Evaluating the Acceptance of a Digital Health Intervention for Blood Pressure Monitoring in Jamaican Hypertension Patients with Family and Healthcare Support.

Roberto James, Jhevon Noble, Garville Ferguson, and Brandon Bent

Faculty of Engineering and Computing, University of Technology, Jamaica

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Chapters 1 to 5

Supervisor: Associate Professor Susan Muir

Module Coordinator: Mr. Christopher Panther

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Declaration of Authorship

We hereby certify that this research project titled “Evaluating the Acceptance of a Digital Health Tool for Blood Pressure Monitoring in Jamaican Hypertension Patients with Family and Healthcare Support”, and the work presented in it are authentic records of the research work carried out by us under the supervision and guidance of Ms. Muir. We confirm that the work incorporated in this assignment has not been submitted to any other university or institution, and that where we have consulted the work of others, it is always clearly attributed.

R. James

Roberto James — June 16, 2025

Date

B. Bent

Brandon Bent — June 16, 2025

Date

J Noble

Jhevon Noble — June 16, 2025

Date

G. Ferguson

Garville Ferguson — June 16, 2025

Date

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Abstract

Hypertension is a significant public health issue in Jamaica, with a high prevalence and substantial impact on cardiovascular health. Digital health interventions (DHIs) offer promising tools for hypertension management by enabling remote monitoring, improving patient engagement, and supporting self-care. Despite Jamaica's high mobile phone penetration, DHIs for hypertension management remained relatively unknown and underutilized. This study aimed to evaluate the acceptability of DHIs for managing hypertension among Jamaican patients, their supporting family members, and healthcare professionals (HCPs), and to develop a prototype to assist with blood pressure management. The prototype was a website featuring patient blood pressure tracking, a support network with group chat for family members, patient to HCP communication, and automated alerts for abnormal readings. A cross-sectional, mixed-methods design was used, combining quantitative surveys of 52 hypertensive patients and 61 family members with qualitative interviews of 3 HCPs. The study was conducted in various healthcare settings across Jamaica. A modified Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) model guided the analysis, incorporating additional factors such as trust and privacy concerns. The findings of this study are expected to offer valuable insights into the acceptability of DHIs, informing strategies to enhance their adoption and improve hypertension management outcomes in Jamaica. Results showed that 75% of patients and 85% of family members reported a strong intention to use or continue using DHIs for blood pressure management. Both groups also demonstrated strong facilitating conditions, with the majority reporting access to digital devices and confidence in their usability indicating they were well-resourced to adopt digital health tools. Healthcare professionals expressed a positive perception of the tool’s potential to enhance care but noted challenges such as digital literacy and cost for older adults, as well as the

risk of alert fatigue. Despite these concerns, all stakeholder groups generally viewed the prototype positively, indicating a strong level of initial acceptability. These findings suggest readiness among Jamaican users to adopt DHIs for hypertension management. It is recommended that future development involve all user groups and explore real-world implementation to enhance adoption and effectiveness.

Keywords: Hypertension management, Digital health interventions (DHIs), Acceptability, Technology adoption, Remote monitoring

Executive Summary

Chapter 1: Introduction

This study aims to evaluate the acceptance of Digital Health Interventions (DHIs) for blood pressure monitoring among Jamaican patients with hypertension, their family members, and healthcare professionals. It seeks to assess the acceptability of these digital tools for managing hypertension across these groups, while also identifying the key facilitators and barriers.

Background

Hypertension remains a major public health concern in Jamaica, with 61.7% of older adults currently affected (Waldron et al., 2018). With the country experiencing the fastest mobile phone adoption rate in the Caribbean (Ahmad, 2020), there is significant potential to leverage mobile-based solutions for hypertension management. Systematic reviews and meta-analyses by Katz et al. (2024) and Yap et al. (2024) have shown that digital health interventions (DHIs) result in significant reductions in blood pressure compared to standard care. Family involvement further enhances the effectiveness of DHIs by supporting medication adherence, lifestyle modifications, and self-monitoring practices (Kario et al., 2022; Sun et al., 2023). Additionally, incorporating healthcare professionals (HCPs) into the design and implementation of DHIs ensures these tools are safe, user-friendly, and responsive to patients' needs (Grynne et al., 2021; Ramasawmy et al., 2024).

Problem Statement

Given Jamaica's high mobile penetration rate (Ahmad, 2020) and the rising burden of hypertension affecting approximately one in three adults (JHLS, 2018), it is timely to explore the acceptability of digital health interventions (DHIs) for blood pressure management. DHIs may be more effective when supported by family members (Kario et al., 2022) and when HCPs actively participate in their implementation (Hwang & Chang, 2023).

Significance

This research provides critical insights into the acceptability of DHIs among Jamaican hypertensive patients, their family members, and healthcare professionals. By highlighting the conditions that support or hinder DHI use, the study contributes to strategies that could improve blood pressure control, reduce cardiovascular risks, and lower healthcare costs through more coordinated, stakeholder-driven hypertension management.

Purpose

The purpose of this study is to evaluate the acceptability of DHI among Jamaican hypertensive patients, their healthcare providers, and family members who offer support. Additionally, the study aims to evaluate the acceptability of a prototype that manages hypertensive patients.

Research Questions

This study focuses on the following two research questions:

1. How acceptable is the digital health intervention (DHI) for managing hypertension among Jamaican patients, as well as among their family members providing support, and the healthcare professionals involved in their care?
2. What are the barriers and facilitating conditions of a DHI for managing hypertension among Jamaican patients, as well as among their family members providing support, and the healthcare professionals involved in their care?

Delimitations

This study focused on hypertensive patients, family members, and healthcare professionals in Jamaica. Participants were primarily recruited through UTech Ja, and healthcare professionals were drawn from 2 parishes. As a result, the findings may not reflect the full diversity of perspectives across the island or be generalizable to other populations. The study evaluated the acceptability of only one type of DHI, a prototype website, excluding other forms like mobile apps or wearables. It also used a cross-sectional design, capturing data at one point in time, so changes in perceptions or behaviour over time were not assessed.

Chapter 2: Literature Review

The literature review covers research on the global and local prevalence of hypertension, as well as the acceptability of DHIs among patients, family members who provide support, and HCPs. It also examines the barriers and limitations to DHI adoption.

Prevalence of Hypertension

Hypertension is a leading global health concern, responsible for approximately 10 million deaths annually, primarily due to its role in cardiovascular diseases such as heart attacks and strokes (Chacko & Jeemon, 2020). Prevalence is especially high in urban areas, where poor lifestyle habits and limited treatment adherence contribute to poor blood pressure control (Singh et al., 2017). In Jamaica, the burden is similarly severe, with 61.4% of adults over 60 affected and many struggling with control due to cultural barriers, low adherence, and inadequate patient education (Mitchell-Fearon et al., 2014; Kwak et al., 2021).

The Acceptability of DHI for Patients

Digital health interventions (DHIs) have shown high levels of acceptability among patients across various populations, including those managing hypertension (Alzahrani et al., 2022). Studies indicate that mobile apps, text messaging, and video-based tools not only improve blood pressure control and adherence but are also well-received, with patients expressing satisfaction and a willingness to continue use (Alzahrani et al., 2022).

The Acceptability of DHI for Family Members

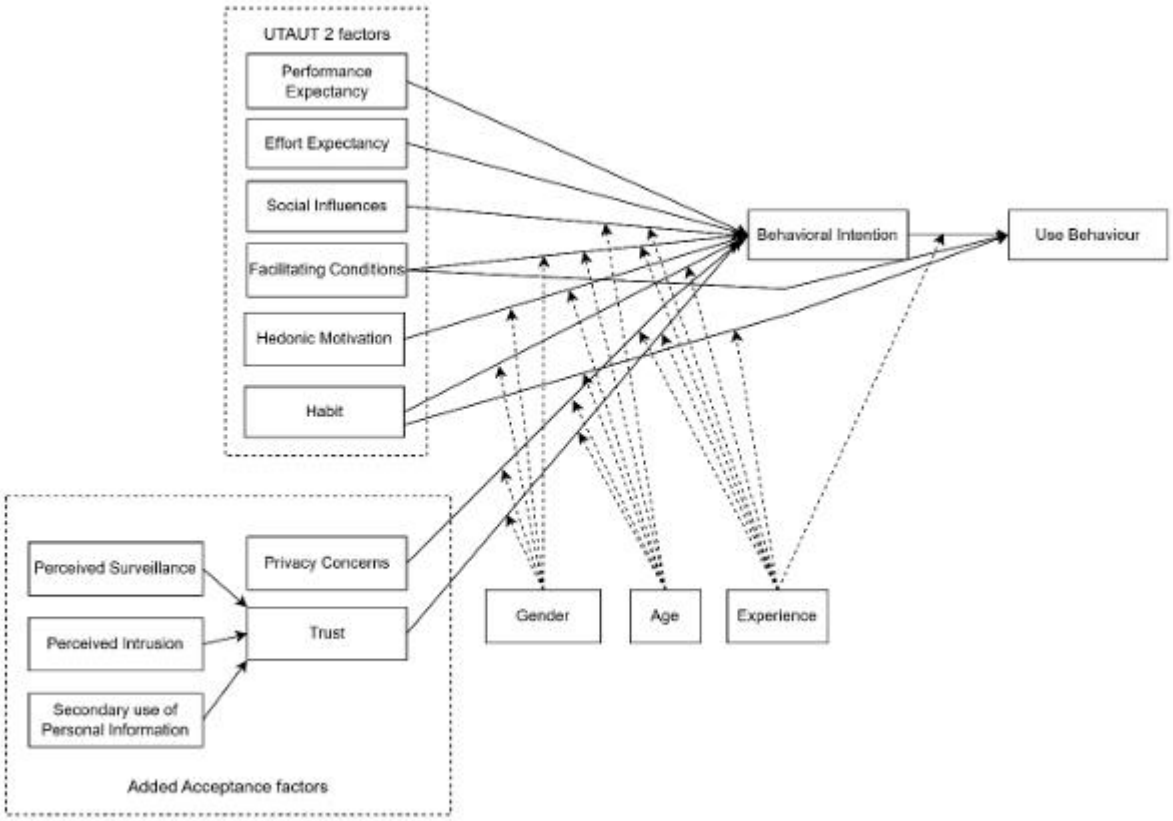
Family involvement has been shown to significantly improve hypertension management outcomes, with studies reporting that patients with active family support are far more likely to control their condition effectively (Fitria et al., 2024; Kurnia et al., 2024). These findings highlight that digital health interventions (DHIs) may be more acceptable and effective when they engage family members as part of the care process.

The Acceptability of DHI for Health Care Professionals

Healthcare professionals recognize the value of DHIs in hypertension care, particularly for improving safety, autonomy, and clinical decision-making (May et al., 2025). Their positive response to the Noom app a digital tool offering self-monitoring and personalized feedback shows a willingness to adopt interactive platforms that support hypertension self-management (Alnooh et al., 2024).

UTAUT2 Review on the Acceptance of Digital Health Interventions

The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) builds on earlier models by incorporating additional factors such as hedonic motivation, price value, and habit, increasing its predictive accuracy to 74% for behavioural intention and 52% for usage (Al Farsi, 2023). This study uses a modified UTAUT2 framework, integrating trust and privacy to better capture user concerns in healthcare settings. These additions aim to create a more context-sensitive model for understanding the acceptance of digital blood pressure monitoring tools.



Proposed Theoretical Framework

Barriers, Challenges, and Limitations of DHI Adoption

The adoption of digital health interventions (DHIs) for hypertension management is hindered by challenges such as poor integration into clinical workflows, usability issues, and privacy concerns among both providers and patients (Palacholla et al., 2019; Pigera et al., 2025). Structural digital disparities further affect uptake, particularly among older adults, rural populations, and those with limited digital literacy or access (Khoong et al., 2021; Welch et al., 2023).

Gaps in Research

There is a notable lack of localized data on hypertension prevalence, impact, and DHI adoption in the Jamaican context, as much of the existing literature draws on international settings such as India. Broader gaps also remain regarding long-term DHI effectiveness, standardization of methodologies, and the influence of socioeconomic and cultural factors on adoption (Kario et al., 2022; Palacholla et al., 2019; Khoong et al., 2021; Sakima et al., 2024).

Chapter 3: Research Methodology

This chapter outlines the mixed-methods approach used to assess the acceptability of a DHI for hypertension management in Jamaica. Guided by a modified UTAUT2 model, the study combined surveys and interviews to explore perceptions, behavioral intentions, and barriers among patients, family members, and HCPs.

Research Design

This cross-sectional mixed-methods study assessed the acceptability of a DHI for hypertension management. Using a modified UTAUT2 model that included trust and privacy concerns, the research explored users' perceptions and barriers to adoption, providing insights into behavioural intentions and DHI use in Jamaica.

Population and Sampling

Participants were hypertensive patients, their family members, and healthcare professionals in Jamaica. Non-probability sampling was employed: snowball sampling for patients, and convenience sampling for family members (from Utech Ja) and healthcare professionals (from medical health centers). The final sample included 52 patients, 61 family members, and 3 healthcare professionals.

Instruments

Two instruments were utilized in this study: an acceptability questionnaire for hypertensive patients and family members and a set of interview questions for healthcare professionals.

Data Analysis

Quantitative data were analyzed using Microsoft Excel for descriptive statistics, cross-tabulations, chi-square tests, Pearson correlation and Cronbach alpha. Qualitative interview data underwent thematic analysis to identify acceptability, facilitating conditions, and barriers.

Ethical Considerations

Ethical approval was obtained, and participant anonymity was ensured by not collecting personally identifiable information. All data was securely stored on an encrypted OneDrive. Informed consent was obtained, outlining the study's purpose, right to withdraw, and data usage.

Methodological Limitations

Key limitations of this study include a relatively small sample size, which limits generalizability. Potential biases may have arisen from the inconsistent order in which participants viewed the prototype and from reliance on self-reported data. Additionally, individuals with limited digital literacy or without internet access were excluded because most data collection was conducted online. Finally, assessing acceptability using only a single website-based prototype may not fully capture the range of user expectations for digital health interventions.

Project Description

This project involves the development of a web-based platform designed for collaborative hypertension management. The platform includes features such as recording blood pressure readings, sending alerts to a support network when hypertensive readings are too high or too low, and providing a built-in chat function for real-time communication between patients and members of their support network (Family Members and HCP).

Chapter 4: Findings

The study revealed a high level of acceptability of digital health interventions (DHIs) among all three stakeholder groups. Among patients, 75% indicated an intention to use or continue using digital tools to manage their blood pressure, while 85% of family members expressed similar willingness to support their loved ones through such platforms. Healthcare professionals also viewed the DHI positively, recognizing its potential to enhance patient care, though they highlighted concerns such as alert overload, cost, and older adults' difficulty with technology. Both patients and family members showed strong facilitating conditions, including access to digital devices and confidence in their use. These findings suggest a strong readiness to adopt DHIs for hypertension management, while also pointing to key usability and accessibility barriers that should be addressed in future design efforts.

	BI	UB	BE	PC	PE	EE	SI	FC	HM	Ha	PT	E1
BI	1											
UB	0.244	1										
BE	.551**	0.248	1									
PC	-0.015	0.120	0.194	1								
PE	.427**	0.102	.373**	0.167	1							
EE	.394**	.377**	0.166	0.265	.586**	1						
SI	0.160	.285*	0.168	0.148	.369**	.369**	1					
FC	.353*	0.173	.327*	0.139	.612**	.601**	.433**	1				
HM	-0.035	.501**	0.014	-0.052	0.138	0.294	0.106	0.063	1			
Ha	0.245	.514**	0.005	-0.221	0.025	.448**	0.225	0.144	.487**	1		
PT	.346*	0.285	0.301	-0.284	0.101	0.225	0.206	0.293	0.162	.385*	1	
E1	0.249	0.006	0.214	0.007	.273*	.304*	-0.094	0.185	-0.008	0.169	0.086	1
**. Correlation is significant at the 0.01 level (2-tailed).												
*. Correlation is significant at the 0.05 level (2-tailed).												

Table showing Pearson Correlation Analysis Matrix of Constructs for Patients

Note: E = Experience, Behavioural Intention = BI, Behavioural Expectations = BE, Use Behavioural = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI, Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

Among patients, Behavioural Expectations, Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Perceived Trust all showed positive correlations with Behavioural Intention. These findings suggest that patients are more likely to adopt digital health tools when they find them useful, easy to use, trustworthy, and when they have the necessary resources and support to use them confidently.

	BI	BE	UB	PC	PE	EE	SI	FC	HM	Habit	PT
BI	1										
BE	.709**	1									
UB	.331**	.439**	1								
PC	-0.066	-0.083	0.020	1							
PE	.480**	.590**	.447**	-0.041	1						
EE	.446**	.542**	.309*	-0.121	.577**	1					
SI	.399**	.555**	.298*	-0.035	.333**	.311*	1				
FC	0.171	.392**	.344**	0.016	.343**	.592**	0.231	1			
HM	0.120	0.198	0.047	-0.063	0.236	.318*	.472**	0.057	1		
Habit	.339*	.400**	0.217	-0.179	0.192	0.178	.528**	0.080	.589**	1	
PT	.350*	.490**	0.117	-.390**	.536**	.483**	.453**	0.206	.444**	.362**	1
** = Correlation is significant at the 0.01 level (2-tailed)											
* = Correlation is significant at the 0.05 level (2-tailed)											

Table showing Pearson Correlation Analysis Matrix of Constructs for Family Members

Note: Behavioural Intention = BI, Behavioural Expectations = BE, Use Behavioural = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI, Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

Among family members, Behavioural Expectations, Use Behaviour, Performance Expectancy, Effort Expectancy, Social Influence, Habit, and Perceived Trust all showed positive correlations with Behavioural Intention. These findings suggest that family members are more likely to support or adopt digital health tools when they see them as useful and easy to use, feel socially encouraged, trust the technology, and when using such tools aligns with their established habits.

Chapter 5: Conclusion and Recommendations

The findings revealed strong acceptability of DHIs across all three stakeholder groups. Most patients and family members expressed a willingness to use digital tools for hypertension management, with performance expectancy, effort expectancy, and Behavioural Expectations emerging as key factors influencing their intention to adopt these tools. This is further supported by widespread access to digital devices and confidence in using technology among both groups. Healthcare professionals also viewed the DHI positively but noted potential barriers such as limited digital literacy among older adults and concerns about affordability.

Recommendations

The study recommends that future studies should:

1. Involve all key stakeholders' patients, their family members, and healthcare professionals in the design, testing, and refinement of DHIs.
2. Evaluating the actual effectiveness of DHIs in improving blood pressure control, medication adherence, and overall health outcomes.
3. Developers should ensure that DHI interfaces are optimized for a range of devices including smaller smartphones to maximize accessibility and sustained engagement.

Chapter 1: Introduction

Hypertension is a critical public health issue, significantly contributing to cardiovascular diseases (CVD), which account for approximately 45% of heart disease deaths and 51% of stroke deaths globally (Xia et al., 2022). In Jamaica, the prevalence of hypertension among older adults has risen dramatically from 43.4% in 1989 to 61.7% in recent years (Waldron et al., 2018). Despite the availability of medication subsidies, only 34.8% of Jamaican hypertensive patients have their condition under control (Waldron et al., 2018). Globally, about 40% of adults aged 25 and over had elevated blood pressure in 2008 (Xia et al., 2022). The increasing prevalence of hypertension, particularly in low and middle-income countries, highlights the urgent need for effective interventions to manage and control this condition (Xia et al., 2022). With Jamaica experiencing the fastest mobile phone adoption rate in the Caribbean, DHIs that leverage mobile technology present a promising avenue for improving hypertension management (Ahmad, 2020).

Digital Health Interventions (DHIs) have shown promise in improving healthcare outcomes. They can lead to improvements in the quality and timeliness of care, more efficient use of resources, and better engagement for people who utilize health and social care services (Mackenzie & Hughes, 2024). Systematic reviews and meta-analysis indicated that participants using mHealth or telehealth showed significant decreases in blood pressure levels compared to those receiving standard care (Katz et al., 2024; Yap et al., 2024). These multifaceted benefits underscore the transformative potential of DHIs in modernizing healthcare and enhancing the experience of those it serves.

When healthcare providers are involved in the development and implementation of DHIs, they may be more effective. Hwang and Chang (2023) noted that nurse-led digital health interventions were more successful in lowering blood pressure and improving self-management in individuals with hypertension compared to standard care. Involving healthcare professionals (HCPs) in developing and implementing digital health tools ensures their user-friendliness and relevance by leveraging HCPs' valuable feedback on design and functionality to meet the actual needs of patients (Grynne et al., 2021). Furthermore, HCPs have a nuanced understanding of the barriers their patients face using digital tools and by collaborating with developers, these tools can better tailor these solutions (Ramasawmy et al. 2024). Integrating healthcare professionals into DHIs is essential to ensure these tools are both effective and safe for hypertension management.

Digital health interventions may be more effective when family members are involved in the care process. Incorporating family support into digital health interventions for hypertension can improve medication adherence, self-monitoring, and lifestyle changes, which are vital for effective blood pressure control (Kario et al., 2022; Sun et al., 2023). By leveraging family support alongside self-care practices, digital interventions can be more effective in promoting sustained blood pressure control and reducing cardiovascular risks.

Problem Statement

Given Jamaica’s high mobile penetration rate (Ahmad, 2020) and the growing burden of hypertension, exploring the acceptance of a digital health intervention (DHI) to support hypertension management is both timely and relevant. Approximately one in three Jamaicans aged 15 and older are hypertensive, with 35.8% of women and 31.7% of men affected (Jamaica

Health and Lifestyle Survey, 2018). Digital health interventions have the potential to change healthcare delivery and may continue to improve how hypertension is managed (Kario et al., 2022). Additionally, they may be more effective when family members are involved in the care process (Kario et al., 2022). Furthermore, evidence suggests that the active participation of healthcare professionals may be a key factor in enhancing DHI effectiveness (Hwang & Chang, 2023).

Purpose

The purpose of this study is to evaluate the acceptability of DHI among Jamaican hypertensive patients, their healthcare providers, and family members who offer support. Additionally, the study aims to evaluate the acceptability of a prototype that manages hypertensive patients.

Research Question

How acceptable is the digital health intervention (DHI) for managing hypertension among Jamaican patients, as well as among their family members providing support and the healthcare professionals involved in their care?

What are the barriers and facilitating conditions of a DHI for managing hypertension among Jamaican patients, as well as among their family members providing support and the healthcare professionals involved in their care?

Significance

This study may provide valuable insights into the acceptability of digital health interventions for managing hypertension among patients, their family members who provide support, and

healthcare professionals. These insights could potentially contribute to reducing the risk of uncontrolled blood pressure, cardiovascular complications, and associated healthcare costs by fostering a more collaborative and supported approach to hypertension management.

Delimitations

This study focused specifically on the Jamaican population, limiting its scope to hypertensive patients, their family members, and healthcare professionals. The hypertensive patients and family members were identified through the University of Technology, Jamaica (UTech Ja), which may affect the diversity and representativeness of the sample. The HCPs who participated were from the parishes of St. Catherine and St. Thomas. This may limit the diversity of perspectives captured from HCPs across the island. As such, the findings may not be generalizable to populations outside of Jamaica or to other stakeholder groups not included in the study.

The study also sought to evaluate the acceptability of a single type of DHI, specifically a prototype website. Other forms of DHIs, such as mobile applications and wearables, were not explored. This delimitation allowed for a focused investigation of stakeholder responses to one specific digital tool.

The study was further delimited by its cross-sectional design, capturing data at a single point in time. As a result, it does not account for changes in perception or behaviour over time.

Definition of Terms

- Adherence: The degree to which a person follows medical advice, including taking prescribed medications, maintaining a diet, or making lifestyle changes as recommended by a healthcare provider.
- Blood pressure: The measure of the force of blood pushing through your arteries.
- Cardiovascular disease: A broad term for disorders that affect the heart and blood vessels.
- Digital Health Intervention (DHI): Health services or treatments provided via technology to share, collect, or use health-related information.
- Family-based intervention – A family-based intervention is a therapeutic or preventive approach that involves the active participation of family members in addressing a particular health, behavioural, or social issue affecting one or more individuals within the family unit. In this study, family members refer to individuals who provide emotional, practical, or health-related support to a hypertensive patient, and may include relatives such as spouses, children, siblings, or other close kin living in the same household or maintaining regular contact
- Health care provider : A healthcare provider is a licensed individual professional or health facility authorized to deliver medical diagnosis and treatment services.
- Hypertension: A condition where the pressure in your blood vessels is elevated, typically measured at 140/90 mmHg or higher.

- Patients: An individual receiving medical care or treatment from a physician or medical facility.

- Self-care: The act of managing one's own health by using available knowledge and information.

- Stroke: Occurs when the brain’s blood supply is interrupted or when there is a sudden bleed within the brain.

Chapter 2: Literature Review

Jamaica has experienced a remarkable rise in mobile phone usage over the past two decades, positioning itself as a leader in mobile penetration within the Caribbean. Mobile ownership and penetration rates in some parts of the region have exceeded 100%, with Jamaica experiencing the fastest mobile phone adoption rate (Ahmad, 2020). This increase has been linked to changes in the economic, legal, and regulatory framework that enabled greater availability and affordability of mobile handsets among lower-income earners (Ahmad, 2020). These developments highlight the growing potential for mobile-based digital health interventions to reach a broad segment of the Jamaican population

Hypertension is a critical public health issue, significantly contributing to cardiovascular diseases (CVD), which account for a large percentage of heart disease and stroke deaths globally (Xia, Zhao, & Nianogo, 2022). In Jamaica, hypertension prevalence among older adults has risen dramatically, with only 34.8% of patients having their condition under control despite medication subsidies (Waldron et al., 2018). Digital health interventions (DHIs) have emerged as promising tools for managing hypertension, yet many lack rigorous validation and professional collaboration (Kario et al., 2022). Nurse-led DHIs have shown greater success in lowering blood pressure and improving self-management compared to standard care (Hwang & Chang, 2023). Professional guidance enhances DHI effectiveness by allowing timely adjustments and individualized monitoring (Willis et al., 2022). The WeChat-based health behavioural digital intervention program (WHBDIP) aims to enhance patients' knowledge of healthy behaviours, which may be more effective when family members are involved in the process (Sun et al., 2023). This review evaluates the acceptability of DHIs among Jamaican patients, their families,

and healthcare professionals, aiming to identify factors influencing their adoption and sustained use.

Prevalence and Negative Impact of Hypertension

Hypertension is a pervasive public health issue in Jamaica, it is a major contributor to the burden of chronic diseases (Boume et al, 2009). Among Jamaicans over 60 years of age, the prevalence of hypertension is substantially higher, at 61.4% (Mitchell-Fearon et al., 2014). A study highlights that many patients struggle with achieving blood pressure control, largely due to insufficient patient education, cultural barriers, and low adherence to prescribed treatment regimens (Kwak et al., 2021). The study done by Kwak et al., (2021), emphasizes the role of healthcare providers in addressing these challenges, noting that many practitioners lack confidence in promoting alternative or complementary treatment options due to limited formal training, insufficient evidence-based guidelines tailored to local practices, and concerns about the potential interactions between traditional remedies and conventional treatments. Additionally, hypertension in Jamaica is closely associated with increased rates of cardiovascular complications and type 2 diabetes, which are compounded by socio-economic disparities and limited access to health resources (Kwak et al., 2021). Addressing these issues requires a multidisciplinary effort that combines patient education, improved provider training, and the integration of culturally relevant treatment approaches into mainstream healthcare.

