

Digital health education program for patients with systemic arterial hypertension and diabetes mellitus in a primary healthcare center

Programa de educación sanitaria digital para pacientes con hipertensión arterial sistémica y diabetes mellitus en un centro de atención primaria

Programa de educação em saúde digital para pacientes com hipertensão arterial sistêmica e diabetes mellitus em um centro de saúde na atenção primária

Alice Mota Iassia^{1*}

ORCID: 0000-0001-7353-7245

Andre Eduardo Mei¹

ORCID: 0000-0002-9711-8085

¹Prefeitura Municipal de Campinas. São Paulo, Brazil.

How to cite this article:

Iassia AM, Mei AE. Digital health education program for patients with systemic arterial hypertension and diabetes mellitus in a primary healthcare center. Glob Acad Nurs. 2026;7(1):e545.
<https://dx.doi.org/10.5935/2675-5602.20200545>

*Corresponding author:

iassia.alice@gmail.com

Submission: 02-27-2026

Approval: 03-30-2026

Abstract

This study evaluated the quality of life before and after a digital health education program for people with systemic arterial hypertension and diabetes mellitus, developed at a health center. This is a qualitative intervention-research study, conducted in four stages: participant selection, application of informed consent and a quality-of-life questionnaire, exposure to digital materials, and post-intervention evaluation through a questionnaire and a semi-structured interview. The results indicated changes in quality of life, heterogeneously among the participants, with emphasis on physical and functional domains such as pain and vitality. Digital health education was well-accepted and perceived as relevant, although the acquisition of knowledge alone is not sufficient to promote sustainable changes in lifestyle habits, mainly due to the participants' life context. The materials broadened access to information and strengthened the autonomy of individuals, with positive impacts on health perception and quality of life. Further studies with larger samples and comparative designs are recommended.

Descriptors: Noncommunicable Diseases; Health Centers; Health Education; eHealth Strategies; Digital Health.

Resumen

Este estudio evaluó la calidad de vida antes y después de la intervención de un programa de educación en salud digital dirigido a personas con hipertensión arterial sistémica y diabetes mellitus, desarrollado en un centro de salud. Se trata de un estudio cualitativo de intervención-investigación, realizado en cuatro etapas: selección de participantes, obtención del consentimiento informado y aplicación de un cuestionario de calidad de vida, exposición a materiales digitales y evaluación posterior a la intervención mediante un cuestionario y una entrevista semiestructurada. Los resultados indicaron cambios en la calidad de vida, heterogéneos entre los participantes, con énfasis en dominios físicos y funcionales como el dolor y la vitalidad. La educación en salud digital fue bien aceptada y percibida como relevante, aunque la adquisición de conocimientos por sí sola no es suficiente para promover cambios sostenibles en los hábitos de vida, principalmente debido al contexto vital de los participantes. Los materiales ampliaron el acceso a la información y fortalecieron la autonomía de las personas, con impactos positivos en la percepción de la salud y la calidad de vida. Se recomiendan estudios adicionales con muestras más grandes y diseños comparativos.

Descriptoros: Enfermedades no Transmisibles; Centros de Salud; Educación en Salud; Estrategias de eSalud; Salud Digital.

Resumo

Este estudo avaliou a qualidade de vida antes e após a intervenção de um programa de educação em saúde digital direcionado a pessoas com hipertensão arterial sistêmica e diabetes mellitus, desenvolvido em um centro de saúde. Trata-se de uma pesquisa qualitativa do tipo pesquisa-intervenção, realizada em quatro etapas: seleção dos participantes, aplicação do TCLE e do formulário de qualidade de vida, exposição aos materiais digitais e avaliação pós-intervenção por meio de um formulário e de uma entrevista semiestructurada. Os resultados indicaram mudanças na qualidade de vida, de forma heterogênea entre os participantes, com destaque para os domínios físicos e funcionais como dor e vitalidade. A educação em saúde digital foi bem aceita e percebida como relevante, embora a aquisição de conhecimento, isoladamente, não seja suficiente para promover mudanças sustentáveis nos hábitos de vida devido, principalmente, ao contexto de vida dos participantes. Os materiais ampliaram o acesso à informação e fortaleceram a autonomia dos indivíduos, com impactos positivos na percepção de saúde e na qualidade de vida. Recomenda-se a realização de estudos com amostras ampliadas e delineamentos comparativos.

Descritores: Doenças Crônicas não Transmissíveis; Unidade Básica de Saúde; Educação em Saúde; Estratégias de Saúde Digital; Tecnologia de Saúde Digital.



Introduction

Non-communicable chronic diseases (NCDs) constitute a major public health problem, responsible for approximately 17 million premature deaths worldwide and affecting socially vulnerable populations more intensely, largely due to modifiable risk factors¹. In Brazil, the high prevalence of systemic arterial hypertension and diabetes mellitus, affecting more than 50 million people, is associated with social inequalities, weaknesses in public policies, and exposure to unhealthy behaviors, demanding continuous actions in care and health education²⁻⁴. Primary Health Care (PHC) plays a central role in addressing these conditions, although it faces structural challenges that compromise the continuity and comprehensiveness of care, especially in large urban centers⁵⁻⁸. In this context, health promotion and education strategies focused on modifiable risk factors, with emphasis on health literacy, are fundamental for strengthening self-care, autonomy, and improving quality of life^{9,10}.

