ARTIGO

MULTIDISCIPLINARY TEAM IN THE MANAGEMENT OF TYPE 2 DIABETES MELLITUS AND OBESITY: AN INTEGRATIVE REVIEW

EQUIPE MULTIDISCIPLINAR NO TRATAMENTO DO DIABETES MELLITUS TIPO 2 E DA OBESIDADE: UMA REVISÃO INTEGRATIVA

EQUIPO MULTIDISCIPLINARIO EN EL MANEJO DE LA DIABETES MELLITUS TIPO 2 Y LA OBESIDAD: UNA REVISIÓN INTEGRADORA

DOI: 10.56083/RCV4N7-113
Receipt of originals: 05/28/2024
Acceptance for publication: 06/18/2024

Natália Abou Hala Nunes
Doutora pelo Programa em Ciências da Saúde
Instituição: Universidade de Taubaté
Endereço: Taubaté, São Paulo, Brasil
E-mail: nataliaabouhalanunes@gmail.com

Caroline Galhano Gomes
Mestranda pelo Programa Ciências da Saúde
Instituição: Universidade de Taubaté
Endereço: Taubaté, São Paulo, Brasil
E-mail: carolinegalhano@gmail.com

Paola Facci Ciscato
Mestranda pelo Programa Ciências da Saúde
Instituição: Universidade de Taubaté
Endereço: Taubaté, São Paulo, Brasil
E-mail: paola_ciscato@hotmail.com

Claudio Monteiro Galvão
Mestrando pelo Programa Ciências da Saúde
Instituição: Universidade de Taubaté
Endereço: Taubaté, São Paulo, Brasil
E-mail: claudiomonteirogalvao.30@gmail.com
ABSTRACT: The growing national and international concern surrounding Obesity and Type 2 Diabetes Mellitus necessitates a comprehensive examination of potential multidisciplinary treatment approaches. The aim of the article is to elucidate the role and contributions of a multidisciplinary team in the management of individuals with Type 2 Diabetes Mellitus and obesity. The method involved conducting an integrative literature review was conducted in April 2023, utilizing the PubMed, Scielo, and Virtual Health Library (BVS) databases. Inclusion criteria comprised articles available in full, written in either English or Portuguese, while exclusion criteria encompassed duplicate articles across multiple databases and review articles. The studies identified in this review highlighted obesity and diabetes as common physiopathologies, with interdisciplinary teams following the Chronic Care Model yielding the best outcomes in healthcare provision. Diet and exercise alone can result in weight loss, but when combined with cognitive-behavioral therapy, there is a potentiation of dietary effects. Consequently, there is enhanced adherence to long-term lifestyle change treatments, which is crucial for managing chronic diseases. A multidisciplinary approach to the treatment of Type 2 Diabetes Mellitus and obesity enhances patient adherence to long-term lifestyle changes. This can be attributed to individualized treatment and improved access to healthcare professionals.

KEYWORDS: obesity, patient care team, diabetes mellitus.

RESUMO: A crescente preocupação nacional e internacional em torno da obesidade e do diabetes mellitus tipo 2 requer uma análise abrangente das possíveis abordagens de tratamento multidisciplinar. O objetivo do artigo é elucidar o papel e as contribuições de uma equipe multidisciplinar na gestão de indivíduos com diabetes mellitus tipo 2 e obesidade. O método consistiu em uma revisão integrativa da literatura realizada em abril de 2023, utilizando as bases de dados PubMed, Scielo e Biblioteca Virtual em Saúde (BVS). Os critérios de inclusão compreenderam artigos disponíveis na íntegra, escritos em inglês ou português, enquanto os critérios de exclusão englobaram artigos duplicados em várias bases de dados e artigos de revisão. Os estudos identificados nesta revisão destacaram a obesidade e o diabetes como fisiopatologias comuns, com equipes interdisciplinares seguindo o Modelo de Cuidados Crônicos obtendo os melhores resultados na prestação de cuidados de saúde. A dieta e o exercício sozinhos podem resultar em perda de peso, mas quando combinados com terapia cognitivo-comportamental, há uma potencialização dos efeitos dietéticos.
Consequentemente, há uma adesão aprimorada aos tratamentos de mudança de estilo de vida a longo prazo, o que é crucial para o manejo de doenças crônicas. Uma abordagem multidisciplinar para o tratamento do diabetes mellitus tipo 2 e obesidade melhora a adesão do paciente às mudanças de estilo de vida a longo prazo. Isso pode ser atribuído ao tratamento individualizado e ao acesso aprimorado a profissionais de saúde.

