Indonesian dentists knowledge, attitudes and practices in COVID-19 pandemic

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ABSTRACT

Introduction: Dentists play a significant role in preventing the transmission of 2019-nCoV. Recommended infection control measures during dental practice can block the route of person-to-person transmission. Dentists and their personnel are used to assess the risk of cross-infection. This study aimed to obtain dentists' knowledge, attitudes, and practices regarding the COVID-19 pandemic in Indonesia. **Methods:** A cross-sectional study was conducted on a sample of licensed dentists using the convenience sampling technique. The minimum sample size was counted using the formula for a descriptive analysis of one group with the expected proportion of 50% and the confidence level of 95%, and obtained 407 respondents from 31 provinces. Data was collected using a questionnaire distributed via a shortened link. 99.75% of respondents knew personal protective equipment, but only 84.28% knew the proper removal procedure. 99.75% of respondents knew about dental devices that cause aerosols, and all respondents knew about social and physical distancing. **Result:** Dentists' attitudes regarding personal protective equipment were that they needed and maintained it during the pandemic. All respondents stated that social and physical distancing was critical and must be maintained while providing health services. Regarding their practices, all respondents did social and physical distancing in their daily lives and during dental procedures. **Conclusion:** Dentists' knowledge is already good in several ways, but with several matters that still need to be improved, their attitudes and practices are good criteria.

Keywords: knowledge; attitude; practice; dentists; COVID-19 pandemic; Indonesia

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INTRODUCTION

Globally, at 02:00 CEST, April 8, 2020, 1,353,361 confirmed cases of COVID-19, including 79,235 deaths, were reported to the WHO. WHO on its website, reports that residents of European, American, Western Pacific, East Mediterranean, Southeast Asian, and African countries are stricken with the COVID-19 disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[1]

Similar to other viruses, SARS-CoV-2 has many natural hosts, which are intermediate hosts and end hosts. This condition poses significant challenges for the prevention and treatment of viral infections. Compared to SARS and MERS, this virus has high transmissibility and infectivity, although the mortality rate is still low.[2,3] The global impact of this new epidemic is also still uncerta.[3] The current COVID-19 pandemic is a public health emergency of global concern.[4] International centres for disease control and prevention are monitoring the spread of this infectious disease.[5] To date, there is no specific therapy for COVID-19. Only supportive treatment is being carried out because there has no specific antiviral for the COVID-19 virus.

Dental practitioners are at high risk for 2019-nCoV infection due to face-to-face communication and exposure to saliva, blood and other body fluids, as well as handling of sharp instruments.[6] Characteristics of dental practice at risk of high cross-infection between patients and patients dental practitioners, as well as dental practices and hospitals in areas (potentially) affected by COVID-19.[7]

Dentists play a significant role in preventing 2019-nCoV transmission. Recommended infection control measures during dental practice can block the route of person-to-person transmission in dental clinics and hospitals.[8] Infection control measures are needed to prevent further spread of the virus and to help control the epidemic situation.[7]

Strict and effective infection control protocol is essential. Experience and relevant guidelines and research demonstrate the importance of knowledge about COVID-19 and nosocomial infections in practice and provide recommended management protocols for dental practitioners and students in areas potentially affected by COVID-19.[7] This study was aimed to find out knowledge, attitudes, and practices of dentists regarding the COVID-19 pandemic in Indonesia.

METODE

The research design was a cross-sectional survey. Cross-sectional research is where research takes measurements or data collection at the same time as a survey technique.[9,10] Validity and reliability tests have been conducted on the questionnaire used to 30 dentist respondents.

The study population was general dentists and dental specialists in Indonesia, both practising and non-practising dentists. The accessible population in this study were dentists who received a link to an online questionnaire in Google form and available on the bit.ly link regarding the readiness of knowledge, attitudes and practices of dentists in overcoming the COVID-19 pandemic in Indonesia.

The sample was both practising and non-practising dentists. The sampling technique used was non-probability sampling with convenience sample type, in which the researcher will obtain a non-probability-based sample that requires less time and effort, and thus usually more economical and can be useful for preliminary research responses from samples can be used in developing research hypotheses. Responses from practical samples may also help to identify problems, determining alternative ranges, or gathering other types of non-inferential data.[11]

The inclusion criteria were dentists who were willing to complete the online questionnaire form thoroughly. The exclusion criteria were dentists who were unable to complete the online questionnaire form and were unwilling to participate in this research. The sample size was calculated from data of the Indonesian Medical Council (KKI), namely 33,714 registered dentists and 4,272 dental specialists (a total of 37,986 dentists).

The formula for calculating the minimum sample size for a one-group descriptive study was used with the expected proportion of 50%, a total width of the confidence interval of 0.5 and a confidence level of 95%, which obtained a minimum sample size of 402 respondents. If used

the expected proportion parameter formula of 50%, a margin of error of 5%, a confidence level of 95%, and a known population of 37,986, would obtain a minimum sample size of 381 respondents.

