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Original article

Parents' satisfaction with the teledentistry method during the COVID-19 pandemic: A study in Java and Bali

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ABSTRACT

Background: *The coronavirus (COVID-19) pandemic situation in Indonesia has caused increased anxiety, especially among parents trying to provide health services for their children. The concerns are about cross-contamination through aerosol splashes and contamination by the virus on instruments and in dental offices. Therefore, the government urges the public to use telemedicine. Telemedicine is a digital-based remote health service. The service utilizes information and communication technology.* ***Purpose:*** *This study aims to assess the satisfaction of parents of pediatric dental patients in using teledentistry during the COVID-19 pandemic.* ***Methods:*** *An analytic observational study with a cross-sectional approach was arranged. Data was gathered through questionnaires distributed to parents who live in Java and Bali using the Google Forms platform, consisting of 15 questions with 6 domains of questions.* ***Results:*** *The results showed that 201 respondents were parents of pediatric dental patients, including 123 female respondents and 78 male respondents. The average age of respondents is dominated by the age group 36–40, which included 68 respondents. Two hundred and one respondents were satisfied with dental health services using teledentistry.* ***Conclusion:*** *Parents of pediatric dental patients are generally satisfied with the quality of dental and oral health services using the teledentistry method.*

Keywords: *children; COVID-19 pandemic; parents; satisfaction; teledentistry*
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INTRODUCTION

The world is currently facing a global health problem, namely the Coronavirus Disease 2019 (COVID-19) pandemic. COVID-19 is a disease that attacks the respiratory system and has a very high rate of transmission.[1] COVID-19 is caused by the SARS-CoV-2 virus, with common symptoms including fever, dry cough, shortness of breath, nausea, vomiting, and anosmia. The first case of COVID-19 was reported on December 31, 2019, in Wuhan City, Hubei Province, China.[1,2] To date, COVID-19 has spread to around 170 countries in the world, including Indonesia.[3] The first COVID-19 patient in Indonesia was reported on March 2, 2020.[4] As of November 4, 2021, there are around 4,256,409 confirmed cases of COVID-19 in Indonesia.[5]

The increase in the number of cases is certainly worrying, especially with data from the National Basic Health Research conducted by the Indonesian Ministry of Health in 2018 showing: First, 41.1% of children in the 3–4 age group experience dental and oral problems; second, 67.3% of children in the 5–9 age group experience dental and oral problems. And only 4.3% of the age group 3–4 and 14.6% of the age group 5–9 receive treatment from dental medical personnel. These data show that many children in Indonesia have dental and oral problems and have not received treatment, and parents' awareness of the need to take their children to the dentist is still low.[6]

This problem needs attention, followed by the problem of a decrease in patient visits to dental and oral health services due to the high number of COVID-19 cases.[7] This decrease is due to several factors of concern, such as cross-contamination through aerosol splashes, contamination of microorganisms on instruments and in dental offices, or indirect contact of the patient's mouth with an object such as a bur or needle.[8] This creates fear and a dilemma

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about the potential for contracting COVID-19 for patients, dentists, and nurses.[9] A study showed that the majority of complaints were toothaches, ulcers, bleeding gums, and bad breath. During this pandemic, to minimize the spread of infections, only 6.1% who visited the dentist received treatment for their complaints and the remaining 13.7% did online consultations.[10]

According to the results of a survey conducted by Adeel in March 2020, involving many respondents from 30 countries, there was an increase in stress and anxiety due to the COVID-19 pandemic experienced by 50–70% of dentists. This could potentially impact their relationships with pediatric patients because pediatric patients require special treatment.[11,12] Based on the path of the spread of COVID-19, as well as the limitations of the COVID-19 vaccine for children, which is only available for children aged 5–17 years old according to the recommendations from the Centers for Disease Control and Prevention (CDC), dentists were required to use Personal Protective Equipment (PPE). The use of PPE limited dentists in communicating with patients because pediatric patients could not see the dentist's expression, which is important in building trust with the dentist.[13,14] This can affect the child's emotional state and the level of parental anxiety.[15]

In practice, the family and the parents (especially the mother in this case) play an important role in caring for children's teeth. The mother can ask for advice from her husband in making health decisions, especially decisions involving costs. Husbands' motivations sometimes affect the behavior of the mother in determining an action.[16] Parents will influence the child's behavior during treatment, where the level of parental anxiety can affect the child's anxiety level and the continuity of care. Management of pediatric dental care requires good teamwork between the dental care team and the parents to understand the child's behavior during treatment. The role of parents is described as a Pedodontic Triangle. This means that pediatric patients require two lines of communication: parents or guardians and dentists, who are interconnected, where dentists and parents both perform behavioral management with pediatric patients.[17]

