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ORIGINAL ARTICLE

Knowledge, Dental Anxiety, and Patient Expectations During the COVID-19 Pandemic

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ABSTRACT

Objective: To assess the knowledge, dental anxiety, and expectations regarding dental services during the COVID-19 pandemic. **Material and Methods:** The respondents were Indonesian citizens above 18 years old. An online Google survey was administered using a structured questionnaire with a snowball sampling technique. Survey items comprised knowledge related to COVID-19, dental anxiety assessed using the modified DAS (Dental Anxiety Scale) and expectations regarding dental services using four dimensions of dental service quality. All questionnaires were tested for reliability and indicated acceptable and good agreement. The data were analyzed descriptively. **Results:** A total of 553 responses were analysed. Most respondents were female (72.9%), 76.7% knew of recommendations to postpone dentist visits and 86.8% knew methods of preventing COVID-19 transmission. More than 70% of respondents knew the precaution procedures in the dental office during COVID-19, and only 27.9% had moderate-severe anxiety. Most respondents' expectations regarding dental services during the pandemic era were related to the quality domain of reliability and responsiveness. **Conclusion:** Respondents knew about COVID-19 transmission and prevention, emergency conditions warranting a visit to the dentist and the procedures used at the dental office. Most respondents stated that they were not anxious about visiting a dentist during the pandemic. The respondents expect the dentist to provide sufficient information to improve oral health and treatment plan.

Keywords: COVID-19; Dental Anxiety; Dental Health Services.

Introduction

The first case of coronavirus disease 2019 (COVID-19) was detected in Wuhan, China, in December 2019 [1]. The published genome sequence for the novel coronavirus shows similarities with other beta-coronaviruses, such as SARS-CoV and MERS-CoV. Therefore, the Corona Virus Study Group of the International Committee on Taxonomy of Viruses gave the virus the scientific name SARS-CoV-2, which is popularly called the COVID-19 virus. On January 30, 2020, the World Health Organisation (WHO) declared SARS-CoV-2 a pandemic and a public health emergency, with a known total mortality rate of 3.4% [2,3].

Information about symptoms, modes of transmission and how to prevent virus spread has been disseminated to the public in all countries by local authorities. Suggestions for strategies such as maintaining distance, reducing crowd activities and implementing lockdowns can prevent transmission [4]. These suggestions have certainly had an impact on all sectors of life, including health, economy, education, lifestyle, behaviour and so on, and they have also had an impact on individuals' psychology, in both health workers and the community [4,5]. In addition to pandemic-related anxiety felt by individuals when leaving the house, they can also become anxious when going to the dentist. Research conducted in Poland regarding dental anxiety experienced by both children and parents indicated that boys in the pandemic group had higher anxiety levels than in the pre-pandemic group, which was also negatively correlated with age. In addition, the anxiety levels of caregivers were higher in the pandemic group than in the pre-pandemic group and showed a strong correlation with child anxiety [6]. Previous studies in Indonesia indicated a positive correlation between knowledge about the transmission of COVID-19 with fear of dental treatment during the pandemic era [7]. Dental anxiety that is not treated properly can affect a person's oral condition and quality of life [8].

SARS-CoV-2 is known to spread to healthcare providers. Dental service providers are also at high risk for nosocomial and cross-infection [9], as dental interventions include aerosols, the use of sharp objects and working on the patient's oropharynx. To prevent the patient from being exposed to cross-contamination, adequate precautions are necessary. Actions in the form of using personal protective equipment (PPE), a negative-pressure room, patient screening and patient management according to local and international dentist association's recommendations must be strictly applied [10]. At the onset of a pandemic, the association recommends postponing dental visits, except in emergencies [11].

Pandemic conditions require special preparation for dental services and procedures, which can certainly raise the expectations of patients receiving or undergoing dental treatment. Patients who need dental services often come with predetermined expectations about what happens during service, including scheduling, clinical hygiene and appearance, financial considerations, clinical treatment outcomes, delivery of health information and good relationships with dentists and clinical staff [12]. The patient's expectation is an important factor in increasing and maintaining patient satisfaction [13].

