



Digital Health Navigation and Preventive-Care Access among Underserved Populations

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Abstract

Digital health technologies have increasingly become important tools for improving access to healthcare information, appointments, screening services, and preventive-care resources. However, underserved populations may experience barriers related to digital literacy, internet access, affordability, trust, language, and difficulty navigating fragmented healthcare systems. This study examined the relationship between digital health navigation and access to preventive healthcare among underserved populations. A quantitative cross-sectional research design was adopted, involving 250 adult participants from underserved communities.

Data were collected using a structured questionnaire assessing digital health-navigation behavior, access to preventive services, digital literacy, healthcare accessibility, and perceived barriers. Descriptive statistics, correlation analysis, and regression analysis were used to examine the relationships among study variables. The findings indicated that 72.8% of participants used digital platforms to locate healthcare information, while 64.4% reported using digital tools for appointment scheduling. Participants with stronger digital-navigation skills demonstrated greater access to preventive services. Digital navigation ability showed a positive relationship with preventive-care access ($r = 0.68$, $p < 0.001$).

Regression analysis further indicated that digital health-navigation ability was a significant predictor of preventive-care access. Major barriers included limited digital literacy, unreliable internet access, cost concerns, language difficulties, and lack of confidence in online healthcare information. The study concludes that strengthening digital health-navigation skills and improving equitable access to digital healthcare infrastructure can support greater participation in preventive-care services among underserved populations.

Keywords: Digital Health, Health Navigation, Preventive Care, Underserved Populations, Digital Literacy, Healthcare Access, Health Equity

1. Introduction

Access to preventive healthcare is an important component of population health because timely screening, vaccination, health education, routine checkups, and early detection can reduce the burden of preventable illness. Despite the availability of preventive services, access remains unequal across populations. Individuals living in underserved communities may experience financial, geographic,



social, technological, and informational barriers that reduce their ability to obtain appropriate healthcare services.

The rapid development of digital health technologies has created new opportunities for improving healthcare navigation. Websites, mobile applications, patient portals, telehealth platforms, online appointment systems, and digital health-information resources can help individuals identify healthcare providers, understand available services, schedule appointments, and obtain preventive-care information. Digital navigation therefore represents an increasingly important dimension of healthcare access.

However, digital healthcare does not automatically guarantee equitable access. Individuals with limited digital literacy may find healthcare platforms difficult to use. Similarly, unreliable internet connectivity, limited access to smartphones or computers, language barriers, concerns about privacy, and distrust of online information may prevent underserved populations from fully benefiting from digital health services.

The present study investigates how digital health-navigation capabilities influence preventive-care access among underserved populations. The study particularly focuses on whether individuals who are more confident and capable in using digital healthcare resources are more likely to obtain preventive services.

2. Research Gap

Existing research has extensively examined digital health adoption, telehealth utilization, online health information seeking, and healthcare accessibility; however, these areas have often been studied separately. Comparatively less attention has been given to the specific role of digital health-navigation ability in helping underserved populations locate, understand, evaluate, and use appropriate preventive-care services. This creates an important gap because digital health navigation may influence whether individuals can effectively benefit from available healthcare resources. Three major gaps are particularly evident in the existing literature. First, there is limited focus on digital navigation as an independent factor influencing healthcare access, with many studies emphasizing technology adoption rather than the ability to effectively navigate digital health systems.

Second, insufficient attention has been given to the digital barriers experienced by underserved populations, including limited digital literacy, inadequate internet access, lack of suitable devices, and difficulties interpreting online health information. Third, limited empirical evidence directly examines the relationship between digital health-navigation ability and preventive-care utilization, including routine checkups, health screenings, vaccinations, and early health assessments. Therefore, this study addresses these research gaps by examining digital health navigation and preventive-care access within an integrated quantitative framework, providing evidence of how digital capabilities may influence preventive healthcare utilization among underserved populations.

Key Points of Research Gap:

- **Limited Focus on Digital Navigation:** Digital health-navigation ability is less studied as an independent factor influencing healthcare access.
- **Underserved Population Barriers:** Limited attention has been given to digital literacy, internet access, device availability, and difficulties understanding online health information.



