

Coping and Glycaemic Control in Type 2 Diabetes Mellitus – A Narrative Review

Coping e Controlo Glicémico na Diabetes Mellitus Tipo 2 – Uma Revisão Narrativa

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Abstract

Purpose: This paper examines the impact of coping strategies on the management of type 2 diabetes *mellitus* (T2DM), focusing on their influence on glycaemic control and quality of life for affected individuals.

Methodology: The review analyses current literature on coping in T2DM, categorizing strategies into problem-focused coping and emotion-focused coping, and relating these approaches to clinical and psychological outcomes.

Findings: Empirical evidence suggests that problem-focused coping strategies, such as self-monitoring and structured problem-solving, are associated with better metabolic outcomes, while emotion-focused strategies, although not directly related to glycaemic control, contribute to psychological well-being.

Limitations/Implications: Despite advancements, further research is necessary to explore the complex interactions between coping strategies and emotional health. Individualization of interventions is crucial for effective diabetes management.

Originality/Value: This study highlights the importance of psychological support in T2DM management and the need for educational programs that promote effective coping strategies.

Keywords: coping; diabetes; glycaemic control

Resumo

Propósito: Este artigo analisa o impacto das estratégias de *coping* na gestão do diabetes *mellitus* tipo 2 (DM2), focando na sua influência no controlo glicémico e na qualidade de vida dos indivíduos afetados.

Metodologia: A revisão analisa a literatura atual sobre *coping* no DM2, categorizando as estratégias em *coping* focado no problema e *coping* focado na emoção, relacionando estas abordagens com os resultados clínicos e psicológicos.

Descobertas: A evidência empírica sugere que as estratégias de *coping* focadas no problema, como a auto-monitorização e a resolução estruturada de problemas, estão associadas a melhores resultados metabólicos, enquanto as estratégias focadas na emoção, embora não estejam diretamente relacionadas com o controlo glicémico, contribuem para o bem-estar psicológico.

Limitações/Implicações: Apesar dos avanços, são necessárias mais investigações para explorar as complexas interações entre as estratégias de *coping* e a saúde emocional. A individualização das intervenções é crucial para uma gestão eficaz do diabetes.

Originalidade/Valor: Este estudo destaca a importância do suporte psicológico na gestão do DM2 e a necessidade de programas educativos que promovam estratégias de *coping* eficazes.

Palavras-chave: *coping*; diabetes; controlo glicémico.

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> INTRODUCTION

Type 2 diabetes *mellitus* (T2DM) is a chronic and progressive metabolic disorder characterized by hyperglycemia, which arises from the combination of insulin resistance and a relative deficiency in insulin secretion by pancreatic beta cells. ⁽¹⁾ This disruption in glucose homeostasis leads to a spectrum of microvascular compli-

cations — such as retinopathy, nephropathy, and neuropathy — and macrovascular complications including cardiovascular diseases, which significantly increase morbidity and mortality rates among affected individuals. ^(2,3) The global burden of T2DM continues to escalate, making it one of the most prevalent non-communicable diseases of the 21st century, with profound impacts on public health and healthcare systems. ^(4,5)

The International Diabetes Federation (IDF) estimates that, since 2000, the global prevalence of diabetes has more than tripled, with over 537 million adults currently living with the disease, a figure projected to reach 783 million by 2045. ⁽⁶⁾ This dramatic rise in diabetes prevalence can be attributed to multiple factors, including increased rates of obesity, sedentary lifestyles, aging populations, and genetic predispositions. ⁽⁷⁾ In Portugal, the prevalence of diabetes among adults aged 20 to 79 is approximately 14.1%, representing over 1.1 million individuals, with the incidence expected to continue rising in line with global trends. ⁽⁸⁾ Such growth in diabetes cases underscores the urgent need for improved strategies for both prevention and management.

