

Supplemental Information: A scoping review of internet access, digital literacy, and health outcomes in adults with Type 2 diabetes

Matthew S. Farmer PhD, RN¹

Collaborators: 2 reviewers

Accepted by 2 of 2 reviewers

Funding Information

This study received no funding.

Conflicts of Interest

The author declares that they have no competing interests.

Publishing History

Submitted 31 May 2024
Accepted 24 March 2025
Published 28 April 2025

Corresponding Author

Matthew Steven Farmer
msfppy@missouri.edu



Open Access



Peer-Reviewed



Creative Commons

¹ Sinclair School of Nursing, University of Missouri, Columbia, Missouri, USA
MF: <https://orcid.org/0000-0003-0989-2968>

Recommended Citation

Farmer, M.S. (2025). A scoping review of internet access, digital literacy, and health outcomes in adults with Type 2 diabetes. *Stacks Journal*: 25004.
<https://doi.org/10.60102/stacks-25004>

**Supplementary Table S1.** *Literature Review Matrix - Study Characteristics*

Citation	Study Objectives	Study Design	Population Studied	Setting	Sample Characteristics	Timeframe of Study	Recruitment Data Collection Methods	Additional Methods Notes
(Taibah et al., 2020)	Assess the progress and identify gaps in e-health initiatives in Saudi Arabian rural populations.	Case Study	The focus is on the Saudi Arabian population, with particular emphasis on rural areas.	Saudi Arabia	Not Applicable	Not Disclosed	Analysis of existing e-health programs and policies.	The study uses a conceptual framework based on the World Health Organization's Atlas of eHealth Country Profiles.
(Pettersson et al., 2023)	To describe self-care maintenance, changes in it, and	Cross-sectional study using a triangulation design	Migrant patients with type 2 diabetes in	Health center in south-eastern Sweden	79 participants, mostly male (51%), aged 69 ± 11 years,	June 2020 to September 2020.	Selection by a diabetes nurse from a healthcare center, using	Quantitative data analyzed using SPSS, qualitative



	factors related to unchanged self-care in migrant patients with type 2 diabetes during COVID-19. Also, to explore well-being, social support, and healthcare service needs during the pandemic.	with both quantitative and qualitative data collection.	south-easter n Sweden.		predominantly from the Middle East (47%) and European countries (53%).		a questionnaire in multiple languages.	data via directed content analysis.
(Weyman n et al., 2016)	Assess the information and decision	Cross-section al study with semi-struct	Patients with Type 2 Diabetes in Germany.	Various healthcare settings in Germany.	Patients with diverse demographic backgrounds,	Not Disclosed	Interviews and questionnaires among	Qualitative and quantitative analysis,



	support needs of Type 2 Diabetes patients.	ured interviews and questionnaires.			diabetes durations, and treatment types.		patients and physicians.	including content analysis and statistical evaluation.
(Samadb eik et al., 2018)	To determine the readiness of patients with chronic diseases in Khorramabad, Iran, to use Health Information Technology (HIT).	Cross-sectional study.	Patients with chronic diseases (respiratory, cardiovascular, renal, diabetes) in Khorramabad, Iran.	Clinics of educational hospitals in Khorramabad, Iran.	Sample Size: 475; majority male (54.88%), married (84.16%), self-employed (40%), with education level below high school or high school (55.12%), urban residents (75.36%).	Conducted in 2016.	Convenience sampling method; PRE-HIT questionnaire.	Data collected using the PRE-HIT questionnaire, analyzed with SPSS version 20.
(Price-Haywood et al., 2017)	Explore eHealth literacy and	Cross-sectional survey.	Older adults (≥50 years) with	Ochsner Health System,	247 patients, majority female, diverse	August 2015 to	Systematic sampling with a	eHealth Literacy Scale



	strategies to encourage patient portal use among older adults.		hypertension or diabetes.	Southeast Louisiana.	in age and chronic conditions.	January 2016.	structured survey.	(eHEALS), portal usage and interest assessment.
(Chérrez-Ojeda et al., 2018)	To assess the frequency and patterns of ICT usage among Ecuadorian patients with T2DM and their preferences for different types of ICTs.	Cross-sectional survey.	Patients with Type 2 Diabetes Mellitus in Ecuador.	Outpatients from public or private practices in Guayaquil, Ecuador.	248 patients, mean age of 57.7 years, majority female (62.1%), with varying levels of education.	Not disclosed	Anonymous survey distributed to eligible outpatients.	Chi-square test for association, adjusted regression analyses.