The purpose of this study is to evaluate the knowledge, anxiety and expectations of the community about dental services during a pandemic. This study modified the Dental Anxiety Scale to measure dental anxiety [14] and four quality dimensions of dental health care (assurance, reliability, responsiveness and empathy), according to Zeithaml and Parasuraman [12], to measure respondents' expectations regarding dental services in the pandemic era.

Material and Methods

Study Design and Ethical Clearance

This study used a cross-sectional observation method that was carried out in Indonesian society. The study was approved by the Ethics Committee of the State Polytechnic of Health, Malang-Indonesia (Reg. No.: 962/KEPK-POLKESMA/2020).

Data Collection

Structured questionnaires were created using Google forms and distributed online to respondents using snowball techniques via Instagram and WhatsApp in August-October 2020. Inform consent was included on the first page of the Google form. If the respondent did not agree, the respondent was welcome to stop filling out the form.

The message linked from one respondent to the next respondent was expected to obtain as many responses as possible. In the message, respondents could open the link and be directed to the questionnaire. Respondents received an explanation regarding the purpose of filling out the questionnaire, were assured of the confidentiality of their identity and were welcome to stop at any time. The criteria for respondents were ≥18 years old, internet access, Indonesian citizenship and question items fill out completely.

The questionnaire consisted of four parts: sociodemographics, knowledge, dental anxiety and expectations regarding dental services in the pandemic era. Sociodemographic questions comprised age, sex, occupation, education and the province of residence. The knowledge questionnaire developed by the researchers was based on references regarding methods of COVID-19 transmission and prevention, conditions that could be postponed and those that must immediately go to the dentist, preparation of the dental office, dental service procedures and patient screening in the pandemic era [11,15]. The answers to the knowledge questionnaire were 'yes' and 'no'.

We used a modified version of the Dental Anxiety Scale questionnaire to measure dental anxiety, which consisted of four questions related to the following scenarios: (1) sitting in the dentist's chair to have your teeth cleaned, and while waiting, the dentist takes out a tool that will be used to scrape the teeth around the gums; (2) waiting in the dentist's chair while the dentist prepares to work on your teeth; (3) sitting in the waiting room, waiting for your turn; and (4) having to go to the dentist tomorrow for an examination. In addition to these four questions, modifications were made by adding three questions related to dental service procedures during the pandemic: (1) the feeling related to an increase in dentist rates/cost, (2) screening and prevention procedures and (3) the risk of COVID-19 transmission in the dental office. The answers were given on a 5-point Likert-type scale*: calm*, *a little restless*, *tense*, *anxious* and *very anxious that I sweat or don't feel well.* The minimum and maximum scores were 7 and 35, respectively. In addition, scores were categorized as no anxiety below the 25 percentile (below 15), moderate anxiety between 25-50 percentile (between 16–22), high anxiety between the 50 and the 75 percentile (between 23–25), and severe anxiety above 75 percentile (above 26) [14].

We created the expectation questionnaire by adopting four dimensions of dental service quality from the work of Zeithaml and Parasuraman [12], namely, the dimensions of assurance, reliability, responsiveness and empathy. Assurance is a guarantee of avoidance of harm and is related to the implementation of adequate procedures, such as the use of PPE and sterilization procedures. Reliability includes qualifications in science and technology. Responsiveness is the ability to provide appropriate assistance to patients, including preventive and promotive efforts against the disease. The empathy dimension is manifested by understanding the patient's needs by establishing good communication [16]. The answer choices for the hope questionnaire were 'yes', 'doubt' and 'no'.

We performed face validity and test-retest before the use of all three questionnaires. Face validity was carried out on 13 respondents to determine whether the respondents understood each of the questions asked. Internal consistency using Cronbach's alpha and test-retest using the intraclass correlation coefficient (ICC) were carried out on 25 people to determine the reliability of the questionnaire.

