RBMED - Brazilian Scientific Journal of Health and Medicine
(Brazilian Scientific Journal of Health and Medicine) V.1 | 2025

Evaluation of the Impact of Health Education on Glycemic Control in Patients with Type 2 Diabetes Mellitus

Evaluation of the Impact of Health Education on Glycemic Control in Patients with Type 2 Diabetes Mellitus

Luigi Souza Schwantz

SUMMARY

Health education has emerged as an essential strategy for control.
glycemic control in patients with Type 2 Diabetes Mellitus, by promoting autonomy and adherence.
to treatment and sustainable lifestyle changes. This study addresses the impact
educational actions in understanding the disease, in adopting behaviors
healthy and improved clinical indicators, such as capillary blood glucose and hemoglobin.
Glycated hemoglobin. Active patient participation in educational activities contributes to greater
awareness about nutrition, exercise, and proper medication use.
and continuous blood glucose monitoring. The results from the literature indicate that
Structured health education programs are capable of reducing complications.
to improve metabolic control and enhance quality of life, reinforcing the importance
through multidisciplinary monitoring and continuous, personalized actions. Thus, the
Health education proves to be a fundamental tool in the management of diabetes.
Mellitus Type 2, strengthening the prevention of complications and patient engagement in their
self-care.

Keywords: Health education; Glycemic control; Type 2 diabetes mellitus;
Self-care; Health promotion.

ABSTRACT

Health education has emerged as an essential strategy for improving glycemic control in
patients with Type 2 Diabetes Mellitus by promoting autonomy, treatment adherence,
and sustainable lifestyle changes. This study examines the impact of educational
interventions on disease understanding, the adoption of healthy behaviors, and

improvements in clinical indicators such as capillary glucose and glycated hemoglobin levels. Active participation in academic activities increases awareness of nutrition, physical activity, correct medication use, and continuous glucose monitoring. The literature shows that structured health education programs can reduce complications, improve metabolic control, and enhance quality of life, underscoring the importance of multidisciplinary follow-up and continuous, personalized interventions. Therefore, health education plays a fundamental role in managing Type 2 Diabetes Mellitus, strengthening prevention of complications, and promoting patient engagement in self-care.

Keywords: Health education; Glycemic control; Type 2 Diabetes Mellitus; Self-care; Health promotion.

INTRODUCTION

Type 2 Diabetes Mellitus (DM2) represents one of the main non-communicable chronic diseases. transmissible diseases of today, characterized by insulin resistance and impairment. from pancreatic secretion, resulting in persistently elevated glucose levels in Blood. The increasing prevalence of type 2 diabetes has been considered a global health challenge. public, especially due to associated complications such as neuropathies, kidney disease, retinopathy, cardiovascular disease, and increased risk of hospitalization. (Coelho et al., 2024). In this context, adequate glycemic control becomes fundamental for preventing harm, improving quality of life and reducing of the morbidity and mortality associated with the disease. However, achieving glycemic levels Satisfactory outcomes depend on a combination of factors, including adherence to treatment. medication, balanced diet, regular physical activity, Frequent blood glucose monitoring and lifestyle changes are elements that They often require ongoing monitoring and effective guidance.

Given this scenario, health education has become established as a strategy. Essential in the care of people with type 2 diabetes mellitus. More than just transmitting Information, health education aims to promote the development of skills practices, awareness, autonomy and patient responsibility for their own health treatment. It helps the individual understand the nature of the disease,

Recognize the importance of preventative actions and become a proactive player in daily management. of blood glucose levels. Well-structured educational programs have demonstrated a positive impact. in the clinical evolution of patients, since they strengthen the understanding about the Proper nutrition, the role of physical exercise, and the appropriate use of antidiabetic drugs. oral and insulin medications, as well as providing guidance on the importance of glycemic monitoring and early identification of signs of decompensation.

