TELEHEALTH LITERACY AND HEALTHCARE ACCESS AMONG HYPERTENSIVE PATIENTS IN SELECTED COMMUNITIES IN GEOGRAPHICALLY ISOLATED AND DISADVANTAGED AREAS IN DAVAO REGION

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Abstract: This study examined the predictive relationship between telehealth literacy and healthcare access among hypertensive patients residing in selected Geographically Isolated and Disadvantaged Areas (GIDAs) in the Davao Region. The study employed a quantitative, cross-sectional, descriptive–predictive design and included 100 hypertensive patients selected through convenience sampling. Data were collected using a modified questionnaire measuring telehealth literacy and healthcare access in terms of availability, accessibility, and utilization. Frequency, percentage, mean, standard deviation, Spearman's rank-order correlation, and Generalized Linear Model (GLM) were utilized for data analysis. Results revealed a high level of telehealth literacy (M = 3.89, SD = 0.91) and healthcare access (M = 3.92, SD = 0.86). Telehealth literacy demonstrated significant positive relationships with healthcare availability (r_s = .252, p = .012) and utilization (r_s = .395, p < .001), but not with accessibility (r_s = .008, p = .937). Furthermore, telehealth literacy significantly predicted healthcare availability (B = 0.309, p = .002) and utilization (B = 0.373, p < .001), explaining 8.96% and 17.50% of their respective variances. However, it did not significantly predict accessibility (B = 0.057, p = .558). The findings indicated that telehealth literacy was significantly correlated with healthcare availability and utilization but had no significant relationship with accessibility. The study suggested that strengthening telehealth literacy could support healthcare engagement among hypertensive patients, while improvements in transportation, digital connectivity, and healthcare infrastructure remained important considerations for addressing accessibility challenges in geographically disadvantaged communities.

Keywords: ***Telehealth Literacy, Healthcare Access, Hypertension, Descriptive–Predictive, Davao Region***

I. INTRODUCTION

Hypertension remains a significant global public health burden requiring continuous monitoring, treatment, and healthcare access. The World Health Organization (2025) estimated that 1.4 billion adults aged 30–79 years had hypertension in 2024, with approximately 44% unaware of their condition. Consistent healthcare access was essential for blood pressure control and prevention of complications (World Health Organization, 2025). Meanwhile, advances in digital health offered opportunities to strengthen health services, particularly for populations experiencing geographical and technological barriers (Eze et al., 2023).

At the international level, telehealth emerged as an alternative healthcare approach through remote consultations, monitoring, and communication with healthcare providers. However, effective use depended on patients' digital literacy, access to technology, and access to digital services (Eze et al., 2023). Eze et al. (2023) identified technological knowledge, digital skills, and healthcare barriers as factors influencing blood pressure telemonitoring. Similarly, Eze et al. (2025) linked higher electronic health literacy with participation in remote blood pressure monitoring.

At the national level, access to healthcare remained unequal across underserved Philippine communities. Leyso and Umezaki (2024) identified geographical disparities in accessibility to healthcare facilities, while Collado (2024) emphasized physical barriers experienced by residents of Geographically Isolated and Disadvantaged Areas (GIDAs). Locally, Candelario and Castillo (2025) explored healthcare navigation in island communities of the Davao Region. They found that digital services could reduce geographical barriers, although limited connectivity and technological capability created additional inequalities in healthcare access. However, the reviewed literature did not directly establish the relationship between telehealth literacy and healthcare availability, accessibility, and utilization among hypertensive patients in selected GIDA communities in the Davao Region (Eze et al., 2023, 2025; Leyso & Umezaki, 2024; Candelario & Castillo, 2025). Although local evidence illustrated the challenges of navigating healthcare services, the specific contribution of telehealth literacy to healthcare access among hypertensive patients remained

insufficiently addressed (Candelario & Castillo, 2025). This gap highlighted the need to examine both the relationship between telehealth literacy and healthcare access and its predictive contribution.

Accordingly, the present study examined the relationship between telehealth literacy and healthcare access among hypertensive patients in selected GIDAs in the Davao Region. It assessed healthcare availability, accessibility, and utilization and determined whether telehealth literacy significantly predicted these dimensions. Furthermore, the study sought to understand how digital health competencies influenced healthcare access in underserved communities. The findings were intended to support nursing education, community-based telehealth initiatives, and equitable healthcare access among geographically isolated and disadvantaged populations. The study also aimed to provide evidence to guide healthcare professionals and policymakers in developing inclusive healthcare strategies.

