GOIANA JOURNAL OF MEDICINE

ISSN 0034-9585
SCIENTIFIC ARTICLE - ORIGINAL

THE INFLUENCE OF DIGITAL HEALTH LITERACY ON TREATMENT ADHERENCE AMONG PATIENTS WITH DIABETES MELLITUS: EVIDENCE FROM A HEALTH OUTREACH EVENT IN GOIÂNIA

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ABSTRACT

Diabetes mellitus (DM) is one of the chronic diseases with the greatest impact on global public health, requiring continuous follow-up and active patient participation in self-care. In this context, digital health literacy has become an essential skill for seeking, understanding, and using health information available in digital environments, potentially influencing treatment adherence and health-related decision-making. This study aimed to evaluate the digital health literacy profile of individuals with diabetes mellitus who participated in the "Goiás United Against Diabetes" health campaign, held in Goiânia, Goiás, Brazil, in 2025. This was an observational, cross-sectional, and descriptive study involving 65 individuals with self-reported diabetes mellitus. Data were collected through face-to-face interviews and analyzed using descriptive statistics. It was observed that 78.5% of participants used smartphones to access the internet, and 55.4% searched for health-related information online. Among those who sought information on the internet, WhatsApp was the most frequently used digital tool (83.3%), while Google was the main source of health information (66.7%). Furthermore, 58.3% reported having received health-related fake news, and 47.2% stated that information provided by healthcare professionals or recognized sources was their primary criterion for assessing reliability. In conclusion, although access to digital technologies is widespread among participants, challenges remain regarding the critical evaluation of online health information, highlighting the need for educational initiatives aimed at strengthening digital health literacy and promoting self-care among individuals with diabetes mellitus.

Keywords: Diabetes mellitus, Digital health literacy, Digital technologies, Treatment Adherence.

INTRODUCTION

Diabetes mellitus (DM) represents one of the greatest contemporary challenges for healthcare systems worldwide. Characterized by metabolic abnormalities resulting from defects in insulin secretion or action, it is associated with significant microvascular and macrovascular complications, including retinopathy, nephropathy, neuropathy, and stroke. In addition to its clinical impact, the

disease imposes a substantial economic and social burden, requiring continuous follow-up, frequent monitoring, and active patient participation in treatment.[1,2]

According to the International Diabetes Federation (IDF), approximately 537 million adults were living with diabetes in 2021, with projections indicating continued growth in the coming decades. In Brazil, diabetes is among the most prevalent noncommunicable chronic diseases, accounting for significant morbidity and mortality and high healthcare costs. In this context, strategies focused on health education play a fundamental role in promoting self-care, metabolic control, and the prevention of disease-related complications.[1,2]

Over recent decades, the rapid expansion of digital technologies has transformed the way health information is produced, shared, and consumed by the population. The internet has become one of the main sources of information for individuals seeking to understand symptoms, treatments, healthy lifestyle habits, and disease prevention strategies. Tools such as search engines, social media, instant messaging applications, and video platforms have significantly expanded access to information, enabling users to obtain health-related content quickly and easily.[3]

However, access to digital technologies alone does not guarantee the ability to adequately understand the information available. In this context, the concept of digital health literacy, also known as eHealth literacy, is particularly relevant. It is defined as the ability to seek, find, understand, critically evaluate, and use information obtained through electronic sources to address health-related problems.[4] This concept encompasses not only technological competencies but also the cognitive skills required to interpret content, recognize reliable sources, and make informed decisions about one's own care.[4,5]

The literature demonstrates that adequate levels of health literacy are associated with better clinical outcomes, greater treatment adherence, and improved ability to self-manage chronic diseases. Similarly, digital health literacy has been identified as a relevant factor in strengthening self-care and promoting more efficient use of available technological resources.[6,7]

The relevance of digital health literacy has become even greater with the increasing spread of misinformation in digital environments. The phenomenon of fake news has been widely discussed in the scientific literature due to its potential to influence health behaviors, compromise treatment adherence, and encourage practices lacking scientific support.[8] The ease with which content can be shared through social media and instant messaging applications facilitates the rapid dissemination of inaccurate information, requiring users to develop increasingly advanced skills to critically assess the quality of the information they consume.[9]

For individuals with diabetes mellitus specifically, digital health literacy is even more important. Effective disease management depends on multiple self-care behaviors, including blood glucose monitoring, medication adherence, healthy eating, regular physical activity, and periodic follow-up with healthcare professionals.[1,2] In this context, digital resources can serve as important tools to support treatment, provided they are used safely, critically, and in accordance with scientific evidence.