(Terkeş et al., 2022)	To evaluate technology use and attitudes towards technology in patients with Type 2 Diabetes.	Descriptive study, observational.	250 patients with Type 2 Diabetes at a university hospital in Turkey	Endocrinology and metabolic diseases department, university hospital, Mediterranean region, Turkey.	250 patients, mean age 58.49 years, majority female (66%), varied educational backgrounds.	January to June 2017.	Systematic sampling from a university hospital, using a structured questionnaire and the Attitude Towards Technology Scale.	Analysis of questionnaire responses and Attitude Towards Technology Scale scores.
(Ramasmay et al., 2016)	To examine the association of sociodemographic and technology use with health literacy among type	Exploratory cross-sectional study	Type 2 diabetes mellitus (T2DM) patients in Chennai, India	Diabetic clinic of Saveetha Medical College, Chennai, India	100 T2DM patients; more than half were males with an average age of 55 years, mostly married, living in urban settings, and with varied	August 2013	Convenient sampling during regular outpatient visits	Modified questionnaires, univariate statistics, chi-square analysis, binary logistic regression, content analysis of



2 diabetic individuals					education and income levels			open-ended data
(Walle et al., 2023)	To assess the willingness of diabetes mellitus patients to use mHealth applications and identify associated factors for self-care management in Ethiopia.	Institutional-based cross-sectional study.	Patients with diabetes mellitus in Ethiopia.	Public hospitals in Illu Abba Bor and Buno Bedelle Zones, Oromia Regional State, southwest Ethiopia.	398 participants, predominantly male (56.3%), aged 43±14.6 years, with a majority living in urban areas (69.3%).	Conducted from November 12 to December 21, 2022.	Systematic random sampling from public hospitals, using pretested interviewer-administered questionnaires.	Data analysis using Epi Data V.4.6 and STATA V.14, multivariable logistic regression analysis for identifying associated factors.
(Jemere et al., 2019)	Determine mobile phone access and willingness	Institution-based cross-sectional survey.	Patients with diabetes, both male and female,	Northwest Ethiopia, University of Gondar Hospital	423 systematically selected patients with diabetes.	February to March 2016.	Systematic random sampling; data collected	Questionnaire-based survey.



	to receive mobile-based diabetes health services in Northwest Ethiopia.		varied age groups.	diabetic clinic			through face-to-face interviews.	
(Yoon et al., 2023)	Assess changes in diabetes medication adherence, hospitalizations, and primary care use during the pandemic.	Longitudinal analysis.	High-risk diabetic patients in the Veterans Affairs health care system.	United States	Predominantly male, older adults, various ethnic backgrounds.	2019-2021	Data from the Veterans Affairs health care system.	Analysis of healthcare utilization and medication adherence data.
(Yom-Tov et al., 2016)	To analyze how health literacy influences the way	Observational study analyzing Internet search	Internet users in the United States searching for	Online environment, specifically the Bing	Approximately 2 million people who queried for diabetes-related	3-month period from May 2014 to July 2014	Analysis of search queries and user behavior	Queries filtered for diabetes-related terms, analysis of



