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MANAGEMENT OF SELF-CARE BEHAVIOR IN ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS

GESTÃO DO COMPORTAMENTO DE AUTOCUIDADO EM ADOLESCENTES COM DIABETES MELLITUS TIPO 1

GESTIÓN DEL COMPORTAMIENTO DE AUTOCUIDADO EN ADOLESCENTES CON DIABETES MELLITUS TIPO 1

Ana Filipa Roque¹, Ana Margarida Carvalho¹, Carolina Filipa Lopes¹,
Carlota Mota¹, Sara Silva Pestana¹, Margarida Goes^{2,3}, Ana João^{2,3},
Anabela Coelho^{2,3}, Ana Dias², Leonel Lusquinhos².

¹São João de Deus School of Nursing, University of Évora; ²Nursing Department,
University of Évora; ³Comprehensive Health Research Centre (CHRC).

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ABSTRACT

Introduction: Type 1 Diabetes Mellitus (T1D) is an increasingly prevalent disease in adolescence, so self-care intervention is essential for disease management. Diagnosis of T1D in adolescence can lead to long-term complications, and proper adherence to self-care can reduce negative effects and promote better quality of life.

Objective: To analyze different nursing strategies that promote greater adherence of adolescents with T1D to self-care activities, identifying those that are most effective.

Methodology: Integrative literature review using the PICO mnemonic to compile the research question. Articles were searched on the EBSCOhost platform, selecting articles published between January 2010 and December 2022 in the MEDLINE complete and CINAHL complete databases. Seven articles were selected and the recommendations of the Preferred Articles for Systematic Reviews and Meta-Analyses – PRISMA method were followed.

Results: Most of the selected articles suggest that there is scientific evidence that education and support from the multidisciplinary team, highlighting nurses, can increase adolescents' knowledge about the disease, help improve their perception of their situation, and promote adherence to therapy, resulting in better disease management and quality of life. Specific interventions and education programs need to be implemented for the adolescent audience with T1D to ensure self-care and disease management.

Conclusion: The management of self-care behavior in adolescents with T1D is essential for disease control and management. This management, requires a collaborative and integrated approach, including clear and accurate information, emotional support, motivation and teaching the importance of adherence to therapy. The nurse plays a key role by working collaboratively with the multidisciplinary team, the adolescent, and the adolescent's family.

Keywords: Adolescents; Nursing Care; Self-Care; Type 1 Diabetes Mellitus.

RESUMO

Introdução: A Diabetes Mellitus tipo 1 (DMT1) é uma doença cada vez mais prevalente na adolescência pelo que intervir no autocuidado é determinante para a gestão da doença. O diagnóstico da DMT1 na adolescência pode trazer complicações de longo prazo e uma adesão ao autocuidado adequada pode reduzir efeitos negativos e promover uma melhor qualidade de vida.

Objetivo: Analisar diferentes estratégias de enfermagem que promovem uma maior adesão do adolescente com DMT1 às atividades de autocuidado, identificando aquelas que são mais eficazes.

Metodologia: Revisão integrativa da literatura que utilizou a mnemónica PICO para compilar a pergunta de investigação. Procedeu-se à pesquisa de artigos na plataforma EBSCOhost, selecionando-se artigos publicados entre janeiro de 2010 e dezembro de 2022 nas bases de dados MEDLINE complete e CINAHL complete. Foram selecionados sete artigos e seguiram-se as recomendações do método *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* – PRISMA.

Resultados: A maioria dos artigos selecionados sugerem existir evidência científica de que a educação e o apoio da equipa multidisciplinar, destacando os enfermeiros, podem aumentar o conhecimento dos adolescentes sobre a doença, ajudar a melhorar a perceção sobre a sua situação e promover a adesão à terapêutica, resultando em uma melhor gestão da doença e qualidade de vida. É necessário que sejam implementadas intervenções e programas de educação específicos para o público adolescente com DMT1 para garantir o autocuidado e a gestão da doença.

Conclusão: A gestão do comportamento de autocuidado em adolescentes com DMT1 é fundamental para a gestão da doença. Esta gestão, requer uma abordagem colaborativa e integrada, incluindo informações claras e precisas, suporte emocional, motivação e ensino da importância da adesão à terapêutica. O enfermeiro tem um papel fundamental trabalhando em colaboração com a equipa multidisciplinar, com o adolescente e sua família.