II. NEED OF THE STUDY.

Hypertension requires continuous monitoring, appropriate medication, regular medical consultations, and sustained access to healthcare services to prevent complications. However, residents of Geographically Isolated and Disadvantaged Areas (GIDAs) frequently encounter geographical, socioeconomic, technological, and healthcare-system barriers that may interfere with timely healthcare access. Distance from healthcare facilities, transportation difficulties, limited healthcare personnel, and inconsistent digital connectivity can further complicate hypertension management among underserved populations (Collado, 2024; Leyso & Umezaki, 2024).

The increasing integration of telehealth into healthcare delivery presents opportunities to address selected limitations of conventional healthcare services. Through digital technologies, patients may obtain health information, communicate with healthcare professionals, participate in remote consultations, and monitor chronic health conditions. Nevertheless, the successful adoption and utilization of these services require sufficient telehealth literacy, including the ability to locate, understand, evaluate, and apply digital health information. Individuals with limited digital competencies may experience difficulties participating in technology-assisted healthcare despite the availability of telehealth services (Eze et al., 2023, 2025).

The present study was necessary to determine whether telehealth literacy was significantly associated with and predicted healthcare access among hypertensive patients in selected GIDA communities in the Davao Region. By examining healthcare availability, accessibility, and utilization separately, the study provided evidence regarding the dimensions of healthcare access that were associated with digital health competencies. The findings may assist nurses, community healthcare workers, local government units, healthcare providers, and policymakers in developing appropriate telehealth education programs and healthcare interventions that address both individual digital competencies and structural barriers to healthcare delivery.

III. RESEARCH METHODOLOGY

3.1 Research Design

This study employed a quantitative, cross-sectional, descriptive–predictive research design to examine telehealth literacy and healthcare access among hypertensive patients in selected Geographically Isolated and Disadvantaged Areas (GIDAs) in the Davao Region. The descriptive component determined the demographic characteristics of the respondents and assessed their levels of telehealth literacy and healthcare access. Data were collected at a single point in time using a structured questionnaire.

The predictive component examined the relationships between telehealth literacy and healthcare access and determined whether telehealth literacy significantly predicted healthcare availability, accessibility, and utilization. This approach allowed the researcher to investigate associations among the study variables without manipulating the research environment.

3.2 Theoretical Framework

This study was anchored on the eHealth Literacy Model (Lily Model) developed by Norman and Skinner (2006) and the Model of Access to Healthcare proposed by Penchansky and Thomas (1981). These models provided the theoretical foundation for examining the relationship between telehealth literacy and healthcare access among hypertensive patients residing in selected Geographically Isolated and Disadvantaged Areas (GIDAs) in the Davao Region.

The eHealth Literacy Model explained that individuals' ability to obtain, understand, evaluate, and utilize electronic health information depended on six interconnected literacies: traditional, health, information, media, computer, and scientific literacy. The model emphasized that adequate eHealth literacy enabled individuals to make informed healthcare decisions and effectively engage with digital health services. In this study, it provided a basis for understanding how telehealth literacy supported hypertensive patients in navigating digital platforms, communicating with healthcare providers, and participating in telehealth consultations (Norman & Skinner, 2006).

The Model of Access to Healthcare conceptualized healthcare access as the degree of fit between patients' needs and healthcare services. It identified five dimensions: availability, accessibility, accommodation, affordability, and acceptability. The present study adopted availability and accessibility and incorporated utilization as an indicator of actual healthcare service use. These dimensions were particularly relevant among hypertensive patients in GIDAs, where geographical isolation, transportation difficulties, and limited healthcare resources could affect access to essential services (Penchansky & Thomas, 1981).

Guided by these models, the study examined the relationship between telehealth literacy and healthcare access in terms of availability, accessibility, and utilization. It further determined whether telehealth literacy significantly predicted these dimensions. Together, the models emphasized the importance of both digital health competencies and healthcare-system conditions in understanding healthcare access and utilization among hypertensive patients in geographically disadvantaged communities.

3.3 Research Setting

The study was conducted in selected Geographically Isolated and Disadvantaged Areas (GIDAs) in the Davao Region, Philippines. These communities were characterized by geographical challenges, transportation difficulties, varying levels of digital connectivity, and limitations in healthcare resources and services.

The research setting was considered appropriate because hypertensive patients residing in geographically disadvantaged communities may encounter difficulties obtaining regular healthcare consultations, monitoring their blood pressure, and maintaining continuity of treatment. The increasing use of telehealth also provided an opportunity to examine the relationship between digital health competencies and healthcare access among underserved populations.

3.4 Population and Sample

The respondents consisted of 100 hypertensive patients residing in selected GIDA communities in the Davao Region. Convenience sampling, a non-probability sampling technique, was utilized to recruit eligible participants based on their accessibility and availability during data collection.

The inclusion criteria required participants to be diagnosed with hypertension by a healthcare professional, aged 18 years and above, residing in the selected GIDA communities, and willing to participate voluntarily. Individuals who could not answer the questionnaire independently because of severe illness or cognitive impairment were excluded.