The research variables were the readiness of knowledge, attitudes, and practices of dentists to overcome the COVID-19 pandemic. The knowledge variables were the knowledge of dentists regarding the COVID-19 pandemic such as when and from where to obtain information on preventing personal spread; personal and community protective equipment; stay at home, social distancing, and physical distancing policy; conducted using a questionnaire with a Gutman scale, then categorised into criteria according to Arikunto[12], by dividing the categories as follows: 'good' criteria if the percentage of knowledge ranges from 76% - 100%; 'sufficient' criteria if the percentage of knowledge is 60% - 75%; and the 'less' criteria if the percentage of knowledge <60%.

Furthermore, the calculation results were interpreted using the following criteria: none of the respondents knows, if the percentage is 0%; very few respondents know, if the percentage is 1% - 19%; a small proportion of respondents know, if the percentage is 20% - 39%; some respondents know, if the percentage is 40% - 59%; most respondents know, if the percentage is 60% - 79%; almost all respondents know, if the percentage is 80% - 99%; and all respondents know if the percentage is 100%.[12]

The attitude of dentists in responding to the prevention of the COVID-19 pandemic spread was measured on a two-scale Likert scale; agree and disagree. The implementation of dental practice in dealing with the COVID-19 pandemic was measured using the Gutman scale. The research location was in Indonesia, and the research period was from April to June 2020. The data collection instrument used was an online Google form questionnaire available on the shortened link bit.ly. All researchers performed the data collection procedure by providing a bit.ly link containing questionnaires according to the variables and operational definitions, as mentioned above.

The research permit has been submitted to the Executive Board of the Indonesian Dental Association (PB-PDGI) to obtain permission to distribute links to its members. Data was processed using mean and percentage, and presented in the form of a frequency distribution table. The Research Ethics Committee of the Faculty of Medicine Universitas Padjadjaran has approved the research ethics with the number of 450/UN6.KEP/EC/2020.

RESULTS

The respondents' characteristics of this research are presented in Figure 1.

Majority of the respondents in this research were practising dentists, which were 88.94%. The majority of sex was female. The age range for the majority of respondents was 21-35 years. Some respondents were pregnant, with the gestational age's majority being the second trimester. Most respondents practiced as general practitioners (72.97%), and 20.25% of respondents were dental specialists, with conservative dentistry as the most specialist type.

The results presented in Fig. 2 show knowledge of the dentist regarding COVID-19, which can be described as follows: the majority's initial knowledge regarding COVID-19 was in December 2019, with information obtained from the mass media. The majority of dentists just found out about the risk of infection from their work in practice in March 2020, and after knowing this risk, most of them immediately stopped practising in March 2020.

The results presented in Fig. 3 show that all respondents were aware of the appeal from their professional organizations related to the oral health services; all respondents stated that the notice from their professional organizations regarding the oral health service terms and conditions was beneficial in making decisions whether to continue practising or not; however, only 39.07% of dentists limited their services as an implementation of their professional organization's appeal.

The results of the research presented in Fig. 4 show that 99.75% of respondents knew the types of personal protective equipment (PPE) must be used when providing oral health services; 97.05% of respondents knew the best level of the PPE for dentists, but only 84.28% of them knew how to remove the PPE correctly. As many as 99.75% of dentists also knew that several dental tools could cause aerosol sprays, which play a role in

the spread of COVID-19. All dentist respondents already knew the physical distancing policy.

The results of the research presented in Fig. 5 show that the attitude of dentists regarding