**PALAVRAS-CHAVE:** obesidade, equipe de cuidados ao paciente, diabetes mellitus.

**RESUMEN:** La creciente preocupación nacional e internacional en torno a la obesidad y la diabetes mellitus tipo 2 requiere un análisis abrangente de los posibles abordajes de tratamiento multidisciplinar. El objetivo del artículo es dilucidar el papel y las contribuciones de un equipo multidisciplinar en la gestión de individuos con diabetes mellitus tipo 2 y obesidad. El método consistió en una revisión integrativa de la literatura realizada en abril de 2023, utilizando como bases de datos PubMed, Scielo y Biblioteca Virtual en Salud (BVS). Los criterios de inclusión comprenden artículos disponibles en forma integrada, escritos en inglés o portugués, mientras que los criterios de exclusión incluyen artículos duplicados en diversas bases de datos y artículos de revisión. Os estudos identificados nesta revisão destacaram a obesidade e o diabetes como fisiopatologias comunes, com equipes interdisciplinares seguindo el Modelo de Cuidados Crônicos obteniendo os melhores resultados na prestação de cuidados de saúde. La dieta y el ejercicio sozinhos pueden resultar en pérdida de peso, pero cuando se combinan con terapia cognitivo-comportamental, hay una potencialización de los efectos dietéticos. Consequentemente, há uma adesão aprimorada aos tratamentos de mudança de estilo de vida a longo prazo, o que é crucial para o manejo de doenças crônicas. Un abordaje multidisciplinar para el tratamiento de la diabetes mellitus tipo 2 y la obesidad mejor adeão do paciente às mudanças de estilo de vida a largo plazo. Esto puede ser atribuído al tratamiento individualizado y acceso aprimorado a profissionais de saúde.

**PALAVRAS-CHAVE:** obesidade, equipe de cuidados ao paciente, diabetes mellitus.
1. Introduction

Obesity is considered a non-communicable chronic disease (NCD), characterized by an excess of body fat to the extent that its quantity leads to health impairments, often with a lengthy asymptomatic history and generally slow progression, multiple risk factors, periods of remission and exacerbation, irreversible cellular damage, among others\(^1\).

According to the World Health Organization (WHO)\(^2\), more than 1 billion people worldwide are classified as obese, including 650 million adults, 340 million adolescents, and 39 million children. In the Brazilian context, 1 in 4 individuals is obese, totaling 41 million people. The WHO diagnoses obesity using the Body Mass Index (BMI), calculated by dividing weight (kg) by height\(^2\) (m). Obesity is defined when the BMI is greater than or equal to 30 kg/m\(^2\) \(^1\).

Diabetes Mellitus, on the other hand, can also be classified as a non-communicable chronic disease (NCD), a non-metabolic disorder characterized by elevated plasma glucose (hyperglycemia), which can result from defects in insulin action or secretion. DM is currently classified as follows: Type 1 Diabetes Mellitus, which can be divided into two categories, A and B. DMT1A, autoimmune, results from the destruction of pancreatic beta cells, leading to the inability of the body to produce insulin. DMT1B, idiopathic, lacks a specific cause \(^3\).

Regarding Type 2 Diabetes Mellitus, individuals typically produce insulin, but their cells cannot use it properly, a condition known as insulin resistance. Another type of Diabetes Mellitus is gestational, characterized by fluctuations in glucose levels during pregnancy, typically occurring in the second or third trimester, with a prevalence ranging from 1 to 14% of pregnancies \(^3\).

