



## HEALTH EDUCATION STRATEGIES FOR PATIENTS WITH DIABETES MELLITUS IN INSULIN THERAPY: INTEGRATIVE REVIEW

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### ABSTRACT

**Objective:** to evaluate the use of different health education strategies aimed at the care of people with diabetes undergoing insulin therapy treatment. **Methods:** integrative literature review, with a search conducted in June 2021 and March 2022, with a ten-year time frame, in the electronic bases Science Direct, Cumulative index to nursing and Allied Health Literature, PubMed portal, Web of Science, Scopus, Scientific Electronic Library Online and Virtual Health Library, with controlled descriptors indexed in Descriptors in Health Sciences and Medical Subject Headings. **Results:** in the eight studies selected based on the inclusion criteria, the strategies found were the use of printed material, individual and group verbal guidance, the use of audiovisual resources and clinical simulation. **Conclusion:** the analysis of the studies allowed us to verify that different modalities of health education are effective to assist in the management of diabetes. However, passive teaching methods are still majority, which makes it necessary for further studies to explore other forms of preparation for health care, such as active teaching-learning methodologies.

**Keywords:** Insulin. Diabetes mellitus. Health education. Educational models.

### INTRODUCTION

Diabetes is a worldwide health problem characterized by persistent hyperglycemia due to deficiency in insulin production or its action, and is among the top ten causes of death in the world. Estimates for the year 2045 show numbers in excess of 628.6 million people with diabetes worldwide. In Brazil, the prevalence increased from 5.5% in 2006 to 7.4% in 2019, and it is estimated that by 2030 it will reach 11.3%<sup>(1,2)</sup>.

Among the therapies indicated for the treatment of diabetes is insulin therapy, characterized by the administration of insulin in the subcutaneous tissue<sup>(1)</sup>. The diagnosis associated with insulin therapy can cause a feeling of personal defeat in relation to treatment obstacles and a need to adapt to a new lifestyle.

Moreover, there may be a feeling of guilt due to the possibility that the lack of previous care has caused the need for insulin use, which can directly interfere in the maintenance of self-care, hinder the learning process in relation to application practices and influence treatment adherence<sup>(3)</sup>.

In this context, only drug treatment is not sufficient for the management and control of the disease, and it is necessary to engage in an educational process that assists people with diabetes and their caregivers in identifying behaviors and risk factors and changing routine habits<sup>(1)</sup>. It should be noted that, when diabetes is not controlled, there is a high risk of it triggering numerous complications, besides being an important cause of early mortality<sup>(1,4)</sup>.

Acute complications include hyperglycemic decompensation, which may progress to more severe complications such as diabetic

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ketoacidosis and non-ketotic hyperosmolar hyperglycemic syndrome. In turn, chronic complications include nephropathy, neuropathy and diabetic retinopathy, as well as changes in large vessels and the possibility of acute myocardial infarction, peripheral vascular disease and stroke. Diabetic neuropathy and vascular complications in the lower limbs are recurrent causes of amputation<sup>(1,4)</sup>.

Health education improves the adoption of the proposed therapy and encourages health teams to know the effects that investments in training generate in the control of glycemic levels. In addition to the contribution in clinical practice and treatment management, there is the opportunity to establish bonds, as well as to accompany the patient over time<sup>(5)</sup>.

Thus, adequate metabolic control reduces and delays the emergence of chronic and acute complications, which increase demand at various levels of health care, generate high costs and decrease the quality and life expectancy of patients<sup>(4)</sup>.

In this context, nurses, in the implementation of care, must increasingly know and use education strategies capable of contributing to health promotion, disease prevention, rehabilitation and health maintenance. Thus, the present study aimed to evaluate the use of different health education strategies aimed at the care of people with diabetes undergoing insulin therapy treatment.

## METHODS

This is an integrative review of the literature, based on Evidence-Based Practice, whose objective was to gather and condense studies available in the national and international literature, in order to seek a broad explanation of the problem and, thus, generate a consistent and understandable panorama related to the theme<sup>(6)</sup>. The study followed the following steps: identification of the right-hand question; selection of research sources; selection of studies, according to inclusion and exclusion criteria; data extraction, through qualitative synthesis; mapping of results; and dissemination of results<sup>(6)</sup>.