	Internet users seek and understand information about diabetes.	behavior related to diabetes.	diabetes-related information.	search engine	d information on Bing.		data from the Bing search engine.	user search patterns and dwell times on web pages, health literacy imputed from community-based scores.
(Whitacre & Brooks, 2014)	To explore the impact of broadband adoption rates on community health outcomes.	Observational study using a first-difference modeling approach.	Residents of 92 metropolitan /micropolitan statistical areas (MSAs) in the USA.	Diverse urban and suburban regions in the United States.	Aggregated data from MSAs with diverse demographic profiles.	2002 to 2009.	Data sourced from the Behavioral Risk Factor Surveillance System and Federal Communications Commission.	Regression analysis with a first-difference approach to examine changes in health outcomes.
(Umeh et al., 2015)	To assess the effects of ICT	Observational study using data	Residents of the UK, with a focus on	The study utilizes data from a	120,621 participant records from	Data analysis covers	Analysis of archival data from a	Hierarchical binary logistic



	uptake on diabetes prevalence, particularly examining ethnic disparities between South Asian and Caucasian populations.	from the UK Office for National Statistics household survey, analyzed through hierarchical binary logistic regression.	South Asian and Caucasian ethnic groups.	nationwide survey in the UK.	the UK household survey, covering years 2006-2011, with ethnicity classified into 'Caucasian' and 'South Asian' groups.	2006 to 2011.	national household survey.	regression analyses, controlling for confounding variables.
(Sharma, 2023)	To explore the association between food insecurity, Internet availability, and diabetes prevalence across different	Observational study using multiscale geographically weighted regression (MGWR).	Counties in the Southeastern United States.	Southeastern region of the U.S. (Alabama, Arkansas, Mississippi, Tennessee).	319 counties in the Southeastern U.S.	2019	Analysis of existing data from multiple sources such as the Behavioral Risk Factor Surveillance System and American Community Survey.	MGWR for spatial analysis



geographic
scales.

(Hincapie et al., 2019)	To explore barriers to medication adherence in medically underserved (MU) populations and identify opportunities for mHealth adherence interventions.	Qualitative cross-sectional focus group.	Medically underserved patients with chronic conditions at a federally qualified health center in Dayton, Ohio.	Federally Qualified Health Center (FQHC) serving medically underserved areas (MUA) and/or medically underserved populations (MUP) in Dayton, Ohio.	17 patients participated in 4 focus groups, predominantly male, with chronic diseases such as diabetes, dyslipidemia, and/or hypertension, prescribed 3 long-term medications.	Conducted between 2015 and 2016.	Convenience sampling at the FQHC, using focus groups and thematic analysis.	Data collected through focus groups, analyzed thematically using the Health Belief Model as a theoretical framework.
(Nguyen et al., 2022)	Investigate the interaction of social determinant	Qualitative research involving in-depth interviews,	Patients with diabetes and community leaders in underserved	Safety-net healthcare settings in socioeconomically	10 patients with diabetes or prediabetes and 10 community	Data collected in 2019.	Purposive selection; interviews, neighborhood tours, and	Qualitative data analysis using Atlas.ti 8 software, applying the



	s of health (SDoH) in chronic disease management within vulnerable populations.	neighborhood tours, and clinic visits.	San Francisco neighborhoods.	deprived San Francisco neighborhoods.	leaders; majority Black, average age 62, most earning less than \$20,000 annually, and managing multiple chronic conditions.		clinic visit observations.	NIMHD research framework, focusing on individual, interpersonal, community, and societal levels.
(Stotz et al, 2021)	To explore the feasibility of online diabetes nutrition education for American Indian and Alaska Native (AI/AN) adults with	Qualitative study involving focus groups and interviews.	AI/AN adults with Type 2 diabetes and key stakeholders in these communities.	Various AI/AN communities across the United States.	AI/AN adults with Type 2 diabetes, along with healthcare providers and other stakeholders in these communities. Focus group sizes 29 22 10 9	Data collected in August–October 2018.	Participants were recruited for focus groups and interviews across four AI/AN communities.	Focus groups and interviews were conducted, supplemented with surveys to gather demographic data and technology use.



Type 2
diabetes.

