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Acceptance and Use of PeduliLindungi Application in Patients Based on Digital Health Literacy Competence

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Abstract

PeduliLindungi is a COVID-19 tracking application with a QR Code feature officially used for contact tracing in Indonesia. District General Hospital (RSUD) Tugurejo Semarang already has a QR Code Scan to enter the building. However, many patients have not used to utilize the scanner. Therefore, the researcher aimed to determine the acceptance and use of the PeduliLindungi app based on patients' digital literacy competence at RSUD Tugurejo, Semarang City. The research was descriptive and distributed questionnaires to 100 outpatients. The results showed that 41% of outpatients could use social media to communicate, and 31% used the internet to find health information. 54% of patients strongly agree that PeduliLindungi helped control Covid-19. The app's acceptance and use were mainly in patients aged 18–27. Patients with education who did not graduate from high school had the lowest average usage, 51.29. The difference in digital literacy competency scores between female and male patients was relatively high, namely 136.6 in women and 124.46 in men. The average digital literacy competence in the expert category was 61.05. Education regarding the PeduliLindungi app is necessary, especially for patients in the non-productive age group.

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Introduction

The world of technology saw the spread and development of computerization rapidly in 1960. Information technology became popular in the late 1970s. Information technology is commonly referred to as computer technology or computer processing of electronic data (Suryadi, 2015). Computerization continued until the birth of Internet technology in 1990. The year 2000 was the peak of technological progress; hence European countries began to develop the "Industry 4.0" concept. With the industrial revolution 4.0, new technology emerged, namely the internet and other technologies, utilizing new digital technology as a model for activities and transactions (Danuri, 2019). Industry 4.0 was very profitable in all fields, especially the health sector. Health services are developing remote patient monitoring using the internet and utilizing sensor technology or Telemedicine (Tjandrawinata, 2016).

Digital literacy is a form of caring for society against the adverse effects of the mass media. Regional Advisor at World Health Organization, Mark Landry, in the TIK-Talk #5 discussion with the theme "Digital Health: Transformation and Innovation Technology for Healthcare", stated that E-Health has an essential role in accelerating universal health coverage. E-health is a health service with an ICT-based application which aims to increase medical processes' efficiency, effectiveness, and quality (Rosadi, 2016). Digital

literacy is an essential skill that people need to engage with digital or online materials. It describes the use of the internet and other digital platforms to find, to understand and to evaluate the information presented. Digital health literacy, or electronic health literacy (e-Health), focuses on an individual's ability to access, to understand, and to engage with digital healthcare materials or technologies to contribute to the quality of life (Griebel et al., 2018). By better understanding individual's levels of digital health literacy, it is possible to identify the needs of specific groups to develop appropriate provisions and ensure that the public can access healthcare equitably (Faux-Nightingale et al., 2022).

At the beginning of November 2021, several hospitals in Semarang City, namely Hermina Pandanaran Hospital, Bhayangkara Semarang Hospital, RSJD Dr. Amino Gondohutomo, and others still have not used the PeduliLindungi QR Code Scan to enter the hospital. However, the Tugurejo Hospital in Semarang City has used a QR Code Scan.

Figure 1. The announcement to download the PeduliLindungi application.

RSUD Tugurejo Semarang City has implemented a policy of using the PeduliLindungi application when patients want to enter the building using a QR Code Scan. Outpatients are patients who are taking care of the transmission of Covid-19. There must be vigilance to minimize the spread using a QR Code Scan. However, only a few outpatients at the Tugurejo Hospital in Semarang City needed a help to understand how to use the PeduliLindungi application.

Based on the initial survey results in November at the Tugurejo Hospital in Semarang, a QR Code Scan facility was available to enter the building. However, many patients had not used to use the scan. Therefore the researcher intends to determine the acceptance and use of the PeduliLindungi application based on digital literacy competence in patients at Tugurejo Hospital, Semarang City.