The complexity of managing T2DM is multifaceted, involving not only the regulation of blood glucose levels but also the need to mitigate risk factors for complications and to address the psychological and emotional burdens associated with living with a chronic illness. ⁽⁹⁾ Indeed, the chronicity of T2DM places a substantial strain on patients, requiring continuous medical monitoring, lifestyle adjustments, and self-care behaviors such as dietary control, physical activity, and adherence to medication regimens. ^(10,11) Consequently, the psychological aspects of managing T2DM are increasingly recognized as critical determinants of treatment success. Studies have shown that emotional stress, anxiety, and depression are commonly experienced by individuals with T2DM, which, if unaddressed, can adversely affect glycemic control and increase the risk of complications. ^(12,13)

Coping strategies — defined as the cognitive and behavioral efforts individuals employ to manage stressful situations — have been identified as essential for effective disease management in chronic conditions like T2DM. ^(14,15) According to the transactional model of stress and coping developed by Lazarus and Folkman, ⁽¹⁶⁾ coping strategies can be broadly categorized into two types: problem-focused coping, which involves taking direct action to address the source of stress, and emotion-focused coping, which is directed at managing the emotional response to stress. In the context of T2DM, problem-focused coping may involve strategies aimed at improving self-management behaviors such as glucose

monitoring, dietary adherence, and exercise routines, while emotion-focused coping might include psychological mechanisms to reduce distress, such as acceptance, seeking social support, or reframing stressful experiences. ⁽¹⁷⁾

The role of coping strategies in glycemic control has been the focus of numerous studies, with evidence suggesting that effective coping can lead to improved clinical outcomes, including better HbA1c levels, reduced complication rates, and enhanced psychological well-being. ^(15,18) For example, individuals who adopt problem-focused coping strategies have been shown to exhibit better self-care behaviors and achieve superior metabolic control compared to those who rely predominantly on emotion-focused coping. ⁽¹⁹⁾ However, it is important to recognize that emotion-focused coping also plays a valuable role, particularly in helping individuals manage the inevitable stressors associated with chronic disease management. Resilience, self-efficacy, and social support are other psychological factors that are closely related to coping and have been associated with improved health outcomes in people with T2DM. ^(20,21)

In clinical practice, the ability of healthcare professionals to support patients in developing effective coping strategies is crucial for optimizing diabetes management. Interventions that target both problem-focused and emotion-focused coping can help patients overcome barriers to self-management, improve adherence to treatment plans, and reduce the psychological impact of living with T2DM. ^(22,23) Furthermore, personalized approaches that consider the individual's psychological state, coping style, and social context are increasingly advocated in therapeutic settings, as they have the potential to enhance the overall effectiveness of diabetes care. ⁽²⁴⁾

Given the complex and demanding nature of T2DM management, this review aims to provide an overview of the most effective coping strategies and their role in glycemic control, highlighting the critical role that healthcare professionals play in supporting patients through tailored psychological and behavioral interventions. By improving our understanding of how patients cope with the emotional and practical challenges of diabetes, we can better inform clinical practices that enhance both metabolic control and quality of life.

> THE COMPLEXITY OF DIABETES MELLITUS

Diabetes *mellitus* is considered a global epidemic by most researchers and is strongly linked to lifestyle choices. When uncontrolled, it can significantly increase the risk of physical and mental problems. Regardless of age, a

diagnosis of diabetes poses a substantial challenge, resulting in numerous restrictions that affect various aspects of daily life.^(9,10) These restrictions result in successive changes and imbalances caused by biophysical changes and the constant need for psychological readjustments. Consequently, individuals with diabetes commonly experience feelings of fatigue, anxiety, depression, and stress.⁽¹⁰⁾

According to the WHO, chronic diseases, such as diabetes, have several characteristics: they are permanent, can cause disability or residual limitations, result from irreversible pathological changes and often require specific training for the patient's rehabilitation, alongside prolonged periods of supervision, observation and care.⁽³⁾ Living with a chronic disease like type 2 diabetes goes far beyond controlling measurements, whether in laboratory tests or capillary blood glucose values assessed throughout the day.^(8,11) Therefore, managing diabetes requires a complete reorganization of daily activities, including diet, physical exercise, and self-care, which brings about a profound and constant transformation, requiring continuous adjustments in the individual's life.^(8,11,12) Several studies indicate that individuals who manage to maintain effective glycemic control tend to enjoy better general health, as well as greater physical and psychological well-being.^(3,8,13) However, achieving this control depends on a combination of factors, such as stress level, body weight and metabolic balance. Thus, diabetes management represents a formidable challenge that demands self-discipline and perseverance, in addition to strict adherence to prescribed medications.^(2,3,8)

In addition to the routine clinical care, health professionals must also focus their attention on the emotional component and on psychological well-being of people with diabetes. Most people with diabetes struggle with the perception that it is a disease that never goes away.⁽¹⁴⁾ This Fear of potential complications, compounded by a lack of recognition for their effort to manage the condition, can result in prolonged stress.^(15,16) Understanding the complexity of diabetes enables healthcare professionals to provide more empathetic support, facilitating individuals' management of this condition. In this context, it is essential to assess and engage the individual's psychological processes effectively.