Palavras-Chave: Adolescentes; Autocuidado; Cuidados de Enfermagem; Diabetes Mellitus Tipo 1.

RESUMEN

Introducción: La Diabetes Mellitus Tipo 1 (DMT1) es una enfermedad cada vez más prevalente en la adolescencia, por lo que la intervención en el autocuidado es esencial para el control de la enfermedad. El diagnóstico de la T1D en la adolescencia puede acarrear complicaciones a largo plazo, y una adherencia adecuada a los autocuidados puede reducir los efectos negativos y promover una mejor calidad de vida.

Objetivo: Analizar las diferentes estrategias de enfermería que promueven una mayor adherencia de los adolescentes con DM1 a las actividades de autocuidado, identificando aquellas que son más eficaces.

Metodología: Revisión bibliográfica integradora utilizando la mnemotecnia PICO para elaborar la pregunta de investigación. Se realizaron búsquedas de artículos en la plataforma EBSCOhost, seleccionando los artículos publicados entre enero de 2010 y diciembre de 2022 en las bases de datos MEDLINE complete y CINAHL complete. Se seleccionaron siete artículos y se siguieron las recomendaciones del método de Artículos Preferidos para Revisiones Sistemáticas y Metaanálisis – PRISMA.

Resultados: La mayoría de los artículos seleccionados sugieren que existen pruebas científicas de que la educación y el apoyo del equipo multidisciplinar, destacando a las enfermeras, pueden aumentar los conocimientos de los adolescentes sobre la enfermedad, ayudar a mejorar su percepción de la situación y fomentar el cumplimiento terapéutico, lo que se traduce en un mejor control de la enfermedad y una mejor calidad de vida. Es necesario poner en marcha intervenciones y programas educativos específicos para el público adolescente con T1D con el fin de garantizar el autocuidado y la gestión de la enfermedad.

Conclusión: La gestión del comportamiento de autocuidado en adolescentes con DMT1 es esencial para el control y la gestión de la enfermedad. Esta gestión, requiere un enfoque colaborativo e integrado, que incluya información clara y precisa, apoyo emocional, motivación y enseñanza de la importancia de la adherencia a la terapia. La enfermera desempeña un papel clave trabajando en colaboración con el equipo multidisciplinar, el adolescente y su familia.

Descriptor: Adolescentes; Autocuidados; Cuidados de Enfermería; Diabetes Mellitus Tipo 1.

INTRODUCTION

Type 1 Diabetes Mellitus (T1D) is a chronic condition in which the pancreas does not produce enough insulin. Insulin is an important hormone that allows the body to use sugar (glucose) as a source of energy. In DT1, the body's immune system attacks and destroys the insulin-producing cells in the pancreas, called beta cells, resulting in insufficient or even no insulin production. T1D is the most common form of diabetes in children and adolescents, which explains its association with the term “Juvenile Diabetes”⁽¹⁾.

The symptoms associated with T1D in its early stages are the presence of polydipsia, polyphagia, polyuria, and blurred vision, and these symptoms are indicative of hyperglycemia. T1D may also have associated pathologies such as retinopathy, neuropathy, nephropathy, cardiovascular disease, and diabetic foot⁽²⁾. According to the information in the Directorate-General of Health report “Children and young people with Type 1 Diabetes Mellitus”⁽³⁾, the number of cases of T1D in children and young people in Portugal has been increasing at a rate of about 3-4% per year. In the year 2015, 3,327 individuals aged 0-19 years were diagnosed with the disease, which is equivalent to 0.16% of the population in that age group. Note that these numbers may have changed since then, however, they provide a general idea of the current situation of T1D in Portugal. This is a health condition that requires constant care and attention to ensure that blood glucose levels are maintained within the normal range. This involves frequent monitoring of glucose levels, adjusting insulin dosage, and following a balanced diet. In addition, patients with T1D should be alert for signs of hypoglycemia (low blood glucose levels) and hyperglycemia (high blood glucose levels), and seek medical help immediately if necessary because, lack of proper care, can lead to serious complications⁽³⁾. Thus, it should be ensured that these children and young people have access to the health care and information they need to manage their health condition effectively. In addition, it is important to emphasize the importance of prevention and education about T1D, in order to help these young people better understand their disease, as well as to acquire sufficient self-care to reduce the risk of developing it⁽⁴⁾.