To guide the review, the research question

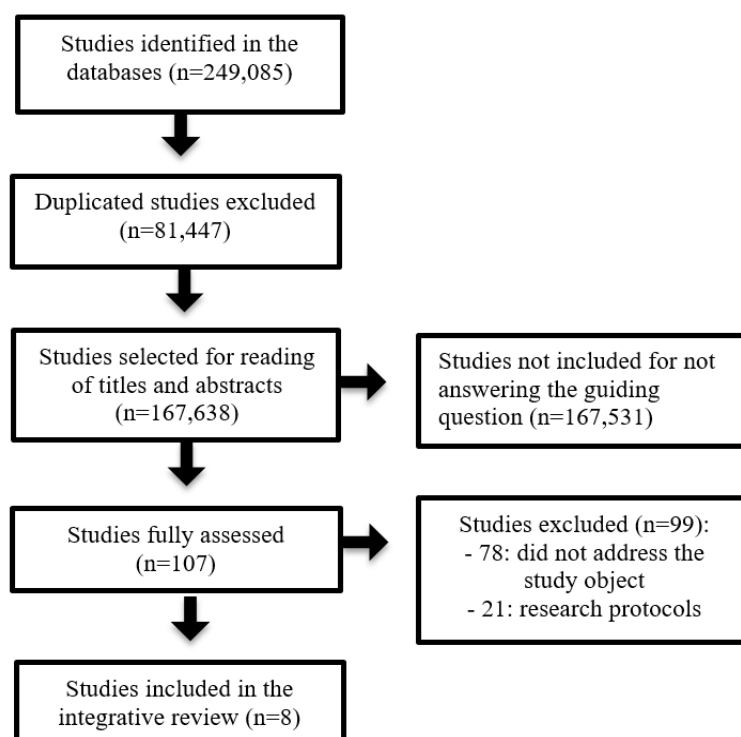
was formulated based on the PICO strategy, being: P (Population): people with diabetes; I (Intervention): educational strategies; Co (Context): insulin therapy. Thus, the following question was asked: what educational strategies are used in the teaching of people with diabetes in insulin therapy?

In this review, studies conducted from 2011 to 2021 were sought. These searches – made by two authors, independently and concomitantly – occurred in June 2021 and March 2022 in the following databases: Science Direct (Elsevier), Cumulative index to nursing and Allied Health Literature (CINAHL), PubMed portal, Web of Science, Scopus, SciELO and the Virtual Health Library (VHL), through the Federated Academic Community (CAFe) of the journal portal of the Higher Education Personnel Improvement Coordination (CAPES) platform.

Descriptors indexed and controlled by the Descriptors in Health Sciences (DeCS) and Medical Subject Headings (MeSH), were used: “Insulin”, “Diabetes Mellitus”, “Education, nursing”, “Health Education”, “Models, Educational” and “Learning”, between single crossing 1# AND 2# AND 3#, namely: 1# (“Insulin” OR “Diabetes Mellitus”) AND 2# (“Education, nursing” OR “Health Education” OR “Models, Educational”) AND 3# (“Learning”).

The inclusion criteria were: complete articles that answered the guide question, fully available in the databases adopted, in all languages, with a ten-year time delimitation. Review articles, letters to the editor, expert opinions, reviews and research with people with diabetes who did not use insulin were excluded. Initially, the titles and abstracts were read as the first filter of the research, in order to identify studies that answered the guide question. After pre-selection, the studies were read in full. Figure 1 shows the flowchart of the strategy for searching and selecting the articles.

Data extraction and mapping of the results occurred from a specific instrument elaborated by the authors, which contained the following variables: article title, journal, authors, country, language, year of publication, study site, type of study, objectives, sample, results, impact factor and level of evidence<sup>(6)</sup>.



**Figure 1.** Article selection flowchart. Campo Grande, MS, Brazil, 2022.

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The impact factor is a measure that reflects the average number of citations of scientific articles published in a given journal and is used to evaluate the importance of a journal in a given area. For this purpose, the classification according to the JCR (Journal Citation Reports) or SJR (SCImago Journal Rank) metrics is used. Regarding the classification of the level of evidence, the one proposed by Melnyk and Fineout-Overholt was adopted, namely: Level 1: meta-analysis of controlled and randomized clinical studies; Level 2: study with experimental design; Level 3: almost experimental research; Level 4: cohort and case-control studies; Level 5: systematic review of descriptive and qualitative studies; Level 6: descriptive or qualitative study and; Level 7: expert opinions<sup>(6)</sup>.

The selection followed the same sequential reading process: title, abstract and full text. The final sample had eight articles. The data were

grouped according to similar themes and were subdivided into categories. The categories – determined from the type of health education strategy used – were as follows: use of printed material, individual and group verbal guidance, use of educational video and clinical simulation.

The findings were structured in table and table, and the articles were coded in descending order regarding the year of publication, for better identification.

## RESULTS

Table 1 presents the studies and provides information regarding authors, country, year of publication, classification according to the impact factor and the level of evidence.