(Fuji et al., 2015)	Explore the use of Personal Health Records for managing diabetes-related health information.	Qualitative study using conventional content analysis.	Patients with Type 2 diabetes.	"Midwest metropolitan city"	59 participants, aged 28-80, predominantly female and white/Caucasian, all high school graduates or higher.	not disclosed	Recruited from internal medicine and endocrinology clinics; data collected through interviews.	Participants received PHR training; interviews conducted to explore PHR use.
---------------------	--	--	--------------------------------	-----------------------------	---	---------------	--	--

(Dao et al., 2019)	explore factors influencing Type 2 Diabetes Mellitus (T2DM) self-management in general practice.	Qualitative study with semi-structured interviews.	Patients with T2DM and their general practitioners and practice nurses in South West Sydney.	General practices in a low socioeconomic area of Sydney, New South Wales, Australia.	10 patients with T2DM and 17 healthcare providers (10 GPs, 7 practice nurses).	Not disclosed	Purposive sampling: interviews conducted with patients and providers.	Thematic analysis using the socio-ecological model as a coding framework.
--------------------	--	--	--	--	--	---------------	---	---



(Johnson, 2023)	To explore African American veterans' experiences and attitudes towards using the My HealtheVet online portal for diabetes management.	Qualitative study with semi-structured interviews.	Non-Hispanic African American veterans diagnosed with type 2 diabetes.	Veterans Affairs health care system.	35 participants; mostly male, aged 35-73 years, varied educational background and financial stability.	Interviews conducted between March and June 2020.	Participants were recruited from a large Midwestern VA medical center and interviewed via phone.	Inductive thematic analysis of interview transcripts.
<hr/>								
(Talebian et al., 2021)	To explore the health information-seeking behavior of diabetic patients.	Qualitative, grounded theory approach.	Iranian diabetic patients.	Healthcare and diabetes centers in Kerman, Iran	18 diabetic patients, both men and women, aged 38-65, with varied educational backgrounds.	Interviews conducted in June 2019.	Purposive sampling, semi-structured interviews.	Data analyzed using the grounded theory approach, with thematic



								categorization.
(Sidhu et al., 2022)	Explore knowledge and awareness of T2DM, related risk factors, and views on health seeking behaviors for T2DM information in young Punjabi Sikhs in the UK	Qualitative, phenomenological, semi-structured 1-1 interviews	Young Punjabi Sikh community in UK	Participants were recruited from a Sikh temple and University of Manchester Sikh Society in West Yorkshire and North West England	13 participants, predominantly female, well-educated, living in family homes.	Data collection between December 2018 and May 2019.	Participants were recruited via a Sikh temple and University of Manchester Sikh Society using purposive and snowball sampling. Interviews were audio-recorded.	Inductive thematic analysis of interview data. Purposive sampling, snowball sampling
(Kim et al., 2023)	Assess outcomes of the ACTIVATE	Quality improvement project, not human	Patients with uncontrolled diabetes and/or	Federally qualified health center	50 patients, majority White and Hispanic or Latino,	April to December 2021.	Recruitment from health center, enrollment	Remote patient monitoring, health



	program, designed to improve monitoring and care of diabetes and hypertension using digital health tools in a rural community.	subjects research.	hypertension in rural California.	in rural California	mean age 55, primarily Spanish-speaking.		survey for demographics, technology access, digital literacy.	coaching, data analysis.
(Chambers et al., 2015)	Examine the feasibility and effectiveness of a home-visiting intervention for diabetes prevention and management	Single-group, pre-post pilot intervention study.	American Indian youth aged 10-19 years, at risk for or diagnosed with Type 2 diabetes.	Rural and isolated American Indian reservation lands.	Predominantly male participants, varied in age, with risk factors for Type 2 diabetes.	Not disclosed	Referrals from local healthcare providers, with data collection through interviews, surveys, and medical assessments.	Multi-faceted intervention involving nutrition, physical activity, and psychosocial support, delivered through home visits and



	nt in American Indian youth.							community activities.
(Mansour , 2021)	To understand the information- seeking behavior of Egyptian adult patients with Type 2 Diabetes Mellitus (T2DM).	Survey, Cross-sectio nal	Egyptian adult patients with T2DM.	Outpatient clinics and Egyptian government health centers.	311 Egyptian adult patients with T2DM, diverse in age, gender, and socioeconomic background.	Conducted in April 2021.	Systematic random sampling, using a structured questionnair e	Analysis of survey responses using statistical tools.
(Rastegar i et al., 2022)	To delineate patients' functional and critical health literacy and	Survey-base d study employing quantitative methods.	384 participants. Residents of Isfahan, Iran.	The study is centered on referrals to Isfahan health	The sample comprised 384 individuals who were patients, diverse in	Data collection occurred in 2019	Random sample selection with structured questionnair	Utilization of the Newest Vital Sign (NVS) for functional literacy and



its association with socio-demographic variables and self-efficacy.	centers, Iran.	terms of age, gender, and educational attainment. Mostly female less than 30 years old. Mostly HSD or Bachelor's educational level.	e administration.	the eHEALS for digital literacy aspects, supplemented by Pearson's correlation coefficient and regression analysis.
---	----------------	---	-------------------	---