Furthermore, studies demonstrate that older individuals frequently experience greater difficulties navigating digital environments, identifying reliable sources, and interpreting health-related content, which may represent an additional challenge for populations affected by chronic diseases.[10] Considering that diabetes mellitus has a high prevalence among older age groups, understanding how these individuals access, use, and evaluate health information is essential for planning more effective educational strategies.

In light of this context, it is necessary to understand how individuals with diabetes mellitus use available digital resources and how these tools influence their health-related behaviors. Understanding the digital health literacy profile of this population may inform the development of more accessible

educational interventions aligned with users' needs, contributing to strengthening self-care, treatment adherence, and the prevention of disease-related complications.[11]

OBJECTIVES

Therefore, this study aims to evaluate the digital health literacy profile of individuals with diabetes mellitus who participated in the "Goiás United Against Diabetes" health outreach event, held in Goiânia, Goiás, Brazil, in 2025. Specifically, it seeks to identify the main means of internet access used by participants, assess the frequency of online searches for health-related information, investigate exposure to health-related fake news, and analyze the criteria adopted by participants to assess the reliability of information found on the internet.

METHODS

This was an observational, cross-sectional, and descriptive study conducted during the "Goiás United Against Diabetes" health outreach event, organized by the Goiás State Health Department in November 2025. The initiative primarily focused on the early detection of diabetic retinopathy and follow-up care for individuals with diabetes mellitus.

The study population consisted of individuals with self-reported diabetes mellitus who participated in the campaign and agreed to complete the proposed questionnaire. Participants aged 18 years or older were included, regardless of the type of diabetes, provided they voluntarily agreed to participate in the study.

Data were collected using a questionnaire administered through face-to-face interviews conducted by trained university students. Responses were recorded electronically using the Google Forms platform. The data collection instrument included questions related to participants' sociodemographic characteristics, internet access, smartphone use, online searches for health-related information, platforms used, exposure to false information, and criteria adopted to assess the reliability of the content found.

The variables analyzed included sex, age, type of diabetes mellitus, smartphone use for internet access, habits of searching for health-related information online, digital platforms used, perceived impact of the information obtained, exposure to fake news, and methods employed to verify the reliability of information.

Data were subjected to descriptive analysis and presented using absolute frequencies, relative frequencies, means, and ranges. The results were organized into tables and graphs to facilitate the interpretation of the findings.

The study is part of a project previously approved by the Research Ethics Committee of the Hospital das Clínicas da Universidade Federal de Goiás, under Certificate of Presentation for Ethical Consideration (CAAE) No. 40722720.6.0000.5078, in accordance with the ethical principles established by Resolution No. 466/2012 of Conselho Nacional de Saúde (National Health Council).

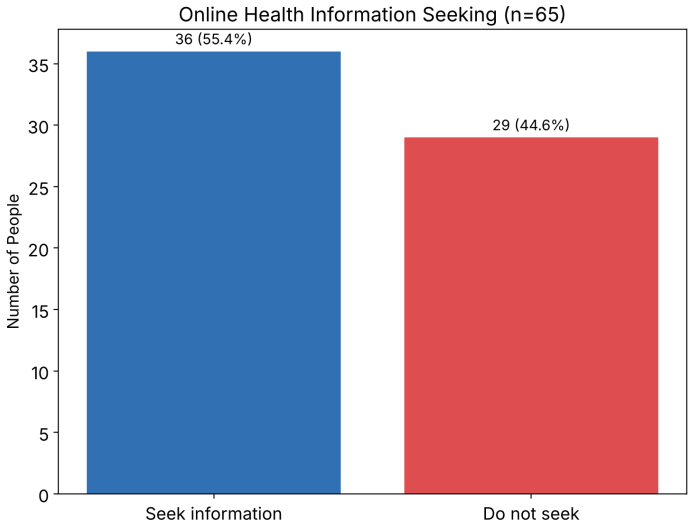
RESULTS AND DISCUSSIONS

A total of 65 individuals with diabetes mellitus were interviewed, with a balanced sex distribution of 33 men (50.8%) and 32 women (49.2%). The mean age was 60 years, ranging from 21 to 89 years. Regarding diagnosis, type 2 diabetes mellitus predominated, accounting for 75.4% of the sample (n=49). Only two participants (3.1%) reported having type 1 diabetes mellitus, while 21.5% (n=14) were unaware of the classification of their own disease.

