

## The use of telemedicine in primary health care during COVID-19: perceptions from health care professionals

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### ABSTRACT

This research aims to explore the perceptions of health care professionals about the use of telemedicine which took place in Banguntapan 2 primary health care. This study was part of a bigger action research study and was done to obtain an understanding of the telemedicine service as the first step of the diagnosing phase. The respondents are the chief of primary health care, the coordinator of individual health initiatives as well and the coordinator for the appointment program. The selected healthcare professionals were chosen to obtain the telemedicine best-practice in healthcare facilities and to serve as the data triangulation to avoid bias in the answers collected. The result of the interviews revealed four topics: i) the use of telemedicine in minimizing direct contact with the patient; ii) the need to expand the existing system; iii) the utilization of WhatsApp, a popular online platform in the community; and iv) the possibility to merge with the existing online system of national health insurance (JKN) and digital government service (DGS). Some recommendations to improve are to implement a one-stop messaging service, optimization of WhatsApp, and bridge the appointment system to the existing regional DGS.

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## 1. INTRODUCTION

The World Health Organization (WHO) declared COVID-19 as a global pandemic on March 11, 2020, and the increase in the number of cases occurred rapidly in various countries over a short period of time. Medical personnel are at high risk of infection and death due to COVID-19, especially those who are at the forefront of treating patients. [1]. This number put Indonesia in the top 5 of the highest medical personnel deaths due to COVID-19 in the world. Medical personnel have a high risk of death likely due to longer working hours and improper use of personal protective equipment (PPE) [2].

To reduce the transmission of COVID-19, the government has launched various programs and slogans whose aim is to increase the awareness of public and health workers. Three M's slogans, namely: wearing masks properly, keeping a distance, and washing hands with soap or hand sanitizer, have often been echoed, followed by five M which emphasizes the need to stay away from the crowd and reduce mobility. However, innovative efforts in society are still needed to face current conditions. One measure is reducing physical contact between

patients and health workers by utilizing information or digital technology platforms. Digital health solutions have been identified as a promising approach to addressing these challenges. Telemedicine has been successfully used to model health services in primary and emergency health facilities [3]. This platform allows patients to receive health services from home [4] and avoid the spread of COVID-19 [5]. It does not only help secure patients from COVID-19 but can also be used for maintaining routine primary care and establishing electronic prescriptions. In addition, health workers can monitor patients' symptoms in real-time and provide medical consultations remotely if needed [6]. For some cases that do not require a physical examination, this technology will be beneficial in reducing the potential for COVID-19 transmission. The United States government has seen this as a potential to help prevent the transmission of COVID-19 [7]. To mitigate the risk of COVID-19 exposure among healthcare workers, it is essential to ensure the correct utilization and sufficient availability of personal protective equipment (PPE). Additionally, the consistent implementation of fundamental infection prevention and control measures, regular protocol updates, and rigorous supervision are imperative [8].

Primary health care or *pusat kesahatan masyarakat* (Puskesmas) Banguntapan 2 is a work unit under the Bantul health office which oversees four villages in the Banguntapan District. Positive confirmation cases of COVID-19 in Bantul are still relatively high. As of March 18<sup>th</sup> 2022, there was an increase in positive cases of 182 cases from the previous day, so more aggressive efforts are needed to reduce the transmission of this case, especially among health workers [9]. Meanwhile, primary health care Banguntapan 2 has a poly appointment service for mother and child health or *kesehatan ibu dan anak* (KIA) cases, making referrals, especially social health insurance administration body or *badan penyelenggara jaminan sosial* (BPJS), taking routine medicine, and BPJS referral programs. It is necessary to develop the existing telemedicine system at the primary health care Banguntapan 2 for other service units. This study aims to gain a comprehensive understanding of the need for the implementation of a telemedicine program at the primary health care Banguntapan 2 from the healthcare professional's perspective.

## 2. RESEARCH METHOD

The cope of this study is to explain the needs assessment from the administration of primary health care Banguntapan 2. As part of action research design, this study aimed to gather information about the real need of the health care professional. The design of this study employed a purposive sampling approach, selecting the chief of primary health care Banguntapan 2, the coordinator of individual health care services, and admin as participants for the interviews. These respondents were chosen specifically because they held crucial roles in overseeing and managing the use of telemedicine in the Banguntapan 2 primary health care facility. The interviews were conducted during pandemic as it provided valuable insights into the problems occurred and the advantages of telemedicine, making their participation highly relevant to understand the telemedicine implementation in the health care facility. The discussions were recorded and later transcribed verbatim, capturing the details of the conversations that lasted between one to two hours.