Globally, hypertension remains a leading cause of morbidity and mortality, contributing to approximately 10 million deaths annually, primarily through its role as a risk factor for cardiovascular diseases (CVDs), such as heart disease and stroke (Chacko & Jeemon, 2020). Prevalence rates are highest in urban areas, where lifestyle factors such as physical inactivity,

high-sodium diets, and stress exacerbate the condition. In India, urban populations exhibit similar challenges, with low awareness and poor treatment adherence being common; only 38% of hypertensive individuals were aware of their condition, and of those on treatment, just 35% achieved adequate control (Singh et al., 2017). The Jamaican context parallels these trends but is further complicated by cultural reliance on traditional medicine, which healthcare providers may not fully integrate into clinical management strategies.

The negative impacts of uncontrolled hypertension in Jamaica extend beyond cardiovascular health, with implications for economic productivity and healthcare system strain (Kwak et al., 2021). Patients who develop complications from untreated hypertension require costly medical interventions, which disproportionately affect lower-income groups (Chacko & Jeemon, 2020; Singh et al., 2017). These issues underscore the need for an integrative, community-based approach to hypertension awareness and management that leverages local cultural practices while promoting evidence-based medical care in Jamaica (Kwak et al., 2021).

Hypertension Management in Patients

Effective hypertension management encompasses both pharmacological treatments and lifestyle modifications, with self-care practices playing an essential role in achieving optimal blood pressure control. Despite available treatments, Low Middle Income Countries show low adherence to both medication and lifestyle recommendations, hindering effective BP management (Chacko & Jeemon, 2020). Strategies like the DASH (Dietary Approaches to Stop Hypertension) diet, regular physical activity, and non-smoking have demonstrated efficacy, yet adherence remains low, as observed in Kerala, India, where only 24% of patients met recommended physical activity levels and less than 15% adhered to dietary guidelines (Chacko

& Jeemon, 2020). Chacko and Jeemon (2020) indicate that in low- and middle-income countries, where healthcare access may be limited, family members often play a key role in hypertension care by participating in health-related decision-making and reinforcing behaviour change, thereby supporting better treatment adherence. Singh et al. (2017) also emphasized the role of routine BP monitoring and regular check-ups in urban settings to enhance patient outcomes. Hence, a comprehensive approach combining medical support, self-care, and community-based interventions is essential for improving hypertension control rates and mitigating associated health risks.

The Importance of DHI, The Role It Plays, and Its Effectiveness in Healthcare

Digital Health Interventions (DHIs) are transforming healthcare. They offer innovative solutions that enhance patient interaction with systems and support chronic condition management. These tools improve patient autonomy and access to essential resources, enabling real-time monitoring and personalized care (Flessa & Huebner, 2021). By streamlining processes and addressing challenges like high patient loads and staff shortages, DHIs hold promise for improving care, especially in resource-limited settings (Flessa & Huebner, 2021). As a result, DHIs play a crucial role in shaping a more efficient and accessible healthcare future.

One of the most significant contributions of DHIs is their ability to seamlessly integrate into healthcare systems, improving service quality while reducing costs (MacKenzie & Hughes, 2024). This cost reduction is achieved through several mechanisms: DHIs reduce the need for in-person consultations, lower hospital admission rates through early intervention and remote monitoring, and improve treatment adherence, which helps prevent complications and readmissions. Their adaptability drives this integration, as DHIs are accessible on smartphones

and wearables (MacKenzie & Hughes, 2024). Such accessibility empowers patients to actively participate in their healthcare while enabling providers to monitor and intervene more specifically. By fostering patient engagement and adherence, DHIs not only enhance individual care experiences but also align with broader goals of equity and accessibility, supporting both local and global healthcare needs (MacKenzie & Hughes, 2024).

In evaluating the broader impact of DHIs, it becomes evident that their benefits extend beyond clinical outcomes. Their usability and interoperability enhance operational efficiency, making them valuable for healthcare systems aiming to modernize (Kolasa & Kozinski, 2020). Unlike traditional metrics like Quality-Adjusted Life Years (QALYs), which focus solely on clinical outcomes, comprehensive evaluation frameworks highlight how DHIs meet modern demands for data security and usability. This multidimensional value underscores their potential to improve both patient care and system-wide healthcare efficiency (Kolasa & Kozinski, 2020).

A compelling example of DHI effectiveness is preventive healthcare, where they are instrumental in promoting lifestyle changes such as increased physical activity and improved diet. These interventions address lifestyle-related diseases that strain healthcare systems globally (Pedersen & Schlichter, 2023). Research shows that when implemented on a large scale, DHIs in preventive care yield significant cost-effective outcomes, influencing health behaviour and reducing the prevalence of chronic diseases. This scalability highlights their potential to reshape public health strategies and contribute to sustainable healthcare systems (Pedersen & Schlichter, 2023).

The Acceptability of DHI for Patients

Patient acceptability is critical to the success of digital health interventions (DHIs) in managing hypertension. These interventions provide patients with tools to monitor their blood pressure at home, receive timely prompts, and track health changes, fostering a sense of autonomy and control over their health management. This ease of use and self-empowerment contribute significantly to better adherence to treatment plans and improved clinical outcomes (Wechkunanukul et al., 2020). Patients value the consistent reminders and feedback provided by DHIs, which support lifestyle adjustments and medication adherence, further reinforcing their effectiveness (Morton, 2019).

The capacity of DHIs to foster self-management and continuous monitoring makes them particularly well-suited for chronic conditions like hypertension (Kolasa & Kozinski, 2020). By empowering patients to take an active role in their care, these interventions create a more patient-centered healthcare experience. This aligns with the broader view that usability and adaptability to individual patient needs are integral to successful DHI implementation. These elements, coupled with provider support, ensure that DHIs are not only clinically effective but also well-received by patients, establishing patient acceptability as a key metric in evaluating their success (Flessa & Huebner, 2021).

Adaptability is central to the success of DHIs in hypertension care. Ensuring accessibility through user-friendly technology and fostering trust among patients and healthcare providers is essential for widespread adoption (MacKenzie & Hughes, 2024). By creating a supportive framework integrating digital tools into routine care, DHIs become valuable assets for patients

and providers. This adaptability enhances their effectiveness in meeting the unique needs of individuals while maintaining a high standard of care delivery (MacKenzie & Hughes, 2024).

Digital health interventions have demonstrated high acceptance rates across various populations and health conditions. For example, a randomized controlled pilot trial in Nepal examined the effectiveness and acceptability of a mobile phone text messaging intervention (TEXT4BP) aimed at improving blood pressure (BP) control and treatment adherence among hypertensive patients. The study reported significant reductions in systolic and diastolic BP, with 70% of the intervention group achieving target BP levels compared to 48% in the control group. Participants also expressed strong acceptability and a willingness to continue using the TEXT4BP intervention (Bhandari et al., 2022). Similarly, a systematic review by Alzahrani et al. (2022) assessed multiple mHealth interventions for the self-management of hypertension and evaluated their acceptability in supporting hypertensive treatment, finding consistent evidence of high patient acceptability. Across 13 studies (12 randomized controlled trials and one clinical trial), most interventions including mobile apps, automated text messaging, and video-based education were associated with improved blood pressure control, medication adherence, and self-efficacy. Notably, participants frequently reported satisfaction with the interventions and a desire to continue using them, highlighting their potential to support long-term hypertension management (Alzahrani et al., 2022). The review concluded that mHealth technologies offer a reliable and acceptable means of enhancing communication between patients and healthcare providers, particularly in facilitating medication adherence and daily self-monitoring practices (Alzahrani et al., 2022). These findings collectively support the growing role of DHIs in empowering patients to manage hypertension more effectively.

Several factors have been shown to influence hypertensive patients' behavioural intention to adopt DHIs, particularly mobile health (mHealth) apps for self-management. Both Breil et al. (2019) and Breil et al. (2022) employed the Unified Theory of Acceptance and Use of Technology (UTAUT) framework, expanded with additional psychological constructs, to explore these determinants. In Breil et al. (2022), performance expectancy was the only UTAUT construct that remained statistically significant in the final regression model for patients ($\beta = .66$, $p < .001$), despite effort expectancy, social influence, and facilitating conditions showing individual significance in earlier steps. Furthermore, variables drawn from Protection Motivation Theory specifically self-efficacy, perceived vulnerability, and response efficacy significantly improved the model, demonstrating the relevance of health-related motivation in technology acceptance. In contrast, Breil et al. (2019) found that both performance expectancy and effort expectancy were significant predictors of intention (Step 1: $R^2 = .57$, $p < .001$). Subsequent steps that introduced additional psychological variables namely perceived health threat and openness to experience increased the model's explanatory power (final model $R^2 = .62$). These findings underscore the central role of performance expectancy and effort expectancy as key drivers of behavioural intention, suggesting that perceptions of usefulness and ease of use are especially influential in shaping hypertensive patients' acceptance of DHIs.

The Acceptability of DHI for Family Members

Family involvement has shown promise as a key determinant of DHIs' acceptability. Active family involvement in patient care, encompassing the understanding and communication

of patient and family values, goals, and decision-making processes, is increasingly recognized as a cornerstone of effective healthcare (Shin et al., 2023). This foundational principle extends to the realm of DHIs, where the support and engagement of family members may influence their acceptability and successful adoption.

Research exploring the design and deployment of DHIs has consistently highlighted the crucial role of family support. For instance, a study focusing on older adults in the Philippines revealed a greater willingness to utilize Telehealth DHIs when individuals had the backing of their family network (Hamilton et al., 2024). Similarly, in a co-design study centered on a DHI for older adults, participants themselves emphasized the importance of family support as a facilitator for DHI use (Hamilton et al., 2024). These findings converge to highlight that family support has the potential to be a critical enabler in the acceptance of DHIs.

Family members have shown promising acceptance rates towards DHIs designed to support them in managing their emotional well-being. For instance, Levesque et al. (2023) conducted an evaluation of Grief Coach, a text-based intervention providing bereavement support to family members associated with hospice care. The study reported high acceptability among participants, with 73% rating the program as very helpful, and 74% indicating that it significantly contributed to their sense of feeling supported during grief. Notably, the program maintained a retention rate of 86% over a 13-month period, highlighting strong user engagement and sustained acceptance (Levesque et al., 2023). These findings suggest that DHIs like Grief Coach hold considerable promise for effectively addressing the emotional and support needs of family members during critical periods.

Family support has been shown to significantly enhance hypertension management outcomes, highlighting the importance of family member acceptance and involvement. Fitria et al. (2024) reported a strong positive correlation ($r = 0.844$, $p = 0.000$) between family coping support and the effectiveness of family health management. Families that are able to effectively manage the stresses of caregiving contribute meaningfully to controlling hypertension and preventing complications among elderly patients. In a similar manner, Kurnia et al. (2024) found that patients with active family involvement were approximately 18.9 times more likely to manage their hypertension effectively (Odds Ratio [OR] = 18.889). These findings reinforce the critical role that family members play in supporting hypertension care and demonstrate their potential to positively influence treatment outcomes through active engagement and support.

The Acceptability of DHI for Health Care Professionals (HCPs)

The usage of a DHI depends on its clinical effectiveness as well as its acceptance by patients and HCPs (Hafner et al., 2022). For instance, studies have shown the potential for nurse-led DHIs to be effectively integrated into healthcare practice, with professionals recognizing these technologies as valuable tools for improving patient outcomes and care delivery (Hwang & Chang, 2023). This acceptance is further highlighted by research involving HCPs in the design process of DHIs, where their willingness to contribute and adopt such tools is evident, and where they express enthusiasm for the implementation of these tools in practice (Grynne et al., 2021). Moreover, HCPs have highlighted the potential benefits of digital approaches within healthcare systems, such as the ability to collect data to support consultations, expedite diagnosis and treatment processes, and streamline the management of waiting lists (Ramasawmy et al. 2024).

The acceptance of DHIs by HCPs is further underscored by findings that demonstrate their active engagement in evaluating and utilizing these tools to enhance patient care. For example, the positive reception of the Noom app by HCPs in supporting hypertension self-management highlights their willingness to adopt DHIs with interactive features that facilitate patient communication and collaboration in managing chronic conditions (Alnooh et al., 2024). Similarly, May et al. (2025) report that German HCPs acknowledged significant benefits of mobile health (mHealth) apps in hypertension care, such as enhancing patient safety through continuous monitoring, promoting patient autonomy and self-management, and providing valuable real-time data to support clinical decision-making and treatment adjustments. Collectively, these findings highlight a promising trend toward increasing HCP support for the integration of digital health technologies in hypertension management.

Clinical Effectiveness of Digital Health Strategies for Blood-Pressure Management

Digital health interventions, spanning telemedicine visits, remote monitoring, and mobile apps consistently produce clinically meaningful reductions in systolic blood pressure for adults with hypertension. Sakima et al. (2024) found that DHIs reduced office systolic BP (SBP) by an average of –3.21 mmHg over three months across 117 studies with 68,677 participants, using tools such as apps, text messages, and websites. This effect was more pronounced in hypertension-specific cohorts, highlighting the role of DHIs in targeted BP management.

Incorporating Bluetooth-enabled self-monitoring platforms empowers patients to take an active role in their care and yields superior blood-pressure control compared to standard monitoring alone. Kario et al. (2022) emphasized that Bluetooth®-enabled telemonitoring significantly improves BP control by enabling patients to self-measure and review their readings

in real time. Similarly, Sheppard et al. (2020) reported notable SBP improvements over 12 months when self-monitoring was combined with co-interventions such as tailored education and healthcare-professional support for high-risk groups.

Integrating patient-driven telemonitoring data into routine clinical workflows enhances long-term blood-pressure management beyond what in-office measurements can achieve. The TASMINH4 trial (2018) validated this by showing that incorporating self-monitored BP readings into clinical decision-making leads to better BP control than relying solely on standard clinic readings, with high patient adherence and rapid initial BP reduction, although differences at 12 months did not reach statistical significance.

Barriers, Challenges, and Limitations of DHI Adoption

Adoption of DHIs for hypertension management faces multiple, interrelated barriers. Providers commonly report difficulties integrating these tools into existing clinical workflows, concerns over insufficient validation, and usability challenges (Palacholla et al., 2019). Patients likewise experience usability problems, lack of technical support, and disruptions in patient–provider relationships (Palacholla et al., 2019). Privacy fears—rooted in mistrust around data protection, unclear data-handling practices, and worries about unauthorized access—further discourage uptake of digital solutions such as contacttracing apps (Pigera et al., 2025). Underlying all of these are digitalhealth disparities: older adults, individuals with lower educational attainment, racial/ethnic minorities, and those in rural or lowincome settings often lack reliable broadband or devices, digital literacy, and confidence to use DHIs independently (Khoong et al., 2021; Nicosia et al., 2022; Welch et al., 2023).

Seamless integration and clear value propositions can help overcome many of these barriers. Palacholla et al. (2019) emphasize that embedding DHIs into clinical workflows, offering robust technical support, and demonstrating measurable patient-outcome improvements significantly enhance provider acceptance. For patients, features like easytouse selfmanagement interfaces, responsive communication channels with clinicians, and visible health benefits are key facilitators of sustained engagement (Khoong et al., 2021).

Key limitations of digital health technologies for hypertension management include insufficient clinical validation, variability in user adherence, and challenges in tailoring interventions to diverse populations. Both Palacholla et al. (2019) and Khoong et al. (2021) underscore the need for more rigorous, largescale validation studies to confirm accuracy and effectiveness in realworld settings. User engagement also fluctuates: some patients struggle to maintain regular use, leading to gaps in monitoring and uneven outcomes. Finally, onesizefitsall designs often fail to address cultural, linguistic, or socioeconomic differences, limiting equitable benefit across older adults, rural communities, and other underserved groups.

UTAUT2 Review on the Acceptance of Digital Health Interventions

The study uses a modified UTAUT2 framework augmented with trust and privacy to examine what drives users' intentions to adopt digital blood pressure monitoring tools. UTAUT1 surpasses earlier models like TRA, TAM, and TPB by explaining up to 70% of the variance in behavioural intention and 50% in technology use (Akinnuwesi et al., 2022), while UTAUT2 enhances this further by adding hedonic motivation, price value, and habit, raising its predictive power to 74% for intention and 52% for usage (Al Farsi, 2023). In this study, we adapted UTAUT2 by incorporating trust and privacy concerns to better reflect user priorities in sensitive

domains like healthcare, aiming to offer a more robust and context-relevant model for analyzing digital health adoption.

Recent research underscores the value of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) in understanding user engagement with Digital Health Interventions (DHIs). Schomakers et al. (2022) applied UTAUT2 in evaluating web-based stress management programs in workplace settings and identified Performance Expectancy (PE) and Effort Expectancy (EE) as strong predictors of behavioural intention. Users were more inclined to adopt DHIs when they perceived them as useful and easy to use. These findings are consistent with Tamilmani et al. (2020), who also found Facilitating Conditions such as access to training, device availability, and support systems to significantly influence users' ability and willingness to adopt health technologies.

However, beyond the traditional UTAUT2 constructs, Trust and Privacy Concerns emerged as critical factors influencing DHI acceptance. Schomakers et al. (2022) report that participants raised explicit concerns about data protection, especially the fear that health data might be accessed by employers. This aligns with broader digital health literature, which highlights that users' trust in data confidentiality and system integrity can significantly influence their engagement, particularly when personal health information, such as blood pressure readings, must be shared online. Insecure or unclear privacy protocols may erode trust, thereby reducing both Performance Expectancy and users' willingness to interact with the system.

Tamilmani et al. (2020) emphasize that data sensitivity and concerns about digital surveillance can shape perceptions of system trustworthiness, suggesting the need for clear privacy assurances, transparent data usage policies, and robust security features. These trust-

building elements are especially vital in patient-managed systems where self-reported data, like home blood pressure readings, are central to clinical decision-making.

In summary, UTAUT2 provides a robust framework for analyzing DHI acceptance, but it must be extended to explicitly consider Trust and Privacy Concerns when sensitive health data is involved. Addressing these concerns through secure platform design, user education, and data transparency is essential for fostering sustained engagement and effective hypertension management.

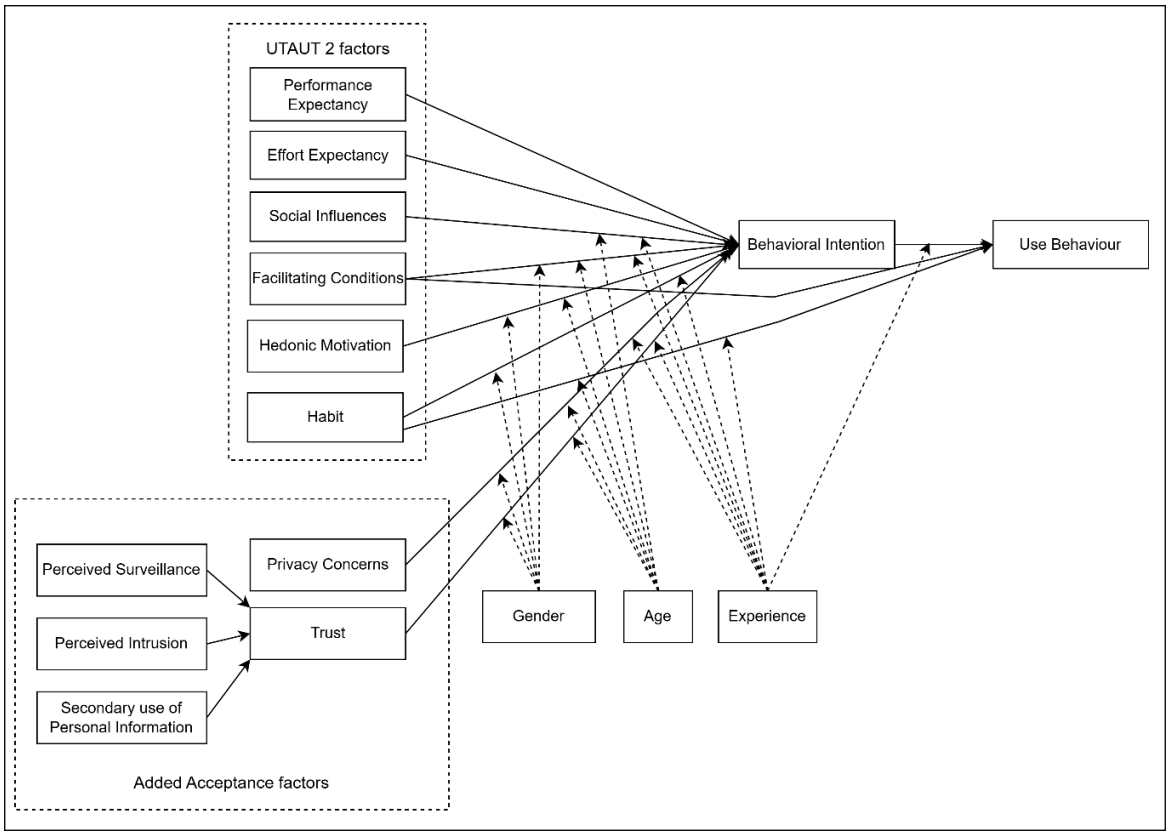


Figure 1: Modified UTAUT2 Framework (Schomakers et al., 2022)

Research Gaps

In exploring the acceptability of Digital Health Interventions (DHI) for managing hypertension among Jamaican patients, as well as their family members and healthcare providers, several research gaps became apparent. Notably, there is a knowledge gap regarding the acceptability of DHI specifically for family members of hypertensive individuals. While some information addresses DHI acceptance among family members in general, limited research specifically examines its acceptability for family members supporting hypertensive patients. For example, studies like Chacko and Jeemon (2020) discuss family support in managing hypertension but do not address the integration of digital health interventions in this context.

Additionally, scholarly information specific to the prevalence, negative impacts, and management of hypertension among Jamaican patients is lacking. Studies such as those by Singh et al., (2017) and Chacko and Jeemon (2020) primarily discuss findings from India, highlighting a geographical gap and the need for research localized to the Jamaican population.

The studies by Sakima et al. (2024), Kario et al. (2022), Palacholla et al. (2019), and Khoong et al. (2021) identify several research gaps in digital health Intervention (DHIs) for managing hypertension. Common issues include the need for standardized methodologies to improve comparability across diverse studies and the limited exploration of patient adherence and home BP monitoring outside clinical settings. Additionally, there are gaps in understanding the impact of socioeconomic status, cultural differences, and individual patient characteristics on DHI adoption and effectiveness. The long-term impacts of DHIs beyond a 12-month period remain underexplored, highlighting the necessity for extended follow-up studies. The integration of DHIs into existing healthcare systems, their clinical validation in diverse populations, and

their specific benefits for subgroups such as pregnant women and patients with comorbid conditions also warrant further investigation. Finally, addressing the unique challenges faced by populations with digital barriers, such as older adults and individuals with lower educational attainment, is critical for optimizing hypertension management.

Summary

The literature review explores the acceptability of Digital Health Interventions (DHI) for managing hypertension among patients, their family members, and healthcare providers, emphasizing that patient acceptability is essential for effective hypertension management. Studies indicate that many patients value DHIs for their ease of use, self-monitoring capabilities, and positive impact on treatment adherence. Research by Wechkunanukul et al. (2020), Morton (2019), and Flessa and Huebner (2021) highlights that DHIs allow patients to monitor blood pressure at home, receive timely reminders, and track progress, which fosters a sense of autonomy and improves clinical outcomes. Additional findings from Kolasa and Kozinski (2020) and MacKenzie and Hughes (2024) emphasize the importance of accessible technology and supportive healthcare frameworks, underscoring usability and adaptability as crucial factors for patient and provider confidence in DHIs.

In relation to DHI acceptability among family members of hypertensive patients, the review points to the significance of family involvement in patient care. Family support in self-care and adherence practices has been associated with improved blood pressure control. Research by Shin et al. (2023), Buckingham et al. (2022), and Chacko & Jeemon (2020) suggests that family engagement in care, combined with the use of digital technology, can enhance the

patient's adherence to treatment, making family-centered interventions an effective strategy for managing hypertension on a broader scale.

Overall, the literature indicates that DHIs have substantial potential to improve hypertension management by empowering patients, engaging families, and promoting patient-centered care. Acceptability and usability emerge as key metrics for successful integration of DHIs into healthcare practices.

Chapter 3: Methodology

Research Design

This study adopted a cross-sectional design and employed a mixed-methods approach to assess the acceptability of a digital health intervention (DHI) aimed at managing hypertension. The combination of quantitative and qualitative data collection was essential for gaining a comprehensive understanding of users' perceptions, experiences, and potential barriers to adoption. The research was guided by a modified version of the Unified Theory of Acceptance and Use of Technology (UTAUT 2), which was adapted to include critical constructs such as trust and privacy concerns. These additions were necessary given the sensitivity surrounding health data and the importance of privacy in digital health environments, particularly in developing countries like Jamaica. UTAUT 2, with these added dimensions, provided a robust theoretical foundation to explore behavioural intentions and usage patterns regarding the DHI.

Population and Sampling

The target population consisted of three main groups: hypertensive patients aged 18 years and older, family members who provide direct care and support to these patients, and healthcare professionals involved in the management of hypertension. The research aimed to recruit 100 hypertensive patients, 100 family members, and approximately 5 healthcare professionals. However, due to practical constraints, the final sample included 52 hypertensive patients, 61 family members, and 3 healthcare professionals. To select participants, the study used non-probability sampling methods suited to the research context. Snowball sampling was employed to recruit hypertensive patients, where initial participants referred others in their network who fit

the inclusion criteria. Family members were selected through convenience sampling, primarily targeting the University of Technology, Jamaica (Utech Ja) community, including students and staff. Similarly, healthcare professionals were chosen based on their accessibility and availability from community health centers, also using convenience sampling.

Instruments

Two instruments were utilized in this study: an acceptability questionnaire for hypertensive patients and family members and a set of interview questions for healthcare professionals.

Instrument 1: Acceptability Questionnaire for Hypertensive Patients and Family Members

The questionnaire was developed to evaluate user perceptions and behavioural intentions concerning the use of the digital health intervention. It contained a demographic section and items based on the modified UTAUT 2 constructs, including Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Trust (TR), Privacy Concerns (PC), and Behavioural Intention (BI). Each construct was measured using Likert scale items ranging from 1 (strongly disagree) to 5 (strongly agree). These items assessed the degree to which users found the DHI acceptable and usable for daily hypertension management.

The questionnaire format was adapted for use in the Jamaican context and reviewed for clarity and relevance by supervisors to ensure validity and reliability. The UTAUT 2 framework has been widely validated across technology adoption studies and was selected for its predictive strength and flexibility in being customized for healthcare technologies. The inclusion of trust and privacy concerns further strengthened the instrument's contextual relevance.

