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Original article

Dental professionals' adaptation to COVID-19 transition in Malaysia

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ABSTRACT

Background: *Coronavirus disease-2019 (COVID-19) has substantially impacted oral health services in Malaysia. The Prime Minister of Malaysia announced the "Transition to Endemic" phase of COVID-19. Although the World Health Organization issued provisional guidelines to address considerations for essential oral health services during the pandemic and endemic phases of COVID-19, there are limited studies on dental professionals' knowledge, attitudes, and perceptions regarding COVID-19.* ***Purpose:*** *To investigate the attitudes, perceptions, and preparedness of dental professionals in Malaysia during the transition from the pandemic to the endemic phase of COVID-19.* ***Methods:*** *This study was conducted among dental professionals practicing in Malaysia, either in the private or public sector. A cross-sectional online survey of 151 dentists was conducted between December 1, 2022, and January 13, 2023. A questionnaire was disseminated via Google Forms. The data were analyzed using IBM SPSS for Windows, v. 22.0. Descriptive statistics and the chi-square test were used, with $p < 0.05$ considered significant.* ***Results:*** *The response rate was 100%. The majority of participants displayed a positive attitude toward the transition. Most respondents reported continuing to implement some general standard operating procedures in their dental practices. This study provides insights into the preparedness of dental practitioners in Malaysia for the transition from the COVID-19 pandemic to the endemic phase.* ***Conclusions:*** *The participants demonstrated a positive attitude and mental preparedness for the transition from pandemic to endemic, though some anticipated impacts on clinical practices during the post-lockdown period. This reflects an overall optimistic outlook among dental practitioners during this transition.*

Keywords: *attitude; dental professionals; endemic; pandemic; perception*
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INTRODUCTION

Coronavirus disease-2019 (COVID-19) was first identified in Wuhan, China, in December 2019. It is an infectious disease caused by the SARS-CoV-2 virus and can be transmitted through respiratory droplets and human-to-human contact.[1,2] Symptoms vary among individuals, with the most common being fever, cough, tiredness, and loss of taste or smell.[2] The outbreak spread rapidly outside China and has brought a substantial negative impact on various sectors, including the economy, education, tourism, and health. The COVID-19 pandemic captured the focus of governments globally, prompting the implementation of various preventive actions to mitigate the virus's rapid spread. These actions included travel restrictions, mandatory quarantines for travelers, bans on public gatherings, the closure of schools, universities, and businesses, curfews, lockdowns, and the promotion of remote work policies.[3]

The World Health Organization established interim guidelines for oral healthcare practices during the pandemic.[4] In addition, the Centers for Disease Control and Prevention and the American Dental Association also issued guidelines to control the spread of the disease. Strict infection control measures were implemented in all healthcare settings to prevent cross-infection.[5,6] Patients were required to undergo a triage process, perform hand hygiene, use personal protective equipment (PPE) for both clinical and non-clinical staff, preprocedural mouth

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rinses and aerosol management.[7] In addition to restricting treatment to emergency cases, these recommendations provided valuable guidance on thorough patient assessments, including evaluations of symptoms, transmission methods, and referral procedures.[8]

With the advent of COVID-19 vaccination, followed by booster doses, both the cases and mortality rate of COVID-19 have gradually decreased. Therefore, the Malaysian government has recommended a gradual transition back to normal life routines after several years of battling the pandemic. On April 1, 2023, the Prime Minister of Malaysia declared the country's transition to the endemic phase of COVID-19, lifting all restrictions on business operating hours and permitting prayer activities without the need for physical distancing.[9,10] Starting April 1, the eased COVID-19 guidelines and standard operating procedures (SOPs) allow prayers and religious activities in mosques, suraus, and other places of worship to be held without the requirement for physical distancing.[11]

Interstate travel is permitted for everyone, regardless of vaccination status. Restrictions on workplace capacity based on vaccination rates have been abolished. However, check-ins using the MySejahtera app remain mandatory at all premises, except in uncrowded open spaces and locations without public gatherings. The wearing of face masks in public places is still mandatory.[10–12]

