



Essential Communication Aspects in Telemedicine: Opportunities to Strengthen Digital Health Services in Indonesia Post-Pandemic Era

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Abstract:

This study reveals essential aspects of communication done by medical practitioners through telemedicine during the Covid-19 pandemic and their relation to increasing the quality of telemedicine services in Indonesia post-pandemic. The study used a qualitative approach with 22 doctors participating in the Bandung City area, Indonesia. Data collection uses semi-structured interviews, which are then analyzed thematically to reveal essential aspects of communication through telemedicine. The results of the analysis consist of several things, namely: (1) personal aspects; including knowledge, psychological conditions, and socio-cultural background (2) process aspects; including interactivity, time context, spatial context, and sensory context; and also (3) technical aspects covering information systems, quality of communication media, availability of health technology, and work coordination systems. Each aspect relates to instrumental and socioemotional information that plays a role in medical decision-making. The results also suggest that to support the usage of telemedicine services, the literacy of its users needs to enhance. Sensitivity to psychological and socio-cultural variations is also required to communicate effectively through telemedicine. Strengthening the technical aspect of telemedicine services, such as integrating information systems, increasing communication media quality, and providing access to health technology instruments, is also essential to improve the completeness and clarity of information, doctor-patient relationships, and confidence that meet the expectations of all of the users in telemedicine services.

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1. Introduction

The latest data in August 2022 shows that Indonesia recorded 6.2 million infected with 157,000 deaths(WHO, 2022). West Java is one of the epicenters of the spread of Covid-19 in Indonesia, with a total of 18.3%, the second most significant case in Indonesia after the capital city of Jakarta(Satuan Tugas Penanganan Covid-19, 2021). There are four super spreader clusters in the West Java region, including Bandung, which later became carriers to other areas in Indonesia(Vermonte & Wicaksono, 2020).One of the parties directly affected by the pandemic is health workers. Indonesia recorded the highest death rate for health workers in Asia(BBC News, 2021; Sulistyawati & Saputri, 2021). As of August 22, 2022, 2087 Indonesian health workers died; the highest were doctors and as many as 751 people(Lubabah, 2022; Pusara Digital Tenaga Kesehatan, 2022). West Java is the second highest region in Indonesia regarding the death rate of health workers in handling Covid-19(Pusara Digital Tenaga Kesehatan, 2022).

The Indonesian government seeks to minimize the impact of the Covid-19 virus transmission and ensure that health services continue to run by encouraging the use of health services remotely through the assistance of technological devices(KemenKes RI, 2020). Through the Ministry of Health, the government issued a policy later strengthened by the Medical Council (Konsil Kedokteran Indonesia, 2020)regarding the use of telemedicine in health services in Indonesia during the pandemic. Telemedicine services are one of the solutions carried out by healthcare facilities in Indonesia to overcome the impact of the pandemic(Wulandari, 2022).During restrictions on people's

activities and mobility, telemedicine services usage in Indonesia has increased(Amalia, 2022). Based on data, telemedicine services provided by the Covid-19 Task Force reached 300 thousand users in April 2020, while people who had access to other telemedicine services in Indonesia are estimated to be up to 15 million(Republika, 2020).

Telemedicine changes the situation of medical meetings between doctors and patients from face-to-face encounters to remotely done with the assistance of communication media technology. Questions arise regarding the extent to which the role of the media in mediating the communication process can have a particular impact on the service itself. Medium has a role in and influences communication events. Media features determine the ability of the media to support information transmission and information processing that can determine the outcome of communication(Dennis, Fuller, & Valacich, 2008; Yan, Tan, Jia, & Akram, 2020). New media capabilities can have a better health impact through customization, contextuality, interactivity, and multimedia (Neuhauser & Kreps, 2003).Remote technology implementation in healthcare affects situations and communication processes between doctors and patients(Hammersley et al., 2019; Stommel, van Goor, & Stommel, 2020; Tates, Antheunis, Kanters, Nieboer, & Gerritse, 2017).

The communication process changes in a medical meeting undoubtedly implicate health efforts. Communication efforts are inseparable from the whole process of treatment and care experienced by doctors and patients. Communication

between doctors and patients is vital in health care (Ha & Longnecker, 2010; Matusitz & Spear, 2014). Communication goals between doctors and patients consist of creating good interpersonal relationships, exchanging information, and making decisions regarding treatment and care (Bredart, Bouleuc, & Dolbeault, 2005; Goold & Lipkin, 1999; Ong, de Haes, Hoos, & Lammes, 1995; Travaline, Ruchinkas, & D'Alonzo, 2005). Effective communication between doctors and patients is an essential part of efforts to improve the health status of patients (Maguire, 2002; Street, Makoul, Arora, & Epstein, 2009). A multidimensional approach is needed for telemedicine to provide optimal benefits (Whitten & Sypher, 2006). Telemedicine must also include communicative aspects for its future development (Breen & Matusitz, 2010).

Research that explores and examines further related aspects of communication in telemedicine, especially in Indonesia, has not been widely carried out. The condition of long-distance health services, with their complexity, certainly raises important questions about how the communication process occurs in situations mediated by technology, which is not the same as in face-to-face communication situations. This study explored the essential communication aspects of telemedicine and how these aspects are related to efforts to increase telemedicine and digital health services in post-pandemic Indonesia.

2. Literature Review

2.1. *Communication as an essential part of medical meetings*

Good communication between doctors and patients can increase mental satisfaction and cooperation, reduce the probability of malpractice cases, and

positively contribute to efforts to improve the patient's health status (Street et al., 2009). Communication bridges the exchange of relevant health information for doctors and patients to identify, avoid, and deal with health threats (Kreps, 2003). Efforts to build a shared understanding of the meaning of messages exchanged cannot be separated from communication (Ge Gao, Burke, Somkin, & Pasick, 2009), creating relationships and trust, and building consensus between doctors and patients regarding medical decisions and actions to be taken. (White & Preda, 2021).