Providing dental health services during a pandemic for pediatric patients certainly presents challenges, especially with social restrictions.[18,19] The government urges the public to use online health services or telemedicine. Telemedicine or teledentistry is an oral health service project first used in 1994 by the United States military to serve the United States military forces worldwide.[19]

Teledentistry has been widely used all over the world; however, parent satisfaction regarding teledentistry services during the pandemic was not well known, particularly in Java and Bali. Based on the factors mentioned above, the authors would like to conduct this study to determine the level of parent satisfaction using telemedicine to improve health services and be one of the resources for further teledentistry development.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted between February 2022 and March 2022, using primary data obtained from questionnaires. As the research instrument, a 15-item questionnaire on parent satisfaction with teledentistry during the COVID-19 pandemic was developed based on expert panel discussion, literature review, and cultural atmospheres. Service quality is measured using six dimensions/aspects, namely the dimensions of convenience, appearance, timeliness, accuracy, content, and others. In this research, it is divided into two islands, namely Java and Bali.

The questionnaire consisted of five-choice answers: strongly agree, agree, moderately agree, disagree, and strongly disagree, each of which was rated 5, 4, 3, 2, and 1. Questionnaire validation was conducted in a subsample of study participants. Validity and reliability were examined using the correlation coefficient and Cronbach's alpha. Correlation coefficient > 0.4 was considered as valid. Cronbach's alpha >0.7 was considered as reliable.

The sampling in this study was carried out by purposive sampling technique. Inclusion criteria were parents who live in Java or Bali and have used teledentistry. We excluded participants who were unable to fill out the questionnaire due to any reason (e.g., poor internet connection, unwillingness to participate, incomprehension, etc.). The teledentistry platforms chosen for this research were Alodoc, KlikDokter, Halodoc, Grab Health, and Hello Sehat, because these platforms have been popular in society and mass media.

The number of respondents in this study was 201. The questionnaire was distributed via social media: TikTok, Instagram, Line, and WhatsApp, including inclusion criteria. Data management was performed using Google Forms and exported to the software Statistical Package for Social Sciences (IBM SPSS version 25.0). This research was approved by the Ethics Commission of the Faculty of Dentistry, Trisakti University on January 24, 2022, with certificate number 537A/S1/KEPK/FKG/1/2022 for ethics approval.

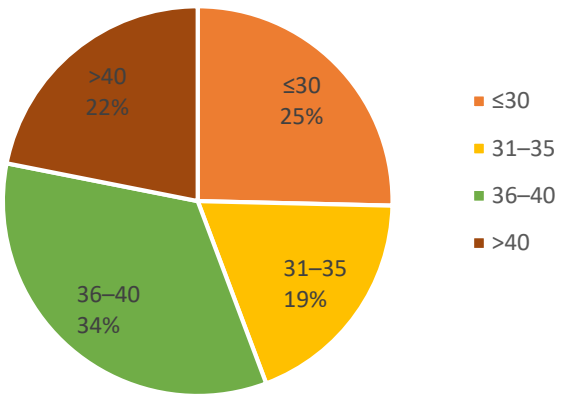

Figure 1. Characteristics of respondents by age.

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RESULTS

It was found that the parents in this study were dominated by women with a total of 123 respondents or 61% of the total respondents, and a total of 78 male respondents or 39% of the 201 total respondents. The respondents with an age range of 36–40 years are the majority with a total of 68 respondents or 34% of the total 201 respondents (Figure 1).

Table 1. Frequency distribution of respondents' characteristics by domicile

Address (City)	Respondents	
	n	%
Malang	11	5.47
Jakarta	50	24.87
Bogor	15	7.46
Bali	20	9.95
Depok	17	8.45
Tangerang	30	14.92
Bekasi	19	9.45
Bandung	13	6.46
Yogyakarta	11	5.47
Surabaya	3	1.49
Sidoarjo	1	0.49
Pemalang	1	0.49
Bondowoso	1	0.49
Rembang	1	0.49
Tangerang Selatan	3	1.49
Semarang	4	1.99
Solo	1	0.49
Total	201	100%

The result of this study indicates that most respondents were from the city of Jakarta with 24.8% of respondents, followed by respondents from various cities/regencies from West Java Province, and only 9.95% of respondents came from Bali (Table 1).