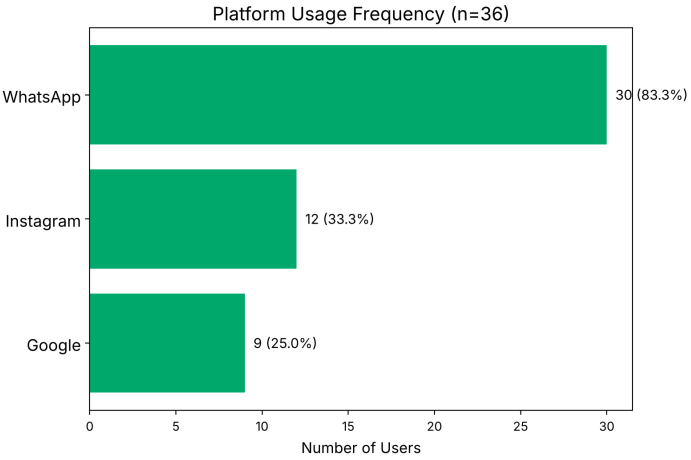
The analysis of access to digital tools revealed widespread use of mobile devices. Among the respondents, 51 (78.5%) used smartphones to access the internet, whereas 14 (21.5%) did not use this resource. These

findings suggest a high level of integration of digital technologies into the daily lives of the study population.

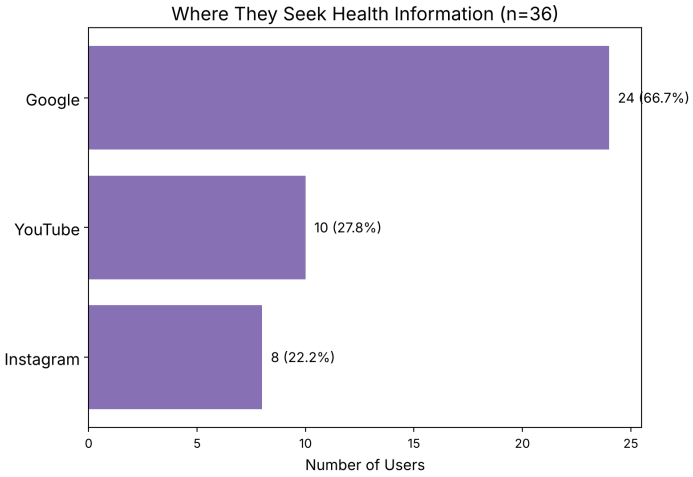
More than half of the participants (55.4%; n=36) reported using the internet to search for health-related information. The remaining participants (44.6%; n=29) stated that they did not use digital media for this purpose.



Among those who searched for health-related information online, WhatsApp was the most frequently mentioned digital tool, used by 83.3% of respondents (n=30). Instagram ranked second, cited by 33.3% (n=12), while Google was mentioned by 25% (n=9).



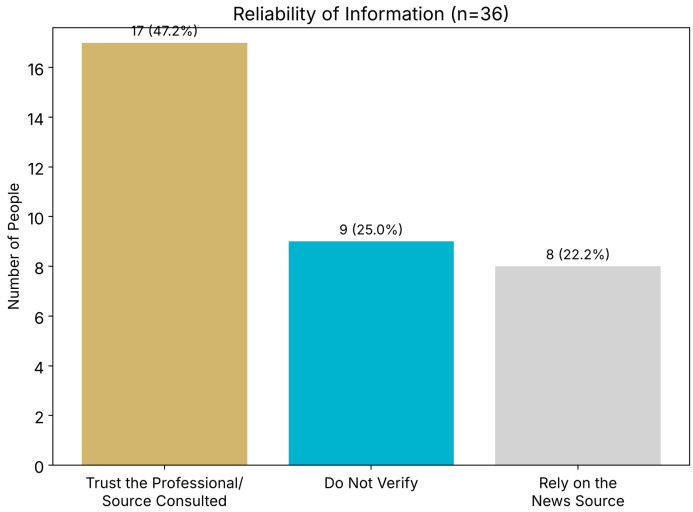
When specifically asked about the sources consulted to obtain health-related information, Google was found to be the predominant source, used by 66.7% of participants (n=24). YouTube was reported by 27.8% (n=10), followed by Instagram, mentioned by 22.2% (n=8).



The majority of respondents (66.7%; n=24) believed that the information found on the internet contributed to their own healthcare. Furthermore, 16.7% (n=6) reported that the content they accessed influenced their decision to seek medical care or professional guidance.

More than half of the participants who searched for health-related information online (58.3%; n=21) reported having received fake news related to health. Nevertheless, three-quarters of respondents stated that they did not share content based solely on news headlines, indicating a relatively cautious approach to the information they received.

Regarding the assessment of information reliability, nearly half of the participants (47.2%; n=17) reported primarily trusting content produced by healthcare professionals or obtained from recognized sources. Another 22.2% (n=8) used the source of the news as their main verification criterion. On the other hand, 25% (n=9) stated that they did not adopt any strategy to assess the credibility of the information they accessed.



