Indonesian Journal of Global Health Research
Volume 7 Number 2, April 2025
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

ANALYSIS OF FACTORS RELATED TO THE USE OF TELEMEDICINE APPLICATION SERVICES

Anggre Paramitha Putri[1]*, Hermansyah[2], Asnawi Abdullah[1], Nurjannah[1], Hafnidar A Rani[1]
[1]Master of Public Health, Universitas Muhammadiyah Aceh, Jl. Muhammadiyah No.91, Batoh,Lueng Bata, Kota Banda Aceh, Aceh 23123 Indonesia
[2]Nursing Department, Poltekkes Kemenkes Aceh, Jl. Soekarno - Hatta, Lagang, Darul Imarah, Aceh Besar, Aceh 23231 Indonesia
*dr.anggre@gmail.com

ABSTRACT
Telemedicine services can be a diversion of most offline or classic consultations into online consultations through telemedicine services. The use of telemedicine continues, especially through telemedicine services provided by the Ministry of Health for patients who need it, such as about prevention of certain diseases, or patients who have experienced symptoms of certain diseases can consult through telemedicine services. This observational analytical study with a cross-sectional design uses a quantitative approach aimed at analyzing factors related to the level of satisfaction of telemedicine service users in Aceh Province. Data collection used a googleform questionnaire that was distributed using social media for 2 weeks. The sample in the study was the population of Aceh who met the inclusion criteria totaling 468 people. Sampling used the accidental sampling technique. Data analysis used a logistic regression test. factors related to the use of telemedicine application services in Aceh Province are the use of the JKN mobile application (OR=1.61; 95%CI=1.06-2.54; p-value=0.025), income < Minimum Wage (OR=1.64; 95%CI=1.13-2.37; p-value=0.008), and 4G/LTE internet network (OR=1.69; 95%CI=1.01-2.84; p-value=0.046). The most dominant factor related to the use of telemedicine is non-BPJS Kesehatan insurance users (AOR=2.42; 95%CI=0.53 – 11.05). It is expected that respondents should use the telemedicine application counseling facility provided for control and encouragement in supporting and assisting efforts to recover quickly and prevent disease. Respondents also pay attention to the type of application used because each telemedicine application has its own advantages and disadvantages.

Keywords: alodokter; halodoc; income; klik dokter; mobile JKN; use of telemedicine

How to cite (in APA style)
Putri, A., Hermansyah, H., Abdullah, A., Nurjannah, N., & Rani, H. A. (2025). Analysis of Factors Related to the Use of Telemedicine Application Services. Indonesian Journal of Global Health Research, 7(2), 737-744. https://doi.org/10.37287/ijghr.v7i2.5792.

INTRODUCTION

As time goes by, technology is very much needed in various levels of human life, one of which is the health sector. One of the developments of information and communication technology (ICT) in the health sector is e-health. The benefits of using ICT in the health sector are that it can improve the quality, accessibility, and continuity of health efforts and the speed of work processes, especially in health care facilities and can optimize data flow so as to increase the availability of quality health data and information (Minister of Health Regulation No. 46, 2017). One of the implementations of tele-health is telemedicine (Minister of Health Regulation No. 20, 2019). The most widely used telemedicine service during the pandemic is teleconsultation services. However, there are concerns that telemedicine services cannot provide the same output as classic consultations where patients and doctors meet face to face and are in the same physical location (Alonso et al., 2021; Gates B. Colbert, 2020).

Indonesia has also regulated the use of telemedicine, especially in order to bring health services closer to the outermost, remote, and underdeveloped areas. Regulation of the Minister of Health Number 20 of 2019 concerning the Implementation of Telemedicine Services Between Health Service Facilities is the government's effort to realize effective, safe,

quality, anti-discriminatory telemedicine services that prioritize the interests and safety of patients (Kuntardjo, 2020). During the COVID-19 pandemic, the Ministry of Health also issued a Circular Letter of the Minister of Health of the Republic of Indonesia Number HK.02.01/MENKES/303/2020 of 2020 concerning the implementation of health services through the use of information and communication technology in order to prevent the spread of the corona virus disease 2019 (COVID-19) (Amaani, 2020). Both regulations show that telemedicine can reduce the level of the COVID-19 crisis and reduce the burden on the health system related to the pandemic. The use of telemedicine can also implement the concept of home hospitality or home medical care. Where during the pandemic home care is better than hospital care (Amaani, 2020; Kuntardjo, 2020).