Of the eight articles included in the study, seven were published in international journals; only two are of Brazilian origin; three are of Chinese origin; and six have been published in the last five years. In addition, there is a predominance of studies conducted in the Asian continent. Almost experimental studies using pre- and post-test were the majority, with emphasis on the level of evidence VI.

**Table 1.** Characteristics of included studies according to identification, authors, country, year of publication, classification according to impact factor and level of evidence. Campo Grande, MS, Brazil, 2022.

ID	Authors	Country	Year	Impact Factor	Level of Evidence
1	Ratri, et al.	Indonesia	2020	SJR 0.49	VI
2	Reis, et al.	Brazil	2020	SJR 0.21	IV
3	Ji H., et al.	China	2019	SJR 1.57	II
4	Misnikova, et al.	Russia	2017	SJR 1.12	II
5	Carvalho, et al.	Brazil	2018	SJR 0.24	VI
6	Brod, et al.	USA	2014	SJR 1.04	VI
7	Liang, et al.	China	2021	JCR 1.889	III
8	Chen, et al.	China	2021	JCR 2.945	II

**Source:** the authors.

Chart 1 presents the method used in the the investigation.  
research, the population and the main findings of

**Chart 1.** Study identification (ID), method, population and use. Campo Grande, MS, Brazil, 2022.

ID	Method	Population	Use
1 <sup>(8)</sup>	Quantitative study using a pre- and post-test questionnaire to assess knowledge before and after health education with video on insulin therapy.	100 participants > 18 years old with T2DM using insulin.	There was a statistically significant increase in patients' knowledge.
2 <sup>(9)</sup>	Mixed approach study using a pre- and post-test questionnaire to evaluate the intervention by verbal guidance, demonstration of insulin management, supervision	61 participants > 18 years old with DM1 or DM2 using insulin.	The intervention was effective in acquiring knowledge related to insulin storage, preparation and use.
3 <sup>(10)</sup>	of the application technique and information folder delivery.	91 participants > 18 years old with T2DM using insulin or antidiabetic drugs for > 1 year.	After 6 months, decreased HbA1c, fasting plasma glucose and postprandial glucose level in the experimental group compared to the control group.
4 <sup>(11)</sup>	Quantitative, quasi-experimental study, using a pre- and post-test questionnaire to compare the effects of the intervention in relation to simulation and case management.	116 patients with DM 1 or DM2 between 18 and 70 years old, using multiple-dose insulin for at least 1 month.	At 6 months, there was a reduction in HbA1c levels, needle reuse rates, and injection site adverse reactions. There was also an improvement in the application technique in the experimental groups, but not in the control group.
5 <sup>(12)</sup>	Randomized clinical trial to evaluate structured training on insulin delivery technique in a 6-month pilot study.	72 participants < 60 years, among people with T2DM using insulin and caregivers.	The use of educational strategies made it possible to improve knowledge, attitude and empathy.
6 <sup>(13)</sup>	Qualitative study with semi-structured interviews and focus groups on issues that permeated insulin therapy.	87 participants > 18 years old with DM2 with indication for insulin therapy.	Influential factors relate to complications and use of treatment. Educational tools must address myths, misconceptions and clinical realities.
7 <sup>(14)</sup>	Qualitative study with focus groups and expert panel to verify the obstacles faced when starting insulin therapy.	100 participants with DM 1 or 2 using insulin.	Using simulation tools, combined with operational videos and manuals, as a standard process to guide patients through insulin injection training, can alleviate patient fear, provide more practice, and improve insulin delivery skills.
8 <sup>(15)</sup>	Quasi-experimental study on the technique of insulin delivery using a belt-shaped simulation device. In both groups, complementary guidelines were used, with the use of a booklet and educational video.	238 participants with DM 1 or 2 using insulin.	Patients who: use insulin with adequate rotation of the injection site have favorable effects on HbA1c control; use short needles to increase access to the site; decrease the reuse of needles; and avoid injection into lipodystrophy sites.

**Source:** the authors.

The categories were organized based on teaching strategies: use of printed material; individual and group verbal guidance; use of educational video; and clinical simulation. It is

important to highlight that some studies have been associated with two or more teaching strategies.

## DISCUSSION

The included studies presented several educational strategies for self-management and encompassed several aspects related to diabetes control and insulin therapy management. In addition, the researches addressed different populations, which demonstrates the importance of using several pedagogical tools for the teaching-learning process.