Qualitative content analysis was utilized to gain a deeper understanding of the ideas and concepts that emerged from the study [10]. To ensure this research follows the WHO 2016 International Ethical Guidelines for Health-related Research Involving Humans guidelines: i) social values, ii) scientific values, iii) equitable assessment and benefits, iv) risks, v) persuasion/exploitation, vi) confidentiality and privacy, and vii) informed consent this research obtained the ethical exemption. Consent was taken from the respondents before the interviews. The interviews were conducted with precautionary measures, both the interviewers and interviewee wore face masks and maintained a 2-meter distance. Transcripts of the interview were kept by the researcher and only used for the article writing. The study was conducted following ethical approval from the Health Research Ethics Committee of UNISA number 1396/KEP-UNISA/IV/2021.

## 3. RESULTS AND DISCUSSION

The primary source from the 2-hours in-depth interview was coded using an abbreviation as Table 1 suggests. The participants in this study were stakeholders from the primary health care Banguntapan 2 facility, specifically those involved in the implementation of telemedicine services. The chief of primary health care, who is responsible for ensuring quality services for patients, actively sought ways to enhance the care provided by introducing telemedicine. The coordinator played a key role in designing and implementing the telemedicine system, ensuring its successful integration into the health care facility. On the other hand, the admin contributed a valuable data and insights regarding the technical aspects and practicality of the telemedicine system, addressing any issues that arise and providing necessary troubleshooting. During the interview the chief, coordinator, and admin actively contributing their expertise which made the data collected comprehensive and saturated, allowing for a thorough investigation into the practicality of telemedicine in Banguntapan 2 primary health care facility. Therefore, considering this specific role of each respondent it is not considered appropriate to put saturation as one method to assure the validity of the data.

Table 1. The primary source of interview

Code	Occupation
WP	Chief of primary health care
SM	Coordinator of individual health care services
ER	Admin of appointment service

The result of the interviews revealed four topics: i) the use of telemedicine in minimizing direct contact with the patient; ii) the need to expand the existing system; iii) the utilization of WhatsApp, a popular online platform in the community; and iv) the possibility to merge with the existing online system of national health insurance (JKN) and digital government service (DGS). The emergence of the highly infectious COVID-19 has been changing how people interact in daily life. To reduce, or even stop, the spreading of the virus several measures must be taken, especially containment or physical distancing. Consequently, various practices have shown success for those who have followed [11].

### 3.1. The use of telemedicine in minimizing direct contact with the patient

Primary health care Banguntapan 2 has developed an online appointment and telemedicine system aimed to minimize the exposure of the Primary health care' personnel to the patients. The appointment service seems to be effective in minimizing health care professionals with patients.

*“Actually, we already have an appointment system in place. Well, the appointment, you know. But it is only for certain services, such as referral services; we do also have for KIA program, immunization, family planning, all services that can be supported by appointment.” (SM, the coordinator)*

*“It's because we limit 20 pregnant mothers a day, preventing them from making a crowd, so it's only 20. Let's say we received 50 (appointments) on Monday; we will divide them into Tuesday, Wednesday, and then Thursday, with a maximum of 20 per day. We are yet to the consultation; no, we haven't done that; it's only for an appointment.” (WP)*

*“The difficulty is, you know, when it comes to going paperless, everyone still has doubts, like, I mean, the idea is that we should focus on screening and telemedicine..... I have a vision that we should integrate the screening process (of the appointments) and telemedicine. So, later on, when we have developed it, we can use electronic medical record (EMR) specifically for telemedicine consultations. But for now, let's stick to this approach until we have to change it.” (WP)*

The existing system was developed to prevent higher possibilities of exposure from patients in this pandemic era with conventional face-to-face visits. “Just to replace (the existing visits system) to prevent more people from making a crowd. it's just that simple,” said WP. Other adds “They only came to get the referral letter without any contact. Just got it and left. That's it” (SM).

In health care settings, the WHO has published updated guidance emphasizing the implementation of infection and prevention control (IPC), besides vaccination [12]. The use of appropriate PPE is essential in preventing infection. Thus, good knowledge of the adequate use of PPE is highly important in supporting the utilization of such measures [13]. It is very important to reduce the spread of any infectious diseases toward health care personnel by limiting contact with patients. Online appointments may serve as an alternative solution to the case as access to an internet connection improves [14]. Online appointments and telemedicine can be implemented due to the capability of current technology such as the internet and smartphone in their mature stage in supporting various use [11].

