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Digital Health Literacy amongst Hypertensive Clients in Depok City: a Descriptive Study

Sofyan Dwi Fathurrahman [1], Utami Rachmawati [2], Sukihananto [3], Wiwin Wiarsih[4]

[1,2,3,4]Faculty of Nursing, Universitas Indonesia
Email : utamirachmawati@ui.ac.id

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Abstract

The lack of electronic-based health system utilization in hypertension preventive and control programs in Depok City is not yet aligned with Depok City's 2021-2026 goals to create modern public services and technology-based infrastructure development. This study aims to identify the digital health literacy in hypertensive clients in Depok City. With the greatest estimated population of hypertensive clients in Depok City, this descriptive study employed the I-eHEALS questionnaire with cluster sampling technique on hypertensive clients in five urban villages, with up to 100 samples. The findings revealed that most Depok City's hypertensive clients were young adults (64%), female (72%), with a secondary education level of 59%, and 25% of them used YouTube as a source of digital health information. Furthermore, it is also reported that hypertensive clients in Depok City have a digital health literacy level of 26. The study's findings indicate that hypertensive clients in Depok City tend to be more digitally literate when they are young adults, female, have higher levels of education, and use online health applications as a source of information about digital health. The researcher suggests fostering digital health literacy and creating digital health resources with an emphasis on hypertension patients' self-care management.

Background

Hypertension is a non-communicable disease with an increasing prevalence. Hypertension itself is a condition where a person's systolic blood pressure is above 140 mmHg and/or diastolic above 90 mmHg (Harding et al., 2020). The number of persons with hypertension has doubled since 1990, from 650 million to 1.28 billion in 2019, according to WHO data from 2019 (2021). Similarly, according to Riskesdas statistics from 2018, the percentage of Indonesians over the age of 18 who had hypertension increased from 25.8% in 2013 to 34.1% in 2018 (Ministry of Health of the Republic of Indonesia, 2018). In all the Community Health Centers in Depok City, hypertension is the first non-communicable disease with the biggest number of outpatient visits—129,388—with the highest number of cases occurring in the subdistricts of Tugu, Sukamaju, Pancoran Mas, Abadijaya, and Mekarjaya (Depok City Health Office, 2022). Compared to the prior year, this number rose by 28.3% (Depok City Health Office, 2021). These findings suggest that hypertension is a medical condition that is still challenging for society to avoid and manage.

Uncontrolled hypertension in community will contribute to the worsening state of public health. Compared to clients with controlled hypertension, over 50% of those with uncontrolled hypertension are at risk for cardiovascular problems, including stroke, renal failure, myocardial infarction, and mortality (Bangalore et al., 2014). The fact that hypertension is the most common outpatient disease in Depok City hospitals, followed by ischemic heart disease and congestive heart failure, which are ranked second and third in terms of outpatient care,

respectively, shows that these results are consistent with the condition of outpatient patients in Depok City hospitals and community health centers (Depok City Health Office, 2022). Furthermore, uncontrolled hypertension raises the possibility of a fatal stroke and recurrence (Biffi et al., 2022). Efforts are required to control hypertension in hypertensive patients because uncontrolled hypertension can lead to problems, according to many research findings.

Switching to healthier behaviors is one efficient way to manage high blood pressure. Babaei-Sis et al. (2016) stated that living a healthy lifestyle can control blood pressure. Healthy living has been shown to help control blood pressure (Babaei-Sis et al., 2016). The study suggests a way of living that prioritizes eating a balanced diet, exercising more, controlling weight, and improving mental health. Changing behavior can be aided by raising community awareness and encouraging health literacy (Protheroe et al., 2017). The health literacy model developed by Paasche-Orlow and Wolf (2007) quoted by Maschke, et.al. (2020) states that health literacy has an impact on client-provider interactions, self-care, and access to and use of healthcare facilities. These three factors will ultimately impact an individual's health outcomes.