Regarding this process, the learning pyramid discusses active and passive teaching-learning methods<sup>(16)</sup>. The acts of reading, watching and listening contribute to efficient learning, but are passive means of learning. However, debating, asking and reporting experiences are actions that motivate reflection and self-criticism, promoting a more active and, consequently, more significant teaching method<sup>(16)</sup>. Moreover, it is worth noting that the learning process occurs differently among individuals, which should be considered when choosing the method used.

Thus, the use of active teaching-learning methodologies enables individuals to occupy the place of subjects in the construction of knowledge, a situation in which the educator is placed as a facilitator of this process. However, sometimes, health education is still based on a fragmented model of knowledge, with a teaching centered only on the knowledge of the educator and the health professional, the standardized content and reproduction by memorization<sup>(16,17)</sup>, without considering the individual's previous knowledge, values and even culture.

### Studies with printed material

In the articles analyzed, the approach with the use of printed material, such as formwork and booklets – passive teaching-learning strategy – led to a significant increase in knowledge of the facts about diabetes, regardless of the treatment regimen, especially with regard to self-care<sup>(9)</sup>.

It can be speculated that the positive results of education with printed material in insulin therapy also result from the fact that the material is available to patients and caregivers at home, with the possibility of handling at any time. This availability helps to change lifestyle and/or medication adherence and, consequently, provides better glycemic control<sup>(18)</sup>.

The relationship between health education, glycemic control and literacy was approached by a chronic disease management program. It was noticed that many patients, when faced with strategies that involved reading, did not understand the information and, therefore, felt embarrassed in front of the professionals. Then, these patients said that they had no glasses or wanted to read the instructions at home, with the family and/or with the caregiver<sup>(19)</sup>.

In this context, health professionals play a primary role in promoting self-care, setting goals and planning care together with the patient<sup>(20)</sup>. Thus, in order to have comprehensive care, professionals must understand patients and their caregivers in a broader perspective. It is necessary to involve them, consider their limitations and offer other approaches, in order to develop an education consistent with individual and family needs<sup>(17,21)</sup>.

Therefore, it is concluded that reducing the complexity of self-management and encouraging behavior change – a change that is combined with the use of an easy-to-understand teaching material, accessible to patients with a lower degree of literacy and available for use at home – can generate positive results in glycemic control and subsequent reduction of complications related to insulin use<sup>(19)</sup>. In this sense, it is important to use tools to assist in this process, such as the application of the Health Literacy Scale, with the objective of identifying knowledge, competence and motivation for change, which directs the strategies used for health education<sup>(22)</sup>.

### Studies with individual and group verbal guidance

The verbalization of knowledge is a financially accessible, practical and flexible strategy. Thus, it is a great ally of health education practices<sup>(2)</sup>. One of the studies<sup>(12)</sup> included in the review investigated the effects of the Conversation Map on diabetes, as the only educational strategy used. The practice is carried out in focus groups and develops from everyday situations experienced by users. The results were positive regarding the clarification of doubts and the exchange of experiences about the use of insulin, as well as the strengthening of bonds

with professionals<sup>(12)</sup>. No tests were performed to evaluate glycemic control after this intervention.

However, an experimental study conducted in Australia with 67 participants evaluated the difference between conventional group education and the use of the Conversation Map. This study showed significant positive results in the Hb1Ac of the group that used the map, in addition to an improvement in relation to knowledge about the theme and capacity for self-care<sup>(23)</sup>.

The realization of verbal guidance as an educational strategy associated with another teaching strategy – such as supervision of the technique of application and delivery of information leaflet for consultation at home – also had the purpose of increasing the capacity of understanding and apprehension of knowledge. The participants, in general, presented a significant decrease in HbA1c after the interventions, compared to the control groups in this situation<sup>(9)</sup>.

In view of the large number of elderly with diabetes, it is necessary to adapt to the demands of this population, because some limitations and dependencies for performing routine activities can compromise functional capacity and maintain autonomy, making self-care management complex<sup>(24)</sup>. Thus, one should verbalize knowledge slower and paused; technical terms should be avoided; and repetitions of the subject should be performed.

In studies on the use of verbal guidance in groups for the instruction of insulin therapy<sup>(9,12,13)</sup>, evidence of improvement in glycemic control is observed, which supports the use of this teaching strategy associated with another method. However, regarding the exclusive use of this strategy, the studies present results related to the good understanding of the information, but only momentarily<sup>(12)</sup>.

In general, defining how knowledge will be transmitted is crucial to deepen the dialogue around needs and demands, so that there is a success in diabetes control. It is essential that health education incorporate pedagogical advances and explore forms that allow a greater integration between theory and practice, which promotes the development of the critical spirit, as well as encourages the capacity for reflection

and active participation in the construction of knowledge<sup>(16)</sup>.

