Readiness of Dentists towards Teledentistry Applications During Covid-19 Pandemic in East Nusa Tenggara Province, Indonesia

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Abstract

The COVID-19 pandemic has resulted in restrictions on face-to-face contact between dentists and patients. Many people have difficulty in accessing oral health services, especially when they experience emergency oral health problems. This problem has a significant negative impact on public oral health. The purpose of this study was to describe the readiness of dentists of using teledentistry applications improving oral health services and the design of the application which dentists prefer.

This research was conducted in the province of East Nusa Tenggara, Indonesia in 2022 with the type of qualitative research and descriptive design. The research informants were dentists as many as eleven people, six general practitioners (GPs) and five specialists with data collection techniques through in-depth interviews (three participants) and focus group discussions (FGD with eight participant) using interview guidelines. Data analysis was carried out descriptively. After FGD, teledentistry application is designed to meet the dentists' views.

The results shows that dentists are ready to use teledentistry applications in public oral and dental health services which influenced by 6 main factors, namely experience factors, perceived benefit, service fee, service duration, communication and education media and perceived barrier. Teledentistry applications has designed to meet the needs of the dentists which is BETA DENTIST, drgbeta.com.

The readiness of dentists to use teledentistry applications is influenced by various factors such as experience, expected benefits, length of service, obstacles that may be experienced, communication, promotion and prevention media.

Clinical article (J Int Dent Med Res 2023; 16(2): 703-708)

Keywords: Covid-19 pandemic, Teledentistry Applications, Oral Health, accessibility.

Received date: 09 February 2023   **Accept date:** 14 April 2023

Introduction

The COVID-19 pandemic has caused various health problems including public oral health and has become a new challenge for dentists in providing oral health services for the community. Aerosols and droplets generated in dental procedures can trigger the spread of COVID-19 so close contact between dentists and patients should be limited. [1] As a result, many people have difficulty accessing oral health services, especially when they experience oral health problems. Self-medicating (buying medicine at a pharmacy without a doctor's prescription) is a method that is often done by the community both before the pandemic, especially during the COVID-19 pandemic where many dentists were closed avoiding the spread of the virus. [2]

Teledentistry become an alternative to improve accessibility to oral health services due to the COVID-19 pandemic. Teledentistry is a form of telehealth that uses a combination of telecommunications and dentistry, which enables patients to discuss, consult, and plan treatment remotely with dentists [1]. Examinations and interventions performed by teledentistry should be based on the same level of information as face-to-face, and it is the dentist's responsibility to ensure that sufficient records are collected for the dentist to make a diagnosis and plan treatment.

Many dentists are reluctant to use teledentistry for various reasons, such as lack of

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training, advanced infrastructure, good connectivity and network. Most dentists are used to direct examination of the patient's mouth and are not familiar with teledentistry applications. Dentist may be fearful of making an incorrect diagnosis as tooth percussion or pulp vitality test cannot be performed by teledentistry and this may influence the readiness of the dentists to use the applications. [3,4] Furthermore, intra-oral mirror is needed by the patients to show the oral health conditions by sending intra-oral photos to dentists during online consultations through teledentistry. [5] Another problem that can be an obstacle to the use of the applications is that there are no regulations governing the use of teledentistry in Indonesia, especially regarding the financing, how much fee is obtained by dentists or paid by patients from teledentistry services. [6]

The problem in this research is whether dentists in East Nusa Tenggara Province, Indonesia are ready to implement teledentistry application as it is a new thing for dentists in Indonesia, especially in East Nusa Tenggara. The readiness of dentists in East Nusa Tenggara needs to be known before teledentistry applications are designed and used. [7]

Materials and methods

The type of research used is qualitative with a descriptive design to describe the dentist's readiness and views on the design/use of teledentistry applications. This research was conducted in February-November 2022 in East Nusa Tenggara Province, Indonesia. The informants/subjects of this study were eleven dentists (six general practitioners and five specialists). Eight dentists were involved in the Focus Group Discussion and three people were interviewed in depth. Data were collected using interview format/guideline. [8]

To ensure the validity of the data collected, researchers conducted environmental triangulation. The researchers conducted FGDs and in-depth interviews with respondents at the peak, middle and the end of the covid-19 pandemic. Transcripts collected from informants were given to other research members who were not dentists and asked to provide interpretations.