The availability of both regulations is in line with the need for comprehensive and universal telemedicine guidelines for any country to adapt based on local context. Details on patient identification, data ownership, backup, and disposal; trans-regional cybersecurity laws and ways to overcome the limitations of telemedicine compared to face-to-face consultations must be clearly outlined to ensure uniformity of telemedicine services and patient safety (Intan Sabrina & Defi, 2021). However, the use of telemedicine during the pandemic in Indonesia has still received less attention from doctors and health policy makers. This has caused the use of telemedicine during the COVID-19 pandemic in Indonesia to be less than optimal (Adnan & Pramaningtyas, 2021).In North India, the use of telemedicine is used to prevent the transmission of Covid-19, factors that influence the use of telemedicine by patients are that patients consider telemedicine useful and more suitable for providing health care services than before using telemedicine, patients feel that there is a reduction in medical costs and reduce the need to travel (Mishra, 2020). Factors that influence the success of telemedicine in Iran are financial structure and those that influence the success of telemedicine are organizational rules and regulations (Maher et al., 2016). From the articles that have been obtained, the factors that influence telemedicine are organizational rules and regulations, financial factors, technological infrastructure, and the Covid-19 pandemic which causes travel restrictions.

Based on the Aceh Provincial Health Statistics in 2020, there was a decrease in health complaints between 2019 and 2020. In 2020, 24.84 percent of the male population in Aceh had experienced health complaints and 29.40 percent of the female population in Aceh had experienced health complaints. The survey results can show that there has been a decrease in visits by Acehnese people to health service facilities during the pandemic, resulting in a decrease in people with health complaints. On the other hand, the majority of villages in Aceh already have a mobile phone internet signal, so there is a large potential for the use of telemedicine in Aceh. Only 51 villages (0.79%) of the total 6,416 villages in Aceh did not have a mobile phone internet signal in 2019 (BPS Aceh, 2021). There are 11 telemedicine platforms that have collaborated with the Ministry of Health, including Alodokter, GetWell, Good Doctor and GrabHealth, Halodoc, KlikDokter, and KlinikGo, Link Sehat, Milvik Dokter, ProSehat, SehatQ, and YesDok (Rokom, 2021). At the time of conducting the initial survey of this study, many people already knew about this e-health, 7 out of 10 patients at one of the Health Centers in Banda Aceh often accessed and asked questions and submitted complaints through the Halodoc telemedicine application. Given the importance of information and communication technology at this time and the potential for its development and the use of information and communication technology in the health sector, especially for preventing the spread of disease, therefore, it is necessary to conduct research that aims to analyze the factors that influence the use of telemedicine application services in Aceh province.

METHOD

This type of research is an observational analytical study with a cross-sectional design using a quantitative approach. The cross-sectional design was chosen in this study because it is easy to implement and does not require follow-up. The researcher only describes factors that are related to telemedicine service users in Aceh Province.The population in this study was the entire population of Aceh Province aged 18-59 years. The population of Aceh in 2021 was 5,374,871 people. The population of Aceh who had health complaints was 32.91 percent in 2022, so the estimated population of the study (N) was 2,526,505 x 32.91% = 831,472 people. The sample in this study was telemedicine application users who had at least carried out more than 1 teleconsultation service using the telemedicine application with a minimum sample of 400 respondents based on the Slovin formula calculation with a margin of error of 5%. The sampling technique in this study was consecutive or accidental sampling. Based on data collection that had been carried out using a Google form, the number of respondents who filled out the Google form was 536 people. However, there were 66 respondents who did not meet the inclusion criteria, so the number of samples in this study became 468 people.

Data collection was carried out by sharing the googleform link https://docs.google.com/forms/d/e/1FAIpQLSfVGOiM654gsmL5D4TS3yTnllQhqOwGUgDTNVW5dx8Zz3VaFg/viewform via WhatsApp to each representative in each district to be shared with the community. The level of telemedicine use was measured using the telehealth usability questionnaire (TUQ) adopted from Parmanto et al. (2016) which consists of 21 statements. The questionnaire used has been tested for validity and reliability with a Cronbach's Alpha value = 0.961.The data analysis of this study consists of univariate, bivariate and multivariate analysis. Bivariate analysis uses logistic regression test with a confidence level of 95%. Variables included in the model for multivariate analysis are variables with a p-value> 0.25 in bivariate analysis. Multivariate analysis uses multiple logistic regression test using STATA application.