This research was developed in a territory comprising an assigned population of 2,035 people with chronic health conditions, according to records from the municipality's Health Services Portal system, consisting of adult individuals. It is an extensive territory within the municipality of Campinas. It is also characterized as a transient territory with a commercial profile, an aspect related to the significant portion of the population that works in the region and resides in rented properties. Furthermore, the area has public spaces and services for assistance and leisure, which play a relevant role in supporting the population and managing chronic health conditions. In this way, this research aimed to evaluate the overall quality of life before and after an intervention in a digital health education program for people with systemic arterial hypertension (SAH) and diabetes mellitus (DM) in a

primary care health center in a metropolitan area of the state of São Paulo.

Methodology

This study adopted the qualitative research-intervention method, which involves the simultaneous transformation of the participants and the reality being investigated, recognizing the researcher as an active subject in the process. According to Thiollent¹¹, this approach aims not only at understanding but also at promoting change through a dialogical process, being especially suitable for evaluating interventions in health and quality of life, as it allows for the apprehension of meanings and perceptions constructed over time. The study was approved by the Research Ethics Committee (Opinion No. 7,709,423, of July 16, 2025, under CAAE No. 89787525.6.0000.5453).

The research was developed in stages. It began with the identification of individuals eligible for intervention. The inclusion criteria were individuals of both sexes, diagnosed with systemic arterial hypertension and diabetes mellitus, residing in the researcher's area of operation, and, initially, aged 18 years or older. However, 1,791 eligible records were identified, as shown in Figure 1, a number that made the continuation of the research unfeasible given the available time and the necessary structure for its execution. Therefore, a new filtering process was carried out, restricting the sample to individuals aged between 18 and 59 years. For this stage, data from the municipality's Health Services Portal and the Citizen's Electronic Medical Record were used, including sociodemographic, clinical, risk classification information, and history of care related to the conditions studied. Access, processing, and use of the data strictly followed guidelines for the protection of personal data and the ethical regulations in force for research with human beings^{12,13}.

Figure 1. Flowchart of the selection and participation process in the research. Campinas, SP, Brazil, 2025



Note: People with hypertension and diabetes mellitus in the Health Services Portal: 1,791 eligible records. Defined age range: 433 records in the 18-59 age range. Verification and confirmation: 78 records. Invited users: 63 invitations sent. After the invitation: 18 people agreed to participate in the research. Informed consent form and questionnaire signed: 7 people signed the informed consent form and answered the SF-36. Digital health education practice: 6 people started the intervention.

The new survey identified 433 people eligible for the intervention. After verification in the Citizen's Electronic Medical Record regarding diagnostic confirmation,

connection to the territory, updated registration, active medical record, and availability of telephone contact, 78 people met all the criteria. Of these, 63 were effectively



contacted via WhatsApp or telephone, resulting in 18 acceptances. Eight participants signed the Informed Consent Form, seven answered the SF-36 before the intervention, and, after joining the transmission channel, six participants remained active, with one person excluded due to omission (Figure 1).

Quality of life was assessed using the Short-Form Health Survey (SF-36), an instrument validated for the Portuguese language¹⁴, composed of 36 items distributed across eight domains. The analysis followed the raw scale methodology, with transformation to a scale of 0 to 100, as proposed by Ware and Sherbourne¹⁵, allowing intra-individual comparisons before and after the intervention.

The digital health education materials created by the researcher and accessed from the public domain were made available via a WhatsApp broadcast channel for five weeks, with access for three months, covering topics such as physical exercise, nutrition, mental health, medication use, alcohol and tobacco, and the pathophysiology of hypertension and diabetes. Privacy and security measures were adopted to protect participants, ensuring individual communication and confidentiality throughout the process.

Following the intervention, participants responded to the SF-36 again via an electronic form, allowing for a comparison of pre- and post-intervention scores.

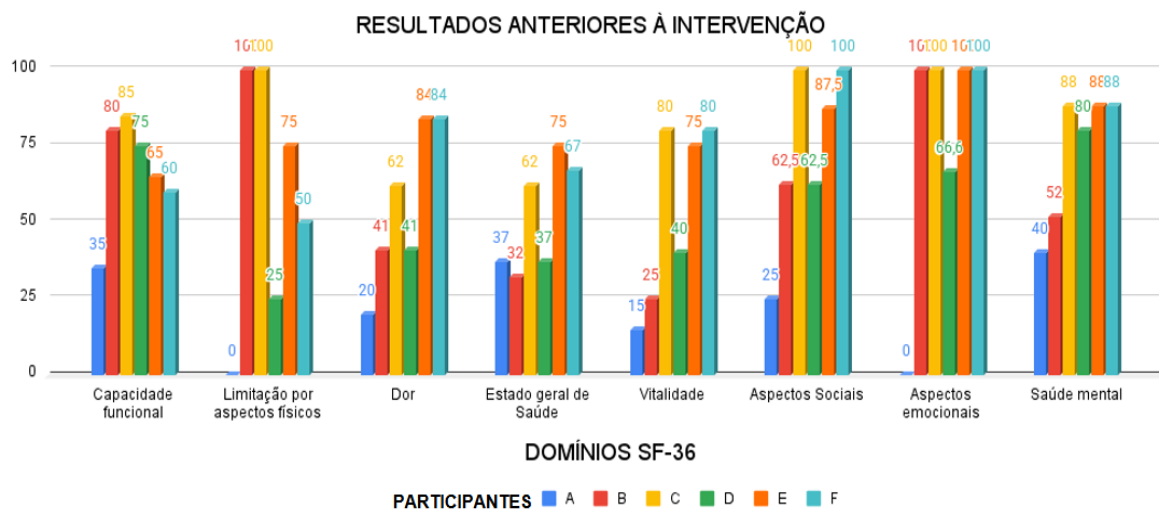
Furthermore, they were invited to participate in semi-structured interviews to evaluate the research and digital health education materials. Using a self-developed semi-structured interview guide consisting of five questions, the interviews were conducted digitally, both synchronously and asynchronously, through audio messages, text messages, and calls via the WhatsApp application.