Sample size planning was informed by power analysis using a significance level of 0.05, statistical power of 0.80, and an assumed moderate effect size. The researcher coordinated with barangay health workers, rural health units, and local healthcare personnel to identify eligible respondents.

3.5 Research Instrument

The study utilized a modified, self-administered questionnaire consisting of three parts: demographic profile, telehealth literacy, and healthcare access. The first part gathered demographic and health-related characteristics, including age, sex, educational attainment, monthly income, internet access, digital device availability, duration of hypertension, frequency of healthcare consultations, and mobile signal availability.

The second part measured telehealth literacy using a modified version of the eHealth Literacy Scale (eHEALS) developed by Norman and Skinner (2006). The instrument consisted of nine items assessing respondents' perceived ability to locate, understand, evaluate, and utilize digital health information and telehealth services.

The third part measured healthcare access using an 11-item researcher-developed questionnaire guided by the Patient-Centered Access to Health Care Framework of Levesque et al. (2013). It consisted of three dimensions: availability (3 items), accessibility (3 items), and utilization (5 items). These dimensions assessed the perceived presence of healthcare resources, the ability to obtain healthcare services, and actual engagement with healthcare services.

Both instruments utilized a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), with higher mean scores indicating higher levels of telehealth literacy and healthcare access. The instrument underwent content validation by three expert validators. The Item-Level Content Validity Index (I-CVI) was 1.00 for all telehealth literacy and healthcare access items, while the Scale-Level Content Validity Index using the averaging method (S-CVI/Ave) was also 1.00 for both instruments.

Pilot testing was conducted among 30 respondents who were excluded from the main study. The telehealth literacy instrument obtained a Cronbach's alpha of 0.915. McDonald's omega coefficients for healthcare access were 0.968 for availability, 0.978 for accessibility, and 0.977 for utilization. These coefficients demonstrated excellent internal consistency.

3.6 Data Collection Procedure

Prior to data collection, the researcher obtained the necessary institutional and ethical approvals and secured permission from concerned local government units, rural health units, and barangay officials. Coordination with barangay health workers and local healthcare personnel facilitated the identification of eligible hypertensive patients.

Following instrument validation and pilot testing, the researcher administered the modified questionnaire to qualified participants. The purpose, procedures, and voluntary nature of the study were explained, and informed consent was obtained before participation.

Respondents were provided sufficient time to complete the questionnaire, and clarification was given when necessary. Completed questionnaires were retrieved, reviewed for completeness, and subsequently encoded, tabulated, analyzed, and interpreted using appropriate statistical procedures.

3.7 Ethical Considerations

The study observed established ethical principles to protect the rights, privacy, dignity, and welfare of the participants. Participation was voluntary, and respondents were informed of their right to refuse or withdraw without penalty.

The researcher maintained confidentiality by limiting access to collected information and presenting findings in aggregate form. Data collection, processing, and storage followed the principles of Republic Act No. 10173, or the Data Privacy Act of 2012. The study was conducted after obtaining the required ethical clearance and institutional permissions.

3.8 Statistical Treatment of Data

The collected data were analyzed using appropriate descriptive and inferential statistical procedures. Frequency and percentage were utilized to describe the demographic and health-related characteristics of the respondents. Mean and standard deviation were employed to determine the levels of telehealth literacy and healthcare access in terms of availability, accessibility, and utilization.

Spearman's rank-order correlation coefficient was utilized to determine the strength, direction, and statistical significance of the relationships between telehealth literacy and the three dimensions of healthcare access. Furthermore, the Generalized Linear

Model (GLM) was employed to examine whether telehealth literacy significantly predicted healthcare availability, accessibility, and utilization. Statistical significance was evaluated at the 0.05 level.