Based on the classification of Teledentistry Media, it seems like respondents in Java Island use health applications more, with as many as 87 respondents. Followed by WhatsApp and email with 80 and 14 respondents, respectively. Similar results were also found in Bali. Based on the Teledentistry Media classification, health application media was chosen by 10 respondents, followed by WhatsApp with 9 respondents, and email with 1 respondent (Figure 2).

According to Figure 3, in Java, the Halodoc application is the most preferred with 39 respondents. Then, Alodok with 35 respondents. Meanwhile, the other three applications, KlikDokter, Grab Health, and Hello Sehat, were preferred by 10, 2, and 1 respondent, respectively. However, in Bali, the data is slightly different from the data in Java. On the island of Bali itself, Alodok was chosen by 4 respondents, followed by Halodoc with 3 respondents, KlikDokter, and other media (Instagram) with 1 respondent each.

Table 2 shows the frequency of parental satisfaction of pediatric dental patients with the teledentistry method used. The convenience aspect consists of three statement items. Both parents in Java and Bali have the same highest satisfaction score for the statement "Teledentistry is very easy to use and understand," where the score is in the "satisfied" category.

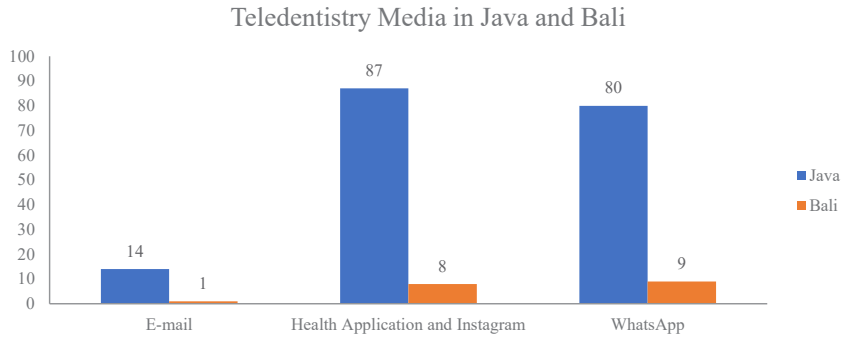

Figure 2. Frequency distribution of respondents' characteristics based on teledentistry media in Java and Bali

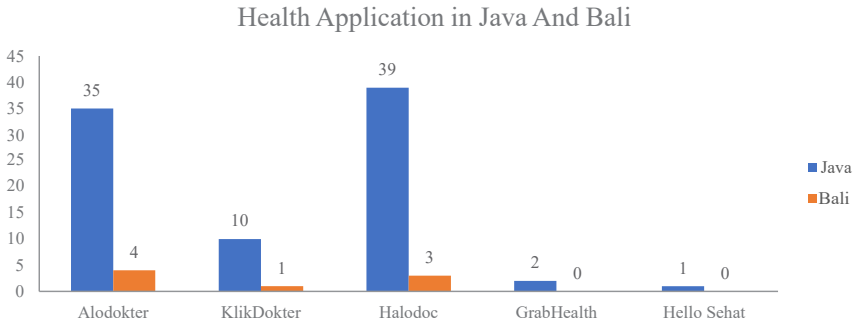

Figure 3. Frequency distribution of teledentistry media by health applications in Java and Bali.

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Table 2. Frequency distribution of parental satisfaction levels of pediatric dental patients with teledentistry methods in Java and Bali

