

Analysis of the Acceptability of Telemedicine in patients with Diabetes Mellitus

Análisis de la aceptabilidad de la telemedicina en pacientes con Diabetes Mellitus

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ABSTRACT

Background: This study aimed to analyze the acceptability of telemedicine among patients diagnosed with diabetes mellitus who receive medical care in the Autonomous City of Buenos Aires. Methods: An observational, descriptive, and cross-sectional study was conducted through the administration of a structured survey to a sample of 300 patients aged 18 to 60 years with a confirmed diagnosis of diabetes mellitus. Data collection was carried out during June 2025 among patients undergoing medical follow-up in Buenos Aires. A non-probabilistic convenience sampling method was used, and the data were analyzed descriptively. Results: Sixty-eight percent of respondents had used telemedicine services at least once, with the mobile phone being the most commonly used device. The main perceived barriers included a preference for in-person consultations, connectivity issues, and difficulties using technology. Despite these barriers, 78% expressed their intention to continue using this modality in the future. Additionally, factors such as age and educational level were found to influence the acceptance of telemedicine. Conclusion: Telemedicine represents a useful tool for the follow-up of patients with diabetes mellitus. However, its effectiveness will depend on the strengthening of technological resources and the implementation of strategies that promote equitable access and adequate patient training.

Keywords: Telemedicine; Diabetes Mellitus; Patient Acceptance of Health Care; Surveys and Questionnaires; Health Services Accessibility.

RESUMEN

Introducción: El presente trabajo tuvo como objetivo analizar la aceptabilidad de la telemedicina en pacientes con diagnóstico de diabetes mellitus que reciben atención médica en la Ciudad Autónoma de Buenos Aires (CABA). Métodos: Se realizó un estudio observacional, descriptivo y de corte transversal, mediante la aplicación de una encuesta estructurada a una muestra de 300 pacientes entre 18 a 60 años con diagnóstico confirmado de diabetes mellitus. La recolección de datos se llevó a cabo durante el mes de junio de 2025 en pacientes con su seguimiento médico en CABA. Se aplicó un muestreo no probabilístico por conveniencia y se analizaron los datos de forma descriptiva. Resultados: El 68% de los encuestados había utilizado servicios de telemedicina al menos una vez, siendo el celular el dispositivo más usado. Las principales barreras percibidas incluyeron la preferencia por la consulta presencial, problemas de conectividad y dificultades en el uso de la tecnología. A pesar de estas barreras, el 78% manifestó su intención de seguir utilizando esta modalidad en el futuro. Además, se observó que factores como la edad y el nivel educativo pueden influir en la aceptación de la telemedicina. Conclusión: La telemedicina representa una herramienta útil para el seguimiento de pacientes con diabetes mellitus. Sin embargo, su efectividad va a depender del fortalecimiento de la tecnología y de la implementación de estrategias que promuevan el acceso equitativo y la capacitación adecuada de los pacientes.

Palabras clave: Telemedicine; Diabetes Mellitus; Patient Acceptance of Health Care; Surveys and Questionnaires; Health Services Accessibility.

INTRODUCTION

Diabetes mellitus is a chronic metabolic disease characterized by elevated blood glucose levels caused by alterations in insulin secretion or activity. The most common form is type 2 diabetes, particularly in adults. Its treatment requires continuous medical follow-up, medication, lifestyle modifications, and patient education to prevent complications [1].

In recent years, and especially since the COVID-19 pandemic, telemedicine has been used more frequently as an alternative for providing remote medical care. Video calls, messages, or other digital platforms facilitate access to healthcare, particularly for people with mobility difficulties or who live far from medical centers [2].

Although telemedicine offers many advantages, it cannot and should not completely replace in-person medical care. Rather, it is a tool that complements and strengthens the follow-up of patients with chronic diseases such as diabetes [3].

For its implementation to be truly effective, understanding the degree of acceptance among patients themselves, as well as their familiarity with the use of digital technologies applied to healthcare, is necessary. Factors such as age, educational level, internet access, and experience with technological tools can significantly influence willingness to use these services [4].

Some recent studies in resource-limited countries have shown that telemedicine facilitates access to and follow-up for patients with chronic diseases, improving treatment adherence and reducing associated costs [6].

In Argentina, the prevalence of diabetes poses a significant challenge to the healthcare system. According to the 4th National Survey of Risk Factors (2019), approximately 12.7% of the adult population has diabetes, and a significant proportion are unaware of their condition, hindering control and the prevention of complications [3].

