

Recent Advances in Psychotherapeutic Treatment and Understanding of Alexithymia in Patients with Obesity and Diabetes Mellitus Type 2

Mustač, Filip; Galijašević, Tin; Podolski, Eva; Belančić, Andrej; Matovinović, Martina; Marčinko, Darko

Source / Izvornik: **Diabetology, 2023, 4, 481 - 489**

Journal article, Published version

Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

<https://doi.org/10.3390/diabetology4040041>

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:184:483115>

Rights / Prava: [Attribution 4.0 International](#)/[Imenovanje 4.0 međunarodna](#)

Download date / Datum preuzimanja: **2025-01-30**





Repository / Repozitorij:

[Repository of the University of Rijeka, Faculty of Medicine - FMRI Repository](#)



Review

Recent Advances in Psychotherapeutic Treatment and Understanding of Alexithymia in Patients with Obesity and Diabetes Mellitus Type 2

Filip Mustać^{1,*}, Tin Galijašević², Eva Podolski², Andrej Belančić^{3,4}, Martina Matovinović^{5,*} and Darko Marčinko^{1,2}

¹ Department of Psychiatry and Psychological Medicine, University Hospital Centre Zagreb, 10000 Zagreb, Croatia; niarveda@gmail.com

² School of Medicine, University of Zagreb, 10000 Zagreb, Croatia; kopaka@oems.hr (T.G.); eva.podolski3@gmail.com (E.P.)

³ Department of Clinical Pharmacology, Clinical Hospital Centre Rijeka, Krešimirova 42, 51000 Rijeka, Croatia; a.belancic93@gmail.com

⁴ Department of Basic and Clinical Pharmacology with Toxicology, Faculty of Medicine, University of Rijeka, Braće Branchetta 20, 51000 Rijeka, Croatia

⁵ Department of Internal Medicine, Division of Endocrinology, Croatian Obesity Treatment Referral Centre, University Hospital Centre Zagreb, 10000 Zagreb, Croatia

* Correspondence: filip.mustac@gmail.com (F.M.); martina_10000@yahoo.com (M.M.)

Abstract: Alexithymia is the inability to describe one's own feelings and is being increasingly researched. According to contemporary psychodynamic theories, negative emotions cannot be adequately named and externalized, but remain trapped in the body. Recent research shows the connection of alexithymia with numerous somatic diseases. Diabetes mellitus type 2 and obesity represent great challenges in treatment, and the psychological profiles in these diseases are being studied more and more often. Therefore, alexithymia enters the focus of some research as a factor that could play a significant role in these diseases, namely as the one that makes a difference. The aim of this paper is a review of the literature with the purpose of understanding the current knowledge about the interconnection between alexithymia, obesity and type 2 diabetes mellitus.

Keywords: alexithymia; obesity; diabetes mellitus type 2; psychodynamic psychotherapy



Citation: Mustać, F.; Galijašević, T.; Podolski, E.; Belančić, A.; Matovinović, M.; Marčinko, D. Recent Advances in Psychotherapeutic Treatment and Understanding of Alexithymia in Patients with Obesity and Diabetes Mellitus Type 2. *Diabetology* **2023**, *4*, 481–489. <https://doi.org/10.3390/diabetology4040041>

Academic Editor: Peter Clifton

Received: 7 September 2023

Revised: 17 October 2023

Accepted: 26 October 2023

Published: 31 October 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Alexithymia is a psychological term used to describe a personality trait or psychological construct characterized by difficulties in identifying, describing, and expressing one's emotions. People with alexithymia have trouble understanding and verbalizing their own emotional experiences and recognizing emotions in others. The term was first coined in 1970s [1], meaning “no words for emotions”. It is characterized by restricted imaginal processes, difficulties in recognizing and identifying subjective feelings and describing them to others. Another key feature is an externally orientated cognitive style which causes individuals to rely on external stimuli or behaviors to regulate their emotions rather than internally processing and understanding their emotional experiences. In addition to this, emotional apathy is often present, causing alexithymic individuals to appear emotionally distant or indifferent to others because of their difficulties in understanding and expressing emotions. It is considered a stable personality factor, that varies in intensity among individuals. It is important to highlight that having alexithymia does not mean that a person lacks emotions altogether; instead, they experience emotions differently and find it challenging to articulate and understand them in a typical way. Although it is not classified as a mental disorder itself, it is often associated with other psychological conditions and medical conditions, such as depression, anxiety, and eating disorders, making it an