There are two types of interactions in medical encounters, namely the cure system that captures instrumental behavioral information and focuses on task and problem solving, and the care system that measures affective or socioemotional behavior that places the patient as an individual rather than as a case (Bensing, 1991; Ong et al., 1995). Both systems reflect the patient's need for recovery and treatment expectations when utilizing health services.

Communication events at medical meetings can not only be seen in the flow of information exchange but need to see the communication behavior that occurs (Burgoon et al., 1987). Roter and Hall (Ong et al., 1995) stated that conversation is the main ingredient or fundamental instrument in medical care, where the doctor-patient establishes a relationship and achieves therapeutic goals. Establishing relational communication to create a good relationship with the patient is very important. Because it becomes a conduit through which information is gathered for diagnosis, designing a treatment plan, and agreement to reach activation and

support for the patient's healing.(Goold & Lipkin, 1999).

The medical decision-making process is closely related to the relationship between doctors and patients.The doctor-patient relationship tends to have an asymmetrical relationship(Beisecker, 1990). The doctor has more legitimate power than the patient, even though doctors and patients try to harmonize relationships to avoid conflict and fulfill mutual expectations through sharing shared roles agreed upon by each party. Not achieving a familiar role in this alignment effort often leads to communication failures. The imbalance in this relationship is closely related to the various contexts attached to the communication actors, such as cultural background, psychological conditions, education, and the situation where the communication event occurred.

To explain doctor-patient communication, we need to consider several variables. First, the background variable consists of cultural variations, the type of doctor-patient relationship, the characteristics of the doctor and patient, to the type of disease suffered by the patient. Second, the process variable refers to the content of communication between doctors and patients, communicative behavior between instrumental behavior, and socio-emotional behavior(Ong et al., 1995). The same opinion was conveyed by(Beisecker, 1990; Chandra & Mohammadnezhad, 2021; Street et al., 2009)that doctors' and patients' socio-demographic characteristics, attitudes, and situational factors can influence their interactions with each other.

Communicative behavior, including the doctor's communication style, is also essential to look up to(Ge Gao et al., 2009; Matusitz & Spear, 2015; Street,

Gordon, & Haidet, 2007). Communication style is one of the influential aspects in creating an open and trust-based relationship. Culture can also give different values to the doctor-patient relationship based on different expectations(Chandra & Mohammadnezhad, 2021; Claramita, Nugraheni, van Dalen, & van der Vleuten, 2013; Matusitz & Spear, 2015; Mulyana, Dida, Suminar, & Indriani, 2019; Osei-Frimpong & Owusu-Frimpong, 2017). Differences between medical language and everyday language used by doctors and patients also can be an obstacle in building a common perception of messages(Chandra & Mohammadnezhad, 2021; Ong et al., 1995), including cultural differences in language in a multicultural society such as Indonesia that allows for barriers in communication (Ge Gao et al., 2009; Mulyana et al., 2019).

Communication between doctors and patients is crucial for successful healthcare services (Matusitz & Spear, 2014).Doctors with better communication and interpersonal skills will be able to detect problems early, can prevent medical crises and expensive costs, and can provide more support to patients(Ha & Longnecker, 2010; King & Hoppe, 2013)The ability of doctors to explore and facilitate a consultation can helps patients better express information, including their concerns(Claramita, Susilo, Kharismayekti, Dalen, & Vleuten, 2013).The views described above have shown how communication between doctors and patients is essential for medical encounters. Our efforts to examine aspects of communication through telemedicine include the characteristics of communicators, message processing, and the role of technology that mediates them.

2.2. *Technology-mediated communication in telemedicine services*

Telemedicine can be described as using telecommunications in health services that enable providers and patients to conduct consultations despite experiencing distance separation and unequal distribution of resources in health services (Miller, 2002). WHO defines telemedicine as a form of using information and communication technology, where distance is an important consideration, by professionals in health services to exchange valid information related to efforts to diagnose, treat, and prevent disease and injury, including use in research, evaluation, and education of health service providers, as well as aimed at improving the health of both individuals and communities (Shirzadfar, 2017).

Telemedicine can be distinguished based on the type of information, namely real-time or synchronous and prerecorded/store and forward or asynchronous (Craig & Petterson, 2005), based on the type or format, namely data, text, audio, image, and video (Catapan & Calvo, 2020), and based on the interaction of participants in it such as doctors, patients-doctors, patients-nurses, and patients-pharmacist (Herring, 2005). Communication behavior is an essential determinant of health outcomes, and changes in how doctors and patients communicate with each other through telemedicine can influence the outcomes of the service itself (Miller, 2003). User characteristics and the context of medical encounters will influence the nature and content of physician-patient communication, including technical and interpersonal aspects of the media that

may influence their behavior in medical encounters.

Computer-Mediated Communication (CMC) is a system that uses computers to organize and process information and uses telecommunications networks to facilitate its exchange (Rice, 1987). CMC can be viewed as another form of medium-mediated communication, especially on the internet and computers, which have social and technological features that can change the dynamics of communication itself (Walther, 2009). The user's position as a human being is consciously involved in exchanging messages or mediated communication, so the user has human symbolic abilities in the interactions facilitated by the technology (Spitzberg, 2006).

The role of the media in communication cannot be seen as limited to transmitting messages. Functional and social factors of the medium become essential aspects to consider (Walther, 1992). Its role in communication events cannot be separated from the interpersonal situations that are present in it, a complexity that has a particular impact on the behavior of its users, such as maintaining self-image, building relationships, completing tasks, including in the decision-making process (Cathcart & Gumpert, 1983). The adaptation process in telemedicine cannot be separated from the characteristics of the medium used (Catapan & Calvo, 2020). The ability to adapt the characteristics of this medium is also related to the processing of information needed to form impressions and build relationships through communication (Walther, 1992).