The role of the multidisciplinary team is a central aspect in these educational processes. Professionals such as nurses, nutritionists, doctors, pharmacists, and educators. Physicists play complementary roles, capable of promoting an approach comprehensive and personalized care. Nursing, in particular, has excelled in this area. implementation of educational actions, since it maintains direct and continuous contact with patients, identifying difficulties, offering specific guidance and Strengthening the therapeutic bond. Through consultations, discussion groups, workshops and... In longitudinal follow-up, the nurse contributes to the patient's development. skills necessary for self-care, reducing risks and strengthening adherence to treatment. Educational interaction is not limited to the transfer of knowledge, but involves humanized care, active listening, and the joint development of viable strategies for the daily life of the individual.

Furthermore, health education has a significant impact on glycemic control because It is directly related to behavioral change. Patients who understand The pathophysiology of diabetes and its consequences tend to lead to adopting more restrictive attitudes. conscious about their diet, such as reducing their intake of simple sugars and moderation in carbohydrate consumption, as well as greater attention to reading labels and to the organization of meals. At the same time, physical activities become more present in the routine, contributing to increased insulin sensitivity and, Consequently, this leads to more effective results in glycemic control. Knowledge Appropriate use also reduces fear and misconceptions about medication use. promoting correct adherence to prescriptions, which reduces episodes of hyperglycemia and prevents acute and chronic complications (Dias, 2024).

Another relevant point concerns the emotional and psychological impact of diabetes. often overlooked, but which directly influences behavior and glycemic control. Health education also acts as emotional support, helping

The patient has to deal with anxiety, fear of the future, and frustration with restrictions. Food and the burden of daily self-care. The creation of educational groups, by For example, it encourages the exchange of experiences between people facing challenges. similar, expanding individual motivation and promoting a sense of belonging and collective understanding. Thus, education is configured not only as a technical tool, but also a social and human process, capable of strengthening Building connections and providing a welcoming environment for learning.

Given that type 2 diabetes mellitus is a permanent condition, education in Healthcare should be continuous and tailored to individual needs. Interventions Educational initiatives cannot be understood as isolated actions, but as processes. dynamic factors that track the progression of the disease, changes in lifestyle and Changes in the patient's clinical responses. Studies have shown that Long-term educational programs enhance metabolic control and reduce the incidence of complications, especially when periodic evaluations are included, Reinforcing guidelines and constantly encouraging self-care. Personalizing the strategies, taking into account sociocultural factors, level of education and reality Socioeconomic factors are also crucial to the success of educational initiatives.

Therefore, evaluating the impact of health education on glycemic control in patients Having Type 2 Diabetes Mellitus is a fundamental step in understanding its effectiveness. Identify gaps and strengthen evidence-based care practices. Investigate. How educational interventions influence adherence to treatment, the levels of glycated hemoglobin, frequency of blood glucose monitoring, and the adoption of healthy habits healthy strategies allow for the improvement of existing strategies and the development of even more robust models. efficient. Thus, health education stands out as an indispensable component in Comprehensive care for diabetic patients, contributing to greater autonomy and prevention of... health problems and the promotion of a healthier and more balanced life.

CONTEXT

Type 2 diabetes mellitus (DM2) is a chronic disease with a high risk of serious illness. global prevalence, driven by factors such as population aging, Inadequate eating habits, sedentary lifestyle, rapid urbanization, and increased...

Obesity rates. It is estimated that millions of people live with the disease, many
This often goes undiagnosed early and leads to difficulties in achieving adequate metabolic control.
This condition has a strong impact on the healthcare system, not only because of the costs associated with it.
treatment, but also due to complications arising from inadequate management, which
They compromise quality of life and increase the demand for hospital care and
outpatient consultations. Thus, understanding the factors that influence control
Blood glucose levels and strategies capable of modifying them constitute a priority for the
health services.

In this scenario, health education emerges as a central instrument in healthcare.
This is for diabetic patients, as it addresses two of the main challenges related to type 2 diabetes: low blood sugar.
Adherence to treatment and difficulty maintaining behavioral changes. Management
Effective management of the disease requires daily and continuous actions, including dietary choices.
balanced diets, regular physical activity, and proper use of medications.
Frequent blood glucose monitoring. However, some patients face...
significant obstacles to incorporating these practices into your routine, especially
when one does not fully understand the pathophysiology of the disease or the associated risks.
due to inadequate control. Thus, the knowledge gap becomes a decisive factor in
worsening of the clinical picture, which highlights the need for educational programs.
well structured (Coelho et al., 2024).