The implementation of telephone appointment has adequately addressed the patients' need during covid outbreak [15] as it enriches the options for the patients. Patients need to be served immediately and the telemedicine has helped to reduce the waiting time of patients [16]. Remote consultations also can reduce the risk of the covid for the pregnant women and reduce the waiting time by up to 33% [17]. However, some problems that need to be improved in conducting telemedicine are; technology literacy, internet connection, cultural acceptability, and trust [18].

### 3.2. The need to expand the existing system

Apart from the existing system, the administration has also been planning to expand into a more comprehensive system, from a direct individual department appointment system to a more integrated multi-department one.

*“But we want to expand (the service) to all people with certain ailments, such conditions which are not necessarily needed to deal (face-to-face) individually.” (SM)*

*“So I am imagining, if I go to the appointment channel, then I would be connected to the doctor right, it's what is supposed to happen, and he or she would respond right away which was not entirely true because maybe he or she still had a patient on the other end.. so, it would be like when we were in a queue, waiting for my turn in line 1, it's just that I could feel being in virtual reality.” (WP)*

The need to expand the service is based on the response from the community in trying to get the service they needed.

*“It would be better like a screening process... like... the main reservation is until 11 AM but for the appointment is different, until 7 PM, which is not what I wanted, you see... it has to have the right schedule, the work schedule, but, you know... sometimes people just called in until 9 PM.” (WP)*

The community is not aware of the boundary or limitations of the current system and thinks that they are supposed to be served as they wanted to be served.

*“I already replied to it through the business account, and they kept pinging me, until 2 in the morning.” (Er)*

*“By the time I turned my phone on in the morning, they got furious. Why didn't you answer me? And you call it a call centre. If they couldn't get through the appointment channel, they tried the call centre.” (Er)*

The assessment also reveals that this early adoption of telemedicine needs a standard operational procedure to inform the patient how to use the service and to make sure the service given satisfies certain standards. The use of appointments in health care facilities has been implemented in various settings. Factors related to the success of the program range from patients, physicians, and systems [12]. Patients would consider the waiting time essential in achieving customer satisfaction [19]. The sooner patients get the service is correlated with the higher the satisfaction rate. Appointment access is regarded as one strategy to be implemented to reduce waiting time as well as reduce the crowds and guarantee the time slot [20]. Enhancing patient satisfaction can be achieved not only by reducing actual wait times but also by improving the interactions and responsiveness of medical staff, which can effectively shorten perceived wait times [21]. The overload and changing of physicians' utilization will affect the level of satisfaction among the patients.

There are ways health professionals do to improve the waiting time of patients using telemedicine, first is to improve the internet and network system as the lack of it hinders the staff adoption of the telemedicine system [22]. Second, the health care professional should adapt to the technology-driven innovation as the government needs to prepare training for a health care worker to efficiently deliver telemedicine services in different settings [23]. Other ways to improve the waiting list are integrating chatbot and real-time scheduler in telemedicine [24], [25]. The rise in online consultations effectively addressed the surge in demand for essential clinical services while simultaneously alleviating the burden on hospital admissions. Consequently, this approach contributed to a reduction in the potential transmission of COVID-19 within the major tertiary hospital and preserved vital resources for managing acute crises [26]. With the launching of mobile JKN, people have access not only to information on health promotion but also to finding and choosing their primary health care provider as well as consulting with their general practitioner.

### **3.3. The utilization of WhatsApp, a popular online platform in the community**

Whatsapp is a very popular application among Indonesian people. It can be used as an individual communication channel or as a group. Primary health care Banguntapan 2 has been using Whatsapp before the pandemic COVID-19 to establish communication in other programs. Indeed, the need to build an online appointment system has emerged as a necessity in this pandemic era, and Whatsapp is considered the best platform considering its popularity.

*“They use Whatsapp, so they send Whatsapp 2 days before they send Whatsapp to the health centre to tell them what they need.” (SM)*

*“This is what brings Whatsapp to make an appointment, sis, if the patient is going to make a reservation, they must send Whatsapp, after sending Whatsapp, what to do next, the assessment must be direct or can we serve online?” (WP)*

People are keener to use Whatsapp since most of them have it already on their smartphone which they also feel is sufficient in accessing the health care service, so far. Therefore, when there is a need to use the online system from the JKN (the existing national insurance system). They are quite reluctant due to the need to get acquainted with the newer system.