important treatment target as it is related to poorer treatment outcomes [1]. Obesity, a medical condition characterized by excessive body fat accumulation and defined as Body Mass Index (BMI) ≥ 30 kg/m², is not strictly considered an eating disorder, yet some studies have found a positive correlation between obesity and alexithymia [2]. Apart from alexithymia as a psychological factor, obesity is also characterized by genetic, biological, social, cultural, and environmental factors, making it one of the biggest public health concerns nowadays, due to its multidimensionality and growing prevalence [2]. As such, it significantly affects the latter development of cardiovascular diseases and diabetes. In this paper, we explore the current literature on the impact of alexithymia as an independent factor in the development and outcome prediction of obesity and DM type 2.

2. Materials and Methods

Our primary focus in writing this paper was to find the correlation between type 2 diabetes mellitus and alexithymia and how they are interconnected. We conducted our research by analyzing the literature on PubMed, concentrating on studies which spoke about our topics of interest. Our inclusion criteria were following. We searched only articles that are in English language. There was no strict time limit for the papers that are included, but mainly we focused on recent studies. On the other hand, we have not rejected all the older studies, so we included all the studies that three authors (FM, TG, EP) found relevant. The process of that deciding was through in-person and telephone meetings and discussing the literature that we found. What was considered relevant was based on our research experience and looking into research methodology and the number of participants. Searching the literature, we found that phenomena like emotional eating and binge eating disorders in most cases link diabetic and alexithymic patients. We also included a summary table (Table 1) in our paper that presents findings from different study groups regarding the relationship between alexithymia and obesity. The table provides insights from various studies, showcasing the diverse results observed in different research contexts. Moreover, in Table 2 the varied relationships between alexithymia and T2DM are presented and summarized, including the findings of the studies which we observed.

3. The Complex Relationship between Alexithymia and Obesity

The underlying mechanisms connecting alexithymia and obesity are complex and not fully understood, but several factors may contribute to this relationship. One of the most important ones is emotional eating. Alexithymic individuals may struggle to recognize and cope with their emotions, leading them to use food as a way to manage their feelings. Emotional eating can lead to overeating and contribute to weight gain and obesity. This finding is in perfect accordance with the addiction theory developed by McDougal, which explains the function of acting, in this case eating, as a way of avoiding psychic work—which in alexithymic individuals includes processing emotions [3]. Some studies have suggested that alexithymia may be linked to impulsive behaviors, including impulsive eating patterns. This impulsivity can lead to a lack of self-control and overeating, contributing to weight gain. Stress plays another significant role in the relationship between these conditions, especially as it is becoming deep-rooted phenomenon in people's lives. As alexithymia is associated with difficulties in managing stress and negative emotions, individuals with this trait may be more prone to experiencing chronic stress, which can lead to unhealthy eating habits and significant weight gain over time. Another possibility upon which has been argued is the fact that alexithymic individuals may have a limited awareness of their physical and emotional states, including hunger and fullness cues. This lack of self-awareness can lead to overeating and difficulties in maintaining a healthy weight. Finally, since alexithymic individuals present with significantly reduced motivation for weight loss and thus difficulty in engaging in weight loss efforts, the entire process of weight reduction therapy is more challenging for them. It is important to note that not all individuals with alexithymia will experience obesity, and not all obese individuals will have alexithymia. The relationship between these factors is, as already mentioned, still an

area of ongoing research, and individual differences play a significant role in how these traits manifest. Many studies on this topic conclude that alexithymia only exists in people with obesity, with other psychological characteristics (e.g., eating disorders), but rarely in patients with no mental health issues. Different hypotheses may explain the strong correlation between alexithymia and mental illness. The first one considers alexithymia to be a primary personality psychological factor, thus highly correlated to mental health problems, in particular depression, anxiety and binge eating. In that context, alexithymia, through a facilitating role in endangering mental health, results in emotional eating, which is involved in weight gain and inadequate weight loss in obese subjects. On the other hand, alexithymia could be a “secondary trait”, in this manner presenting itself with the difficulty to identify and describe feelings in a response to a certain event where, e.g., depression or anxiety is a primary condition [4]. These findings collectively suggest that there may be a complex relationship between alexithymia and obesity. While some studies found positive correlations between alexithymia and body weight, others found associations with emotional eating, depression, and different facets of emotional processing (Table 1).