CMC is often associated with the problem of reducing signs in communication, primarily nonverbal cues. Media

perfection emphasizes the medium or technology's ability to process and deliver information, especially in overcoming the uncertainty and ambiguity of information in certain communication media (Daft & Lengel, 1986). Different view conveyed by (Ramirez, Walther, Burgoon, & Sunnafrank, 2002) complements the understanding related to media relations in the communication process that although the ability of the media to influence ongoing communication is not limiting, individuals can use specific cognitive strategies and communicative behavior to deal with various situations media limitations.

The information search process can be viewed as goal-driven and complex, allowing communicators to develop new and unique ways of communicating through certain media (Ramirez et al., 2002). Using verbal and paralanguage is one of the efforts to overcome the limitations of nonverbal cues in CMC, thus enabling relational communication (Tates et al., 2017; Walther, 2009). Parties involved in mediated communication can adapt to overcome the limitations of cues to express personal and social meaning in mediated communication (Herring, 2005; Rice, 1987; Walther, 1992). The interpretation of the information received by both parties cannot be separated from the values (Yan et al., 2020), owned by doctors and patients and the inherent cultural background (Helou et al., 2022). Medical encounters are often temporal or even singular, implying that in short sessions, there is a risk of decreased socio-emotional aspects and empathic relationships. A good understanding of the reduced characteristics of nonverbal cues can be balanced with behavioral communication strategies that can compensate for the filtering

effect (Grondin, Lomanowska, & Jackson, 2019). The time dimension in communicating and previous communication experiences help build relationships in communication mediated through telemedicine (Burgoon et al., 1987; Tachakra & Rajani, 2002). The increased availability and accessibility of using CMC can encourage trust in the doctor-patient relationship so that, to some extent, aspects of building relationships can be carried out via CMC (Lee & Zuercher, 2017). The level of trust between the sender and the recipient of the message also affects the level of compliance, and finally, a strong bond between communicators can affect the final behavior of the communication carried out (Wilson & Djamasbi, 2022).

The non-physical situation in telemedicine reduces sensory information such as touch, smell, and hearing, which can reduce doctors' ability to make diagnoses and reduce confidence in the diagnosis. Lack of sensory aspects and separation of physical and social distance in the doctor-patient relationship can affect the emotional and psychological bond between doctors and patients. This effect is mainly related to the quality of tone of voice, eye contact, gaze, posture, facial expressions, gestures, and other nonverbals that modify the meaning of verbal utterances (Miller, 2003).

The self-efficacy gap often arises related to views that position higher communication skills in face-to-face situations than in virtual situations and the ability to obtain information through physical examinations that can only appear in face-to-face settings (Rikhy, Dela Cruz, Rattan, Bibi, & Rangrej, 2022). Medium has a particular role and influence in communication behavior and interpersonal relationships so it has

important implications that specific skills are needed regarding the message, medium, and context in conducting mediated communication (Coleman, 2020; Lupton & Maslen, 2017; Spitzberg, 2006). Based on the views expressed above, telemedicine requires ongoing communication between doctors and patients. The presence of media and technology with its characteristics can impact its communication behavior.

3. Methods

The study uses a qualitative approach to explore and understand the meaning conveyed by the participants so that it can provide a complex picture related to essential aspects of communication through telemedicine (Creswell, 2016). Exploration of what, why, and how questions of a communication event carried out by doctors during medical meetings mediated through telemedicine led to the method used in this research, which is case studies. According to (Yin, 2018), the case study research method is the right strategy to be used in research that uses how or why research questions, the studied events limit the researcher to control time, and the focus of the research is to track contemporary events. The case study method can provide analysis either at the individual, incident, or group level. The method suits to unveil a deep understanding of the situation and its meaning

Based on the purpose of the study, we collected data from doctors who performed telemedicine services during the pandemic in Bandung and were willing to be involved in the research. Data collection was carried out purposively and using a snowball technique until achieved data saturation. This study involved 22 medical

practitioners consisting of 4 specialists, five dentists, and 13 general practitioners who work in health care facilities in the Bandung city area. Specialist doctors include internists, dermatologists, ophthalmologists, and pediatricians. Participants' age range from 27-50 years, with an average work experience of more than five years. Four doctors are male, and the rest are female, with Sundanese, Manadonese, Javanese, Minangkabau, and Batak ethnic backgrounds. All informants perform telemedicine services during the pandemic.

Data collection used semi-structured interviews to achieve consistency; the interview took more than once. On average, interviews took time around 30-90 minutes which take place in the clinic. Because of the pandemic, we were also using online teleconference for the interview to minimize the risk of transmission. The data collection process started in September 2021 and continued until February 2022. The interview transcripts were also transcribed automatically by using NVivo12 to minimize any potential bias due to personal sense of judgment. The interview data were then analyzed thematically, related to the purpose of communication in medical meetings, by paying attention to aspects that emerged situationally and contextually in communication through telemedicine.

