

Evaluation Indicators of Home Glycemic Monitoring Programs for Type 2 Diabetes: Integrative Literature Review

Indicadores de Avaliação de Programas Domiciliares de Monitoramento Glicêmico para Diabetes Tipo 2: Revisão Integrativa da Literatura

Indicadores de Evaluación de Programas Domiciliarios de Monitoreo de la Glucemia para la Diabetes Tipo 2: Revisión Integrativa de la Literatura

RESUMO

Objetivo: Analisar a produção científica sobre os indicadores de avaliação de programas de monitoramento glicêmico domiciliar para pessoas com diabetes mellitus tipo 2. **Métodos:** Revisão integrativa de literatura, norteada pela pergunta de pesquisa: Quais as evidências científicas publicadas sobre os indicadores de monitoramento glicêmico domiciliar? Após a definição do problema pela estratégia PICO, foram realizadas buscas nas bases Literatura Latino-Americana e do Caribe em Ciências da Saúde, MEDLINE, SCOPUS, CINAHL e Web of Science. Os critérios de elegibilidade foram: estudos publicados que respondessem à pergunta de pesquisa, sem delimitação de idioma e ano de publicação. **Resultados:** Selecionaram-se oito artigos, com predominância de ensaios clínicos, referentes a programas de automonitoramento glicêmico domiciliar, seguidos por estudo de avaliação de atividade educacional e de educação com componente de monitoramento glicêmico. O principal indicador de qualidade para avaliação dos programas foi a taxa de hemoglobina glicada. Outro indicador de avaliação foi a opinião dos pacientes e profissionais envolvidos na intervenção. **Conclusão:** Os estudos demonstraram que os programas de automonitoramento glicêmico, associados às atividades educativas em saúde, são eficazes no tratamento e controle do diabetes mellitus.

DESCRIPTORES: Diabetes Mellitus; Controle Glicêmico; Avaliação em Saúde; Programa; Indicadores de Gestão.

ABSTRACT

Objective: To analyze the scientific production on the evaluation indicators of home glycemic monitoring programs for people with type 2 diabetes mellitus. **Methods:** Integrative literature review, guided by the research question: What is the published scientific evidence on home glycemic monitoring indicators? After defining the problem using the PICO strategy, searches were carried out in the Latin American and Caribbean Literature in Health Sciences, MEDLINE, SCOPUS, CINAHL and Web of Science databases. The eligibility criteria were: published studies that answered the research question, without delimitation of language and year of publication. **Results:** Eight articles were selected, with a predominance of clinical trials, refer to home glycemic self-monitoring programs, followed by a study evaluating educational and educational activities with a glycemic monitoring component. The main quality indicator for evaluating the programs was the glycated hemoglobin rate. Another evaluation indicator was the opinion of patients and professionals involved in the intervention. **Conclusion:** Studies have shown that glycemic self-monitoring programs, associated with health education activities, are effective in the treatment and control of diabetes mellitus.

DESCRIPTORS: Diabetes Mellitus; Glycemic Control; Health Evaluation; Program; Management Indicators.

RESUMEN

Objetivo: Analizar la producción científica sobre los indicadores de evaluación de los programas de vigilancia glucémica domiciliar para personas con diabetes mellitus tipo 2. **Métodos:** Revisión integrativa de la literatura, guiada por la pregunta de investigación: ¿Cuál es la evidencia científica publicada sobre los indicadores de vigilancia glucémica domiciliar? Luego de definir el problema mediante la estrategia PICO, se realizaron búsquedas en las bases de datos "Literatura Latinoamericana y del Caribe en Ciencias de la Salud, MEDLINE, SCOPUS, CINAHL y Web of Science". Los criterios de elegibilidad fueron: estudios publicados que respondieran a la pregunta de investigación, sin delimitación de idioma y año de publicación. **Resultados:** Se seleccionaron ocho artículos, con predominio de ensayos clínicos, referentes a programas de autocontrol glucémico domiciliario, seguidos de un estudio que evalúa actividades educativas y educativas con componente de control glucémico. El principal indicador de calidad para evaluar los programas fue la tasa de hemoglobina glicosilada. Otro indicador de evaluación fue la opinión de los

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pacientes y profesionales implicados en la intervención. **Conclusión:** Los estudios han demostrado que los programas de autocontrol glucémico, asociados a actividades de educación para la salud, son efectivos en el tratamiento y control de la diabetes mellitus.

DESCRIPTORES: Diabetes Mellitus; Control Glucémico; Evaluación em Salud; Programa; Indicadores de Gestão.