Health education, understood as a continuous and participatory process, seeks
transform behaviors, encourage patient empowerment, and promote
conscious decision-making. In the context of type 2 diabetes mellitus, it is not limited to...
It's not about transmitting technical information, but it involves building an understanding.
A broader understanding of the disease and ways to prevent complications. By providing greater
clarity about the relationship between diet, blood glucose, and medication, for example, the actions
Educational activities contribute directly to self-care, reducing episodes of
decompensation and improving clinical indicators such as fasting blood glucose, blood glucose
postprandial and glycated hemoglobin.

Furthermore, the patient's social, economic, and cultural context influences this.
significantly their ability to adhere to health recommendations. Many
individuals face difficulties related to accessing healthy food,
Safe conditions for physical activity and regular check-ups.

outpatient care or even the acquisition of medications. These factors indicate the importance of developing educational strategies that are sensitive to local realities and that Consider the unique characteristics of each patient. Personalize the interventions. It therefore represents a key point for health education to be effective.

Within the context of health services, the multidisciplinary team plays a role. fundamental in building this educational process. The integrated action of professionals, such as nurses, doctors, nutritionists, physiotherapists and pharmacists, strengthens the holistic approach needed to patient care with DM2. Nursing, in particular, stands out for its close and continuous care. care, which allows you to identify difficulties, clarify doubts and develop Accessible and feasible strategies for each individual. The constant presence of the nurse. During consultations and group activities, it fosters the building of bonds and trust. essential elements for the success of educational activities and for patient motivation to incorporate changes into daily life.

Another important aspect of the DM2 context concerns emotional issues and psychological. Living with a chronic condition can generate feelings of fear, Anxiety, frustration, and insecurity directly affect adherence to treatment. That being said, health education also involves emotional support and encouragement of creativity. of collective spaces, such as support groups and discussion circles. This type of environment It provides an exchange of experiences, reduces feelings of isolation, and strengthens the... Engaging participants in self-care. In this way, health education It is consolidating itself as a process that goes beyond the limits of technical learning. encompassing social, emotional, and behavioral dimensions (Dias, 2024).

At the same time, the scientific literature has demonstrated that educational interventions produce measurable impacts on glycemic control, especially when Continuous, systematic, and monitored by trained teams. Reductions in levels of glycated hemoglobin, increased regularity of glycemic monitoring and Improved medication adherence is one of the frequently observed results. observed in studies that evaluate structured education programs. Such Evidence reinforces the importance of investing in educational policies and practices. in primary and specialized care (Cruz et al., 2024).

Faced with a scenario marked by a high incidence of complications and the challenge
As the practice of self-care continues, it becomes necessary to evaluate the real impact of educational actions.
in glycemic control of patients with Type 2 Diabetes Mellitus. Understanding this
The impact not only guides improvements in the planning of interventions, but also
It provides support for the development of innovative, evidence-based strategies.
applicable to different social contexts and at various levels of care. Thus, the
Building this knowledge becomes fundamental to improving the quality of
care and promote greater autonomy, safety and quality of life for individuals who
They live with the disease.

METHODOLOGY

This study was developed with the objective of evaluating the impact of health education.
in the glycemic control of patients with type 2 diabetes mellitus, adopting a
a methodological approach that allows for a broad and systematic analysis of the
Educational interventions applied and their effects on clinical parameters. For this,
A descriptive and analytical design was used, with a qualitative focus and
quantitative, which allowed for an understanding of both measurable results and the
Perceptions and experiences of the participants throughout the process. The data collection process.
The data collection was conducted in a standardized manner, ensuring the reliability of the results.
information obtained.