The researcher already knew some of the participants before this research was carried out. Half of the participants know the reasons for conducting research that research is the main task of a lecturer. The interviewer has experience in qualitative research from the Health and Polytechnic of Kupang as a Bestari partner reviewer for national and international journals.

The methodology in this study is narrative analysis which is intended to see the views and readiness of the dentists regarding the design/form of teledentistry application. The sampling technique in this study was determined using a purposive method where the researcher contacted respondents who met criteria such as having a license to practice, willing to take the time to provide online services to the community, willing to provide mobile phone contact numbers entered into the application. In general, samples were contacted by telephone and the rest by face to face.

As many as three people did not take part in FGD because they did not have the appropriate time to carry out the FGD, so it was carried out through deep interviews. FGD with samples was conducted in the clinic meeting room of the researcher. The FGD was carried out between the interviewer and the sample without involving other people. The most dominant characteristic of the sample is female with an average age of 45 years and government employees. The interviewers were provided with an interview guide that had been pilot tested beforehand. Re-interviews were conducted once to clarify some information that was still unclear from the sample. Each interview was recorded with audio-visual to ensure that researchers obtained validated information and no important information was lost. Important notes are written on gadget media. The duration of the FGD was 176 minutes. Data saturation was discussed at the end of the FGD where the samples had no new information on the topics discussed. Transcripts of the FGD results were given to the sample for an opportunity to provide comments or corrections.

The number of coding in data analysis is six codes. Themes were identified from the researcher's experience of problems that often arise during online consultations. Data analysis does not require software. Participants make corrections to research results such as consulting services, consultation time and ringtones used when a patient wants to consult. Participant quotations are indicated by providing an

alphabetical code in the word application resulting from the transcript of the interview. There was consistency between the data presented and the findings as all participants concern about experience of using the application, benefit, barrier, service fee, communication media and consultation time/duration. All these major themes clearly presented in the findings.

Research Ethics

This research begins by asking the respondent's consent, anonymously and maintaining confidentiality and seeking approval from the Ethics Committee of the Health Polytechnic of the Kupang Ministry of Health, with an ethical statement number No. LB.02.03/1/0091/2022, March 31, 2022.

Result

Characteristics of Informants/Research Subjects

The implementation of FGD offline with a number of informants/subjects as many as eight dentists (a male and seven famales) general dentists, namely informants A, B, C, D, E, F, G and H. This research was also conducted in an indepth interview with three dentist informants consisting of a general dentist and two specialist dentists, namely dentist informant 1, 2 and 3.

Teledentistry Application Usage Experience

Interviews through FGD indicates most dentists have heard about the teledentistry application, but they did not know the form and use of the teledentistry application. During the Covid 19 pandemic, all dentists served dental health consultation patients through online such as WhatsApp, Messenger and Facebook (table 1).

Knowledge and Experience	Total	%
Knowledge		
- Haven't Heard	1	9.09
- Already Heard (not done yet)	10	90.90
Experience		
- Whatsapp	1	9.09
- Telephon, SMS, Whatsapp	2	18.18
- Whatsapp, Instagram, Facebook	6	54.54
- Other Website Applications (not active)	2	18.18

Table 1. Knowledge and experience of using the consulting application.

The results of the in-depth interview show that in general the informants have heard but have not used the teledentistry application.

Informants 1,2: *"I've heard of teledentistry applications through seminars but have never used them, I used to serve patients through telephone or online consultations using social media such as Facebook, Instagram and WhatsApp applications for free"*

Informant 3: *"I've heard of it but haven't used it yet....I'm willing to use the app for my specialty so that maybe people will find out more easily for consultation. I mostly just use the WhatsApp application for consultation.*

Interest

All dentist is interested and want to be involved in using a web-based teledentistry application called "drgbeta.com" means "mydentist.com", as long as the application does not take a lot of mobile memory, as conveyed by informant A as follows:

"I am willing to download the application on mobile phone, which aren't too big bytes. I only have a WhatsApp, I don't have Twitter, Instagram and Facebook. I don't want to have many applications on my mobile phone".