In conjunction with the government's announcement of the transition from pandemic to endemic, the Malaysian Dental Association (MDA) has updated its guidelines for dental practitioners in both government and private practice.[13] Subsequently, several adjustments to the SOPs were introduced to ensure they align with current needs and remain up-to-date. The guidelines have been revised to match the present conditions and changes within the country. With the relaxed measures in the endemic phase, quick response (QR) code scanning via the MySejahtera app is no longer mandatory before entering healthcare facilities. Instead, it is only used to verify an individual's risk status to identify those who are high-risk or under a home surveillance order (HSO).[11,13]

There are a few guidelines that remain the same as during the pandemic, such as staff and patients always wearing face masks and practicing proper hand hygiene. The dental clinic should be well-ventilated, with frequent cleaning of surfaces such as doorknobs and tables using disinfectants. Scheduling of appointments should be done carefully to avoid crowding in the dental clinic. Treatment is not limited to emergency cases only, and there is no reduction in the number of appointments in clinics or hospitals.[13,14]

Even though Malaysia is transitioning from a pandemic to an endemic phase, dental healthcare personnel remain in the highest risk category for SARS-CoV-2 exposure due to the frequent performance of aerosol-generating procedures in clinical settings.[4,15,16] Dental professionals are particularly susceptible to this infection due to the nature of their clinical work.[17]

Although some studies have assessed Malaysian dental practitioners' perceptions of the provisional COVID-19 guidelines imposed by the government during the pandemic, with the transition to the endemic phase, it remains uncertain whether dental professionals in Malaysia are physically or mentally prepared to return to pre-COVID-19 working guidelines. Therefore, the aim of this study is to evaluate the attitudes, perceptions, and preparedness of the dental community in Malaysia regarding the transition from the pandemic to the endemic phase of COVID-19. Investigating these factors is essential for ensuring the resilience of oral health services, adherence to guidelines, public health preparedness, and addressing gaps in existing research.

MATERIALS AND METHODS

This was a descriptive, quantitative, cross-sectional study designed to indicate dental practitioners' awareness and perceptions of the effect of COVID-19 on their regular dental practice during the transition from the pandemic to the endemic phases of COVID-19. Prior to conducting the study, approval for ethical clearance was obtained from the institutional ethical committee of SEGi University Malaysia (Ethics Approval Number: SEGiEC/SR/FOD/84/2022-2023). To prevent duplicate responses, some questions were limited to only one response. All respondents were informed about the objectives of the study, and participation was purely voluntary; thus, informed consent was obtained before they began completing the form.

This study population consisted of general dental practitioners and dental specialists. Convenience sampling and snowball sampling were followed to ensure maximal participation. The study's inclusion criteria were as follows: 1) dental practitioners randomly selected from various health sectors in Malaysia, including the Ministry of Health, Ministry of Education Ministry of Defence and private health sectors; 2) active dental practitioners with either an annual practicing certificate or a temporary practicing certificate for non-Malaysians issued by the Malaysian Dental Council; 3) only those who completed the forms and clicked the "Submit" button at the conclusion of the survey; and 4) participation limited to dentists who provided consent. Exclusion criteria applied if the respondent failed to complete the survey, with no restrictions based on age, race, or region.

The minimum number of participants aimed for was 150 dental practitioners, following the inclusion and exclusion criteria. For sample size calculation, the Epi Info version 7.0 software was used. A frequency of 37%, a margin of error of 5%, and a design effect of 1 were input into the software to calculate the sample size.[18] The Cronbach's alpha for the study was 0.78.