### Studies with educational video

Learning based on audiovisual resources is an important teaching tool in health as it contributes to the quality of care. Audiovisual technology enables the construction of a multidimensional knowledge, in which there is the possibility of interactivity and flexibility. An important question concerns how the teaching strategy is understood by patients, mainly by those of advanced age, which is a determining factor in the transfer of knowledge<sup>(25-26)</sup>.

The study that addressed this strategy<sup>(8)</sup> showed the need for shorter videos, with clear language, paused speech and clear intonation. When produced in order to meet the need of the assisted public, the use of audiovisual language as a pedagogical resource arouses interest and favors the exploration of content in a more attractive way, facilitating the viewer's understanding. However, there is still little development of studies that evidence the elaboration of this type of material and its use by health professionals<sup>(25-27)</sup>.

The evaluation of the knowledge and attitude of patients about insulin therapy showed that, although the participants already had a good knowledge about the issues that permeate diabetes and insulin therapy, they presented better results in the tests of understanding and behavior after watching the educational videos regarding the correct use of insulin<sup>(8)</sup>.

The findings maintain that, with the use of educational video as a teaching proposal, the participants presented good knowledge acquisition in relation to the information transmitted. However, there are some limitations regarding the singularity of care, such as differences in the capture of the material in relation, mainly, to the intellectual level and cognitive and auditory deficits; the degree of patient autonomy; and, in certain cases, the types of caregivers who provide care or who assist patients in aspects related to insulin therapy<sup>(8,27-28)</sup>.

### Clinical simulation studies

The use of clinical simulation as a teaching strategy for insulin therapy enables the improvement of skills and knowledge, according to the specificity of each individual. This method has a great potential for the teaching-learning process, mainly because it is a facilitator of meaningful learning.

Proposed by David Ausubel, the theory of meaningful learning consolidates the idea of knowledge construction, emphasizing the interaction between preexisting and acquired knowledge<sup>(16)</sup>. This type of learning occurs when there is attribution of meanings to a new knowledge from the interaction with previous knowledge, even if they are unsatisfactory. With this interaction, it is possible to enrich the previous structure and generate expansion and reconfiguration of knowledge. For this, it is necessary to foster questions, generate doubts and increase the desire for information, making learning motivating, with potentially significant materials that provide the establishment of relevant dialogues with previous knowledge<sup>(16,29)</sup>.

Therefore, the use of clinical simulation allows experiencing different daily situations and realizing the learning of information, ensuring the construction of knowledge from experiences<sup>(14)</sup>. In the included studies that addressed clinical simulation<sup>(10,14,15)</sup>, it was evidenced that the participants were sensitive to diabetes education actions, performed mainly by nurses in the intervention stages. In addition, they showed significant improvement in clinical parameters, as well as better adhering to their treatment regimens<sup>(10)</sup>.

The use of simulation allows health education to address several peculiarities, from the simulation of the application technique – as in one of the studies<sup>(14)</sup>, in which a low-cost simulator was used, in the form of a belt – to a clinical case simulation<sup>(10)</sup> performed after the presentation of a video; in this simulation, the participants represented a scene of everyday life, and doubts were answered.

Thus, this educational resource stimulates the sensory system, because, by using a device that allows the recreation of a situation or an adverse event – such as the application in a lipodystrophy or in an injured skin – the simulation allows the identification and

recognition of the risk. These actions minimize future complications and provide the individual with the experience of sometimes unknown situations<sup>(15)</sup>, in order to make learning meaningful.

In other studies<sup>(9,11)</sup> included in this integrative review, structured training and observation of the application technique were performed. These strategies allowed identifying the main questions, difficulties, limitations and doubts. The observation of the application technique can be used to precede another strategy or can be adopted as a single resource, as it provides the recognition of potentialities and difficulties, which can guide the professional's approach. In addition, this observation also allows the practical and synchronous orientation of the procedure centered on the peculiarities of the patients<sup>(11)</sup>.

These results indicate that active actions of low-cost education are replicable in the routine of the services of professionals. In addition, these actions are very effective tools for continued care and for the consolidation of meaningful learning. Although its use with patients and caregivers is still incipient, studies on this topic have the potential to solidify the strategy in different populations and in the different services that require reasoned and quality information, especially for self-care.

Practicing and teaching allows content to be assimilated more easily, as they have been experienced and applied. Such initiatives require a more active participation of the student and greater involvement with the theme to be learned, elements that make up the base of the Glasser Pyramid. Thus, it is understood that new experiences must be established through a more active, participative and inclusive learning<sup>(16)</sup>.