RESULT

Table 1.
Univariate Analysis Results

Variables	f	%
Age (mean, standard deviation)	30,19	8,14
Gender		
Man	136	29,06
Woman	332	70,94
Last education		
Higher (College)	363	77,56
Intermediate	105	22,44
Work		
Work	223	47,65
Doesn't work	245	52,35
Income		
≥ Minimum Wage	209	44,66
< Minimum Wage	259	55,34
Residential Area		
Urban	222	47,44
Rural	246	52,56
Health Insurance		
None	23	4,91
Non-BPJS Health	11	2,35
BPJS Health	434	92,74
Types of Internet Networks		
WIFI	69	14,74
2,5G/EDGE/ GPRS	7	1,50
3G/H/H+/EDVO	25	5,34
4G/LTE	367	78,42

Variables	f	%
Types of Telemedicine Applications		
Halodoc	138	29,49
Mobile JKN	253	54,06
Klik Dokter	57	12,18
Alodokter	20	4,27
Telemedicine Usage Experience		
Seldom	144	30,77
Often	324	69,23
Use of Telemedicine Applications		
Underuse	208	44,44
Use	260	55,56

Table 1. shows that the average age of respondents is 31 years. Respondents who are female are 332 people (70.44%). Respondents who have the last education in the middle category are 105 people (22.44%). Respondents who are not working are 245 people (52.35%). Respondents who have income > Minimum Wage are 259 people (52.34%). Respondents who live in rural areas are 246 people (52.56%)Respondents who use BPJS health insurance are 434 people (92.74%). Respondents who use iPhone type phones are 97 people (20.73%). Respondents who use 4G/LTE type internet networks are 367 people (78.42%). Respondents who use JKN mobile telemedicine applications are 253 people (54.06%). Respondents who use telemedicine applications with a duration of 5-10 minutes are 193 people (41.24%). Respondents who often use telemedicine are 324 people (49.23%). The proportion of respondents who use telemedicine services is 260 people (55.56%).

Table 2.
Factors Related to the Use of Telemachine Applications

Variables	Telemedicine Users (n=468)				OR (95% CI)	*p-value*
	Underuse		Use			
	f	%	f	%		
Types of Telemedicine Applications						
Halodoc	72	52,17	66	47,83		
Mobile JKN	102	40,32	151	59,68	1,61 (1,06-2,45)	0,025
Klik Dokter	27	47,37	30	52,63	1,21 (0,65-2,24)	0,542
Alodokter	7	35,00	13	65,00	2,02 (0,76-5,38)	0,157
Age					0,98 (0,95-1,00)	0,079
Gender						
Man	62	45,59	74	54,41		
Woman	146	43,98	186	56,02	1,06 (0,71-1,59)	0,750
Education						
High	165	45,45	198	54,55		
Intermediate	43	40,95	62	59,05	1,20 (0,77-1,86)	0,414
Work						
Work	108	48,43	115	51,57		
Doesn't work	100	40,82	145	59,18	1,36 (0,94-1,96)	0,098
Income						
≥ Minimum Wage	107	51,20	102	48,80		
< Minimum Wage	101	39,00	158	61,00	1,64 (1,13-2,37)	0,008
Region						
Urban	106	47,75	116	52,25		
Rural	102	41,46	144	58,54	1,29 (0,89-1,85)	0,172
Health Insurance						
None	13	56,52	10	43,48		
Not-BPJS Health	5	45,45	6	54,44	1,56 (0,36-6,61)	0,546
BPJS Health	190	43,78	244	56,22	1,66 (0,71-3,89)	0,235
Types of Internet Networks						
WIFI	38	55,06	31	44,93		
2,5G/EDGE/ GPRS	3	42,86	4	57,14	1,63 (0,33-7,85)	0,540
3G/H/H+/EDVO	13	52,00	12	48,00	1,13 (0,45-2,83)	0,792
4G/LTE	154	41,96	213	58,04	1,69 (1,01-2,84)	0,046