IV. RESULTS AND DISCUSSION

4.1 Demographic Profile of Respondents

Table 1. The Demographic Profile of Respondents

Demographic Profile	Frequency	Percentage
Age:		
29-32 yo	7	7.0
33-36 yo	16	16.0
37-40 yo	18	18.0
41-44 yo	3	3.0
45-48 yo	13	13.0
49-52 yo	8	8.0
53-56 yo	13	13.0
57-60 yo	12	12.0
61-64 yo	10	10.0
Total	**100**	**100%**
Generational Classification:		
Generation Z (29 years and below)	2	2%
Millennials (30-45 years)	48	48%
Generation X (46–61 years)	44	44%
Baby Boomers (62–80 years)	6	6%
	100	**100%**
Sex:		
Male	53	53.0
Female	47	47.0
Total	**100**	**100%**
Educational Attainment:		
Elementary Graduate	12	12.0
High School Level	11	11.0
High School Graduate	25	25.0
College Level	32	32.0
College Graduate	18	18.0
Postgraduate Studies	2	2.0
Total	**100**	**100%**
Monthly Income:		
Below ₱5,000	22	22.0
₱5,001–₱10,000	20	20.0
₱10,001–₱15,000	32	32.0
₱15,001–₱20,000	22	22.0
₱20,001 and above	4	4.0
Total	**100**	**100%**
Internet Access:		
Without Internet	21	21.0
With Internet	79	79.0
Total	**100**	**100%**
Smartphone:		
No/Not Available	13	13.0
Yes/Available	87	87.0
Total	**100**	**100%**
Tablet:		
No/Not Available	84	84.0
Yes/Available	16	16.0
Total	**100**	**100%**
Laptop/Desk Top:		
No/Not Available	84	84.0
Yes/Available	16	16.0
Total	**100**	**100%**
Basic Phone:		
No/Not Available	82	82.0
Yes/Available	18	18.0
Total	**100**	**100%**
No Device:		
Has at least one device	100	100.0

Duration of Hypertension:		
Less than 1 year	59	59.0
1–5 years	26	26.0
6–10 years	7	7.0
More than 10 years	8	8.0
Total	**100**	**100%**
Frequency of Healthcare Consultation:		
Monthly	1	1.0
Every 2–3 months	24	24.0
Every 6 months	32	32.0
Only when symptoms occur	43	43.0
Total	**100**	**100%**
Mobile Signal Availability:		
Strong	13	13.0
Moderate	66	66.0
Weak	21	21.0
Total	**100**	**100%**
n=100		

Table 1 presents the demographic and health-related characteristics of 100 hypertensive patients in selected GIDAs in the Davao Region. The largest age group was 37–40 years (18.0%), with Millennials (48.0%) and Generation X (44.0%) comprising the majority. Male respondents accounted for 53.0%, while most had reached college level (32.0%) and reported a monthly income of ₱10,001–₱15,000 (32.0%). Regarding digital resources, 87.0% had smartphones, 79.0% had internet access, and all respondents possessed at least one digital device. However, 66.0% reported moderate mobile signals, while 21.0% experienced weak connectivity. Most respondents had been diagnosed with hypertension for less than one year (59.0%), and 43.0% sought healthcare consultation only when symptoms occurred, indicating potential gaps in regular hypertension monitoring and follow-up care.

These findings highlighted the importance of digital literacy, reliable connectivity, and sustained healthcare engagement among hypertensive patients. Previous studies demonstrated that digital health technologies could support hypertension management in underserved communities (Poblete et al., 2023; Paluyo et al., 2023). However, technological availability alone did not guarantee effective telehealth utilization, as digital competencies and connectivity remained important considerations (Greer & Abel, 2022; Lee et al., 2024). Furthermore, Falcon et al. (2026) identified disparities in hypertension management across Philippine healthcare settings, emphasizing the need for regular monitoring and continuous care. Overall, the findings suggested that strengthening telehealth literacy alongside improvements in digital infrastructure and healthcare delivery could support healthcare access and utilization among hypertensive patients in geographically disadvantaged communities.

4.2 Level of Telehealth Literacy

Table 2. Level of Telehealth Literacy

Variable	Mean	SD	Interpretation
Telehealth Literacy	3.89	0.91	High

The findings revealed that the respondents demonstrated a high level of telehealth literacy, with an overall mean of 3.89 and a standard deviation of 0.91. This indicates that respondents generally possessed favorable knowledge and confidence in locating, understanding, evaluating, and utilizing digital health information and telehealth services.

Among the questionnaire indicators, the highest mean was obtained for the statement concerning the ability to find health information through digital or telehealth platforms (M = 3.98, SD = 0.89). Conversely, understanding health information and instructions provided through telehealth services obtained the lowest mean (M = 3.77, SD = 0.94), although it remained within the high category.These results suggest that respondents were generally capable of finding digital health information but may require additional support in understanding and interpreting information communicated through telehealth platforms.

Eze et al. (2025) similarly found that hypertensive patients participating in remote blood pressure monitoring demonstrated higher electronic health literacy than nonparticipants. Jiang (2024) also reported that community-based digital health management interventions improved electronic health literacy and hypertension self-management. These findings emphasize the importance of strengthening digital health competencies to support effective participation in technology-assisted healthcare.

4.3 Level of Healthcare Access

Table 3. Level of Healthcare Access

Dimension	Mean	SD	Interpretation
Availability	4.01	0.93	High
Accessibility	3.93	0.84	High
Utilization	3.82	0.81	High
Overall	**3.92**	**0.86**	**High**

The findings revealed a high overall level of healthcare access among hypertensive patients in the selected GIDA communities, with a mean of 3.92 and a standard deviation of 0.86.