Supplementary Table S2. *Literature Review Matrix - Limitations, Summary, and Themes*

Citation	Limitations	Relevant Summation of Study	Themes



(Taibah et al., 2020)	Case-study paper.	The study expresses the need for focused e-health strategies in rural areas of Saudi Arabia to bridge the digital divide and improve healthcare outcomes, particularly for managing chronic conditions like diabetes.	Rural populations lack Internet availability, literacy, and infrastructure.
(Pettersson et al., 2023)	Research on migrant population. Cross-sectional, causal inference not possible. 24% response rate.	The study indicates that migrant patients with type 2 diabetes experienced significant changes in self-care during COVID-19. Challenges included reduced physical activity, dietary changes, and altered healthcare access, highlighting the need for tailored support and communication strategies.	More than half of the participants preferred written letters to communicate with their providers. Limited Internet availability is cited as one of three reasons that migrants with chronic disease were negatively affected by the pandemic due to limited access to health care.
(Weyman et al., 2016)	Sample of older adults with Internet adoption didn't match the population. Potential bias of those willing to participate in research were interested in technology.	The authors highlight the importance of Internet adoption and literacy in managing diabetes, emphasizing the need for accurate, accessible online information and decision support tools tailored to individual patient needs. 61.7% report using the Internet to look	Adoption of Internet must be considered in sharing health information and decision support



for health information online. 35.1% who did not look for health information online did not use the Internet.

(Samadbeik et al., 2018) Adoption of the Internet is not directly assessed.

There is medium-level readiness among chronic disease patients to use HIT. Computer experience and sociodemographic factors influence this readiness. The findings suggest the need for improving computer literacy and addressing barriers to HIT adoption.

Education level had a significant association with computer and Internet expertise. Rural inhabitants have readiness for technology usage but authors cite other literature about lack of resources.

(Price-Haywood et al., 2017) Single site, survey response bias

Higher eHealth literacy is linked to increased patient portal usage among older adults, suggesting the need for tailored interventions to enhance digital literacy and address specific barriers. "I don't have a computer. If I had one, I would use it [MyOchsner]. I miss getting reminders. I have a cell phone from the government that just calls." appointments all the time and if I had a

Portal users had higher education and younger age. Some nonusers report a lack of desire to use a portal, lack of digital literacy, lack of computer/Internet availability. Most older adults report they would need assistance with tech.



computer, I could enter them on there
and

(Chérrez-Ojeda et al., 2018)	Analysis based on survey responses; potential biases in self-reported data.	Adoption of and preferences for ICTs among patients with T2DM in Ecuador are influenced by demographic factors like age and education. Highlights the importance of understanding patient preferences and digital literacy in designing ICT-based interventions for diabetes management, especially in developing countries.	Internet availability reported for only 27.2%. Internet enabled smartphone = 46.8%. Lack of availability impacts health interventions. Education and income associated with higher ICT use.
(Terkeş et al., 2022)	Attitudes are self-reported, single center study.	Significant use of technology among Type 2 Diabetes patients. Younger, more educated patients exhibit more favorable attitudes towards technology, indicating a potential avenue for digital health interventions in diabetes management.	Favorable attitude towards health information online but tended to be younger and more educated.