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*MORTALIDADE MASCULINA
NA REGIÃO DO TRAIRI POTI-
GUAR: PRODUZINDO VISIBIL-
DADES À SAÚDE DOS HOMENS*



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INTRODUCTION

Diabetes Mellitus (DM) comprises a group of metabolic disorders characterized by hyperglycemia, caused by a defect in the action and/or secretion of insulin, which leads to alterations in metabolism. Among the main types, classified according to cause, are type 1 DM, type 2 DM and gestational DM. These are caused by the destruction of insulin-producing cells, insulin resistance and a metabolic condition specific to the gestational period, respectively.⁽¹⁾

It is estimated that approximately 537 million adults aged between 20

and 79 live with DM worldwide. This figure is projected to rise to 783 million by 2045. According to the World Health Organization (WHO), the majority of these cases are type 2 diabetes (DM2), which continues to be a significant public health problem. The prevalence of cases in Brazil is the highest in Latin America, at approximately 10.1% of the population, with 3,522,006 people having this condition, mainly among adults and the elderly, thus ranking 6th globally.^(2,3)

One of the main components in the treatment of DM involves self-care practices that involve the active participation of the patient. Behav-

ioral changes are essential for improving health conditions and increasing the patient's responsibility for the results of care.⁽⁴⁾ Thus, methods that assess the frequency and magnitude of hyperglycemia are important in monitoring DM, with a view to adjusting treatment at home.⁽¹⁾ The free dispensing of monitors and reagent strips for home blood glucose monitoring is a controversial issue due to the high costs involved and the questioning of the real advantages provided by self-monitoring, especially in patients with DM2.⁽¹⁾

Even though most patients recognize the importance of self-monitoring of blood glucose for their treatment, managers still find it difficult to implement this service due to the high financial investment, as well as the lack of effective protocols established. To this end, health indicators are essential for assessing the effectiveness, cost-effectiveness and im-



pact of these measures on patients' quality of life and the performance of health services. ⁽⁴⁾

These indicators are an important parameter for health evaluation. They were created to simplify the quantification and evaluation of information generated for this purpose. Thus, they are measures that provide relevant information on certain attributes and dimensions of health status, as well as on the performance of health services. In management, these indicators are also known as control items and are widely used in quality programs. ^(1,5)

Considering the reflections described above, this study aimed to analyze the scientific production on the evaluation indicators of home glycemic monitoring programs for patients with type 2 diabetes mellitus.

METHODS

Type of study

This is an integrative literature review. This method is developed from the analysis of relevant research, which allows the synthesis of knowledge for a greater understanding of the subject. It also helps to identify existing evidence regarding health practice, in the context of gaps in well-founded scientific production. ⁽⁶⁾

For its preparation, the six phases necessary to comply with the methodological rigor of preparing an integrative review were adopted, comprising: phase 1 - Elaboration of the research question; phase 2 - search or sampling in the literature; phase 3 - data collection; phase 4 - critical analysis of the studies included; phase 5 - discussion of the results and phase 6 - presentation of the integrative review. ⁽⁶⁾

Inclusion and exclusion criteria

To define the research problem, the following acronym was used: population/problem, interest, context (PICO): patients with DM2 (P - population), program evaluation in-

dicators (I - phenomenon of interest), home glycemic monitoring (C - context), published scientific production (O - Outcome).

Thus, the following guiding question was established: What scientific production has been published on evaluation indicators for home glycemic monitoring programs for people with type 2 diabetes mellitus?

The inclusion criterion was: primary articles that addressed evalua-

tion analyses of home glycemic monitoring programs for patients with type 2 diabetes mellitus. Literature reviews, secondary studies (e.g. systematic reviews), response letters and editorials, as well as studies with populations other than humans or non-2DM were excluded from the sample. There was no limitation on languages or year of publication, due to the scarcity of scientific production on the subject.