The analysis of the qualitative data followed the methodological assumptions proposed by Gibbs¹⁶, comprising a systematic process of organizing, coding, and interpreting textual data, with the identification of patterns, categories, and emerging meanings. This approach allowed for the construction of interpretations grounded in the experiences and perceptions of the participants, in line with the research objectives.

Results and Discussion

Six individuals diagnosed with systemic arterial hypertension and diabetes mellitus participated in the study; three were male, and three were female, aged between 45 and 57 years. Their occupations ranged from household activities to work in companies in the region. The assessment of health-related quality of life, conducted prior to the intervention using the SF-36 instrument, revealed high heterogeneity among the participants.

Figure 2. SF-36 results before intervention. Campinas, SP, Brazil, 2025



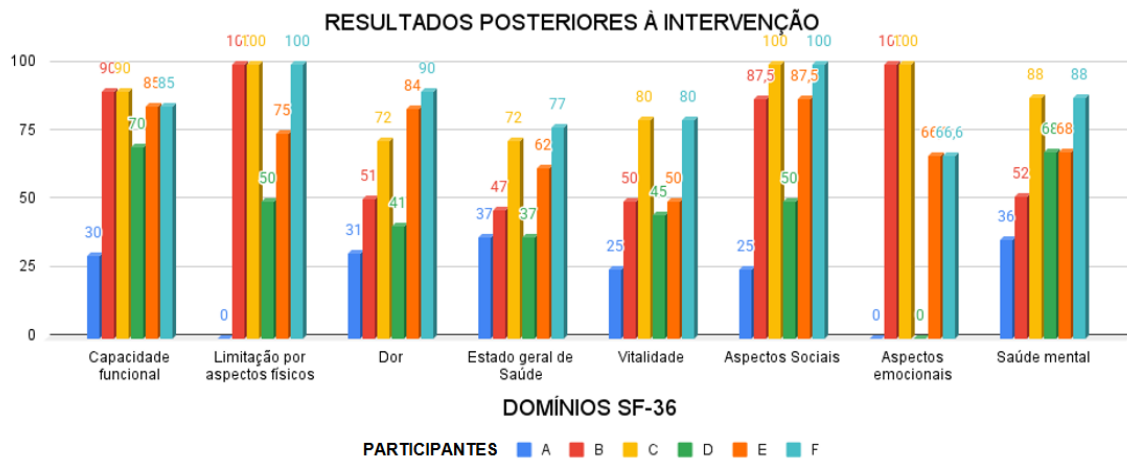
Note: Results before intervention. Functional capacity. Limitations due to physical aspects. Pain. General health status. Vitality. Social aspects. Emotional aspects. Mental health. SF-36 domains. Participants.

The SF-36 scores showed wide variability between domains and between participants, indicating different levels of physical and psychosocial impairment. A greater impact was observed in the physical domains, especially Functional Capacity, Physical Limitations, Pain, General Health Status, and Vitality, the latter standing out as one of the most affected domains, with frequent reports of fatigue and low energy, a finding like that described by Nogueira and Navega¹⁷. In contrast, the domains of Social Aspects, Emotional Aspects, and Mental Health were relatively preserved, even among participants with significant physical limitations, suggesting the presence of adaptive strategies or support networks. An association was found between Pain

and Limitation due to Physical Aspects, as well as between Functional Capacity and General Health Status, while in some cases, there was a dissociation between physical and psychosocial domains. Pre-intervention results indicate relevant needs in pain management, improvement of vitality, and qualification of the perception of general health status, while psychosocial preservation appears as a favorable factor for adherence to educational strategies. The observed heterogeneity reinforces the importance of flexible and individual-centered educational interventions, pointing to the SF-36 as an appropriate tool to guide digital health education.



Figure 3. SF-36 results after intervention. Campinas, SP, Brazil, 2025



Note: Results after intervention. Functional capacity. Limitations due to physical aspects. Pain. General health status. Vitality. Social aspects. Emotional aspects. Mental health. SF-36 domains. Participants.

Post-intervention assessment revealed significant changes in quality of life, heterogeneously across participants and domains. More consistent improvements were observed in the psychosocial and functional domains, while Pain, Vitality, and General Health Status showed more variable responses. In some participants, scores for Functional Capacity and Limitations due to Physical Aspects reached high values (≥ 75), suggesting a reduction in restrictions on daily activities. The Social Aspects and Emotional Aspects domains maintained high scores or showed further improvement, reaching maximum values in some cases, while Mental Health remained stable or improved in most participants. In two individuals, however, a worsening was observed in these domains, possibly related to life conditions and experiences.