In this context, telemedicine has emerged as an innovative tool to facilitate access to medical care, especially for patients with chronic diseases such as diabetes. The ability to conduct remote consultations, follow-up, and education can improve treatment adherence and reduce complications [1,4].

In this context, understanding what diabetic patients think about the use of telemedicine is essential. Knowing their level of acceptance helps identify barriers and opportunities for improvement and design strategies that better adapt to their needs.

The primary objective of this study is to evaluate the acceptability of telemedicine among diabetic patients receiving care in the Autonomous City of Buenos Aires.

METHODS

STUDY DESIGN

An observational, descriptive, cross-sectional study was conducted to analyze the acceptability of telemedicine among patients aged 18 to 60 years with a confirmed diagnosis of diabetes mellitus.

POPULATION AND STUDY SITE

The population consists of individuals aged 18 to 60 years with a confirmed diagnosis of diabetes mellitus who receive medical follow-up at various public and private health centers in the Autonomous City of Buenos Aires.

SAMPLE

Nonprobabilistic convenience sampling was used. Patients who voluntarily agreed to participate during the data collection period, which was conducted between the second and third weeks of June 2025, were included.

INCLUSION CRITERIA

Individuals aged 18 years or older.

Confirmed medical diagnosis of type 1 or type 2 diabetes mellitus.

She had at least one medical consultation (in person or virtual) in the past 12 months.

Consent and voluntary willingness to participate in the study.

Access to devices with an internet connection and basic skills to complete an online survey.

Patients currently under medical care at institutions located in the Autonomous City of Buenos Aires (CABA), regardless of their place of residence.

EXCLUSION CRITERIA

Patients with cognitive or psychiatric disorders or sensory difficulties that prevent them from understanding and answering the questionnaire.

Individuals with technological limitations that prevent them from properly completing the online form (e.g., need for assistance, connectivity or reading issues).

Online surveys that are incomplete or contain inconsistent or contradictory data (e.g., age outside the established range or mutually incompatible responses).

Participants who, although they reported a diagnosis of diabetes, were not currently receiving medical follow-up at CABA.

DATA COLLECTION INSTRUMENTS

A structured survey (Supplementary Material 1), developed specifically for this research, was used. It contained closed-ended and multiple-choice questions aligned with the study's specific objectives. The survey addressed aspects related to the previous use of telemedicine, the devices used, and the barriers and facilitators perceived by patients.

DATA ANALYSIS

The data obtained were analyzed descriptively, using absolute frequencies and percentages to interpret the responses and establish general trends within the sample.

ETHICAL CONSIDERATIONS

The principles of confidentiality and anonymity were respected. All the participants were informed about the study's objectives and provided verbal consent to participate. Participation was entirely voluntary.

RESULTS

The total sample consisted of 300 patients with a confirmed diagnosis of diabetes mellitus who met the established inclusion and exclusion criteria.

DEMOGRAPHIC CHARACTERISTICS

With respect to distribution by age group, 30% were in the 18–30 age group (n=90), 40% were in the 31–45 age group (n=120), and the remaining 30% were in the 46–60 age group (n=90).

PREVIOUS USE OF TELEMEDICINE

A total of 68% of patients (n=204) reported having used telemedicine services at least once, while 32% (n=96) had not yet done so.

MOST COMMONLY-USED DEVICE

Among those who used telemedicine, 60% accessed it via cell phones (n=180), 30% used computers (n=90), and the remaining 10% used tablets (n=30) (Figure 1).

PERCEIVED BARRIERS

The main barriers reported for the use of telemedicine were a preference for in-person consultations (30%), connectivity issues (25%), and technological difficulties (20%). To a lesser extent, a lack of privacy (10%) and other reasons (15%) were mentioned (Figure 2).

INTENTION TO USE IN THE FUTURE

When asked about their intention to use telemedicine again in the future, 78% of the patients (n=234) responded affirmatively, while 22% (n=66) stated that they would not (Figure 3).

DISCUSSION

The results obtained in this study shown considerable acceptance of telemedicine use among patients with diabetes mellitus who attend health centers in the Autonomous City of Buenos Aires. Most respondents (68%) reported having used telemedicine services at some point, indicating that this modality is already present in a significant portion of the population studied. These findings are consistent with those of previous reports showing a sustained increase in the use of telemedicine, especially since the COVID-19 pandemic, in the management of chronic diseases such as diabetes [1,2].