The era of industrial revolution 4.0 has led to the growth of digital technology, which has made everything in life—including the health sector—digital. According to Norman & Skinner (2006) quoted by El Benny et. al. (2021), digital health literacy, also known as eHealth literacy, is one type of digital development in the health sector. It refers to the capacity to look for, comprehend, and evaluate health information from electronic sources and use the knowledge acquired to address or resolve health issues. This idea fits with Depok City's development purpose, which is to create technology-based infrastructure and modern public services between 2021 and 2026 (Depok City Health Service, 2021). Unfortunately, eHealth is still not being used to its full potential in Depok City's hypertension prevention and control initiatives, such as "CERDIK," "PATUH," “Gerakan Lansia Sadar Hipertensi” (the Hypertension-Aware Elderly Movement), mobile health clinics, and home visits. Utilizing digital health literacy is one strategy in the Depok City hypertension prevention and management program. The inception of this program needs to be based on the health literacy of Depok City; nonetheless, no study has been conducted on the digital health literacy of the city's hypertensive clients. Based on this phenomenon, the researchers examined the hypertensive clients of Depok City's digital health literacy.

Methods

Descriptive research was employed in this study. Using cluster sampling method, samples are obtained from organizational units (clinics, Family Welfare and Environment –“PKK” –, etc.), geographic units (villages, sub-districts, districts, etc.), and so on (Notoadmojo, 2012). The study included hypertensive clients with a minimum age requirement of thirty who resided in Tugu Sub-district (25 samples), Sukamaju Sub-district (21 samples), Pancoran Mas Sub-district (18 samples), Abadijaya Sub-district (18 samples), and Mekarjaya Sub-district (18 samples) in Depok City, and who had access to digital information sources or a device. Informed consent was obtained from the clients by the researchers before the hypertensive clients in the five sub-districts underwent hypertension control at the Community Health Centers or Integrated Health Service (Posbindu). This research has been declared to have passed ethical review by the Ethics Committee of the Faculty of Nursing, University of Indonesia on October 9th 2023 with the issue number S-1950/UN2.F12.D1/PDP.04.04/2023.

The I-eHEALS instrument was utilized in this study to gauge the population's degree of digital health literacy (Wijaya & Kloping, 2021). Thirty participants from the sub-districts of Bojong

Pondok Terong and Beji were used to test the I-eHEALS instrument. The determined r value is much higher than the critical value table (r > 0.3610) and has a Cronbach's alpha coefficient value of 0.923, according to the results of the Pearson correlation study. Consequently, it can be said that I-eHEALS is a viable and trustworthy tool for assessing hypertensive customers in Depok City's level of digital health literacy. Univariate analysis is the type of data analysis utilized in this study to characterize the traits of respondents. Frequency distribution is the kind of statistical test that is employed. In the meanwhile, a test of normalcy was used to evaluate digital health literacy. The mean and standard deviation serve as the benchmark values if it is determined that the data are regularly distributed. In all other cases, the reference values are the90% CI, the median, and the Min-Max value.

Result and Discussion

Following analysis of the research findings, a frequency distribution table is provided. The purpose of this is to ascertain the frequency distribution of respondents with respect to age, gender, educational attainment, and sources of digital health information. Table 2 reveals that most respondents were middle-aged, or between 41 and 41 years old. Additionally, women made up 72% of the sample, secondary education was their last formal education (59%), and 25% of them used YouTube to find information about digital health.

Table 1. Distribution of Respondent Characteristics

Variable	Category	Frequency	Percentage (%)
Age	Young Adult	5	5
	Middle Adult	**64**	64
	Elderly	31	31
Gender	Man	28	28
	Woman	72	72
Level of Education	Basic Education (SD)	22	22
	Secondary Education (midde school, high school, or equivalent)	**59**	59
	Higher Education (Diploma, Bachelor, Master, Doctoral)	19	19
Digital Health Information Resources	Google	23	23
	Social Media (Whatsapp, Tiktok, etc.)	14	14
	Youtube	**25**	25
	Online Health Application (SATUSEHAT, Halodoc, Alodokter, etc.)	2	2
	Never	**36**	36

Moreover, a sig value was determined using the Shapiro-Wilk normality test. 0.000 or less than 0.05, indicating a non-normal distribution in the digital health literacy of hypertensive consumers in Depok City. Table 2 shows that the median score for digital health literacy among hypertensive clients in Depok City is 26, with 8 being the lowest and 40 being the highest.

Table 2. Digital Health Literacy of Hypertension Clients in Depok City (n=100)

Variable	Mean	Median	SD	Min-Max	CI 90%
Digital Health Literacy	22.92	26	11.23	8-40	21.05-24.7

Table 3 then shows the average for each digital health literacy item for clients in Depok City who have high blood pressure. According to the analysis's findings, hypertensive customers in Depok City still lack the digital health literacy skills listed in points 6, 7, and 8. This indicates that most hypertensive clients in Depok City lack the ability to distinguish between high-quality and low-quality health information, to assess the quality of the information they are given, and to feel comfortable utilizing this knowledge as the foundation for their health decisions.

