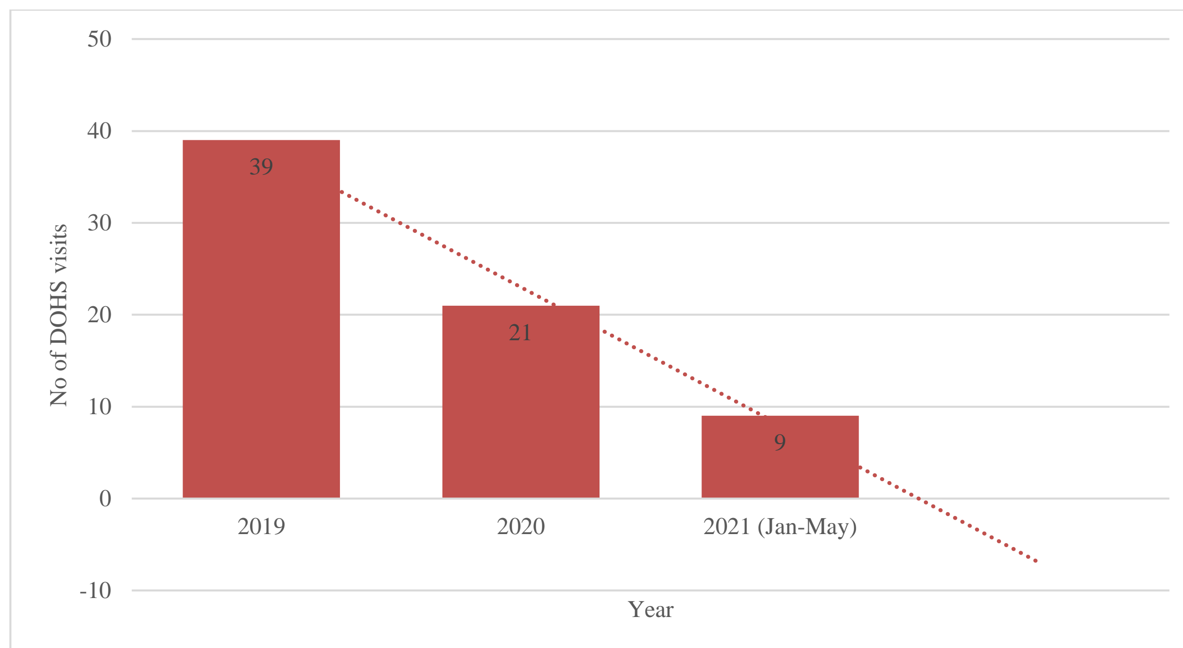
Ref: Operational Policy of the Department of Special Care Dentistry, Hospital Kajang, 2021

DISRUPTION IN DOMICILIARY ORAL HEALTH CARE SERVICES (DOHS)

Domiciliary oral health care is one of the components of the SCD services. Patients who are eligible for this service are those with difficulties to access oral health care facilities due to their disabilities and current medical conditions (Walls, 2005). The basis of the service was initiated by MOH in 1993 through the oral health care service provided for the elderly in institutions and further expanded in 2002 and subsequently in 2014 after the revision of the Guidelines on the Oral Healthcare for Elderly (Oral Health Division, 2014). In 2013, SCD started delivering oral health care to selected patients at their individual residence after acknowledging that some bed-bound PWDs benefitted more by receiving dental care within their familiar environment. It was initially started in a small scale due to lack of manpower and suitable equipment. Subsequently, it was formally introduced to the patients and carer in 2015 following the allowance of a special budget given by the MOH to run the service. The carers and PWDs themselves found the service very helpful in maintaining their oral health without needing to travel, which could be very costly and time consuming.

The implementation of various levels of MCO since 2020 has led to the restriction of movement of healthcare workers. Many dental outreach programmes have to be suspended or postponed including the DOHS. In view that those PWDs who receive DOHS are in high-risk categories in contracting COVID-19, and the health care workers are also considered as possible carriers of the virus, visiting patients at home is not encouraged unless in an emergency situation. Therefore, a lot of patients are unable to attain regular dental check-up that they were used to prior to the pandemic. **Figure 2** displays the reduction in DOHS visits in 2020 and 2021 in comparison with 2019.