Chart 1 - Search strategies by database

Database	Strategy
LILACS	("Diabetes Mellitus Tipo 2" OR "DM2" OR "T2DM" OR "Diabetes Tipo 2") AND ("Monitoramento Glicêmico Domiciliar" OR "Automonitorização da Glicose" OR "Autocontrole da Glicemia" OR "Autocontrole Glicêmico") AND ("Indicadores de Avaliação" OR "Indicadores de Desempenho" OR "Avaliação de Programas de Saúde" OR "Indicadores de Saúde" OR "Métricas de Avaliação" OR "Avaliação de Efetividade" OR "Custo-Benefício")
Medline	(((((Blood Glucose Self-Monitoring) OR (Blood Glucose Self Monitoring) OR (Glucose, Blood, Self-Monitoring)) OR (Self-Monitoring, Blood Glucose)) OR (Blood Glucose Self-Monitorings)) OR (Glucose Self-Monitoring, Blood)) OR (Glucose Self-Monitorings, Blood)) OR (Self Monitoring, Blood Glucose)) OR (Self-Monitorings, Blood Glucose)) OR (Monitoring, Home Blood Glucose)) OR (Blood Sugar Self-Monitoring)) OR (Blood Sugar Self Monitoring)) OR (Blood Sugar Self-Monitorings)) OR (Self-Monitoring, Blood Sugar)) OR (Self-Monitorings, Blood Sugar)) OR (Sugar Self-Monitoring, Blood)) OR (Sugar Self-Monitorings, Blood)) OR (Home Blood Glucose Monitoring)) OR (Glucose, Blood, Self Monitoring))) AND (((Program Evaluation) OR (Evaluation, Program)) OR (Evaluations, Program)) OR (Program Evaluations)) OR (Program Effectiveness)) OR (Effectiveness, Program))
Scopus	(((TITLE-ABS-KEY ("Blood Glucose Self-Monitoring") OR TITLE-ABS-KEY ("Blood Glucose Self Monitoring") OR TITLE-ABS-KEY ("Glucose, Blood, Self-Monitoring") OR TITLE-ABS-KEY ("Self-Monitoring, Blood Glucose") OR TITLE-ABS-KEY ("Blood Glucose Self-Monitorings") OR TITLE-ABS-KEY ("Glucose Self-Monitoring, Blood") OR TITLE-ABS-KEY ("Glucose Self-Monitorings, Blood") OR TITLE-ABS-KEY ("Self Monitoring, Blood Glucose") OR TITLE-ABS-KEY ("Self-Monitorings, Blood Glucose") OR TITLE-ABS-KEY ("Monitoring, Home Blood Glucose") OR TITLE-ABS-KEY ("Blood Sugar Self-Monitoring") OR TITLE-ABS-KEY ("Blood Sugar Self-Monitorings") OR TITLE-ABS-KEY ("Self-Monitoring, Blood Sugar") OR TITLE-ABS-KEY ("Self-Monitorings, Blood Sugar") OR TITLE-ABS-KEY ("Sugar Self-Monitoring, Blood") OR TITLE-ABS-KEY ("Sugar Self-Monitorings, Blood") OR TITLE-ABS-KEY ("Home Blood Glucose Monitoring") OR TITLE-ABS-KEY ("Glucose, Blood, Self Monitoring"))) AND ((TITLE-ABS-KEY ("Program Evaluation") OR TITLE-ABS-KEY ("Evaluation, Program") OR TITLE-ABS-KEY (evaluations, AND program) OR TITLE-ABS-KEY ("Program Evaluations") OR TITLE-ABS-KEY (program AND effectiveness) OR TITLE-ABS-KEY (effectiveness, AND program)))

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Web of Science	(((((((((((((ALL=("Blood Glucose Self-Monitoring")) OR ALL= ("Blood Glucose Self Monitoring")) OR ALL=("Glucose, Blood, Self-Monitoring")) OR ALL=("Self- Monitoring, Blood Glucose")) OR ALL=("Blood Glucose Self-Monitorings")) OR ALL=("Glucose Self- Monitoring, Blood")) OR ALL=("Glucose Self-Monitorings, Blood")) OR ALL=("Self Monitoring, Blood Glucose")) OR ALL=("Self-Monitorings, Blood Glucose")) OR ALL=("Monitoring, Home Blood Glucose")) OR ALL=("Blood Sugar Self-Monitoring")) OR ALL=("Blood Sugar Self Monitoring")) OR ALL=("Blood Sugar Self-Monitorings")) OR ALL=("Self-Monitoring, Blood Suga")) OR ALL=("Self- Monitorings, Blood Sugar")) OR ALL=("Sugar Self-Monitoring, Blood")) OR ALL=("Sugar Self- Monitorings, Blood")) OR ALL=("Home Blood Glucose Monitoring")) OR ALL=("Glucose, Blood, Self Monitoring"))
Cinahl	((Blood Glucose Self- Monitoring) OR (Blood Glucose Monitoring)) AND (program evaluation))