Among the three dimensions, healthcare availability obtained the highest mean of 4.01, indicating that respondents generally perceived healthcare services and resources as available within their communities. Accessibility followed with a mean of 3.93, while utilization obtained the lowest mean of 3.82, although both remained within the high category.

These findings indicate that perceived healthcare availability did not necessarily correspond to an equivalent level of actual healthcare utilization. Despite reporting generally favorable access, some respondents continued to seek healthcare only when symptoms occurred, suggesting differences in healthcare-seeking practices and continuity of care.

Leyso and Umezaki (2024) identified geographical inequalities in the accessibility of healthcare services across the Philippines, while Collado (2024) emphasized the influence of geographical isolation and physical barriers on healthcare access. Similarly, Meulman et al. (2024) highlighted the role of individual, socioeconomic, and healthcare-system factors in healthcare utilization. These studies support the interpretation that healthcare access is multidimensional and cannot be explained solely by the presence of healthcare facilities or digital healthcare services.

4.4 Relationship Between Telehealth Literacy and Healthcare Access

Table 4. Relationship Between Telehealth Literacy and Healthcare Access

Healthcare Access Dimension	Spearman's rho	p-value	Interpretation
Availability	.252	.012	Significant
Accessibility	.008	.937	Not Significant
Utilization	.395	< .001	Significant

The Spearman rank-order correlation analysis revealed significant positive relationships between telehealth literacy and healthcare availability ($r_s = .252$, $p = .012$) and between telehealth literacy and healthcare utilization ($r_s = .395$, $p < .001$).

The relationship between telehealth literacy and availability was weak but statistically significant, indicating that respondents with higher telehealth literacy tended to report higher perceived healthcare availability. Meanwhile, utilization demonstrated a moderate positive relationship with telehealth literacy, suggesting that greater digital health competencies were associated with greater engagement in healthcare services.

In contrast, telehealth literacy demonstrated no significant relationship with healthcare accessibility ($r_s = .008$, $p = .937$). This finding indicates that the ability to access, understand, and utilize digital health information was not meaningfully associated with respondents' reported ability to reach and obtain healthcare services. Eze et al. (2023, 2025) emphasized that technological knowledge, digital skills, and electronic health literacy were associated with participation in digital healthcare and remote blood pressure monitoring. These findings provide context for the positive relationships between telehealth literacy and healthcare availability and utilization. However, healthcare accessibility may be influenced more strongly by external conditions, including transportation, distance, infrastructure, and healthcare facility distribution. Collado (2024) and Leyso and Umezaki (2024) highlighted geographical barriers affecting healthcare access in underserved Philippine communities. Thus, improving telehealth literacy alone may not adequately address the structural challenges experienced by hypertensive patients in geographically disadvantaged areas.

***4.5** Predictive Influence of Telehealth Literacy on Healthcare Availability*

Table 5. Prediction of Telehealth Literacy on Healthcare Availability

Statistical Indicator	Value
Regression Estimate (B)	0.309
Standard Error	0.100
z-value	3.110
p-value	.002
95% Confidence Interval	0.114–0.504
R^2	0.0896
Explained Variance	8.96%

The Generalized Linear Model revealed that telehealth literacy significantly and positively predicted healthcare availability ($B = 0.309$, $p = .002$). The confidence interval did not include zero, supporting the statistical significance of the relationship.

The model explained approximately 8.96% of the variability in perceived healthcare availability. This indicates that while telehealth literacy contributed significantly to predicting healthcare availability, most of the variation remained unexplained by the model. These findings suggest that individuals with higher telehealth literacy may be more capable of recognizing, identifying, and navigating available healthcare services.

However, healthcare availability also depends on factors beyond individual digital competencies, including the distribution of healthcare facilities, available healthcare professionals, technological infrastructure, and healthcare system resources. Eze et al. (2025) identified an association between electronic health literacy and participation in remote blood pressure monitoring. Similarly, Leyso and Umezaki (2024) emphasized the influence of geographical inequalities on healthcare service distribution. Taken together, these findings indicate that telehealth literacy may contribute to perceived healthcare availability but should be considered alongside broader healthcare-system conditions.

4.6 Predictive Influence of Telehealth Literacy on Healthcare Accessibility

Table 6. Prediction of Telehealth Literacy on Healthcare Accessibility

Statistical Indicator	Value
Regression Estimate (B)	0.057
Standard Error	0.098
z-value	0.586
p-value	.558
95% Confidence Interval	−0.134–0.249
R^2	0.00349
Explained Variance	0.35%

The Generalized Linear Model demonstrated that telehealth literacy did not significantly predict healthcare accessibility (B = 0.057, p = .558). The confidence interval included zero, indicating insufficient statistical evidence of a predictive relationship.