Figure 2: No of DOHS visits in 2019, 2020 and Jan-May 2021



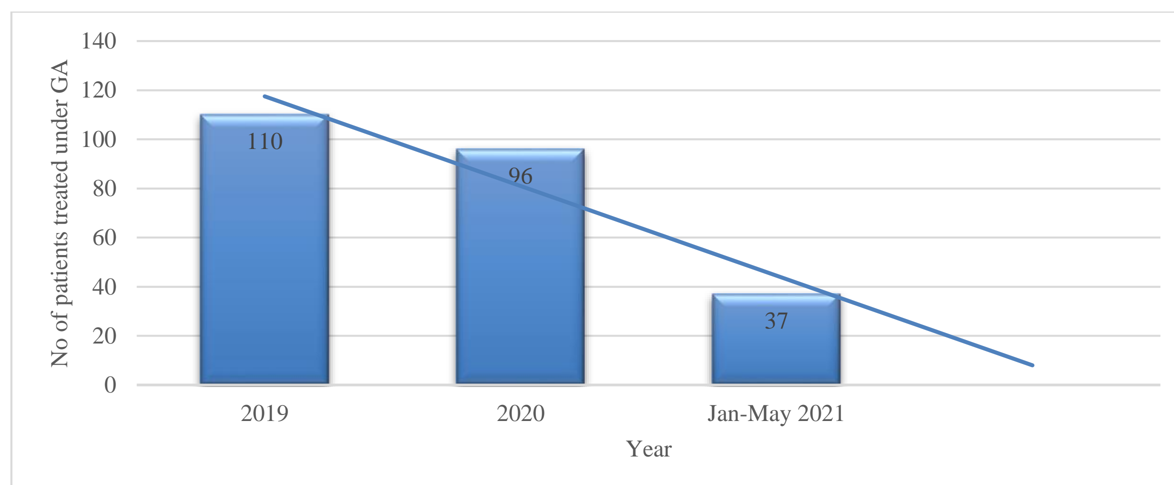
As at the time of writing this article, daily cases of COVID-19 in Malaysia still continues to surge and this is expected to remain high for the next few weeks. Thus, DOHS may not be able to resume as normal until the numbers of daily cases reduce.

DISRUPTION OF ORAL HEALTH CARE UNDER GENERAL ANAESTHESIA (GA) FOR PWDS

PWDs, especially those with behavioural issues and who are uncooperative to receive dental treatment on the dental chair in the usual manner, are often arranged for comprehensive dental treatment (CDT) performed under GA or sedation (Mallineni, 2016, Glassman et al, 2009) . Dental treatment under GA requires a team of dental and medical professionals including specialist in SCD, dental officers, dental surgery assistants, anaesthetists, medical officers, medical nurses, and health attendants. The presence of anaesthetists and their team as well as the availability of the operation theatres are mandatory in any procedure performed under GA.

The surge of COVID-19 cases especially high numbers of patients with the severe infections (Category 5) in the country has caused the utilization of more than hundred percent of Intensive Care Unit (ICU) beds in most hospitals as reported by the Director General of MOH. This requires the presence of anaesthetists and the team members as well as ventilators used in GA to ventilate patients in ICU. The mobilization of anaesthetists and their team to care for ventilated COVID-19 infected patients and to other hospitals severely affected by COVID-19 has resulted in lack of anaesthetic manpower in conducting elective GA procedures. Therefore, all elective medical and dental procedures are cancelled or postponed until the situation abates. However, emergency procedures for life-threatening conditions are still carried out under general anaesthesia. Since comprehensive dental procedure for PWDs is considered as an elective procedure, the service has experienced cancellation and postponement for more than a year. Affected PWDs scheduled for CDT under GA may not be able to be treated immediately and their oral health will deteriorate to stage necessitating emergency interventions in the future. Fortunately, at present, there have been no complaints received from patients' family members or carers after thorough explanation has been accorded on the criticality of the situation faced by the hospitals which has led to the prolonged delay of their scheduled GA appointments. **Figure 3** depicts the reducing trend in the number of patients receiving dental treatment under GA in 2019, 2020 and from January till May 2021.