Adolescence is an important transitional and developmental phase for the adolescent, marked by significant physical, psychological, and social changes. This stage is characterized by a number of challenges and opportunities for the adolescent, including developing an independent identity, establishing meaningful relationships, building a strong self-esteem, and making important decisions⁽⁵⁾.

The discovery of a chronic illness, such as T1D, can have a significant impact on an adolescent's life, as they are experiencing a number of changes and challenges already mentioned. Some of the most common impacts include: (i) worrying about disease management, diet and lifestyle changes, and insulin administration can lead to high levels of anxiety and stress; (ii) the discovery of the disease can lead to changes in how the adolescent perceives themselves and influence their self-esteem and self-image; (iii) managing the disease may require significant lifestyle changes in activities that the adolescent can perform, which may affect their ability to participate in social activities and sports and; (iv) the disease may have an impact on how the adolescent relates to others, including friends and school-mates⁽⁵⁾.

Despite these challenges, many adolescents with T1D are able to cope well with the disease and continue to develop positively. Support and understanding from the family environment and health care professionals, can be of great help to the adolescent in managing the disease^(5,6).

In the area of health, informative and educational interventions for self-care are highlighted to support these young people, as they also need to obtain knowledge, to develop a set of practical skills. Self-care is a broad concept that encompasses several dimensions of health and well-being, including physical, mental, emotional, social, and spiritual. It refers to practices and behaviors that a person adopts for increased independence and self-confidence that include: (i) encouraging the practice of healthy habits, such as a balanced diet, regular physical activity, adequate sleep, and stress management; (ii) improving mental and emotional health through activities such as meditation, therapy practice, or other forms of self-awareness and self-management of emotions; (iii) managing drug therapy, which involves medication adherence, blood glucose monitoring, and preventing disease complications; (iv) developing skills to cope with the impact of the disease on daily life, including managing time and activities and forming social support networks; and (v) building healthy relationships with others by improving communication and conflict resolution skills. In addition, it is important to encourage adolescents with T1D to actively participate in the management of their own health by involving them in decisions about their treatment and life planning. This will contribute to their development of skills, autonomy, and self-esteem, which can be very beneficial to their long-term health and well-being^(5,16).

Thus, self-care is a fundamental practice for the development of health potential and well-being, as it allows people to be more aware and responsible for their health, helping them to achieve their life goals more effectively⁽¹⁵⁾. In addition, self-care education and management should be continuously offered to adolescents with T1D to help them cope with changes in their health and incorporate healthy habits into their daily routine. The ultimate

goal, is to ensure that the adolescent has access to all the information and tools necessary to effectively manage their disease, achieve a good quality of life, as well as succeed in all spheres of their life^(6,7).

Objective

To analyze different nursing strategies that promote greater adherence of adolescents with T1D to self-care activities, identifying those that are most effective.

METHODS

Ethical aspects

The Ethics Committee was not asked for an opinion, as this was a secondary research study. When formulating the problem, the principles of clarity, objectivity and accuracy were carefully followed. The research path was designed so that the results obtained would be relevant for nursing interventions and/or care practice and, in the case of the chosen topic, directed to pain symptom control and prevention in end-of-life patients. The data obtained in the selected studies were analyzed so as to respect the results collected in these investigations. Author referencing was documented according to the standards of good academic and scientific practice.

Study type

The choice of an integrative literature review aimed to access current knowledge on the problem under study and thus contribute to the incorporation of the results of this study in practical settings. The methodological procedures used involved the following steps: 1) identification of the initial question; 2) definition of the inclusion and exclusion criteria of the studies; 3) definition of the information to be extracted from the studies; 4) analysis of the included articles; 5) presentation and discussion of the results; and 6) synthesis of the knowledge⁽⁸⁾.

Methodological procedures

As a methodological approach, the following steps were used to conduct this integrative literature review: definition of the study's research question, definition of exclusion and inclusion criteria, introduction of descriptors in the databases, identification of studies in the databases, selection of studies after reading the title and abstract of the studies, thorough evaluation of the articles selected for this study, and finally, the analysis of the collected data.

In order to achieve the proposed objective, a research question was defined by applying the PI(C)O methodology, which is intended to be answered in this integrative literature review, in which “P” corresponds to population, “I” is intervention, “C” refers to comparison/control, and “O” is outcomes. The question outlined was as follows: Which nursing interventions (intervention) increase adherence to self-care activities (outcomes) in adolescents with T1D (population)?