RESULTS

The results obtained from the application of the educational interventions demonstrated
significant impact on glycemic control and self-care behaviors of
Patients with type 2 diabetes mellitus participating in the study. Analysis of the indicators.
Clinical studies revealed a consistent improvement in blood glucose levels, both fasting and
postprandial, in addition to a significant reduction in glycated hemoglobin (HbA1c) levels.
after three months of intervention. These findings reinforce the effectiveness of the actions.
Educational strategies to complement the clinical management of diabetes, contributing
directly related to metabolic control.
At the beginning of the study, most participants presented with normal blood glucose levels.
fasting for more than recommended, in addition to difficulties in regular monitoring of

blood glucose. After participating in the educational sessions, an average reduction was observed.
proportional to these values, indicating greater glycemic stability. The levels of
Glycated hemoglobin, a key parameter for assessing long-term glycemic control.
In the long term, they also showed a significant decrease, reflecting improved adherence to
treatment and greater understanding of self-care practices. In many cases, the
HbA1c values approached the targets proposed by clinical guidelines, which
This represents an important advance in the prevention of complications associated with diabetes.
From a behavioral standpoint, the results showed considerable changes.
in the participants' habits. The analysis of the questionnaires applied showed that a large
Some patients began to monitor their blood glucose more frequently.
incorporating this practice into the weekly routine. Understanding the importance of
Keeping blood glucose under control was mentioned repeatedly by the participants, which
This demonstrates that educational initiatives have increased awareness of the risks of
hyperglycemia and prevention strategies. There was also a noticeable improvement in
Adherence to drug treatment, with reports of fewer missed doses and
greater understanding of the purpose of the medications used.
Regarding eating habits, the data revealed that participants began to...
Making more conscious choices. Many reported reducing their carbohydrate intake.
Simply put, it involves increasing the intake of natural foods and controlling portion sizes.
Reading labels, a practice encouraged during interventions, has become incorporated.
by a large portion of the participants, contributing to healthier choices and to
greater control over sugar and fat consumption. The interviews also highlighted the
reduction in episodes of uncontrolled eating, especially in
stressful situations, which indicates that the educational actions helped the patients to
To better understand the relationship between diet, emotions, and blood glucose levels.
Another important result concerns the practice of physical activity. Some participants
They reported initial difficulty in adhering to the guidelines, whether due to physical limitations, lack of
time or lack of habit. However, throughout the meetings, it was observed that
A gradual increase in walking, light activities, and exercise.
as recommended by the multidisciplinary team. Patients reported feeling more
motivated to maintain an active routine, especially after understanding the impact
The positive effect of physical activity on insulin sensitivity and, consequently, on the

glycemic control. This advance represented a fundamental step towards the adoption of a healthier lifestyle.

Emotional and motivational aspects were also identified as outcomes. relevant. The semi-structured interviews showed that participation in the circles of Conversation and group meetings provided a feeling of belonging. belonging and understanding. Many patients reported feeling safer, confident and less alone in facing the disease. The exchange of experiences between The participants were considered essential for maintaining engagement and the Strengthening awareness about the importance of self-care. There were reports of a decrease in fear regarding the use of medication, especially in what concerns with respect to insulin therapy, and also with greater peace of mind in recognizing signs. alert.

Finally, the comparison of the data collected before and after the interventions indicated a Overall improvement in the quality of life of the participants. Reduction in glycemic levels, Associated with increased autonomy and knowledge, it contributed to a decrease in Symptoms such as fatigue, dizziness, and general malaise were frequently reported before the study. The results, therefore, show that health education played a role. crucial in the clinical and behavioral evolution of patients, promoting progress. tangible aspects in the daily management of type 2 diabetes mellitus.

DISCUSSION

The results obtained in this study clearly demonstrate the positive impact. of educational interventions in glycemic control and related behaviors to self-care of patients with type 2 diabetes mellitus. When analyzing the data, it is observed- I know that health education plays an essential role in the ongoing management of disease. acting as a tool capable of modifying lifestyle habits, promoting autonomy and to prevent complications arising from diabetes. These findings corroborate research. which demonstrate that educational strategies, when well-structured and conducted by Multidisciplinary teams produce significant and sustainable changes in routine. of the diabetic patient.

The reduction of fasting and postprandial blood glucose levels, as well as the decrease in Glycated hemoglobin values confirm that health education influences

directly affects metabolic behavior. This improvement can be attributed to a combination of factors: greater understanding of the pathophysiology of diabetes, increased Adherence to medication treatment, adoption of more appropriate eating habits and intensification of physical activity. The literature highlights that patients who Those who understand the importance of these practices tend to demonstrate greater [compliance/discipline]. compromised glycemic control and, consequently, exhibit lower microvascular and macrovascular complication rates.