Variables	Telemedicine Users (n=468)				OR (95% CI)	*p-value*
	Underuse		Use			
	f	%	f	%		
Duration of Application Usage						
<5 minute	68	45,33	82	54,67		
5-10 minute	84	43,52	109	56,48	1,07 (0,70-1,65)	0,738
10-15 minute	30	46,15	35	53,85	0,96 (0,53-1,73)	0,912
15-20 minute	7	33,33	14	66,67	1,65 (0,63-4,34)	0,303
>20 minute	19	48,72	20	51,28	0,87 (0,43-1,76)	0,706
Telemedicine Usage Experience						
Seldom	63	43,75	81	56,25		
Often	145	44,75	179	55,25	0,96 (0,64-1,42)	0,840

Table 2 shows factors related to the use of telemedicine application services in Aceh Province, namely the use of the JKN mobile application (OR = 1.61; 95% CI = 1.06-2.54; p-value = 0.025), income < Minimum Wage (OR = 1.64; 95% CI = 1.13-2.37; p-value = 0.008), and 4G/LTE internet network (OR = 1.69; 95% CI = 1.01-2.84; p-value = 0.046). Respondents who use the JKN mobile application are 1.61 times more likely to use telemedicine application services compared to respondents who use halodoc. Respondents with income < Minimum Wage are 1.64 times more likely to be more satisfied using telemedicine application services than those with income ≥ Minimum Wage Minimum Wage. Respondents who use 4G/LTE internet networks are 1.69 times more likely to use telemedicine application services compared to respondents who use WiFi internet networks.

Table 3.
Most Dominant Factors Related to Telemedicine Use (Multiple Logistic Regression Test)

Variables	Model I OR (95%CI)	Model II OR (95%CI)	Model III OR (95%CI)	Model IV OR (95%CI)
Age	0.99 (0,96 – 1,01)	0,99 (0,96 – 1,01)	0,99 (0,96 – 1,01)	0,99 (0,96 – 1,03)
Female Gender	0,97 (0,63 – 1,50)	0,98 (0,64 – 1,50)	0,94 (0,61 – 1,46)	0,97 (0,62 – 1,51)
Secondary Education	0,99 (0,61 – 1,59)	0,98 (0,61 – 1,59)	0,99 (0,61 – 1,61)	1,01 (0,62 – 1,65)
Not Working	0,95 (0,57 – 1,59)	0,95 (0,57 – 1,59)	0,98 (0,58 – 1,64)	0,95 (0,56 – 1,61)
Income < Minimum Wage	1,59 (0,96 – 2,65)	1,54 (0,92 – 2,58)	1,58 (0,94 – 2,66)	1,63 (0,96 – 2,77)
Rural Area		1,14 (0,78 – 1,67)	1,16 (0,79 – 1,70)	1,13 (0,76 – 1,67)
Not BPJS Health			2,57 (0,57 – 11,45)	2,42 (0,53 – 11,05)
BPJS Health			2,10 (0,88 – 2,24)	2,04 (0,84 – 4,93)
2.5 G Network				1,50 (0,29 – 7,62)
3G Network				1,28 (0,50 – 3,28)
4G Network				1,62 (0,94 – 2,77)
Frequently Use Telemedicine				0,99 (0,64 – 1,52)
5-10 minutes Using Telemedicine				1,16 (0,73 – 1,83)
10-15 minutes Using Telemedicine				1,05 (0,57 – 1,93)
15-20 minutes Using Telemedicine				1,77 (0,65 – 4,81)
>20 minutes Using Telemedicine				1,00 (0,47 – 2,11)

* p-value < 0,05

Table 3 shows in model 4, the most dominant factor related to the use of telemedicine is non-BPJS Kesehatan insurance users with an AOR value of 2.42. However, statistically it is not

significantly related to the use of telemedicine. Respondents who use non-BPJS Kesehatan insurance are 2.42 times more likely to use telemedicine compared to respondents who do not have insurance, when other variables are constant.