The model explained only approximately 0.35% of the variability in healthcare accessibility. This suggests that telehealth literacy contributed minimally to explaining differences in respondents' reported healthcare accessibility.

This finding highlights the distinction between possessing digital healthcare competencies and being able to obtain healthcare services. Even when patients have sufficient knowledge and skills to use telehealth platforms, geographical distance, transportation difficulties, limited digital connectivity, healthcare infrastructure, and financial barriers may continue to restrict healthcare accessibility.

Leyso and Umezaki (2024) documented spatial inequalities in healthcare accessibility across Philippine municipalities, while Collado (2024) identified physical barriers affecting healthcare access in GIDA communities. These findings support the importance of addressing structural and geographical barriers alongside digital health education interventions.

4.7 Predictive Influence of Telehealth Literacy on Healthcare Utilization

Table 7. Prediction of Telehealth Literacy on Healthcare Utilization

Statistical Indicator	Value
Regression Estimate (B)	0.373
Standard Error	0.082
z-value	4.560
p-value	< .001
95% Confidence Interval	0.213–0.533
R^2	0.175
Explained Variance	17.50%

The Generalized Linear Model revealed that telehealth literacy significantly and positively predicted healthcare utilization (B = 0.373, p < .001). The confidence interval excluded zero, supporting the statistical significance of the relationship.

The model explained approximately 17.50% of the variability in healthcare utilization, representing the greatest explanatory contribution among the three healthcare access dimensions.

These findings indicate that hypertensive patients with higher telehealth literacy tended to demonstrate greater healthcare utilization. Individuals who possessed greater confidence and ability in locating, understanding, evaluating, and applying digital health information may have been better prepared to participate in healthcare consultations, monitoring, and follow-up services.

Eze et al. (2025) reported that hypertensive patients participating in remote blood pressure monitoring demonstrated higher electronic health literacy than nonparticipants. Likewise, Eze et al. (2023) identified technological knowledge, digital skills, and motivation as factors influencing participation in blood pressure telemonitoring.

Nevertheless, the model explained only 17.50% of the variation in healthcare utilization. This indicates that other factors, including socioeconomic circumstances, geographical conditions, healthcare-system resources, and technological infrastructure, may also be relevant to healthcare utilization among hypertensive patients in geographically disadvantaged communities.

V. CONCLUSION

The study concluded that hypertensive patients residing in selected Geographically Isolated and Disadvantaged Areas (GIDAs) in the Davao Region demonstrated generally high levels of telehealth literacy and healthcare access. Although most respondents reported having access to digital devices and the internet, differences in mobile signal availability and healthcare consultation practices highlighted continuing challenges in sustained healthcare engagement.

Telehealth literacy demonstrated significant positive relationships with healthcare availability and utilization but showed no significant relationship with accessibility. Furthermore, telehealth literacy significantly predicted healthcare availability and utilization, explaining approximately 8.96% and 17.50% of their respective variances. However, telehealth literacy did not significantly predict healthcare accessibility.

These findings suggest that telehealth literacy represents an important factor associated with the recognition and utilization of healthcare services among hypertensive patients. Nevertheless, digital health competencies alone may not adequately address accessibility challenges arising from geographical isolation, transportation difficulties, inadequate healthcare infrastructure, and limited connectivity.

Therefore, strengthening telehealth literacy should be integrated with broader healthcare interventions that improve digital connectivity, healthcare resources, transportation support, and continuity of care. Such approaches may contribute to more equitable healthcare opportunities and improved engagement in hypertension management among underserved populations.

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REFERENCES

[1] Ahmed, S. K. 2024. How to choose a sampling technique and determine sample size for research: A simplified guide for researchers. Oral Oncology Reports, 12: 100662. https://doi.org/10.1016/j.oor.2024.100662

[2] Althubaiti, A. 2023. Sample size determination: A practical guide for health researchers. Journal of General and Family Medicine, 24(2): 72–78. https://doi.org/10.1002/jgf2.600

[3] Ban, S., Kim, Y. and Seomun, G. 2024. Digital health literacy: A concept analysis. Digital Health, 10: 20552076241287894. https://doi.org/10.1177/20552076241287894

[4] Candelario, C. M. C. and Castillo, E. C. 2025. Crossing waters, crossing divides: A qualitative exploration of patient navigation experiences in Philippine island communities. Health & Place, 94: 103482. https://doi.org/10.1016/j.healthplace.2025.103482

[5] Colburn, D. A. 2024. The impact of telehealth expansion on health care utilization, access, and outcomes during the pandemic: A systematic review. Telemedicine and e-Health, 30(5): 1401–1410. https://doi.org/10.1089/tmj.2023.0440

[6] Collado, Z. C. 2024. The right to healthcare must include the right to ease of physical access: Exploring geography-health nexus in GIDA communities in the Philippines. International Journal of Social Determinants of Health and Health Services, 54(4): 436–440. https://doi.org/10.1177/27551938241265673

[7] Cronbach, L. J. 1951. Coefficient alpha and the internal structure of tests. Psychometrika, 16(3): 297–334. https://doi.org/10.1007/BF02310555

[8] Estrela, M., Semedo, G., Roque, F., Ferreira, P. L. and Herdeiro, M. T. 2023. Sociodemographic determinants of digital health literacy: A systematic review and meta-analysis. International Journal of Medical Informatics, 177: 105124.