Methods

The type of research conducted by researchers is quantitative descriptive research using the Digital Health Literacy Competency for Citizens (DHLC) questionnaire (Rachmani, Haikal, & Rimawati, 2022) obtained from the SiCerdik website (https://sicerdik.dinus.ac.id) (Rachmani et al., 2022). The score results from the 26 DHLC questions will be used to measure the level of digital competence in health literacy in the form of the Digital Health Literacy Competencies Index. The general calculation for the Digital Health Literacy Competencies Index is as follows:

$$\text{Index} = (\text{mean} - 1) * (50/3)$$

Thus, the way of calculations is:

$$\text{DHLC Index} = (((Q1 + Q2 + Q3 + Q4 + Q5 \ldots. + Q26/26 - 1) * 50/3$$

The index value is then categorized as a beginner with a value between 0 – 50; independent with a value between >50 to 70; advanced with a value between >70 to 90; and expert with a value between >90-100 (Rachmani et al., 2022).

Data was collected using an accidental sampling technique and distributed 100 questionnaires to 100 outpatients at Tugurejo Hospital, Semarang City, from January 2020 until February 2020. The data was processed using SPSS to analyze the correlation between Digital Health Literacy and the use of Peduli Lindungi.

Results

Table 1. Distribution Frequency of Digital Literacy Competency Items

No.	Statement	Unable	Very hard and need assist	Hard and need assist	Easy and need assist	Easy and didn't need assist	Easy and able to help others	Very easy if there is no problem	Very easy and able to solve the problems
A	Digital Competencies	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)
1	I can identify the keywords and tags needed to find information related to the desired topic.	1 (1)	2 (2)	2 (2)	5 (5)	16 (16)	7 (7)	28 (28)	39 (39)
2	I can use commonly used chat applications (e.g., Facebook, WhatsApp, line, etc.) to chat daily.	1 (1)	0 (0)	1 (1)	5 (5)	13 (13)	7 (7)	32 (32)	41 (41)
3	I can manage group chats on my mobile phone (e.g., FB messenger, WhatsApp, Line, Telegram) to create groups, add members, and delete groups.	2 (2)	0 (0)	3 (3)	5 (5)	13 (13)	12 (12)	29 (29)	36 (36)
4	I can use commonly used chat applications (e.g., FB, WhatsApp, Line, etc.) to share material (messages, files, images, links) with other group members.	1 (1)	0 (0)	2 (2)	5 (5)	17 (17)	9 (9)	33 (33)	33 (33)
5	I can use and suggest various strategic media (FB, Hashtags on Instagram, and Twitter) to mobilize community participation in the environment on various activities or topics.	2 (2)	3 (3)	2 (2)	9 (9)	14 (14)	9 (9)	29 (29)	32 (32)
6	I can manage and solve problems when writing and communicating using digital tools (e.g., inappropriate comments, hoaxes, etc.) on social media.	2 (2)	0 (0)	5 (5)	9 (9)	17 (17)	7 (7)	28 (28)	32 (32)
7	I can manage my social media to avoid actions that can harm the reputation of my digital data when using social media on the internet.	1 (1)	1 (1)	11 (11)	10 (10)	17 (17)	5 (5)	30 (30)	25 (25)
8	I can make videos from tutorials on youtube and Instagram on how to make short videos on tablet/mobile phone with health content.	3 (3)	3 (3)	11 (11)	12 (12)	16 (16)	10 (10)	20 (20)	25 (25)
9	I can protect social media accounts (Twitter, FB, Instagram) using various methods (good passwords, login control, etc.).	1 (1)	3 (3)	6 (6)	13 (13)	13 (13)	14 (14)	23 (23)	27 (27)
10	I can detect risks when receiving tweets or messages from people with fake profiles or phishing attempts.	3 (3)	6 (6)	9 (9)	10 (10)	14 (14)	15 (15)	19 (19)	24 (24)
11	When sharing digital content on social media, I can choose the most appropriate method to protect my data and others (e.g., address, telephone number, etc.).	1 (1)	3 (3)	9 (9)	10 (10)	20 (20)	10 (10)	22 (22)	25 (25)
12	I can distinguish between appropriate and inappropriate digital content for sharing on social media so that my privacy and that of others are not disturbed.	0 (0)	2 (2)	4 (4)	9 (9)	18 (18)	12 (12)	23 (23)	32 (32)
13	I can create digital health campaigns using social media (e.g., Twitter, FB) that others can share and use on smartphones or tablets.	2 (2)	4 (4)	9 (9)	10 (10)	17 (17)	10 (10)	18 (18)	30 (30)
14	I can identify simple problems that may arise when using digital tools and what help is needed to solve the problem.	2 (2)	2 (2)	8 (8)	14 (14)	17 (17)	8 (8)	24 (24)	25 (25)
15	I can make adjustments on a computer/ smartphone/ tablet to make the letters bigger so they can be read on the screen.	2 (2)	1 (1)	3 (3)	13 (13)	23 (23)	11 (11)	20 (20)	27 (27)
16	I can select the technologies and digital tools that can be used to create well-defined knowledge and innovations.	0 (0)	2 (2)	8 (8)	16 (16)	22 (22)	6 (6)	27 (27)	19 (19)
17	Using digital tools, I can collaborate with friends to understand and solve routine and conceptual problems.	0 (0)	4 (4)	12 (12)	11 (11)	18 (18)	7 (7)	24 (24)	24 (24)