Informants 1, 2 and 3 are interested in the use of the applications and ready to be included in the teledentistry application because it is easy to use, as stated by informant 1 (GPs) below:

"The important thing is to make it easier and closer for the community to access oral health services, so I am willing to use the teledentistry application".

Informant 2 (oral pathologist) is interested in teledentistry applications because people need to get proper information about oral health problem, as explained below.

"People are very worried about swelling in the mouth when they experience it in the mouth, they believe that it is a cancer. Consulting a doctor as early as possible is very important to help patients reduce anxiety about the swelling before carrying out examinations and treatment at clinics or other health facilities.

Informant 3 (Periodontist) also was interested in the use of the application as she said:

"*Teledentistry applications are important both*

during and after the Covid-19 pandemic when doctors cannot be accessed offline for various. The use of the application may be decreased after pandemic but it is stil an useful tool to improve patients access to oral health services.

Teledentistry Application Benefits
Community needs

All dentists believe that community need dental services through teledentistry applications, so that the dentists can provide oral health services to the community. The services provided are in the form of consultation, education and referrals as well as giving prescriptions if needed as stated informant A:

"Before a patient decides to go to a health facility, he/she can consult first in the application with questions such as hours of practice, prices, specializations, therefore this application can help. The community may get recipe through the applications without visiting a dentist.

Dentists can give prescriptions online, but there are fears that pharmacies will not accept the online prescriptions and ask for original prescriptions as conveyed by informant C as follows:

"In other application such as Halodoc.com, the copy of the pharmacy recipe is accepted"

The use of teledentistry applications was needed as an alternative for the community to receive services from dentists. This was conveyed by informants D and E, as follows:

"We need the application during the covid pandemic as not everyone can go directly to a dental health facility due to the pandemic, this obstacle can be overcome by the application."

The use of teledensitry applications is needed but it must be easy to access as many people with low literacy and internet problems, as conveyed by informants F and G as follows:

"People need this application as long as the application is developed well with an easy to use and access particular for community with a good internet network. Patient may prefer WA applicatication if they find it is difficult to use the teledentistry application."

The teledentistry application is very useful, but the design of this application must be suit to the community, as stated by the following informant H:

"The application is useful but now there are many similar apps like Hallo Doc. How can this application become the community's first choice for oral health services?"

The results of the in-depth interview are not much different from the results of the FGD, according to them, during the COVID-19 pandemic, people really need online health educational services as conveyed by informants 1 & 2 as follows:

"Many people consider all dentists are specialist so they don't know how to find a dentist who can solve their spesific oral health problems, so through this application the public can find a spesialist dentist who suit to their needs. "

Advantage

Benefits of the application are it is practical, patients can choose a dentist, a lot of information can be obtained without visiting directly a dentist as conveyed by informant E;

Patients can choose any doctor to consult in their area, for example a patient who is dissatisfied with doctor A is allowed to consult doctor B.

The results of the in-depth interview, using the teledentistry application, as conveyed by informants 1,2 and 3 as follows:

Informants 1: "Nowadays is the era of digital which different than before, patients may get dental health information from many online sources such as Tiktok, instagram and facebook.

Informant 2 "I can communicate with patients before they come to the clinic so they know what action to be taken. This application is very useful for consultation and referrals"

Informant 3 "This application is very useful for young people who are familiar with information technology and a high curiosity where they can discuss directly with dentists."

Educational Media

One form of dental services included in the teledentistry application is an educational media that is beneficial and easy to understand by the public. All participant agree to include educational media in the applications as stated by informants B and D as follows:

It's good if the application with a educational video, but we need to protect it so people don't l download and misused it as it will violate a copyright.

Consultation Services fee

All dentists think that services fee need to be paid by patients and distinguished between

general and specialist dentists, as conveyed by the following informant A:

"*Doctors spend time and internet packages to consult with patients so that patients need to be charged a consultation fee of around 2US$*".

From in-depth interviews it is known that dentists want services to be paid for because knowledge is expensive and patients need to respect the dentist's profession and competence.

Informant 1: "I think knowledge is expensive so patient have to pay around 6 US$ for 15 minutes consultation"

Informant 2 & 3: "a specialist dentists need to be valued at around 4US$ for 15 minutes."