No.	Statement	Satisfaction Level in Java			Satisfaction Level in Bali		
		Total Score	(%)	Category	Total Score	(%)	Category
	Ease of Use						
1	Teledentistry is very easy to use and understand	732	79.5	Satisfied	80	81	Satisfied
2	I can use any device to access Teledentistry	707	77.2	Satisfied	73	73	Satisfied
3	I can consult anytime and anywhere through Teledentistry	719	78.1	Satisfied	79	79	Satisfied
	Average Score	719	78.3	Satisfied	77	77.6	Satisfied
	Display						
4	The display on Teledentistry is attractive and practical	703	76.7	Satisfied	78	78	Satisfied
5	I rarely encounter system problems or errors when using Teledentistry	702	76.2	Satisfied	73	73	Satisfied
6	The information and instructions displayed on Teledentistry are quite clear and neat	722	77.9	Satisfied	81	81	Satisfied
	Average Score	709	76.9	Satisfied	77	77.3	Satisfied
	Timeliness						
7	Teledentistry can provide alerts to remind me of upcoming appointments	695	75.5	Satisfied	85	85	Satisfied
8	Teledentistry provides scheduling flexibility and decreased waiting time	685	74.8	Satisfied	82	82	Satisfied
9	I can consult in real-time with doctors using Teledentistry	692	75	Satisfied	81	81	Satisfied
	Average Score	690	75.1	Satisfied	83	82.6	Satisfied
	Accuracy						
10	The doctor can immediately and accurately understand my complaints	700	76	Satisfied	75	75	Satisfied
11	Information is provided directly from experts and practitioners so that the information provided is reliable and trustworthy	701	76.5	Satisfied	83	83	Satisfied
12	Teledentistry provides complete information regarding the identity, specialization, address, length of work, and license to practice of any doctor who wants to consult with me so that I don't have to worry about his credibility	696	75.5	Satisfied	82	82	Satisfied
	Average Score	699	76	Satisfied	80	80	Satisfied
	Content						
13	The explanations, information, diagnoses, and education provided by the doctor are well conveyed, effective, and easy to understand	722	78.4	Satisfied	80	80	Satisfied
14	Reports, information, and prescription instructions given by doctors are easy to read, practical, and very neat	692	75.5	Satisfied	82	82	Satisfied
15	I get the latest information about the COVID-19 pandemic and about the world of health according to my needs	696	75.5	Satisfied	76	76	Satisfied
	Average Score	703	76.5	Satisfied	79	79.3	Satisfied
	Other						
16	I feel that the Teledentistry method makes it safer for me and my children to get health services in the midst of the COVID-19 pandemic	736	79.4	Satisfied	80	80	Satisfied
17	I feel consulting using the Teledentistry method is much more efficient	719	78.2	Satisfied	78	78	Satisfied
18	Teledentistry makes it easier for me to attend consultations without taking time off of work or rescheduling important events	700	76.4	Satisfied	81	81	Satisfied
19	The sound quality produced through the Teledentistry application is very clear	690	75	Satisfied	82	82	Satisfied
20	I can easily and quickly send photos and videos about my child's dental and oral problems via Teledentistry	696	75.4	Satisfied	76	76	Satisfied
	Average Score	708	76.9	Satisfied	79	79.4	Satisfied

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The display aspect consists of three statement items. Both parents in Java and Bali have the same highest satisfaction score for the statement "The information and instructions displayed on Teledentistry are quite clear and neat," where the score is in the "satisfied" category.

The timeliness aspect consists of three statement items. Both parents in Java and Bali have the same highest satisfaction score for the statement "Teledentistry can provide alerts to remind me of upcoming appointments," where the score is in the "satisfied" category.

The accuracy aspect consists of three statement items. Both parents in Java and Bali have the same highest satisfaction score for the statement "Information is provided directly from experts and practitioners so that the information provided is reliable and trustworthy," where the score falls in the "satisfied" category.

The content aspect consists of three statement items. Parents in Java and Bali have slightly different scores on this aspect. Parents in Java have the highest satisfaction score for the statement "The explanations, information, diagnoses, and education provided by the doctor are well conveyed, effective, and easy to understand." On the other hand, parents in Bali have the highest satisfaction score for the statement "Reports, information, and prescription instructions given by doctors are easy to read, practical, and very neat." Scores on both statements are in the "satisfied" category.

The next aspect is the level of satisfaction of patients' parents, consisting of five statements. Both parents in Java and Bali have slightly different scores on this aspect. Parents in Java have the highest satisfaction score for the statement "I feel that the Teledentistry method makes it safer for me and my children to get health services in the midst of the COVID-19 pandemic." On the other hand, parents in Bali have the highest satisfaction score for the statement "The sound quality produced through the Teledentistry application is very clear." For both statements, the score is in the "satisfied" category. Based on Table 2, the parents of pediatric dental patients in Java and Bali are satisfied with dental health services using the Teledentistry method during the COVID-19 pandemic.