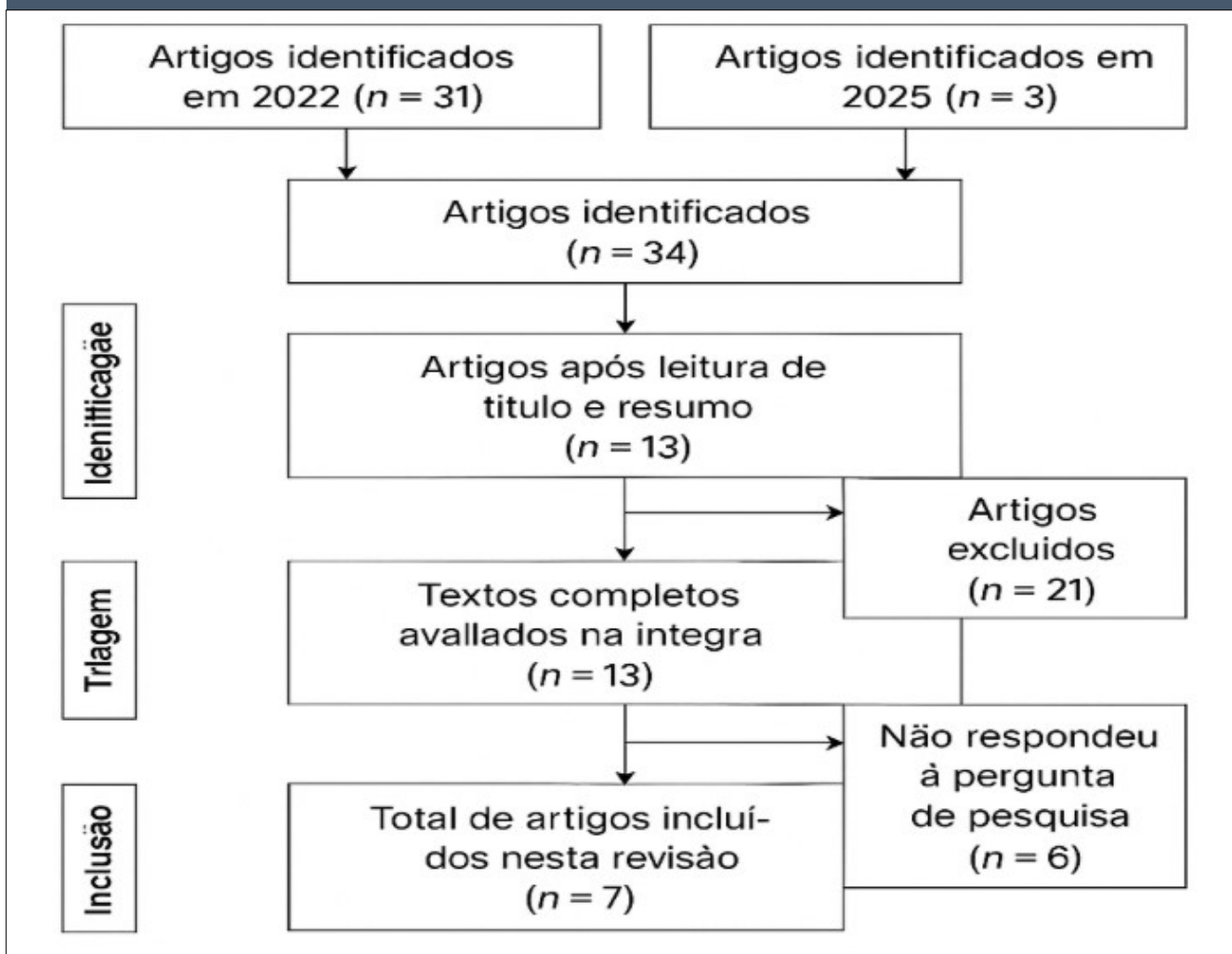
Data analysis and processing procedures

In the search conducted in 2022, 31 primary studies were identified. After reading the titles and abstracts, 22 articles were excluded because

they did not address individuals with type 2 diabetes mellitus (DM2) as the target population. After reading the full text of the remaining 9 articles, 5 studies that did not answer the research question were excluded, to-

taling 4 articles. In 2025, more studies (n=3) were included, which were identified in a new search. The analyses were carried out independently by two reviewers and the selection is shown in Figure 1.

Figure 1 - Selection flow of the articles included in this review. Londrina, PR, Brazil, 2025.



Source: Adapted from PRISMA 2020.

After selecting the articles, a descriptive analysis was carried out using a table containing identification data, type of study, results and level of evidence. The level of evidence for the type of study was kept as described by the authors themselves, using the hierarchical classification of the concepts of scholars in the field of evidence-based nursing, which classifies studies into five levels,⁽⁷⁾ according to the degree of methodological robustness and ability to generate safe recommendations for clinical practice:

- Level I: Evidence derived from systematic reviews or meta-analyses of randomized controlled trials (RCTs), or from evidence-based guidelines with excellent methodology.
- Level II: Results from at least one well-designed randomized clinical trial (RCT).
- Level III: Evidence from qua-

si-experimental studies, such as clinical trials without randomization.

- Level IV: Evidence from descriptive or correlational studies with a quantitative approach (such as cohort or observational studies), or from well-conducted qualitative studies.
- Level V: Expert opinions or reports of clinical experience, or data based on physiology, bench or committee consensus.