Figure 3: **The number of patients treated under GA in SCD service**



MODIFICATION OF DENTAL SETTINGS AND APPOINTMENT SCHEDULE

Despite multiple service disruptions, the MCO and its implementation does not affect the clinic operation hours, as SCD is considered an essential service. The SCD clinics throughout the country are open as usual, however, in the beginning of the pandemic in March 2020, the service was only focused on emergency/ urgent treatment only. As we learn more about the virus, more information and scientific data are available and therefore, we are able to resume routine services. On 18th May 2020, Oral Health Programme, MOH published its first Guideline on Oral Healthcare service during the pandemic (Oral Health Programme, 2020) as a guide to resumption of services under the MOH.

The MOH has also published *'Garis Panduan Pengendalian Isu-Isu Berhubung Penularan Jangkitan Wabak COVID-19 di Perkhidmatan Kesihatan Pergigian Bil. 3/2020* (distributed on 17 April 2020), Guidelines on COVID-2019 Management in Malaysia No. 05/2020 (5th edition) (published on 25 March 2020) and Guidelines for Management of Surgery During COVID-19 Pandemic (Version 2/2020, published on 4 May 2020) (Oral Health Programme, 2020, Ministry of Health Malaysia, 2020). As the situation is very dynamic, these documents have been updated several times according to the current scientific information available and government orders. The latest version of the Guideline on Oral Healthcare service during the pandemic in the MOH was distributed on 11th of May 2021, which is more comprehensive and evidence -based (Oral Health Programme, 2021). It emphasizes on the specific requirements of dental care settings and precautions to be taken while treating patients.

The recommendation of the guideline includes movement pathways of the patients from the entrance to a separate exit door It also recommends for separation of dental surgeries for non-AGPs and AGPs procedures. If space is limited, the guideline recommends the installation of barriers to separate one surgery from another. The dental surgery room should also be equipped with an air decontamination unit (ADU) with HEPA filters and an extra oral vacuum suction (EOVS) device, and it recommends the room to have good natural ventilation, especially when AGPs are to be performed. These recommendations are consistent with other available published guidelines (Ather, 2020, Ge,2020, Kathree et al, 2020). A separate section for donning and doffing of personal protective equipment (PPE) should also be made available (Panesar et al, 2020). Most of SCD clinics have now been equipped with the necessary equipment as suggested by the guidelines. Minor renovations and installation of barriers have taken place to enable the facilities to comply with these recommendations so that the service can run safely. The patients and carers need to be informed about the changes made in the dental surgeries to prevent unwanted behavioural issues among patients who are sensitive with changes of the surroundings that they were once familiar with. The size of the EOVS can be quite large and the noise it produces can be fearful for SCD patients with intellectual disabilities and cognitive impairment. The longer-than-usual appointment time and multiple visits for familiarization may need to be allocated. **Figure 4** shows the EOVS used in SCD clinics.

Figure 4: **EOVS used in SCD clinics during AGPs**

SCD clinics also recently has developed a new operational policy as in the diagram below to allow safe and better management of patients during this critical period.

OPERATIONAL POLICY OF THE SEPCIAL CARE DENTISTRY CLINIC DURING MCO DUE TO COVID-19 PANDEMIC

1. Special Care Dentistry clinic will be operating as per usual working hours from 8 am to 5 pm and from Monday to Friday.
2. Priority will be given to emergency cases on referral basis. The referring clinician is required to call the clinic to get an appointment date prior to referral.
3. Non-emergency referrals of new cases will be postponed until further notice or until newly diagnosed daily COVID-19 cases has reduced to 2 digits and maintained for 14 days.
4. All non-urgent review patient appointments will be postponed until further notice.
5. All emergency dental procedures that generate aerosols (AGPs) will be scheduled accordingly and prior COVID-19 Rapid Antigen Tests (RTK) will be performed.
6. All elective dental AGPs which are required to be done within 3 months and anticipated to lead to more severe problems will be scheduled accordingly and COVD-19 Real Time Polymerase Chain Reaction test (RT-PCR) will be performed 3-5 days prior to the appointment.
7. All visiting clinics at other hospitals will be postponed until further notice.
8. All domiciliary visits will be postponed until further notice.
9. Review patients who have not been seen within the last 6 months will be scheduled accordingly.
10. All elective dental treatment under general anaesthesia will be postponed until further notice.
11. All patients undergoing treatment under general anaesthesia and conscious sedation must be screened for RT-PCR tests at least 3-5 days before the day of treatment.
12. Cases to be considered as emergency if it falls into the categories below:

    a. Tooth Pain (Pain score >4)
    b. Extraction of tooth secondary to irreversible pulpitis and acute periapical periodontitis
    c. Fractured restoration/appliance/prosthesis that can cause trauma to soft tissues and pain
    d. Intraoral injury/tooth injury caused by a fall or any sort of trauma
    e. Trigeminal Neuralgia
    f. Facial Cellulitis and abscess
    g. Intraoral lesions/growths which are suspected as malignant
    h. Post extraction complications (bleeding, dry socket, infections)
    i. Dental treatment prior to critical medical procedures such as radiotheraphy, chemotheraphy, heart surgeries or organ transplant which can't be deferred

Ref: Operational Policy of the Department of Special Care Dentistry, Hospital Kajang,

Patients and carers are also advised to strictly adhere to their appointment time. They will be asked to wait in the car if they arrive earlier than 10 minutes from the scheduled appointment time to ensure physical distancing at the waiting area and minimise mobilization of patients, which in turn reduces the risk of infection.

The current practices implemented have indirectly enable the patient and carer to be punctual for their appointments. Patients arriving late for their appointments would need to inform the clinic beforehand so that the appropriate advice can be given. Patients and carers are able to adapt to the current practice partly due to the fact that they are contacted earlier about the schedule and proposed plan. Patients with severe behavioural issues who require more than one carer to be present, those who are unable to comply with the SOPs (e.g. wearing face mask/face shield) and individuals who are hyperactive are advised to postpone their appointment unless in cases of emergencies. It has been encouraging to see positive responses from patients and carers on the current practices and their understanding about the rationales of the new norms.

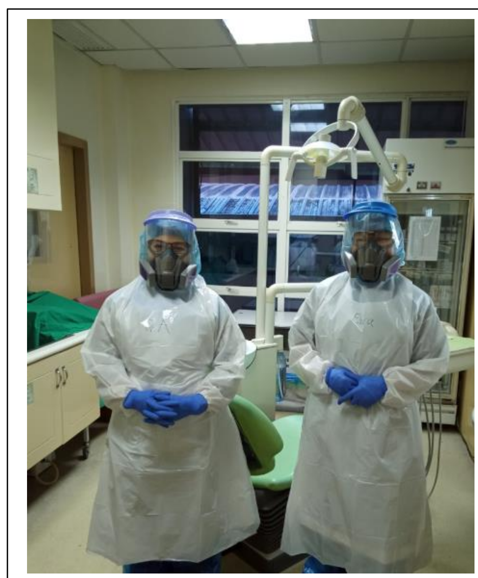
ADDITIONAL REQUIREMENTS

Besides having to adapt with the standard SOPs in relation to the pandemic, there are other additional requirements (which are different from practices prior to the pandemic) that need to be fulfilled while the patients attend the dental clinic. One of the requirements include performing COVID-19 screening test on dental patients. The gold standard screening tests for the detection of COVID-19 are the RT-PCR, which requires a swab of nasopharyngeal and oropharyngeal secretions, and the RTK-antigen test, which needs at least a nasopharyngeal swab (Ministry of Health Malaysia, 2021). These procedures appear to be challenging for people with intellectual disabilities and uncooperative patients. However, since it is a mandatory to be carried out before dental procedure done under GA and dental AGPs in the SCD clinics, the SCD dental team must put a lot of effort to ensure that the swabs are taken correctly, so that the samples are not rejected. Some forms of clinical holding for the patients may need to be utilized with prior consent from the parents or carers (Master et al, 2009). Some parents/carers, who are reluctant to proceed after being informed about the process, are made aware that the dental procedures may be delayed or postponed. If the latter is opted out, possible risks of severe dental infection and pain must be clearly explained to the parents/carers by the SCD team. Currently, the MOH has approved the use of salivary antigen RTK test kits for home use. It is anticipated that the use of these kits would make the process of testing SCD patients much easier.

Another recommended dental treatment protocols during the pandemic include the use of pre-operative mouth gargling with 1-1.5% hydrogen peroxide or 0.2-1.0% povidone iodine for at least 15-30 seconds. However, some PWDs (especially those with intellectual or cognitive impairments) are unable to tolerate this mouthwash or to spit it out. Although gargling with these solutions has been recommended in many literature (Giudece, 2020, Ather, 2020, National Health Service (NHS), 2020) and in the MOH guideline (Oral Health Programme, 2021) as a way to reduce the risk of virus transmission, other methods such as oral irrigation or wiping may need to be adopted for SCD patents who have difficulties in doing so.