The domains Pain, General Health Status and Vitality showed greater variability with improvement in

some participants and stability or slight reduction in others, suggesting the need for longer or combined interventions as also described in the study by Faria et al.¹⁸ In the study by Oh et al.¹⁹, intervening for six months through an intervention and control group, they concluded that there were effective changes in the management of metabolic syndrome. Ongoing clinical monitoring and even the use of cognitive-behavioral therapy can be very positive in contributing to lifestyle changes, as they incorporate psychological and behavioral aspects into profound personal transformations²⁰. In the study by Santos et al.²¹ through a non-randomized clinical trial, it is highlighted that educational interventions in the quality of life of adults with metabolic syndrome can be an effective strategy for controlling the syndrome. Although no significant differences were observed between groups, there was an overall improvement in scores compared to baseline.

Figure 4. Question (1) "Were the digital health education materials sufficient and adequate for understanding your health condition?" and concise responses from participants. Campinas, SP, Brazil, 2025



Note: Attention: The materials captured the users' attention. Clarity: They presented accessible information. Essential Aspects: They were crucial for understanding health and acquiring new knowledge. Completeness: They covered the necessary aspects of hypertension and diabetes.

Studies indicate that structured interventions, especially those based on educational and behavioral approaches, exert a significant influence on the perception of bodily pain in individuals with metabolic syndrome^{20,22}. In

addition, digital health promotion programs also have the potential to positively impact this domain by promoting autonomy, adherence to healthy behaviors, and continuity of self-care. The literature also indicates that interventions



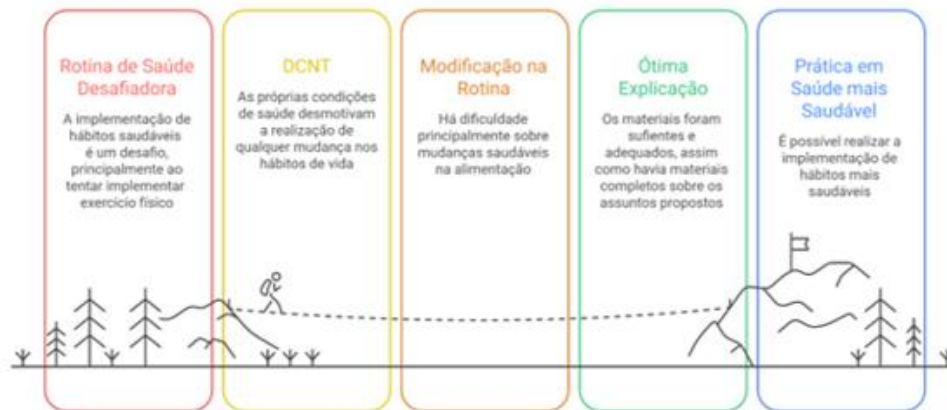
focused on regular physical activity and the adoption of healthy eating habits contribute to an overall improvement in the quality of life of people with metabolic syndrome^{23,24}. In this context, the post-intervention findings reinforce that digital health education can act as a mediator of cognitive and behavioral processes, aligning with evidence on digital health that highlights the use of digital tools in supporting self-care and the management of chronic conditions, including in resource-limited settings²⁵.

Reviews of digital interventions in resource-limited settings indicate that changes in physical and functional domains, such as pain and vitality, tend to occur more slowly and depend on the continuity of recommended practices. Although digital health favors the modification of attitudes

and behaviors related to health promotion, the consolidation of improvements in these aspects requires prolonged interventions, sustainable use of technologies, and their continuous integration with face-to-face care and health care systems. Regarding the interviews conducted, a summary of the responses obtained is presented below.

In question 1, presented synthetically in figure (4), participants reported that the digital health education materials were sufficient and adequate for understanding their health condition because they were clear, interesting, complete, and easy to understand, which brought new knowledge that was essential for understanding health as a whole and not just the conditions of hypertension and diabetes mellitus.

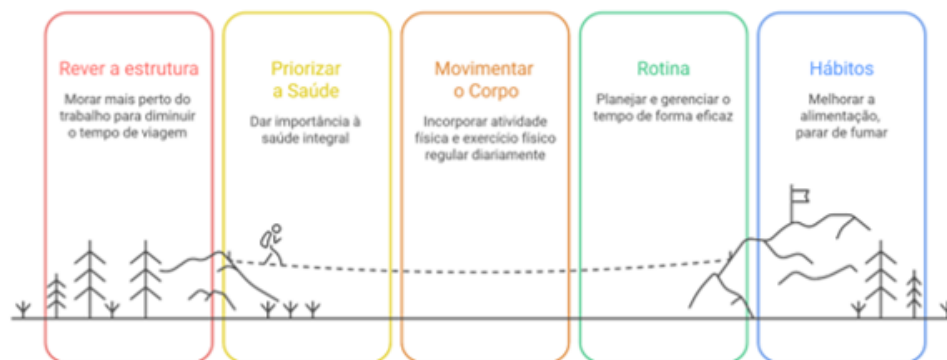
Figure 5. Question (2) “Were the digital health education materials sufficient and adequate to promote healthier changes in your lifestyle habits?” and concise responses from participants. Campinas, SP, Brazil, 2025



In the second question, presented in figure (5), participants reported that the digital health education materials were sufficient and adequate to promote healthier changes in lifestyle habits. In addition, they had access to information from various materials that they did not know

how to find outside of the research; therefore, they contributed to learning this knowledge with such intensity that they could have prevented the development of cardiovascular diseases.