Several studies<sup>(9,14,15)</sup> used the association of two or more teaching strategies in diabetes to promote a greater understanding of the theme, since the resources complemented each other. In other words, these studies identified weaknesses in relation to the theme and performed interventions in order to minimize the difficulties as much as possible. Methods were also used with which participants identified themselves, according to their limitations.

It is important to mention that the effective combination of education activities can ensure

more consolidated meaningful learning, especially when an active resource is used. In addition, this combination can strengthen the meaning of transmitted knowledge, which generates positive effects, in order to complement activities, minimizing gaps in the transmission of knowledge<sup>(16)</sup>.

It is noteworthy, as a possible limitation of this study, that the use of the descriptor “Models, education” may not have made it possible to reach all the educational strategies used to train people with diabetes in need of insulin therapy. Another limitation is the lack of research with large population numbers and with a higher level of evidence.

### CONCLUSION

In this integrative review, four teaching strategies related to diabetes and insulin therapy were addressed: printed material, verbal guidance, educational video and clinical simulation. The analysis of the studies included

in this review allowed us to verify that different modalities of health education – especially when they are associated – are effective in helping patients in diabetes control.

Such low-cost strategies are of great value in preventing complications resulting from poor glycemic control and provide improvements in the quality of life of patients. It is believed that, with the use of educational strategies, one can subvert the curative logic and present preventive health as a possibility of reducing costs of the health sector.

Studies with passive teaching-learning methods, such as the use of audiovisual strategies and booklets, are still the majority. However, when methods using interactive resources were adopted, a higher support of the participants was observed, which contributed to glycemic control. No strategies that used applications, games, or other technologies were identified. This gap points to the possibility of further investigations on the subject.

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## ESTRATÉGIAS DE EDUCAÇÃO EM SAÚDE A PACIENTES COM DIABETES MELLITUS EM INSULINOTERAPIA: REVISÃO INTEGRATIVA

### RESUMO

**Objetivo:** avaliar a utilização de diferentes estratégias de educação em saúde destinadas ao cuidado das pessoas com diabetes em tratamento de insulino terapia. **Métodos:** revisão integrativa da literatura, com busca realizada no período de junho de 2021 e março de 2022, com recorte temporal de dez anos, nas bases eletrônicas Science Direct, Cumulative index to nursing and Allied Health Literature, portal PubMed, Web of Science, Scopus, Scientific Electronic Library Online e Biblioteca Virtual em Saúde, com descritores controlados indexados no *Descritores em Ciências da Saúde* e no *Medical Subject Headings*. **Resultados:** nos oito estudos selecionados a partir dos critérios de inclusão, as estratégias encontradas foram o uso de material impresso, a orientação verbal individual e em grupo, o emprego de recurso audiovisual e a simulação clínica. **Conclusão:** a análise dos estudos permitiu verificar que diferentes modalidades de educação em saúde são eficazes para auxiliar no gerenciamento do diabetes. Entretanto, os métodos de ensino passivos ainda são maioria, o que torna necessário que novos estudos explorem outras formas de preparo para o cuidado em saúde, como as metodologias ativas de ensino-aprendizagem.

**Palavras-chave:** Insulina. Diabetes mellitus. Educação em saúde. Modelos educacionais.

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## ESTRATEGIAS DE EDUCACIÓN EN SALUD A PACIENTES CON DIABETES MELLITUS EN INSULINOTERAPIA: REVISIÓN INTEGRADORA

### RESUMEN

**Objetivo:** evaluar la utilización de diferentes estrategias de educación en salud dirigidas al cuidado a las personas con diabetes en tratamiento de insulino terapia. **Métodos:** revisión integradora de la literatura, con búsqueda realizada en el período de junio de 2021 y marzo de 2022, con recorte temporal de diez años, en las bases electrónicas Science Direct, Cumulative index to Nursing and Allied Health Literature, portal PubMed, Web of Science, Scopus, Scientific Electronic Library Online y Biblioteca Virtual em Salud, con descriptores controlados indexados en el *Descritores em Ciências da Saúde* y en el *Medical Subject Headings*. **Resultados:** en los ocho estudios seleccionados a partir de los criterios de inclusión, las estrategias encontradas fueron el uso de material impreso, la orientación verbal individual y en grupo, el empleo de recurso audiovisual y la simulación clínica. **Conclusión:** el análisis de los estudios permitió verificar que diferentes modalidades de educación en salud son eficaces para ayudar en el manejo de la diabetes. Sin embargo, los métodos de enseñanza pasivos



todavía son mayoría, lo que hace necesario que nuevos estudios exploren otras formas de preparación para el cuidado en salud, como las metodologías activas de enseñanza-aprendizaje.