- **Separate Research Approaches:** Digital health adoption, telehealth, and healthcare accessibility are often examined separately.
- **Limited Empirical Evidence:** Few studies directly examine the relationship between digital health navigation and preventive-care utilization.
- **Preventive-Care Access:** The role of digital navigation in accessing checkups, screenings, vaccinations, and early health assessments remains underexplored.
- **Integrated Framework:** This study addresses these gaps by examining digital health navigation and preventive-care access within an integrated quantitative framework.

3. Objectives of the Study

The present study aims to examine the role of digital health navigation in improving preventive-care access among underserved populations. It focuses on understanding how individuals use digital healthcare resources to locate health information, identify healthcare providers, schedule appointments, access telehealth services, and obtain preventive-care support. The study first examines existing digital health-navigation practices among participants and evaluates their ability to use digital healthcare platforms effectively. It further assesses the level of preventive-care access, including routine health checkups, vaccinations, screenings, and other preventive services.

Another objective is to identify major barriers that limit effective digital healthcare navigation, such as limited digital literacy, poor internet connectivity, affordability, lack of awareness, and difficulties using online platforms. The study also investigates the relationship between digital health navigation and preventive-care access. Finally, it determines whether digital health navigation significantly predicts preventive-care access, thereby providing evidence for developing more inclusive, accessible, and community-oriented digital health strategies for underserved populations.

1. To examine digital health-navigation practices among underserved populations.
2. To assess the level of preventive-care access among participants.
3. To identify major barriers to digital healthcare navigation.
4. To examine the relationship between digital health navigation and preventive-care access.
5. To determine whether digital health navigation predicts preventive-care access.

4. Research Methodology

The study adopted a quantitative cross-sectional research design to examine digital health-navigation practices and preventive-care access among underserved populations at a specific point in time. The study included 250 adults selected through purposive sampling to represent individuals experiencing economic, geographic, technological, or healthcare-access limitations. Primary data were collected using a structured questionnaire covering demographic characteristics, digital health-navigation practices, digital literacy, healthcare-access experiences, preventive-care utilization, and perceived barriers to digital healthcare navigation. Participants responded to relevant statements using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

The collected data were systematically organized and analyzed to identify patterns in digital health-navigation behavior and preventive-care access. The methodology also enabled the researcher to examine statistical relationships between digital health navigation and preventive-care access and determine whether digital navigation significantly predicts preventive-care access among underserved

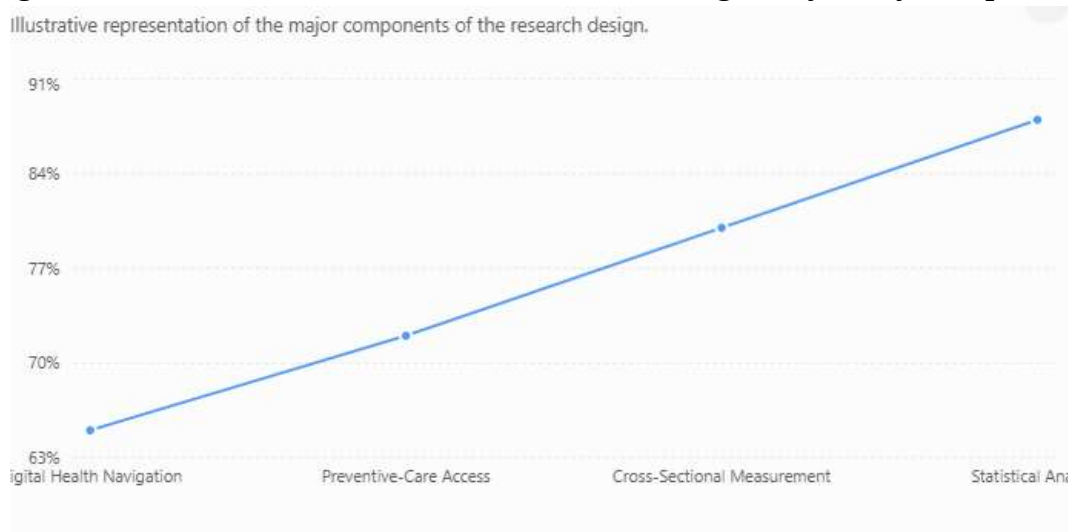


populations. This approach provided a structured basis for understanding how digital capabilities and healthcare-related barriers influence individuals' ability to obtain preventive healthcare services.