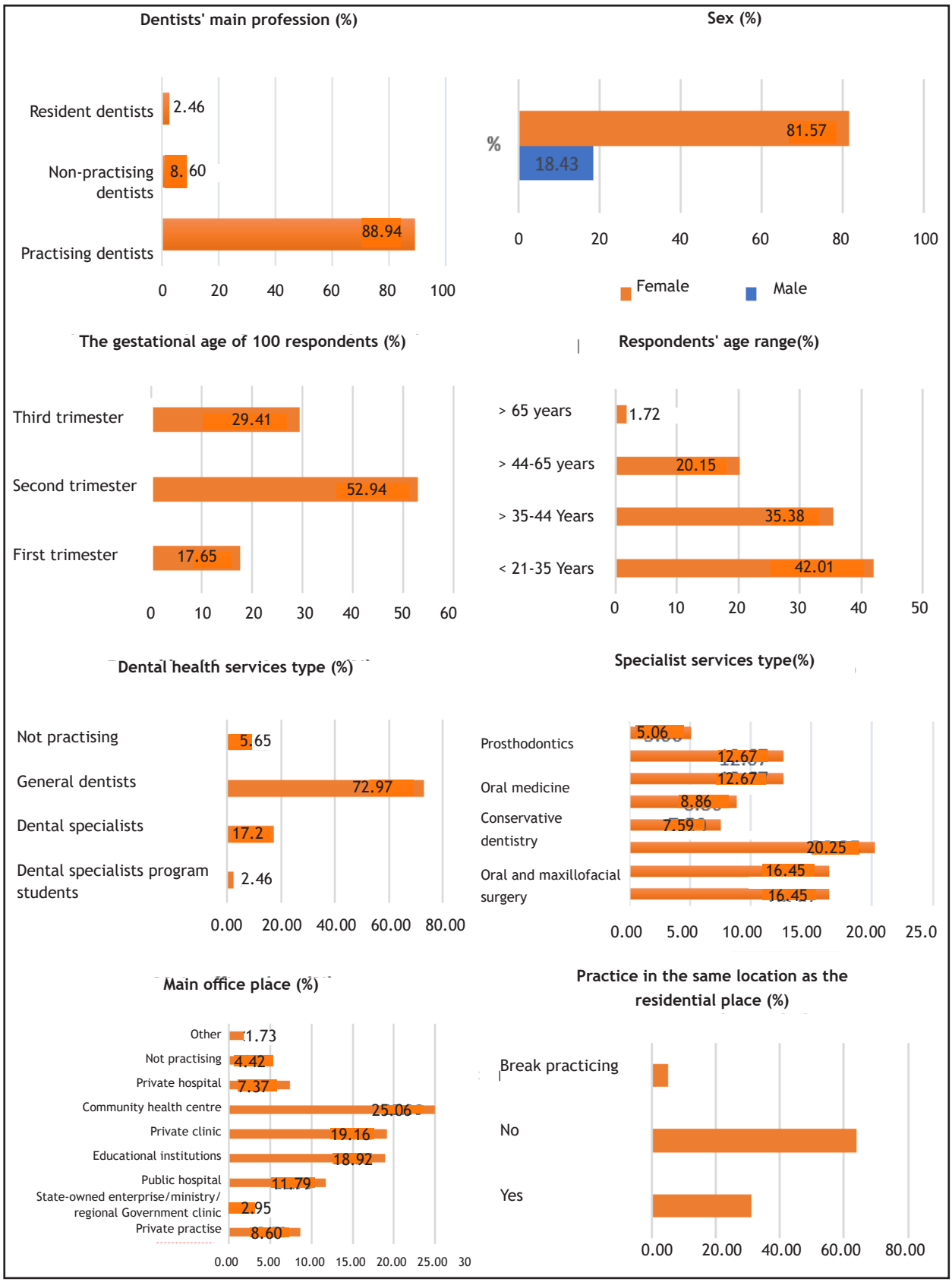

Figure 1. Characteristics of respondents

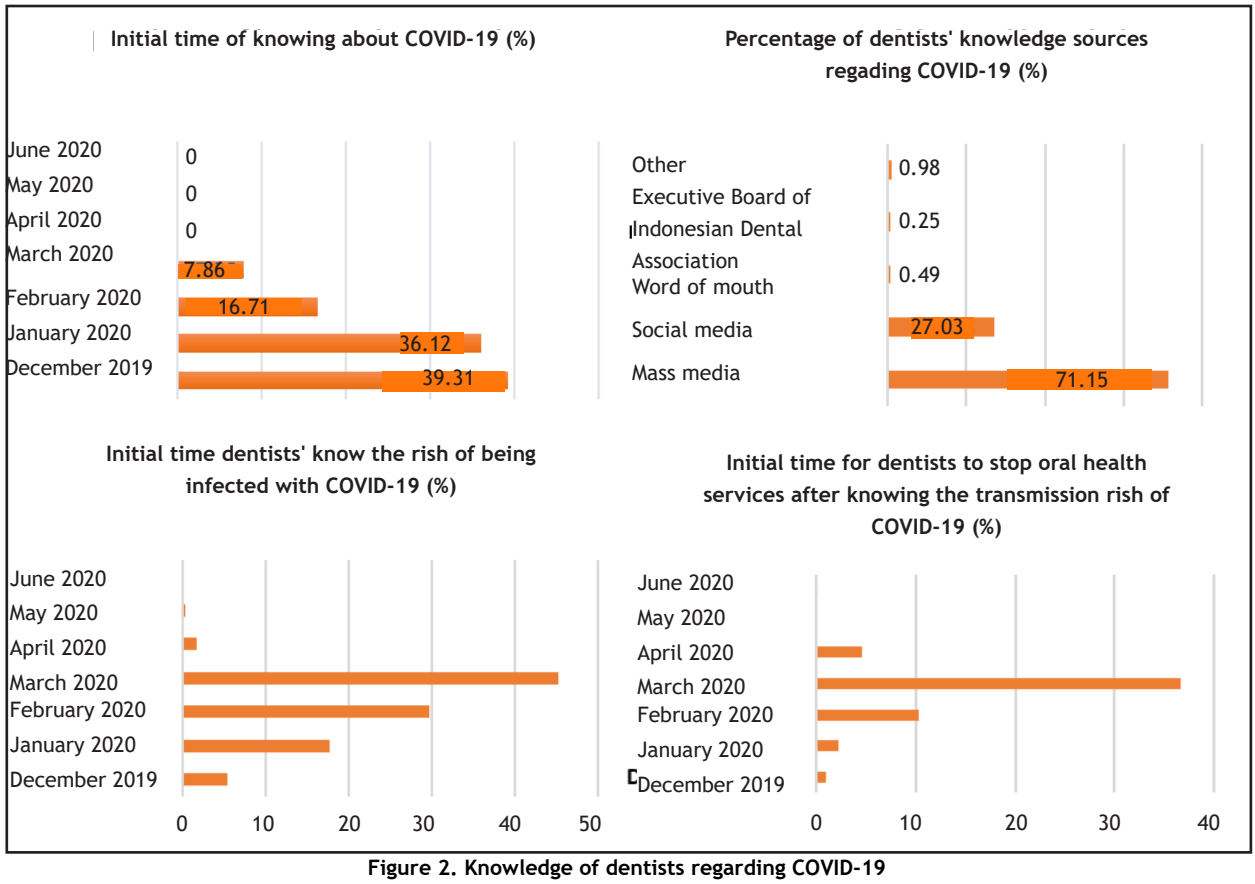

Figure 2. Knowledge of dentists regarding COVID-19

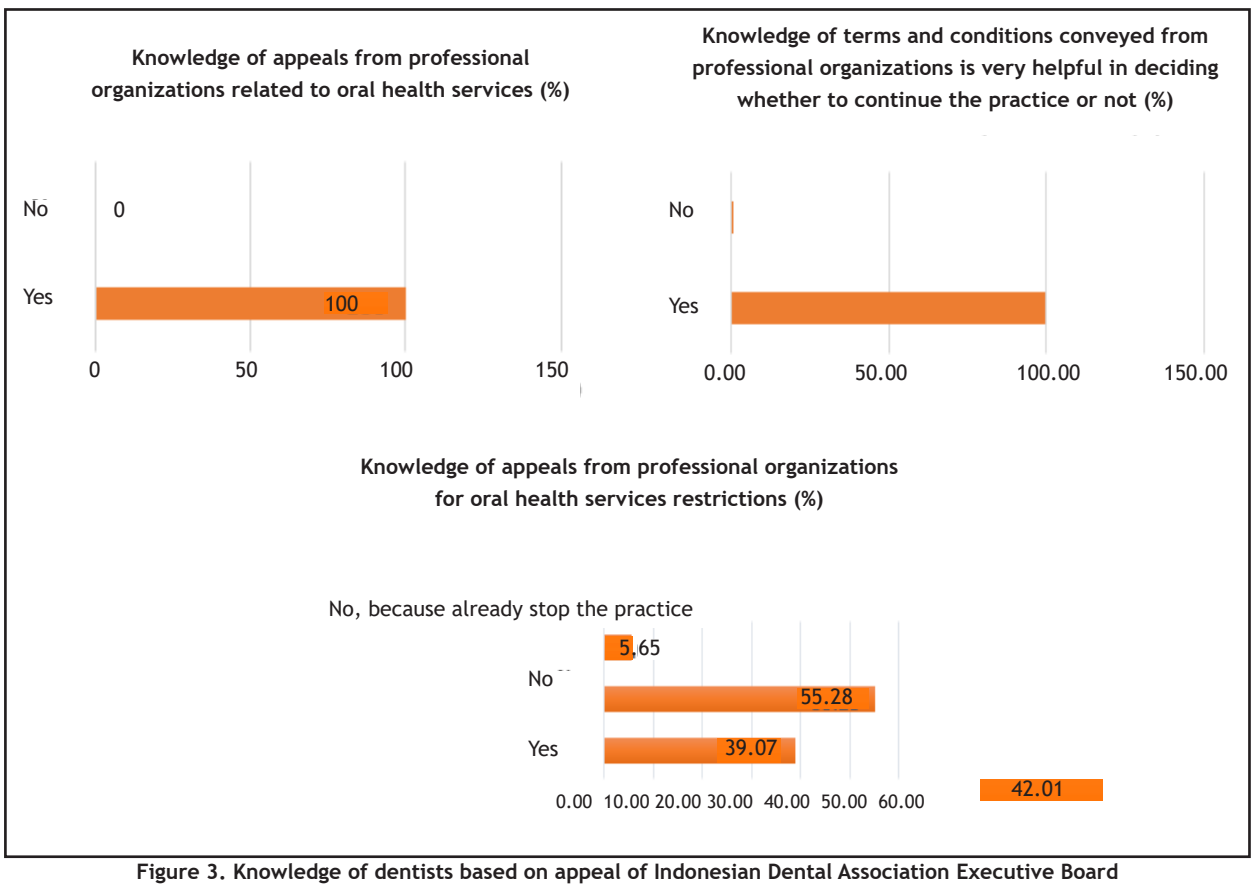

Figure 3. Knowledge of dentists based on appeal of Indonesian Dental Association Executive Board

the PPE was that as much as 98.03% felt that they need it much. The attitude towards the patients' travel history was that 96.81% felt that it was a necessary thing to know. Also, the attitude of dentists regarding the PPE that protects from the spread of COVID-19 was that as many as 85% felt