DISCUSSION

Factors related to the use of telemedicine application services in Aceh Province are the use of the JKN mobile application, income < Minimum Wage, and 4G/LTE internet network. The JKN Mobile Application is a form of digital transformation launched by BPJS Kesehatan, the application aims to facilitate the National Health Insurance-Indonesian Healthy Card, especially to handle long queues at BPJS Kesehatan Branch offices and health facilities (Yusriadi, 2019; Rani, 2020). Before COVID-19, the features in the JKN Mobile application included participant registration, changes to participant data, payment of insurance premiums with e-wallet, making appointments, and screening and treatment services (BPJS Kesehatan, 2017).Mobile JKN has adapted and updated its features by adding 6 additional features since 2020. The 6 new features include information on insured medicines, arrears relaxation program (Indonesian: Program Relaksasi Tunggakan), information on surgery schedules and bed availability, doctor consultations, and COVID-19 self-screening. Mobile JKN can be one of the options to use at this time, especially in order to reduce cases of Covid-19 transmission in the BPJS Kesehatan Office Work environment and in the general public (Indonesia GO ID, 2020).

In a study conducted in Sydney, 265 of 665 COVID-19 positive patients completed a questionnaire. Overall, patients rated their care as good or very good. Patients felt confident knowing that their symptoms were being monitored virtually and felt that the technology used by the virtual rpa improved their access to care and treatment. The majority of patients also reported positive experiences due to their care needs being met and the information and communication they received. While those who reported their overall care as very poor or poor (4.2%), reported that the care from the virtual rpa was not helpful (72.7%) and the technology did not improve their access to care (72.7%). All reported that they did not feel involved in their care (Raffan et al., 2021).In addition, the results of this study also show that there is a relationship between income and the use of telemedicine. This study is in line with research conducted by Gianmah & Mulyana (2021) that there are differences in customer satisfaction based on income. According to Majid et al. (2022), factors related to patient satisfaction with telemedicine are that patients do not need time to travel to the clinic, saving patient travel distance, and patient income. The cost factor is the customer's sacrifice to get a product or service that is relatively easy, comfortable and efficient (Swastha & Irawan, 2008). Patients tend to be satisfied if they do not need to spend additional costs or waste time to get services.

Income will affect the use of applications for a service provided. In this study, researchers assume that income < Minimum Wage uses telemedicine applications more because respondents do not need to spend money to use several telemedicine applications that can be accessed for free. In contrast to those with higher incomes, they will be more satisfied in obtaining information by making direct visits to health workers.The results of the study also showed that there was a relationship between 4G/LTE internet network and the use of telemedicine application services in Aceh Province (OR=1.69; 95%CI=1.01-2.84; p-value=0.046). Respondents who used 4G/LTE internet network were 1.69 times more likely to use telemedicine application services compared to respondents who used wifi internet network.Patient satisfaction is the result of patient expectations in getting health services provided to them to achieve the desired treatment goals (Hawrysz et al., 2021). Information on patient satisfaction with telemedicine is useful for maintaining the quality of health service

delivery (Kruse et al., 2019). The availability and stability of the internet network and ease of access to telemedicine services are difficulties that are still faced regarding use (Zhai, 2021).

Telecommunication networks are the main supporting tool in using telemedicine applications (Saputro et al., 2021). The use of 3G networks can be used, but it takes a longer execution time compared to 4G networks (Samsugi, 2017). So the type of network used greatly affects user satisfaction in accessing telemedicine. Although wifi is easier to use and allows users to access via laptops and other devices at any time (Permana & Fath, 2021), if there are too many users, it will also hinder access to the use of telemedicine applications (Kissi et al., 2020).In addition, researchers also assume that the factors that influence the increase in TUQ scores also vary based on the type of application. Because, each application has advantages and disadvantages. However, the most influential is income < Minimum Wage. Because respondents who earn < Minimum Wage use the application more because it does not require costs to get health information.

CONCLUSION

Factors related to the use of telemedicine application services in Aceh Province are the use of the JKN mobile application (OR=1.61; 95%CI=1.06-2.54; p-value=0.025), income < Minimum Wage (OR=1.64; 95%CI=1.13-2.37; p-value=0.008), and 4G/LTE internet network (OR=1.69; 95%CI=1.01-2.84; p-value=0.046). The most dominant factor related to the use of telemedicine is non-BPJS Kesehatan insurance users (OR=2.42; 95%CI=0.53 – 11.05). It is expected that respondents should use the telemedicine application counseling facility provided as a controller and encouragement in supporting and assisting efforts to recover quickly and prevent disease. Respondents also pay attention to the type of application used because each telemedicine application has its own advantages and disadvantages. In addition, it is hoped that the health service can develop digital counseling services to reach people who have difficulty getting health information quickly and up to date. In addition, it is necessary to conduct socialization and advertising about the benefits of the telemedicine application owned by the government.

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