**Palabras clave:** Insulina. Diabetes mellitus. Educación en salud. Modelos educativos.

## REFERENCES

1. Sociedade Brasileira de Diabetes. Diretrizes da Sociedade Brasileira de Diabetes 2019-2020. [Internet]. 2019 [cited Oct 29, 2020]; 12-60. Available from: <https://www.diabetes.org.br/profissionais/images/DIRETRIZES-COMPLETA-2019-2020.pdf>
2. Saeedi P, Petersohn I, Salpea P, Malanda B, Karuranga S, Unwin N, et al. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: results from the International Diabetes Federation Diabetes Atlas, 9th ed. *Diabetes Res Clin Pract*. 2019;157:1-5. DOI: <https://doi.org/10.1016/j.diabres.2019.107843>
3. Reis P dos, Marcon SS, Nass EMA, Arruda GO de, Back IR, Lino IGT, et al. Performance of people with diabetes mellitus under insulin therapy. *Cogitare enferm*. 2020; 25. DOI: <http://dx.doi.org/10.5380/ce.v25i0.66006>
4. Castro RMF, Silva AMN, Silva AKS, Araújo BFC, Maluf BVT, Franco JCV. Diabetes mellitus e suas complicações - uma revisão sistemática e informativa. *Brazilian Journal of Health Review*. 2021;4 (1):3349-3391. DOI: <https://doi.org/10.34119/bjhrv4n1-263>
5. Santos AL, Marcon SS, Teston EF, Back IR, Lino IGT, Batista VC, Matsuda LM, Haddad MCFL. Adherence to the treatment of diabetes Mellitus and relationship with assistance in Primary Care. *REME – Rev Min Enferm*. 2020;24:e-1279. DOI: <https://doi.org/10.5935/1415-2762.20200008>
6. Souza MT, Silva MD, Carvalho R. Integrative review: what is it? How to do it? *Einstein*. 2010; 10(1):102-106. DOI: <https://doi.org/10.1590/s1679-45082010rw1134>
7. Stillwell SB, Fineout-Overholt E, Melnyk BM, Williamson KM. Searching for the Evidence: Strategies to help you conduct a successful search. *Am J Nurs*. 2010; 110(5):41-47. DOI: <https://doi.org/10.1097/01.NAJ.0000372071.24134.7e>
8. Ratri DM, Hamidah KF, Puspitasari AD, Farid M. Video-based health education to support insulin therapy in diabetes mellitus patients. *J Public Health Res*. 2020; 9(2):226-233. DOI: <https://doi.org/10.4081/jphr.2020.1849>
9. Reis P, Marcon SS, Teston EF, Nass EM, Ruiz AG, Francisqueti V, et al. Educational intervention on insulin knowledge and management at home. *Acta Paul Enferm*. 2020; 33(1):1-9. DOI: <https://doi.org/10.37689/acta-ape/2020ao0241>
10. Ji H, Chen R, Huang Y, Li W, Shi C, Zhou J. Effect of simulation education and case management on glycemic control in type 2 diabetes. *Diabetes Metab Res Rev*. 2019; 35(3):1-7. DOI: <https://doi.org/10.1002/dmrr.3112>
11. Misnikova IV, Gubkina VA, Lakeeva TS, Dreval AV. A randomized controlled trial to assess the impact of proper insulin injection technique training on glycemic control. *Diabetes Ther*. 2017; 8(6):1309-1318. DOI: <https://doi.org/10.1007/s13300-017-0315-y>
12. Carvalho SL, Ferreira MA, Medeiros JMP, Queiroga ACF, Moreira TR, Negreiros FDSF. Conversation map: an educational strategy in the care of elderly people with diabetes mellitus. *Rev Bras Enferm*. 2018; 71(1): 925-929. DOI: <https://doi.org/10.1590/0034-7167-2017-0064>
13. Brod M, Alolga LS, Meneghini L. Barriers to initiating insulin in type 2 diabetes patients: development of a new patient education tool to address myths, misconceptions and clinical realities. *Patient*. 2014; 7(4):437-450. DOI: <https://doi.org/10.1007/s40271-014-0068-x>
14. Liang KMM, Xie QMB, Nie JBN, Deng JBN. Study on the effect of education for insulin injection in diabetic patients with new simulation tools. *Medicine*. 2021; 10(14):1-8. DOI: <https://doi.org/10.1097/MD.00000000000025424>
15. Chen L, Xing Q, Li J, Zhou J, Yuan Y, Wan Y, et al. Injection technique education in patients with diabetes injecting insulin into areas of lipohypertrophy: a randomized controlled trial. *Diabetes Ther*. 2021; 12(3):813-26. DOI: <https://doi.org/10.1007/s13300-021-01013-1>