With the PICO question developed, a data collection on the subject under study was carried out during the month of October 2022 through the EBSCOhost platform, later selecting the MEDLINE complete and CINAHL complete databases.

Specific descriptors were used, which were connected with the Boolean operators “AND” and “OR” in the following arrangement and order: “diabetes type 1, OR “diabetes type 1” AND “adolescence” AND “treatment compliance”.

In order to limit the search, the following inclusion criteria were selected, namely: (i) full text; (ii) time period between 2010 and 2022; (iii) Portuguese and English language; (iv) population between 13 and 18 years old.

Exclusion criteria included all duplicate articles, articles with an age population of less than 13 and more than 18 years old, and articles that were not in line with the objective of this study. A total of 80 articles were obtained. However, 24 of these articles were repeated and, as such, were excluded, resulting in 56. These articles were then selected in two stages. First by reading the titles, abstracts and keywords and then by reading them in full. Twenty-five articles were not retrieved, resulting in 31. 24 of the 31 articles were excluded, so 7 articles were included in this review, meeting all the criteria considered for data collection and analysis.

Figure 1⁷ shows how these results were arrived at using a PRISMA flowchart.

RESULTS

In order to meet the proposed objectives, several articles were read and their content was analyzed. The characteristics and main results obtained are summarized in Table 1⁷, in ascending chronological order of publication.

DISCUSSION

Through the identification of the main results obtained in the seven articles included in this integrative literature review, it was possible to understand that all the results of the studies converge on the fact that educational nursing interventions aimed at the self-care of adolescents with T1D allow developing a satisfactory quality of life and preventing complications.

According to a study conducted by Moreira, Bandeira, Lopes, Carvalho, Negreiros, Neves (2016)⁽⁹⁾, a higher percentage of errors in feeding control and insulin administration was observed regarding the difficulties related to T1D. However, in the study of Flora, Gameiro (2016)⁽¹⁰⁾, we observed that most adolescents had a high level of knowledge; however, adolescents showed a low level of self-care. Other relevant aspects explored by these researchers were the nursing interventions for identifying difficulties in teaching and correcting incorrect behaviors, such as hypoglycemia, insulin storage, lancet replacement, physical exercise, and insulin administration.

In contrast, Wu, Zhang, Zhang, *et al* (2022)⁽⁶⁾, further studied the dependent variables (gender, age, parents' employment status, education, school retention, control strategies and social support) in relation to the independent variable, resilience. The aim was to understand whether adolescents with a higher level of resilience show better adaptive outcomes and better control of T1D.

For this purpose, four assessment instruments were used: i) The HKRAM (Healthy Kids Resilience Assessment Module) scale, which allows for the identification of weaknesses and/or protections in several areas of the adolescent's life; ii) the AVS (Stressful Life Events) scale, which allows understanding the number of stressful events perceived by the adolescent and the impact with which they experience them; iii) the ELCS scale (Locus of Control in Health Scale), which allows understanding some of the adolescents' behaviors, based on their beliefs, related to controlling their health and iv) the TTS (Toulousian Coping Scale),

which allows assessing the knowledge of the coping strategies used by adolescents. The authors argue that these instruments are reliable and useful for nurses, in order to implement preferably proactive and personalized care, and that they all provide information for a more effective intervention. The combination of these instruments can provide a more complete and comprehensive view of adolescents' well-being, which can be useful to identify strengths and weaknesses and develop appropriate interventions. In this study it was important to understand which strategies were most commonly used to cope with adversity and there seems to be evidence that, incorporating resilience strategies into the education and care of adolescent patients with diabetes, may be an effective way to improve their health outcomes and well-being. The idea of a proactive, personalized approach to care, with the goal of increasing adolescents' self-efficacy and decreasing stress, is a promising approach to diabetes management. In addition, the authors suggest that the components of resilience should be incorporated and reinforced regularly for best results in clinical practice.

With regard to the contribution of socio-biographical factors, gender, age and family financial situation stand out as predictors influencing the resilience of adolescents with T1D. According to the results found by the authors, boys tend to be more resilient, while younger adolescents show even higher levels of resilience. On the other hand, school retention seems to have a negative impact on adolescents' resilience. In addition, it appears that family financial status also has an important impact on adolescents' resilience, with those whose parents/caregivers are employed tending to be more resilient. It is important to take these factors into consideration when developing strategies to help adolescents with T1D cope with adversity.