Instrument 2: Interview Questions for Healthcare Professionals

This semi-structured interview guide was designed to elicit detailed perspectives from healthcare professionals about the perceived benefits, limitations, and usability of the DHI. The questions focused on the role of digital tools in clinical workflows, trust in technology, patient engagement, and concerns about data privacy and integration with existing care systems. These interviews provided deeper insights into how professionals view the implementation of such tools in public health settings.

The development of the interview questions drew from the literature on digital health acceptance and insights from earlier studies on hypertension and technology adoption. To support content validity, questions were iteratively refined based on feedback from the research team and supervisor.

Procedures

1. Identification of the Sample: The sample for this study included patients with hypertension, their family members, and HCPs. These groups were chosen based on their relevance to the research aim of assessing the acceptability of a DHI for hypertension management. Non-probability sampling techniques were employed. Convenience sampling was used for recruiting family members and HCPs. Patients with hypertension were recruited using snowball sampling, as Utech students and staff with hypertensive family members were asked to invite those relatives to participate.
2. Contacting Sample: Participants were contacted both in person and online. Recruitment involved direct approaches to UTech students or contacting them through WhatsApp

groups, along with the distribution of three links containing the informed consent form, the questionnaire, and a video demonstration of the prototype. Students and staff were asked to share these links with any hypertensive family members to determine their interest in participating in the study. HCPs were contacted by calling or approaching staff at medical centers we were familiar with. These individuals were shown the informed consent form and asked if they would be willing to participate in the study. The form outlined the study's purpose and assured all potential participants of confidentiality and voluntary participation.

3. **Obtaining Cooperation** : To encourage participation, the study emphasized the potential value of the findings in improving digital tools for managing hypertension. All participants were required to review and agree to an informed consent form, which clarified that their participation was voluntary, that they could withdraw at any time, and that all data would remain anonymous and confidential.
4. **Administration of the Instruments**: Questionnaires were administered to patients with hypertension and their family members using Microsoft Forms. HCPs participated in consensual recorded interviews conducted in person or online, depending on availability. Participants were not required to interact directly with the prototype. Instead, a video demonstration of the prototype's features was shown to patients and family members. This video included an overview of the website's features. After viewing the video, patients and family members were asked to provide feedback through the questionnaire. HCPs were shown a live demonstration of the prototype at the beginning of the interview and then they were asked questions to assess their acceptance on DHI use to manage hypertension.

5. **Handling of Data**

   Questionnaire responses were collected via Microsoft Forms and securely stored on an encrypted OneDrive account accessible only to the research team and supervisor. Interview recordings were also stored on encrypted OneDrive, with no personally identifying information collected during these sessions. All data was anonymized to ensure participant privacy and confidentiality.

6. **Appendices**

   All related documents, including, consent forms, questionnaires, interview questions, and video demonstration are included in the appendices of the research document.

Quantitative Analysis

Quantitative data from the online surveys were analysed using Microsoft Excel, beginning with descriptive statistics such as mean and standard deviation to understand general trends in participants' responses. To explore relationships between key variables, the study employed cross-tabulations and chi-square tests, which helped identify significant associations between demographic factors, like gender and field of study, and behavioural intentions toward using digital health tools. Pearson correlation analysis was also used to examine how constructs such as trust, privacy concerns, and performance expectancy related to participants' willingness to adopt the intervention. Additionally, reliability tests were conducted to ensure consistency within the survey constructs. These methods provided a comprehensive view of stakeholder acceptance and allowed for deeper insights into the factors influencing digital health adoption.

Qualitative Analysis

The qualitative component of the study focused on the insights derived from interviews with healthcare professionals. These interviews were transcribed and organized in Microsoft Word, after which a thematic analysis was conducted. Themes were generated inductively by identifying patterns in the data related to usability, clinical applicability, perceived patient benefits, and ethical considerations. The thematic coding allowed for cross-comparison of responses, highlighting areas of convergence and divergence in participants' views. This approach helped deepen the understanding of how healthcare providers perceived the value and limitations of integrating a digital health tool into hypertension management practices.

Ethical Considerations

Ethical integrity was maintained throughout the study. Ethical approval was applied for, and an ethics form was submitted following the University's requirements. Participants' anonymity was preserved, particularly for hypertensive patients and family members completing questionnaires, by avoiding the collection of personally identifiable information. In the case of interviews, no personal data was recorded, and all audio recordings were securely stored on an encrypted One Drive accessible only to the research team and the academic supervisor. Survey data were also stored on the same encrypted platform, ensuring data confidentiality and protection in accordance with ethical research standards. Participants were informed about the purpose of the study, their right to withdraw at any time, and how their data would be used. Informed consent was obtained from all individuals before participation.

Methodological Limitations

Several methodological limitations affected the study. One key limitation was the relatively low sample size. Although the target was 100 participants for each questionnaire group, only 52 hypertensive patients and 61 family members completed the questionnaires. Additionally, while the target was five healthcare professionals (HCPs) for the interviews, only three agreed to participate. This limited participation reduces the generalizability of the findings. Another limitation was the inconsistency in the order in which participants engaged with the prototype and the questionnaire. Some individuals viewed a video of the digital health intervention (DHI) prototype demonstration before completing the questionnaire, while others completed the questionnaire first and then watched the video.

The study also relied on self-reported data, which introduces the possibility of self-report bias. Participants may have over- or under-reported their attitudes or behaviours, especially in an online, unsupervised context. Moreover, the use of an online survey method presents its own limitations. Online data collection can exclude individuals with limited digital literacy or poor internet access, and there's limited control over the environment in which participants complete the survey, potentially affecting response quality. Finally, the study assessed acceptability using only a single website-based prototype. While this provided valuable initial insights, relying on one prototype may not fully reflect users' broader expectations or experiences with digital health interventions.

Project Design

As part of the study, a prototype website will be developed to demonstrate collaborative hypertension management. The website will enable patients to track their blood pressure

readings and add healthcare professionals and family members to their support network. Family members in the support network will have access to a group chat feature, allowing them to communicate directly with the patient and each other. Healthcare professionals will have the ability to adjust the patient's target blood pressure range. Additionally, automated email and sms alerts will be sent to family members, and healthcare providers whenever the patient's blood pressure readings fall outside the safe range, indicating a potential risk.

Prototype development has 4 steps and these are:

Step 1: Defining the scope

Since hypertension is widely prevalent, the project aimed to create a platform where patients, family members, and healthcare professionals (HCPs) could collaborate in monitoring and managing hypertension. To keep the prototype manageable, only essential features were included: a support network, a daily reading submission system, a real-time alert system, and a chat feature that allows seamless communication between users. Patients would be able to search for and add family members or HCPs to their support network. Once connected, members of the network could view the patient’s blood pressure readings and receive alerts when readings exceeded safe limits. Twilio was integrated to send SMS notifications whenever a reading was out of range.

Step 2: Architecture and Design

To keep development efficient, the backend was built using Vanilla PHP, while HTML, CSS, and JavaScript powered the frontend. A relational database (MariaDB) was used to store user accounts, readings, support networks, and chat messages. The system followed a monolithic architecture, meaning all components interacted within a single application.

Step 3: Development

Once architecture was defined, development began in the third phase. GitHub was used for version control, providing a collaborative space for managing code changes and updates. Throughout development, continuous testing was performed by project members to identify and resolve bugs. The prototype was deployed on GitHub, serving as the staging environment for testing before full evaluation.

Step 4: Integration and Testing

The fourth phase, Integration and Testing, ensured that the system was functioning correctly and that all features were well-integrated. Testing started with integration validation, checking Twilio notifications to confirm alerts were triggered when readings were out of range. The chat feature was tested to guarantee real-time communication between patients, family members, and healthcare professionals. Additionally, the support network feature underwent verification to ensure users could search for and send requests correctly.

Chapter 4: Results and Findings

This chapter presents the results and findings from the data collection and analysis. The study attempts to evaluate the acceptability of DHI among Jamaican hypertensive patients, their healthcare providers, and family members who offer support. Additionally, the study aims to evaluate the acceptability of a prototype that manages hypertensive patients. Our research questions are as follows:

1) How acceptable is the digital health intervention (DHI) for managing hypertension among Jamaican patients, as well as among their family members providing support and the healthcare professionals involved in their care?
2) What are the barriers and facilitating conditions of a DHI for managing hypertension among Jamaican patients, as well as among their family members providing support and the healthcare professionals involved in their care?

Data Collection Response Rates

This study achieved strong participation rates across all data collection methods. For the online surveys, we received 52 completed patient questionnaires (52 of the 100 targeted responses) and 61 family member questionnaires (61 of the 100 targeted responses), which consist of student, staff, and past student participants of the University of Technology, Jamaica. All participants were required to view a prototype demonstration before completing their surveys. Additionally, we successfully conducted 3 planned interviews with healthcare professionals, fulfilling our objective of including medical perspectives in the research.

Demographics

This section presents the demographic information of the hypertensive patients, family members, and healthcare professionals who participated in the study.

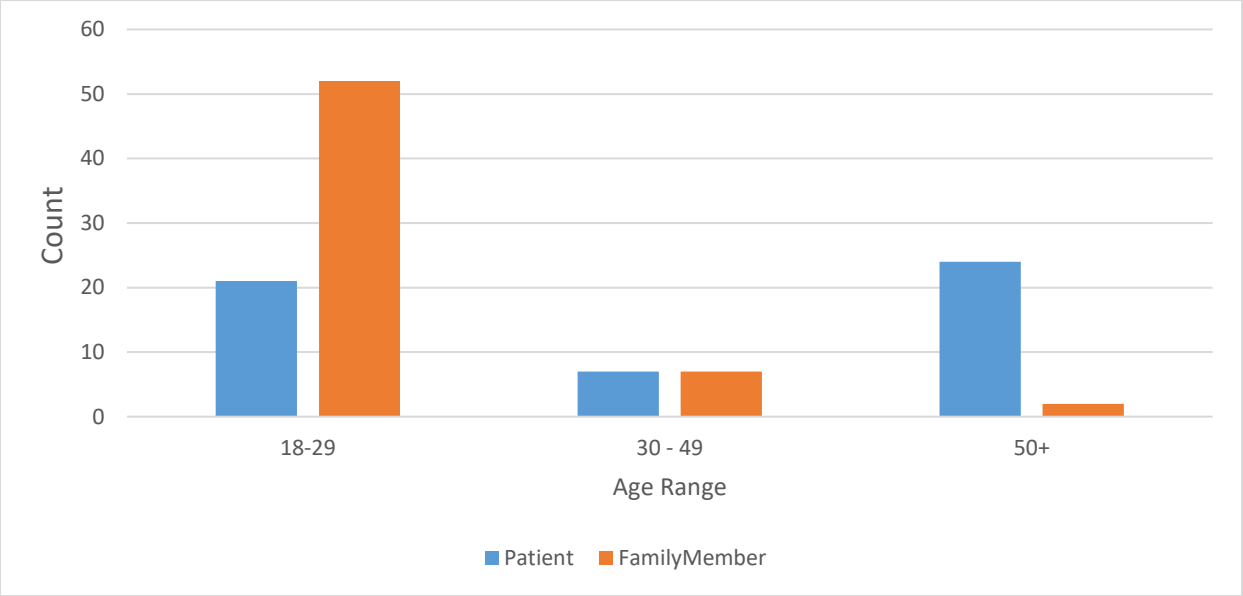


Figure 2: The Age Distribution of the Patient and Family Member Participants

The age distribution in this study shows that more patient participants (24 out of 52) were aged 50 and above, while the majority of family member participants (52 out of 61) were between 18–29 years old. This indicates that, within this sample, older individuals were primarily the ones managing hypertension, and younger individuals were more commonly in the support role. Very few family members (only 2) were aged 50 and over, suggesting that in this study, hypertension management was largely supported by younger relatives (see *Figure 2*).

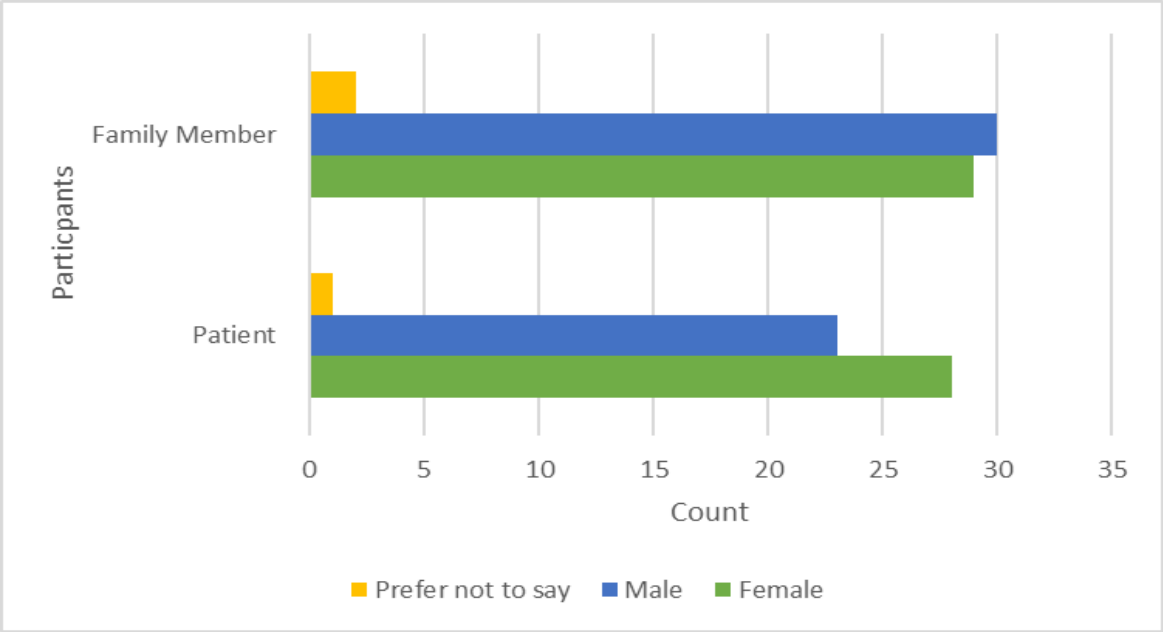


Figure 3: The Gender Distribution of the Patient and Family Member Participants

Based on the data collected, of the 52 patients, 28 identified as female, 23 as male, and 1 preferred not to say (see *Figure 3*). Among the 61 family members, 30 identified as male, 29 as female, and 2 preferred not to disclose their gender (see *Figure 3*).

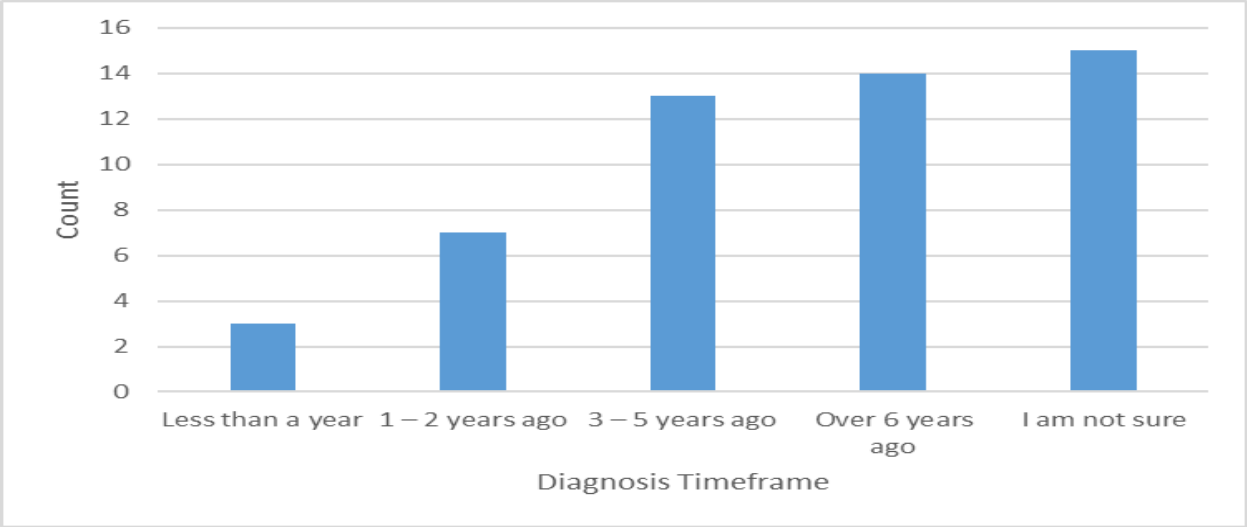


Figure 4: The Diagnosis Timeframe Distribution of the Patient Participants

Out of 52 participants, 3 were diagnosed within the last year, 7 were diagnosed 1-2 years ago, 13 were diagnosed 3-5 years ago, and 14 were diagnosed over 6 years ago (see *Figure 4*). Additionally, 15 patients reported being unsure of their diagnosis timeframe (see *Figure 4*). This indicates a majority of patients (15 out of 52) with uncertainty about their diagnosis date, while a relatively balanced distribution exists among those diagnosed within the last few years.

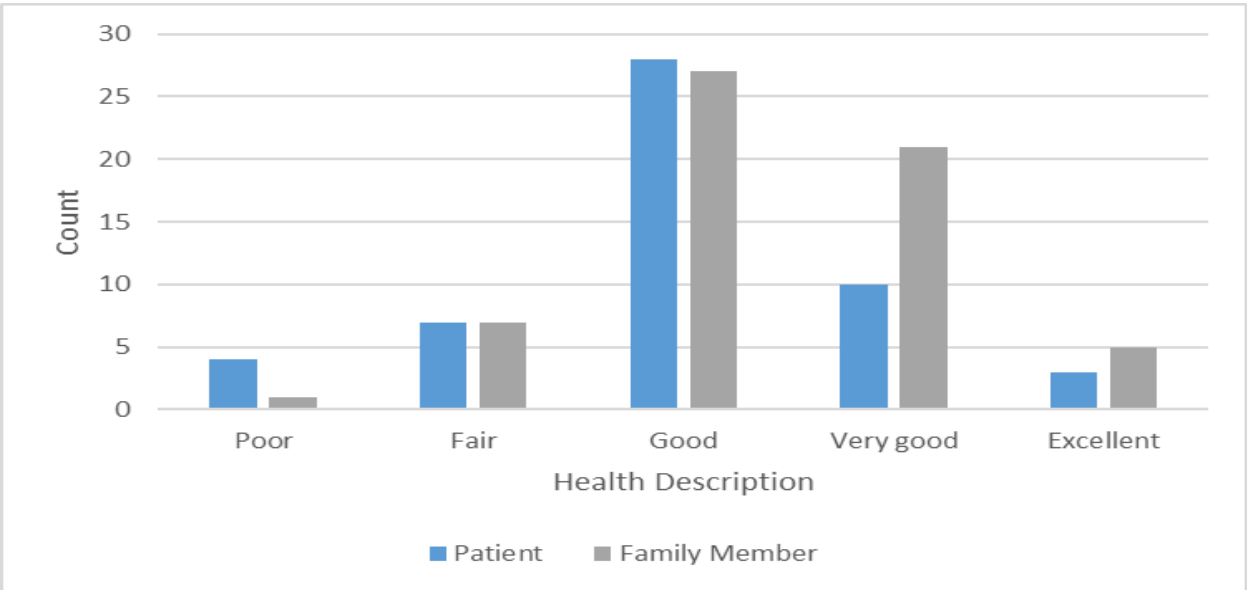


Figure 5: The Health Description of the Patient and Family Member Participants

Among the 52 patients, the majority rated their health as "Good" (28 respondents or 53.8%), followed by "Very good" (10 or 19.2%), "Fair" (7 or 13.5%), "Poor" (4 or 7.7%), and "Excellent" (3 or 5.8%) (see *Figure 5*). In contrast, the 61 family members generally reported better health overall, with the most common response also being "Good" (27 or 44.3%), followed closely by "Very good" (21 or 34.4%). Fewer reported "Fair" (7 or 11.5%), "Excellent" (5 or 8.2%), and only 1 person (1.6%) selected "Poor" (see *Figure 5*).

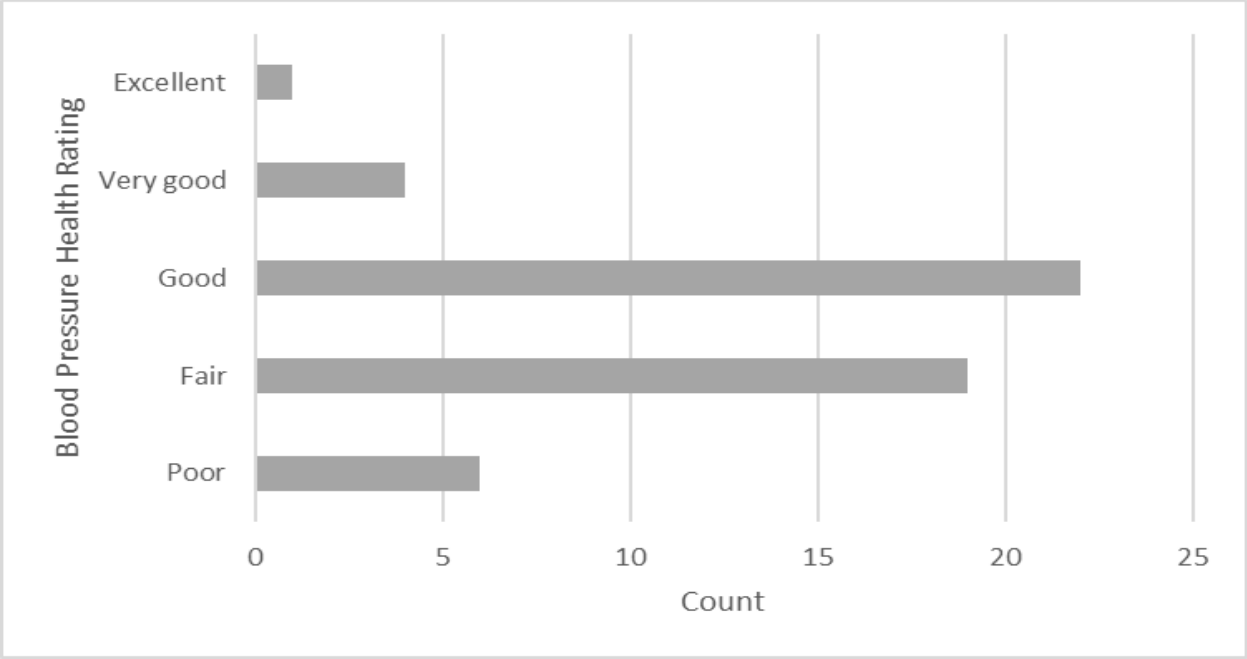


Figure 6: How hypertensive patients rated their current blood pressure health

The majority of respondents (22 out of 52) described their blood pressure health as "Good," followed closely by 19 who selected "Fair" (see *Figure 6*). A smaller portion rated their health as "Poor" (6), while only 4 considered it "Very good" and just 1 reported "Excellent" (see *Figure 6*). This suggests that while most patients in our study perceive their blood pressure as being in a generally manageable or moderate state ("Fair" to "Good"), very few view it as being in optimal condition, and a notable minority still experience poor control.

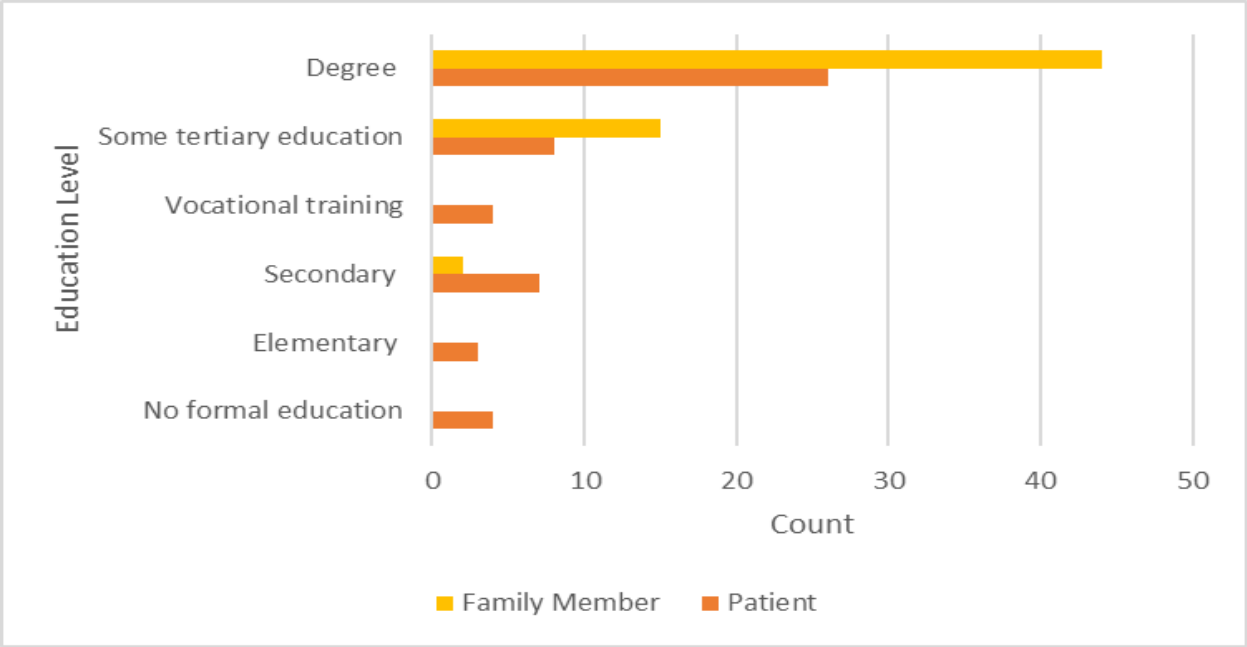


Figure 7: The education levels of hypertensive patients and their family members

Among the 52 patients, the majority (26) held an undergraduate or graduate degree. This was followed by 8 with some tertiary education, 7 with secondary education, 4 with vocational training, 3 with only elementary education, and 4 who had no formal education (see *Figure 7*). In contrast, the 61 family members reported significantly higher education levels, with 44 holding a degree and 15 having some tertiary education (see *Figure 7*). Only 2 had secondary education, and none reported lower levels (see *Figure 7*). Overall, it is important to note that this study was conducted within a university setting, where participants are likely to have higher educational levels than the general population, and as such, the findings may not be representative of broader educational backgrounds.

	STEM	*Non-STEM*	*Did not say*	*Total*
Patient	**19**	**19**	**14**	**52**
Family Member	**47**	**14**	**0**	**61**

Table 1: The academic backgrounds of patients and their family members

Among the 38 of 52 patients who responded to this optional question, the distribution was evenly split 19 (50%) reported a STEM background and 19 (50%) reported a non-STEM background. In contrast, among the 61 family members, a strong majority 47 (77%) had a STEM background, while 14 (23%) came from non-STEM fields. This contrast highlights a notable difference in academic orientation between the two groups, with family members being significantly more represented in STEM disciplines compared to patients.