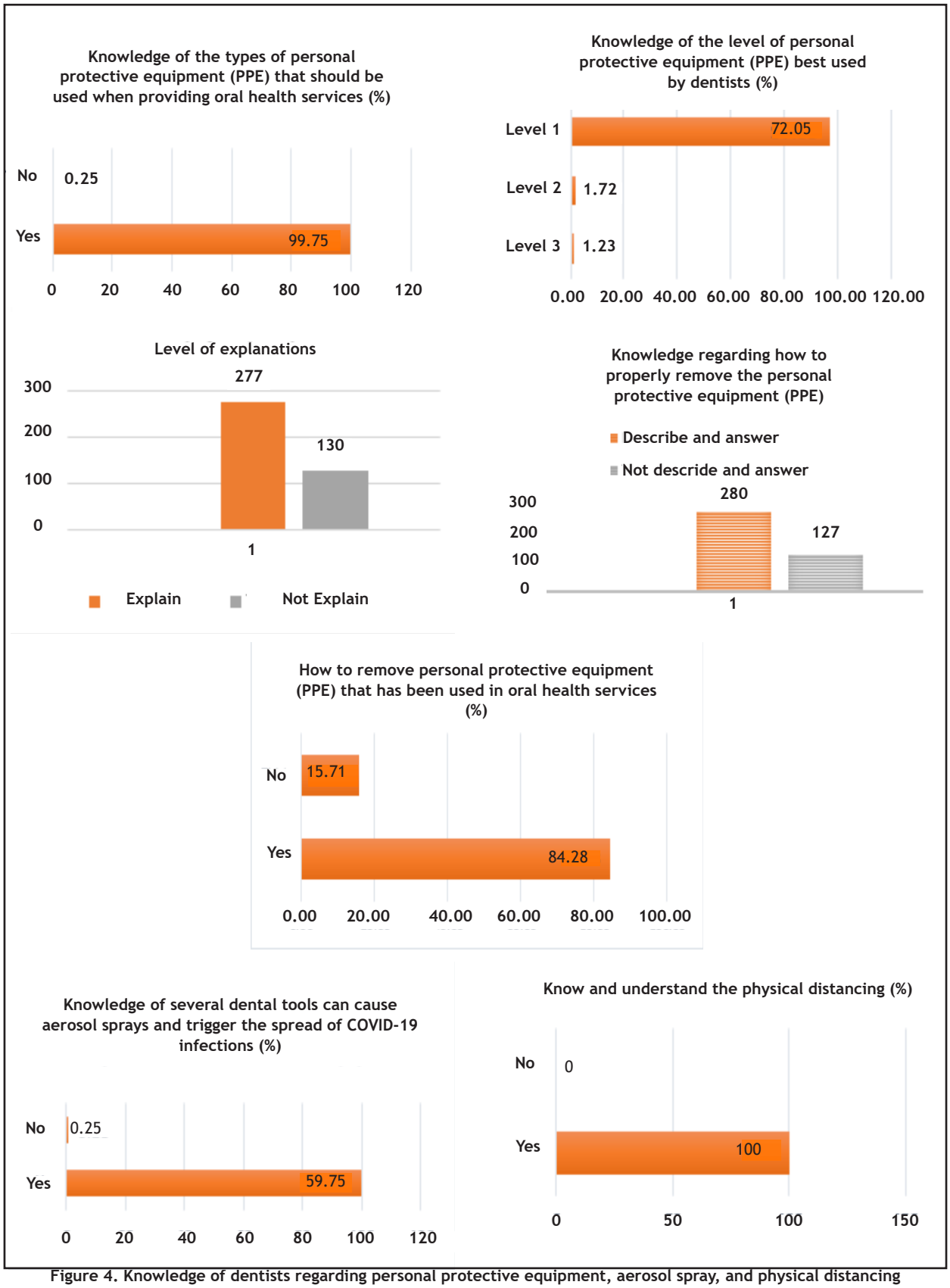

Figure 4. Knowledge of dentists regarding personal protective equipment, aerosol spray, and physical distancing

that the PPE made them feel protected. Moreover, 76.17% of dentist respondents felt that physical distancing kept them from the spread of COVID-19 during the pandemic period.

Fig. 6 presented the practice of dentists in dealing with the COVID-19 pandemic. After knowing the risk of COVID-19 transmission, there were 42.75% of dentists who continued to provide