(Ramasa my et al., 2016)	Based on exploratory design with potential biases in self-reported data and limitations due to the cross-sectional nature. Internet/computer use assessed but not mobile phone/mobile Internet usage. Sampling methodology.	The study reveals the crucial role of technology, particularly Internet availability, in enhancing health literacy among type 2 diabetic patients. Need for improved healthcare access and literacy to aid in better diabetes management, especially in settings where technological disparities exist	Higher health literacy associated with computers and Internet in the home (in a sample of patients in India). 40% of participants were familiar with the use of computers. 43% reported Internet adoption .
(Walle et al., 2023)	Based on a quantitative, cross-sectional design with potential interviewer bias, lacking inclusion of private hospitals.	Internet availability and digital literacy have an important role in determining the willingness of diabetes patients to use mHealth applications for self-care. The need for enhancing Internet connectivity, digital literacy, and user-friendly design in mHealth tools to improve diabetes self-care management, especially in low-income settings.	Willingness to use mHealth applications is high but adoption (13.1%) and availability is low (57.2% have smart phones).
(Jemere et al., 2019)	Metropolitan areas lacked rural participants, interviewer bias -- but mitigated with standardized interviews.	Strong potential of mHealth services in diabetes care, highlighting the high adoption of mobile phones among diabetic patients and their willingness to	Text message or voice call interventions viewed favorably to assist with self-care management of diabetes



engage with mobile phone-based health services, suggesting a viable route for enhancing diabetes management and education in this population.

(Yoon et al., 2023)	95% male participants. Rural participants favored in-person visits over virtual but unclear as to why.	Shift to virtual care during the pandemic did not significantly disrupt medication adherence among high-risk diabetic patients, suggesting resilience in healthcare delivery systems under emergency conditions.	Rural patients relied more on in-person care. Limited Internet availability hypothesized as a factor but not assessed.
---------------------	--	--	--

(Yom-Tov et al., 2016)	One search engine data, just search data with no individual covariates. Reliability in question. Health literacy was inferred.	There are disparities in how individuals with different levels of health literacy use the Internet to learn about diabetes. Those with limited health literacy face challenges in searching, understanding, and engaging with online health information. This indicates that digital inequalities in health literacy can significantly impact the effectiveness of online resources in educating users about diabetes management and care, suggesting a need for more accessible	Suggestion that disparities in health literacy exist in populations connected to the Internet or using the Internet to search for health information.
------------------------	--	--	---



and comprehensible online health information.

(Whitacre & Brooks, 2014)	Assumption that broadband adoption in 2002 was zero. Limited to MSAs (n=92 observations). Longitudinal data used a first-difference approach.	Increasing broadband adoption may influence certain health outcomes, showing the potential of broadband as a tool for public health improvement.	Increase in Broadband adoption is associated with slight decreases in rates of individuals with diabetes.
(Umeh et al., 2015)	Computer definition does not include tablets. Type 1 or Type 2 diabetes are not distinguished.	The study highlights the role of ICT in modifying diabetes risk across ethnic groups, showing a significant interplay between technology use, socioeconomic factors, and diabetes prevalence.	A computer at home is associated with higher socioeconomic status and must be considered when thinking about diabetes risk.
(Sharma, 2023)	Ecological data, not causal analysis.	Significant influence of food insecurity and Internet availability on diabetes prevalence. Need for targeted public health interventions in regions with higher rates of food insecurity and lower Internet availability.	Counties with a greater number of households without Internet availability were associated with higher levels of diabetes.



(Hincapie et al., 2019)	Small sample of Ohio underserved patients. Diabetes behaviors based on self-report, not validated. Results were not stratified by adoption of home Internet or Smart Phone usage	There are diverse experiences in mHealth for medication adherence. Providing patient-centered approaches to assist patients in constructing individualized medication adherence strategies may lead to better outcomes. 3/17 reported Internet availability at home, 5/17 had smart phones. Results were combined.	Experiences for non mHealth use are too complicated.
(Nguyen et al., 2022)	recruitment inclusion required smartphone ownership; limited generalizability from sample, lack of causal connection through model and diabetes outcomes	Complex SDoH across multiple levels in chronic disease management. Suggesting need for tailored interventions in healthcare for vulnerable populations.	20% of participants report not using the Internet, only 40% felt familiar with using a mobile phone. Limited health and digital literacy are individual barriers to chronic disease management.
(Stotz et al. 2021)	Higher than average educational attainment for the AI/AN population. Participants recruited from diabetic centers, biased towards those with current healthcare usage.	Online diabetes nutrition education is a promising and feasible approach for AI/AN communities, given the widespread use of smartphones and Internet availability. It can potentially overcome barriers to traditional education methods and provide tailored, accessible health information.	81% of participants with T2D report adoption of the Internet (67% from their phone). 90% have adopted and used through a family member. Adoption and use of the Internet for diabetes programs viewed favorably.