According to the WHO, Brazil ranks 5th globally, with over 16.8 million Brazilian adults between the ages of 20 and 79 having Diabetes Mellitus. On
a global scale, there are approximately 463 million adults with DM, accounting for roughly 9.3% of the world's population³.

Given the significant expansion and emergence of national and international concerns surrounding Obesity and Type 2 Diabetes Mellitus, there is a need for a broader perspective on potential multidisciplinary treatments and their effectiveness in improving people's lives by addressing the interplay of these diseases. This involves strategies encompassing emotional, educational, social, and other aspects. Developing a qualified and skilled multiprofessional team is essential to meet the demands of specialized care, as the complexity of these diseases requires periods of attention, multidisciplinary supervision, and continuous monitoring by the healthcare team (4).

Integrative literature review is a method aimed at synthesizing results obtained from research on a specific theme or question systematically, comprehensively, and in an organized manner. Due to its rigorous methodology, it proves highly effective in providing a comprehensive synthesis of all research related to a specific question or issue, from topic identification to interpretation and results. (5) According to Table 1, we can see results based on the descriptor and the results found without filtering on the presented topic. In Table 2, after going through the entire process, 5 articles were found that fit the presented proposal, and thus, all the main characteristics of these articles were extracted.

A multidisciplinary team's role in addressing obesity and Type 2 Diabetes Mellitus is of paramount importance, as it provides a diverse perspective from various fields working together to achieve a single goal: improving the quality of life of patients with these diseases across various aspects of their lives (6).

The article aims to elucidate the role and contributions of a multidisciplinary team in managing individuals with type 2 diabetes mellitus and obesity.
2. Material and Method

An integrative literature review was conducted with a descriptive and exploratory approach, following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guideline (7).

Articles were searched in the PubMed, Scielo, and Virtual Health Library (BVS) databases in April 2023. Inclusion criteria consisted of articles available in full, written in English or Portuguese, while exclusion criteria included duplicate articles across multiple databases and review articles.

The descriptors used in Portuguese were obesidade (obesity), Equipe de Assistência ao Paciente (Patient Care Team), diabetes mellitus, and in English, obesity, Patient Care Team, diabetes mellitus. Keywords in Portuguese were diabetes, obesidade (obesity), and multidisciplinar (multidisciplinary), while in English, they were diabetes, obesity, and multidisciplinary.

After searching for descriptors in the databases (Table 1), filters were applied to articles published in the last 5 years and restricted to those containing the keywords in their titles and abstracts. The raw search results were input into the Rayyan tool. Through this tool, duplicate articles were removed, and three collaborators performed the article selection in a blinded manner. Article titles were assessed, and for those addressing the themes of obesity, diabetes, and multidisciplinary teams, abstracts were reviewed, followed by a full article examination.

The article selection was based on the guiding question, "What is the efficacy of a multidisciplinary approach in adult patients with obesity and Type 2 Diabetes Mellitus compared to other treatment approaches, in terms of glycemic control, weight loss, improvement in quality of life, and reduction in the need for medication?" This question was formulated using the PICO (Population/Problem, Intervention, Comparison, Outcome) strategy, where P - Population/Problem: Adults with obesity and Type 2 Diabetes Mellitus; I
- Intervention: Multidisciplinary approach; C - Comparison: Compared with other treatment approaches; O - Outcome: Outcomes in terms of glycemic control, weight loss, improvement in quality of life, reduction in the need for medication, among others.

Data were collected using Excel spreadsheets, and frequencies were evaluated as absolute and percentage values using SPSS software, presented in tables and figures.