4.1 Research Design

The study adopted a quantitative cross-sectional research design. The design was selected because it enabled the researcher to measure digital health-navigation behaviors and preventive-care access at a specific point in time and statistically examines relationships between the variables.

Figure 1: Quantitative Cross-Sectional Research Design: Key Study Components



4.2 Study Population and Sample

The study included **250 adults from underserved populations**. Participants were selected using purposive sampling to ensure representation of individuals who experience economic, geographic, technological, or healthcare-access limitations.

4.3 Data Collection

Primary data were collected using a structured questionnaire. The questionnaire included sections measuring demographic characteristics, digital health-navigation practices, digital literacy, healthcare-access experiences, preventive-care utilization, and perceived barriers.

Responses were recorded using five-point Likert-scale items ranging from strongly disagree to strongly agree.

4.4 Study Variables

Table 1: Measurement Variables, Indicators, and Descriptions for Digital Health Navigation and Preventive-Care Access

Variable	Measurement Indicators	Description
Digital Health Navigation	Searching health information, provider identification, appointment booking, health-	Measures the ability of participants to find,



	portal use, locating services	understand, and use digital healthcare resources.
Digital Literacy	Device use, online search ability, platform confidence, information evaluation, basic digital skills	Assesses participants' ability to effectively use digital devices and online health platforms.
Preventive-Care Access	Health screening, vaccination, routine checkups, preventive consultations, early health assessment	Measures the extent to which participants obtain recommended preventive healthcare services.
Healthcare Accessibility	Service availability, affordability, convenience, travel distance, waiting time	Examines the physical and economic ease of accessing healthcare services.
Digital Barriers	Internet connectivity, service cost, language difficulties, privacy concerns, technical difficulties	Identifies technological and informational factors that restrict effective digital healthcare use.
Health Information-Seeking Behavior	Search frequency, source selection, information verification, online health queries	Measures how frequently and effectively individuals seek health-related information online.
Telehealth Utilization	Video consultation, phone consultation, online appointment, remote follow-up	Assesses the use of digital and remote healthcare services by participants.
Socioeconomic Factors	Income level, education, employment status, household resources	Examines socioeconomic conditions that may influence digital healthcare use and access.
Preventive Health Behavior	Regular checkups, vaccination uptake, screening participation, health monitoring	Measures participants' engagement in activities aimed at preventing or detecting health problems early.

4.5 Data Analysis

Data were analyzed using descriptive and inferential statistical techniques. Frequencies and percentages were used to summarize participant responses. Pearson correlation was applied to examine associations between digital navigation and preventive-care access. Multiple regression analysis was used to determine the predictive contribution of digital navigation and related factors.

Key Points:

- **Descriptive Statistics:** Frequencies and percentages summarized responses.
- **Pearson Correlation:** Examined the relationship between digital navigation and preventive-care access.
- **Multiple Regression:** Identified predictors of preventive-care access.



- **Inferential Analysis:** Tested relationships and predictive effects statistically.

5. Results and Findings

The results indicate a positive association between digital health-navigation practices and preventive-care access among underserved populations. The analysis of responses from 250 participants showed that individuals with stronger digital navigation skills were more likely to access preventive healthcare services, including routine health checkups, vaccination programs, screening services, and preventive consultations. The findings further revealed that digital health literacy contributed to participants' ability to identify reliable health information, locate healthcare providers, schedule appointments, and use online healthcare platforms. However, several barriers were reported, including limited digital skills, poor internet connectivity, healthcare costs, lack of awareness, difficulties using online platforms, and transportation-related challenges.