(Fuji et al., 2015)	Sampling characteristics may limit generalizability.	Mixed experiences with PHR use. While it enhanced awareness and led to behavioral changes in some, others faced barriers like economic constraints, computer literacy challenges, and lack of engagement from healthcare providers, suggesting a need for better integration of PHRs into diabetes care. Participants cited issues with affording and adopting technology and the Internet.	Some participants lacked the financial means to adopt technology. Others lacked reliable Internet availability, even in a public library. Digital literacy is cited as a barrier for one participant.
(Dao et al., 2019)	Selection bias due to sampling from the clinic. All participants in the study had Internet availability. Small sample from a single area.	Diabetes management is complex, influenced by multiple factors beyond individual patient control, suggesting the need for comprehensive, multi-level strategies in general practice settings.	Even with Internet availability, they didn't know how to use it according to providers. Patients say they don't know how to appraise the information. Many patients of providers who are elderly have not adopted the Internet.
(Johnson, 2023)	Lack of female representation. All levels of diabetes included. May be different based on severity of illness.	Digital disparities, especially among African American veterans, are influenced by sociocultural factors and personal experiences with technology and healthcare institutions. These factors	All participants had a cell phone, and most used it to adopt and use the Internet.



significantly affect the adoption and effective use of digital health tools like My HealtheVet for diabetes management.

(Talebian et al., 2021)

Population potentially biased due to recruitment from diabetes centers.

A range of interactive factors centered on health information acquisition influences the health information-seeking behavior of diabetic patients.

Some patients consult Internet sources for education, but some barriers include lack of trust, overwhelming information, usually consulted doctor first.

(Sidhu et al., 2022)

Limited sampling of males.

Young Punjabi Sikhs in the UK prefer using the Internet for T2DM information, citing its convenience and ease of access compared to the effort required to visit a doctor. This shows the importance of Internet availability and digital literacy in managing diabetes, particularly in culturally specific contexts where traditional practices and gender norms play a significant role

Positive Disposition towards the Internet as a source of health information.



(Kim et al., 2023)	Participant retention. Small sample size. Occurred during COVID-19, external factors may have influenced results.	The ACTIVATE program demonstrated that targeted digital health interventions with a data-enabled RPM system can improve chronic illness management in rural, underserved communities, addressing challenges such as Internet availability, using cellular data, and digital literacy, with a digital navigator, to enhance diabetes and hypertension outcomes.	44% did not have internet availability. 61% had internet adoption through a cellphone. RPM and digital health solution connected with data-enabled tablets regardless of participants' Internet availability or adoption. The results were positive.
(Chambers et al., 2015)	Lack of control cohort. Internet availability was assessed but not a main variable analyzed in the study.	This study indicates that a culturally tailored, family-oriented home-visiting program can positively influence diabetes outcomes and knowledge among American Indian youth.	Few participants report Internet availability, all participants considered "at risk" by BMI or A1c criteria
(Mansour, 2021)	Sample were more educated, most with Bachelor's degrees.	Internet availability and digital literacy influence the information-seeking behavior of Egyptian T2DM patients, with barriers impacting the efficacy of this process.	Lack of Internet availability and digital literacy can create barriers in information retrieval



(Rastegari et al., 2022)	Sample patients were potentially more concerned with their health status. Older adults refused to fill out the eHEALS questions.	The study showed significant gaps in health literacy among Iranian patients, with a notable correlation between higher education levels and improved eHealth literacy. Reveals the importance of targeted literacy interventions in healthcare.	High rates of lower health literacy, Internet availability cited as 90%.
--------------------------	--	---	--