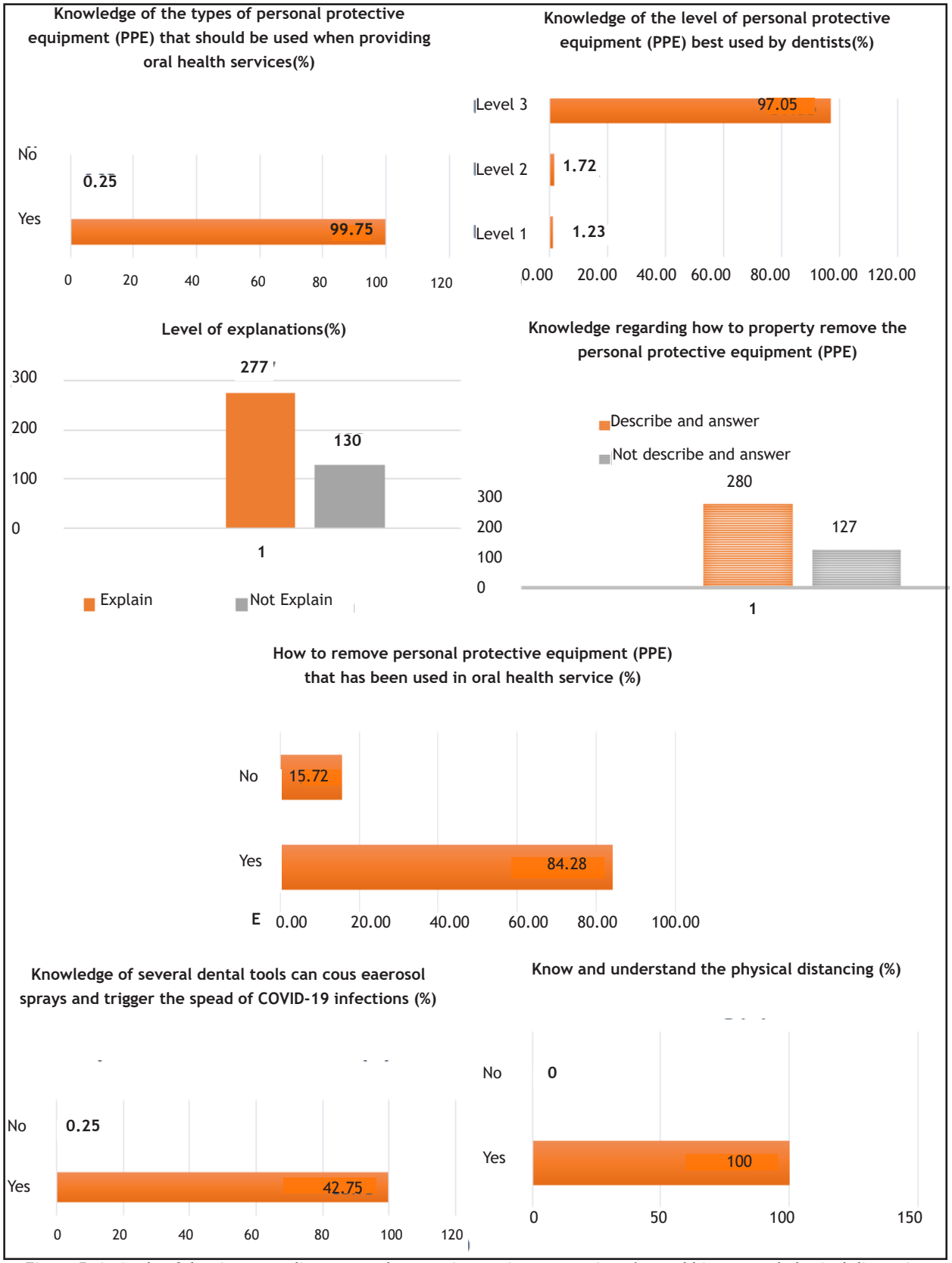

Figure 5. Attitude of dentists regarding personal protective equipment, patients' travel history, and physical distancing

