TELEMEDICINE ACCEPTANCE AND USAGE IN JAKARTA METROPOLITAN AREA

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ABSTRACT

Introduction: Implementing infection prevention protocols during the COVID-19 pandemic in Indonesia hinders the public from accessing health care services. This condition causes virtual health services to become more accessible than conventional health services, thus encouraging healthcare providers to adopt telemedicine as a method of service delivery. However, as a relatively new technology in Indonesia, public acceptance is crucial to predict the level of public willingness to adopt telemedicine. Yet, a little study in Indonesia has tried to assess it.
Purposes: The purpose of this research is to measure the acceptability of telemedicine services in Jakarta metropolitan area, the factors that determine it, and whether the level of acceptance correlates with the usage frequency of telemedicine.
Methods: Data used in this study is acquired with an online survey from February to March 2022, targeting residents of the Greater Jakarta area. Instruments used in this survey are demographic data form and SUTAQ questionnaire translated into Indonesian. Of the total 454 respondents, 200 have used telemedicine in the last six months. Respondents were then divided into several groups based on age, gender, monthly income, education level, chronic conditions, health insurance membership, and frequency of telemedicine use. Bivariate analysis was conducted using chi-square test for categorical data and t-test for numerical data.
Results: The assessment of the SUTAQ scores indicates good acceptance of telemedicine in all demographic groups. Increased accessibility to health services and satisfactory user experience have contributed to its good acceptance. However, we also found that the frequency of use was not correlated with the level of acceptance, but positively correlated with the presence of chronic conditions.
Conclusions: Telemedicine is well received by users who live in the Greater Jakarta area. Users find it easier to access health services and are satisfied with the health services provided through telemedicine.

Keywords: *telemedicine, COVID-19, acceptance, Jakarta*

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INTRODUCTION

Implementing infection control protocol during the COVID-19 pandemic in Indonesia is disrupting public access to healthcare (Nugraha et al., 2020). This explains the declining number of visitors and non-COVID patients in hospitals, clinics, and public health centers (Tsaqif, 2021; Partakusuma, 2021). This condition can cause detrimental effects on public health, such as increased morbidity, excess death, and disruption of the national disease prevention program (Wijaya et al., 2022; Chudasama et al., 2020; Roberton et al., 2020)

To increase healthcare accessibility, the Indonesian government actively endorses the use of telemedicine. With the health ministry program, COVID-19 patients who are self-isolating will get their treatment and medication-free via telemedicine. As a result, the number of telemedicine usage increased during the pandemic, as reported by several providers. Telemedicine has some potential to be a complement (Kichloo et al., 2022) or even a replacement for regular healthcare. But as a relatively new technology in Indonesia, there's little known about the public's perception of telemedicine. Knowing public perception and acceptance of telemedicine is necessary to predict if the public is willing to adopt this new technology and whether the increase in usage is caused by temporary necessitation or the effect will last after the pandemic.

In this study, we try to quantify the acceptability of telemedicine in Indonesia by measuring the public's perception of how it increased access to healthcare, the quality of care, and the public's concerns about privacy and the quality of the healthcare personnel. We also want to see if the demographic factors and the frequency of usage are related to the acceptability. Telemedicine providers can use this information to match their service with the public's expectations and by the government to consider if they want to legislate or invest in this technology.

METHODS

This study used a cross-sectional approach with questionnaire-based tools to acquire an overview of telemedicine acceptability among Jakarta residents during the COVID-19 pandemic. The questionnaire consisted of demographic data, existing chronic conditions, health insurance coverage, telemedicine usage (frequency of use and timing), and acceptability of telemedicine and SUTAQ. SUTAQ questionnaire is a useful tool to measure telemedicine acceptance and was developed by Hirani et al. (2016). SUTAQ measures telemedicine acceptance by evaluating the users' belief in six dimensions; enhanced care, increased accessibility, privacy and discomfort, care personnel concern, kit as substitution, and satisfaction. The questionnaire was found to have adequate validity and reliability in Indonesian. The sampling method used was convenience sampling, every respondent who has fulfilled the inclusion criteria (resided in the Greater Jakarta area and has used telemedicine at least once in the last six months) was included as a sample. The questionnaires can be accessed with a link and were dispersed via several social media such as Instagram, Twitter, Facebook, LinkedIn, and LINE. The acquired data were analyzed using STATA to describe the characteristics of respondents, acceptance of telemedicine, and use of telemedicine. Meanwhile, bivariate analyses were conducted to determine the relationship between respondent characteristics and the use of telemedicine using the chi-square test, as well as the relationship between the use of telemedicine and the level of acceptance of telemedicine using a t-test with normal data distribution.