Data Analysis

Descriptive statistics was used to analyze the findings. Data were analyzed using the statistical package SPSS 22.0 (SPSS Inc., Chicago, IL, USA).

Results

A total of 554 respondents filled out the e-survey within three months. One respondent was excluded because he was younger than 18 years. The Cronbach's alpha values for knowledge, dental anxiety, and expectation were 0.79, 0.76, and 075, respectively, indicating acceptable reliability. The ICC values for knowledge, dental anxiety and expectation were 0.68, 0.68 and 0.75, respectively, indicating good agreement.

Table 1 shows the characteristics of the respondents. Most were female (72.9%), aged 18–24 years (37.1%), had a bachelor's degree (44%), were employed in the nongovernment sector (34.7%), stated that they currently had no need for dental care (63.1%) and were hearing or reading information related to recommendations of postponing visits to the dentist (76.7%).

Table 1. Sociodemographic characteristics of participants.

Variables	N	%
Gender		
Male	150	27.1
Female	403	72.9
Age (years)		
18–24	205	37.1
25–34	109	19.7
35–44	76	13.7
45–54	109	19.7
54–59	33	6.0
>59	21	3.8
Education		
Junior high	7	0.9
Senior high	173	31.3
Diploma	101	18.3
Bachelor	243	44.0
Master	31	5.6
Employee		
College student	154	27.8
Government staff	121	21.9
Nongovernment staff	192	34.7
Entrepreneurs	55	9.9
Other	31	5.6
Currently requires dental care		
Yes	349	36.9
No	204	63.1
Knew recommendations regarding postponing visits to the dentist		
Yes	424	76.7
No	129	23.3

Table 2 shows that 52.4% of respondents knew only some of the options for COVID-19 transmission, but 86.8% knew how to prevent transmission of the disease. A total of 86.1% of respondents knew more than 70% of conditions that could be postponed to seeing a dentist, and 93.7% knew more than 70% of the conditions that required an immediate dentist visit.

Table 2. Knowledge related to COVID-19 and Postponing Dental Procedures in the COVID-19 Era.

Item Question	Knew All the Options N (%)	Knew >70% of the Options N (%)	Knew <70% of the Options N (%)
How the COVID-19 virus is transmitted	263 (47.6)	290 (52.4)	0 (0.0)
How to prevent transmission of the COVID-19 virus	480 (86.8)	73 (13.2)	0 (0.0)
Conditions can be postponed to see a dentist	0 (0.0)	476 (86.1)	77 (13.9)
Conditions should immediately see a dentist	0 (0.0)	518 (93.7)	35 (6.3)

Table 3 indicates that more than 70% of respondents knew of dental procedures specific to the COVID-19 era, such as dentists must use specific PPE, the dental office needs to be specially prepared and designed, the dentist will ask questions about travel and contact history in the past two weeks, the patient's temperature will be taken before they enter the dental office, hands should be washed and they will be asked to rinse the antiseptic solution before starting treatment.

Table 3. Knowledge Related to Dental Procedures in the COVID-19 Era.

Item Question	Yes N (%)	No N (%)
Dentists serving patients must use specific personal protective equipment	521 (94.2)	32 (5.8)
The dental office needs to be specially prepared and designed	466 (84.3)	87 (15.7)
The dentist will need to ask you questions about your travel history and contact history in the past 2 weeks	479 (86.6)	74 (13.4)
The dentist needs to take your temperature before entering the practice room	514 (92.9)	39 (7.1)
Patients who enter the dentist's office need to wash their hands	532 (96.2)	21 (3.8)
The patient will be asked to rinse the antiseptic solution before starting treatment	403 (72.9)	150 (27.1)

Table 4 shows 72,2% of respondents had no anxiety about visiting a dentist during the COVID-19 pandemic. However, 27.9% had moderate–severe anxiety, with most aged 18–24 years (8%).

Table 4. Distribution of dental anxiety according to age.