RESULTS

Seven articles were selected for evaluation, numbering them by identifier (ID) from 1 to 7 (Table 2). The predominant language of the publications was English^(8,9,11,12) and three were in Portuguese^(10,14,15), the latter being developed in Brazil. The articles were published in the following years: 2012⁽¹¹⁾, 2014⁽¹⁰⁾, 2016⁽⁹⁾, 2023⁽¹²⁻¹⁴⁾ e 2024⁽¹³⁾. There was a pre-

dominance of the randomized clinical trial study method (n=3),^(8,11,14) followed by a cross-sectional study (n=2)^(10,12), cohort study (n=1)⁽⁹⁾ observational study (n=1)⁽¹³⁾. All the studies included adopted a quantitative approach to data analysis⁽⁸⁻¹⁴⁾. There was also variation in the levels of evidence, with 3 falling into level III^(8,11,14), 2 into level IV^(9,13); 2 into level V^(10,12). The majority of the studies included refer to home glycemic self-monitoring programs (n=2)^(9,10), followed by 2 studies that evaluated educational interventions with a glycemic monitoring component^(8,14). All four studies focused on evaluating the programs and their impact on the lives and comorbidities of patients with DM2. One of the studies incorporated the perceptions of health professionals and users into its analysis, broadening the understanding of the subjective aspects of the intervention⁽¹⁴⁾.

Chart 2 - Summary of the primary studies included in this integrative review (ID=1, 2, 3, 4, 5, 6 and 7), Londrina, PR, Brazil, 2025.

ID Article Title	Objective	Intervention	Results	Level of evidence (LE)
ID: 1 ⁽⁸⁾ Effects of physician's diabetes self-management education using Japan Association of Diabetes Education and Care Diabetes Education Card System Program and a self-monitoring of blood glucose readings analyzer in individuals with type 2 diabetes: An exploratory, open-labeled, prospective randomized clinical trial.	To investigate patients' knowledge of glycemic self-monitoring using a tool developed by the Japanese Diabetes Education Association.	The intervention and control groups received professional guidance on DM self-management, while the educational tool and the glycemic monitoring system reading analyzer were used in group 1.	There was a reduction in HbA1c in the intervention group, but it was not statistically significant compared to the control group.	Randomized clinical trial (NE: III).
ID: 2 ⁽⁹⁾ Do diabetes mellitus patients adhere to self-monitoring of blood glucose (SMBG) and is this associated with glycemic control? Experiences from a SMBG program in western Kenya. Diabetes Research and Clinical Practice.	Evaluating HbA1c levels among patients in a self-monitoring program.	At a hospital in Kenya, patients were instructed and given a blood glucose meter (HGT). For children and adolescents, the program provided supplies free of charge, while adults paid a below-market price to receive HGT strips. Patients were contacted by telephone once a week and informed of their glucose readings that week to guide a health professional in adjusting their medication.	Of the 164 patients, 59% were women, 76% from rural areas, 34% adhered to the program within 6 months and 17% within 12 months. The low adherence and low reduction in HbA1c (1.1%) was correlated with the fact that it was a paid program.	Cohort study (NE: IV).

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ID: 3(10) Evaluation of the Capillary Blood Glucose Self-Monitoring Program	To evaluate the structure, process and results of the Capillary Blood Glucose Self-Monitoring Program in a Brazilian municipality.	The Donabedian framework was used to construct the structure, process and outcome indicators.	In the evaluation (structure and process) 9.4% of health professionals received training to work in the program. The majority of doctors reported that they did not advise patients to adjust insulin doses according to the capillary blood glucose results obtained at home, but according to laboratory tests. With regard to the results component, only 9.7% of the patients showed the ability to act on their capillary blood glucose results. For 86.3%, participation in the program was positive and among the health professionals, 81.3% reported that the program brought benefits for disease control.	Cross-sectional epidemiological study (NE: V).
ID: 4(11) Randomized controlled trial of an automated, interactive telephone intervention (TCL Diabetes) do improve type 2 diabetes management: baseline findings and six-month outcomes.	To evaluate a Telephone-Linked Care (TLC) program to improve type 2 diabetes management.	Type 2 diabetic patients with HbA1c greater than 7.5% were divided into two groups (CI and GC), with 60 participants in each group. Both groups were instructed to maintain usual medical care and to carry out glycemic monitoring. The IG received weekly guidance on using the automated interactive telephone system as a DM self-management and education tool.	Over six months the participants (IG) who received the Australian TCL program showed a 0.8% decrease in average HbA1c, compared to a 0.2% HbA1c reduction in the usual care group (CG) (p=0.002). There was also a significant improvement in mental assessment, with an average increase of 1.9 in the IG, while the CG decreased by 0.8 (p=0.007). No significant improvements were observed in the physical assessment.	Randomized clinical trial (NE: III).
ID: 5(12) Evaluation of the cost, effectiveness and satisfaction of those involved in a home glycemic monitoring program.	To evaluate the cost, effectiveness and perception of those involved in a home monitoring program.	Home monitoring with HbA1c assessment, adherence and patient/professional satisfaction.	HbA1c reduction and high satisfaction with the program. Cost feasible compared to perceived clinical benefits.	Cross-sectional study (NE: V).
ID: 6(13) Impact of the use of continuous glucose monitoring devices on glycemic control and quality of life.	To analyze the impact of continuous glucose monitoring technologies.	Use of continuous monitoring devices in patients with DM2.	Improvement in glycemic control and self-reported quality of life.	Observational study (NE: IV).
ID: 7(14) Evaluation of a behavioral program focused on self-care and empowerment in DM2.	To evaluate a behavioral program focused on patient empowerment.	Educational intervention with individual guidance and remote support.	Improvements in self-care indicators, HbA1c and patient satisfaction.	Randomized clinical trial (NE: III).