Figure 6. Question (3) “What are your future plans for improving your quality of life through the knowledge acquired?” and concise responses from participants. Campinas, SP, Brazil, 2025

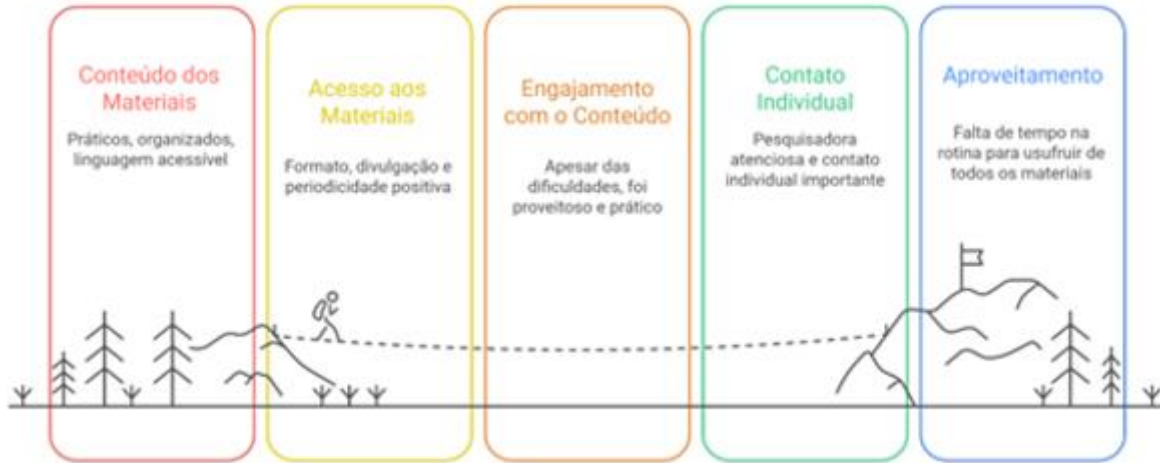


Note: Review the Structure: Live closer to work to reduce commute time. Prioritize Health: Give importance to overall health. Move the Body: Incorporate regular physical activity and exercise daily. Routine: Plan and manage time effectively. Habits: Improve diet, quit smoking.

The third, presented in figure (6), questioned the participants about future plans. All have plans to improve their quality of life through the knowledge acquired; however, there are several challenges, such as putting the knowledge into practice, organizing the routine, and assimilating that their own current health makes it difficult

to implement new habits, understanding that there are times in life when these changes are more difficult than at other times. They also reported the difficulty of having time to dedicate to their own health, as most of this time is immersed in caring for family and work.

Figure 7. Question (4) “What is your final assessment of the use of digital health education materials for improving or stabilizing the health condition of hypertension and diabetes?” and synthetic responses from participants. Campinas, SP, Brazil, 2025



Note: Content of the Materials: Practical, organized, accessible language. Access to the Materials: Positive format, dissemination, and frequency. Engagement with the Content: Despite the difficulties, it was beneficial and practical. Individual Contact: Attentive researcher and important individual contact. Benefit: Lack of time in the routine to take advantage of all the materials.

The fourth question, presented in figure (7), reflected on the use of digital health education materials to improve or stabilize health conditions. Participants described that they liked the initiative, the materials disseminated, and the language used, as well as the way the information was delivered from the initial call for the research to the final evaluation. Furthermore, despite the collective intervention and the shared knowledge, individual contact with participants throughout the study made a

difference by promoting individualized care. The digital format was also a differentiating factor. Participants reported that digital materials facilitate use and the entire knowledge acquisition process in an intense routine with limited time, as well as self-care. Therefore, listening to and watching videos during work breaks or even while commuting is an alternative to benefit from digital health education content.

Figure 8. Question (5) “What is your suggestion for improvements in future digital health education research?” and synthetic responses from participants. Campinas, SP, Brazil, 2025



Note: Diversify Format: offer a variety of materials including images, videos, text, audio, and booklets. Direct Communication: Establish direct communication with professionals. Materials: Provide more specific materials, including those on physical exercise. Inclusive Interventions: Address barriers to participation for older adults. Impactful Digital Health Research: Accessible and engaging digital interventions.

The fifth and final question, presented in figure (8), inquired about suggestions for improvements in future research like this. Participants reflected on the difficulties that older people might have with this intervention due to lower digital literacy, and also suggested a desire to exchange information with other participants to contribute to their own self-care process.