*“So, for this telemedicine program from JKN, people have to install a new application, which they don't like.. no.. then, they will go back to Whatsapp. That's why when they (JKN) ran an evaluation, they thought we didn't use the online application. But, it's because the people don't like it, see.” (WP)*

*“So here's the thing, sir, if people want to use telemedicine, they have to install the app, but people don't like it, you know. In the end, they prefer to use WhatsApp, right? So, we evaluated it, but the app didn't work, well, because people don't like using apps like that, you know. So, in the end, we tried to include it, like if someone sends a WhatsApp message for an appointment, we wanted to consider it as an online service that uses the app, but it didn't work because people didn't click on the mobile option. So, we ended up including it in our appointment service,..., but the app just didn't work, you know.” (WP)*

The study also found the need to utilize the digital platform that most people are already familiar with to enhance the online application system. WhatsApp is considered the most usable messenger application among the people in the study settings, it is also one of the most used social media platforms in the world. In January 2023, Indonesian Android users spent an average of 29 hours and six minutes per month on Whatsapp, demonstrating its significant usage. Furthermore, in 2022, the number of Whatsapp users in Indonesia reached approximately 120.35 million, indicating its widespread popularity in the country [27].

With its recent development and flexibility, WhatsApp can be used for various purposes. In health care settings, WhatsApp has been used by patients to communicate with physicians to consult or send images before doing face-to-face consultations. The use of WhatsApp consultation could minimize the contact of patients thus limiting the risk of COVID-19 transmission [28]. It also helped efficiency as the patient does not need to visit the clinic [29] and increases adherence to medication [30]. Physicians also use it for their personal as well as professional purposes as it improves interprofessional communication between physicians in the medical field [31], [32]. However, there is a concern for safety and security that may involve regard to patients' confidentiality [33].

### **3.4. Possibility to merge with the existing online system of JKN and DGS**

There are several problems faced when primary care does not have a database integrated with the population data, one of them is the inability to check where patients live. As primary care focuses on regional service, they can only serve the patient within their region. The integrated data also could be used to minimize the confusion of patient data. When it should be clear the patient belongs to a specific clinic.

*“There was this person and I also asked what her date of birth was after it answered it turned out to be my old community health centre, where is the house, (she said) Jetis, ho hoo, this is not my (clinic) resident.” (WP)*

The integrated health data in Indonesia is dealt with by JKN. In the existence of JKN, all primary health care have to install and use the system of p-care which is an online registration and referral system, however, not completed with the pharmaceutical management system. Therefore, each primary health care has its internal information management system which is a fully integrated system from registration to medication administration process. Fortunately, the JKN system has been able to establish a bridging process between those systems, which is very beneficial for the primary health care in terms of time and human resources efficiency. However, if there is an additional program that is required to be merged with the current system, it should be done with support from the regional office.

*“I have had said, when I told the same (to merge additional information system) to the related section, I said I want to change this, so the term if for example there is an additional link to DGS, it means that we will go to the sub-district to ask for this permission too.” (WP)*

*"In the DGS, it's possible (to pull-up the EMR data), but there's no written record in the medical record (EMR) like that. So, for example, I'm an existing patient, usually I come directly (to the doctor), because here was already exist a telemedicine service, so when I had my 10th check-up, there was no written record in my medical record, but it's recorded in the DGS."* (WP)

With its capability to serve the required data from the demography, it's necessary to have integrated data for the government. There are requirements for implementing integrated data such as restructuring the organization and mechanism of health care, including increasing professional medical education, technology transfer, and quality assurance [34]. Furthermore, integrated telemedicine would improve the service as a whole in terms of increasing the efficiency of the service [35].

Lean management of hospital including a digital booking offers an effort to reduce waiting time by eliminating time wastage and reducing time for patient care support activities [36]. Digitalization of health service in Indonesia has the opportunity to support continuity of care through interoperable system [37]. The development of digital health service in Indonesia shows some degree of alignment of findable, accessible, interoperable and reusable (FAIR) guidelines [38]. Some issues regarding the new digital health application are data security, data protection, integration, infrastructure, usability and usefulness [39]. The limitation of the study, however, the authors did not involve the patient to confirm their satisfaction to support the acceptance of the system among the health care practitioners. Future research could involve the patient's perception to confirm the satisfaction of the use of telehealth.

#### 4. CONCLUSION

This study shows an initial need to implement and improve the practice of a telemedicine program in primary health care Banguntapan 2 during the COVID-19 pandemic era. The interviews identified four topics: i) telemedicine for minimizing direct patient contact; ii) expanding the current system; iii) utilizing WhatsApp as a popular platform; and iv) the potential integration with JKN and DGS online systems. The initial online appointment has been in place in primary health care Banguntapan 2. However, with the increased needs of the community and the increasing prevalence of COVID-19, the appointment system needs improvement. Therefore, there is an urge to develop the existing system. The improvement of the system includes utilizing an existing online messenger application, and the ability to merge the existing system of JKN and DGS. Following the needs assessment, the subsequent course of action in the research process is to put the idea into action by implementing it.

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