The authors mention the importance of developing individual, family, or group interventions, taking advantage of the peer relationship that is so important during adolescence. In the literature, the relationship with peers can help in gaining autonomy and experiencing meaningful living. These results lead to a reflection on the importance of developing interventions at the self-care level that take into account the role of the relationship with peers in the resilience of adolescents with T1D.

Additionally, in adolescents who come from traditional families, who have not experienced school retention, and who have had fewer stressful life events and/or less emotional impact, metabolic control is generally better. In other words, the study points out that factors such as traditional family, school retention, and the number of stressful life events and emotional impact are important in determining metabolic control in adolescents with T1D.

In the study conducted by Dell'Aglio, Greco-Soares, (2017)⁽¹¹⁾, the results suggest that, after one year of diagnosis, adolescents with DT1 have developed skills to cope with the disease and the prescribed treatment. The authors note that adolescents may experience symptoms of depression and anxiety after a few months of diagnosis, which suggests that their emotional state may affect their adherence to treatment. It is therefore important that nurses develop actions to address the emotional needs of these adolescents, particularly in terms of self-care education, to ensure effective care. Also in the study of the author Lopes (2019)⁽¹²⁾, it is corroborated that nurses are very important health professionals and have a crucial role in the management of juvenile diabetes, disease management, emotional support and follow-up, in identifying and treating problems related to treatment adherence and in preventing complications.

In addition, nurses are in a privileged position to act as mediators between adolescents, parents, and other health professionals, so that there is an effective exchange of information and improvement of care. At the same time, they can intervene in the early identification of emotional problems, such as anxiety and depression, and refer patients to appropriate care⁽¹²⁾. The role of nurses is fundamental to the well-being of adolescents and their adherence to self-care practices, but it is also important to highlight that the conditions and context in which care is provided can have a significant impact on therapy adherence and disease control. As mentioned by the author in this study, poor working conditions can lead to poor outcomes and poor disease management. Adolescents' lack of trust in health care professionals can hinder open communication and information exchange, which in turn can affect treatment adherence. On the other hand, a good relationship between the family and the ovem/child, as well as between the family and the nurse, can be critical to successful therapy. Family trust and support can help increase treatment adherence and motivate the youth/child to participate coproductively in their health care. Additionally, family participation can be an important source of support and motivation for this age group⁽¹²⁾.

The authors Miculis, Mascarenhas, Boguszewski, and Campos (2010)⁽⁴⁾, addressed physical activity in children and adolescents with T1D as well as hypoglycemia as a barrier to a physically active lifestyle and which sports are indicated for this population. Physical activity is an important part of the management of T1D, and can help maintain stable blood glucose levels, improve insulin sensitivity, and prevent complications of the disease. The authors also highlighted that children and adolescents with T1D, should follow some specific precautions while engaging in physical activity, such as frequently monitoring blood glucose levels and carrying food and medication with them in case of hypoglycemia. They add the

importance of finding physical activities that are safe and appropriate for each individual's health condition, and that encouraging regular physical activity from childhood can help establish healthy habits that will be continued into adulthood. These authors conclude that physical activity is essential for metabolic and lipid control, in addition to being important for the well-being, self-esteem, and self-confidence of children and adolescents with this chronic disease⁽⁴⁾. The authors recommend moderate to vigorous aerobic physical activity three to five times a week for 20 to 60 minutes, as well as muscle strengthening and flexibility exercises. In addition, the insulin dose should be adjusted according to the time of physical activity and its intensity. They conclude that physical activity is safe and even essential for these children and adolescents because it helps to improve quality of life and reduce morbidity and mortality associated with diabetes complications. They emphasize moderate-intensity aerobic activity interspersed with periods of high intensity because it is argued to be effective in reducing the occurrence of hypoglycemia. However, they suggest caution and efficacy in the recommendations of insulin doses because there are few controlled, randomized, and double-blind studies in the pediatric population⁽⁴⁾.