The integrated analysis of the SF-36, the interviews, and the participants' level of involvement did not allow for the identification of a direct relationship confirming the improvement in the assessed outcomes as a result of the intervention, nor did it establish more precise associations between the observed variations and the educational process, indicating the need for further investigation in

future studies. Although health promotion practices in primary health care are recognized as relevant strategies for improving living conditions, especially due to their proximity to the territories²⁶, the results show that access to information, in isolation, is insufficient to promote sustainable changes in lifestyle habits. The adoption of healthy behaviors is conditioned by social, economic, psychological, cultural, and environmental factors, reinforcing the limitations of approaches focused exclusively on the individual²⁷. In this context, the Social Determinants of Health (SDH) are central to understanding care in chronic diseases, as they directly influence the ability to adhere to self-care and health recommendations²⁸.

The participants' life context emerged as the main challenge to adopting healthy habits, marked by material limitations, work demands, family responsibilities, and unequal access to health services, often obscured by discourses that individualize responsibility for care⁵. The findings reinforce the need for health promotion actions in primary health care, including those mediated by digital technologies, articulated with intersectoral, territorially based strategies guided by the Social Determinants of Health (SDH), with participatory and empowering approaches. In this sense, digital health education expands access to reliable information, improves health literacy, and reduces time and space barriers, in addition to presenting cost-effectiveness and scalability potential in health^{29,30}, promoting a more proactive approach to care and more informed decision-making in healthcare³¹.

Although they show potential for reach and cost-effectiveness, digital interventions in health education face challenges related to access, engagement, digital literacy, results evaluation, and sustainability, requiring contextualized and integrated strategies³². Primary health care (PHC) is configured as a strategic space for interventions aimed at changing lifestyles, as it favors the articulation between health care and social support, as evidenced by Santos et al.²¹. In this context, the UBS (Basic Health Unit), through its eMulti (Multidisciplinary Teams), ACS (Community Health Agents), and ESF (Family Health Strategy) teams, plays a central role in organizing care, stratifying chronic conditions, and developing educational actions for health management and the adoption of healthy lifestyles³. However, structural limitations in the work process within primary health care still relegate health promotion and prevention actions to a secondary level, reflecting the predominance of the biomedical model centered on immediate care and medicalization⁵.

The productivist logic that guides the management of health services, based on quantitative goals and short-term results, imposes an overload on teams and limits the time allocated to educational, preventive, and health promotion actions, favoring fragmented and immediate practices. The expected transformations from these actions demand their own timeframe, incompatible with management models centered on productivity, which generates tensions between the discourse of comprehensive

care and the concrete organization of work in health. In this sense, strengthening health promotion in primary health care requires a review of management models, valuing interdisciplinary practices, qualitative evaluations, and recognizing care as a complex, relational, and long-term process, beyond numerical goals.

Although short-term practices serve the interests of managers and the expectations of the population, the care of chronic conditions requires longitudinal approaches, community support networks, active participation of professionals and users, and funding compatible with health promotion policies. In this context, digital health education interventions should be implemented cautiously so as not to reinforce the liberal and neoliberal rationality that holds individuals exclusively responsible for their health, disregarding structural factors and social determinants. This logic, by emphasizing self-management and absolute autonomy, can generate forms of symbolic violence and reproduce health inequalities³³⁻³⁵.

Public health literature suggests that an exclusive emphasis on individual responsibility can weaken collective responsibility, a central element of justice and equity in health, especially in contexts of social vulnerability where the social determinants of health (SDH) extend beyond individual control³⁶. Even when personal behaviors contribute to health risks, the causes of illness are rooted in broader social and economic contexts, justifying collective co-responsibility in health care and protection. In this sense, health promotion must go beyond individual behavioral change, incorporating policies and environments that favor collaborative practices and recognize the interdependence between individuals and their social, economic, and institutional contexts, according to the WHO's expanded concept of health³⁷. Moving in this direction implies shifting the focus from the isolated individual to networks, communities, and social systems, understanding health as a common good and a social right.

Final Considerations

This study evaluated the effects of a digital health education intervention on the quality of life of people with chronic conditions, using the SF-36 and qualitative data. The results indicate good acceptability of the intervention and positive effects mainly in the psychosocial and functional domains, suggesting that digital health education can expand access to information, strengthen autonomy, and contribute to health promotion. However, limitations such as the small sample size, the use of self-reported instruments, the short follow-up period to detect sustainable changes in quality of life, especially in physical domains, and the absence of a control group restrict the generalization and causal inference of the findings.

In conclusion, digital interventions present a potential complementary strategy in healthcare, especially when combined with in-person actions, social support, and longitudinal follow-up. However, future studies with more robust designs are needed to confirm their effects.