No.	Statement	Unable	Very hard and need assist	Hard and need assist	Easy and need assist	Easy and didn't need assist	Easy and able to help others	Very easy if there is no problem	Very easy and able to solve the problems
18	I can evaluate whether the newly discovered digital environment when browsing is appropriate or safe.an evaluate whether the situation the newly discovered digital environment when browsing is appropriate or safe.	0 (0)	7 (7)	7 (7)	15 (15)	15 (15)	7 (7)	21 (21)	28 (28)
B	Health Information Literacy	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)	F(%)
19	I know what health information is available on the internet.	1 (1)	1 (1)	2 (2)	13 (13)	18 (18)	15 (15)	21 (21)	29 (29)
20	I know where to find helpful health information on the internet.	1 (1)	1 (1)	4 (4)	10 (10)	17 (17)	13 (13)	27 (27)	27 (27)
21	The internet can be used as a source of health information.	1 (1)	1 (1)	4 (4)	10 (10)	20 (20)	11 (11)	22 (22)	31 (31)
22	I know how to find helpful health information on the internet.	1 (1)	2 (2)	3 (3)	9 (9)	22 (22)	12 (12)	24 (24)	27 (27)
23	I know how to use the internet to answer health questions.	1 (1)	1 (1)	4 (4)	13 (13)	20 (20)	10 (10)	24 (24)	27 (27)
24	I know how to use health information I found to help with my work.	2 (2)	1 (1)	4 (4)	14 (14)	18 (18)	7 (7)	30 (30)	24 (24)
25	I can evaluate health information found on the internet.	1 (1)	2 (2)	8 (8)	10 (10)	19 (19)	10 (10)	30 (30)	20 (20)
26	I can distinguish between correct health information and incorrect health information.	1 (1)	1 (1)	4 (4)	15 (15)	22 (22)	10 (10)	26 (26)	21 (21)

Digital literacy competencies showed that most patients can easily overcome problems using chat applications such as WhatsApp, Line, Facebook, and others to communicate with the percentage (41%). However, only 1% of 100 patients cannot use social media to communicate. To protect their social media accounts, 13% of patients found it easy to need help, and (6%) of patients found it difficult and need help.