Table 3. Mean score of each digital health literacy item among hypertension patients in Depok City (n=100)

Number of Item	Mean
1st Item	3
2nd Item	3
3rd Item	3
4th Item	3
5th Item	3
6th Item	**2**
7th Item	**2**
8th Item	**2**

In order to compare the variables, a crosstab analysis is then performed between digital health literacy and the variables age, gender, education level, and digital health information sources. Table 4 displays health literacy according to age, gender, and health information source.

Table 4. Digital Health Literacy Based on Age, Gender, Education Level, and source of health information (n=100)

Variable	Category	Median	Frequency	SD
Age	Young Adult	**37**	5	2.34
	Middle Adult	28	**64**	10.51
	Elderly	8	31	9.09
Gender	Man	24	28	11.44
	Woman	**26**	72	11.2
Level of Education	Basic Education (Elementary School)	8	22	8.85
	Secondary Education (midde school, high school, or equivalent)	26	**59**	10.54

	Higher Education (Diploma, Bachelor, Master, Doctoral)	**33**	19	10.35
Digital Health Information Resources	Google	8	23	8.85
	Social Media (Whatsapp, Tiktok, etc.)	26	14	10.54
	Youtube	33	**25**	10.35
	Online Health Application (SATUSEHAT, Halodoc, Alodokter, etc.)	**35**	2	2.82
	Never	8	36	4.74

According to this data, the young adult age group had the highest level of digital health literacy, with a median score of 37 and a standard deviation of 2.34. However, the median score for senior respondents was the lowest, at 8, with a standard deviation of 9.09. Furthermore, a median score of 26 with an 11.2 standard deviation indicated that the average level of digital health literacy among female hypertensive clients was often greater than that of male clients. These results suggest that, in comparison to males, women are often more adept at accessing, evaluating, and assessing health information obtained from digital sources. When it comes to digital health literacy, hypertensive customers with university degree as their last formal education have the highest level—33—when compared to those with lower education levels. This table suggests that hypertensive consumers in Depok City have more digital health literacy the more educated they are. Moreover, it is well known that hypertension patients with a median score of 8 have less digital health literacy than those who utilize their devices as a source of knowledge about digital health than those who do. Conversely, hypertensive clients who use online health apps like Halodoc, SATUSEHAT, Halodoc, etc. have the greatest level of digital health literacy—35. Despite being used less frequently than other digital health information sources, our research demonstrates that hypertensive clients can search for, understand, apply, and assess digital health information contained in online health applications quite well.

The ability to search, assess, use, and evaluate health information acquired from electronic sources is a skill that hypertensive customers in Depok City seem to have at a mean score of 26 out of 5, according to the results of univariate analysis. Similar findings were found in a previous study conducted by Puja et al. (2022), which found that diabetics in Buleleng Regency, Bali, had an average digital health literacy score of three out of five. However, the average level of digital health literacy among hypertensive consumers in Depok is often lower than that of hypertensive clients in Chiang Mai, Thailand (29.6).

The findings of this study clearly conflict with Depok City 2021–2026's development goal, which calls for the creation of cutting-edge public services and infrastructure development centered on technology. Harmony with society's ability to look for, examine, comprehend, use, and appraise different types of information obtained from electronic sources is necessary to accomplish this goal. One of the things affecting the digital health literacy of hypertensive clients in Depok City may be the efforts to use eHealth, which are still not extensively implemented in hypertension preventive and control programs. According to the Depok City Official Portal (2023), the Depok Single Window application, one of the Depok City government's apps, offers administrative functions as well as health information. Nonetheless, this application still provides a small amount of health education about hypertension clients'

self-care management. This is consistent with the study's findings, which show that the majority of Depok City's hypertensive customers use YouTube as their primary resource for health information. In fact, research by Yanti et al. (2020) demonstrates a relationship between hypertension clients' health literacy and their ability to obtain health information. Thus, it can be said that initiatives are required to raise the level of digital health literacy among Depok City's hypertensive consumers.