References

1. World Health Organization (WHO). Noncommunicable diseases and universal health coverage: ensuring everyone receives the care they need: technical brief [Internet]. Geneva: WHO; 2023 [acesso em 5 mai 2026]. Disponível em: https://cdn.who.int/media/docs/default-source/universal-health-coverage/who-uhl-technical-brief-ncds.pdf?sfvrsn=af5127e4_3&download=true
2. Brasil. Ministério da Saúde. Plano de ações estratégicas para o enfrentamento das doenças crônicas não transmissíveis (DCNT) no Brasil 2011-2022 [Internet]. Brasília: Ministério da Saúde; 2011 [acesso em 5 mai 2026]. Disponível em: https://bvsms.saude.gov.br/bvs/publicacoes/plano_acoes_enfrent_dcnt_2011.pdf
3. Brasil. Ministério da Saúde. Cuidado às condições crônicas na atenção primária à saúde: o imperativo da consolidação da estratégia da saúde da família [Internet]. Brasília: Ministério da Saúde; 2012 [acesso em 5 mai 2026]. Disponível em: https://bvsms.saude.gov.br/bvs/publicacoes/cuidado_condicoes_atencao_primaria_saude.pdf
4. Brasil. Ministério da Saúde; Instituto Brasileiro de Geografia e Estatística (IBGE). Pesquisa Nacional de Saúde: percepção do estado de saúde, estilos de vida, doenças crônicas e saúde bucal: Brasil e grandes regiões [Internet]. Rio de Janeiro: IBGE; 2020 [acesso em 5 mai 2026]. Disponível em: <https://www.pns.icict.fiocruz.br/wp-content/uploads/2021/12/liv101846.pdf>
5. Mattioni FC, Rocha CMF. Promoção da saúde na atenção primária: efeitos e limitações em tempos de neoliberalismo conservador. *Cienc Saude Colet*. 2023;28(8):2173-82. <https://doi.org/10.1590/1413-81232023288.05972023>
6. Brasil. Ministério da Saúde. Portaria nº 2.436, de 21 de setembro de 2017. Aprova a Política Nacional de Atenção Básica (PNAB), estabelecendo a revisão de diretrizes para a organização da Atenção Básica, no âmbito do Sistema Único de Saúde (SUS). *Diário Oficial da União*. 22 set 2017; Seção 1:68. Disponível em: https://bvsms.saude.gov.br/bvs/saudelegis/gm/2017/prt2436_22_09_2017.html
7. Brasil. Ministério da Saúde. Plano de ações estratégicas para o enfrentamento das doenças crônicas e agravos não transmissíveis no Brasil, 2022-2030 [Internet]. Brasília: Ministério da Saúde; 2021 [acesso em 5 mai 2026]. Disponível em: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/svsa/doencas-cronicas-nao-transmissiveis-dcnt/09-plano-de-dant-2022_2030.pdf
8. Barbosa MU, Maranhão AADS, Silva ARDS, Rocha LVM, Moraes GDO, Souza HM, et al. Atenção primária à saúde e o manejo de doenças crônicas: modelos de sucesso e desafios no acompanhamento continuado. *Braz J Implantol Health Sci*. 2025;7(4):543-52. <https://doi.org/10.36557/2674-8169.2025v7n4p543-552>
9. Oscalices MIL, Okuno MFP, Lopes MCBT, Batista REA, Campanharo CRV. Literacia em saúde e adesão ao tratamento de pacientes com insuficiência cardíaca. *Rev Esc Enferm USP*. 2019;53:e03447. <https://doi.org/10.1590/S1980-220X2017039803447>
10. Tenani CF. Impacto da literacia em saúde nos comportamentos de saúde e doenças crônicas em usuários do Sistema Único de Saúde em um município brasileiro [tese]. Campinas: Universidade Estadual de Campinas; 2021. Disponível em: <https://repositorio.unicamp.br/acervo/detalhe/1164219>
11. Thiollent M. Pesquisa-ação nas organizações. 2ª ed. São Paulo: Atlas; 2011.
12. Brasil. Lei nº 13.709, de 14 de agosto de 2018. Dispõe sobre a proteção de dados pessoais e altera a Lei nº 12.965, de 23 de abril de 2014 (Marco Civil da Internet). *Diário Oficial da União*. 15 ago 2018; Seção 1:3. Disponível em: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/lei/l13709.htm
13. Brasil. Lei nº 14.874, de 28 de maio de 2024. Dispõe sobre a pesquisa com seres humanos e institui o Sistema Nacional de Ética em Pesquisa com Seres Humanos. *Diário Oficial da União*. 29 mai 2024; Seção 1:4. Disponível em: https://www.planalto.gov.br/ccivil_03/_ato2023-2026/2024/lei/l14874.htm
14. Ciconelli RM. Tradução para o português e validação do questionário genérico de avaliação de qualidade de vida SF-36 (Brasil SF-36) [tese]. São Paulo: Universidade Federal de São Paulo; 1999. Disponível em: <https://repositorio.unifesp.br/server/api/core/bitstreams/a8a7d4b8-b6a0-477f-9b38-fea2e35e2914/content>
15. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Med Care*. 1992;30(6):473-83. <https://doi.org/10.1097/00005650-199206000-00002>
16. Gibbs G. Análise de dados qualitativos. Tradução: Roberto Cataldo Costa. Porto Alegre: Artmed; 2009. (Obra original publicada em 2007)
17. Nogueira HC, Navega MT. Influência da Escola de Postura na qualidade de vida, capacidade funcional, intensidade de dor e flexibilidade de trabalhadores administrativos. *Fisioter Pesqui*. 2011;18(4):353-8. <https://doi.org/10.1590/S1809-29502011000400010>
18. Faria HTG, Veras VS, Xavier ATDF, Teixeira CRDS, Zanetti ML, Santos MAD. Qualidade de vida de pacientes com diabetes mellitus antes e após participação em programa educativo. *Rev Esc Enferm USP*. 2013;47(2):348-54. <https://doi.org/10.1590/S0080-62342013000200011>
19. Oh EG, Bang SY, Hyun SS, Kim SH, Chu SH, Jeon JY, et al. Effects of a 6-month lifestyle modification intervention on the cardiometabolic risk factors and health-related qualities of life in women with metabolic syndrome. *Metabolism*. 2010;59(7):1035-43. <https://doi.org/10.1016/j.metabol.2009.10.027>
20. Zhang Y, Mei S, Yang R, Chen L, Hang G, Li L. Effects of lifestyle intervention using patient-centered cognitive behavioral therapy among patients with cardio-metabolic syndrome: a randomized, controlled trial. *BMC Cardiovasc Disord*. 2016;16(1):227. <https://doi.org/10.1186/s12872-016-0398-9>
21. Santos ISC, Araújo WAD, Damasceno TDO, Souza ADS, Boery RNSDO, Fernandes JD. Intervenção educativa na qualidade de vida e conhecimento da síndrome metabólica. *Acta Paul Enferm*. 2022;35:eAPE02982. <https://doi.org/10.37689/acta-ape/2022A002982>
22. Jahangiry L, Montazeri A, Najafi M, Yaseri M, Farhangi MA. An interactive web-based intervention on nutritional status, physical activity and health-related quality of life in patient with metabolic syndrome: a randomized-controlled trial (The Red Ruby Study). *Nutr Diabetes*. 2017;7(1):e240. <https://doi.org/10.1038/nutd.2016.35>
23. Watanabe M, Yokotsuka M, Yamaoka K, Adachi M, Nemoto A, Tango T. Effects of a lifestyle modification programme to reduce the number of risk factors for metabolic syndrome: a randomised controlled trial. *Public Health Nutr*. 2017;20(1):142-53. <https://doi.org/10.1017/S1368980016001920>