Table 2. The Acceptance and Use of the PeduliLindungi Application

No.	Statement	Very Disagree	Disagree	Doubt	Agree	Strongly Agree
		F (%)	F (%)	F (%)	F (%)	F (%)
	Usefulness					
1.	The PeduliLindungi application helps control Covid-19.	2 (2)	1 (1)	9 (9)	34 (34)	54 (54)
2.	The PeduliLindungi application will be able to reduce the transmission of Covid-19.	7 (7)	12 (12)	22 (22)	42 (42)	17 (17)
3.	The PeduliLindungi application is a significant part of the Covid-19 control program.	2 (2)	11 (11)	17 (17)	51 (51)	19 (19)
4.	Using the PeduliLindungi application makes it easy when traveling.	3 (3)	6 (6)	17 (17)	43 (43)	31 (31)
5.	Using the PeduliLindungi application is inconvenient for me because it creates a queue.	11 (11)	31 (31)	17 (17)	28 (28)	12 (12)
6.	Using the PeduliLindungi application is an absolute requirement to enter a public place.	4 (4)	14 (14)	15 (15)	36 (36)	31 (31)
7.	Using the PeduliLindungi application gives me the confidence to carry out my activities as before.	3 (3)	9 (9)	18 (18)	42 (42)	28 (28)
8.	The PeduliLindungi application makes storing critical documents related to Covid-19 (vaccine, the result of antigen test) easy.	4 (4)	9 (9)	15 (15)	34 (34)	38 (38)
	Ease of Use					
9.	I am always comfortable using the PeduliLindungi application when in public places.	4 (4)	5 (5)	9 (9)	34 (34)	48 (48)
10.	The PeduliLindungi application is easy to learn, and become proficient in using it.	5 (5)	5 (5)	9 (9)	35 (35)	46 (46)
11.	The PeduliLindungi application is easy to use.	6 (6)	7 (7)	6 (6)	37 (37)	44 (44)

No.	Statement	Very Disagree	Disagree	Doubt	Agree	Strongly Agree
		F (%)	F (%)	F (%)	F (%)	F (%)
	User Control					
12.	I need help with the check-in and check-out functions of the PeduliLindungi application.	20 (20)	21 (21)	19 (19)	15 (15)	25 (25)
13.	I have a problem to log-in and log-out of the PeduliLindungi application.	16 (16)	20 (20)	17 (17)	18 (18)	29 (29)
14.	The recovery process of the PeduliLindungi application is fast when an error occurs.	7 (7)	12 (12)	20 (20)	36 (36)	25 (25)
15.	The information released from the PeduliLindungi application is easy to understand.	4 (4)	6 (6)	9 (9)	37 (37)	44 (44)

Acceptance and use of the PeduliLindungi application based on the table above, 54% of participants strongly agreed that the PeduliLindungi application is beneficial for controlling Covid -19, and there are 42% of participants agreed that the application could reduce Covid -19. However, from 100 respondents, 28% of participants considered the application a hassle because it created a queue.

Regarding the ease of use of the PeduliLindungi application, 47% of participants claimed comfortable with this application, and 46% of patients were easy to learn and proficient in its use. In addition, according to the table in the control of the use of many patients who have difficulty with the check-in and check-out functions, there are 26% problems with log-in and log-out functions, namely 29%. With so many users of this application, errors often occur, but it is easy and fast for recovery, there are (36%) agreed about this.

Table 3. Digital Health Literacy Competence Based on Gender of Patients at Tugurejo Hospital Semarang

Gender	Digital Health Literacy Competence			
	Mean	Minimum	Maximum	ρ value
Women	136.60	42	182	0.581
Men	124.46	39	182	

Based on Table 3, the average digital literacy competency for women is relatively higher compared to men, 136.6, while the average for beginner men is 124.46. The average difference between men and women in digital literacy competence is quite significant, namely 12.14. In addition, the minimum and maximum values for men have a range of 143 which is higher than that of women, which is 140.

Table 4. Acceptance and Differences in the PeduliLindungi Application Based on Digital Literacy Competency

The level of digital literacy competency	Acceptance of PeduliLindungi			
	Mean	Minimum	Maximum	r, ρ value
Beginner	48.28	19	60	0.516; < 0.001
Independent	53.20	28	67	
Advance	59.25	48	74	
Expert	61.05	37	75	

Determining the level of digital literacy competence is carried out by referring to the analysis and categorization that has been carried out by Rachmani et al., 2022. According to Table 4, the highest average in receiving and using PeduliLindungi is in the expert category, with an average of 61.05, and the lowest is beginners, with an average of 48.28. The lowest minimum score is 19 in the beginner category, and the highest maximum score is in the expert, which is 75. Meanwhile, the range, namely in the beginner category, is 41, which is higher than the advanced independent, only 26. Table 4 shows that the higher the competencies score, the higher Peduli Lindungi acceptance.

Discussion

Digital literacy is the ability to understand and use information from various sources accessed via computers (Ningsih et al., 2021) and in health describe as digital health literacy. At this time, digital health literacy competencies are needed to open up broader insights, especially in the health sector. Good literacy competence will make adjusting and using a digital device or the internet easier.