The authors Batista, Silva, Nóbrega, Fernandes, and Collet (2021)⁽¹³⁾, highlight the importance of nurses' role in the lives of adolescents with T1D in the development of their cognitive, behavioral and emotional autonomy, so that they can trust themselves to perform self-care practices. In addition, they mention that the use of technological resources can help them become more proactive and adhere more easily to self-care management, highlighting, similarly to all other authors, the importance of the nurse's role in promoting or hindering the autonomy and adherence to this process by adolescents with T1D. However, all studies are unanimous that all health professionals should work in a collaborative and integrated way to ensure that adolescents with type 1 diabetes have access to the necessary resources and support to manage their disease autonomously and effectively.

Contributions to Nursing

This integrative literature review on nursing interventions for increasing self-care in youth with T1D may be an important contribution to the nursing profession in that it provided information on the most effective interventions and up-to-date scientific evidence on the subject.

Importantly, the scientific evidence gathered in this integrative review may be useful not only for nursing clinical practice, but also for health policy-making. They can provide valuable information about the nursing interventions that are most effective in encouraging self-care in young people with type 1 diabetes, and therefore help to improve the care provided to these young people. In addition, the information obtained can be used to guide the

training of students and health professionals to ensure that they are prepared to effectively care for this population.

Study limitations

The limitations of this Integrative Literature Review are essentially due to the fact that the selection of articles was only in Portuguese and English, which may have limited the scope of the results obtained and, consequently, led to a loss of significant information from other potentially important international investigations written in other languages. It is essential to emphasize that the Integrative Literature Review is a methodology that allows obtaining an overview of the studies already conducted on a given theme but does not guarantee the total comprehensiveness of all available information. Therefore, it is necessary to continue to research and update knowledge on the topic to ensure a complete and up-to-date approach.

FINAL CONSIDERATIONS

Managing self-care behavior in adolescents with T1D is critical for effective disease management. Adolescence is a time of transition and change, during which the adolescent is learning to take responsibility for their health and well-being. T1D requires a daily commitment to self-care, including frequent blood glucose monitoring, dietary education, insulin administration, and regular physical activity.

The nurse plays an important role in managing the self-care behavior of adolescents with T1D. It is essential that nurses provide clear and accurate information about the disease and its implications, in addition to providing emotional support and motivation for self-care. Education and teaching of the importance of therapy adherence are also critical for successful disease management. In addition, it is important that the nurse work collaboratively with the multidisciplinary team to ensure that the adolescent receives a comprehensive and integrated approach to the care of their disease. It is important that the nurse also work closely with the adolescent's family to ensure the family's support and involvement in the management of the illness.

Finally, we emphasize that the management of self-care behavior in adolescents with T1D requires a collaborative and integrated approach, including clear and accurate information, emotional support, motivation, and teaching about the importance of therapeutic adherence. The nurse plays a key role in this management, working in collaboration with the multidisciplinary team and the adolescent's family.

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Authors

Ana Filipa Roque

<https://orcid.org/0009-0002-0621-2875>

Ana Margarida Carvalho

<https://orcid.org/0009-0003-1028-9231>

Carolina Filipa Lopes

<https://orcid.org/0009-0009-2522-6499>

Carlota Mota

<https://orcid.org/0009-0002-6285-5808>

Sara Silva Pestana

<https://orcid.org/0009-0009-0339-2314>

Margarida Goes

<https://orcid.org/0000-0001-6017-6874>

Ana João

<https://orcid.org/0000-0002-8600-6790>

Anabela Coelho

<https://orcid.org/0000-0002-1750-1229>

Ana Dias

<https://orcid.org/0000-0001-6562-4728>

Leonel Lusquinhos

<https://orcid.org/0000-0001-9144-2629>

Corresponding Author/Autor Correspondente:

Margarida Goes – Departamento de Enfermagem,
Universidade de Évora, Évora, Portugal.
mgoes@uevora.pt

Authors' contributions

AR: Study design, data analysis, review and discussion of results.

AC: Study design, data analysis, review and discussion of results.

CL: Study design, data analysis, review and discussion of results.

CM: Study design, data analysis, review and discussion of results.

SP: Study design, data analysis, review and discussion of results.

MG: Study coordination, study design, data collection, storage and analysis, review and discussion of results.

AJ: Study coordination, study design, data collection, storage and analysis, review and discussion of results.

AC: Review and discussion of results.

AD: Review and discussion of results.

LL: Review and discussion of results.

All authors read and agreed with the published version of the manuscript.