HCP	Gender	Years of Experience	Specialty
#1	**Male**	**38**	**General Practice**
#2	**Female**	**30+**	**General Medicine**
#3	**Male**	**15**	**Primary Care**

Table 2: Background Information on Interviewed Health Practitioners

The data summarizes the demographics of three interviewed healthcare professionals, including their gender, years of experience, and area of practice (see *Table 2)*. Two practitioners (one male, one female) have over 30 years of experience in general medicine, while the third, a male, has 15 years of experience in primary care (see *Table 2)*. This range reflects both deep-rooted expertise and diverse clinical backgrounds among the participants.

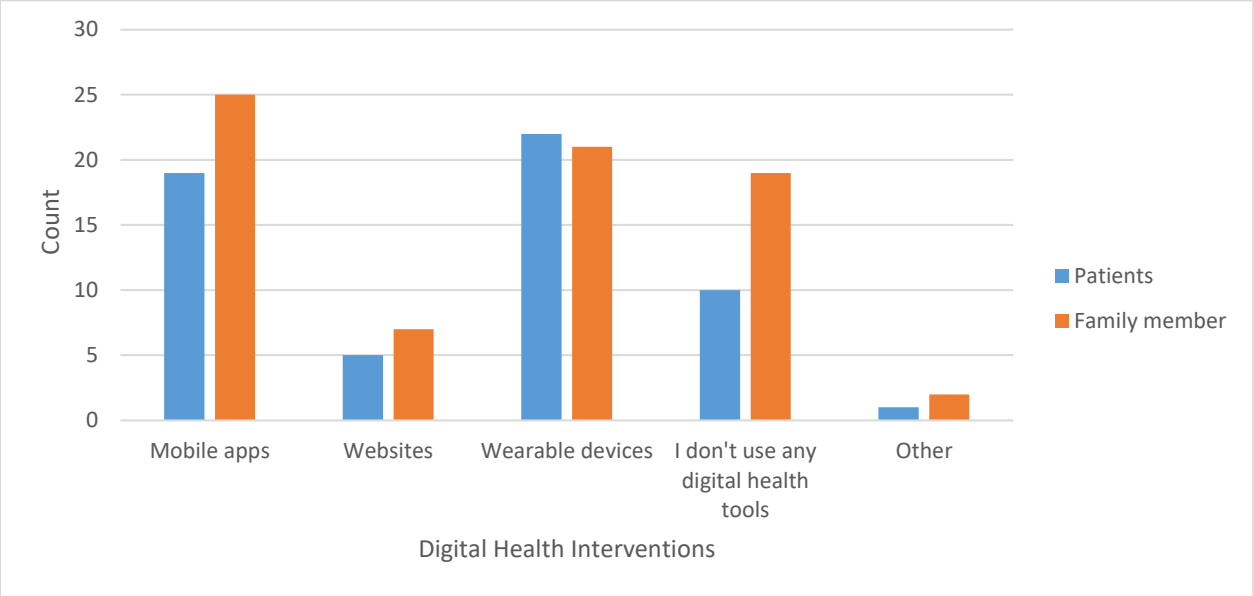


Figure 8: DHI used by hypertensive patients and family members to track blood pressure

Figure 8 illustrates differences in how hypertensive patients and their family members use digital health tools, with patients primarily using them to manage their blood pressure, and family members using them to help manage their loved ones' hypertension. Among patients (n = 56), 22 individuals (39.3%) reported using wearable devices to track their blood pressure, while 19 (33.9%) used mobile apps. In contrast, more family members (n = 61) used mobile apps, 25 individuals (41.0%), followed by 21 (34.4%) who used wearables. However, a key difference is that 19 family members (31.1%) reported not using any digital tools to support their loved one's care, compared to only 10 patients (17.9%). Despite family members showing higher confidence with technology (as shown in Figure 9), their lower engagement may be influenced by external barriers, particularly financial constraints. While patients may prioritize health-related expenditures, family members might face monetary issues that limit access to devices or paid health apps. This suggests that digital confidence alone does not guarantee usage, and affordability remains a significant factor affecting DHI adoption, especially among family members.

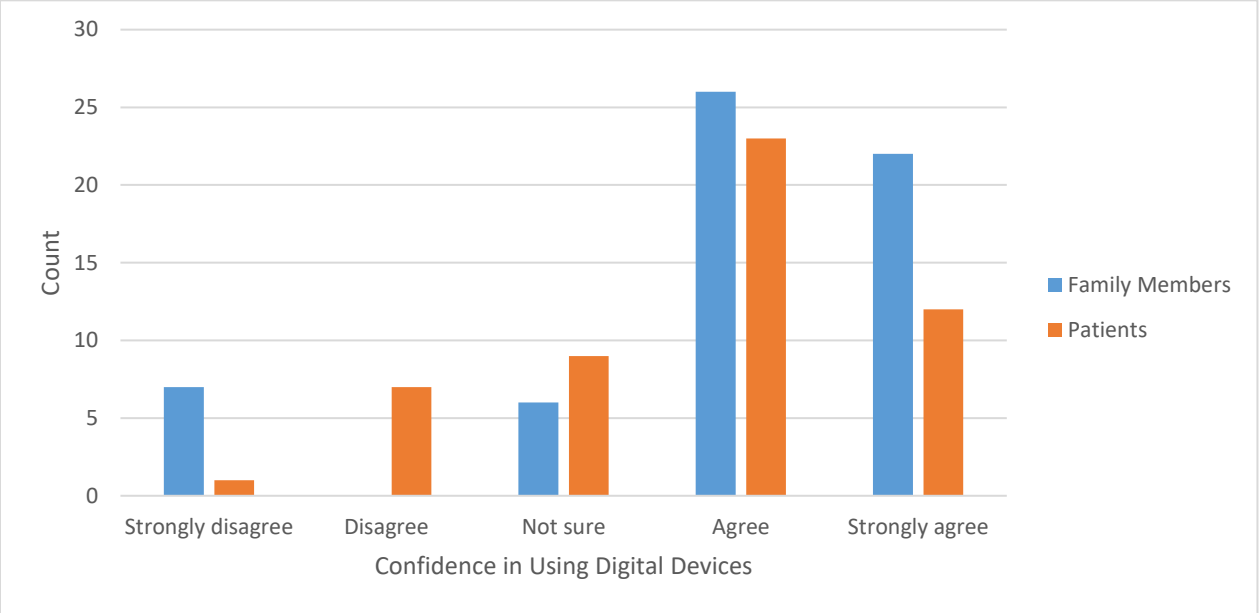


Figure 9: Confidence of hypertensive patients and families in using digital devices.

Figure 9 reveals notable disparities in digital confidence between hypertensive patients and their family members. Among family members, 26 out of 61 (43%) agreed and 22 (36%) strongly agreed that they were confident using digital devices, totaling 48 respondents or 79% expressing confidence. In contrast, only 23 out of 52 patients (44%) agreed and 12 (23%) strongly agreed, amounting to 35 patients or 67% showing confidence. Additionally, a higher percentage of patients expressed uncertainty or lack of confidence: 7 (13%) disagreed and 9 (17%) were unsure, totaling 16 out of 52 (30.8%), compared to just 7 family members out of 61 (11%) falling into those categories. These figures underscore a digital confidence gap between patients and family members, likely influenced by differences in age, education, and digital exposure, and highlight the need for targeted support to ensure equitable DHI adoption.

Feature	Patients (n = 52)	Percentage (%)	Family Members (n = 61)	Percentage (%)
Blood pressure tracking	50	96.2%	59	96.7%
Medication reminders	40	76.9%	46	75.4%
Appointment reminders	38	73.1%	45	73.8%
Alerts via email for dangerous readings	25	48.1%	29	47.5%
Alerts via WhatsApp for dangerous readings	29	55.8%	36	59.0%
Alerts via SMS for dangerous readings	28	53.8%	35	57.4%
Communication with health professionals	36	69.2%	36	59.0%
Communication with family/other family members	26	50.0%	23	37.7%
Other	1	1.9%	0	0.0%

Table 3: shows preferred features for blood pressure management.

Patients showed a strong preference for core management features, with 96.2% selecting blood pressure tracking and 76.9% choosing medication reminders as essential tools. Appointment reminders (73.1%) and communication with healthcare professionals (69.2%) were also highly valued. Notably, 55.8% of patients preferred receiving alerts via WhatsApp, followed by SMS (53.8%) and email (48.1%), indicating a clear interest in real-time, accessible notifications. Additionally, 50% of patients expressed interest in communicating with family members through the platform, suggesting a desire for more support and involvement from their care network. Family members also ranked blood pressure tracking (96.7%) and medication reminders (75.4%) as top priorities, mirroring patients' responses. Appointment reminders (73.8%) and alerts, particularly via WhatsApp (59.0%), were similarly important. However,

family members placed slightly less emphasis on communication features, with 59.0% interested in professional communication and only 37.7% in family-to-family communication. This suggests that while family members value tools that help them support the patient, they may see their role as more task-oriented and less focused on broader coordination or family engagement.

Acceptability of Stakeholders to adopt a DHI for Hypertension

This section will discuss the technological acceptance of patients, their family members and health care professionals towards the acceptance and of Digital Health Interventions.

Technology Acceptance of Hypertensive Patients

We will now begin this discussion by first evaluating technological acceptance from the perspective of Hypertensive Patients.

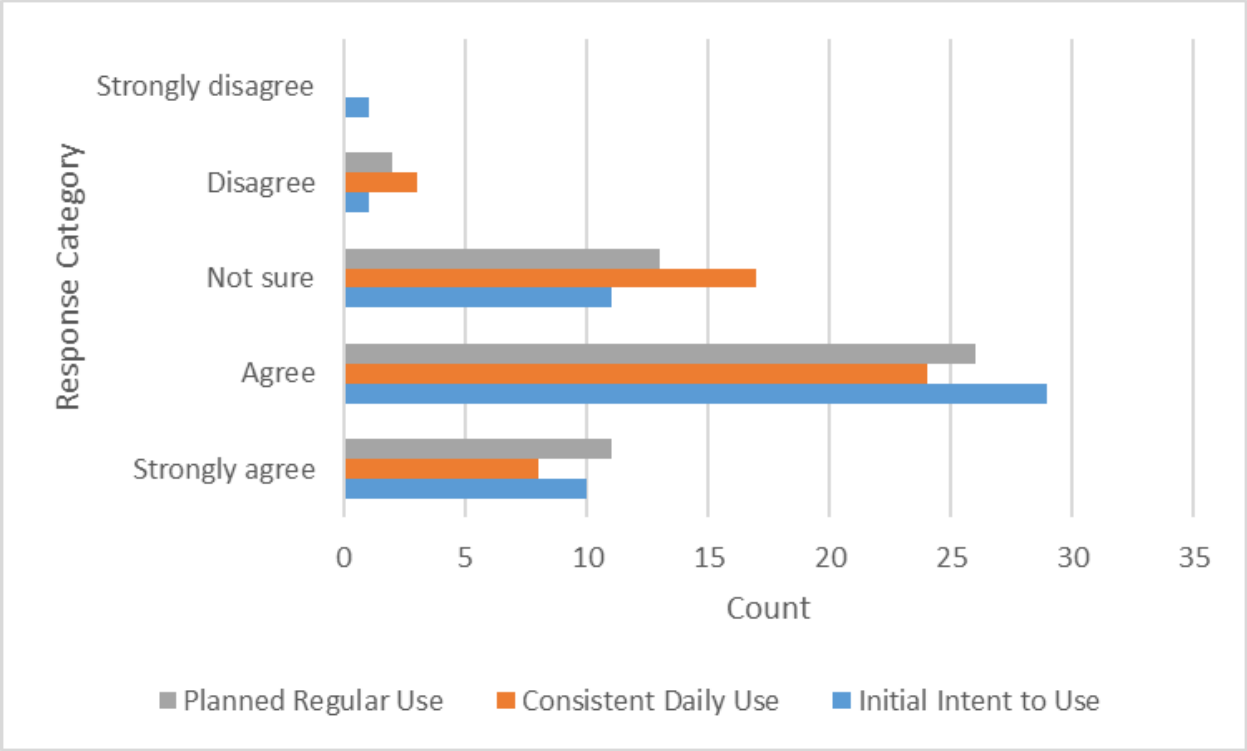


Figure 10: Patient's Intention to Use Digital Tools for Hypertension Management

The responses across the three behavioural intention questions suggest generally positive attitudes among patients toward using digital platforms for blood pressure management with support from family members and healthcare professionals. When patients were asked whether they intend to use or continue using websites or mobile apps to manage their blood pressure

(*Initial Intent to Use*), 39 out of 52 (75%) of participants responded with either "Agree" or "Strongly agree," suggesting a strong initial willingness to engage with these technologies (see *Figure 10*). Only a small minority expressed disagreement (1 patient), while 11 (21%) were unsure, indicating some hesitation (see *Figure 10*).

When looking at the consistent and ongoing use of these tools in daily life (*Consistent Daily Use*), the patients showed a slight dip in certainty. Although a majority (32 out of 52 or 61.5%) still responded positively, there was a notable increase in uncertainty, with 17 (33%) selecting "Not sure" (see *Figure 10*). This suggests that while patients are open to the idea of using digital tools, they may be less confident about their ability or commitment to use them regularly without further support or assurance.

When asked about planned regular use, 37 out of 52 (71%) respondents again expressed agreement, reaffirming the earlier indication of general acceptance (see *Figure 10*). The consistency of positive responses across the three questions reflects a promising foundation for digital health adoption. However, the recurring presence of "Not sure" responses ranging from 21% to 33% highlights the importance of addressing potential barriers such as digital literacy, perceived ease of use, or access to technology to ensure these intentions translate into sustained behavioural change.

Behavioural Intention Question	Female (n = 28)	Male (n = 23)	Prefer not to say (n = 1)
Initial Intent to Use	18 Strongly Agree/Agree (64.3%) 8 Not Sure (28.6%) 2 Disagree/Strongly Disagree (7.2%)	21 Strongly Agree/Agree (91.3%) 2 Not Sure (8.7%) 0 Disagree/Strongly Disagree	0 Strongly Agree/Agree 1 Not Sure (100%)
Consistent Daily Use	15 Strongly in Agree/Agree (53.6%) 12 Not Sure (42.9%) 1 Disagree (3.6%) 0 Strongly Disagree	16 Strongly Agree/Agree (69.6%) 5 Not Sure (21.7%) 2 Disagree (8.7%) 0 Strongly Disagree	1 Strongly Agree/Agree (100%) 0 Not Sure
Planned Regular Use	19 Strongly Agree/Agree (67.9%) 7 Not Sure (25%) 2 Disagree (7.1%) 0 Strongly Disagree	18 Strongly Agree/Agree (78.3%) 5 Not Sure (21.7%) 0 Disagree 0 Strongly Disagree	0 Strongly Agree/Agree 1 Not Sure (100%)

Table 4: Gender-Based Comparison of Behavioural Intention Among Patients

The Gender-Based Comparison of Behavioural Intention Among Patients reveals nuanced patterns in digital health engagement across gender identities. Overall, male participants consistently expressed the strongest behavioural intention to use websites or mobile apps for blood pressure management. Across all three questions, 21 out of 23 males (91.3%) either "Strongly agreed" or "Agreed," with no male participants selecting "Disagree" or "Strongly disagree" (see *Table 4*). This high affirmation rate suggests a strong openness and confidence in engaging with digital tools among the male patient participants.

In contrast, female participants demonstrated moderate levels of positive behavioural intention. For instance, in response to the question about planning regular use, only 19 out of 28 (67.9%) selected "Strongly agree" or "Agree," while a notable 25% were "Not sure" (see *Table 4*). Additionally, female responses were the only ones that included "Disagree" and "Strongly

disagree," indicating a slightly higher level of hesitation or skepticism regarding consistent and long-term use of digital health platforms.

Chi-Square Test Result of Gender and Initial Intent to Use for Patients

This analysis was conducted to determine whether participants' behavioural intentions (BI1) differ by patient gender, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	63.710[a]	15	0.000
N of Valid Cases	52		
a. 20 cells (83.3%) have expected count less than 5. The minimum expected count is .02.			

Table 5: shows the Pearson Correlation between gender and BI1 For Patients

Note: BI1= I intend to use or continue to use websites or mobile apps for managing my blood pressure with the support of my family members and a healthcare professional.

A chi-square test of independence was performed to examine the relationship between gender and responses to BI1. Overall, female participants (n = 28) tended to select "Disagree" (15 observed vs. 15.3 expected) and "Strongly agree" (8 vs. 5.8 expected) more often than expected, while male participants (n = 23) were more likely than expected to choose "Disagree" (14 vs. 12.6) and "Strongly disagree" (7 vs. 4.3). The one participant who preferred not to state their gender selected "Strongly agree," matching its minimal expected count. The Pearson chi-square was significant, $\chi^2(15, N = 53) = 63.71$, $p < .001$, indicating that BI1 responses differed by gender. However, with 83.3% of expected cell frequencies below 5 (minimum = 0.02), these results should be interpreted with caution due to potential violations of the test's assumptions.

Chi-Square Test Results of Gender and Consistent Daily Use for Patients

This analysis was conducted to determine whether participants' behavioural intentions (BI2) differ by patient gender, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	57.640[a]	12	0.000
N of Valid Cases	52		
a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .02.			

Table 6: shows the chi-square table between gender and BI 2 For Patients

Note: BI2: I will always try or continue to use a website or mobile app for managing my blood pressure in my daily life with the support of my family members and a healthcare professional.

The Pearson chi-square statistic was 57.64 with 12 degrees of freedom (N = 53), indicating a statistically significant association ($p < .001$). However, 16 cells (80.0%) had expected counts below 5, with the smallest expected count being .02, which suggests that the validity of the chi-square approximation may be compromised, and these results should be interpreted cautiously.

Chi-Square Test Results of Gender and Planned Regular Use for Patients

This analysis was conducted to determine whether participants' behavioural intentions (BI3) differ by patient gender, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	58.142[a]	12	0.000
N of Valid Cases	52		
a. 15 cells (75.0%) have expected countless than 5. The minimum expected count is .02.			

Table 7: shows the chi-square table between gender and BI 3 for Patients

Note BI3: I plan to use or continue the regular use of a website or mobile app for managing my blood pressure with the support of my family members and a healthcare professional.

The test yielded a chi-square value of 58.142 (N = 53), indicating a statistically significant association ($p < .001$). However, 15 cells (75.0%) had expected counts less than 5, with the smallest expected count being .02, suggesting that the chi-square approximation may be unreliable and these results should be interpreted with caution.

Response Category	STEM (n = 21)	Non-STEM (n = 15)	Did not say (n = 16)
Initial Intent to Use	17 Strongly Agree/Agree (81.0%) 4 Not Sure (19.0%) 0 Disagree/Strongly Disagree (0%)	10 Strongly Agree/Agree (66.7%) 4 Not Sure (26.7%) 1 Strongly Disagree (6.7%)	12 Strongly Agree/Agree (75.0%) 3 Not Sure (18.8%) 1 Disagree (6.3%)
Consistent Daily Use	16 Strongly Agree/Agree (76.2%) 5 Not Sure (23.8%) 0 Disagree/Strongly Disagree (0%)	8 Strongly Agree/Agree (53.3%) 6 Not Sure (40.0%) 1 Disagree (6.7%)	8 Strongly Agree/Agree (50.0%) 6 Not Sure (37.5%) 2 Disagree (12.5%)
Planned Regular Use	15 Strongly Agree/Agree (71.4%) 5 Not Sure (23.8%) 1 Disagree (4.8%)	8 Strongly Agree/Agree (53.3%) 6 Not Sure (40.0%) 1 Disagree (6.7%)	11 Strongly Agree/Agree (68.8%) 4 Not Sure (25.0%) 1 Disagree (6.3%)

Table 8: Industry-Based Comparison of Behavioural Intention Among Patients

The Industry-Based Comparison of Behavioural Intention Among Patients shows that individuals from STEM backgrounds consistently display stronger commitment and more favorable attitudes toward using digital tools for blood pressure management than those from non-STEM fields.

Regarding the "*Initial Intention to Use"* such platforms, 17 out of 21 STEM participants (81%) responded with "Agree" or "Strongly Agree," indicating a high level of openness. This contrasts with only 10 out of 15 non-STEM participants (66.7%) who expressed similar agreement, suggesting a more reserved stance (see *Table 8*). The trend continues with the question on *"Consistent Daily Use":* STEM participants again showed higher affirmative responses (76.2%) compared to 53.3% from the non-STEM group. Additionally, uncertainty

("Not Sure") was more prevalent among non-STEM respondents (40%) than STEM participants (23.8%), reflecting lower confidence or familiarity with these technologies.

When asked about *"Planned Regular Use"* STEM participants remained more favorable, with 71.4% agreeing or strongly agreeing, compared to 53.3% in the non-STEM group (see *Table 8*). While both groups had minimal outright disagreement, the data suggest that individuals with STEM backgrounds may be more inclined toward digital health engagement potentially due to higher digital literacy or greater exposure to tech-enabled solutions. These findings point to the need for targeted interventions or additional support mechanisms to bridge the engagement gap among non-STEM participants.

Chi-Square Test Results for STEM vs. non-STEM and Patients' Initial Intent to Use

This analysis was conducted to determine whether participants' behavioural intentions (BI1) differ by their fields of study, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	141.695[a]	15	0.000
Likelihood Ratio	173.548	15	0.000
N of Valid Cases	129		
a. 17 cells (70.8%) have expected count less than 5. The minimum expected count is .12.			

Table 9: shows the chi-square table between STEM vs Non-Stem for *BI1 for Patient*

Note: BI1 = I intend to use or continue to use websites or mobile apps for managing my blood pressure with the support of my family members and a healthcare professional.

A chi-square test of independence was performed to examine the relationship between field of study (STEM vs. Non-STEM) and responses to BI1 among patients. The Pearson chi-square was significant, $\chi^2(15, N = 129) = 141.70$, $p < .001$, indicating that BI1 responses differed by field of study. However, 70.8% of the expected cell frequencies were below 5 (minimum = 0.12), suggesting that these results should be interpreted with caution due to potential violations of the test's assumptions.

Chi-Square Test Results of STEM vs non-STEM and Patients' Consistent Daily Use

This analysis was conducted to determine whether participants' behavioural intentions (BI2) differ by their fields of study, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	141.738[a]	12	0.000
Likelihood Ratio	174.616	12	0.000
N of Valid Cases	129		
a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .35.			

Table 10: shows the chi-square table between STEM and Non-Stem for *BI2 for Patient*

Note: BI2 = I will always try or continue to use a website or mobile app for managing my blood pressure in my daily life with the support of my family members and a healthcare professional.

A chi-square test of independence was performed to examine the relationship between field of study (STEM vs. Non-STEM) and responses to BI2 among patients. The Pearson chi-square was significant, $\chi^2(12, N = 129) = 141.74$, $p < .001$, indicating that BI2 responses differed by field of study. However, 70.0% of the expected cell frequencies were below 5 (minimum =

0.35), so these results should be interpreted with caution due to potential violations of the test's assumptions.

Chi-Square Test Results of STEM vs non-STEM and Patients' Planned Regular Use

This analysis was conducted to determine whether participants' behavioural intentions (BI3) differ by their fields of study, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	132.150[a]	12	0.000
Likelihood Ratio	170.142	12	0.000
N of Valid Cases	129		
a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .23.			

Table 11: *shows the chi-square table between STEM and Non Stem for BI3 for Patient*

Note: BI3 = I plan to use or continue the regular use of a website or mobile app for managing my blood pressure with the support of my family members and a healthcare professional.

A chi-square test of independence was performed to examine the relationship between field of study (STEM vs. Non-STEM) and responses to BI3 among patients. The Pearson chi-square was significant, $\chi^2(12, N = 129) = 132.15$, $p < .001$, indicating that BI3 responses differed by field of study. However, 65.0% of the expected cell frequencies were below 5 (minimum = 0.23), so these results should be interpreted with caution due to potential violations of the test's assumptions.

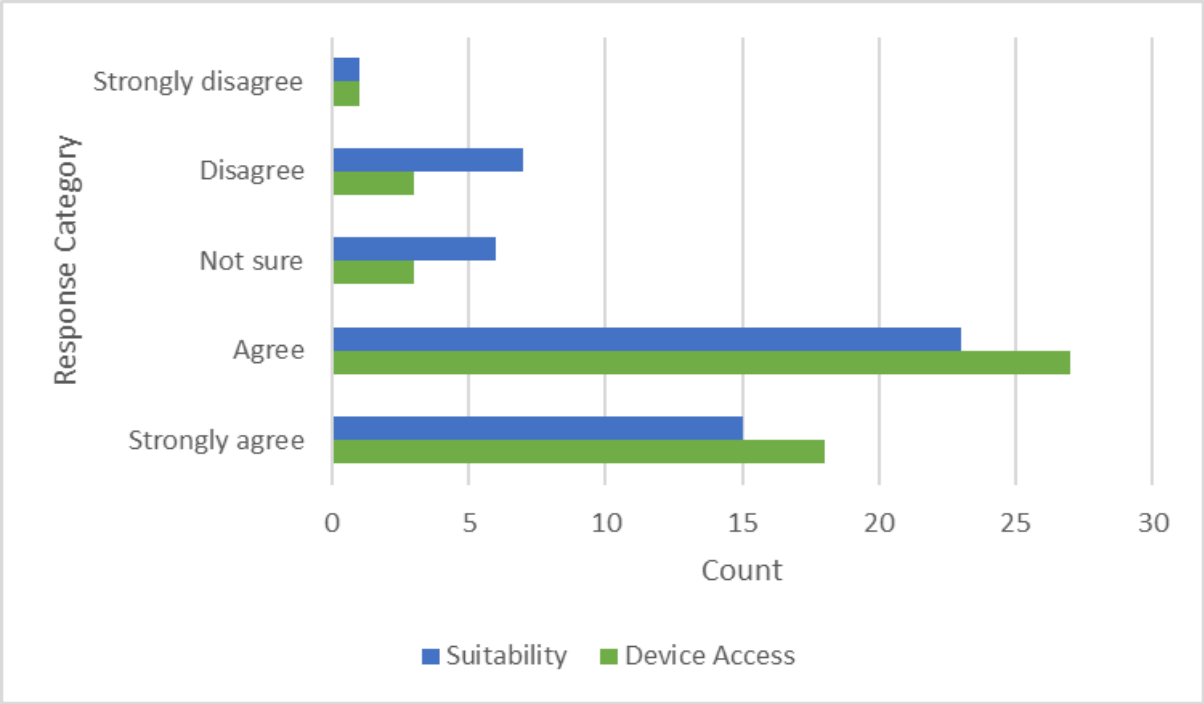


Figure 11: Facilitating Conditions Response Summary Among Patients.

The Facilitating Conditions Response Summary provides insight into patients' access to and comfort with the devices needed to use digital tools for blood pressure management. A clear majority of respondents indicated having a device, with 45 out of 52 participants (86.5%) selecting either "Agree" or "Strongly agree" for having a device such as a smartphone, tablet, or computer (*"Device Access"*) (see *Figure 11*). This indicates a strong foundational readiness for digital engagement from a technical access standpoint.