The questionnaire utilized in this study was created based on prior literature[19,20] and underwent validation for content and face/process validity. Two experts conducted

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content validation, while respondents assessed face/process validity. Slight adjustments were made to refine the structure and improve the clarity of the questionnaire to ensure better understanding. The questionnaire consisted of forty-seven questions divided into four sections: A) Sociodemographic status; B) Awareness of the transition from pandemic to endemic; C) Readiness and Preparedness for the transition from pandemic to endemic; and D) Perception during endemic. Each item in Sections C and D was rated on a 5-point Likert scale (strongly disagree-1, disagree-2, neutral-3, agree-4, strongly agree-5; Table 1). The interval of the 5-point Likert scale was categorized based on the cut-off points shown below for the interpretation of the mean score of each item.[21]

The link to the form was distributed among the dental practitioners' community through relevant online platforms such as WhatsApp, Facebook, and electronic mail to recruit the appropriate number of participants. The online questionnaire was available for approximately 12 weeks, from early December 2022 to the first week of February 2023. Participation was voluntary, and written informed consent was obtained before the survey was completed. Participants who consented were required to click "agree" before proceeding to fill out the questionnaire through a Google Form.

Data entry and analysis were conducted using IBM SPSS for Windows, version 22.0 (IBM Corp., Armonk, USA). Descriptive statistics were presented as means with standard deviations and frequency and percentage distributions. A normality test was carried out to assess the distribution of continuous variables, with statistical significance defined as $p < 0.05$.

Table 1. Cut-off points for 5-point Likert scale mean score for data interpretation

Category	Interval of Mean Score
Strongly disagree	1.00 – 1.79
Disagree	1.80 – 2.59
Neutral/Neither agree nor disagree	2.60 – 3.39
Agree	3.40 – 4.19
Strongly agree	4.20 – 5.00

RESULTS

Based on the results, 67.1% (n = 102) of respondents who participated in this study were women, and 32.9% (n = 48) were men (Figure 1A). Most of the respondents were in the age range between 20–29 years old (56.8%, n = 85) (Figure 1B), followed by 19.3% (n = 29) in the 30–39 age group, 9.3% (n = 14) in the 40–49 age group, 11.3% (n = 17) in the 50–59 age group, and 3.3% (n = 5) aged more than 60 years (Figure 1B). Figure 1C presents the distribution of dental practitioners from different sectors (government and

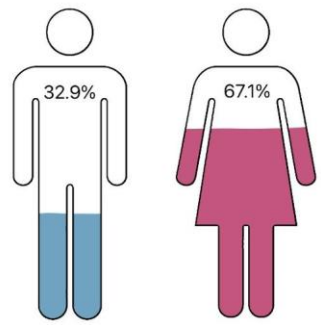
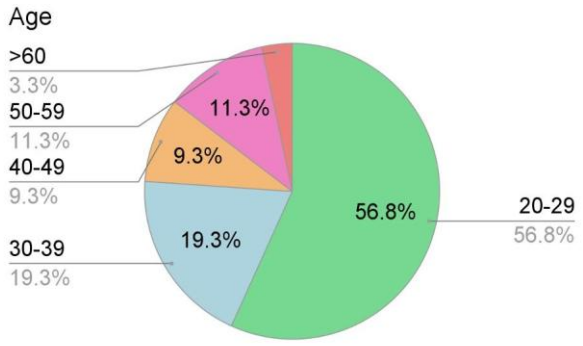


Figure 1(A)



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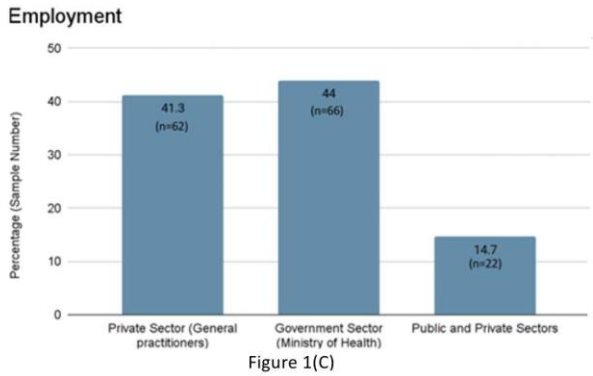

Figure 1(C)