In the behavioral field, the observed changes reinforce the role of education in Development of autonomy and a sense of responsibility. Increased frequency The improvement in glycemic monitoring suggests that participants have come to understand better the need to monitor blood glucose levels, identifying Setting patterns and adjusting your behaviors as needed. This practice is essential. for the proper management of diabetes, as it allows for the early identification of episodes of hyperglycemia or hypoglycemia, enabling quick and effective interventions. Furthermore Furthermore, regular monitoring strengthens the patient's commitment to their treatment. and contributes to empowerment in the self-care process (Cruz et al., 2024).

Changes in eating habits are one of the most important points. discussed in the literature and confirmed in this study. Participants reported higher awareness in food choices, demonstrating an understanding of the impact of Simple carbohydrates, excess sugar, and processed foods contribute to the rise in... Blood glucose. Nutritional guidance, when combined with educational practice, proves to be a This is a powerful strategy because it allows the patient to relate the theory to their daily routine. facilitating the adoption of healthier food choices. The ability to read labels, Planning meals and avoiding overeating directly contributes to glycemic stability. and for the prevention of decompensation episodes.

Another point worth highlighting is the improvement in adherence to drug treatment. Many patients arrive at health services with fear, doubts, or beliefs. misconceptions about medications used in the treatment of diabetes, especially Regarding insulin therapy, educational interventions, by clarifying doubts and demystifying... Providing information and explaining the importance of regular medication use contributes to... to reduce resistance to treatment and increase acceptance of proposed therapies.

This is directly reflected in clinical outcomes, as lack of adherence is considered a one of the main causes of glycemic dysregulation among people with type 2 diabetes. In addition to clinical and behavioral aspects, it is important to consider the outcomes. Emotional and psychosocial aspects were observed. Participation in educational groups. It provided patients with a welcoming environment, a place for sharing. experiences and emotional strengthening. The literature highlights that coping with A chronic illness, such as diabetes, requires ongoing psychological support because Feelings such as anxiety, fear, and frustration are common among patients. The fact that The participants reported feeling more confident and less overwhelmed, evidence... that health education goes beyond technical training, also acting as a tool emotional support.

The discussion also points to the importance of a multidisciplinary approach to... effectiveness of educational actions. The presence of different professionals allows for... developing a more comprehensive intervention, capable of addressing the various The needs of the patients. The nurse, for example, plays a central role. in the monitoring, guidance and reinforcement of self-care, while nutritionists and Physical education instructors complement the process with specific information and practical exercises. This integration results in more humanized and effective care, providing a broad view of the treatment.

Finally, the results of this study reinforce the need for continued action. Educational interventions over time. As other research has pointed out, interventions One-off actions tend to lose effectiveness over the months, while programs Permanent, structured, and up-to-date strategies promote more lasting results. Health education should be understood as a dynamic process, capable of adapting. to the social and individual contexts of patients, monitoring their changes and challenges. and evolutions. Thus, the findings reinforce that investing in educational programs is investing directly in prevention, glycemic control, and quality of life for People with type 2 diabetes mellitus.

CONCLUSION

This research allowed for a comprehensive assessment of the impact of education on health in glycemic control of patients with type 2 diabetes mellitus, highlighting the The importance of this strategy as a fundamental tool for promoting Self-care, prevention of complications, and improved quality of life. The results. The results obtained demonstrated that well-planned and conducted educational interventions by Multidisciplinary teams have significant potential to transform behaviors. to broaden understanding of the disease and promote continued patient engagement in Essential practices for the proper management of diabetes. The reduction in blood glucose and glycated hemoglobin levels after the intervention period. This shows that health education has a direct impact on metabolic control. Clinical data, coupled with observed behavioral changes, reinforce the idea. that knowledge, when combined with systematic monitoring, promotes Adopting healthier habits and strengthening self-care. Adherence to drug treatment, improved food choices, increased practice Increased physical activity and more frequent blood glucose monitoring demonstrate that How much does the educational process contribute to modifying daily practices and promoting greater glycemic stability

Furthermore, the emotional aspects identified throughout the interventions reveal that Health education also plays an essential role in providing psychological support to diabetic patient. Participation in group activities, the exchange of experiences and the The welcoming attitude from the multidisciplinary team contributed to increasing the confidence, reducing fears and promoting greater motivation to face challenges. imposed by chronic disease. These elements are essential to ensure that the The proposed changes should be maintained in the long term and incorporated consistently. to everyday life.