In contrast, slightly fewer participants felt their device was adequately sized for reading longer texts comfortably (*"Suitability"*), with 38 out of 52 (73.1%) expressing agreement or strong agreement. Notably, the number of participants who selected "Disagree" rose from 3 regarding *"Device Access"* to 7 in relations to its *"Suitability"*, suggesting that screen size or readability might be a barrier for a small but meaningful segment of users (see *Figure 11*).

Overall, while most patients appear well-equipped to access digital health platforms, the data highlights the need to consider readability and user interface design, particularly for users

with smaller or less optimal devices. Addressing these design aspects could help ensure sustained engagement and ease of use across the patient population.

Reliability Analysis of Patient Constraint Variables

The following table presents the internal consistency (e.g., Cronbach's α) for each constraint variable as reported by patients. Establishing reliability here ensures that the measures of patient-perceived constraints are stable and coherent before proceeding with further analyses

Variables	Number of Items	Alpha
E	1	---
BI	3	.815
UB	2	.848
BE	3	.772
PC	9	.865
PE	3	.753
EE	4	.906
SI	3	.863
FC	2	.803
HM	3	.795
Ha	3	.549
PT	5	.850

Table 12: Reliability of Research Variables for Patient Constraints

Note: E = Experience, Behavioural Intention = BI, Behavioural Expectations = BE, Use Behavioural = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI, Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

The majority of the Cronbach's Alpha values exceeded the recommended threshold of 0.7, indicating good internal consistency and reliability of the constructs (Taber, 2018). Notably, Effort Expectancy (α = 0.906), Privacy Concerns (α = 0.865), Social Influence (α = 0.863), Perceived Trust (α = 0.850), and Use Behaviour (α = 0.848) demonstrated particularly strong internal reliability. These high alpha values suggest that the items within each scale consistently measure the same underlying construct.

Behavioural Intention (BI) also showed good reliability (α = 0.815), as did Facilitating Conditions (α = 0.803), Behavioural Expectations (α = 0.772), Performance Expectancy (α = 0.753), and Hedonic Motivation (α = 0.795), further supporting the robustness of the measurement tools used.

However, the Cronbach's Alpha for the Habit scale (Ha) was relatively low (α = 0.549), falling below the commonly accepted threshold of 0.7. This suggests that the items may not consistently capture the same underlying concept of habit. Further item-level analysis may be necessary to determine whether specific questions within the Habit scale are misaligned or ambiguous. Given that this scale consists of only three items, it's also possible that the limited number of indicators contributed to the reduced reliability, as smaller scales are generally more sensitive to item inconsistencies.

Lastly, the Experience (E) construct was not evaluated for reliability as it consisted of a single item, and Cronbach's Alpha is not applicable in such cases.

Descriptive Statistics of Patient Acceptability Responses

This table summarizes the central tendency and dispersion (mean, standard deviation, minimum, maximum) for each acceptability question answered by patients. Showing these

descriptive statistics provides an overview of how patients generally perceive digital health tools and the variability in their responses

Variables	Number of Items	min	max	mean	Std. deviation
E	1	1	5	3.73	1.031
BI	3	1	5	3.8269	.68118
UB	2	1	5	3.2019	1.09929
BE	3	1	5	3.9231	.58529
PC	9	1	5	3.5342	.66994
PE	3	1	5	3.9103	.74715
EE	4	1	5	3.7596	.88279
SI	3	1	5	3.6026	.85568
FC	2	1	5	3.9808	.89641
HM	3	1	5	3.4264	.76402
Ha	3	1	5	3.2597	.72948
PT	5	1	5	3.6651	.68134

Table 13: Descriptive Statistics of Acceptability Questions for Patients

Note: 1 = Strongly disagree, 2 = Disagree, 3 = Not sure, 4 = Agree, 5 = Strongly agree.
E = Experience, Behavioural Intention = BI, Behavioural Expectations = BE, Use Behaviour = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI, Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

The descriptive statistics provide insight into participants' perceptions and attitudes across the constructs measured. The highest mean scores were observed for Facilitating Conditions ($\bar{x} = 3.9808$, $\sigma = 0.89641$), Performance Expectancy ($\bar{x} = 3.9103$, $\sigma = 0.74715$), and Behavioural Expectations ($\bar{x} = 3.9231$, $\sigma = 0.58529$), suggesting that participants generally feel

supported in their environment, believe that digital tools enhance their performance, and demonstrate strong engagement with the interventions provided. These high means, combined with relatively low standard deviations, indicate a shared positive experience across respondents.

Behavioural Intention ($\bar{x} = 3.8269$, $\sigma = 0.68118$) and Effort Expectancy ($\bar{x} = 3.7596$, $\sigma = 0.88279$) also scored highly, implying that most users intend to continue using digital health interventions and find them relatively easy to use. Privacy Concerns ($\bar{x} = 3.5342$, $\sigma = 0.66994$) and Social Influence ($\bar{x} = 3.6026$, $\sigma = 0.85568$) reflect moderate concern about the resources required for usage and the impact of social context on acceptance, respectively.

Lower mean scores were observed for Use Behaviour ($\bar{x} = 3.2019$, $\sigma = 1.09929$), Habit ($\bar{x} = 3.2597$, $\sigma = 0.72948$), and Hedonic Motivation ($\bar{x} = 3.4264$, $\sigma = 0.76402$), indicating less consistency in actual use patterns, less evidence of habitual use, and moderate levels of enjoyment associated with the platform. These findings suggest that while participants find the tools useful and relatively easy to use, integration into daily routines may still be developing.

The Experience (E) scale, which only contained a single item ($\bar{x} = 3.73$, $\sigma = 1.031$), shows moderate agreement, indicating that participants felt emotionally neutral to slightly positive about the digital tools. Finally, Perceived Trust ($\bar{x} = 3.6651$, $\sigma = 0.68134$) suggests that respondents have a moderately heightened sense of concern or awareness about the health issue being addressed, potentially reinforcing their intention to engage with the intervention.

Pearson Correlation Matrix of Patient Constructs

This table displays the pairwise Pearson correlation coefficients among key constructs (e.g., usefulness, ease of use, social support) measured in patients. Presenting the correlation

matrix highlights the strength and direction of relationships between constructs, guiding interpretation and model building.

	BI	UB	BE	PC	PE	EE	SI	FC	HM	Ha	PT	E1
BI	1											
UB	0.244	1										
BE	.551**	0.248	1									
PC	-0.015	0.120	0.194	1								
PE	.427**	0.102	.373**	0.167	1							
EE	.394**	.377**	0.166	0.265	.586**	1						
SI	0.160	.285*	0.168	0.148	.369**	.369**	1					
FC	.353*	0.173	.327*	0.139	.612**	.601**	.433**	1				
HM	-0.035	.501**	0.014	-0.052	0.138	0.294	0.106	0.063	1			
Ha	0.245	.514**	0.005	-0.221	0.025	.448**	0.225	0.144	.487**	1		
PT	.346*	0.285	0.301	-0.284	0.101	0.225	0.206	0.293	0.162	.385*	1	
E1	0.249	0.006	0.214	0.007	.273*	.304*	-0.094	0.185	-0.008	0.169	0.086	1
**. Correlation is significant at the 0.01 level (2-tailed).												
*. Correlation is significant at the 0.05 level (2-tailed).												

Table 14: Pearson Correlation Analysis Matrix of Constructs for Patients

Note: E = Experience, Behavioural Intention = BI, Behavioural Expectations = BE, Use Behaviour = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI, Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

Table 14 displays the Pearson correlation coefficients between Behavioural Intention (BI) and each adoption factor. Among the variables, Behavioural Expectations ($r = .551^{**}$, $p < .01$), Performance Expectancy ($r = .427^{**}$, $p < .01$), Effort Expectancy ($r = .394^{**}$, $p < .01$), Facilitating Conditions ($r = .353^{*}$, $p < .05$), and Perceived Trust ($r = .346^{*}$, $p < .05$) showed statistically significant positive correlations with Behavioural Intention. The strongest relationship was found between Behavioural Expectations and BI, suggesting that individuals

who are more behaviourally involved with the intervention are more likely to intend continued use.

Other constructs such as Use Behaviour (r = .244), Habit (r = .245), and Experience (E1) response (r = .249) were positively correlated with BI but did not reach statistical significance. Privacy Concerns (r = .015), Hedonic Motivation (r = .035), and Social Influence (r = .160) also showed weak and non-significant correlations, indicating limited predictive value for behavioural intention in this sample.

These results highlight the importance of engagement, perceived usefulness, ease of use, and contextual support in shaping individuals' intentions to adopt digital health tools. The significant correlation of Perceived Trust further suggests that individuals who recognize the severity or susceptibility of the health issue may be more motivated to engage with such interventions.

Technology Acceptance of Family Members

This section discusses the findings on family members' acceptance of digital health interventions (DHIs) and the facilitating conditions that support their use of the technology.

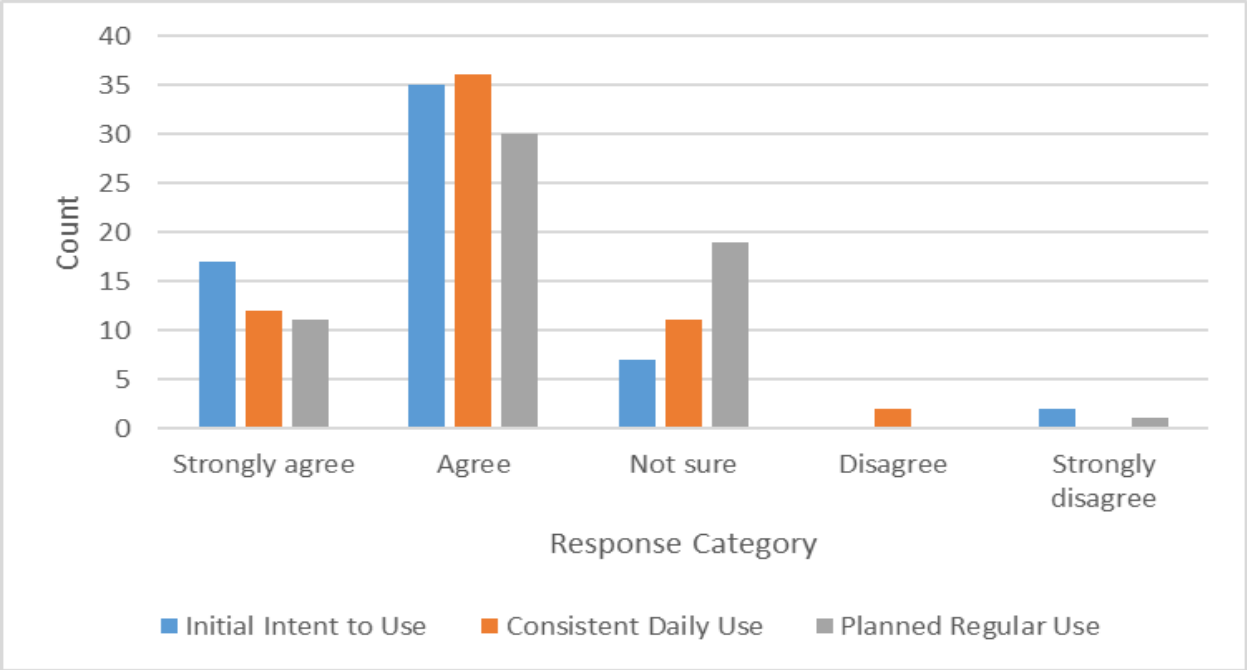


Figure 12: Family Members' Intention to Use Digital Tools for Hypertension Support

The responses from family members of patients indicate a generally strong behavioural intention to engage with digital health tools for blood pressure management, particularly when professional healthcare support is available. When asked about their willingness to use such technology, a significant majority 85% (52 out of 61) respondents expressed positive intent, with 57% (35 out of 61) agreeing and 28% (17 out 61) strongly agreeing (see *Figure 12*). This shows a high level of openness among family members to adopting websites or mobile apps for assisting their loved ones in managing their condition.

However, when questions focused more specifically on consistent or future usage patterns, the level of certainty began to taper. For instance, in relation to regular, daily engagement, fewer respondents 79% (48 out of 61) maintained a positive stance, while expressions of uncertainty grew slightly (see *Figure 12*). This pattern continued when considering plans for sustained, long-term use: only 67% (41 out of 61) remained affirmative, while "Not sure" responses rose to 31% (19 out of 61) (see *Figure 12*). This trend suggests that while initial enthusiasm is evident, long-term or routine engagement may be influenced by practical considerations such as ease of use, daily demands, or perceived effectiveness. Addressing these barriers through education, design improvements, and ongoing support may be key to maintaining digital engagement.

Behavioural Intention Question	**Female (n = 29)**	**Male (n = 30)**	**Prefer not to say (n = 2)**
Initial Intent to Use (Intend to use/continue using)	24 Strongly Agree/Agree (82.8%) 4 Not Sure (13.8%) 0 Disagree 1 Strongly Disagree (3.4%)	26 Strongly Agree/Agree (86.7%) 3 Not Sure (10%) 0 Disagree 1 Strongly Disagree (3.3%)	2 Strongly Agree/Agree (100%) 0 Disagree 0 Strongly Disagree
Consistent Daily Use (Will always try to use)	25 Strongly Agree/Agree (86.2%) 4 Not Sure (13.8%) 0 Disagree 0 Strongly Disagree	22 Strongly Agree/Agree (73.3%) 6 Not Sure (20%) 2 Disagree (6.7%) 0 Strongly Disagree	1 Strongly Agree/Agree (50%) 1 Not Sure (50%) 0 Disagree
Planned Regular Use (Plan to continue regular use)	21 Strongly Agree/Agree (72.4%) 8 Not Sure (27.6%) 0 Disagree 0 Strongly Disagree	20 Strongly Agree/Agree (66.7%) 10 Not Sure (33.3%) 0 Disagree/Strongly Disagree	1 Strongly Agree/Agree (50%) 1 Not Sure (50%)

Table 15: Gender-Based Comparison of Behavioural Intention Among Family Members

The gender-based comparison shows strong overall support among family members for using digital tools, though levels of certainty and enthusiasm vary by gender. Male family

members demonstrated the most consistent and confident responses, with 26 out of 30 (86.7%) selecting either "Strongly agree" or "Agree" across the behavioural intention questions (see *Table 5*). Their responses remained steady across intentions to use ("*Initial Intent to Use"*), try regularly (*Consistent Daily Use*), and plan future use (*"Consistent Daily Use"*), showing relatively low levels of uncertainty (13.3%) and no disagreement (see *Table 15*).

Female participants also showed high support for digital engagement, though with slightly more variability. On average, about 79.3% expressed positive intent across all three questions, but a slightly higher number were "Not sure" (17.2%) compared to their male counterparts (see *Table 15*). Notably, female respondents included one "Strongly disagree" in the question about general intent, suggesting a small but present hesitation (see *Table 15*).

Chi-Square Test Results of Gender and Initial Intention to Use for Family Members

This analysis was conducted to determine whether participants' behavioural intentions (BI1) differ by Family Member gender, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.534[a]	6	0.957
N of Valid Cases	61		
a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .07.			

Table 16: *shows the chi-square table between gender and BI1 for Family Member*

Note BI1: I intend to use or continue using a website or mobile app to help my family member manage their blood pressure, with support from healthcare professionals

A Pearson chi-square test was performed to explore whether there is an association between the two categorical variables under study. The analysis yielded a non-significant chi-square statistic, $\chi^2(6, N = 61) = 1.534$, $p = .957$, indicating that the distribution of responses does not differ by group. Although 66.7% of the cells had expected counts below 5 (minimum expected count = 0.07), suggesting caution in interpreting the chi-square approximation, the very high p-value provides strong evidence that the variables are independent in this sample.

Chi-Square Test Results of Gender and Consistent Daily Use for Family Members

This analysis was conducted to determine whether participants' behavioural intentions (BI2) differ by Family Member gender, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.363[a]	6	0.628
N of Valid Cases	61		
a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .07.			

Table 17: *shows the chi-square table between gender and BI2 for Family Member*

Note BI2: I will always try or continue to use a website or mobile app to assist my family members with managing their blood pressure in daily life, with support from healthcare professionals

A Pearson chi-square test was conducted to assess whether there is a statistically significant association between the categorical variables under study. The analysis yielded $\chi^2(6, N = 61) = 4.363$, $p = .628$, indicating no significant relationship between the factors. Although 50.0% of the cells had expected counts below five (minimum = 0.07), which suggests that the chi-square

approximation should be interpreted with caution, the high p-value provides strong evidence that the distributions of the two variables are independent in this sample.

Chi-Square Test Results of Gender and Planned Regular Use for Family Members

This analysis was conducted to determine whether participants' behavioural intentions (BI3) differ by Family Member gender, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.423[a]	6	0.000
N of Valid Cases	61		
a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .03.			

Table 18: *shows the chi-square table between gender and BI3 for Family Member*

Note BI3: I plan to use or continue regularly using a website or mobile app to support my family member's blood pressure management, with support from healthcare professionals

A Pearson chi-square test was conducted to examine whether the distribution of responses differed across the categories of the independent variable. The test yielded a significant association, $\chi^2(6, N = 61) = 31.423$, $p < .001$, indicating that the pattern of responses is not independent of the grouping factor. Despite the significant result, 50.0% of cells had expected counts below 5 (minimum expected count = 0.03), suggesting that the chi-square approximation may be less reliable; therefore, these findings should be interpreted with caution

Response Category	STEM (n = 49)	Non-STEM (n = 11)	Did not say (n = 1)
Initial Intent to Use (Intend to use/continue using)	41 Strongly Agree/Agree (83.7%) 7 Not Sure (14.3%) 1 Strongly Disagree (2.0%)	10 Strongly Agree/Agree (90.9%) 0 Not Sure (0%) 1 Strongly Disagree (9.1%)	1 Agree (100%) 0 in all other categories
Consistent Daily Use (Will always try to use)	38 Strongly Agree/Agree (77.6%) 10 Not Sure (20.4%) 1 Disagree (2.0%)	9 Strongly Agree/Agree (81.8%) 1 Not Sure (9.1%) 1 Disagree (9.1%)	1 Agree (100%) 0 in all other categories
Planned Regular Use (Plan to continue regular use)	35 Strongly Agree/Agree (71.4%) 13 Not Sure (26.5%) 1 Strongly Disagree (2.0%)	5 Strongly Agree/Agree (45.5%) 6 Not Sure (54.5%) 0 Disagree/Strongly Disagree	1 Agree (100%) 0 in all other categories

Table 19: Industry-Based Comparison of Behavioural Intention Among Family Members

This section examines how Family Members' academic backgrounds specifically STEM versus non-STEM fields influence their behavioural intention to use digital health interventions for hypertension support. For the initial willingness to adopt these tools (*"Initial Intent to Use"*), 41 out of 49 STEM participants (83.7%) selected either "Strongly Agree" or "Agree," compared to 10 out of 11 non-STEM participants (90.9%) (see *Table 19*). Although this suggests high initial acceptance among both groups, the smaller size of the non-STEM sample limits the generalizability of that figure. Where the difference becomes more pronounced is in sustained and regular use (*"Planned Regular"*). On the question of continued daily support through these digital platforms (*"Consistent Daily Use"*), 38 STEM participants (77.6%) expressed agreement, while 9 non-STEM participants (81.8%) did the same (see *Table 19*).

In the final question (*"Planned Regular"*), focused on planned regular usage, 35 STEM participants (71.4%) agreed or strongly agreed, while only 5 from the non-STEM group (45.5%) did so (see *Table 19*). This drop among non-STEM participants suggests that while initial

openness exists, maintaining engagement may be more challenging for them. These results may underline the importance of designing inclusive digital health tools and providing additional support for non-STEM users, who may require more reassurance or training to build sustained behavioural intention.

Chi-Square Test Results for STEM vs. Non-STEM and Family Members' Initial Intent to Use

This analysis was conducted to determine whether participants' behavioural intentions (BI1) differ by their fields of study, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	133.920[a]	12	0.000
Likelihood Ratio	179.648	12	0.000
N of Valid Cases	126		
a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .02.			

Table 20: *shows the chi-square table between STEM vs Non Stem for BI1 for Family Member*

Note : BI1 = I intend to use or continue to use websites or mobile apps for managing my blood pressure with the support of my family members and a healthcare professional.

A chi-square test of independence was performed to examine the relationship between field of study (STEM vs. Non-STEM) and responses to BI1 among patients. The Pearson chi-square was significant, $\chi^2(12, N = 126) = 133.92$, $p < .001$, indicating that BI1 responses differed by field of study. However, 65.0% of the expected cell frequencies were below 5 (minimum =

0.02), so these results should be interpreted with caution due to potential violations of the test's assumptions.

Chi-Square Test Results of STEM vs non-STEM and Family Members' Consistent Daily Use

This analysis was conducted to determine whether participants' behavioural intentions (BI2) differ by their fields of study, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	134.249[a]	12	0.000
Likelihood Ratio	178.795	12	0.000
N of Valid Cases	126		
a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .02.			

Table 21: *shows the chi-square table between STEM vs Non Stem for BI2 for Family Member*

Note : BI2 = I will always try or continue to use a website or mobile app for managing my blood pressure in my daily life with the support of my family members and a healthcare professional.

A chi-square test of independence was performed to examine the relationship between field of study (STEM vs. Non-STEM) and responses to BI2 among patients. The Pearson chi-square was significant, $\chi^2(12, N = 126) = 134.25$, $p < .001$, indicating that BI2 responses differed by field of study. However, 65.0% of the expected cell frequencies were below 5 (minimum =

0.02), so these results should be interpreted with caution due to potential violations of the test's assumptions.

Chi-Square Test Results of STEM vs non-STEM and Family Members' Planned Regular Use

This analysis was conducted to determine whether participants' behavioural intentions (BI3) differ by their fields of study, providing insight into potential demographic influences on technology adoption. Understanding such relationships helps tailor interventions and communications to specific gender groups for more effective implementation.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	138.550[a]	12	0.000
Likelihood Ratio	182.791	12	0.000
N of Valid Cases	126		
a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is .01.			

Table 22: shows the chi-square table between STEM vs Non-Stem for *BI2 for Family Member*

Note : BI3 = I plan to use or continue the regular use of a website or mobile app for managing my blood pressure with the support of my family members and a healthcare professional.

A chi-square test of independence was performed to examine the relationship between field of study (STEM vs. Non-STEM) and responses to BI3 among patients. The Pearson chi-square was significant, $\chi^2(12, N = 126) = 138.55$, $p < .001$, indicating that BI3 responses differed by field of study. However, 60.0% of the expected cell frequencies were below 5 (minimum =

0.01), so these results should be interpreted with caution due to potential violations of the test's assumptions.

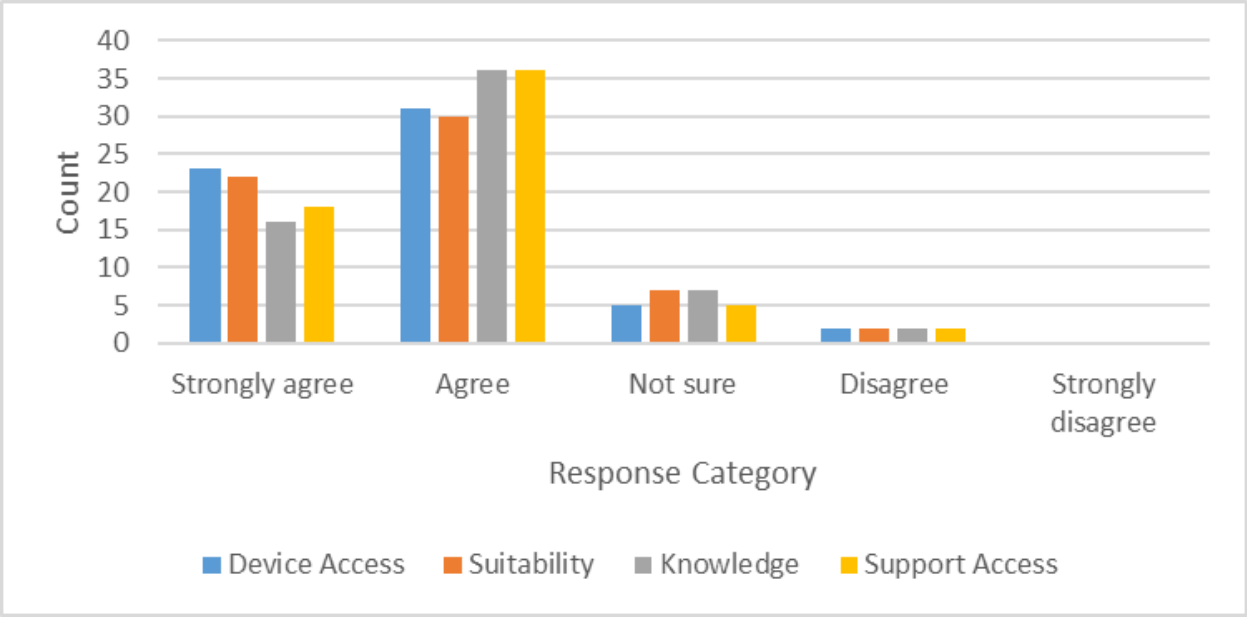


Figure 13: Facilitating Conditions Response Summary Among Family Members

The Facilitating Conditions Response Summary Among Family Members reveals generally strong enabling conditions for digital health engagement. A large majority of respondents reported having access to a suitable device, with 89% (n=54) either agreeing or strongly agreeing that they possess a computer, smartphone, or tablet (*"Device Access"*), and 85% (n=52) confirming the device is appropriately sized for reading longer texts (*"Suitability"*)(see *Figure 13*).

When asked about confidence and support structures, 85% (n=52) agreed or strongly agreed they have the necessary knowledge to assist a family member with digital blood pressure management tools ("*Knowledge"*), and the same proportion felt they could access help if they

encountered difficulties (*"Support Access"*)(see *Figure 13*). "Not sure" and "Disagree" responses were minimal across all four questions, collectively comprising only 10–15% per item.

This overall response pattern suggests that most family members perceive both the technological and knowledge-based infrastructure needed to support digital health engagement as readily available, which bodes well for the implementation of digital interventions targeting hypertension management.

Reliability Analysis of Family Constraint Variables

This table presents the internal consistency (e.g., Cronbach's α) for each constraint variable as reported by family members. Establishing reliability here ensures that the measures of family-perceived constraints are dependable before any further interpretation.

Variables	Number of Items	Alpha
BI	3	.733
BE	3	.781
PC	9	.833
PE	3	.785
EE	4	.849
SI	3	.861
FC	4	.816
HM	3	.87
Ha	3	.776
PT	5	.774

Table 23: Reliability of Research Variables For Family Members

Note: Behavioural Intention = BI, Behavioural Expectations = BE, Use Behaviour = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI,

Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

All of the Cronbach's Alpha values were above the recommended threshold of 0.7, indicating that the variables are reliable and their items are internally consistent. Notably, all variables, including Behavioural Intention (α = .733), Behavioural Expectations (α = .781), Privacy Concerns (α = .833), Performance Expectancy (α = .785), Effort Expectancy (α = .849), Social Influence (α = .861), Facilitating Conditions (α = .816), Hedonic Motivation (α = .870), and Habit (α = .776), demonstrated acceptable to high reliability. No variables fell below the 0.7 threshold, suggesting that all scales in this analysis possess adequate internal consistency, and none were excluded for having only a single item.