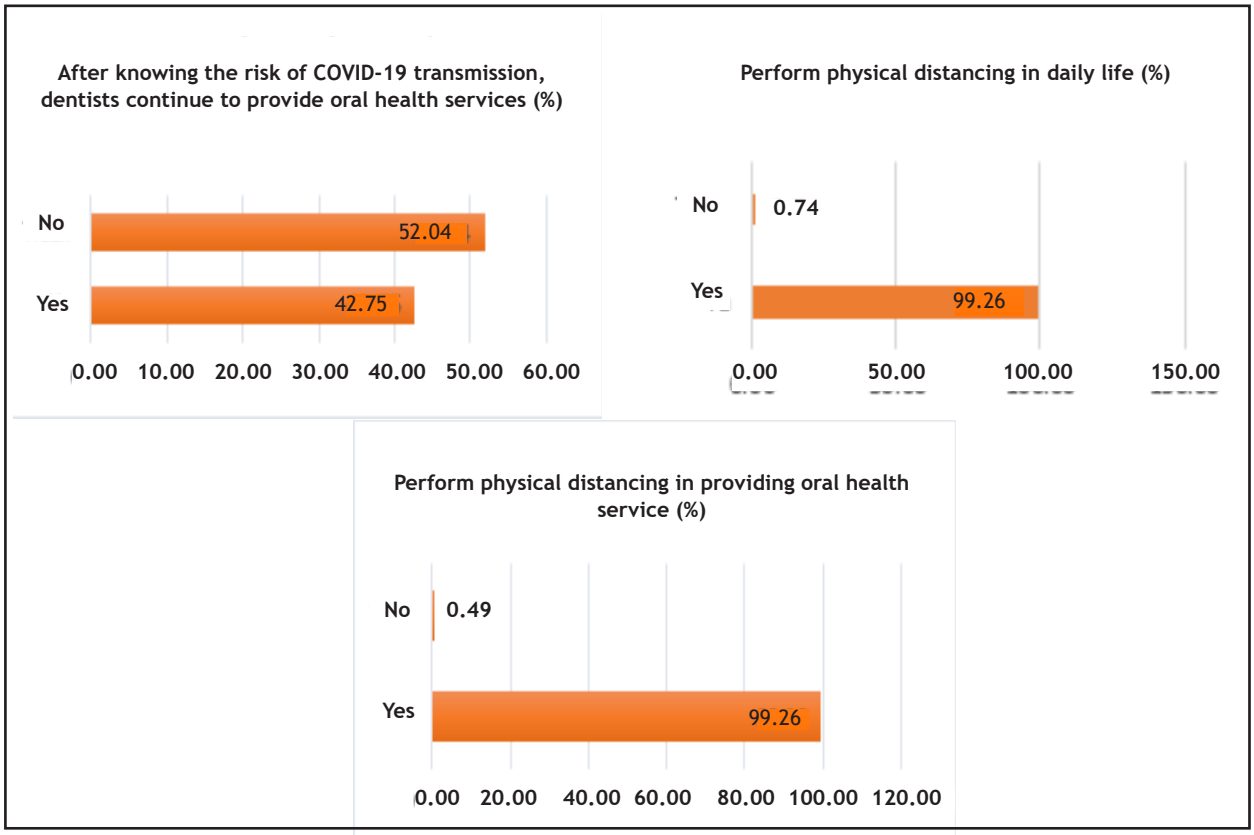

Figure 6. Practice of dentists regarding the transmission risks and social distancing

oral health services, and as many as 99.26% of them performed social distancing both in their daily lives and in their offices.

DISCUSSION

The majority of the respondents knew COVID-19 from December 2019, with information obtained from the mass media. The majority of dentists found out about the risk of infection from their work in practice from March 2020, and after knowing this risk, most of them immediately stopped practising in March 2020. According to the research conducted by Kamate et al[13], using an online questionnaire distributed among dentists worldwide using a combination of convenience and snowball sampling, suggested that almost all (99.4%) of the dentists have already heard coronavirus information, however, only 90.9% of them could explain it correctly. As many as 68.1% and 64.2% of dentists were aware of the availability of vaccines and diagnostic methods for COVID-19. As many as 95.9% of dentists believe that COVID-19 is fatal, and 99.8% of them report that wearing a mouth mask can prevent transmission. Both results of this study proved that dentists have good knowledge, attitude, and practices regarding the COVID-19 pandemic because dentists are at high risk of transmission of the coronavirus.[13]

Fig. 2 shows knowledge of the dentist regarding COVID-19, which can be described as follows: the majority's initial knowledge regarding COVID-19 was in December 2019, with information obtained from the mass media. The majority of dentists just found out about the risk of infection from their work in practice in March 2020, and after knowing this risk, most of them immediately stopped practising in March 2020. This state probably caused by the rapid spread of Coronavirus disease 2019 (COVID-19) worldwide which was officially declared to be a pandemic by the World Health Organization (WHO) on March 11, 2020.[1] Nearly all countries over the entire globe have reported many COVID-19 cases.[14]

The results presented in Fig. 3 show that all respondents were aware of the appeal from their professional organizations related to oral health services. All respondents stated that the notice from their professional organizations regarding the oral health service terms and conditions was beneficial in making decisions whether to continue practising or not. However, only 39.07% of dentists

limited their services as an implementation of their professional organization's appeal. Professional organizations, both national and international, play an essential role in disseminating information related to the COVID-19 virus pandemic to all health workers, including dentists.

Guidelines and recommendation on practising dentistry during a pandemic must be complied with and limited by the World Organization (WHO)[1] or Center for Diseases Control and Prevention (CDC) health protocols. The purpose of this guideline and appeal is to protect health workers such as dentists from being infected and becoming a source of COVID-19 virus infection for their patients. The study conducted by Kamate et al.[13] on 860 dentists from different countries showed that only 43.8% of dentists reported that their staff practised according to WHO guidelines and recommendation for the prevention of COVID-19. Indeed, this condition must be addressed immediately and become a more significant concern for dentists with current CDC and WHO guidelines to combat further spread of this disease.[13]

Figure. 4 shows that 99.75% of respondents knew the types of personal protective equipment (PPE) must be used when providing oral health services, 97.05% of respondents knew the best level of the PPE for dentists. However, only 84.28% of them knew how to remove the PPE correctly. This result is in a good category, and this result is similar with the systematic review which stated that knowing the PPE is important but knowing how to wear it properly and removing it safely is also a necessary knowledge to have. It is important to remember that PPE is just one way of protecting dental professionals and patients.