* HbA1c: Glycated Hemoglobin

One of the main indicators evaluated in the studies was the level of HbA1c related to the intervention, which was used both as a clinical indicator and as a program evaluation indicator, as it provides an accurate measure of long-term glycemic control. This dual use is justified by its ability to assess both the effectiveness of clinical interventions and the quality of health programs.⁽⁸⁻¹¹⁾

In addition, only one of the studies⁽¹²⁾ included an analysis of the program's costs, integrating aspects of economic viability and perceived cost-effectiveness into its evaluation.

DISCUSSION

The main indicator used by studies to evaluate home monitoring programs for DM2 is the clinical index of HbA1c reduction. Its use for evaluation purposes is justified mainly by its ability to accurately and objectively reflect the effectiveness of interventions.

In addition, HbA1c is considered to be the best predictor of DM complications. Its extensive validation in DM follow-up comes from two central studies: the Diabetes Control and Complications Trial (DCCT), which analyzed patients with type 1 DM (DM1),⁽¹⁵⁾ and the United Kingdom Prospective Diabetes Study (UKPDS), which evaluated individuals with type 2 DM (DM2).⁽¹⁶⁾ The UKPDS study showed results such as a 1% reduction in HbA1c, DM-related deaths (21%), myocardial infarction (14%), microvascular complications (37%).⁽¹⁶⁾

The DCCT implemented HbA1c as the gold standard among the tests for DM control to assess the individual's metabolic control, due to the high level of evidence shown for the relationship between increased levels and the risk of microvascular complications in DM2 (level of evidence A).^(1,15)

However, it is worth noting that HbA1c reflects the average glycemia of the quarter before the sample was taken, disregarding glycemic variability and hypoglycemic peaks, as well as presenting limitations such as individual characteristics due to changes in red blood cells and renal failure.⁽¹⁾ It can be seen from the analysis of the studies that the reduction in HbA1c rates is directly linked to intervention strategies, mainly educational and self-management activities.^(8,11)

The development of the glycemic self-monitoring strategy has revolutionized DM management. This method is comprehensive and efficient in identifying glycemic variability and allows patients themselves to act in a timely manner in the event of hyperglycemic peaks or hypoglycemic episodes, a skill known as DM self-management.⁽¹⁷⁾

Self-management of DM is an important tool in achieving control of the disease, and is achieved by combining the development of the individual's skills with those of their family, community and health professionals.⁽¹⁸⁾

Educational actions in health intervene positively in the perception of patients with DM. There was a positive evaluation of the control of type II DM when glycemic monitoring was associated with educational activities.⁽⁸⁻¹¹⁾ Patient education as a strategy used by the professional team can reduce the glycemic level by around 1% for every 23.5 hours the patient is in contact.⁽¹⁹⁾

Supported self-care is based on the principle that people with chronic conditions know as much, or more, about their condition and their care needs than health professionals.⁽¹⁶⁾ The main objectives of supported self-care are to generate knowledge and skills among people with chronic conditions to learn about their problem, decide and choose their treatment, adopt behaviors that con-

tribute to their health and overcome barriers to improvement.⁽⁷⁾

Another indicator observed was the evaluation of users and professionals. In order to intentionally assess quality in health areas, the choice of indicator is one of the key stages, and this must take into account the actors involved in the work process.⁽²⁰⁾

“ Therefore, choosing the perception of users and professionals as a quality indicator makes it possible to assess issues such as quality of care, humanization, access, structure and organization, among others. ”

On the other hand, professional satisfaction makes it possible to diagnose the characteristics of the service from the point of view of the employees themselves, in relation to the administrative and general aspects of

the service.⁽²¹⁾

The satisfaction of health service users is increasingly in evidence in the literature, focusing mainly on the quality of care. However, this assessment can be complex, as it can be influenced by multiple factors including cultural, social, personal and psychological aspects, expectations and background.⁽²²⁾

Another result found is the use of automated interactive telephone system technology (TCL). This system aims to simulate telephone interactions between patients and healthcare professionals and complement standard medical care. TLC systems have previously been used to effectively screen people with specific health conditions, promote self-care behaviors and provide monitoring and feedback for patients with a variety of chronic diseases.⁽²³⁾