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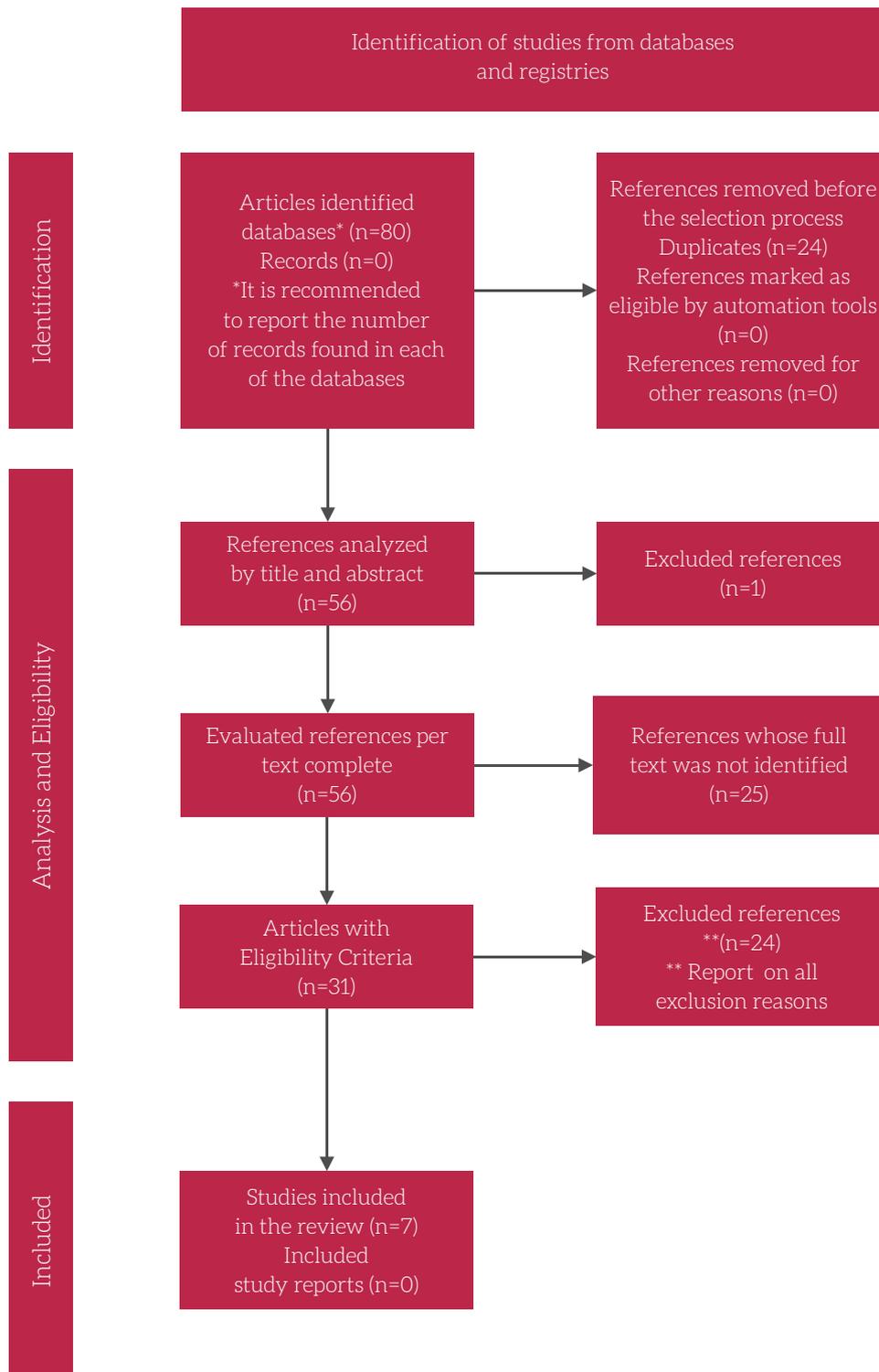


Figure 1 - 2020 PRISMA diagram for the presentation of the research methodology.⁵