<table>
<thead>
<tr>
<th>Databases</th>
<th>Descriptor Combination</th>
<th>Search Results Without Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pubmed</td>
<td>obesidade AND diabetes AND multidisciplinar</td>
<td>8</td>
</tr>
<tr>
<td>Pubmed</td>
<td>obesidade AND diabetes AND equipe de assistência ao paciente</td>
<td>0</td>
</tr>
<tr>
<td>Pubmed</td>
<td>obesity AND diabetes AND multidisciplinary</td>
<td>1,452</td>
</tr>
<tr>
<td>Pubmed</td>
<td>obesity AND diabetes AND patient care team</td>
<td>336</td>
</tr>
<tr>
<td>Scielo</td>
<td>obesidade AND diabetes AND multidisciplinar</td>
<td>6</td>
</tr>
<tr>
<td>Scielo</td>
<td>obesity AND diabetes AND multidisciplinary</td>
<td>33</td>
</tr>
<tr>
<td>Scielo</td>
<td>obesidade AND diabetes AND equipe de assistência ao paciente</td>
<td>0</td>
</tr>
<tr>
<td>Scielo</td>
<td>obesity AND diabetes AND patient care team</td>
<td>1</td>
</tr>
<tr>
<td>BVS</td>
<td>obesidade AND diabetes AND multidisciplinar</td>
<td>168</td>
</tr>
<tr>
<td>BVS</td>
<td>obesidade AND diabetes AND equipe de assistência ao paciente</td>
<td>110</td>
</tr>
<tr>
<td>BVS</td>
<td>obesity AND diabetes AND multidisciplinary</td>
<td>967</td>
</tr>
<tr>
<td>BVS</td>
<td>obesity AND diabetes AND patient care team</td>
<td>244</td>
</tr>
</tbody>
</table>

Source: Table 1 highlights the combinations of descriptors in relation to the number of articles found.

That is, as observed in Table 1, the descriptor with the most results is "obesity AND diabetes AND multidisciplinary," while the search with the fewest results is “Obesidade AND diabetes AND assistência ao paciente.”

3. Results and Discussion

A total of 3,325 articles were initially selected, and after evaluating their titles and abstracts, 77 articles were chosen based on the inclusion and exclusion criteria for full-text reading. Out of these, 4 were included in the
review. Subsequently, the bibliographic references of each publication were reviewed, applying the same criteria for the selection of additional articles. After this process, 1 more article was included, resulting in a total of 5 articles. The search and selection strategy for publications followed the PRISMA protocol (7), as seen in the following flowchart (Figure 1).

Figure 1 – Flowchart of Data Search.

![Flowchart of Data Search](image)

Source: Figure 1 shows the stages of how the research was conducted, including identification, selection, and inclusion.

* The database filter tool did not exclude all articles published more than 5 years ago.

The 5 articles were published in the English language and were conducted in the United States (2 studies), Mexico, Australia, and China. The study conclusions are discussed in Table 2.
### Table 2

- **Assessment of a Multidisciplinary Intervention in Patients With BMI > 35 kg/m² and Recently Diagnosed Type 2 Diabetes (8)**
  - **Title**: The role and contributions of the multidisciplinary team in the management of individuals with Type 2 diabetes mellitus and obesity
  - **First author/Country/Year**: García-Ulloa, A.C. México 2019
  - **Number of Participants**: 587
  - The fact that the patient receives all necessary interventions simultaneously has improved treatment adherence. Diet and exercise alone may result in weight loss, but cognitive-behavioral therapy enhances the effects of dietary modification. A structured exercise program, taking into account the patient's preferences, can ensure long-term adherence. Evaluating mental health, identifying barriers, eating disorders, and stressors (including social support) is essential for long-term maintenance.