4. Result & Discussion

Based on the analysis of the interviews data, several themes emerged related to essential aspects that need to be considered in communication through telemedicine as follows:

4.1 Knowledge, psychological condition, and socio-cultural background

Knowledge

Patients have different abilities in conveying information to doctors. Doctor informants said that there were patients who could communicate and convey the information needed by doctors through anamnesis, but some others had problems conveying the intended message. Patients have different levels of knowledge from doctors in understanding symptoms and diseases (Lee & Zuercher, 2017). Aj, a general practitioner, explained how the patient's complaints of shortness of breath could not provide clarity in distinguishing shortness of breath from the lung or shortness of breath from increased stomach acid. Pra, an ophthalmologist, had a similar situation when she had difficulty understanding the opaque terms conveyed by his patient. Another doctor stated as follows:

The patient said, "it is getting better, doctor," but when I saw it during the control check, it was not getting better...so sometimes our perception is different from the patient's perception (HEP, dermatologist)

Several doctors conveyed that the patient's communication media ability was also different. MKI, a dentist, said that taking pictures through the camera of elderly patients is also not necessarily sufficient because the method is incorrect. In contrast MP, a general practitioner, and An, a dentist, stated how "millennial patients" tend to respond quickly and use media features such as voice notes to facilitate communication. Differences in expressing feelings, experiences, and information related to illness conditions through spoken language can be an obstacle when conveyed in written or verbal form by some elderly patients, as stated below:

When we talk to elderly patients, sometimes we ask about A, and the answer is ABCD. To convey verbal language in writing language sometimes can be different, so when the patient wants to say something, the typing word can be different. (AK, general practitioner)

The issue of health technology literacy also arises based on interview data. The situation relates because doctors delegate their sensory-based assessments to patients due to non-physical situations in telemedicine. DP, a general practitioner, stated that patients do not necessarily understand how to use medical devices such as sphygmomanometers and thermometers. Knowledge relates to the patient's ability to convey and interpret the information exchanged in a medical meeting with a doctor. Good health literacy facilitates the exchange of information needed by doctors, improves the quality of communication, and plays a role in decision-making (Altin & Stock, 2016). The results also show that technological literacy related to communication media features and health technology is needed to overcome distance situations in telemedicine. The use of digital health media and technology requires sufficient knowledge and expertise for its users (Malhotra, Ramachandran, Chauhan, Soni, & Garg, 2020).

Psychological conditions

The exchange of information between doctors and patients cannot be separated from the psychological condition patients experience when they are sick. LV, a general practitioner, conveyed how the pandemic caused many patients to feel anxious. Patients also have different orientations when conducting medical meetings; as stated by YPS, a general

practitioner, some patients want their symptoms to disappear immediately, but some want to cure the cause of their illness. We also revealed in this study that psychological conditions experienced by doctors related to communication breakdowns or lack of feedback from patients, including fatigue due to excessive workload and the risk of misdiagnosis, as follows:

...actually, what I was afraid of was that I had a misdiagnosed. It feels like a psychological burden (Aj, general practitioner)

We have chatted, but he is the one who does not reply, then he gets angry... doesn't it feel like the doctor is in the wrong... even though we are there to help (D, general practitioner)

Once, I had 60 up to 70 patients a day...it felt like throwing up (AW, general practitioner)

Besides the patient's side, the doctor's psychological condition must also be noted. The burnout situation experienced by a doctor can also affect the outcome of a medical appointment. The situation of patients experiencing pain and anxiety has situational consequences in a medical meeting, one of which is related to building trust (Lei et al., 2021). Doctors need to consider various psychological conditions in medical meetings to meet expectations and satisfaction (Holmström, Nokkoudenmäki, Zukancic, & Sundler, 2016).

Socio-cultural setting

Social status, gender, and language differences were some of the things that emerged, as stated by the doctor's informants. The relationship between doctors and patients cannot be separated from the socio-cultural background (Ge Gao et al., 2009; Mulyana et al., 2019). AAP, a young general practitioner, finds it

challenging to deal with close-minded patients and doubts his abilities because her patient has a high social status and is far older than herself.

Medical encounters involving different sexes are also one of the exciting findings in this study, where Indonesia, as a Muslim-majority country, is bound by the values that govern the appropriateness of the interaction. The difference in values attached to doctors and patients can provide contextuality in the relationship at a medical meeting (Alam, Banwell, Olsen, & Lokuge, 2019; Ge Gao et al., 2009). As stated by a general practitioner as follows: :

It is challenging to communicate with the opposite sex as a female doctor; when dealing with male patients, maybe we are also limited. It is different when interacting with fellow women or mothers because joking is okay... it is impossible if we are of different sexes. We communicate in more formal talks because there is a limit (M, general practitioner)

In different case, relationships that take place between patients and doctors of different sexes have the potential to create uncomfortable situations, as stated by An, a dentist who explained how one of his young patients misinterpreted his form of empathic communication as a form of caring that had different meanings. Technologically mediated encounters can confound the reality environment and give rise to inappropriate behaviors related to relative anonymity in mediated communication (Walther, 2009; Yan et al., 2020).

Indonesia has various ethnic groups and regional languages. Each cultural background has terms not commonly used in medical terms to describe a

disease or symptom(Mulyana et al., 2019). Terms such as "masuk angin" and "angin duduk" are often heard by a general practitioner DP. He needs to equate the perception according to the language commonly used by the patient in everyday life in order to be able to understand the meaning of the patient's story about the symptoms he feels.

The paternal relationship between doctor and patient is a doctor-patient relationship with the characteristics of one-way communication, which is also often found in Indonesia(Claramita, Nugraheni, et al., 2013).Previous studies have shown telemedicine encourages patients to be more active(Oh & Lee, 2012; Tates et al., 2017). We found evidence that telemedicine encourages doctors and patients to have active conversations. This increase in participation is inseparable from telemedicine, which prioritizes subjective assessments derived from anamnesis with patients. These findings align with research conducted by(Miller, 2002), explaining that the participation of both parties tends to increase due to the absence of physical examinations in telemedicine. One doctor states that patients tend to be more daring to ask and disclose information regarding changes in patient attitudes when telemedicine.

Patients who are passive during telemedicine become more courageous and involved in the conversation, maybe because they do not meet face-to-face, do not hesitate to ask questions, and are not shy because they do not see the doctor. If patients are already active, they stay active (An, dentist)

(Chen, Zhang, & Hou, 2022) argue that patient intention to carry out technology-mediated communication relates to their

previous communication experience. Patients who experience anxiety in communicating face-to-face tend to be more open when communicating online.