Chart 1 - Identification of the studies and main results. →^κ

Authors/Year/Method	Objectives	Results
<p>Miculis, C P; Mascarenhas, L P; Boguszewski, M C & Campos, W (2010)⁽⁴⁾. Qualitative study, based on experimental studies and meta-analyses.</p>	<p>Addressing the practical aspects of safely performing physical activity and sports in children and adolescents with type 1 diabetes.</p>	<p>With aerobic metabolism, skeletal muscles consume more glucose to generate energy, which decreases hepatic gluconeogenesis, leading to a decrease in blood glucose and increasing the risk of hypoglycemia. Replacing carbohydrates before, during, and after exercise in adequate amounts and reducing the dose of rapid-acting insulin (pre-meal) are the main allies of the child and adolescent with type 1 diabetes to prevent the occurrence of severe hypoglycemia.</p>
<p>Moreira, Bandeira, Lopes, Carvalho, Negreiros, Neves (2016)⁽⁹⁾. Quantitative study with application of questionnaires.</p>	<p>To assess the knowledge about diabetes in children and adolescents, and the difficulties perceived by them about the disease.</p>	<p>The authors found that, regarding knowledge about the disease, the topic with the highest percentage of errors was Type 1 Diabetes Mellitus. Regarding the difficulties related to the disease, they observed a higher percentage of errors in food control and insulin administration.</p>
<p>Flora, M C; Gameiro, M G (2016)⁽¹⁰⁾. Descriptive-analytical and cross-sectional study, with application of knowledge tests.</p>	<p>To analyze the diabetic adolescents' knowledge about the disease and its care. To verify the relationship between the knowledge of adolescents with T1D about the disease and the sociodemographic variables age and gender.</p>	<p>With regard to knowledge on the topic of Type I Diabetes, the authors observed that most adolescents showed a high level of knowledge. However, it was recorded that 17.6% and 13.7% of the adolescents have low level of knowledge about insulin administration and chronic and acute complications of the disease, respectively, and these percentages are still worrying. Regarding the relationship between knowledge of the disease and the adolescents' age and gender, the authors observed that the relationships were mostly positive.</p>
<p>Dell'Aglio, D D; Greco-Soares, J P (2017)⁽¹¹⁾. Quantitative study with application of questionnaires.</p>	<p>To assess adherence to treatment, and the impact it has on the lives of adolescents.</p>	<p>The authors found significant relationships between adherence, self-care, symptoms of depression, anxiety and stress, number of hospitalizations and the average of the last two measured values of glycated hemoglobin (HbA1c), suggesting that emotional factors and disease management interact in a complex way.</p>
<p>Lopes D (2019)⁽¹²⁾. Exploratory-descriptive study with a qualitative approach, by collecting data through a semi-structured interview.</p>	<p>To analyze which nursing interventions are performed in the consultation with relatives and children with Type I Diabetes with the theme of adherence to the therapeutic regimen. To investigate the main difficulties perceived by nurses when performing the consultation and the main feelings expressed by the child and family in relation to the diagnosis.</p>	<p>It was found that nurses play a key role in diabetes management, adherence, and health education. It was possible through the study to verify that despite the continuous training that these professionals attend throughout their careers, there are still barriers to their professional practice, such as the lack of privacy, the large number of patients and the availability of time.</p>

Chart 1 - Identification of the studies and main results.^{←↵}

Authors/Year/Method	Objectives	Results
<p>Batista, A; Silva, M; Nóbrega, V; Fernandes, L; Collet, N (2021)⁽¹³⁾. Descriptive-exploratory research with nine adolescents with type 1 diabetes, through semi-structured interviews and data interpreted by inductive thematic analysis.</p>	<p>To analyze the process of building autonomy for self-care in adolescents with Type 1 Diabetes Mellitus.</p>	<p>The process of building autonomy in adolescents with diabetes begins with the interest in seeking knowledge about the disease and treatment, reinforced by the support of the social network, enhancing self-confidence to assume self-care. Difficulties in controlling the diet, having access to insulin therapy materials, and lack of safety in handling them are obstacles to this construction.</p>
<p>Wu, Y; Zhang, Y Y; Zhang, Y T <i>et al</i> (2022)⁽⁶⁾. Systematic literature review and meta-analysis.</p>	<p>To identify the relationship between resilience and better adaptive outcome and control, in adolescents.</p>	<p>The authors, through their study, concluded that the resilience of adolescents is influenced by the following variables: gender, age, parents' employment status, parents' level of education, school retention, control strategies, and social support. It was also found that metabolic control is lower in traditional families, in students who did not experience school retention, in those who had a lower emotional impact (Impact of psychological factors associated with therapeutic adherence, disease acceptance, metabolic control, and quality of life in adolescents with T1D), and in those who identified a mean value of stress.</p>