In addition, the attire worn by the dental team, particularly a complete PPE (as shown in **Figure 5)** may trigger fear and anxiety among some PWDs leading to poor behaviour and compliance. Since this is a mandatory requirement especially for performing dental procedures that generate aerosols, the patients can be provided with pictures of the dental team in full PPE prior to arriving for their appointment to enable them to get accustomed to the team in PPE. The use of social stories prepared for patients prior to their dental visits can be of help too. All these initiatives are necessary in order to prepare our patients and familiarise them with the new norms, thus ensuring compliance to dental visits.

Figure 5: SCD team with complete PPE



The use of teledentistry has become quite common in SCD practices (Meng, et al, 2020, Jamal, et al, 2020, Giudice, et al, 2020). Initially, it was used as a method to triage with patient by phone a day before the scheduled appointment. Subsequently, as dental visits becoming more restricted, regular reviews of oral health are also performed via video call by the specialists, especially for patients who live in rural areas or areas under the enhanced movement control order (EMCO). During this time, oral health of the patients is virtually assessed with the assistance of caregivers. Appropriate advice can be given to the patient and carer while waiting for the next physical dental visit. Any enquiries by the patients and carers can be addressed and if the situation warrants an urgent treatment, dental visit at the clinic will be arranged accordingly. This technologically-driven dental approach should be done with prior consent by patients/carers. Confidentiality and privacy issues needs to be discussed in the consent taking process. Both parties have to be responsible in ensuring that the information transmitted during the telecommunication will not be shared or disseminated to others. Several feedbacks obtained from the patients and carers stated that they felt more secure and comfortable to communicate with their regular dental team as they were able to obtain reliable and trustworthy advice.

Another strong recommendation since the emergence of the pandemic is the use of rubber dam in dental isolation to reduce the spread of COVID-19 during AGPs (Meng et al, 2020, Sinjari et al, 2020). The effectiveness of rubber dam has been scientifically proven by many studies to aid the success of endodontic treatment (Wang et al, 2016, Keys, 2017). Despite this, the use of rubber dam may not be preferable among the specialists in SCD due to the difficulty in placing this equipment, especially on people with intellectual disabilities, patients with cooperation or behavioural issues, as well as those with certain conditions such as microstomia, cerebral palsy, post-stroke etc. Therefore, it is imperative that the SCD team is aware of other available alternatives to control the virus transmission while performing dental treatment.

CONCLUSION

The emergence of the current Delta variant has significantly affected the overall delivery of health care services in Malaysia due to the drastic increase in hospital admission because of COVID-19 (Chukarjon et al, 2021, Lum, 2021). Fortunately, the most recent Lambda variant of SARS-CoV-2 has yet to be detected in the country but it is just a matter of time as its detection is understood to be directly related to sequence-based surveillance, laboratory studies, and epidemiological investigations (Lal, 2021). The efficacy and effectiveness of the current available vaccines against the Lambda variant is yet to be known. The rapid spread of the current infection has maximized the use of our health facilities including outpatient clinics that have been converted to hospital wards to accommodate infected patients. The number of patients seen by SCD clinics has been reduced to 20% as more dental staff have been mobilized to the cause of curbing spread of the disease. Dental personnel have been mobilized to assist at the Low-Risk Patient Assessment Centres and vaccination centres as most medical staff from these centres have been remobilized to in patient care facilities to assist with the sudden surge of critically ill patients. The SCD service being part of the health care profession in the Ministry of Health also plays its role in the war against COVID-19.

The pandemic has given rise to a multitude of changes that pose a challenge for PWDs to adapt, thus creating a barrier for them to receive dental treatment in these current norms. The suspension of all elective dental procedures, disruption of visiting clinics as well as the domiciliary oral healthcare service and remobilization of the dental workforce to help combatting the pandemic has affected the specialty and patients significantly. The present norms of dental practice is expected to last for a significant amount of time and all dental staff and patients have no option but to conform to the changes. The current experiences of pandemic is certainly valuable in preparing the SCD fraternity to face any similar crisis in future.

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