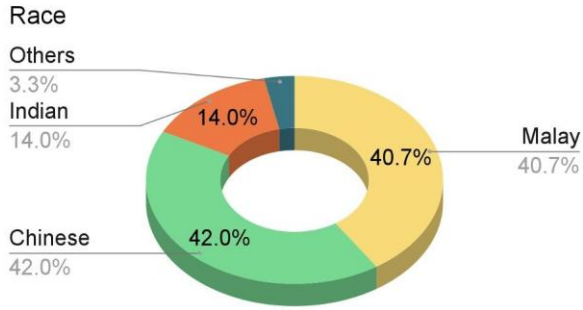

Figure 1(D)

Figure 1. Demographic characteristics of the dental professionals who participated in the research. (A): Gender; (B): Age; (C): Employment; (D): Race.

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private). About 44% (n = 66) were from the government sector (MOH), whereas 41.3% (n = 62) were from the private sector (general practitioners), followed by 14.7% (n = 22) from both private and government sectors.

Based on Figure 1D, most participants were from the Chinese race (42.0%, n = 63). The second most common were Malays (40.7%, n = 61), followed by Indians (13.9%, n = 21). Other races accounted for 3.3% (n = 5). All respondents were vaccinated (100%, n = 151), and about 65.3% (n = 98) had been infected with COVID-19 (Table 2). Additionally, 26% (n = 39) of participants were categorized as high-risk due to comorbidities.

Table 2. Details of dental professionals regarding the vaccination, high-risk status for COVID-19, and history of being infected with COVID-19

Description	Yes (%) (n)	No (%) (n)
Vaccination status	100% (150)	0% (0)
High-risk for COVID-19 due to comorbidities	26% (39)	74% (111)
Infected with COVID-19	65.3% (98)	34.7% (52)

Most respondents (79.3%, n = 119) perceived that they were only practicing mandatory QR code screening before entering the healthcare facility using the MySejahtera application for check-ins at clinics and hospitals during the pandemic (Table 3). Only 19.3% (n = 29) continued practicing MySejahtera check-ins even though the government announced that it was no longer compulsory during the transition (Table 3).

In addition, the results show that 71.3% (n = 107) of respondents implemented hand hygiene compliance at the entrance of the clinic during the pandemic, but only 24.0% (n = 36) still maintain these procedures (Table 3). About 80% (n = 120) of respondents reduced the number of appointments in dental clinics to prevent crowding in the waiting room during the pandemic, but only 5.3% (n = 8) continued reducing appointments during the transition (Table 3).

About 62.7% (n = 94) of respondents limited dental treatment to emergency cases only for COVID-19-positive patients during the pandemic, while 22% (n = 33) did not practice this during either the pandemic or endemic phases (Table 3). Only 15.3% (n = 23) continued this practice during both phases. However, some general SOPs are still

Table 3. Dental practitioner behavior regarding provisional dental practice guidelines during the transition from pandemic to endemic among dental professionals in Malaysia

Questions	During pandemic	Both (pandemic and endemic)	Not practiced
	% (n)	% (n)	% (n)
Do you implement My Sejahtera check-in at the clinic or hospital?	79.3 (119)	19.3 (29)	1.3(2)
Do you implement hand hygiene compliance at the entrance of your clinic?	71.3 (107)	24.0 (36)	4.7(7)
Do you check patient risk status (high risk- COVID-19 positive cases or under Home Surveillance Order [HSO])?	39.3 (59)	55.4 (83)	5.3 (8)
Do you implement a compulsory weekly COVID-19 test (RT-PCR/antigen COVID-19 test) for staff?	42.7 (64)	5.3 (8)	51.3 (77)
Did you reduce the number of appointments to prevent crowding in the waiting room?	80.0 (120)	5.3 (8)	14.7 (22)
Do you limit dental treatment to emergency cases only for COVID-19-positive patients (e.g., abscess, trauma, fracture, severe pain)?	62.7 (94)	15.3 (23)	22.0 (33)