4.2 *Interactivity, time, spatial, and sensory context*

Interactivity

Interactivity is closely related to the level of response in a conversation(Burgoon et al., 1987; Spitzberg, 2006). Response delay is one of the problems in telemedicine, especially when using asynchronous media such as instant messaging applications. DP, a general practitioner, explained that the use of WhatsApp causes delays in conversations related to the time it takes to type a reply. Delays can also occur related to whether or not the focus of the doctor and patient during a medical meeting, as revealed by the following doctor:

There is a distraction from the patient's side, I often get patients using telemedicine services while they are working. (LS-general practitioner)

The focus between the two parties in telemedicine can sometimes become unbalanced. Sometimes patients make contact with doctors during their working time or vice versa, where doctors respond to conversations in telemedicine when they are overwhelmed with patients in face-to-face practice. The difference in the situation between telemedicine and face-to-face communication opens up space for the norms and appropriateness of communication behavior where standard behavior needs to be considered(Miller, 2002). Doctors and patients must agree on the time and procedure for conducting consultations to achieve reciprocity or balance between doctors and patients in medical meetings. Immediacy is closely related to the parties' interaction, which can reduce

physical distance and those who attend via telemedicine(Lee & Zuercher, 2017). Interactivity in telemedicine is vital to maintain the flow and flow of message exchange. Loss of real-time information exchange can hinder efforts to collect the required information.(Brossman, Barnes, Stern, & Westergren, 2022).

Whatever it is, not only telemedicine, we still have to tune in...must be reciprocal to both parties, must be active and attentive (DDS,general practitioner)

Time context

Time flexibility is one of the advantages of telemedicine. Doctors' limited resources often cause time in a medical meeting to be short(Lee & Zuercher, 2017). Telemedicine allows doctors and patients to meet more flexibly so that the consultation time can last relatively longer.

...actually, we initially set aside about an hour for six patients, but because sometimes there are patients who feel unfinished, it can take more than an hour to continue the chat...(DP, general practitioner)

The time available for having a longer conversation is compensation related to efforts to build socio-emotional relationships between doctors and patients through telemedicine which is constrained by limited nonverbal communication such as mimics, gestures, touch, and others (Grondin et al., 2019). However, we found that lower response rates also resulted in longer telemedicine times; the waiting time for a response is often longer than the conversation itself. One of the causes of delayed response by doctors is due to poor time management due to excessive workload, as stated below:

During Covid, there were a lot of incoming chat messages, not just one or

two people, a lot. We usually reply to the messages from the bottom first. So we do not know how long the patient has sent the message, so it is not real-time. (YPS, general practitioner)

Although, on the one hand, the use of technology in doctor and patient consultations allows increased accessibility, this convenience has the potential to increase the workload, which in the end has implications for time management and the quality of information exchange in a medical meeting (Yan et al., 2020).

Spatial Context

Layanan telemedicine memungkinkan dokter dan pasien melakukan pertemuan medis di luar batasan ruang praktek. Perubahan ini memungkinkan suasana yang lebih leluasa, sebagaimana disampaikan oleh dokter :

Because when the patients meet face-to-face, they see that there are still many other patients in the waiting room and feel uncomfortable. It is different when chatting because it is not visible. They feel more liberty than in a face-to-face meeting. (MP, general practitioner)

Aside from the positive impact, problems can also arise because of cyberspace's limited field of vision. This situation was conveyed by one doctor as follows:

There is a scene that is cut off... if we see face to face we can see the whole body, how are the movements? is there any anxiety? We can see if there is something he has not told us yet. However, if looking look at the virtual we can only see the patient's head. (AAP, general practitioner)

Presence in cyberspace requires understanding from users and ensuring the quality of media that can provide an interactive and lucid sensory environment. It also requires prerequisites that pay attention to

psychological aspects and communication skills, including building participation and empathetic relationships (Sävenstedt, Zingmark, & Sandman, 2004). Flexibility in telemedicine can also improve the work-life balance for physicians (DePuccio, Gaughan, Shiu-Yee, & McAlearney, 2022).

Sensory Context

Physical examination becomes a tool for the doctor's objective assessment of the patient's physical condition, which involves all sensory elements ranging from touch, hearing, smell, and sight. Telemedicine still has limitations for doctors in collecting sensory data, usually done during face-to-face meetings, so patients must do it independently and report the sensory data to doctors.

We do not just listen to complaints. We need to see, hear, and even touch it. Telemedicine lack this ability. For example, we see a skin lesion perpendicular from above, not necessarily the same as from the side, so we lose the ability to see from different angles. (HEP, dermatologist)

The role of the patient as an extension of the doctor certainly cannot be equated with the doctor's ability as an expert; however, the doctor can direct the patient to collect sensory data (Lupton & Maslen, 2017). This sensory limitation is closely related to the doctor's confidence in making a diagnosis (Rikhy et al., 2022).

4.3 Information system, media communication, health technology and work coordination

Integrated information system

When conducting an examination, the doctor requires a history of the patient's medical information and then performs a medical record after conducting a medical examination with the patient. One of the challenges in telemedicine services is integrating patient medical information,

usually contained in clinical information systems. An integrated information system that can be accessed anytime, anywhere, is not necessarily owned by all health care facilities. This situation can complicate the remote examination process, as stated by several doctors as follows:

Because medical records can only be accessed by doctors or health workers when they are at the clinic, when doing telemedicine at home, sometimes forget not to include it, or when patient data is incomplete which can also be a problem. (DP, general practitioner)

We are still building our own system, but there are still limitations in accessing and entering data, so it is still a bit of a hassle. (DDS, general practitioner)

The quality of data, information systems, and information produced is related to the use and satisfaction of its users (Hu, 2003). The integrated medical information system makes it easier for doctors to input patient data and access the required medical history, thus completing and clarifying the information needed to make a medical decision.