All of which require careful consideration and research to inform our journey back to what may become a new normal condition. All dental professionals will need to take action in identifying and managing risk in line with national guidance and learning from our colleagues around the world. We have to be able to justify our actions in managing risk, and collect evidence and be prepared to adapt where necessary.[15]

Apart from needing knowledge of how to wear and remove the PPE properly, dentists also need training. Occupational safety is not only oriented to the safety of dentists as a health service provider but also the patient's safety against the risk of transmission of the COVID-19 virus, as mandated in the Ministry of Health of The Republic of Indonesia Circular Letter Number HK.02.01.Menkes/215/2020, concerning the prevention of transmission of coronavirus disease in the workplace.[16]

Based on data compiled by the Indonesian Medical Association mitigation team, from March to October 2020, as many as 253 medical and health workers have died due to being infected with COVID-19. This figure ranks the third highest health worker mortality in the world.[17] Dental staff, including non-dental health care workers who may treat dental emergencies, needs to follow several steps, from patient evaluation to infection control at personal, procedural and clinical levels, to prevent any possible COVID-19 cross-contamination in dental clinics.[18]

As many as 99.75% of dentists also knew that several dental tools could cause aerosol sprays, which play a role in the spread of COVID-19. Although there is no evidence that aerosols generated from dental care lead to the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), guidelines have been recommended given the urgency of the epidemic. Aerosols and droplets are generated during dental procedures as a result of water irrigation for cooling of the dental or surgical site.

The US Centers for Disease Control and Prevention (CDC) has listed dental care-related aerosols or droplets as high risk based on the presumed equivalence of these aerosols to those that might occur during medical procedures.[17] In the dental setting, risk of transmission might be related primarily to the treatment of asymptomatic and minimally symptomatic patients.[19]

The nature of dental practice procedures which can generate a cloud of aerosol render dental offices to be among the highest risk categories for transmission of the COVID-19. For this reason, routine dental care has been suspended during the COVID-19 pandemic to reducing the transmission of the infection.[20] Nevertheless, dentists are ethically obligated to provide emergency dental services to patients who need urgent care regardless of their health status. It is the dental practitioner's moral and ethical responsibility to balance the patients'

needs and public health concerns.[20]

Fig. 5 shows that the attitude of dentists regarding the PPE was that the majority of them felt that they need it much (98.03%). The attitude towards the patients' travel history was that 96.81% of the dentists felt that it was a necessary thing to know. Also, the attitude of dentists regarding the protection of the PPE from the spread of COVID-19 was that many of them felt protected (85%). In March 2020, the World Health Organization (WHO).[1] released a press report highlighting the severe shortage of personal protective equipment (PPE) affecting health care workers worldwide during the COVID-19 pandemic.[21] However, in Indonesia, although a good attitude has been formed, it has not been followed by the proper practices. Nearly similar to a myriad of reports about the lack of personal protective equipment (PPE) all over the world.[21]

Moreover, 76.17% of dentists in the present research felt that physical distancing kept them from the spread of COVID-19 during the pandemic period (Fig. 5). This research was consistent with the research conducted by Long et al[22], which suggested that implementation of strategies that modified patient screenings, prioritising cases, team rotations with temporal spacing, and modified PPE protocols are effective measures in the event of a pandemic. These modifications can help expand access to emergency care, reduce patient exposure, and manage provider and supporting staff exposure. This strategy is part of physical distancing.[23]

In Fig. 6, we can see the practice of dentists in dealing with the COVID-19 pandemic. After knowing the risk of COVID-19 transmission, there were 42.75% of dentists who continued to provide oral health services, and as many as 99.26% of them performed social distancing both in their daily lives and in their offices. Dentists who continue the practice after knowing the transmission of COVID-19 may be related to their workplace regulation, such as primary health centre dentists. Dental health services require very close distance with the patients; thus, the dentist and patients have to ignore social distancing protocols. More than half of the dentists in the current research decided to stop practising. This result was also suggested by Alharbi et al[21], that 71.2% of dentists who responded to the questionnaire decided to suspend their clinical practice during this particular time. The main factors for this fact were the shortage of personal protective equipment (PPE), the respondents' subjective perceptions of the risk of COVID-19 contraction, and a general feeling of anxiety and uncertainty regarding the COVID-19 situation.[21]

The close distance occurred during dental practice can be overcome by using suitable PPE so that the provision of dental health services to the community continues to run optimally, in a way that will not harm dentists in the risk of being exposed to COVID-19. Dentists should take strict personal safety measures based on their expertise and applicable recommendations and study, and avoid or reduce operations that may generate droplets or aerosols. The four-handed technique serves to manage the infection. The use of low or high-volume saliva ejectors will decrease the output of droplets and aerosols.[1]

Due to the unavailability of standard procedures, dental treatment in various affected countries has stopped or significantly decreased.[24] Since health services cannot be stopped for too long; different steps need to be learnt to continue the practice. The level of awareness and vigilance of social distancing among dentists is very high, so it affects the decision to stop providing dental health services. Otherwise, this is also a good indication that dentists will be more open in learning a new approach for the dental practice.[25]

CONCLUSION

The knowledge of dentists is already good in several ways, but there are still matters that need to be improved. Attitudes and practices are in good criteria. The response of most dentists regarding the preparedness and perception of infection control measures against the COVID-19 pandemic was positive.

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