Descriptive Statistics of Family Acceptability Responses

This table summarizes the central tendency and dispersion (mean, standard deviation, minimum, maximum) for each acceptability question answered by family members. Providing these descriptive statistics offers an overview of how families generally view digital health tools and the variability in their responses.

Variables	Number of Items	Min	Max	Mean	Std. Deviation
BI	3	1	5	3.9454	0.63005
BE	3	1	5	3.9180	0.69829
PC	9	1	5	3.4408	0.78389
PE	3	1	5	4.0929	0.5097
EE	4	1	5	4.1270	0.61850
SI	3	1	5	3.6011	0.69341
FC	4	1	5	4.1598	0.58636
HM	3	1	5	3.3399	0.79019
Ha	3	1	5	3.2876	0.82763
PT	5	1	5	3.8657	0.57797
UB	1	1	5	3.8361	0.91616

Table 24: Descriptive Statistics of Acceptability Questions For Family Members

Note : 1 = Strongly disagree, 2 = Disagree, 3 = Not sure, 4 = Agree, 5 = Strongly agree. Behavioural Intention = BI, Behavioural Expectations = BE, Use Behaviour = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI, Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

The table presents the descriptive statistics for each construct in our model. Facilitating Conditions ($\bar{x}$ = 4.1598, σ = 0.5864), Effort Expectancy ($\bar{x}$ = 4.1270, σ = 0.6185), and Performance Expectancy ($\bar{x}$ = 4.0929, σ = 0.5097) all exhibit high mean scores coupled with relatively low standard deviations, indicating that participants feel well supported with the necessary resources, find the tools easy to use, and believe that these tools will improve their performance. Behavioural Intention ($\bar{x}$ = 3.9454, σ = 0.6301) and Behavioural Expectations ($\bar{x}$ = 3.9180, σ = 0.6983) similarly reflect strong overall intentions and expectations toward using the tools. Privacy Concerns ($\bar{x}$ = 3.4408, σ = 0.7839) and Social Influence ($\bar{x}$ = 3.6011, σ = 0.6934) both fall in the mid-range, suggesting moderate levels of concern over data privacy and moderate perceived social pressures. Hedonic Motivation ($\bar{x}$ = 3.3399, σ = 0.7902) and Habit ($\bar{x}$ = 3.2876, σ = 0.8276) indicate that enjoyment and habitual tendencies are present but less pronounced. Finally, Perceived Trust ($\bar{x}$ = 3.8657, σ = 0.5780) and Use Behaviour (UB) ($\bar{x}$ = 3.8361, σ = 0.9162) both point to generally positive trust perceptions and use behaviour, albeit with greater variability in actual use.

Pearson Correlation Matrix of Family Constructs

This table displays the pairwise Pearson correlation coefficients among key constructs (e.g., usefulness, ease of use, social support) measured in family members. Presenting the

correlation matrix highlights the strength and direction of relationships between constructs, informing subsequent model development.

	BI	BE	UB	PC	PE	EE	SI	FC	HM	Habit	PT
BI	1										
BE	.709**	1									
UB	.331**	.439**	1								
PC	-0.066	-0.083	0.020	1							
PE	.480**	.590**	.447**	-0.041	1						
EE	.446**	.542**	.309*	-0.121	.577**	1					
SI	.399**	.555**	.298*	-0.035	.333**	.311*	1				
FC	0.171	.392**	.344**	0.016	.343**	.592**	0.231	1			
HM	0.120	0.198	0.047	-0.063	0.236	.318*	.472**	0.057	1		
Habit	.339*	.400**	0.217	-0.179	0.192	0.178	.528**	0.080	.589**	1	
PT	.350*	.490**	0.117	-.390**	.536**	.483**	.453**	0.206	.444**	.362**	1
** = Correlation is significant at the 0.01 level (2-tailed)											
* = Correlation is significant at the 0.05 level (2-tailed)											

Table 25: Pearson Correlation Analysis Matrix of Constructs For Family Members

Note: Behavioural Intention = BI, Behavioural Expectations = BE, Use Behaviour = UB, Privacy Concerns = PC, Performance Expectancy = PE, Effort Expectancy = EE, Social Influence = SI, Facilitating Conditions = FC, Hedonic Motivation = HM, Habit = Ha, and Perceived Trust = PT.

The Pearson correlation coefficients were computed to examine the relationships between Behavioural Intention (BI) and the various adoption factors. Behavioural Expectations (BE) ($r = .709^{**}$, $p < .01$), Performance Expectancy (PE) ($r = .480^{**}$, $p < .01$), Effort Expectancy (EE) ($r = .446^{**}$, $p < .01$), Social Influence (SI) ($r = .399^{**}$, $p < .01$), Use Behaviour (UB) ($r = .331^{**}$, $p < .01$), Habit ($r = .339^{*}$, $p < .05$), and Perceived Trust (PT) ($r = .350^{*}$, $p < .05$) all showed statistically significant positive correlations with BI. The strongest association was observed

between BI and BE, indicating that higher behavioural expectations are closely linked to stronger intentions to use the intervention.

Other variables, such as Facilitating Conditions (FC) ($r = .171$, ns) and Hedonic Motivation (HM) ($r = .120$, ns), were positively correlated with BI, but these relationships did not reach statistical significance. Privacy Concerns (PC_All) ($r = –.066$, ns) showed a weak and non-significant negative correlation with BI.

These findings suggest that behavioural expectations, perceptions of usefulness, ease of use, and social influence are particularly important for promoting behavioural intention to use digital health tools. Meanwhile, concerns around privacy and hedonic motivation appear to play a limited role in shaping intention in this context.

Technology Acceptance Comparison Between Hypertensive Patient and Family Member

This section presents a comparison of hypertensive patients and their family members regarding their acceptance of digital health intervention (DHI) technology.

Behavioural Intention Category	Patients (n = 52)	Family Members (n = 61)
Initial Intent to Use (Intend to use/continue using)	39 Agree/Strongly Agree (75%) 11 Not Sure (21%) 2 Disagree (4%)	52 Agree/Strongly Agree (85%) 7 Not Sure (11%) 2 Disagree (3%)
Consistent Daily Use (Will always try to use)	32 Agree/Strongly Agree (61.5%) 17 Not Sure (33%) 3 Disagree (5.5%)	48 Agree/Strongly Agree (79%) 11 Not Sure (18%) 2 Disagree (3%)
Planned Regular Use (Plan to continue regular use)	37 Agree/Strongly Agree (71%) 13 Not Sure (25%) 2 Disagree (4%)	41 Agree/Strongly Agree (67%) 19 Not Sure (31%) 1 Disagree (2%)

Table 26: Patient and Family Member Intention to Use DHI for Hypertension Management

The comparison between patients and their family members reveals a generally high behavioural intention toward using digital tools for blood pressure management, though with some variation in certainty over time. Initially, family members expressed slightly stronger intent than patients, with 52 out of 61 (85%) of them selecting “Agree” or “Strongly Agree” compared to 39 out of 52 (75%) of patients (see *Table 26*). This suggests that family members may be more motivated or feel a greater sense of responsibility in supporting their loved ones through digital health platforms.

However, while both groups expressed strong initial willingness to use the digital tool, the responses varied a bit when asked about consistent daily and planned regular use. For daily use, 79% of family members and 61.5% of patients responded positively, while 67% of family members and 71% of patients agreed to planned regular use (see *Table 26*). Notably, the number

of “Not Sure” responses increased across these items, particularly for long-term engagement suggesting that while there is overall interest, some participants may be uncertain about their ability to maintain regular use due to factors like effort required or ease of use.

Overall, both patients and family members demonstrated strong behavioural intention to use digital tools for hypertension management, with family members showing consistently higher levels of agreement across initial, daily, and planned regular use. While patients were generally supportive, they expressed greater uncertainty, particularly around long-term engagement. These findings highlight the important role family members can play in supporting digital health adoption and suggest that sustained use among patients may depend on addressing usability concerns, enhancing digital literacy, and ensuring ongoing healthcare provider involvement.

Behavioural Intention	Patient			Family Member		
	STEM (n = 21)	**Non-STEM** (n = 15)	**Did not say** (n = 16)	**STEM** (n = 49)	**Non-STEM** (n = 11)	**Did not say** (n = 1)
Initial Intent to Use (Intend to use/continue using)	SA: 6 A: 11 NS: 4 D: 0 SD: 0	SA: 1 A: 9 NS: 4 D: 0 SD: 1	SA: 3 A: 9 NS: 3 D: 1 SD: 0	SA: 14 A: 27 NS: 7 D: 0 SD: 1	SA: 3 A: 7 NS: 0 D: 0 SD: 1	SA: 0 A: 1 NS: 0 D: 0 SD: 0
Consistent Daily Use (Will always try to use)	SA: 5 A: 11 NS: 5 D: 0 SD: 0	SA: 1 A: 7 NS: 6 D: 1 SD: 0	SA: 2 A: 6 NS: 6 D: 2 SD: 0	SA: 11 A: 27 NS: 10 D: 1 SD: 0	SA: 1 A: 8 NS: 1 D: 1 SD: 0	SA: 0 A: 1 NS: 0 D: 0 SD: 0
Planned Regular Use (Plan to continue regular use)	SA: 6 A: 9 NS: 5 D: 1 SD: 0	SA: 1 A: 7 NS: 6 D: 1 SD: 0	SA: 2 A: 9 NS: 4 D: 1 SD: 0	SA: 11 A: 24 NS: 13 D: 0 SD: 1	SA: 0 A: 5 NS: 6 D: 0 SD: 0	SA: 0 A: 1 NS: 0 D: 0 SD: 0

Table 27: STEM vs Non-STEM Behavioural Intention in Patients and Family Members

Note: *SA = Strongly Agree, A = Agree, NS = Not Sure, D = Disagree, and SD = Strongly Disagree.*

The STEM vs Non-STEM Comparison of Behavioural Intention in Patients and Family Members reveals clear differences in engagement with digital health tools based on industry/profession. Among patients, those from STEM fields showed notably higher support in all behavioural intention areas. For example, when asked about their initial intent to use digital tools, 17 out of 21 STEM patients (81.0%) either strongly agreed or agreed, compared to 10 out of 15 non-STEM patients (66.7%) (see *Table 27*). For consistent daily use, support remained strong among STEM patients (16/21 or 76.2%), while non-STEM agreement dropped slightly to 8 out of 15 (53.3%). Similarly, in planned regular use, STEM patients again led with 15 out of 21 (71.4%) agreeing or strongly agreeing, compared to 8 out of 15 non-STEM patients (53.3%) (see

Table 27). Notably, “Not Sure” responses were higher in the non-STEM group across all items, indicating more hesitancy.

Among family members, the contrast is even more pronounced. For initial intent to use, 41 out of 49 STEM respondents (83.7%) agreed or strongly agreed, compared to just 10 out of 11 non-STEM respondents (90.9%), though the smaller non-STEM sample slightly skews this figure (see *Table 27)*. However, as questions shifted toward consistent use, support among non-STEM participants dropped: only 9 out of 11 (81.8%) agreed or strongly agreed, compared to 38 out of 49 (77.6%) of STEM respondents. When asked about planned regular use, STEM family members again showed stronger intent (35/49 or 71.4%) versus 5 out of 11 (45.5%) in non-STEM (see *Table 27*).

These results suggest that STEM-affiliated individuals, both patients and family members, exhibit stronger and more consistent behavioural intentions to use digital health tools, reflecting greater familiarity or comfort with technology. In contrast, non-STEM participants, especially in the patient group, show more uncertainty and lower levels of strong agreement, indicating potential areas for targeted support or training to foster greater confidence and sustained use.

Health Care Professionals’ Perceptions of a Website Used for Hypertension Management

This thematic analysis explores healthcare professionals' (HCPs) perceptions of using digital tools, specifically a website or mobile app, for collaborative hypertension management. Data for the analysis was gathered through interviews with three HCPs. The analysis is organized around four key themes that emerged from the interview data. First, Positive perceptions of Digital Health Tool Acceptance examine HCPs' overall attitudes towards

incorporating digital tools, their views on specific features, and their willingness to recommend these tools to patients. Second, Experience and Usage of Digital Tools investigates HCPs' direct involvement with digital tools in their practice. Third, Barriers to Patient Adoption delves into the factors that may hinder patients' ability and willingness to use these tools. Finally, Trust and Privacy explores HCPs' confidence in the technology, as well as their concerns related to data monitoring and the potential misuse of patient information.

Theme 1: Positive Perceptions of Digital Health Tool Acceptance

Overall, the HCPs demonstrated a generally positive attitude towards using digital tools for hypertension management, recognizing their potential to improve patient care and streamline certain processes. However, their acceptance was often qualified by considerations around practicality, specific feature needs, and workflow integration.

HCPs expressed interest for the potential of digital tools to enhance blood pressure management. HCP #1 was particularly emphatic, stating they would "of course" encourage patients to use a mobile app or website. This enthusiasm stemmed from the limitations of their current paper-based methods, which require patients to manually record readings and bring them to appointments for analysis. HCP #1 highlighted the benefit of being able to "know on the go when someone’s blood pressure is too high or too low and would be able to take action immediately," emphasizing the value of timely intervention. HCP #2 also strongly affirmed the value of digital tools, stating that they facilitate "more direct, immediate contact with patients" and enable timely intervention when something goes wrong. HCP #3 similarly acknowledged that digital tools "can improve patient care by providing real-time blood pressure monitoring" and facilitate patient engagement.

HCPs highlighted specific features that they deemed important for effective digital hypertension management tools. A key feature mentioned by HCP #3 was the ability to record medication intake alongside blood pressure readings, which they saw as crucial for identifying how medication affects the patient's blood pressure.

HCP #2 revealed a challenge in current patient communication, stating that while they provide patients with their phone number, this often results in the burden of calls "any time of the day and night." Consequently, HCP #2 expressed significant interest in the chat feature offered by the prototype, recognizing its benefit in enabling them to communicate with patients at a more convenient and suitable time.

Theme 2: Limited Experience and Concerns for Health Professional Adoption

HCPs said they have limited direct experience using digital tools specifically for managing hypertension, indicating that this is a relatively new area in their practice. However, one HCP provided a notable example of a patient using a sophisticated digital tool for medication adherence.

HCP #1 and HCP #2 both indicated a lack of prior experience with using digital tools to manage hypertension. HCP #1 stated that while they have used digital tools for other purposes like managing medical records and online consultations, using a tool "to manage hypertension and documenting the reading...is new to me". HCP #2 similarly stated that they do not have any experience with managing hypertension using an app and that the concept was new to them.

Both HCP #1 and HCP #2 also reported a lack of prior observations of patients or families using websites or mobile apps for blood pressure management. HCP #2's response, "No, I don't have any; in all honesty, no, until you are introducing this one to me," further emphasizes the novelty of this technology in their experience. HCP #3 shared an example of a patient using a

digital health tool, not specifically for blood pressure monitoring, but for medication adherence. This tool involved an internet-connected machine that enabled the patient's daughter in Canada to remotely monitor if her mother was taking her medication. The machine would remind the patient to take their medication and notify the daughter if the medication was not dispensed.

HCPs also raised important concerns and practical considerations. HCP #3 expressed reservations about the feasibility of using a blood pressure app to manage a large number of patients, given the potential for "hundreds of alerts a day" and the impracticality of responding to all of them in real-time. This concern was exacerbated by the lack of widespread use of physician assistants in Jamaica to help manage these alerts. Additionally, HCP #1 indicated that their likelihood of using the digital tool would increase if it offered broader functionality, such as the ability to manage other conditions like diabetes and cholesterol.

Theme 3: Barriers to Patient Adoption

Generally, the HCPs identified patient-related factors as significant considerations that may impede the adoption of digital tools for hypertension management. These factors include age-related challenges with technology, the influence of cost, and the need for support and training.

Sub-Theme: Age-Related Digital Literacy and Ease of Use: This sub-theme highlights the challenge that older patients may encounter when learning to use digital tools, reflecting the observed gap in usability between different age groups. However, it also acknowledges that, with the right guidance, learning remains achievable for older patients.

A prominent concern raised by HCPs was the potential difficulty older patients may face in learning to use digital tools. HCP #1 explicitly stated that using an online tool would be “easier for the younger population, but for the older population, who should be the target

audience, it would be difficult because they think everything is too new". HCP #3 also anticipated a clear age-related divide in ease of use, noting that while younger patients would likely adapt easily, seniors (especially those in their late 60s and 70s) often have difficulty using a smartphone. However, HCP #2 offered a more optimistic perspective, suggesting that with the widespread use of the internet, a significant portion of the population "probably 75% of Jamaicans" should find these tools "pretty easy" to use and that even elderly patients can learn with proper guidance.

Sub-Theme: Cost of using a Digital tool: This sub-theme examines how the financial implications of using a DHI serve as a significant barrier, influencing patients' ability and willingness to adopt such tools for hypertension management.

HCP #3 emphasized that "costs always play a major role in patients, whether or not they're going to comply," highlighting affordability as a significant factor influencing acceptance. They further elaborated on this, stating that patients' financial situations greatly influence their ability to utilize digital tools, especially since many hypertensive patients are elderly with limited incomes. In such cases, "family support" and their willingness to cover the costs become crucial.

Sub-theme: Patient Compliance and the importance of Support in DHI Adoption: This sub-theme highlights the importance of family support in enabling patient adoption of DHIs, while also acknowledging that patient compliance remains a significant hurdle.

HCPs also acknowledged the importance of supporting and facilitating conditions to promote patient adoption. HCP #1 suggested that older patients who have trouble using the tool should ask a family member for help and noted that at-home elderly patients would need support,

particularly if they have trouble seeing. HCP #3 similarly highlighted the role of “family support” in enabling patients to use digital tools.

As it relates to patient compliance, HCP #1 indicated that their own attitude and use of the tool could significantly influence adoption, stating that a tool like ours “will be readily used if the doctor is in the position to use it”. However, HCP #1 also acknowledged that patient compliance is a major factor, adding, "My problem is the patient”. This indicates that even if the technology is readily available and HCPs are supportive, patient compliance remains a significant hurdle.

Sub-Theme: Concerns about trust and privacy: This sub-theme explores varying levels of concern among patients and their families regarding data privacy and the security of health information on digital platforms.

Different views were offered regarding the extent to which patients are concerned about data privacy by HCPs. HCP #1 indicated that some patients are hesitant about their information going outside of the medical center and prefer paper-based records. They also noted that privacy concerns tend to be less prominent among hypertensive patients compared to those with stigmatized conditions like HIV. However, HCP #1 shared that family members of younger hypertensive patients have expressed anxiety about the potential social repercussions if their relative's health information were to become public. In contrast, HCP #2 initially suggested that patients in Jamaica are unlikely to be concerned about data monitoring.

HCPs also highlighted the nuanced nature of privacy concerns. HCP #2 acknowledged that concerns about personal information usage, such as sharing with third parties, are "tricky" and vary individually. They elaborated that some patients are cautious and ask specific questions about data usage, access, and sharing, while others are more willing to share data if they see a

potential benefit. HCP #3 acknowledged that uploading data to the internet raises privacy concerns, especially with increased awareness of data protection laws.

HCPs suggested potential ways to address privacy concerns. HCP #3 noted that while data sharing is becoming more common, reading the privacy policy could alleviate some concerns, though they were unsure if patients do this. HCP #3 also reassured that data monitoring might not be a major problem since the app collects only basic personal information and blood pressure readings.

Discussion

This section analyzes how our data from Jamaican hypertensive patients, their family members, and healthcare professionals compares with the existing literature.

Patient Acceptance of DHI for Hypertension Management

The findings suggest moderate patient acceptability of DHIs for hypertension management. Specifically, 75% (39 out of 52) of patients expressed an intention to use websites or mobile apps to manage their blood pressure, and 71% (37 out of 52) indicated a willingness to use such tools regularly. These results align with findings by Bhandari et al. (2022), where 70% of participants using a mobile phone text messaging intervention (TEXT4BP) for blood pressure control achieved target BP levels and expressed a strong willingness to continue using the tool. Similarly, Alzahrani et al. (2022) conducted a systematic review of 13 studies involving mHealth interventions for hypertension self-management and found consistent evidence of high patient acceptability across various digital tools, including mobile apps and text-based interventions. Their review highlighted improvements in medication adherence, self-efficacy, and communication with healthcare providers, factors that may have contributed to the positive

acceptance rates observed in this study. This alignment in findings reinforces the notion that digital tools tailored to hypertension management can be both effective and well-received. The consistency of positive responses in this study, alongside the willingness seen in international trials, supports the potential of DHIs to enhance patient engagement, encourage self-management, and promote healthier behaviours in the Jamaican context.

Patient's facilitating conditions and barriers to DHI adoption

Facilitating conditions and barriers play a crucial role in shaping patients' ability and readiness to adopt digital health interventions (DHIs). In this study, the majority of patients (45 out of 52 participants or 86.5%) reported having access to a device such as a smartphone or computer, indicating a strong technical foundation for digital engagement. However, healthcare professionals interviewed highlighted that age may pose a significant barrier for many patients. They expressed concern that older adults, who form a large portion of the hypertensive population, may struggle with using digital platforms due to unfamiliarity with technology. This aligns with findings by Nicosia et al. (2022), who noted that older adults often face multiple obstacles to DHI adoption, including limited digital literacy, infrequent use of technology, and increased perceptions of difficulty when using digital tools. These concerns are reflected in the current study, where among patients aged 50 and over, only 9 reported using mobile apps and 10 used wearable devices, while none reported using websites. This pattern may reflect user preference, with older patients selecting tools they are more familiar with or comfort using. These insights highlight the importance of considering digital literacy and user familiarity when designing and implementing DHIs for older adults.

Factors associated with Behavioural Intention to Accept DHIs Among Hypertensive Patients

The findings reveal several factors that are significantly associated with patients' behavioural intention to adopt DHIs for hypertension management. Notably, Behavioural Expectations ($r = .551^{**}$, $p < .01$), Performance Expectancy ($r = .427^{**}$, $p < .01$), and Effort Expectancy ($r = .394^{**}$, $p < .01$) demonstrated strong positive correlations with behavioural intention. These results align with Breil et al. (2019), who found that both Performance Expectancy and Effort Expectancy were significant predictors of intention in their UTAUT-based study ($R^2 = .57$, $p < .001$). Similarly, Breil et al. (2022) reported that Performance Expectancy remained the only significant UTAUT construct in their final model ($\beta = .66$, $p < .001$), reinforcing the importance of this factor in influencing adoption. The current findings also showed a significant correlation between Facilitating Conditions and behavioural intention ($r = .353^{*}$, $p < .05$), which is consistent with Breil et al. (2022), where Facilitating Conditions were statistically significant in the earlier stages of the regression model but lost significance after health-related motivational factors were added. These converging results underscore that Performance Expectancy and Effort Expectancy play crucial roles in shaping behavioural intention to use DHIs.

Family Member Acceptance of DHI for Hypertension Management

Results from this study demonstrate a strong intention among family members of hypertensive patients to adopt digital health interventions (DHIs) for managing blood pressure. Specifically, 85% (52 out of 61) of family respondents expressed a positive intention to use digital tools, with more than half agreeing and over a quarter strongly agreeing to support their loved ones through digital platforms. This high level of acceptance aligns with findings by Fitria et al. (2024), who

reported a strong positive correlation (r = 0.844, p = 0.000) between family coping support and effective hypertension management, highlighting the pivotal role of family involvement in improving health outcomes. Similarly, Kurnia et al. (2024) found that patients with family support were approximately 18.9 times more likely to manage their hypertension effectively (Odds Ratio [OR] = 18.889). Chacko and Jeemon (2020) further emphasize that in low- and middle-income settings, family members frequently assist in health-related decision-making and reinforcement of behaviour change, thereby supporting better treatment adherence. These findings collectively underscore the vital contribution of family members in the successful adoption and effectiveness of DHIs for hypertension management.

Family members' facilitating conditions and barriers to DHI adoption

The results of this study indicate that family members of hypertensive patients are generally well-equipped to engage with digital health interventions (DHIs), with 89% (54 out of 61) reporting access to a device such as a smartphone, tablet, or computer, and 85% (52 out of 61) indicating that their device was suitable for reading longer texts. This high level of access and readiness reflects strong technological preparedness, which is a critical facilitating condition for supporting patients in using digital tools for hypertension management. These findings align with research by Hamilton et al. (2024), who observed that when family members have the necessary technological resources and familiarity, they are more likely to support the adoption of Telehealth interventions, especially among older patients. Similarly, Shin et al. (2023) emphasized that family involvement, encouraged by access to digital tools and confidence in their use, may enhance the success of DHIs. These findings suggest that the strong digital

foundation among family members in this study may contribute positively to the sustained use and acceptability of DHIs within hypertension care.

Healthcare Professional Acceptance of DHI for Hypertension Management

Healthcare professionals introduced to the prototype website expressed a generally positive outlook on its potential to support hypertension management. Their perception reflects the willingness of HCPs to use digital tools that align with clinical goals and enhance patient care. This aligns with existing literature emphasizing the importance of professional support for successful digital health implementation. Hafner et al. (2022) note that acceptance from both patients and healthcare professionals is essential for DHI success. Similarly, Grynne et al. (2021) found that when providers are involved in evaluating of DHIs, their willingness to adopt them increases. The perceived usefulness of specific features such as real-time monitoring, easier communication, and the ability to document hypertensive readings was especially notable. Interactive elements like these have also been recognized in the literature for enhancing provider-patient engagement. For instance, Alnooh et al. (2024) reported that healthcare professionals gave positive feedback on the Noom app, a mobile platform for weight management and chronic illness support, due to its features that promote communication and provider-patient interaction. These findings reinforce the initial acceptance observed in this study, suggesting that thoughtfully designed digital tools may be well-received by healthcare professionals, particularly when their potential to enhance care is evident.

HCPs' facilitating conditions and barriers to DHI Adoption

Although this study involved a small sample of only three HCPs, the concerns raised align with existing research on the challenges of DHI integration, suggesting their relevance

despite the limited scope. One notable barrier raised by HCPs in this study was the concern about alert overload when using DHIs. Participants expressed apprehension about receiving large volumes of notifications, such as blood pressure alerts, which could become difficult to manage, especially in the absence of adequate clinical support staff, like physician assistants. This concern reflects findings in the literature. For instance, Palacholla et al. (2019) identified difficulties with integrating digital health tools into clinical workflows as a significant barrier to adoption. Handling excessive alerts can lead to fatigue and reduced responsiveness for HCPs. Such disruptions not only impact workflow efficiency but may also diminish the perceived usefulness of the tool if it generates more administrative burden than clinical benefit. Therefore, to support sustained provider engagement, it is essential that DHIs be designed to manage notifications in a way that is manageable.