A relevant finding is that 78% of patients expressed their intention to continue using telemedicine in the future, reflecting a high willingness to adopt this modality as part of routine medical follow-up. The intention to use telemedicine in the future is considered a key indicator of acceptability, as it implies prior satisfaction, trust in the tool, and a perception of its usefulness [2].

With respect to the devices used, cell phones were the most common, which aligned with the growing penetration of smartphones and their accessibility to the general population, facilitating remote medical consultations [3,4].

Despite the generally positive acceptance, barriers were identified that limit the full adoption of telemedicine. The preference for in-person consultations, mentioned by 30% of the respondents, suggests that although telemedicine offers advantages, resistance still exists based on the desire for direct interaction with healthcare professionals and the perception of higher quality in in-person care. In addition, technical difficulties such as connectivity issues and challenges with digital platforms affect the user experience and can pose obstacles for some patients, especially those with less technological familiarity or who are older [4,5].

These barriers must be considered in the design and implementation of health policies aimed at expanding and optimizing the use of telemedicine, with a particular focus on digital training and improving technological infrastructure to prevent inequalities in access [5].

Among the limitations of this study, it is worth noting that the sample was restricted to patients aged 18 to 60 and thus does not include older adults, a group that might exhibit lower acceptance or greater difficulties with the use of technology. Furthermore, the cross-sectional design of the study does not allow for the evaluation of changes in perceptions over time or the establishment of causal relationships. Finally, the survey was conducted online, which may have biased the sample toward patients with greater internet access and greater technological proficiency. These findings highlight that while telemedicine is well received by most diabetic patients, significant challenges must be addressed to ensure its full adoption. Strengthening digital education and optimizing technological tools will be key to maximizing the potential of this modality in diabetes management.

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SUPPLEMENTARY MATERIAL 1 - SURVEY SURVEY

1. Sociodemographic Data

1.1. What is your age?

18–30 years

31–45 years

46–60 years

1.2. What is your gender?

Male.

Female.

Other

1.3. What is your highest level of education?

Incomplete elementary school.

Completed primary school.

Completed secondary school.

Incomplete tertiary/university education.

Completed tertiary/university education.

1.4. What is your health insurance coverage?

Public.

Private.

Both.

No coverage.

2. Diagnosis and Follow-up

2.1. What type of diabetes were you diagnosed with?

Type 1

Type 2

2.2. How long ago were you diagnosed?

Less than 1 year.

1–5 years.

More than 5 years.

2.3. How often do you see your doctor for diabetes management?

Less than once a year.

1–2 times a year.

More than 2 times a year.

2.4. Where do you primarily have your medical checkups?

Autonomous City of Buenos Aires (CABA).

Another province.

3. Use of telemedicine

3.1. Have you used telemedicine services to manage your diabetes?

Yes.

No.

3.2. If you answered “Yes” to the previous question, how often do you use telemedicine?

Only once.

Occasionally (less than 3 times a year).

Regularly (3 or more times a year).

3.3. What device do you usually use for telemedicine consultations? (You may select more than one)

Cell phone.

Computer or laptop.

Tablet.

3.4. What is your preferred method for medical consultations?

In person.

Virtual (telemedicine).

Hybrid (in person and virtual).

4. Perceptions of telemedicine

4.1. How easy do you find it to use telemedicine for your appointments?

Very easy.

Easy.

Neither easy nor difficult.

Difficult.

Very difficult.

4.2. Do you think that telemedicine is useful for managing your diabetes?

I completely agree.

Agree.

Neither agree nor disagree.

Disagree.

Strongly disagree.

4.3. Which of the following barriers have you experienced when you use telemedicine? (Check all that apply)

Lack of access to technological devices.

Internet connection problems.

Lack of privacy during the consultation.

Difficulty using digital platforms.

I prefer in-person consultations.

Other: _____

4.4. What do you consider to be the main advantages of telemedicine? (Check all that apply)

Convenience.

Time savings.

Less exposure to infections.

Easier to obtain a doctor's appointment.

Other: _____

5. Intention to use in the future

5.1. Would you like to continue using telemedicine for your medical consultations in the future?

Yes.

No.

5.2. What would increase your willingness to use telemedicine? (Check all that apply)

Better internet connections.

More information and training on how to use it.

Better quality of virtual care.

Access to technological devices.

Other: _____