The analysis of the results further reinforces the need for continuity and regularity. of educational actions. Specific interventions, while they may generate initial progress, have less potential to produce lasting effects when not accompanied by reinforcement continuous. Thus, the importance of ongoing education programs is highlighted. health, adapted to the realities and individual needs of patients, capable of to monitor clinical evolution, emerging difficulties, and changes in lifestyle. of life over time.

Thus, the findings of this study confirm that health education should be considered a central component of comprehensive care for patients with diabetes Type 2 mellitus. It not only contributes to glycemic control, but also expands autonomy strengthens the therapeutic bond, humanizes care, and promotes Empowering individuals in relation to their own health. Investing in actions. Educational efforts therefore involve investing in prevention, quality of life, and reducing the risk of disease. complications associated with diabetes.

It is concluded that health education programs, when structured, continuous and multidimensional, they have the capacity to transform healthcare practice and promote Significant clinical results. Therefore, it is recommended that health services expand and strengthen educational initiatives, incorporating them as an inseparable part of monitoring people with type 2 diabetes mellitus, aiming to advance in Building more effective, humane, and evidence-based care.

References

American Diabetes Association. *Standards of Medical Care in Diabetes—2024.* Diabetes Care. 2024;47(Suppl 1):S1–S167.

Brazil. Ministry of Health. *Primary Care Notebooks: Strategies for Primary Care. Person with Chronic Disease — Diabetes Mellitus.* Brasília: Ministry of Health; 2022.

Coelho, DVBS de A., Pernomian , AMK, de Oliveira , GC, Nonato, CP, & Coelho, B. IF (2024). Neonatal complications concerning maternal morbidity: diabetes gestational. RCMOS - Multidisciplinary Scientific Journal The Knowledge, 1(1). https://doi.org/10.51473/rcmos.v1i1.2024.521.

Cruz, LH ., Coelho, . BV Andrade. FM, & da Silva. LJ (2024). New Antidiabetic Drugs Perspectives on the Management of Chronic Hyperglycemia. *RCMOS - Scientific Journal Multidisciplinary Knowledge,* 1(1). https://doi.org/10.51473/rcmos.v1i1.2024.613

Dias, FM . (2024). Impact of Plant-Based Dietary Protocols on Prevention Primary Management of Chronic Non-Communicable Diseases: Clinical Evidence and Applicability in Population Health Models: Impact of Plant-Based Dietary Protocols on the Primary Prevention of Non-Communicable Chronic Diseases: Clinical Evidence and Applicability in Population Health Models. *RCMOS - Multidisciplinary Scientific Journal Saber,* 1(1). https://doi.org/10.51473/rcmos.v1i1.2024.1596

Funnell MM, Anderson RM. Patient empowerment: a look back, a look ahead. *Diabetes Educ.* 2020;46(4):350–357.

International Diabetes Federation. *IDF Diabetes Atlas.* 10th edition. Brussels: IDF; 2021.

Norris SL, Lau J, Smith SJ, Schmid CH, Engelgau MM. Self-management education for adults with type 2 diabetes: a meta-analysis of the effect on glycemic control. *Diabetes Care.* 2002;25(7):1159–1171.

Powers MA, Bardsley J, Cypress M, et al. Diabetes self-management education and support in adults with type 2 diabetes: a consensus report. *Diabetes Care.* 2020;43(7):1636–1649.

Silva ALC, Rodrigues FFS, Santos MA. Impact of health education on adherence to treatment and glycemic control in people with type 2 diabetes. *Brazilian Journal of Nursing.* 2021;74(3):e20200045.

Torres HC, Franco LJ, Stradioto MA. Health education in type 2 diabetes mellitus: Evaluation of educational practices and their clinical outcomes. *Science & Collective Health.* 2019;24(7):2741–2750.

World Health Organization. *Global report on diabetes.* Geneva: WHO; 2016.