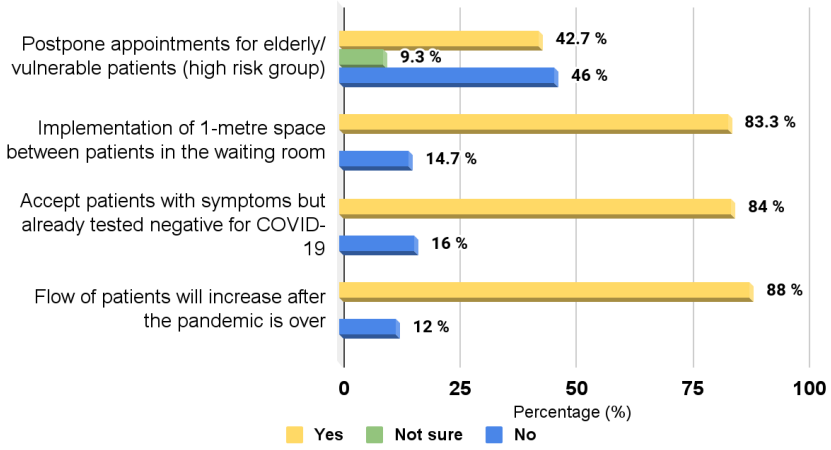

Figure 2. Perceptions of dental professionals regarding key practices during the pandemic and transition to endemic conditions.

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used during both the pandemic and endemic phases. The results showed that about 55.4% (n = 83) of respondents still check patient risk status (high-risk COVID-19-positive cases or those under HSO). About 42.7% (n = 64) of respondents followed the practice of compulsory weekly COVID-19 tests for staff during the pandemic (Table 3).

About 42.7% (n = 64) of respondents agreed that it was necessary to postpone appointments for high-risk individuals (elderly or vulnerable patients) (Figure 2). However, 46% (n = 69) disagreed, believing it was unnecessary. Most respondents (83.3%, n = 130) implemented a one-meter space between patients in the waiting room during the pandemic (Figure 2). Furthermore, 84% (n = 126) of respondents concurred that patients who tested negative for COVID-19 but presented with typical symptoms such as fever, cough, or flu could still be accepted as patients; however, 44.7% (n = 67) limited these cases to emergencies only (Figure 2). Although the number of patients was limited during the pandemic, most respondents (88%, n = 132) were confident that the flow of patients would increase once the situation became endemic (Figure 2).

In conjunction with an economic recession, the majority of respondents (94.7%, n = 142) think that the government should provide sales and service tax (SST) relief for dental materials as compensation for treatment charges (Figure 3). Furthermore, 60% of respondents (n = 90) agreed that standardization of treatment charges among all private dental clinics should be implemented. About 68% (n = 102) believe that changes to standard protocols on waste management in dental clinics are necessary during endemic times (Figure 3).

The majority of dental professionals are self-initiated in protective awareness and preparing themselves for the change from pandemic to endemic. It was observed that most respondents wore PPE during aerosol-generating treatments (81.4%, n = 122) and non-aerosol treatments (72.0%, n = 108), used a face shield (79.4%, n = 119), disinfected exposed surfaces with surface disinfectants (86.6%, n = 130), and took intraoral radiographs (71.3%, n = 107), even though the case numbers are low during the endemic phase (Table 4). However, it was also observed that some guidelines are practiced less frequently during the COVID-19 endemic phase, such as the use of double gloves (26.0%, n = 39), preprocedural mouth rinses (27.3%, n = 41), and ventilation of the operating area between patients (42.7%, n = 64) (Table 4).