- **Hybrid model of intensive lifestyle intervention is potentially effective in patients with diabetes & obesity for post-COVID era (9)**
  - **Title**: The role and contributions of the multidisciplinary team in the management of individuals with Type 2 diabetes mellitus and obesity
  - **First author/Country/Year**: Dhaver, S. EUA 2022
  - **Number of Participants**: 56
  - The hybrid model offers patients the option to participate in the program in a way that adapts to the complexities of a post-pandemic era. The hybrid model does not compromise face-to-face interaction with the multidisciplinary team. Although virtual and in-person models have their unique advantages and disadvantages, the combination of them, which resulted in the hybrid model, has created a synergistic approach that enhances the delivery
<table>
<thead>
<tr>
<th>Study Title</th>
<th>Author(s)</th>
<th>Year</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-person and virtual multidisciplinary intensive lifestyle interventions are equally effective in patients with type 2 diabetes and obesity. (10)</td>
<td>Al-Badri, M. EUA 2022</td>
<td>38</td>
<td>Virtual multidisciplinary ILI is as effective as the in-person intervention program in improving body weight, HbA1c, blood pressure, and lipid profile and reducing the number of antidiabetic medications. The results of our study suggest that expanding the Why WAIT program into a virtual format for a larger population of patients with diabetes and obesity is feasible and potentially as successful as the in-person program.</td>
</tr>
<tr>
<td>Class 3 Obesity in a Multidisciplinary Metabolic Weight Management Program: The Effect of Preexisting Type 2 Diabetes on 6-Month Weight Loss (11)</td>
<td>Medveczky, D. (Australía) 2020</td>
<td>180</td>
<td>Patients with class 3 obesity experienced weight loss in 6 months in this program. Patients with type 2 DM at the study’s outset achieved comparable weight loss in 6 months, significant improvement in glycemic control, and a reduction in diabetes medication burden. Furthermore, patients with type 2 DM who initially started taking weight-neutral/loss medications lost significantly more weight than those who began taking weight-gain medications, and these medications should preferably be used in class 3 obesity and comorbidity with type 2 DM.</td>
</tr>
<tr>
<td>Cardiovascular effects of intensive lifestyle intervention in adults with overweight/obesity and type 2 diabetes according to body weight time in range.(12)</td>
<td>Liu, M. (China) 2022</td>
<td>4312</td>
<td>In adults with overweight/obesity and type 2 diabetes, lifestyle intervention can help reduce the risk of cardiovascular events when lower body weight is maintained after weight loss.</td>
</tr>
</tbody>
</table>
In the studies identified in this review, obesity and diabetes were shown to share common pathophysiological aspects, and interdisciplinary teams following the Chronic Care Model have achieved the best results in healthcare provision. Diet and exercise alone can lead to weight loss; however, when combined with cognitive-behavioral therapy, there is an enhancement of the dietary effects. As a result, greater adherence to long-term lifestyle change treatments, a crucial factor in managing chronic diseases, is observed.

Obesity has been identified as one of the primary risk factors for Type 2 diabetes. It is estimated that between 80 and 90% of individuals affected by this disease are obese. A higher BMI and a greater number of obese individuals are observed among those with some degree of abnormal glucose homeostasis. It primarily occurs in people with excess weight, sedentary behavior, unhealthy eating habits, and a family history of diabetes. Studies have shown that obesity is concerning not only from an appearance perspective but also because it is a leading cause of diseases such as cardiovascular diseases, Type 2 diabetes, hypertension, high cholesterol, and orthopedic conditions related to excessive weight on the bones.

The obesity and diabetes specialist team has a duty to support and assist patients day by day with their doubts, fears, anxieties, and difficulties that often arise during this type of treatment, which is indeed very challenging. Symptoms of depression are common in obese patients. Another study indicated that the confirmation of structured interdisciplinary programs adapted to patients' preferences and reality can lead to improved long-term adherence and better results. Therefore, looking at a post-COVID era, where patients prioritize flexibility in their daily lives, both virtual and in-person models have unique advantages and disadvantages, giving rise to the hybrid model.
It can be seen that the virtual environment can bring as many benefits as the in-person environment and can yield significant results for weight loss. Many patients experience an improvement in glycemic control through virtual means, which consequently reduces the need for diabetes medications, automatically improving obesity and maintaining a lower body weight achieved. Despite the flexibility that the virtual environment can provide, many users may be excluded from the method due to lack of internet access or technology, especially when adapted to Brazil.

4. Conclusion

The multidisciplinary approach to the treatment of Type 2 Diabetes Mellitus and obesity enhances patient adherence to long-term lifestyle changes. This is attributed to individualized treatment and easy access to healthcare professionals.

With the pandemic, virtual appointments became necessary, offering an opportunity to improve patient access to professionals as it increases time and location flexibility. Therefore, online and hybrid intervention models may be further explored in future projects.
References


2. World Health Organization WHO [Internet]. [cited May 19, 2023].