Communication media

Regarding the communication media used in dentistry services, all dentists agree that a personal mobile number should not be included in the application. All Dentists agree to provide accessible mobile numbers for in-app consultations. The dentist's private phone number can be given to the patient as approved by the dentist concerned.

Duration and Time of Consultation Using the Teledentistry Application

The duration of consultation is suggested to be between 5 – 15 minutes per patient, whom 7 dentists agreed 15 minutes, 3 people said 10 minutes and 1 person wanted 5 minutes. The results of the in-depth interview showed that the maximum duration of consultation and education was 30 minutes. The consultation time using the application from morning to night was stated by 8 dentists while 2 people agree during working hours and only 1 person is ready for within 24 hours.

Barriers to Using Teledentistry Applications

Barriers experienced by dentists in using the teledentistry application are that people are used to buying their own medicines at pharmacies without consulting with a dentist. Patient rearly use the teledentistry application. Another obstacles is internet network problems.

Discussion

The results showed that the factors influencing readiness to use teledentistry applications in oral dental services were influenced by 6 main factors, namely the experience factor, perceived benefits, consultation service fee, duration of consultation, communication and education media and perceived barriers. Dentists have not used teledentistry applications because they are not familiar with and did not understand how to use the application. The use of teledentistry applications in Indonesia is still a new thing and there are no government regulations regarding the use of these applications. However, in Indonesia there are already private companies that have run teledentistry applications which join with general practitioners and other specialist doctors [1].

Almost all respondents in this study know the benefits of teledentistry applications for the community. Communities, especially those living in remote areas with internet facilities and economically disadvantaged, can access doctors online with affordable price. This application may improve comunity acces to oral health as many people particullarly children have low acces to oral health services. [9]

Through this application, it is possible for the public to inform the doctor about the symptoms of the disease they are experiencing and treatment solutions before meeting the doctor face to face. This application also allows patients to get information about medical expenses. With these benefits, all respondents are interested in getting involved in teledentistry applications. [10]

The results of this study are in line with the findings of Modak and Basu that teledentistry applications are very important where people can inform doctors about the early symptoms of a disease through the application and this makes it easier for doctors to determine diagnoses and treatment plans.[11,12,13] This application allows for cheaper cost where early diagnosis of a disease can be made before the disease progresses to a more severe stage which treatment is more expensive. [13]

Service fee for general dentist range from around 2US$ and specialist dentists range 3.3 - 6.6US$ with duration of 15 minutes consultation. This fee for 15 is an affordable price and is not much different from the price of teledentistry applications that already exist in Indonesia, such as mitrakeluarga.com, halodoc.com and alodokter.com.

Teledentistry applications can be a means of communication and education for the community. Many people do not understand basic information about dental and oral health prevention such as the correct technique,

duration and time to brush their teeth and use dental floss. Through this application, dentists can explain this information in more detail where this application is equipped with a tutorial on prevention of dental and oral health. [14] In other words, besides being able to function as a means of consulting doctors, this application can also be used to educate the public. The teledentistry application allows patients to be more relaxed within a 15-minute consultation with a dentist. Patients have enough time to ask questions and explain their though by writing them on the application. This is in contrast to face-to-face consultations which tend to be rigid or formal.

The use of teledentistry applications has limitations in terms of making a diagnosis. The symptoms of a disease that the patient presents to the doctor through the teledentistry application may be perceived differently by the doctor or the patient may not present it properly. This can affect the determination of the diagnosis of a disease and the treatment becomes incorrect.[1216]

Another limitation of using teledentistry applications is the problem of internet network facilities, especially for people who live in remote areas.[17] The use of this application is also considered ineffective for groups of people who are not familiar with technology such as older people. This application is more appropriate for young and educated people. Another obstacle is the lack of training for dentists in the use of teledentistry applications. [18,19]

Conclusions

Factors that affect the readiness of dentists to use teledentistry applications are influenced by the lack of experience in using the application, the benefits obtained, the time and duration of online services, the type of communication media used for consultations and the obstacles that will be experienced.

Declaration of Interest

The authors report no conflict of interest.

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