The use of this technology has been shown to increase patients' knowledge and self-care behavior and the clinical outcomes associated with the prevention and control of chronic health conditions, including diabetes.⁽²⁴⁾

In view of the results analyzed, it can be seen that the use of indicators is still restricted, mostly clinical, such as measuring body mass index, abdominal circumference and blood pressure, making it possible to assess the progression and control of the disease. However, it is necessary to adopt a more comprehensive and multifaceted evaluation approach, capable of integrating different dimensions of care: 1) Subjective dimension that identifies the patient's perception of their health, adherence to treatment, self-confidence in managing the disease and perception of quality of life; 2) Educational dimension that assesses the level of knowledge acquired about self-care, the ability to interpret glycemic results and apply appropriate conduct at home; 3) Psychosocial dimension that considers

the emotional, behavioral and social support aspects that impact self-care and engagement with the educational program; 4) Technological dimension that refers to the usability and acceptance of continuous or intermittent monitoring devices, as well as their integration with electronic record systems and health applications. 5) The economic dimension, which evaluates the cost-benefit ratio of the program, the impact on reducing complications and hospitalizations, and the cost perceived by the user. In order for the evaluation of home glycemic monitoring programs to be truly robust, it cannot be limited to laboratory parameters such as HbA1c, even though this is widely validated and essential in the control of DM.⁽⁸⁻¹³⁾

Even with the predominance of the HbA1c parameter as the central indicator, the findings of this review indicate the importance of broadening the evaluation criteria, incorporating subjective, educational, technological and economic indicators, such as the study that included an analysis of economic viability and perceived cost-benefit⁽¹²⁾ pointing to the relevance of a multidimensional evaluation model, which is essential to ensure the sustainability, effectiveness and practical applicability of these programs within the scope of primary health care.

Study limitations

There was a limitation in the number of articles found on the evaluation of home-based glycemic monitoring programs for DM2, which restricted the number of results available for analysis and, consequently, limited the scope of the discussion.

Furthermore, there was also a lack of comprehensive evaluation indicators that could provide a complete understanding of the effectiveness and financial impact of these programs, which can make it difficult to accurately assess the results and iden-

tify areas that need improvement, for example in relation to cost-effectiveness.

Contributions to Practice

The results of this study can contribute to the practice of health care by prompting reflections and future directions of interest to other researchers regarding the need to develop other evaluation indicators related to home glycemic monitoring.

It should be noted that program evaluation indicators should cover various factors, such as results in changing lifestyle and behavior patterns, treatments used, as well as laboratory results and the actors involved in the care processes, because by covering these aspects, it becomes possible to obtain a comprehensive view of the impact of the home glycemic monitoring program and the adjustments and improvements needed to meet the needs of patients living with DM.

FINAL CONSIDERATIONS

The results showed that home glycemic self-monitoring programs, associated with health education activities, are effective in the treatment and control of DM. It was also identified that the main quality indicator for evaluation in home glycemic monitoring programs was the analysis of HbA1c reduction parameters and the evaluation of the perception of users and professionals.

In addition, this panorama can provide further reflections and motivate research into the development of broad and effective evaluation indicators that represent the quality of these self-monitoring blood glucose programs in their different aspects with heterogeneity. This approach, in turn, contributes to positive impacts on the health of people with DM, by promoting an efficient health system.