Availability of health technology

The limitation of doctors in conducting physical assessments or clinical examinations then positions patients as agents to capture sensory information and convey it to doctors, either with the help of medical technology tools or using other assistive media. Patients who carry out the process independently in conveying information on physical complaints and vital data often face obstacles in supporting equipment, including sufficient knowledge (DePuccio et al., 2022). Here are some explanations from doctors regarding the use of health technology in telemedicine:

When the covid situation is at its peak, and the availability of equipment is limited, they don't have a saturation device at home or a temperature measuring device, so they panic when chatting on telemedicine; rather than delaying it, it's better to be referred immediately (Aj, general practitioner)

To mention cornea or conjunctiva alone, the patient is sometimes incorrect; if the inflammation is in the black cornea and the inflammation is in the white part, the treatment is different. An eye case is still complex unless a precise tool can replace the objective examination earlier. (Pr, ophthalmologist)

Quality of communication media

Telemedicine takes place mediated by communication media. To achieve good information exchange, the quality of the media used also plays an important role. Media impacts the communicative behavior of its users (Dennis et al., 2008; Helou et al., 2022; Tates et al., 2017; Yan et al., 2020). The interview results show how the bandwidth and quality of the devices used can impact the exchange of information between doctors and patients.

If there is signal interference or when the gadget has an error, the consultation will be disrupted. (Mar, general practitioner). Patients are sometimes obstructed from using their gadgets, or opening their cellphones, maybe even because their signal quality can only reach the registration stage. Sometimes there are problems with the microphone not turning on, or the video does not work. So we have to find a way to connect doctors and patients, and that will take time. (AAP, general practitioner)

Although the quality of images, audio, and videos produced through media is significant, when problems arise, doctors

and patients can still find alternative solutions (Johansson, Lindberg, & Söderberg, 2017).

Work coordination system

Health services involve the collaboration of several sections in health care facilities, involving the registration administration, doctors, nurses, to pharmacy installations, to carry out services properly, so all parties in telemedicine services need to coordinate effectively. Constraints often arise related to the work coordination system that is not meet the needs of the patient. Some doctors conveyed :

There are new patients and old patients in this telemedicine. For new patients, there is no problem, but for old patients, we need previous medical history, so we have to need the medical records and the person in charge; sometimes, it is difficult because our telemedicine is in different locations. Then for the payment process, we also need a cashier, because so far we are still using the bank transfer system and it must be by the finance department, so the process involves many parts. (DDS, general practitioner)

Patients are sometimes impatient to wait because their condition is not good or uncomfortable. We must be able to determine priorities. For example, we must first solve the telemedicine and then call the patient face to face. (Mar, general practitioner)

Coordination of work involving many parties is closely related to the work system model chosen in implementing telemedicine services. A streamlined, effective, and efficient system allows for a better level of interaction and attention to support the process of exchanging information, building relationships, and making decisions that impact meeting the parties' expectations. Changes in the

work coordination model need to consider cultural factors, social relationships, and working time, including effective communication behavior in the governance of work that accommodates online and offline situations (Beno, 2022).

4.4 Relevance to the goals of doctor and patient communication

Completeness and clarity of information

One of the purposes of communication in medical meetings is exchanging information. Doctors need to collect complete patient data and information, either through history taking or physical and supporting examinations. The consequence of implementing telemedicine in medical services is a non-physical encounter between doctors and patients. This situation raises the view that the doctor's diagnosis is incomplete through telemedicine. Some doctors say the following:

Anamnesis can cover 80% of the information for the diagnosis, but it still means another 20%, and we have to manage. The limitation of telemedicine is that we cannot do the second one, even though this is very crucial. (YS, internist)

So if through direct action, we can see the surrounding tissue to find out if the tissue is from the teeth because it is complex. It could be because of cavities or gums, so we still have to explore further. (D-dentist)

One of the crucial stages in information processing is to give meaning to the information. Doctors try to translate the data capture results, partly delegated to patients, then process it into appropriate information to establish a diagnosis.

Sometimes the statement from the patient confuses us, so we must be careful in establishing the proper diagnosis. If we do a clinical examination via telemedicine, it may only be seen

from the picture while the picture does not speak. It does not provide complete information. (An, dentist)

Doctors try to clarify their message to give them confidence in making decisions. The use of asynchronous media has limitations in conveying messages only through text and images, which impacts the adequacy and accuracy of information (Yan et al., 2020). Some doctors say they need to check back with detailed questions about symptoms, clarifying, including a summary at the end of the conversation to ensure information. Clarity of information is closely related to statements about limitations in assessing a symptom. Non-physical situations make it difficult for doctors to make an assessment. Through deepening and clarifying statements, appropriate communication can help achieve nonverbal support, quality information, and interpersonal relationships (Grondin et al., 2019). Conversation-based assessments can also replace live-based assessments during remote examinations (Stommel et al., 2020).

Socioemotional communication

The relationship between doctors and patients is one of the goals of communication between doctors and patients, and this is closely related to building empathic, open, and trusting communication so that it can ultimately support the patient's healing process. Telemedicine is often associated with reduced nonverbal cues in medical encounters (Wilson & Djasasbi, 2022). Verbalization strategy and paralinguistic can replace nonverbal cues that are vital to relational communication in face-to-face settings. Including eye gaze simulation in teleconsultation is a nonverbal communication strategy that

can foster communication and interpersonal relationships with patients (Helou et al., 2022).