The results demonstrate that access to digital technologies is widespread among participants in the health outreach event, as approximately four out of five respondents reported using smartphones to access the internet. This finding is consistent with the trend observed in Brazil over recent decades, characterized by the expansion of internet access through mobile devices, including among older populations and individuals with chronic diseases.[3]

Despite the widespread availability of access to digital technologies, only 55.4% of participants reported searching for health-related information on the internet. This result suggests that the availability of technological resources does not necessarily translate into their effective use for educational or health promotion purposes. This finding reinforces the distinction between digital access and digital health literacy, since owning a smartphone or having an internet connection does not guarantee the ability to locate, interpret, and appropriately use information related to healthcare.[4]

Norman and Skinner, in proposing the concept of eHealth Literacy, emphasized that the effective use of digital health information depends on the integration of multiple competencies, including reading skills, health literacy, scientific literacy, media literacy, and technological proficiency.[4] Thus, individuals may have extensive access to digital technologies while still experiencing significant limitations in using and critically interpreting the available content.[4,5]

The mean age of the sample, approximately 60 years, warrants consideration. Previous studies have demonstrated that older individuals frequently experience greater difficulty identifying reliable sources, interpreting digital content, and navigating electronic platforms.[10]

Another relevant aspect identified in this study was the predominance of WhatsApp as the most frequently used digital tool among participants who searched for health-related information. This result is consistent with national studies demonstrating the central role of instant messaging applications in everyday communication among Brazilians.[3] WhatsApp has become an important channel for sharing health-related content due to its accessibility, rapid dissemination of information, and widespread use across different age groups. However, the predominant use of messaging applications may pose a challenge to the quality of information consumed by patients, facilitating the circulation of fake news or information lacking scientific support.[8]

Among the sources used to obtain health-related information, Google was the platform most frequently mentioned by participants. Ease of access and the speed at which answers can be obtained make these tools attractive to users seeking information about symptoms, treatments, or healthy lifestyle habits. However, the quality of the information found depends on the user's ability to critically evaluate the sources consulted.

One of the most relevant findings of the present study concerns the high frequency of exposure to misinformation. More than half of the participants reported having received health-related fake news. This finding reinforces the growing concern within the scientific community regarding the phenomenon of the infodemic, characterized by the excessive circulation of both accurate and inaccurate information in digital environments.[8]

Health misinformation can compromise preventive behaviors, reduce treatment adherence, and increase the population's vulnerability to potentially harmful practices. For individuals with diabetes mellitus, exposure to inaccurate information may result in inappropriate changes to treatment, medication discontinuation, or the adoption of strategies without proven effectiveness.

Although exposure to fake news was frequent, three-quarters of participants stated that they did not share content based solely on news headlines. This result may indicate cautious behavior regarding the information received, potentially serving as a protective factor against the spread

of misinformation. Nevertheless, refraining from sharing content does not guarantee that such information will not influence health-related beliefs or decisions.

Another important finding concerns the criteria used to assess the reliability of information. Approximately half of the participants reported trusting content provided by healthcare professionals or previously recognized sources. This is a positive finding, as it demonstrates the value placed on technical and scientific authority as a criterion for validating information. On the other hand, one-quarter of participants stated that they did not perform any type of verification of the reliability of the content they accessed. This finding highlights a significant vulnerability related to digital health literacy and suggests the need for educational interventions aimed at developing critical skills for evaluating online information.[4]

Among the study's limitations, the use of a convenience sample consisting of participants from a single health outreach event should be highlighted, as this may limit the generalizability of the results to other populations.

CONCLUSION

The present study made it possible to characterize relevant aspects of digital health literacy among individuals with diabetes mellitus who participated in the "Goiás United Against Diabetes" health outreach event in 2025. The results demonstrated that most participants had access to digital devices, particularly smartphones, highlighting the increasing integration of information technologies into the daily lives of this population.

Despite widespread internet access, it was observed that not all participants searched for health-related information, suggesting that access to technology alone does not guarantee the development of digital health literacy skills. Furthermore, platforms such as WhatsApp, Google, and YouTube were found to play a central role in obtaining health-related information, making them important channels for future educational strategies. The findings also revealed significant exposure to health misinformation, as more than half of the participants reported having received fake news related to health.

In this context, developing initiatives aimed at strengthening digital health literacy is essential, particularly among individuals with chronic diseases who require continuous follow-up and frequent self-care decisions. Educational interventions developed by educational institutions, healthcare services, and scientific organizations may help improve users' ability to identify reliable information and appropriately use available digital resources.

Finally, the results reinforce the importance of incorporating digital technologies into health education strategies targeting individuals with diabetes mellitus. Understanding the digital profile of this population may help develop more accessible, effective interventions aligned with users' actual needs, promoting self-care, treatment adherence, and the prevention of disease-related complications.

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Received: 24/08/26. Accepted: 27/08/26. Published in: 11/11/2026.