REFERENCES

1. Sociedade Brasileira de Diabetes. [Official positioning n°03/2020. Therapeutic conduct in people with diabetes and hypertension] [Internet]. São Paulo – SP. 2020 [cited 16 Jun 2023]. Available from: <https://profissional.diabetes.org.br/wp-content/uploads/2021/06/CONDUTA-TERAPEUTICA-HIPERTENSAO-ARTERIAL.pdf>
2. Pan American Health Organization. Panorama of Diabetes in the Americas [Internet]. Washington, D.C.: PAHO; 2022. Available from: <https://doi.org/10.37774/9789275126332>.
3. International Diabetes Federation. More than two in three people with diabetes already have complications at diagnosis [Internet]. Available from: <https://idf.org/news/more-than-two-in-three-people-with-diabetes-already-have-complications-at-diagnosis/>
4. Souza VP, Santos ECB, Angelim RCM, Teixeira CRS, Martins RD. Conhecimento e Práticas de Usuários com Diabetes Mellitus sobre a Automonitorização da Glicemia Capilar no Domicílio. *Revista de Pesquisa Cuidado é Fundamental Online*. 2018;10(3):737–745.
5. Rankings, SI. A avaliação de programas de saúde: continuidades e mudanças. *Cad. Saúde Pública*. 2020; 36(9):e00237219, p. 1-8.
6. Ganong LH. Integrative reviews of nursing research. *Res Nurs Health*. 1987;10(1):1-11.
7. Mendes KDS, Silveira RCCP, Galvão CM. Integrative literature review: a research method to incorporate evidence in health care and nursing. *Texto contexto - enferm*. 2008;17(4):758-64.
8. Tanaka N, Yabe D, Murotani K, Yamaguchi Y, Fujita Y, Kubota S, et al. Effects of physician's diabetes self-management education using Japan Association of Diabetes Education and Care Diabetes Education Card System Program and a self-monitoring of blood glucose readings analyzer in individuals with type 2 diabetes: An exploratory, open-labeled, prospective randomized clinical trial. *J Diabetes Investig*. 2021;12(12):2221-2231.
9. Wambui Charity K, Kumar AMV, Hinderaker SG, Chinnakali P, Pastakia SD, Kamano J. Do diabetes mellitus patients adhere to self-monitoring of blood glucose (SMBG) and is this associated with glycemic control? Experiences from a SMBG program in western Kenya. *Diabetes Res Clin Pract*. 2016;112:37-43.
10. Augusto MC, Nitsche MJT, Parada CMGL, Zanetti ML, Carvalhaes MABL. Avaliação do Programa de Automonitoramento da Glicemia Capilar. *Rev Lat Am Enfermagem*. 2014; 22(5), 801-809.
11. Williams ED, Bird D, Forbes AW, Russell A, Ash S, Friedman R, Scuffham PA, Oldenburg B. Randomised controlled trial of an automated, interactive telephone intervention (TLC Diabetes) to improve type 2 diabetes management: baseline findings and six-month outcomes. *BMC Public Health*. 2012;12:602.
12. Ravagnani C, Maria, Costa K, Danielly, Cristina I, Carvalho F. Avaliação do custo, eficácia e satisfação dos atores de programa de monitorização glicêmica domiciliar. *Revista Enfermagem Atual In Derme*. 2023 Sep 29;97(3): e023147–7.
13. Santos, Goelzer V, Beatriz Dias Paredes, Carla A, Kristian Cavalcanti Santos, Lorenzato S, et al. O impacto do uso de dispositivos de monitoramento contínuo de glicose no controle glicêmico e na qualidade de vida de pessoas vivendo com diabetes tipo 2. *Revista Eletrônica Acervo Saúde*. 2023 Dec 20;23(12):e15090–0.
14. Nunes LB, Santos JC dos, Reis IA, Torres H de C. Avaliação do programa comportamental em diabetes mellitus tipo 2: ensaio clínico randomizado. *Ciência & Saúde Coletiva* [Internet]. 2023 Mar 6 [cited 2023 Mar 15];28:851–62. Available from: <https://www.scielo.br/j/csc/a/qSHtDpxYfqB6fgFsfjcFpVQ/?lang=pt>.
15. Diabetes control and complications trial research group, Nathan DM, Genuth S, Lachin J, Cleary P, Crofford O, et al. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *N Engl J Med*. 1993;14(329):977-86.
16. United Kingdom Prospective Diabetes Study Group. United Kingdom Prospective Diabetes Study (UKPDS) 13: relative efficacy of randomly allocated diet, sulphonylurea, insulin, or metformin in patients with newly diagnosed non-insulin dependent diabetes followed for three years. *BMJ*. 1995;310(6972):83-8.
17. Tauschmann M, Hovorka R. Technology in the management of type 1 diabetes mellitus – current status and future prospects. *Nat Rev Endocrinol*. 2018;14(8):464–75.
18. Ferreira CM, Soares EP, Carvalho GB. Educational intervention as a management tool for diabetics. *Cad Esp Ceará*. 2020;1(14):111-114.
19. Garber AJ, Abrahamson MJ, Barzilay JJ, Rosenblit PD, Umpierrez GE, Davidson MH. American Association of Clinical Endocrinologists' Comprehensive Diabetes Management Algorithm 2013 Consensus Statement-executive summary. *Endocr Pract*. 2013;19:1-48.
20. Donabedian A. The role of outcomes in quality assessment and assurance. *Quality Review Bulletin*. 1992;6(20):975-992.
21. Ricci NA, Wanderly FS, Oliveira MS, Rebelatto JR. The São Carlos Hospital School: assessment of its functioning by means of user satisfaction. *Ciênc Saúde Coletiva*. 2011;16(1):1125-1134.
22. Volpato LF, Meneghim MC, Pereira AC, Ambrosano GMB. Quality planning of Family Health Units using Quality Function Deployment (QFD). *Cad Saúde Pública*. 2010;8(26):1561-1572.
23. Houlihan B, Jette A, Friedman R, Paasche-Orlow M, Ni P, Wierbicky J, et al. A pilot study of a telehealth intervention for persons with spinal cord dysfunction. *Spinal Cord*. 2013;51:715-720.
24. Eakin EG, Lawler SP, Vandelanotte C, Owen N. Telephone interventions for physical activity and dietary behavior change: a systematic review. *Am J Prev Med*. 2007;32:419-434.