Anxiety Scale	18–24 N (%)	25–34 N (%)	35–44 N (%)	45–54 N (%)	55–59 N (%)	>59 N (%)	Total N (%)
No anxiety	161 (29.1)	74 (13.4)	55 (9.9)	74 (13.4)	20 (3.6)	15 (2.7)	399 (72.2)
Moderate anxiety	39 (7.1)	31 (5.6)	18 (3.3)	33 (6.0)	9 (1.6)	6 (1.1)	136 (24.6)
High anxiety	3 (0.5)	3 (0.5)	1 (0.2)	1 (0.2)	3 (0.5)	0 (0.0)	11 (2.0)
Severe anxiety	2 (0.4)	1 (0.2)	2 (0.4)	1 (0.2)	1 (0.2)	0 (0.0)	7 (1.3)
Total	205 (37.1)	109 (19.7)	76 (13.7)	109 (19.7)	33 (6.0)	21 (3.8)	553 (100)

Table 5 displays the highest frequencies are "expect the dentist to provide information about diseases and preventive ways to improve oral health" 551 (97.6%) and "expect the dentist to provide an explanation of oral health problems and the treatment plan that will be given" 551 (99.6%).

Table 5. Patients' Expectations Regarding Dental Services in the COVID-19 Era, in Order of Importance.

Item Question	No N (%)	Doubtful N (%)	Yes N (%)
Expect the dentist can provide a feeling of security and on-time appointments	1 (0.2)	1 (0.2)	551 (97.6)

Expect the dentist to provide information about diseases and preventive ways to improve oral health	2 (0.4)	0 (0.0)	551 (99.6)
Expect the dentist to provide an explanation of oral health problems and the treatment plan that will be given	2 (0.4)	2 (0.4)	549 (99.2)
Expect the dentists always adhere to the rules of antisepsis and sterilization	4 (0.7)	2 (0.4)	547 (98.9)
Expect the dentist to communicate sufficiently with the patient	3 (0.6)	4 (0.7)	546 (98.7)
Expect the dentists to always perform COVID-19 prevention procedures	6 (1.0)	2 (0.4)	545 (98.6)
Expect the dentist to always use complete personal protective equipment	6 (1.5)	8 (1.4)	537 (97.1)
Expect the dentist to always perform COVID-19 screening procedures	15 (2.8)	10 (1.8)	528 (95.4)
Expect the dentist to refer to a specialist dentist or other specialists when necessary	48 (8.7)	29 (5.2)	476 (86.1)
Expect an increase in dentist rates related to the preparation of dental office and personal protective equipment used by dentists	265 (47.9)	134 (24.2)	154 (27.9)

Discussion

Since COVID-19 was declared a pandemic by the WHO, the Indonesian government has been aggressively providing education to the public about coronavirus and methods to prevent its spread. Through mass media, electronic media, social media and highway banners, the government has cultivated the 3M movement (wearing masks, physical distancing and washing hands) and has also established a task force in each community group, whose function is to carry out monitoring and control. The Indonesian government also imposes fines on people who do not wear masks when leaving the house [17]. With regard to regulations set by the government, this study requires respondents to be 18 years of age or older, as that age is said to be legally mature and psychologically capable of deciding attitudes and taking action [18].

Because dental offices are at high risk for spreading COVID-19, at the beginning of the pandemic, the Indonesian Dentist Association provided education to the public to postpone dental visits for nonemergency conditions, such as bad breath, whitening teeth, fitting prostheses, scaling, filling teeth and extracting teeth that were not causing any pain. However, they still recommended visiting a dentist immediately for emergency cases, such as bleeding, swelling and trauma to the facial area [11]. The current study was conducted almost a year after the beginning of the COVID-19 pandemic. The survey results showed that most respondents already knew how COVID-19 was transmitted, how to prevent transmission and which conditions could be postponed and which required an immediate dental visit. Thus, it can be concluded that the socialisation implemented by the government and dentist associations was successful. This result is in line with another study of patient anxiety, fear and panic regarding COVID-19 and their confidence in hospital infection control policies in Thailand, which found that most patients reported changes in behaviour by washing their hands more frequently, wearing masks in public places, maintaining physical distancing in public places and being knowledgeable about SARS-CoV-2 transmission [19].