Chapter 5: Conclusion and Recommendations

In this concluding chapter, we synthesize the study's main findings on the acceptability of DHIs for blood pressure monitoring among Jamaican hypertensive patients, their family members, and HCPs.

The Acceptance of DHI among stakeholders

This study sought to evaluate the acceptability of DHIs for managing hypertension among Jamaican patients, their supportive family members, and the HCPs involved in their care. It also examined the barriers and facilitating conditions that influence the use of such tools. Survey results showed a strong willingness to adopt DHIs. Among patients (n=52), 75% expressed a positive behavioral intention (BI), and among family members (n=61), this rose to 85%. The actual use behavior (UB), however, showed a discrepancy: 39.3% of patients used wearables and 33.9% used mobile apps, while 41% of family members preferred mobile apps. Yet 31.1% of family members reported not using any tools, compared to only 17.9% of patients, revealing a gap between Behavioral Intention and Use Behavior.

Statistical analysis using Pearson correlation highlighted key factors influencing BI and UB. For patients, behavioral expectation (BE, r = .551**), performance expectancy (PE, r = .427**), and effort expectancy (EE, r = .394**) were positively associated with BI. Similarly, for family members, BE (r = .709**), PE (r = .480**), and EE (r = .446**) were significant predictors of BI. Trust (PT), social influence (SI), and habit also played modest but meaningful roles in both groups.

Interviews with HCPs confirmed that DHIs are seen as supportive tools when properly integrated into care routines. However, they emphasized the importance of seamless workflow

integration, stronger patient support through family involvement, and the potential to manage a broader range of conditions beyond hypertension.

The Barriers and Facilitating Conditions among stakeholders

All three groups reported generally strong enabling conditions for DHI use. Family members overwhelmingly have suitable devices (89% agreement) and feel knowledgeable and supported (85%) in assisting relatives with digital BP tools. Patients likewise demonstrate high device access (86.5%), though a smaller majority (73.1%) find their screens suitably sized for longer text, suggesting UI/readability should be considered. Healthcare professionals, in a small sample (n=3), noted alert overload as a key operational barrier, reflecting broader workflow-integration challenges. Together, these findings indicate that while technological infrastructure and support are largely in place, attention to device usability and alert management will be crucial to sustain engagement across users.

Several barriers continue to hinder patient adoption, particularly among older populations. Age-related challenges with digital literacy remain a notable concern, with 3 healthcare professionals (HCPs) seeing that elderly patients often struggle to use smartphones or adapt to latest technologies.

Recommendations

Effective DHIs for collaborative hypertension management in Jamaica require careful planning. This includes incorporating patients, family members and health care professionals into the design process of the digital tool, and future research evaluates the effectiveness of these interventions within Jamaica. By focusing on these key areas, the potential of DHIs may be better realized and their ability to potentially improve health outcomes.

A primary recommendation is to involve all key stakeholders, patients, their family members providing support, and healthcare professionals in the design and testing phases of DHIs for hypertension management. This collaborative approach is crucial to ensure that the DHIs are highly acceptable, user-friendly, and seamlessly integrate into existing healthcare workflows and the daily routines of users. By incorporating feedback from these diverse groups from the beginning of the prototype's implementation, DHIs can be developed to truly meet their needs, address potential barriers, and foster greater engagement and adherence.

Furthermore, it is essential to conduct future research that evaluates the effectiveness of the DHI for managing hypertension within Jamaica. While the current study establishes acceptability, which is a vital initial step, future research should focus on assessing whether the DHI leads to tangible improvements in blood pressure control, medication adherence, and other relevant health outcomes. This could involve implementing pilot studies where hypertensive patients in Jamaica utilize the DHI over a defined period, with researchers carefully measuring outcomes against a control group to provide strong evidence of its impact on public health.

Facilitating conditions indicate a strong level of readiness among both patients and their family members to engage with digital tools for managing blood pressure. Most patients reported having access to suitable devices such as smartphones, tablets, or computers, suggesting that basic technical barriers are minimal. However, some expressed concerns about screen size and readability, highlighting potential usability challenges particularly for those using smaller devices. Family members also showed high confidence in their ability to use digital tools and seek help when needed. This broad access to technology and available support creates a favorable environment for the adoption of digital health interventions. Still, ensuring user

interfaces are accessible and legible across various devices will be essential to promote long-term engagement.

Summary

This study evaluated the acceptability of digital health interventions (DHIs) for hypertension management among Jamaican patients, their family members, and healthcare professionals. As part of the study, all participants were shown a demonstration of a prototype website designed to illustrate how a DHI could support collaborative hypertension management involving patients, family members, and healthcare professionals. Following the demonstration, patients and family members were asked to complete a questionnaire assessing their level of acceptability, while healthcare professionals participated in interviews to provide their perspectives. Among patients, 75% (39 out of 52) agreed or strongly agreed that they intended to use or continue using websites or mobile apps to manage their blood pressure. A similarly high level of acceptance was observed among family members, with 85% (52 out of 61) agreeing or strongly agreeing that they intended to use or continue using a website or mobile app to help manage their hypertensive family member's blood pressure. Healthcare professionals also expressed a positive perception of DHI, noting its potential to enhance patient care. Both patients and family members demonstrated strong facilitating conditions for DHI adoption, such as high access to digital devices and confidence in using them. However, health care providers noted potential challenges among older adults, such as difficulties using technology and cost of DHI. Along with these concerns HCPs also pointed to potential issues such as alert overload, while still affirming the tool's usefulness. Despite these challenges, the overall findings indicate that all three stakeholder groups generally viewed the prototype website positively. This suggests a strong level of initial

acceptability and readiness to adopt digital solutions for hypertension management. To enhance adoption and long-term use, it is recommended that patients, family members, and HCPs be actively involved in the design and development of DHIs. Future research should also focus on evaluating the effectiveness of these tools in the real world.

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Appendix

Patients Questionnaire

Inclusion Criteria: To take part in this questionnaire, you must have high blood pressure.

Questions 1 - 40 are mandatory (Demographics to Facilitating Conditions)

Questions 41 - 51 are optional (Hedonic Motivation to Perceived Trust)

Demographics

1. How old are you?
    - 18 - 29
    - 30 - 39
    - 40 - 49
    - 50 - 59
    - 60 - 69
    - over 70

2. What is your gender?
    - Male
    - Female
    - Prefer not to say

3. When were you diagnosed with high blood pressure?
    - Less than a year
    - 1-2 years ago
    - 3-5 years ago

- Over 6 years ago
- I am not sure

4. How would you describe your overall health?
   - Excellent
   - Very good
   - Good
   - Fair
   - Good

5. How would you describe your current blood pressure health?
   - Excellent
   - Very good
   - Good
   - Fair
   - Poor

6. Please select the field that best applies to your major or course of study.
   - Architecture and Land Management
   - Arts and Humanities
   - Business, Tourism Management or Entrepreneurship
   - Communication and Media Studies
   - Education

- Law
- Medicine, Pharmacy, Nursing, and Allied Health
- Natural Science
- Mathematics
- Computing and Engineering

Other _____

7. What is your Education Level?

- no formal education
- elementary (primary or preparatory school)
- secondary (high school or technical school)
- some tertiary education
- vocational training
- Degree (undergraduate or graduate degree)

Other: _____

Experience

8. What online tools or digital devices do you use to manage your blood pressure? [Check all that apply]

☑ Mobile apps

☑ Websites

☑ Wearable devices

☑ Other (Please specify)

☑ I don't use any digital health tools

9. I am confident in my ability to use smartphones and computers effectively, with the support from health professionals and family members

- o Strongly disagree
- o Disagree
- o Not sure
- o Agree
- o Strongly agree

Interest

10. What features are you most interested in using to manage your blood pressure? (Check all that apply.)

☑ Blood pressure tracking

☑ Medication reminders

☑ Appointment reminders

☑ Alerts of dangerous blood pressure readings via email

☑ Alerts of dangerous blood pressure readings via WhatsApp

☑ Alerts of dangerous blood pressure readings via text (SMS)

☑ Communication with health professionals

☑ Communication with family members

Other: _____

Behaviour Intention

11. I intend to use or continue to use websites or mobile apps for managing my blood pressure with the support of my family member and a healthcare professonal.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

12. I will always try or continue to use a website or mobile app for managing my blood pressure in my daily life with the support of my family member and a healthcare professonal.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

13. I plan to use or continue the regular use of a website or mobile app for managing my blood pressure with the support of my family member and a healthcare professional.

- Strongly disagree
- Disagree
- Not sure
- Agree

- Strongly agree

Use Behaviour

14. I am actively using a website or mobile app to manage my blood pressure and plan to continue using it.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

15. I use a website or mobile app to manage my blood pressure whenever it is necessary.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Behavioural Expectations

16. I expect to actively be supported by my family member/s and healthcare professional in using a website or mobile app to manage my blood pressure in the next year.

- Strongly disagree

- Disagree
- Not sure
- Agree
- Strongly agree

17. I will actively be supported by my family member/s and healthcare professional in using a website or mobile app in the next year.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

18. I predict that I will actively be supported by my family member/s and healthcare professional in using a website or mobile app to manage my blood pressure in the next year.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Privacy Concerns

Perceived Surveillance

19. I believe that the location of my device is monitored at least part of the time when using websites or mobile apps for managing blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

20. I am concerned that websites or mobile apps for managing blood pressure may collect too much information about me.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

21. I am concerned that websites or mobile apps for managing blood pressure may monitor my activities on my device

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Perceived Intrusion

22. I believe that, as a result of using websites or mobile apps for managing blood pressure, information about me that I consider private is now more readily available to others than I would want.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

23. I am concerned that, through my use of websites or mobile apps for managing blood pressure, others may learn more about me than I am comfortable with.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

24. I feel that, as a result of using websites or mobile apps for managing blood pressure, information about me is available that could invade my privacy

- Strongly disagree
- Disagree

- Not sure
- Agree
- Strongly agree

Secondary use of personal information

25. I am concerned that websites or mobile apps for managing blood pressure may use my personal information for other purposes without notifying me or getting my authorization.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

26. When I provide personal information to websites or mobile apps for managing blood pressure, my information may be used for other purposes.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

27. I am concerned that websites or mobile apps for managing blood pressure may share my personal information with other entities without my authorization.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Performance Expectancy

28. I find a website or mobile app for managing blood pressure useful in my daily life.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

29. Using such a website or mobile app for managing blood pressure helps me accomplish things more quickly

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

30. Using a website or mobile app for managing blood pressure helps me take better care of my health.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Effort Expectancy

31. Learning how to use a website or mobile app for managing blood pressure is easy for me.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

32. Interacting with a website or mobile app for managing blood pressure is clear and understandable.

- Strongly disagree
- Disagree
- Not sure
- Agree

- Strongly agree

33. I find website or mobile apps for managing blood pressure easy to use.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

34. It is easy for me to become skillful at using website or mobile apps for managing blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Social Influence

35. People who are important to me think that I should use a website or mobile app for managing blood pressure.

- Strongly disagree
- Disagree
- Not sure

- Agree
- Strongly agree

36. People who influence my behaviour think that I should use a website or mobile app for managing blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

37. People whose opinions I value would like me to use a website or mobile app for managing blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Facilitating Conditions

38. I have a device, such as a computer, smartphone, or tablet, on which I can use a website or mobile app for managing blood pressure.

- Strongly disagree

- Disagree
- Not sure
- Agree
- Strongly agree

39. My device, such as a computer, smartphone, or tablet, is the right size to read even longer texts on a website or mobile app comfortably.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Hedonic Motivation

40. Using a website or mobile app for managing blood pressure is fun.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

41. Using a website or mobile app for managing blood pressure is enjoyable.

- Strongly disagree

- Disagree
- Not sure
- Agree
- Strongly agree

42. Using a website or mobile app for managing blood pressure is very entertaining

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Habit

43. Using a website or mobile app for managing blood pressure has become a habit for me.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

44. I cannot manage my blood pressure without using a website or mobile app anymore.

- Strongly disagree
- Disagree

- Not sure
- Agree
- Strongly agree

45. I need a website or mobile app for managing my blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Perceived Trust

46. Websites or mobile apps for managing blood pressure work reliably.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

47. I am confident that websites or mobile apps for managing blood pressure function well.

- Strongly disagree
- Disagree
- Not sure

- Agree
- Strongly agree

48. Websites or mobile apps for managing blood pressure are capable of correctly interpreting my health status.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

49. I trust websites or mobile apps for managing my blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

50. I can rely on websites or mobile apps for managing my blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Family Members Questionnaire

Questions 1 - 37 are mandatory (Demographics to Facilitating Conditions)

Questions 38 - 48 are optional (Hedonic Motivation to Perceived Trust)

Demographics

1. How old are you?
    - 18 - 29
    - 30 - 39
    - 40 - 49
    - 50 - 59
    - 60 - 69
    - over 70

2. What is your gender?
    - Male
    - Female
    - Prefer not to say

3. How would you describe your overall health?
    - Excellent
    - Very good
    - Good
    - Fair
    - Poor

4. What is your Education Level?

- no formal education
- elementary (primary or preparatory school)
- secondary (high school or technical school)
- some tertiary education
- Degree (undergraduate or graduate degree)

Other: _____

5. Please select the field that best applies to your major or course of study.

- Architecture and Land Management
- Arts and Humanities
- Business, Tourism Management or Entrepreneurship
- Communication and Media Studies
- Education
- Law
- Medicine, Pharmacy, Nursing, and Allied Health
- Natural Science
- Mathematics
- Computing and Engineering
- Other: _____

Experience

6. What digital health tools do you use to help your loved one manage their blood pressure?[Check all that apply]

☑ Mobile apps

☑ Websites

☑ Wearable devices

☑ Other (Please specify)

☑ I don't use any digital health tools

7. I am confident in my ability to use smartphones and computers to support my family member effectively.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Interest

8. What features are you most interested in using to help your family member manage their blood pressure? (Check all that apply.)

☑ blood pressure tracking

☑ medication reminders

☑ appointment reminders

☑ alerts of dangerous blood pressure readings via email

☑ alerts of dangerous blood pressure readings via WhatsApp

☑ alerts of dangerous blood pressure readings via text (SMS)

☑ Communication with health professionals

☑ Communication with other family members

Other: _____

Behaviour Intention

9. I intend to use or continue using a website or mobile app to help my family member manage their blood pressure, with support from healthcare professionals

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

10. I will always try or continue to use a website or mobile app to assist my family member with managing their blood pressure in daily life, with support from healthcare professionals

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

11. I plan to use or continue regularly using a website or mobile app to support my family member's blood pressure management, with support from healthcare professionals

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Behavioural Expectations

12. I expect to actively support my hypertensive family member in using a website or mobile app to manage their blood pressure in the next year.

    - Strongly disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly agree

13. I will actively support my family member in using a website or mobile app in the next year.

    - Strongly disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly agree

14. I predict that I will actively support my hypertensive family member in using a website or mobile app to manage their blood pressure in the next year.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Use Behaviour

15. I actively support my family member in using a website or mobile app to manage their blood pressure and plan to continue supporting them in doing so.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Privacy Concerns

Perceived Surveillance

16. I believe that the location of my device is monitored at least part of the time when using websites or mobile apps to assist my family member.

- Strongly disagree
- Disagree
- Not sure
- Agree

- Strongly agree

17. I am concerned that websites or mobile apps for managing blood pressure may collect too much information about me or my family member.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

18. I am concerned that websites or mobile apps for managing blood pressure may monitor my activities on my device while assisting my family member.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Perceived Intrusion

19. I believe that, as a result of using websites or mobile apps to help my family member manage their blood pressure, private information about them or me is now more readily available to others than I would want.

- Strongly disagree
- Disagree

- Not sure
- Agree
- Strongly agree

20. I am concerned that, through my use of websites or mobile apps to assist my family member, others may learn more about us than I am comfortable with.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

21. I feel that, as a result of using websites or mobile apps for managing my family member's blood pressure, information is available that could invade our privacy.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Secondary Use of Personal Information

22. I am concerned that websites or mobile apps for managing blood pressure may use my or my family member's personal information for other purposes without notifying us or getting authorization.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

23. When I provide personal information to websites or mobile apps for managing my family member's blood pressure, it may be used for other purposes.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

24. I am concerned that websites for managing blood pressure may share my family member's personal information with other entities without authorization.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Performance Expectancy

25. I find a website or mobile app useful for helping my family member manage their blood pressure in daily life.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

26. Using a website or mobile app helps me assist my family member in managing their blood pressure more efficiently.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

27. Using a website or mobile app helps me better support my family member in taking care of their health.

- Strongly disagree
- Disagree
- Not sure
- Agree

- Strongly agree

Effort Expectancy

28. Learning how to use a website or mobile app to help my family member manage their blood pressure is easy for me.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

29. Interacting with a website or mobile app to support my family member's blood pressure management is clear and understandable.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

30. I find websites or mobile apps easy to use when helping my family member manage their blood pressure.

- Strongly disagree

- Disagree
- Not sure
- Agree
- Strongly agree

31. It is easy for me to become skillful at using websites or mobile apps to assist with my family member's blood pressure management.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Social Influence

32. People who are important to me think that I should use a website or mobile app to help my family member's manage their blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

33. People who influence my behaviour think that I should use a website or mobile app to support my family member's blood pressure management.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

34. People whose opinions I value would like me to use a website or mobile app to assist my family member in managing their blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Facilitating Conditions

35. I have a device, such as a computer, smartphone, or tablet, on which I can help my family member use a website or mobile app for managing their blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree

- Strongly agree

36. My device, such as a computer, smartphone, or tablet, is the right size to read even longer texts on a website or mobile app comfortably when helping my family member.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

37. I have the necessary knowledge to assist my family member in using a website or mobile app for managing their blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

38. I can get help from others if I have difficulties using a website or mobile app to assist my family member with their blood pressure management.

- Strongly disagree
- Disagree
- Not sure

- Agree
- Strongly agree

Hedonic Motivation

39. Using a website or mobile app to help my family member manage their blood pressure is fun.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

40. Using a website or mobile app to assist with my family member's blood pressure management is enjoyable.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

41. Using a website or mobile app to help my family member manage their blood pressure is very entertaining.

- Strongly disagree

- Disagree
- Not sure
- Agree
- Strongly agree

Habit

42. Using a website or mobile app to help my family member manage their blood pressure has become a habit for me.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

43. I cannot assist my family member with managing their blood pressure without using a website or mobile app anymore.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

44. I need a website or mobile app to help my family member manage their blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Perceived Trust

45. I believe that websites or mobile apps for managing blood pressure work reliably to support my family member.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

46. I am confident that websites or mobile apps or mobile apps for managing blood pressure function well for my family member's needs.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

47. Websites or mobile apps are capable of correctly interpreting my family member's health status.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

48. I trust websites or mobile apps for managing my family member's blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

49. I can rely on websites or mobile apps to help me manage my family member's blood pressure.

- Strongly disagree
- Disagree
- Not sure
- Agree
- Strongly agree

Interview Questions for Healthcare Professionals

Demographics

1. Could you tell me about your role and experience in healthcare?

Behavioural Intention

2. Would you encourage patients and their families to consider using a website or mobile app for managing blood pressure?

Use Behaviour

3. Do you have any experience with using a website or mobile app to help patients manage their blood pressure? If so, can you share your experience recommending or using such a website or mobile app?

Performance Expectancy

4. Do you think a website or mobile app for managing blood pressure could support better patient care?

Effort Expectancy

5. In your opinion, how easy or difficult do you think it might be for patients to learn and use a website or mobile app to manage their blood pressure?

Social Influence

6. How much do you think your advice, or that of other healthcare professionals, affects whether patients decide to use a website or app to manage their blood pressure?

Facilitating Conditions

7. What resources or support do you think might be necessary for patients and their families to effectively use a website or mobile app to manage blood pressure?

Habit

8. Have you observed any cases where patients or their families incorporated the use of a website or mobile app for managing blood pressure into their routines?

Perceived Trust

9. How confident do you think patients and their families might feel in the reliability and accuracy of a website or mobile app for managing blood pressure?

Privacy Concerns

Perceived Surveillance

10. Do you think patients or their families might be concerned about their data being monitored when using a website or mobile app to manage blood pressure?

Perceived Intrusion

11. Have you encountered concerns from patients or their families about privacy issues related to using a website or mobile app to manage blood pressure?

Secondary Use of Personal Information

12. Do you think patients or their families might be worried about their personal information being used for purposes beyond managing blood pressure, such as being shared with third parties?

Other

13. What features do you think a website or mobile app for managing blood pressure should have to effectively support patients, families, and healthcare professionals?

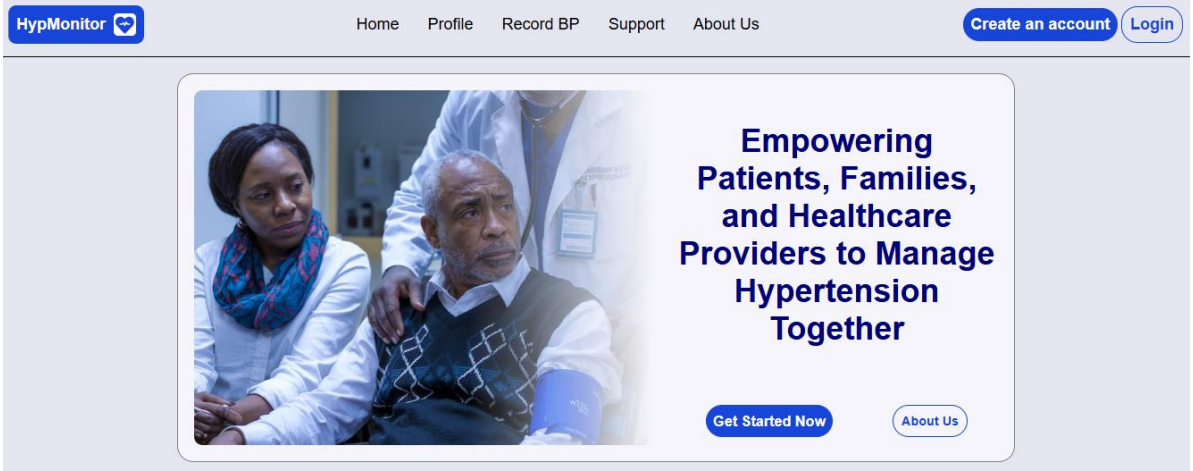
14. Have you ever used a digital tool to manage a patient's blood pressure? If so, what type of tools did you use?

Prototype Screenshots and Demonstration

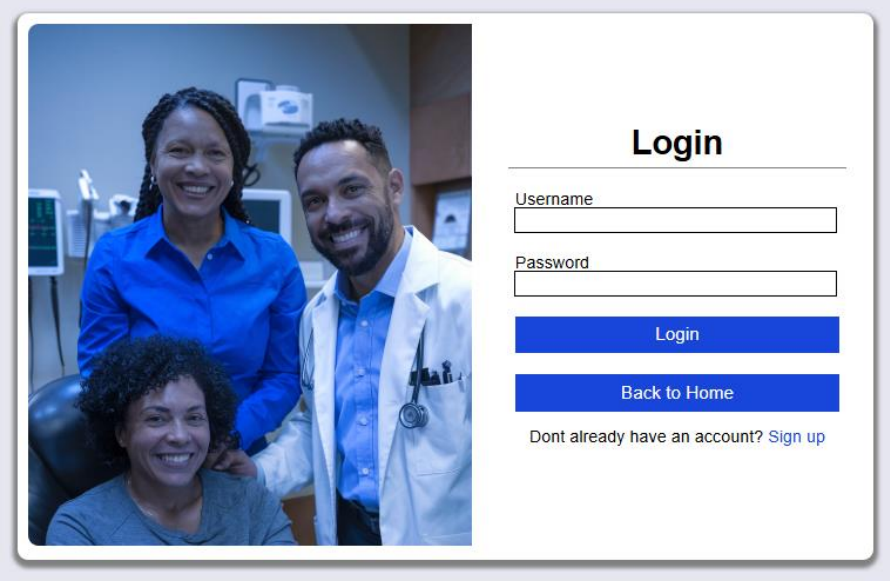
Prototype Demonstration Link:
https://drive.google.com/file/d/1liGeBjMQVSU1vH73QR4XeCYJ1eKZokCD/view?usp=sharing

This section presents screenshots of various pages within the prototype.

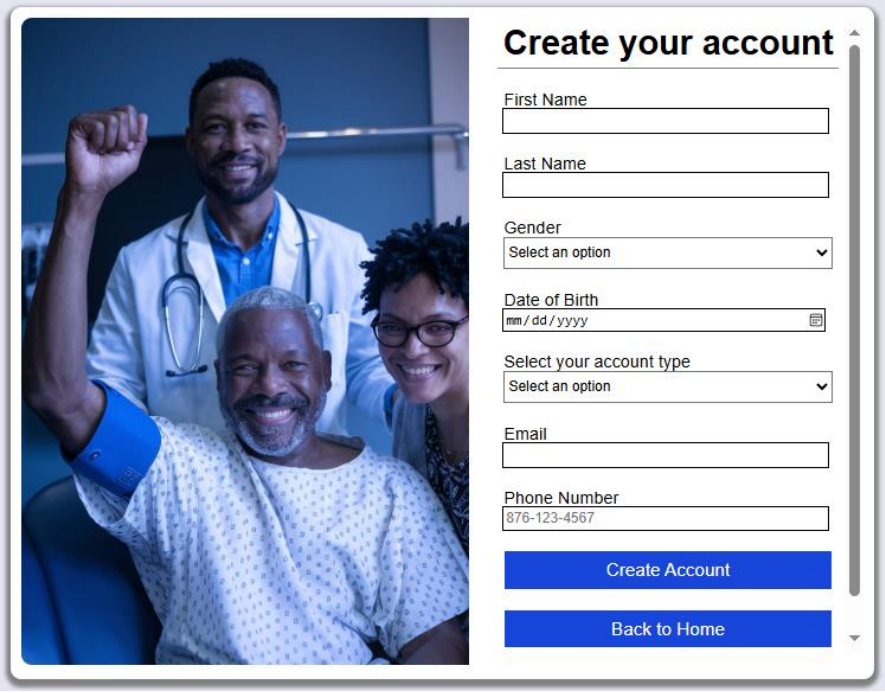
Home Page - The homepage introduces the platform's purpose



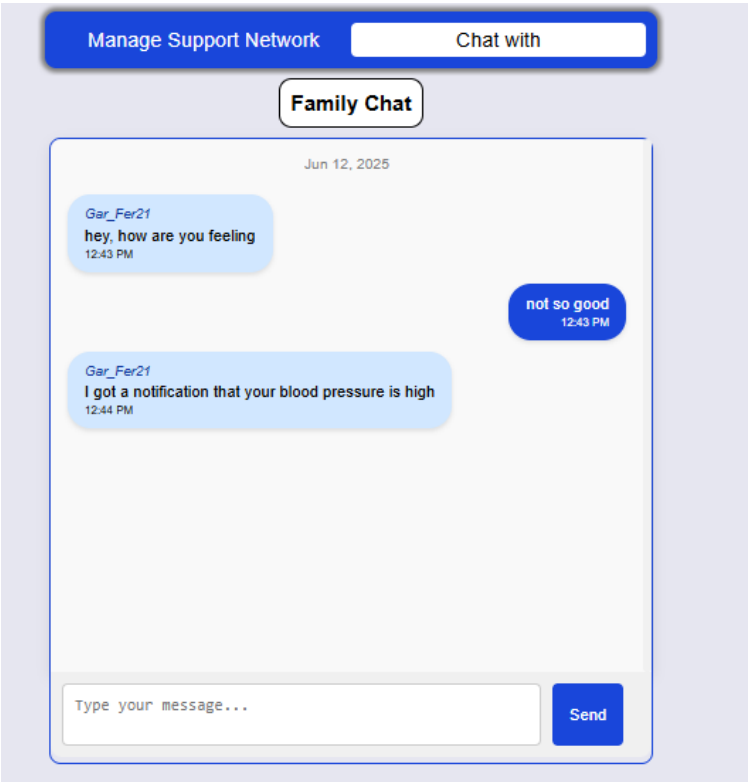
Login Page - The login page allows registered users to securely access their account by entering their username and password.