16. Roman C, Ellwanger J, Becker GC, Silveira AD, Machado CL, Manfroi WC. Metodologias ativas de ensino-aprendizagem no processo de ensino em saúde no Brasil: uma revisão narrativa. *Clin Biomed Res*. 2017; 37(1):349-357. DOI: <https://doi.org/10.4322/2357-9730.73911>
17. Ferreira JFMM, Bracarense CF, Kappel VB, Parreira BDM, Rodrigues LR, Goulart BF. Health education in the Family health strategy: nurse's perception. *UERJ Nursing Journal*. 2021; 29(1):1-8. DOI: <http://doi.org/10.12957/reuerj.2021.59640>
18. Selea A, Šumarac-Dumanović M, Pešić M, Šuluburić D, Stamenković-Pejković D, Cvijović G, et al. The effects of education with printed material on glycemic control in patients with diabetes type 2 treated with different therapeutic regimens. *Vojnosanit Pregl*. 2011; 68(8):676-683. DOI: <https://doi.org/10.2298/vsp1108676s>
19. Rothman R, Malone R, Bryant B, Horlen C, DeWalt D, Pignone M. The relationship between literacy and glycemic control in a diabetes disease-management program. *Diabetes Educ*. 2004; 30(2):263-273. DOI: <https://doi.org/10.1177/014572170403000219>
20. Teston EF, Sales CA, Marcon SS. Perspectives of individuals with diabetes on selfcare: contributions for assistance. *Esc. Anna Nery*. 2017;21(2):1-83. DOI: <https://doi.org/10.5935/1414-8145.20170043>
21. Castro PC, Ribeiro TS, Faraoni AG, Matumoto S, Souza FB, Viana AL. Insulin self-application in adults with diabetes mellitus in the home context: integrative review. *REME - Rev Min Enferm*. 2022;26:1-10. DOI: <https://doi.org/10.35699/2316-9389.2022.38799>
22. Marques SR, Escarce AG, Lemos SM. Health literacy and self-rated health in adults primary care patients. *CoDAS*. 2018; 30(2):1-8. DOI: <https://doi.org/10.1590/2317-1782/20182017127>
23. Kewming S, D'Amore A, Mitchell EKL. Conversation maps and diabetes education groups: an evaluation at an Australian rural health service. *Diabetes Spectr*. 2016; 29(1):32-36. DOI: <https://doi.org/10.2337/diaspect.29.1.32>
24. Mota TA, Alves MB, Silva VA, Oliveira FA, Brito PMC, Silva RS. Factors associated with the functional capacity of elderly individuals with hypertension and/or diabetes mellitus. *Escola Anna Nery*. 2020; 24(1):1-7. DOI: <https://doi.org/10.1590/2177-9465-EAN-2019-0089>
25. Lima VS, Azevedo NA, Guimarães JM, Pereira MM, Neto JA, Souza LM, et al. Produção de vídeo-educacional: estratégia de formação docente para o ensino na saúde. *Reciis-Rev Eletrôn Comun Inf Inov Saúde*. 2019;13(2):428-438. DOI: <https://doi.org/10.29397/reciis.v13i2.1594>
26. Razera APR, Trettene AS, Mondini CCSD, Cintra FMRN, Razera FPM, Tabaquim MLM. Construction of an educational video on postoperative care for cheiloplasty and palatoplasty. *Texto Contexto Enferm*. 2019; 28(1):2-13. DOI: <http://dx.doi.org/10.1590/1980-265X-TCE-2018-0301>
27. Mendes AH, Torres ACS, Belém MO. Understanding of popular health education by a Family Health Strategy team. *Cienc. Cuid. Saúde*. 2021;20:1-6. DOI:

<https://doi.org/10.4025/ciencuidsaude.v20i0.52101>

28. Dalmolin A, Perlini NM, Coppetti LC, Rossato GC, Gomes JS, Silva ME. Educational video as a healthcare education resource for people with colostomy and their families. *Rev Gaúcha Enferm.* 2016; 37(1):1-9. DOI:

<https://doi.org/10.1590/1983-1447.2016.esp.68373>

29. Grillo MF, Neumann CR, Scain SF, Rozeno RF, Gross JL, Leitão CB. Effect of different types of self-management education in patients with diabetes. *Rev Assoc Med Bras.* 2013; 59(4):400-405. DOI: <https://doi.org/10.1016/j.ramb.2013.02.006>

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