RESULTS

From 417 responses, 200 are eligible (have used telemedicine in the last six months). As seen in Table 1, 48% of respondents are between 20 and 40 years old, 62% are female, 61% earn less than 4.5 million Rupiah per month, and 52% have a bachelor's degree. As many as 32% of

respondents have chronic conditions, and 52% have private insurance coverage. Most (66%) respondents had used telemedicine more than once, and 57% had used telemedicine before the COVID-19 pandemic.

The higher proportion of telemedicine users who have less than 4.5 million Rupiah as their monthly income (which is below Jakarta's regional minimum wage) may be attributed to its lower prices than regular care, thus becoming more economically accessible for those in the lower socioeconomic group (Sechrist et al., 2020). Another study also reports that, unlike traditional care, telemedicine allows the working population to get medical consultations without being absent from work or having to commute (Powell et al., 2017).

Table 1. Respondents' characteristic

Variable	n (%)	
Age		
<20 years old	77	(38.50%)
20-40 years old	96	(48.00%)
>40 years old	27	(13.50%)
Gender		
Male	76	(38.00%)
Female	124	(62.00%)
Income per month		
Rp <4.5 million	123	(61.50%)
Rp 4.5 – 10 million	46	(23.00%)
Rp >10 million	31	(15.50%)
Education		
High school	77	(38.50%)
Undergraduate	104	(52.00%)
Postgraduate	19	(9.50%)
Having chronic diseases		
No	136	(68.00%)
Yes	64	(32.00%)
Health Insurance		
No	43	(21.50%)
BPJS	53	(26.50%)
Private	104	(52.00%)
Telemedicine usage in the last 6 months		
Once	68	(34.00%)
Multiple times	132	(66.00%)
Usage before pandemic (March 2020)		
No	87	(43.50%)
Yes	113	(56.50%)

The overall telemedicine acceptance across all demographic groups is good (Table 2). Two categories with negative statements are privacy and discomfort and care personnel concerns. A high value on these categories indicated a high negative statement. In this research, we found lower than median (3.00) values for privacy and discomfort (2.51) and care personnel concerns (3.27) subscales. The low Privacy and discomfort score indicated that telemedicine users feel comfortable with healthcare delivery via telemedicine and are not too concerned about their privacy. The slightly lower than median care personnel concerns indicate that telemedicine users trust the healthcare providers' skills in telemedicine but to a lesser extent than in the previous subscale. The remaining subscales consist of positive statements. All of them are more than medium positive statements. The highest positive statement is increased accessibility factors. These values mean the users believe that telemedicine has dramatically improved their access to healthcare and perceive telemedicine as a complement to regular healthcare.

The high acceptance of telemedicine among Jakarta residents may be related to several factors such as high internet penetration, extensive smartphone usage, the cost of transportation, and varieties of telemedicine services exclusively available in urban areas. Jakarta ranks highest in internet user percentage among Indonesian provinces (BPS, 2019). A high level of smartphone usage is also observed across all socioeconomic groups in Jakarta (APJII, 2022). This means this service can be accessed by broad types of demographics and can be especially beneficial for individuals of lower-income levels. Furthermore, transportation issues such as traffic congestion and transportation cost in Jakarta may contribute. Transportation proved to be a barrier to healthcare, especially for individuals of the lower socioeconomic group and people with chronic conditions (Wolfe, McDonald, and Holmes, 2020). With telemedicine, people can bypass the transportation problem, thus increasing patient satisfaction (Atmojo et

al., 2020). Urban residents in Indonesia also enjoy more varieties of services from telemedicine than their rural counterparts. Essential services like teleconsultation and e-prescription are universally available, but additional services such as drug delivery, in-home lab tests, online hospital appointments, etc., are only accessible in several big cities.