[9] Eze, C. E., Dorsch, M. P., Coe, A. B., Lester, C. A., Buis, L. R. and Farris, K. B. 2023. Facilitators and barriers to blood pressure telemonitoring: A mixed-methods study. Digital Health, 9: 20552076231187585. https://doi.org/10.1177/20552076231187585

[10] Eze, C. E., Dorsch, M. P., Coe, A. B., Lester, C. A., Buis, L. R. and Farris, K. B. 2025. eHealth literacy and participation in remote blood pressure monitoring among patients with hypertension: Cross-sectional study. Journal of Medical Internet Research, 27: e71926. https://doi.org/10.2196/71926

[11] Falcon, R. M. G., Chua, J. G. B., Feliciano, J. F., et al. 2026. Quality-of-care of Filipino patients with hypertension in primary care settings. BMC Primary Care, 27: 102. https://doi.org/10.1186/s12875-026-03220-w

[12] Greer, D. B. and Abel, W. M. 2022. Exploring feasibility of mHealth to manage hypertension in rural Black older adults: A convergent parallel mixed method study. Patient Preference and Adherence, 16: 2135–2148.

[13] Health Resources and Services Administration. 2025. Telehealth programs and healthcare access. https://www.hrsa.gov/telehealth

[14] Hua, Z., Yuqing, S., Qianwen, L. and Hong, C. 2025. Factors influencing eHealth literacy worldwide: Systematic review and meta-analysis. Journal of Medical Internet Research, 27: e50313. https://doi.org/10.2196/50313

[15] Ji, H., Dong, J., Pan, W., et al. 2024. Associations between digital literacy, health literacy, and digital health behaviors among rural residents: Evidence from Zhejiang, China. International Journal for Equity in Health, 23: 68.

[16] Jiang, X., Wang, L., Leng, Y., Xie, R., Li, C., Nie, Z., Liu, D. and Wang, G. 2024. The level of electronic health literacy among older adults: A systematic review and meta-analysis. Archives of Public Health, 82: 204. https://doi.org/10.1186/s13690-024-01428-9

[17] Jiang, Y. 2024. Impact of community proactive health management application on electronic health literacy and self-management of hypertensive patients. Public Health Nursing, 41(6): 1436–1445. https://doi.org/10.1111/phn.13424

[18] Katz, M. E., Mszar, R., Grimshaw, A. A., Gunderson, C. G., Onuma, O. K., Lu, Y. and Spatz, E. S. 2024. Digital health interventions for hypertension management in US populations experiencing health disparities: A systematic review and meta-analysis. JAMA Network Open, 7(2): e2356070. https://doi.org/10.1001/jamanetworkopen.2023.56070

[19] Lee, J. S., et al. 2024. Rural and urban differences in hypertension management through telehealth before and during the COVID-19 pandemic among commercially insured patients. American Journal of Hypertension, 37(2): 107–111. https://pubmed.ncbi.nlm.nih.gov/37772661/

[20] Leyso, N. L. and Umezaki, M. 2024. Spatial inequality in the accessibility of healthcare services in the Philippines. GeoJournal, 89: 120. https://doi.org/10.1007/s10708-024-11098-3

[21] Meulman, I., Uiters, E., Cloin, M., Polder, J. and Stadhouders, N. 2024. Systematic review of individual-level, community-level, and healthcare system-level factors contributing to socioeconomic differences in healthcare utilisation in OECD countries with universal health coverage. BMJ Open, 14(3): e080559. https://doi.org/10.1136/bmjopen-2023-080559

[22] Norman, C. D. and Skinner, H. A. 2006a. eHealth literacy: Essential skills for consumer health in a networked world. Journal of Medical Internet Research, 8(2): e9. https://doi.org/10.2196/jmir.8.2.e9

[23] Norman, C. D. and Skinner, H. A. 2006b. eHEALS: The eHealth Literacy Scale. Journal of Medical Internet Research, 8(4): e27. https://doi.org/10.2196/jmir.8.4.e27

[24] Paluyo, J., Stake, A. and Bryson, R. 2023. Padayon: A new digital health model for diabetes and hypertension in rural Philippines. BMJ Innovations, 9(1): 43–48. https://innovations.bmj.com/content/9/1/43