The research findings indicate that hypertensive customers in Depok City still lack proficiency in the areas of assessment, evaluation, and confidence when using digital health information. These results are consistent with research by Silalahi et al. (2020) and Rojanasumapong et al. (2021), which demonstrates that there is still a deficiency in digital health literacy abilities related to the evaluation and assessment of digital health information. The incapacity of hypertensive customers in Depok City to assess and evaluate digital health information stems from two factors: a high degree of deceptive health information and a low interest in reading information (Indonesian Telematics Society, 2017; Miller and McKenna, 2016). As a result, encouraging digital health literacy among hypertensive clients in Depok City may center on improving their capacity to interpret and evaluate digital health information.

According to the analysis's findings, young adults had the highest level of digital health literacy, while senior citizens had the lowest level. Several respondents, particularly those in the middle adult and senior age groups, were found to be unable to search for digital health information on their devices and instead only be able to use them to send and receive electronic communications, according to research conducted during the data gathering process. This can be explained by a research by Rachmawati et al., (2019) that explain those amongst diabetic elderly have the highest score of Diabetes Literacy especially on the aspect of basic or functional literacy. Furthermore, Berman et al. (2022), Toar (2020), and Safitri, Kusumawardani, & Hidayat (2022), which state that a number of factors, such as elderly individuals living alone, having limited device usage abilities, and experiencing a decline in cognitive and motor skills, as well as sensory issues, affect older adults' health literacy and their ability to access, read, and comprehend information found in electronic media. According to research by Gunawan et al. (2020), hardly 2% of people are senior citizens. Among those who are reliant on technology, 23% of young adults are more reliant on social media and technology, making them more adept and habituated to utilizing technology.

Moreover, the analysis's findings indicated that women with hypertension likely to have greater levels of digital health literacy than men. This result is consistent with research by Puja et al. (2022) and Uysal, Ceylan & Koc (2020), which demonstrates that women are typically more digitally literate than men. According to Uysal, Ceylan, and Koc (2020), women are more likely to search for health information when family members have health issues because they typically perform more domestic chores. Women typically use devices more intensely and with greater dependency than males do (Supriani et al., 2020; Choi et al., 2015).

The group with higher education levels was shown to have the highest level of digital health literacy. Prior studies on hypertensive consumers in Central Lampung also shown that extremely good health literacy was possessed by 71.2% of hypertensive clients with higher education (Yanti, Andoko, & Mayasari, 2020). In addition, studies by Xesfingi & Vozikis (2016) demonstrate that respondents are more likely to achieve the maximum digital health literacy score of 53% the more educated they are. Higher educated people tend to be more

health literate because they are able to respond to information rationally and make decisions on pertinent health facts (Kaafah, 2018).

The analysis's findings revealed that, in comparison to other sources, Depok City's hypertension patients who utilize online health apps typically had greater levels of digital health literacy. According to information quality indicators, it is recognized that online health applications have good information quality (Alexander et al., 2021). According to Hapsari, Prawiradilaga, and Muhardi (2023), Halodoc and Alodokter delivered pertinent and comprehensible health information, and the majority of respondents thought the telemedicine application was user-friendly, practical, and accurate in its delivery of health information. Additionally beneficial to behavior and health outcomes are online health applications (Han & Lee, 2018).

Conclusion

This study provides insight into the level of digital health literacy among Depok City's hypertensive clients. The majority of the findings from this study are In Depok City, hypertensive clients are middle-aged women with a secondary education (junior high school, high school, or similar), who utilize YouTube to research digital health issues. Moreover, the median level of digital health literacy among Depok City's hypertensive consumers is 26. Among hypertensive customers in Depok City, health literacy skills that are currently lacking include the capacity to evaluate and assess digital health information and the assurance to use it. In addition, it is well known that female young adult hypertensive consumers in Depok City who use online health applications to obtain digital health information are typically better educated and have higher health literacy. According to this study, hypertensive customers in Depok City still want additional instruction on how to find, evaluate, comprehend, apply, and search for health information obtained from electronic sources. Thus, the researchers are hopeful that the UPTD Community Health Center in Depok City will be able to conduct targeted outreach to encourage hypertensive clients in Depok City to be digitally literate, and that the center will create health information resources related to self-care management information for hypertensive clients on YouTube. It is anticipated that language use and information delivery will also be tailored to the educational background of hypertensive consumers, the majority of whom have completed secondary school (junior high school, high school, or similar). Counseling can be conducted concurrently with religious events by means of demonstrative techniques, with the primary targets being men, the elderly, and low-income groups. Alternatively, the promotional intervention can target those who are not part of these groups.

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