This study reveals that gender has no significant differences in digital health literacy; this result is the opposite of another study that gender has different levels of digital health literacy and digital health literacy in some activities (Hagan Jr et al., 2023; Sarhan et al., 2021).

The patients at Tugurejo Hospital have good literacy competence. The average patient answers very lightly and can solve problems. Furthermore, almost all the statements submitted have the highest percentage in level 7. In all circles, they use mobile phones with applications such as Whatsapp, Google, Facebook, YouTube, Line, and others. People find it easy to communicate, to send photos or files, and to search for information online.

PeduliLindungi is an application developed to assist relevant government agencies in tracking to stop the spread of Covid-19 (Rosalina et al., 2021). This new application tracks whether someone is affected by Covid -19. It can be accessed directly through the PeduliLindungi application or other applications such as Gojek, Shoppe, Grab, and others.

The PeduliLindungi application is a requirement for entering the Tugurejo Hospital in Semarang. This application makes it easier for hospitals to track Covid-19 patients. However, many patients need to become more familiar with this because they need to learn how to use the PeduliLindungi application. According to the research, 29% of participants had difficulty performing the Log-in and Log-out functions, and 26% had trouble checking in and out by scanning barcodes. This condition means many patients who do not understand using and accepting the new PeduliLindungi application during this pandemic. However, the PeduliLindungi application is effortless, and 54% of patients strongly agree that this application can control Covid-19 cases.

All people need good digital literacy competence during the Covid-19 pandemic. Because every second, there is always misleading information (hoaxes) that are spread, are readily accepted and are consumed by the public. Clueless people tend only to devour information if they confirm whether the news is accurate or fake. Therefore, increasing digital literacy is necessary for the 4.0 era (A. Lestari, 2021). This information management process goes hand in hand with its launch PeduliLindungi application, fulfilling community information during the current COVID-19 pandemic.

The acceptance and use of the PeduliLindungi application based on users' competency at the Tugurejo Hospital in Semarang are relatively high. This result is because Table 4 shows the average acceptance and the use of the PeduliLindungi application are in the expert category; it shows that the acceptance and the use of the PeduliLindungi application are classified as high, with an average of 60.05.

Conclusion

The digital literacy of Tugurejo Hospital patients is high, but less than 13% of participants feel unable. They have difficulty and need help from others to use the internet and manage their social media. However, many patients can use the internet. Moreover, 31% of patients make the internet a source of their need to find health information.

The use and acceptance of PeduliLindungi at the Tugurejo Hospital in Semarang are relatively high. 54% of participants strongly agree that it helps control Covid -19. There were 44% of participants felt that the application is easy to use. 29% of patients had difficulties such as log-in and log-out functions. Furthermore, 26% of participants had difficulty checking in and check-out with the scanning barcode.

Based on digital literacy competence, women are higher than men, namely 136.60 compared to 124.46 in women. Acceptance and use of PeduliLindungi based on digital literacy competence is relatively higher in the expert category. With differences in the acceptance and use of the PeduliLindungi application, the acceptance and use of each person will be different.

The hospitals should give patients more attention to scanning the QR Code when entering and leaving the building so that patients affected by Covid-19 can be identified. The need for education, especially for older people, to recognize the PeduliLindungi application regarding menus and features in PeduliLindungi such as Log-in, Log-out, Check-in, and Check-out.

Author Contributions

E.R designed the study. N.N.A performed the preliminary and whole studies and analyzed the data. N.N.A and L.C wrote the manuscript with input from all authors.

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Institutional Review Board Statement

The protocols used in the study were approved by the Institutional Review Board (IRB) of the Health Research Committee Faculty of Health Universitas Dian Nuswantoro. The protocols used in the study were ethically appropriate by following under 7 (seven) WHO 2011 Standards, 1) Social Values, 2) Scientific Values, 3) Equitable Assessment and Benefits, 4) Risks, 5) Persuasion/ Exploitation, 6) Confidentiality and Privacy, and 7) Informed Consent, referring to the 2016 CIOMS Guidelines. The fulfillment of the indicators of each standard indicates this.

Conflicts of Interest

The authors declare no conflict of interest.

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