DISCUSSION

The field of dentistry is regarded as one of the professions with the highest risk of COVID-19 transmission due

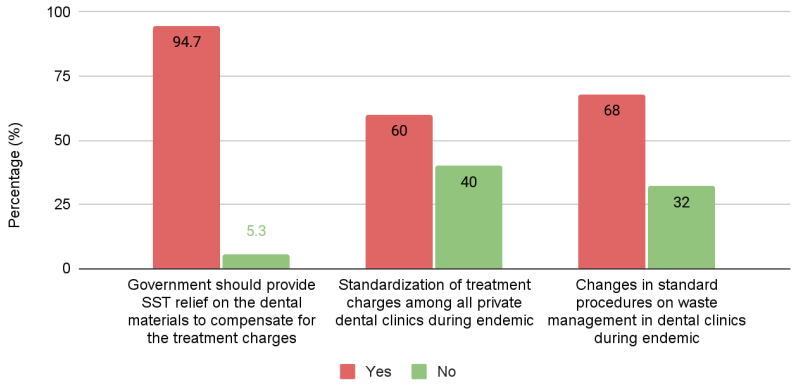

Figure 3. Perceptions of dental professionals toward government support and standardization of procedures on waste management in dental clinics during endemic conditions.

Table 4. Adherence to protective measures by dental professionals during the transition from pandemic to endemic: self-initiated practices and observations

Paramenters	During pandemic	Both (pandemic and endemic)	Not practiced
	% (n)	% (n)	% (n)
Wear PPE during aerosol treatment	18 (27)	81.4 (122)	0.7 (1)
Wear PPE during non-aerosol treatment	25.3 (38)	72 (108)	2.7 (4)
Wear double gloves and a mask	55.3 (83)	26 (39)	18.7 (28)
Use of face shield	18.7 (28)	79.4 (119)	1.3 (2)
Provide antimicrobial pre-procedural mouth rinse	62.7 (94)	27.3 (41)	10 (15)
Use high vacuum suction during aerosol procedures	28 (42)	66 (99)	6 (9)
Take intraoral radiographs	9.3 (14)	85.3 (128)	5.3 (8)
Ventilate the operating area in between each patient	54.7 (82)	42.7 (64)	2.7 (4)
Disinfect the exposed surface using surface disinfectant	12.7 (19)	86.6 (130)	0.7 (1)
Readiness to stop routine patient screening	11.3 (17)	35.3 (53)	53.3 (80)

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to the nature of its working environment. This study was a descriptive cross-sectional study that described the attitudes, perceptions, and preparedness of dental professionals in Malaysia during the transition from the pandemic to the endemic phases of COVID-19. Global guidelines for dental treatment were issued internationally following the outbreak.[5,22,23]

Since the Malaysian government announced the transition from pandemic to endemic, the dental guidelines have also been updated in conjunction with this announcement. Respondents found that the latest guidelines from the MDA website were useful for staying updated on local developments and guidelines regarding COVID-19 to minimize transmission.[21] Although older protocols, such as MySejahtera check-ins, health declaration form fill-ups, and temperature checks, are no longer practiced during the endemic phase, updated guidelines still mandate the use of face masks, scheduling appointments to prevent crowding and regularly sanitizing frequently touched surfaces such as door handles and desks.[13] Initially, during the early stages of the outbreak, only emergency treatments were recommended. However, with current understanding, most dental clinics now operate under the "new normal," adhering to established SOPs.[4,6]

Based on the findings, the majority of dental professionals in both public and private sectors still follow the recommended guidelines provided by MDA during endemic times. With fewer limitations, the inflow of patients has dramatically increased during the endemic phase compared with the pandemic. Most dental clinics no longer limit the number of patient appointments, accept walk-in patients, and dismiss the requirement for COVID-19 testing prior to dental appointments. Hence, patients are more willing to visit dentists for treatment during the endemic phase since the additional cost of COVID-19 tests, which posed a financial burden during the pandemic, is no longer a deterrent.[21]

In response to COVID-19, SOPs and infection control measures were adjusted according to the type of treatment to minimize virus transmission. The majority of respondents strictly adhered to COVID-19 guidelines and demonstrated awareness of transmission risks. This study found that most dental professionals consistently used PPE and face shields during both the pandemic and endemic phases, regardless of whether treatments were aerosol-generating or non-aerosol, and implemented procedural mitigation measures. Several studies have shown that the proper use of PPE effectively protects dental professionals from exposure to infectious agents, particularly COVID-19.[17,24,25] Procedural mitigation measures, such as the use of high-volume suction, were employed during procedures that produced splatter or aerosol.