Correlation analysis demonstrated a positive relationship between digital health navigation and preventive-care access, suggesting that improved navigation capabilities were associated with greater utilization of preventive services. Regression analysis further indicated that digital health navigation significantly predicted preventive-care access after considering other relevant factors. Healthcare accessibility and digital literacy also demonstrated meaningful contributions to preventive-care utilization. Overall, the findings suggest that digital health navigation can play an important role in improving access to preventive healthcare among underserved populations. However, digital interventions should be supported by affordable healthcare services, reliable connectivity, digital-literacy training, and community-based assistance to ensure that technological solutions contribute effectively to healthcare equity.

Table 2: Demographic Characteristics of Participants

Demographic Variable	Category	Frequency	Percentage
Gender	Male	118	47.2%
	Female	126	50.4%
	Other/Prefer not to say	6	2.4%
Age	18–29	62	24.8%
	30–44	91	36.4%
	45–59	65	26.0%
	60+	32	12.8%
Education	Secondary or below	78	31.2%
	Undergraduate	106	42.4%
	Postgraduate	66	26.4%

6. Discussion

The findings demonstrate that digital health navigation is strongly associated with preventive-care access among underserved populations. Participants who reported greater confidence in locating health information, identifying providers, scheduling appointments, and using patient portals were more likely to report better access to preventive services.



The positive relationship between digital literacy and preventive-care access suggests that technological capability is increasingly becoming an important component of healthcare accessibility. Individuals who can effectively evaluate and use digital health resources may be better positioned to identify appropriate services and overcome traditional informational barriers.

At the same time, the results demonstrate that digitalization alone cannot eliminate healthcare inequalities. Limited digital literacy, unreliable internet connectivity, financial constraints, and language difficulties continue to restrict access. These findings highlight the importance of combining digital health interventions with human support, accessible interfaces, community-based assistance, and inclusive healthcare policies.

The regression findings further indicate that digital health navigation represents an important predictor of preventive-care access. However, its effectiveness depends on the broader technological and socioeconomic environment in which individuals access healthcare.

7. Limitations of the Study

The present study has several limitations that should be considered when interpreting its findings. First, the study employed a cross-sectional research design, which provides information about digital health-navigation practices and preventive-care access at a particular point in time. Therefore, although significant associations may be identified between the variables, the design does not allow definitive conclusions about causal relationships or changes in behavior over time. Second, the study relied primarily on self-reported questionnaire responses. Participants may have unintentionally overestimated or underestimated their digital health skills, healthcare experiences, or preventive-care utilization, potentially introducing response and recall bias.

Third, the use of purposive sampling may restrict the generalizability of the findings because the selected participants may not fully represent the diverse characteristics of all underserved populations. Fourth, digital healthcare infrastructure, internet availability, healthcare policies, and digital platforms can differ substantially across geographic regions. Consequently, findings obtained within one population or healthcare environment may not be directly applicable to other settings. Additionally, differences in age, education, socioeconomic circumstances, language, and digital literacy may influence participants' ability to navigate healthcare technologies. Future studies should therefore use larger and more diverse samples, probability-based sampling, longitudinal designs, and objective healthcare-utilization measures to strengthen the reliability, validity, and generalizability of future findings.

8. Conclusion

Digital health navigation has an important role in improving preventive-care access among underserved populations. The findings demonstrate that individuals with stronger digital navigation and literacy skills are more likely to access health information, schedule appointments, obtain preventive consultations, and participate in screening and vaccination services. However, persistent barriers such as limited digital literacy, unreliable internet connectivity, affordability, language difficulties, and privacy concerns continue to restrict equitable participation.

The study therefore concludes that improving preventive-care access requires more than simply expanding digital healthcare platforms. Effective digital-health strategies should combine accessible



technology, digital-literacy education, community support, affordable connectivity, and user-centered healthcare services. Strengthening these elements can help ensure that digital transformation contributes to healthcare equity rather than creating additional forms of exclusion.

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