24. Frere NO, Soliman SSA, Foda MA, Eyada TK, Saad NES. Effect of patient education on metabolic syndrome components among females in Zagazig University outpatient clinics, Egypt: an intervention study. *Diabetes Metab Syndr*. 2019;13(3):1897-900. <https://doi.org/10.1016/j.dsx.2019.04.021>
25. Piette JD, Lun KC, Moura LA Jr, Fraser HS, Mechael PN, Powell J, et al. Impacts of e-health on the outcomes of care in low- and middle-income countries: where do we go from here? *Bull World Health Organ*. 2012;90(5):365-72. <https://doi.org/10.2471/BLT.11.099069>
26. Mattioni FC, Brochier LSB, Leão JGF, Zago PTN, Rocha CMF. A atenção primária em saúde como cenário de práticas de promoção da saúde: revisão integrativa. *Rev Contexto Saude*. 2022;22(45):e12886. <https://doi.org/10.21527/2176-7114.2022.45.12886>
27. Lupton D. *Risk*. London: Key Ideas; 1999.
28. Kangas T, Milis SL, Vanthomme K, Vandenheede H. The social determinants of health-related quality of life among people with chronic disease: a systematic literature review. *Qual Life Res*. 2025 Apr 29. <https://doi.org/10.1007/s11136-025-03976-1>
29. Alves FR, Manzan FRA, Buso ALZ, Santos AS, Carvalho CMO, Rodrigues MFBS. Tecnologias na informação na educação em saúde: uma revisão integrativa. *Rev CESUMAR*. 2025;30:40-5. <https://doi.org/10.17765/2176-9176.2025v30e13414>
30. Stanic T, Avsar TS, Gomes M. Economic evaluations of digital health interventions for children and adolescents: systematic review. *J Med Internet Res*. 2023;25:e45958. <https://doi.org/10.2196/45958>
31. Grover H, Nour R, Zary N, Powell L. Online interventions addressing health misinformation: scoping review. *J Med Internet Res*. 2025;27:e69618. <https://doi.org/10.2196/69618>
32. Locatelli JK, Scortegagna SA, Machi ACBD. The long-term user experience of an m-health application. *RECIIS*. 2023;17(4):850-66. <https://doi.org/10.29397/reciis.v17i4.3828>
33. Dardot P, Laval C. A nova razão do mundo: ensaio sobre a sociedade neoliberal [Internet]. São Paulo: Boitempo; 2016 [acesso em 5 mai 2026]. Disponível em: https://wp.ufpel.edu.br/ppgs/files/2019/11/Christian-Laval_-_Pierre-Dardot-A-Nova-Razao-do-Mundo_-_Ensaio-Sobre-a-Sociedade-Neoliberal-Colecao-Estado-de-Sitio-Boitempo-2016.pdf
34. Lupton D. *Digital health: critical and cross-disciplinary perspectives*. London: Routledge; 2017.
35. Bourdieu P. *O poder simbólico*. 6ª ed. Rio de Janeiro: Bertrand Brasil; 2018.
36. Have HAMJT, Gordijin B. *Doing global health ethics*. 2nd ed. London: Routledge; 2020. <https://doi.org/10.1007/978-94-007-2512-6>
37. World Health Organization (WHO). International Conference on Primary Health Care, Alma-Ata, USSR, 6-12 September 1978: Declaration of Alma-Ata [Internet]. Geneva: WHO; 1978 [acesso em 5 mai 2026]. Disponível em: <https://iris.who.int/server/api/core/bitstreams/bed1234b-053b-4b11-8411-674c819e8ef8/content>