The dental association recommends that dentists prepare special practice rooms, such as negative-pressure rooms, using level 3 PPE when performing aerosol-causing procedures, patient preparation procedures and patient screening [15]. Adhering to these recommendations is important for practicing dentists, as they work in very risky areas [20]. During a pandemic, dental teams must follow strict control and reset measures. It is the responsibility of the dental care worker to stay up to date with the latest information and countermeasures within the dental facility [21]. The survey results showed that most respondents already knew about the preparation of dental practice places and dental service procedures during the COVID-19 pandemic. For the safety of patients and the dental team, implementing evidence-based patient management and protocols from the available literature is necessary to help formulate work procedures for dental practice before patient visits, during dental work in the office and after treatment and during the outbreak and thereafter [22].

Limitations on social activity, the risk of contracting COVID-19 and the high number of confirmed positive cases of COVID-19 have caused anxiety in the community, in both medical and nonmedical personnel [23,24]. Dental office preparations made by dentists will certainly have an impact on capital expenditures and rates. This condition may cause anxiety in the community, including dental anxiety. In addition, limited knowledge about COVID-19 can also cause anxiety in the community [25]. The results of this study indicate that many respondents have knowledge about COVID-19 and that few respondents experience highly severe dental anxiety; thus, one explanation could be that the dental anxiety of respondents during the COVID-19 pandemic was low because they had proper knowledge. Research in Thailand on anxiety using the Generalised Anxiety Disorder 7-item measure in patients who presented to the hospital showed that as many as 13.2% of patients experienced anxiety related to COVID-19 in the moderate-severe anxiety category [18].

The COVID-19 pandemic has had an impact on dental health services. Procedures for receiving and treating patients are different from those of the pre-pandemic period. This difference can lead to alteration in patient expectations of the services they will receive in the pandemic era. One of the purposes of this research is to obtain a picture of what kind of expectations patients have regarding dental services during the COVID-19 era. The results showed that the patients' highest expectations were for the dentist to provide a feeling of security and on-time appointments and for the dentist to provide information about diseases and preventive ways to improve oral health. Both of these expectations may arise in connection with the desire to spend less time in the dental office and to reduce visits to the dentist by implementing preventive measures. The study on patient perspectives, fears and hopes during the COVID-19 pandemic found a lack of transparency in the information given to patients regarding COVID-19 incidents and tests in the hospitals where they were treated. This can be used to guide how best to reorganize the health care system to accommodate the needs of patients during the COVID-19 pandemic. In this situation, the patient pays more attention to their health needs, and the health care professional has a greater responsibility not to disappoint their patients, despite all the challenges [26].

Although the results of this survey showed that the public already knows how COVID-19 is transmitted and how to prevent such transmission, the reports of confirmed positive cases in Indonesia are still high as of early 2021, with 7300 people infected and a mortality rate of 2.7% [17]. This gap indicates that existing knowledge in the community may not have been fully practiced. There is a need for further research on community compliance in implementing health protocols. Moreover, to determine the factors underlying the high number of confirmed positive cases, a follow-up survey should be conducted regarding community compliance with the implementation of protocols that includes more respondents from all regions of Indonesia. The limitations of this study include the lack of data on attitudes, intentions and behaviours regarding the use of masks, physical distancing and frequent hand washing.

Conclusion

Most respondents knew about the transmission and prevention of COVID-19, the preparations and procedures performed by dentists during the COVID-19 pandemic and for what conditions seeing a dentist could be postponed. Some respondents also stated that they did not feel anxious visiting a dentist during this pandemic. During this time, the respondents expect the dentist to provide information about diseases and preventive ways, and also provide an explanation of oral health problems and the treatment plan.

Authors' Contributions

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

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Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

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

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