DISCUSSION

Since the COVID-19 pandemic in 2020, there has been limited access to oral and dental health; hence, the online platform, teledentistry, has been the main alternative for oral and dental consultations. The Indonesian government's policy is conveyed through circular letter No. HK.02.01/MENKES/303/2020 concerning implementing Health Services through the Utilization of Information and Communication Technology in Preventing the Spread of Coronavirus Disease 2019 (COVID-19).[20]

Telemedicine is a digital-based remote health service. The service utilizes information and communication technology as a health service facility, including consultation, education, diagnosis, therapy, prevention, treatment, research, and evaluation by health professionals.[21] During the pandemic, teledentistry services are a good alternative for early detection of disease, providing oral pre-treatment systemically to prevent the disease emergencies and becoming a means to monitor disease conditions.[22] The limitation of teledentistry is that it isn't able to manage all cases. The direct examination or visualization to identify the lesion or abnormality is fundamental. Besides that, not all the telemedicine platforms provide a "picture" to visualize the patient's condition, especially in dentistry. Intraoral visualization is important to perform proper diagnoses and assign treatment plans.

Several innovations and developments have been made in recent years using computers, smart cellular phones, telecommunications technology, digital diagnostic services, hardware, and software for diagnosis and follow-up. This technology helps improve the quality of dental patient management and enables dentists to reach patients remotely.[23]

The advantages of telemedicine or teledentistry include: (1) comprehensive coverage to remote communities, (2) more effective cost reduction, (3) early diagnosis or early detection of disease, (4) time efficiency, (5) effective communication, and (6) convenience in storing medical records.[24,25] Teledentistry can also provide oral pre-treatment systemically to treat disease emergencies and can be a means to monitor disease conditions.

According to previous studies, there is a 50% reduction in prevention-related costs when using teledentistry. Teleconsultation for dentoalveolar preoperative consultation has reduced the number of patients requiring the physical presence of a specialist from 43 patients to 10 patients.[26,27] According to Annur's interview with Alodokter's Co-Founder, Suci Arumsari, there are already millions of application-based telemedicine users in Indonesia. One of the telemedicine applications is Alodokter, which in 2021 recorded more than 20 million monthly active users throughout Indonesia, especially in Java and Bali.[28] This certainly illustrates the enthusiasm of the Indonesian people for emerging digital health companies.

Most teledentistry users in this study were parents aged between 30–40 years. This age group of parents is likely to have children under 18 years of age, where oral and dental disease occurs often both in primary and permanent teeth. The majority of the sample prefers to use mobile health applications for teledentistry, especially due to the pandemic situation and the practicality matter: it can save time and effort. They can utilize teledentistry while traveling or doing other activities. For busy urban dwellers, this can be a major consideration. The majority of participants in this study live in cities. In general, cities have better facilities and supporting equipment for information technology, which is essential for teledentistry. For busy urban dwellers, this can be a major consideration. Teledentistry management is generally carried out for non-emergency cases such as periodical check-ups, guidance for improving oral hygiene

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at home, or consultations for conditions such as delayed eruptions. Emergency case management still requires treatment at a dental clinic.

Among available teledentistry platforms, such as email, WhatsApp, and other applications in Java and Bali, WhatsApp is the most preferred platform. This might be because of its familiarity and practicality. A study by Petruzzi and De Benedittis[29] found that 82% of participants agreed that WhatsApp was a good platform for consultations.

The application Halodoc was chosen by most participants in Java and Bali. This might be related to its practicality and the recommendations by mass media and non-formal sources such as family and friends. To engage users, a health consultation platform should make the users feel comfortable. These two applications, WhatsApp and Halodoc, are examples of popular telemedicine platforms in Indonesia. WhatsApp can be used for teledentistry management. During the pandemic, patients who already know doctors personally often consult with their doctor about their health problems through the WhatsApp chat.

Our study indicated that the participants in Java and Bali were generally satisfied with the available teledentistry platforms during the COVID-19 pandemic. This finding supports a previous study by Erwansyah et al,[30] which found a high satisfaction rate among long-distance health service or telehealth users. The efficiency and effectiveness of telehealth (e.g., easy-to-book appointments, short or no waiting time, and no transportation costs) may be reasons for the high satisfaction rate.[30]

In conclusion, parents of pediatric dental patients in Java and Bali are satisfied overall with dental and oral health services using teledentistry. This finding may encourage the development of teledentistry in Indonesia so that it can be utilized more widely in communities, particularly when physical access to dental and oral healthcare is relatively limited (e.g., during a pandemic). The limitation of this research was the uneven distribution of the questionnaire, which was carried out through social media and individual sharing, so it was less able to reach the wider community.

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