The study shows how doctors develop communication efforts to overcome limitations so they can still build relational communication with patients. The effort is by doing socioemotional verbalization by writing sentences of support, prayer, and motivation. The words "Shafakallah," "Syafakillah," and "Get well soon" and the use of emojis with a smile icon and clasped hands replace the facial expressions, gestures, and nonverbal cues that exist in the face-to-face setting. The use of various communication strategies requires communication competencies related to listening skills, word choice in sentences, and verbalization of social cues that can positively impact interpersonal relationships (Spitzberg, 2006; Travaline et al., 2005).

In addition to communication skills, flexibility in consultation time causes patients to feel better prepared and accessible than in face-to-face meetings, which tend to be constricted. Repeated meetings, including longer consultation times, can increase the empathic relationship between doctors and patients (Grondin et al., 2019).

Expectation and confidence level

Communication between doctors and patients in a medical meeting is closely related to the decision-making process to improve the patient's health status. Telemedicine, with its characteristics, causes a different decision-making process and cannot be fully equated with a face-to-face meeting (Broffman et al., 2022; Stommel et al., 2020). Uncertainty is felt by doctors in making decisions in consultations via video conferencing because of the non-physical situations present in telemedicine services (Nordtug,

Assing Hvidt, Lüchau, & Grønning, 2022). A combination of data, including vital data and photos sent via telemedicine, can provide sufficient information for assessing and initiating a medical situation (Chen et al., 2022). Doctors tend to be more careful in providing diagnoses and therapy, including doctors conveying information in advance regarding the difference between telemedicine and face-to-face meetings. In order to equalize patient perceptions and expectations about the services provided, doctors need to convey this information first. Several doctors expressed different confidence levels in decision-making because of the non-physical situations present in telemedicine services, as stated below :

There are obstacles in helping to solve patient problems because there is incomplete information. It is different if, for example, we meet in person because all examinations are complete; everything is there. Enforcement of diagnosis and provision of therapy can be said to be complete, but if it is telemedicine, primarily through chat, it may not be complete (RV, general practitioner)

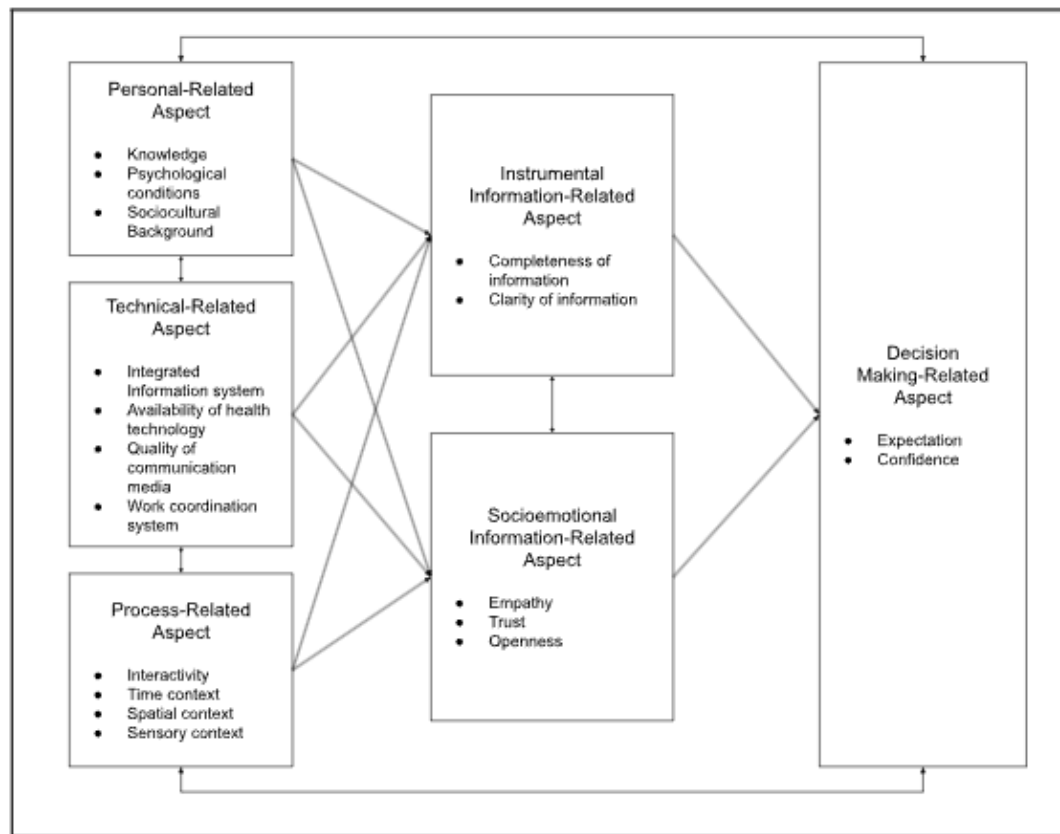
We cannot convince the patient one hundred percent. Still, the patient must understand that if there are signs of danger or the condition worsens, the patient must immediately see a doctor or go to a hospital. So it is like if using telemedicine it is only through anamnesis (MP, general practitioner)

"That means then we can understand each other, ma'am", if we cannot be optimal because the patient cannot be optimal either, so let us get it treated first, if the complaint is still there while the medicine has run out, the patient has to come for control again (AW, general practitioner)

4.5 Essentials aspects of communication through telemedicine

The study examines essential aspects of communication through telemedicine, the results of the thematic analysis with three goals of communication between

doctors and patients, namely information exchange, relationship building, and decision making. The thematic analysis results are mapped in a conceptual framework, as depicted in Figure 1.