> COPING WITH DIABETES

According to Lazarus and Folkman,⁽¹⁷⁾ coping is understood as the constant cognitive and behavioural effort that is made in order to manage the demands (external or internal) placed on the individual to maintain equi-

librium. Thus, coping can be conceptualized as a conscious endeavour that allows a person to stress-inducing factors, mobilizing resources in response.^(17,18)

In another approach, coping can be understood as the effort that the individual makes to achieve long-term goals, manage associated frustrations, and resist immediate temptations, which allow him to reach the ideal state.⁽¹⁸⁾ Lazarus and Folkman describe coping in two types: problem-focused coping and emotion-focused coping.⁽¹⁷⁻¹⁹⁾

Problem-focused coping is generally seen as the ability to plan effectively or engage behaviours to overcome the problem causing distress.⁽²⁰⁾ For individuals with diabetes, problem-focused coping can be utilized in managing challenging eating situations.^(19,20) Research indicates that effective problem-focused coping strategies are directly linked to better glycemic control. For instance, self-monitoring of blood glucose is a form of problem-focused coping associated with improved HbA1c levels, highlighting the importance of patient empowerment in managing their condition.⁽⁸⁾

Emotion-focused coping aims to manage the negative emotions produced by stress-generating factors⁽¹⁷⁻¹⁹⁾ and is most useful when the person with diabetes evaluates the experience as a situation in which nothing can be done to modify the event or when he evaluates it as a transitory process, which will spontaneously resolve.^(17,18,22,23) This coping (focused on emotion) involves cognitive processes aimed at reducing emotional distress that may include avoidance, minimization, distancing and finding positive value in negative events.^(18-20, 23-25)

In certain people with diabetes, it is common to see that there is particular reluctance in carrying out the assessment of capillary glucose or in adhering to treatment, a way they find to deal with the emotional suffering that the disease causes them.^(24,25) Obviously, this example is not about a positive coping strategy in terms of psychological and medical outcomes.⁽²⁴⁾

There is evidence to indicate that diabetes is related to emotional imbalances.⁽²⁶⁾ People with diabetes, due to factors that generate chronic stress, sometimes have depressive symptoms, although others try to deal with the disease without apparent symptoms of stress and damage to their daily activities, despite the fact that they may also experience permanent anxiety.⁽²¹⁻²⁶⁾

Overall, problem-focused coping strategies are associated with more successful medical outcomes than emotion-focused ones.⁽²⁶⁻²⁷⁾

Problem-focused coping has been associated with better self-care outcomes, better metabolic control, and psychosocial well-being in adults and children alike.⁽²⁷⁾

Coping focused on positive emotion, such as humour, meditation or even the search for a positive meaning, has been shown to help reduce stress levels, increasing disease management results.⁽²⁷⁾

These strategies can also contribute to better outcomes by reducing frustration and demoralization that can compromise disease management.

> DISCUSSION

Emotion-focused coping strategies focus on how the person interprets their relationship with the environment, involving more thought processes than direct actions. This means that, although the emotional relationship with the environment is not altered, the individual changes the meaning you attribute to the situation, which results in a modification of your emotional reaction.⁽²⁸⁾ In this sense, the results of Murakami *et al.* show that emotion-focused coping is inversely associated with HbA1c levels in people with type 2 diabetes who are not receiving insulin treatment.⁽⁷⁾

To deepen this perspective, this study assesses coping behaviours using the Brief Scale for Coping Profile (BSCP), which consists of an 18-item scale divided into six subscales. This tool allows you to assess a person's ability to manage stressful environments.⁽⁷⁾ Furthermore, factors such as habitual alcohol consumption, marital status, the adaptive dimension of emotion-focused coping and mood changes are also associated with HbA1c levels.⁽⁷⁾