It was also observed that intraoral radiographs were used less frequently during the COVID-19 pandemic compared with the endemic period. Respondents expressed concerns about cross-contamination, as intraoral film holders can cause patient discomfort, trigger gag reflexes, and lead to coughing and saliva secretion.[26] Consequently, it is recommended to replace intraoral radiographs with extraoral options, such as OPG and CBCT, where feasible.[24,26]

These findings revealed that most respondents were concerned about contracting the virus at work and potentially transmitting it to their family members. While no clear or direct link between dental treatment and COVID-19 transmission has been established, the risk of transmission remains.[27] Therefore, strict adherence to standard operating protocols and guidelines during dental procedures is essential to prevent the spread of COVID-19.[27]

The results also indicated that half of the respondents continued to use preprocedural mouth rinses during both the pandemic and endemic phases. Although evidence supporting its effectiveness specifically against COVID-19 is limited, the use of antimicrobial preprocedural mouth rinses remains recommended. Studies suggest that such rinses can help reduce viral load in the oral cavity, thereby minimizing the potential spread of the virus.[24]

The study also showed that most of the respondents were able to maintain their stress levels and mental well-being despite concerns about insufficient PPE being distributed due to increased demand, although a study reported that most dental professionals experienced stress during the pandemic.[28] Unreliable access to PPE was more likely to increase health professionals' anxiety, depression, and other clinically substantial disorders.[29]

Based on this study, respondents believe that the government should provide SST relief on dental materials and PPE to compensate for financial losses during the pandemic and lessen the burden on active dental professionals. Moreover, the compulsory closure of dental practices during the movement control order (MCO), combined with a reduced number of patients upon reopening during the conditional movement control order (CMCO) and recovery movement control order (RMCO) periods, contributed to a substantial drop in clinic revenue, especially for private practitioners.[30] Additionally, increased expenses for PPE, such as surgical masks, face shields, surgical gowns, and routine disinfection and sanitization—compulsory for infection control—further added to the financial strain. Some practitioners indicated that they increased the price of dental treatments and adjusted staff remuneration to address these financial challenges.[30]

Even though the Malaysian government issued several stimulus packages[3] following the COVID-19 outbreak, not all dental practitioners were aware of these incentives.[30] Examples of these incentives included direct and indirect tax measures, employment-related initiatives, economic stimulus measures, and other support mechanisms.[31] Due to the differing nature of the pandemic in each country, national dental associations play a crucial role in assisting and connecting dental practitioners, particularly those in private practice, with the government. They provide professional support as well as financial and legal advisory services, which are especially important in the current

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situation. The MDA has taken the initiative to issue a supporting letter to private dental practitioners, addressing matters such as waiving rental fees and loan repayment.[30]

In conclusion, dental practitioners have demonstrated their commitment to maintaining general guidelines and SOPs in their clinics during the transition from the pandemic to the endemic phase of COVID-19. The continuation of these practices, originally adopted during the pandemic, highlights the positive attitudes and preparedness of the majority of dental professionals. Their dedication to upholding high infection control standards reflects their responsibility to ensure the safety of both patients and staff.

The positive responses observed among dental practitioners regarding their perceptions during this transitional period underscore their adaptability and resilience in the face of sudden challenges. Despite the initial outbreak of the pandemic, their proactive approach and positive outlook have contributed to the overall readiness of the dental health community.

Notably, the recent announcement of tax relief for dental check-ups and treatments in the 2023 budget is anticipated to have a beneficial impact on dental practices. This initiative is expected to encourage an increase in the number of patients seeking dental care in the coming years. The combination of practitioners' positive attitudes, continued adherence to safety protocols, and supportive government measures positions the dental profession for a successful and responsive transition from pandemic to endemic conditions in Malaysia.

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