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Figure 1 Conceptual Model of Communication Aspect in Telemedicine

Personal-related aspect

The study results indicate that variations in knowledge, psychology, and socio-culture are inherent in each communication actor, namely doctors and patients. In particular, the variety of knowledge related to health literacy, communication media, and health technology. Health literacy is related to the patient's ability to understand and convey clear and complete information about the disease. Transmission of the information is also closely related to the

patient's ability to use communication media and health technology. This situation is also related to the non-physical conditions in telemedicine services which lead to the delegation of sensory data collection to patients. The psychological conditions and social and cultural backgrounds attached to the communicators provide context regarding the process of building relationships and exchanging information between doctors and nurses. What patients use, the value attached to gender, and differences in

research objectives are some emerging examples of how psychological and socio-cultural factors can affect medical encounters. The factors attached to the communicator determine how they use choices and strategies to utilize certain media (Ramirez et al., 2002). Communication competence is crucial in effective technology-mediated communication (Spitzberg, 2006).

Technical-related aspect

The technical aspect impacts efforts to build relationships and exchange the required information. Problems such as workload and the unintegrated medical record system with telemedicine services have implications for the speed of doctors' response. Work coordination is also closely related to the choice of media used and information systems that support the effectiveness of cooperation between the parts involved in telemedicine services. The quality of communication media, such as signals and mobile camera devices, also impacts the clarity of the information needed. Including the availability of health technology such as thermometers, tensimeters, and others that support the process of collecting patient sensory information independently (DePuccio et al., 2022).

Process-related aspect

This aspect relates to how the communication process takes place through telemedicine. Interactivity is related to the characteristics of the selected media, where the immediacy of response in exchanging messages also increases social presence through telemedicine. The time and spatial dimensions also present differences in the context of relational communication, in addition to providing convenience in

time flexibility, but also potentially giving rise to impersonal communication, relative anonymity, and hyperpersonal communication in a medical meeting.

The non-physical condition in telemedicine also raises consequences related to sensory assessments that doctors cannot do. Doctors can make certain communication efforts to direct patients as an extension of the doctor's sensory instruments (Lupton & Maslen, 2017). In developing relational communication, the system and media choice will have different impacts regarding social presence in virtual medical meetings (Chen et al., 2022).

Decision-making

The personal, process and technical aspects are closely related to the instrumental and socioemotional goals of communication. These three aspects have an impact on the communicative behavior of doctors in medical meetings. Good communication competencies are needed, including the ability to understand the characteristics and features of the media, socio-emotional verbalization, and listening skills, including sensitivity to psycho-socio-cultural variations, which can strengthen trust, openness, and empathetic relationships in a medical meeting. Completeness and clarity of information and relational communication are closely related to the decision-making process carried out by doctors and patients (Broffman et al., 2022; Nordtug et al., 2022). The differences inherent in telemedicine, which are different from face-to-face meetings, require equalizing the perceptions and expectations of each party involved. Medical decision-making is also inseparable from confidence in the diagnosis produced through assessment and examination through telemedicine.

4.6 Telemedicine development in post-pandemic

Based on the results, we recommend several things related to essential aspects of communication through telemedicine. First, completeness and clarity of information are the keys for doctors to believe in the results of the diagnosis. Completeness and clarity of information need to consider strengthening the technical aspects of telemedicine services, including medical information systems, communication media quality, health technology availability, and coordination of work systems. Second, improving the technical aspects requires attention to aspects of the communication process that can encourage doctors and patients to interact. The development of telemedicine service features needs to pay attention to the context of time, spatial, and sensory to approach the conditions of face-to-face meetings so that aspects of time management, and presence, including the shared role of doctors and patients, can represent a complete experience as felt at face-to-face medical meetings. Time flexibility, activeness, and patient-centered communication are some of the positive benefits that need to be explored further in telemedicine services. The use of technology that allows customization, interactivity, and user convenience must pay attention to the social reality of how people act and interact (Neuhauser & Kreps, 2003). This process is inseparable from a multidisciplinary collaboration involving professionals across scientific fields, health workers, communication experts, information system developers, and human-computer interface designers (Weiner, 2012).

Third, good mediated communication skills, including sensitivity to cognitive, psychological, and socio-cultural variations, must be possessed by doctors so that relational communication aims to create a positive relationship of trust, openness, and empathy between doctors and patients can. Communication strategies such as language choice, use of multimedia, deepening of information, and active conversation, are several ways to build effective communication through telemedicine (Coleman, 2020).

This study has several limitations because it only looks at the doctor's point of view; research that also includes the patient's perspective will enrich explorations related to communication mediated in telemedicine services. The study does not yet include the regulatory aspect; regulation has a role in strengthening telemedicine services and guaranteeing the rights of both doctors and patients (Vitacca & Scalvini, 2022), including regulations regarding payment mechanisms in telemedicine (Whitten & Sypher, 2006). One of the exciting results of this study is that the non-physical situation in telemedicine encourages doctors and patients to be more involved in exchanging information. These results can be future directions to examine further the situation of the absence of physical presence in telemedicine with communication behavior between doctors and patients in assessing symptoms and making medical decisions. The study also shows the existence of medical information systems and digital health technology factors as an inseparable part of the use of digital communication media, which has implications for the communicative behavior of doctors and patients at a virtual medical meeting.

Conclusion

The existence of telemedicine in post-pandemic is a necessity. The study showed telemedicine has already changed the communication between doctors and patients. The study identifies personal, technical, and process aspects of telemedicine. The results suggest that increasing the usage of telemedicine services involved some efforts, namely; First, the literacy of its users needs to increase. Second, sensitivity to psychological and socio-cultural variations is vital to communicate effectively through telemedicine. Third, strengthening the technical aspect of telemedicine services is also essential. A collaboration from multidisciplinary is needed to develop integrated information systems in telemedicine services, increase communication media quality, and provide access to health technology instruments in telemedicine. All of this effort can improve the completeness and clarity of information, enhance interactivity, amplify doctor-patient relationships, and support solid clinical decision-making.

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