These findings corroborate the importance of psychological therapy aimed at managing stress, using coping strategies focused on emotion, to improve glycaemic control. However, more comprehensive research is still needed to further explore the relationships between psychological factors and glycaemic control.⁽⁷⁾

Therefore, interventions aimed at people with diabetes, with the aim of promoting problem-focused coping, have also demonstrated positive effects on quality of life, reflecting on health and metabolic balance.^(30,26) Problem-focused coping can be an advantageous strategy in managing specific aspects of self-care related to diabetes: such as knowledge, diet, exercise and foot monitoring. This approach can be mobilized when associated with a specific problem, allowing people with diabetes to become more aware of their situation.^(26,18)

The study by Murakami *et al.*⁽⁷⁾ indicated a significant correlation between problem-focused coping and glycaemic control in people with diabetes who did not use insulin, but not in those who did. Researchers attempted to identify a profile explaining the relationship between coping and glycaemic control but were unsuccessful.⁽⁷⁾ A

possible explanation for this may lie in the sample size and its characteristics, since, traditionally, the Japanese tend not to adopt active coping strategies. Furthermore, more recent studies suggest that these active strategies are associated with a better perception of well-being in situations that are difficult to control.⁽³⁰⁾

Although not all studies indicate a direct relationship between problem-focused coping and glycaemic control, this approach is considered a fundamental strategy in most diabetes management programs.^(18,26,30) These results are partially corroborated by studies that show that the adoption of coping strategies, by reducing stress levels, can also improve glycaemic control and, consequently, reduce the risk of microvascular complications.^(26,31)

Improving glycaemic control not only reduces the impact of diabetes, it also reduces the risk of microvascular complications. In this context, adequate management of the disease becomes essential, with healthcare professionals playing a central role. Nowadays, well-structured therapeutic education programs have been developed to guide people with diabetes to adopt fundamental knowledge and attitudes in their daily routines, reinforcing the importance of effective coping strategies.^(2,3)

For a therapeutic education program to be truly effective, it is essential to adopt individual-centered strategies, based on continuous assessment and consistent data collection. This allows the healthcare professional to plan more accurately, with the aim of empowering and motivating the diabetes patient. In this way, the professional can mobilize the necessary resources for the effective management of the disease, ensuring that the treatment is adapted to the specific needs of each patient.^(2,3)

When individuals with diabetes are integrated into dynamic educational programs adapted to their individual needs, they tend to feel calmer and safer. This increase in confidence results in a greater sense of self-efficacy, enabling better management of the disease and improved quality of life.^(2,4)

In summary, coping is an essential psychological process that can facilitate the adjustment of individuals living with chronic diseases, especially diabetes. It is crucial for healthcare professionals to recognize the various coping strategies employed by these patients, as this understanding can contribute to the development of therapeutic educational programs that promote healthy behaviours. Further research is needed to explore these relationships more thoroughly.

> CONCLUSION

Effective coping strategies are paramount in the management of diabetes mellitus, significantly influencing both glycemic control and the overall quality of life for individuals living with this chronic condition. The interplay between problem-focused coping and emotion-focused coping elucidates the multifaceted nature of stress management among diabetic patients. Empirical evidence underscores that individuals employing problem-focused strategies, such as self-monitoring and structured problem-solving, tend to achieve better metabolic outcomes, specifically lower HbA1c levels. Conversely, while emotion-focused coping may not directly correlate with glycemic control, it plays a crucial role in alleviating psychological distress, thereby enhancing the patient's overall well-being.

Healthcare professionals must recognize the importance of incorporating coping strategy education into diabetes management programs. By tailoring interventions that promote effective coping mechanisms, practitioners can empower patients, fostering resilience and improving self-efficacy in managing their condition. As diabetes continues to pose significant health challenges globally, advancing our understanding of the psychological components associated with coping and disease management remains imperative. Future research should further explore the nuanced relationship between coping strategies, emotional health, and glycemic outcomes to develop comprehensive, individualized care approaches that optimize the quality of life for those affected by diabetes. <

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Conflicts of interests/Conflitos de interesses:

The authors declare that they have no conflicts of interests. *Os autores declaram a inexistência de conflitos de interesses.*

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