[25] Panganiban, J. M. S., et al. 2025. Impact of primary care benefits on healthcare utilisation and estimated out-of-pocket expenses in urban, rural and remote settings in the Philippines. BMJ Open Quality, 14(1): e002676. https://doi.org/10.1136/bmjoq-2023-002676

[26] Park, J. H. and Mun, E. J. 2025. Variables influencing digital health literacy in older adults: A systematic review and meta-analysis. Journal of Korean Academy of Nursing, 55(4): 651–667. https://doi.org/10.4040/jkan.25112
[27] Penchansky, R. and Thomas, J. W. 1981. The concept of access: Definition and relationship to consumer satisfaction. Medical Care, 19(2): 127–140. https://pubmed.ncbi.nlm.nih.gov/7206846/
[28] Pickering, A., Rafaqat, W., Balk, A., Chen, M., Abrogena, L., He, S., Showstark, M., Davis, A., Chen, A. and Lee, J. 2024. A building blocks approach to implementing a telehealth clinic model to improve primary care access in the Philippines: A large-scale pilot project. Telehealth and Medicine Today, 9(1). https://doi.org/10.30953/thmt.v9.456
[29] Poblete, J. Y., et al. 2023. Digitally based blood pressure self-monitoring program that promotes hypertension self-management and health education among patients with low-income: Usability study. JMIR Human Factors, 10: e46313. https://humanfactors.jmir.org/2023/1/e46313
[30] Republic Act No. 10173. 2012. Data Privacy Act of 2012. https://privacy.gov.ph/data-privacy-act/
[31] Serafica, R., Reyes, A. T., Cacciata, M. C., Kawi, J., Leyva, E. W. A., Sy, F. S. and Evangelista, L. S. 2025. Bridging the gap: Reducing health inequities in access to preventive health care services in rural communities in the Philippines. Journal of Transcultural Nursing, 36(1): 24–33. https://doi.org/10.1177/10436596241271270
[32] Shi, Z., Du, X., Li, J., Hou, R., Sun, J. and Marohabutr, T. 2024. Factors influencing digital health literacy among older adults: A scoping review. Frontiers in Public Health, 12: 1447747. https://doi.org/10.3389/fpubh.2024.1447747
[33] To, H. M. H., Palafox, B., Balabanova, D., Palileo-Villanueva, L. and McKee, M. 2025. Study on health seeking behaviour and determinants of undiagnosed hypertension in poor households in the Philippines, part of the RESPOND study (SHARP-RESPOND). PLOS Global Public Health, 5(5): e0004550. https://doi.org/10.1371/journal.pgph.0004550
[34] Totaro, et al. 2025. Digital health literacy in patients with hypertension: A cross-sectional study. Journal of Clinical Nursing. https://doi.org/10.1111/jocn.17811
[35] Varma, N., Cygankiewicz, I., Turakhia, M. P., et al. 2021. 2021 ISHNE/HRS/EHRA/APHRS collaborative statement on mHealth in arrhythmia management: Digital medical tools for heart rhythm professionals. European Heart Journal – Digital Health, 2(1): 7–48.
[36] Weiner, H., Gallo, A., Gabiola, J., Ip, E. and Bender, M. 2024. Patient perspectives on utilizing a mobile medical clinic in rural Philippine communities. Journal of Asian Health, 4(2). https://doi.org/10.59448/jah.v4i2.62
[37] World Health Organization. 2021. More than 700 million people with untreated hypertension. https://www.who.int/news/item/25-08-2021-more-than-700-million-people-with-untreated-hypertension
[38] World Health Organization. 2023a. Digital health. https://www.who.int/health-topics/digital-health
[39] World Health Organization. 2023b. Stronger systems for healthy hearts in the Philippines.
[40] World Health Organization. 2025. Hypertension. https://www.who.int/news-room/fact-sheets/detail/hypertension
[41] Xie, L., Lam, C. T., Levin-Zamir, D., Nutbeam, D. and Mo, P. K. H. 2026. Digital health literacy interventions for older adults: A systematic review and meta-analysis of effects and intervention components. Social Science & Medicine, 410: 119897. https://doi.org/10.1016/j.socscimed.2026.119897
[42] Xuewen, W. 2024. Information behavior model of e-health literacy for online health information users. Journal of Information and Visualization.
[43] Zaghloul, H., Fanous, K., Ahmed, L., Arabi, M., Varghese, S., Omar, S., Al-Najjar, Y., El-Khoury, R., Gray, J., Rakab, A. and Arayssi, T. 2025. Digital health literacy in patients with common chronic diseases: Systematic review and meta-analysis. Journal of Medical Internet Research, 27: e56231. https://doi.org/10.2196/56231

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