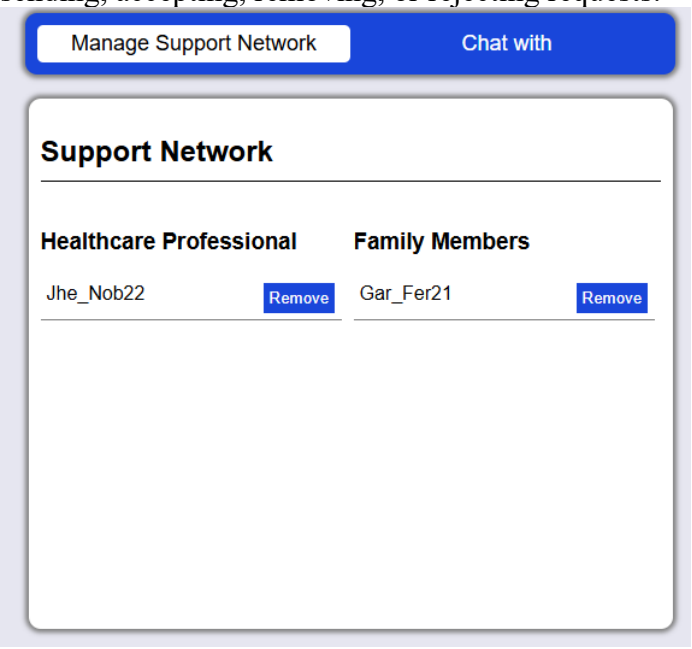
Registration Page - allows new users to create an account



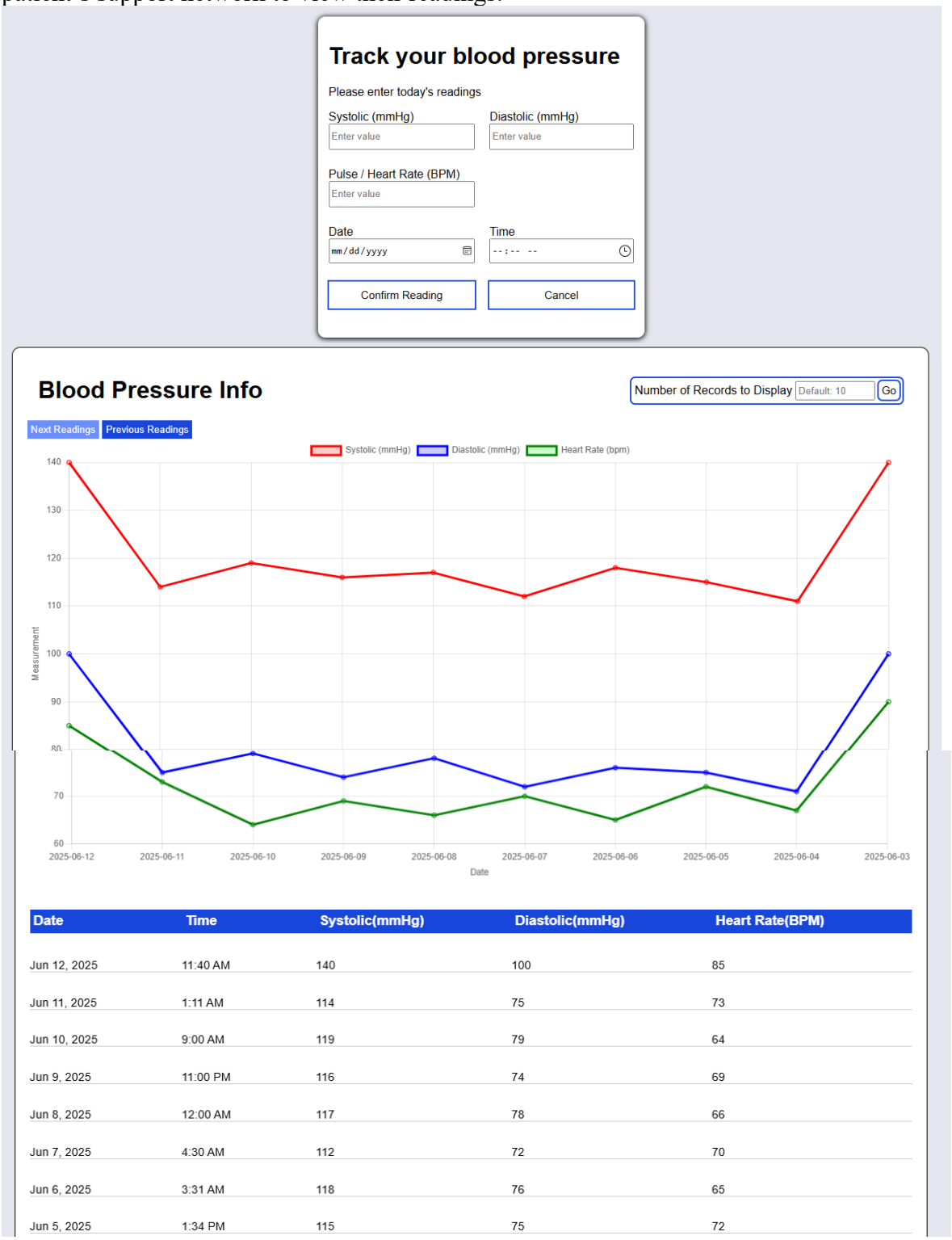
Chat Page – allows user to communicate with each other



The Support Network page allows users to manage their support network by viewing accepted member, sending, accepting, removing, or rejecting requests.



Record BP Page – allows patients to enter their bp readings and allow user that are apart of a patient's support network to view their readings.



Date	Time	Systolic(mmHg)	Diastolic(mmHg)	Heart Rate(BPM)
Jun 12, 2025	11:40 AM	140	100	85
Jun 11, 2025	1:11 AM	114	75	73
Jun 10, 2025	9:00 AM	119	79	64
Jun 9, 2025	11:00 PM	116	74	69
Jun 8, 2025	12:00 AM	117	78	66
Jun 7, 2025	4:30 AM	112	72	70
Jun 6, 2025	3:31 AM	118	76	65
Jun 5, 2025	1:34 PM	115	75	72

Prototype Resources

Provide a list of technologies, libraries, APIs, and services used in the prototype.

Development Tools

- Frontend: HTML, CSS, JavaScript
- Backend: Pure PHP
- Database: MariaDB (PhpMyAdmin)

APIs and Services

- Twilio SMS API – for sending alerts to a patient's support network
- PHP Mailer / SMTP – for account verification and sending alerts via email

External Libraries or Assets

- PHP dotenv for managing environment variables
- Chart.js (for visualizing Blood Pressure trends)
- Any icons, templates, or design assets
- Ideogram.ai – used to generate images

Security Practices

- Password hashing (e.g., password_hash() in PHP)
- Input sanitization and validation
- Session handling and user role access control

Ethics Form

SCHOOL OF GRADUATE STUDIES, RESEARCH AND ENTREPRENEURSHIP (SGSRE)
University of Technology, Jamaica

Exts: 3204/3139/3124 **Email: sgsre@utech.edu.jm**

Application for the Ethics Approval of Research Involving Human Subjects

1. SHORT TITLE OF PROJECT (limit 150 characters-see Guidelines)

Acceptability Of Digital Health Intervention (DHI) for Jamaican Patients with Hypertension and their Support Network

2. APPROVAL FROM ANOTHER ETHICS COMMITTEE

Has this project been submitted (or will it be submitted) to another Ethics Committee for approval? Yes ☐ No ☒

If YES, name the committee(s), and give the status of each application. (Attach copies of correspondence with each Sub-Committee)

Name of Ethics Committee and Institution	Application Reference No.	Approved/Pending/Rejected/ To be re-submitted (select one)
N/A		

3. PRINCIPAL SUPERVISOR

Name: Title/first name/family name	Ms. Susan Muir
Qualifications & position held:	Associate Professor
Organizational unit & mailing address:	237 Old Hope Road, Kingston
Telephone and Fax:	1876-927-1680-8
Email address:	smuir@utech.edu.jm

4. STUDENT RESEARCHERS (Postgraduate only)

Name: Title/first name/family name	
Qualifications:	
Organizational unit & mailing address:	
Telephone and Fax:	

Email address:	

Name: Title/first name/family name	
Qualifications:	
Organizational unit & mailing address:	
Telephone and Fax:	
Email address:	

Copy table and repeat for each additional students.

5. STUDENT RESEARCH (Undergraduate)

Is this a final year project of a student of the University of Technology, Jamaica?

Yes ☒ No ☐

If YES, complete the following:

	Student ID No: 2102249
Name of student:	Jhevon Noble
Course of study:	BSc Computing
Research Supervisor:	Associate Professor Susan Muir

	Student ID No: 2106015
Name of student:	Brandon Bent
Course of study:	BSc Computing
Research Supervisor:	Associate Professor Susan Muir

	Student ID No: 2100101
Name of student:	Roberto James
Course of study:	BSc Computing
Research Supervisor:	Associate Professor Susan Muir

	Student ID No: 2002901
Name of student:	Garville Ferguson
Course of study:	BSc Information Technology and Enterprise
Research Supervisor:	Associate Professor Susan Muir

6. ESTIMATED DURATION OF PROJECT (dd/mm/yy)

This is the period during which you anticipate contact with participants, their personal records, or the handling of human tissue samples.

From: 20/02/25 To: 30/04/25

7. FUNDING

Is the project the subject of an application for funding to an internal or external grants body drug company, etc? Yes ☐ No ☒

If YES, answer the following questions:
(a) List the funding sources and give the status of each application. *(Attach copies of the primary application for funding)*

Funding Body	Approved/Pending/Rejected/To be submitted
N/A	N/A

(b) What is the exact project title on the funding application(s)?

N/A

8. PRIVACY LEGISLATION

Does the project involve access to personal information held by a Government department or agency, or private sector organization? Yes ☐ No ☒

If YES, will the access to personal information be **without** the consent of the individual(s) to who the information relates? Yes ☐ No ☐

If YES, to both of the above, specify the type of data to be accessed/collected, the departments/agencies holding the information, and the number of records involved.

Type of Data:
N/A
Department/Agency:
N/A

9. AIMS AND SIGNIFICANCE OF PROJECT

Provide aim(s) of the study and the potential merit(s)/significance of the study.

Aim(s): This study aims to evaluate the acceptability of Digital Health Intervention (DHI) among Jamaican hypertensive patients, their healthcare providers, and family members who offer support. Additionally, it aims to evaluate the acceptability of a prototype that manages hypertensive patients with the help of their support network (healthcare professionals and family members).
Significance of the Study: This study may provide valuable insights into the acceptability of DHI's for managing hypertension among patients, their family members who provide support, and healthcare professionals. These insights could potentially contribute to reducing the risk of uncontrolled blood pressure, cardiovascular complications, and associated healthcare costs by fostering a more collaborative and supported approach to hypertension management.

10. SPECIFIC TYPES OF RESEARCH

Does the proposed research involve any of the following?

		Yes	No
A.	People with an intellectual or mental impairment, temporary or permanent?	☐	☒
B.	People highly dependent on medical care, e.g. emergency care, intensive care, neonatal intensive care, terminally ill, or unconscious?	☐	☒
C.	Particular communities or groups such as convicts and captive groups?	☐	☒
D.	Use of human tissue samples, features, embryos and stem cells or cell lines?	☐	☒
E.	Other specific cultural, ethnic or indigenous groups?	☐	☒
F.	Assisted reproductive technology?	☐	☒
G.	Epidemiology research?	☐	☒
H.	Human genetic research?	☐	☒
I.	Any concealment or covert observations?	☐	☒

J.	Clinical trials	☐	☒
K.	Minors under the age of 18	☐	☒

NOTE: If YES, provide details (total number involved), of how consent will be obtained. Informed consent of parents or guardians and where practical, of children should be obtained in research involving children.

Number Involved:
N/A
Informed Consent:
N/A

11. RESEARCH PLAN AND PROCEDURES

Provide a clear description of the proposed research plan and procedures, by answering the following questions:

A. Where will the project be conducted? (Schools, hospitals, organizations, etc.)

This project will be conducted at the University of Technology, Jamaica.

B. What is the research design? (Case study, survey, experimental, ethnography, action research, correlational study, etc.)

The research design is a cross-sectional study.

C. Briefly describe the research method(s). (Questionnaire, interview, observation, document review, etc.)

Questionnaires will be issued to patients with hypertension and their family members.
Consensual recorded interviews will be conducted with healthcare professionals.
Development of a prototype website will be developed to help manage hypertension. The website will enable patients to track their blood pressure readings and add healthcare professionals and family members to their support network. Family members in the support network will have access to a group chat feature, allowing them to communicate directly with the patient and each other.
The participants will be shown a demonstration of the prototype in person or online to provide feedback about the functionality and usability. The project will not be used directly by the participants

D. Which participant group(s) will be used in the study and why have they been selected?

The groups chosen for this research are patients with hypertension, their family members, and healthcare professionals. Patients will be evaluated, given their firsthand struggles with the illness; family members will also be evaluated, given that they are the patients' support system; and healthcare professionals will be evaluated, given that they are the ones providing the care. With this, each participant group can provide their views on the acceptability of DHIs.

E. How will potential participants be approached to participate in the study? *(Attach copies of letters, advertisement, posters or other recruitment material to be used).*

Potential candidates will be approached face-to-face and online to assist with the study. Individuals with Hypertension (Patients): UTECH staff members and students with hypertension will be asked if they would like to participate in the study. Additionally, students and staff will be asked if they have any hypertensive family members that we could contact that would be interested in participating in the study. We will contact patients through their family members, who are UTECH students or staff. The student or staff member will receive a link to share with their hypertensive family member, which contains an informed consent form outlining the study and has the researcher's contact information. If any patients with hypertension are interested in participating, they can contact us directly. Family Members: Students and staff with hypertensive family members will be asked if they would like to participate in the study. Healthcare Professionals: The UTECH Medical Center will be visited, and consenting healthcare professionals will be invited to participate in the study. Additionally, nurses will also be approached to participate in the study.

F. How much time will potential participants have to consider the invitation to participate?

They will have one (1) week to consider the invitation.

G. How will potential participants be selected? *(Describe sampling method(s) to be used).*

A variety of non-probability sampling will be used. Patients, their family members and health care professionals will be chosen from UTech Ja that are accessible. Individuals with hypertension will be selected using *snowballing sampling* (through their UTech Ja family members). Family members in the study

are UTech students and staff who are selected using *convenience sampling*. Health professionals will be selected using *convenience sampling* at the UTech Medical Centre.

H. How many participants will be recruited and what is the rationale for that number?

This study will recruit 100 patients with hypertension, 100 family members, and 5 healthcare professionals. The rationale for choosing these numbers is that it ensures a diverse yet manageable participant pool, enabling us to generalize findings while maintaining data quality.

I. What is required of participants? *(Attach copies of any survey, interview schedule, data sheets, etc., to be used).*

Participants with hypertension and their family members offering support will fill out questionnaires. Patients with hypertension and their family members will be interviewed about a prototype (in person or online).
Healthcare professionals are required to truthfully answer interview questions, including their perspectives about the prototype.

J. How will the privacy of the participants be protected?

Participants' privacy will be protected by ensuring anonymity for hypertensive individuals and their family members completing questionnaires. The only sensitive information collected will be confirmation that a participant has hypertension, and no hypertensive readings or other medical data will be collected. No personal information will be collected during recorded interviews, and these recordings will be encrypted and securely stored on encrypted One Drive, accessible only to the researchers and the supervisor. Similarly, all information gathered through questionnaires will be securely stored on an encrypted Google Drive, with access restricted to the researchers and the supervisor. We will ensure that no personal identifying information is requested at any point during the study, protecting the privacy and confidentiality of all participants.

12. RELEVANT EXPERIENCE OF RESEARCHERS

A. Have you conducted a similar type of protocol/survey before? Yes ☐ No ☒

B. When? (Please state): N/A

C. Where? (Please state): N/A

13. DATA MANAGEMENT

Briefly explain the ways in which you propose to ensure proper management or safety of data and findings.

Data from online questionnaires and information from interview findings will also be stored on an encrypted Google Drive that can only be accessed by all four (4) members conducting this study and the supervisor. This data that is collected will be stored on an encrypted Database by the research Supervisor to be processed for future research studies.

14. ANALYSIS

Explain how information you receive will be analyzed, interpreted and reported. What specific approaches or techniques (statistical or qualitative) will be employed?

Information will be analyzed using both qualitative and quantitative approaches to ensure a comprehensive understanding of the data. Qualitative data, such as interview responses, will employ context analysis, allowing for the identification of themes and patterns. Cross-referencing between participant responses will provide a comparative synopsis to highlight consistencies and differences. Quantitative data will be analyzed using descriptive statistics. Visualizations like charts and graphs will be created to clearly present trends and relationships. This integrated analysis will combine numerical insights with contextual depth, providing a well-rounded and detailed understanding of the findings.

15. PROPOSED REVIEW OF PROGRESS, PARTICIPANT CARE, AND WINDING UP PROCEDURES

Describe the mechanisms that will be put in place with the following:

Review of progress of project

We will meet with our Major Project Coordinator bimonthly until the project is finished.

Duty of care to participants and research staff

The project will not request that anyone disclose the hypertension status of family or friends. Instead to honour informed consent principles, students and staff from UTech Ja will ask family members whether they are interested in joining this research project. Each family member will then elect to participate in the project, by sending a WhatsApp message or email to the research team, who will then reply to them. To reduce the risk of privacy violation, the research team will store the data on an encrypted server provided by UTech Ja. Additionally, the research team will treat all data with confidentiality which will be available only to the supervisor and major project students After the project ends, the data will no longer be accessible by the major project students. The project data will be stored safely by the project supervisor so the data could be reused for future research.

Procedures for reporting adverse events

In the event of adversity or emergencies, a report will be sent to our supervisor, the Office of Graduate Studies, Research, and Entrepreneurship, and the major project committee.

Premature cessation (termination) of project

A premature project cessation isn't to be expected, especially at this stage.
However, if a situation arises that could impact the operation of the study, then it
would have to be terminated with immediate effect, and reports sent out
to our supervisor, the Office of Graduate Studies, Research, and Entrepreneurship, and the major project committee.

Feedback of results to participants

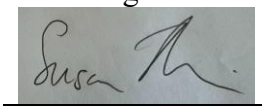
Feedback on results will be prioritized and issued to participants by email.

I hereby declare that:

I have read and understand the University's Policy regarding human ethics. All personnel involved have adequate experience and training to perform the protocols. I will adhere to all protocols described in this document and report any modifications for the approval of the Research Ethics Committee.

Applicant's Name	Signature	Date
Jhevon Noble	J Noble	07 Feb 2025
Applicant's Name	Signature	Date
Brandon Bent	B. Bent	07 Feb 2025
Applicant's Name	Signature	Date
Roberto James	R. James	07 Feb 2025
Applicant's Name	Signature	Date
Garville Ferguson	G. Ferguson	07 Feb 2025

I have read the applicant's proposal and I support the request for research ethics clearance.

Supervisor's Name	Signature	Date
Susan Muir		07 Feb 2025

Official Use Only

Decision: Approved ❑ Not Approved ❑

_____ _____

Chairman, Research Ethics Committee Date

Revised: January 11, 2009

Letter to Participants

237 Old Hope Road, Kingston

Date : ____ __ 2025

Dear Participant,

Re: Invitation to Participate in a Research Study

My name is Roberto James and I am a student at the College or Faculty of Engineering and Computing at the University of Technology, Jamaica. I am also the lead researcher for the study titled Acceptability Of Digital Health Intervention (DHI) for Jamaican Patients with Hypertension and their Support Network. This study is being done with Roberto James, Brandon Bent, Jhevon Noble and Garville Ferguson who are also from the College or Faculty of Engineering and Computing

This study aims to evaluate the acceptability of digital health tools among Jamaican patients with high blood pressure, healthcare providers and family members who offer support. Additionally, the study aims to evaluate the acceptability of a prototype that manages patients with high blood pressure. To achieve this aim, an online questionnaire and Zoom interview will be used to collect data from participants. The information collected will be used in the above-mentioned research study, which will be presented at a conference and published as a journal article.

You have been selected to participate in this study because you are an individual with high blood pressure or a family member of someone with high blood pressure or a healthcare professional. If you agree to participate in this study, you will be required to sign a consent form before completing an online questionnaire and/or be interviewed. The questionnaire would take no more than 10 minutes, and the interview may be between 30 and 60 minutes. If you do not want to be involved in this study, please do not complete the questionnaire or participate in the interview.

If you agree to participate but later decide to withdraw, you have the right to do so without penalty. Also, only the researcher(s) will access the datasets, which will be stored in a University of Technology, Jamaica storage facility, according to the guidelines of the Data Protection Act of 2020. All individual responses will remain confidential and anonymous, ensuring that you cannot be identified in any collected data. Additionally, the project's supervisor will store the data on an encrypted drive for potential use in future research.

Please note that the researcher(s) already applied for research ethics clearance from the Research Ethics Committee at the University of Technology, Jamaica. If you have questions regarding your rights as research participants, contact Dr. Nadine Maitland, the Faculty of Engineering and Computing Ethics Coordinator at the University of Technology, Jamaica, by email at nmaitland@utech.edu.jm, and Mr. A. Lawrence, the Data Protection Officer, by email at dpo@utech.edu.jm. I would appreciate your response by the end of April, 2025

Thank you in advance.

Sincerely,

Roberto James

Lead Researcher

Informed Consent Form for Adult Participants

Study Title:	Acceptability of digital health intervention for patients with hypertension
Name of Researcher(s):	Roberto James, Brandon Bent, Jhevon Noble and Garville Ferguson
Affiliation:	Faculty of Engineering and Computing, University of Technology, Jamaica
Phone:	1876-784-3534, 1876-873-7342, 1876-793-8703, 1876-528-7999
Email:	robertojames91@gmail.com, brandonbent200310@gmail.com, jhevonnoble@gmail.com, garvillef@gmail.com

You are asked to volunteer your participation in a research study conducted by

Roberto James, Brandon Bent, Jhevon Noble and Garville Ferguson of the Faculty of Engineering and Computing , University of Technology, Jamaica. The information provided on this form and the accompanying cover letter is presented to you to fulfil legal and ethical requirements for research studies at the University of Technology (UTech), Jamaica, and the Data Protection Act of 2020. The researcher(s) have applied for ethical clearance from the University Research Ethics Committee. See the attached ethical clearance.

Description of the Study

The study for which you have been invited to participate is being conducted for a study that will be presented at a conference and published as a journal article. This study seeks to evaluate the acceptability of digital health tools among Jamaican patients with high blood pressure, healthcare provider and family members who offer support. The research will also evaluate the acceptability of a prototype that manages Jamaican patients with high blood pressure.

Procedures

If you volunteer to participate in this study, you will be asked to complete a questionnaire, as well as respond to interview questions. The questionnaire administered to patients and family members should take no more than 10 minutes to complete, and it will be administered online using Microsoft Forms The interview which are done by Health care Professionals should be

between 30 to 60 minutes and will also be online using the Zoom Platform or face to face which will be recorded with your permission. All data will be gathered during the month of February 2025 to March 2025 After the initial interview, there may be a possibility for you to be interviewed again, depending on the results of the initial analysis. The transcripts of each interview will be sent to you for verification and clarification of your responses. Furthermore, you have the right to request a copy of this recording and/or the transcripts at any time.

Potential Risks and Benefits

No more than minimal risks. However, there will be potential risks associated with this study; if you choose to participate, you have the right to discontinue your participation without prejudice. Depending on the nature of the risk, the researcher(s) will discontinue or terminate the study after reporting it to the Faculty Research Ethics Committee, and the Office of Data Protection. The potential benefit is that the study will add something new to the existing literature, as well as be used to provide valuable insights into the acceptability of a website for managing a patient's blood pressure with the involvement of family members who provide support and healthcare professionals. These insights could potentially contribute to reducing the risk of uncontrolled blood pressure, cardiovascular complications, and associated healthcare costs by fostering a more collaborative and supported approach to blood pressure management. The results will be published and will be available to people interested in this area.

Compensation for Participation

You will not be compensated for your participation in this study.

Confidentiality

Data to be collected will remain confidential. No sensitive information will be collected from you. Pseudonyms would be used, and if any identifiable information is collected, the researcher(s) would edit such from the data, so that such information (your name, location or the school, etc.) that you are affiliated with would not be traced. Furthermore, your responses will be entered on password-protected computers as views without identifying information. Again, **y**our participation is completely anonymous. Please note that all files uploaded or created on One Drive are encrypted. All data collected will be stored in the University of Technology, Jamaica storage, according to the guidelines of the Data Protection Act of 2020. This data that is collected will be stored on an encrypted drive by the research Supervisor to be processed for future research studies.

Participation and Withdrawal

Participation is voluntary. You can choose to withdraw from the study at any time without prejudice. Furthermore, participants who initially agreed to participate may withdraw from the study if circumstances warrant doing so.

Subsequent Use of Data

Data collected may be used in subsequent studies, by reanalysing it for further studies, publications and presentations, but all information will be anonymous. When this happens, you will be notified.

Contact Information

If you have questions regarding your rights as research participants, contact Dr. Nadine Maitland, the Faculty of Engineering and Computing Ethics Coordinator at the University of Technology, Jamaica, by email at nmaitland@utech.edu.jm, and Mr. A. Lawrence, the Data Protection Officer, by email at dpo@utech.edu.jm.

Voluntary Consent and Signatures

If you have read this document and agree, please indicate your willingness to participate in this research by signing in the Participants Signature section. Please sign only if you have reviewed all of this consent form and had the opportunity to ask questions. You will receive a copy of this consent form after it has been signed by both you and the researcher(s).

Signature of Lead Researcher Date

****

Your signature on this consent form shows that you have been informed about the conditions and safeguards of this study.

I have read the information provided and agree to participate in this study.

Signature of Participant Date