Table 2. Telemedicine Acceptance

SUTAQ subscale	Mean ± SD	Min	Max
Enhanced care	4.76 ± 0.86	2.33	6
Increased accessibility	5.34 ± 0.58	3.66	6
Privacy and discomfort	2.51 ± 1.39	1	6
Care personnel concerns	3.27 ± 1.23	1	6
Kit as substitution	4.12 ± 0.98	1.33	6
Satisfaction	5.13 ± 0.70	1.66	6

We also conducted a bivariate analysis to obtain factors related to telemedicine usage. We use a chi-square test for categorical data analysis and a t-test for numerical data with normal distribution. Among all variables, we found that having a chronic disease(s) was related to more frequent telemedicine usage (Table 3). Several factors can explain the higher telemedicine utilization among users with chronic conditions. First, most people with chronic conditions are at high risk of morbidity and mortality related to COVID-19 infection, so they did social distancing and self-isolate during the pandemic. They were recommended to decrease the frequency of visiting about once a month even though they need something to discuss with their doctors. In sum, the pandemic has necessitated the frequent use of telemedicine for people with chronic conditions (Wijaya et al., 2020). Besides the pandemic, convenience can also be a supporting factor. Telemedicine allows remote healthcare delivery, greatly improving healthcare accessibility by eliminating the time, transportation, and mobility constraints that chronic patients often have (Corbett et al., 2020). Different scores in individual subscales (e.g., enhanced care) between different socioeconomic groups were reported in another research (Hirani et al., 2016), but that was not observed in our research.

However, no correlation was observed between telemedicine acceptance and usage frequency (Table 4). The frequent and occasional users show similar scores in all six acceptance subscales. It may suggest that the service leaves a good impression on the first-time user. The pandemic situation may also necessitate telemedicine use, but this situation might be changed after the pandemic; hence further research is required to confirm this.

Table 3. Factors influencing telemedicine usage in the last months

Variable	1 time user n (%)		2 times user n (%)		P value
Age					
<20 years old	31	(40.26)	46	(59.74)	
20-40 years old	28	(29.17)	68	(70.83)	0.309
>40 years old	9	(33.33)	18	(66.67)	
Gender					
Male	25	(32.89)	51	(67.11)	0.796
Female	43	(34.68)	81	(65.32)	
Monthly income					
Rp <4.5 million	47	38.21	76	61.79	
Rp 4.5 – 10 million	10	21.74	36	78.26	0.130
Rp >10 million	11	35.48	20	64.52	
Total	68	34.00	132	66.00	
Education					
High school	26	33.77	51	66.23	
Undergraduate	38	36.54	66	63.46	0.423
Postgraduate	4	21.05	15	78.95	
Total	68	34.00	132	66.00	
Having chronic disease					
No	55	40.44	81	59.56	**0.005***
Yes	13	20.31	51	79.69	
Total	68	34.00	132	66.00	
Having insurance					
No	20	46.51	23	53.49	
BPJS	16	30.19	37	69.81	0.148
Private	32	30.77	72	69.23	
Total	68	34.00	132	66.00	
Usage before pandemic					
No	33	37.93	54	62.07	
Yes	35	30.97	78	69.03	0.303
Total	68	34.00	132	66.00	

*Significant results (p value<0.05)

Table 4. Telemedicine acceptance and using telemedicine

SUTAQ Subscale	1 time user (Mean ± SD)	Multiple times user	P value
Enhanced care	4.808824 ± .8983423	4.732323 ± .8445197	0.5615
Increase accessibility	5.367647 ± .5961171	5.333333 ± .5766152	0.6972
Privacy and discomfort	2.406863 ± 1.393952	2.565657 ± 1.40092	0.4475
Care personnel concerns	3.171569 ± 1.388764	3.315657 ± 1.137169	0.4623
Kit as substitution	4.254902 ± 1.017456	4.05303 ± .9542811	0.1771
Satisfaction	5.176471 ± .7906388	5.103535 ± .652694	0.5141

T-test significant if p value <0.05

CONCLUSIONS

Telemedicine has good acceptance among users in Jakarta. The good acceptance is mainly attributed to the users' perception of increased healthcare access and satisfaction with the service provided. The presence of chronic disease is a factor related to the more frequent use of telemedicine, but acceptance of telemedicine usage is not significantly related to telemedicine usage frequency.

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