Table 1. This table offers an overview of different study groups and their findings regarding the relationship between alexithymia and obesity.

Study Group	Results
Troisi et al. (2001) [5]	No significant association between BMI and TAS total score was found.
Pinaqui et al. (2003) [3]	Alexithymia was the predictor of emotional eating in population of obese women suffering from BED.
Zak-Golab et al. (2013) [6]	Higher BMI was associated with severe depression symptoms, but not alexithymia.
Pinna et al. (2011) [4]	Alexithymia was significantly more frequent among obese patients compared to controls with normal BMI, with this group of obese subjects achieving higher mean scores on TAS. BED was associated with a significantly higher frequency of alexithymic traits and higher TAS scores.
Fernandes et al. (2017) [7]	Meta-analyses of 31 studies comparing emotional processing in individuals with obesity demonstrated that obese individuals had higher scores of alexithymia, difficulty in identifying feelings, and externally oriented thinking style, when compared with control groups.
C. Di Monte et al. (2020) [2]	A significant positive correlation between alexithymia level, measured with TSIA scale, and body weight was found.

TSIA—Toronto Structured Interview for Alexithymia; BED—binge eating disorder; BMI—Body Mass Index, TAS—Toronto Alexithymia Scale.

It is important to note that the relationship between these factors may vary among different populations and individuals. Further research may be needed to better understand the mechanisms and implications of this relationship.

4. The Importance of an Adequate Assessment Tool for Alexithymia

It is worth noting that in all these studies, alexithymia was assessed using a self-report instrument, the 20-item Toronto Alexithymia Scale (TAS-20), the most widely used instrument to assess alexithymia. The TAS-20, as a self-report test, shows some limitations. One of them is the fact that some individuals may not be able to properly rate their deficits in emotional awareness through the form of a self-report measure. Moreover, reduced fantasy and imaginal thinking, which are both distinctive features of the alexithymia construct, are not taken into consideration in TAS-20. To beat these limitations, a new instrument for alexithymia assessment, the Toronto Structured Interview for Alexithymia (TSIA) was developed. It consists of four subscales which correlate with four predominant aspects of

alexithymia construct: difficulty in identifying feelings, difficulty in describing feelings, externally orientated thinking, and imaginal processes. This assessment proved to be better because it is the interviewer who applies a score to each of these aspects, thus avoiding self-evaluation bias. Furthermore, a complete set of prompts and probes is asked in each question, leading to more precise comprehension of the meaning of the given responses. Therefore, TSIA presents as a more sensitive assessment tool for alexithymia, and many researchers advocate for the implementation of TSIA in everyday practice, underlining the importance of a multimethod assessment for the evaluation of alexithymia [2].

5. How Alexithymia Influences Coping with Diabetes Mellitus Type 2

Alexithymia further represents a complex construct that goes beyond the basic definition of the mere inability to describe one's own emotions, but rather predicts how an individual experience himself and his emotions, as well as the world around him, and speaks of a lack of the possibility of symbolism, which will mean that these patients tend to focus on concrete topics [8,9]. If these patients are inclined to a concrete, non-phantasmatic interpretation of internal and external reality and then we may consider alexithymia to be very pronounced [8,10]. Diabetes mellitus type 2 represents a very demanding and difficult diagnosis regarding the importance of discipline not only when taking medication, but also maintaining a healthy lifestyle. Thus, a person with diabetes mellitus type 2 must pay attention to the therapy regimen, caloric intake, and qualitative food intake, if on insulin therapy, have the necessary equipment in every situation, pay attention to foot care, etc. [11,12]. Eating represents a very essential and important sociocultural role, and such a level of engagement with one's own illness certainly makes an individual tired and frustrated after a while and can lead to some mental health problems [13,14]. Also, things like continuous glucose monitor implants facilitate disease control and comfort, which is still relatively challenging in Croatia [15]. However, CGM implants still change the external appearance and the patient may feel different, ashamed or stigmatized, which can also be a problem for a certain number of patients. A person with diabetes mellitus can thus find her/himself in a rather unfavorable position. It should be noted that for some people, food represents a certain type of escape from reality and comfort. It can also be present with symptoms associated with atypical depression [9,16], but for some people, food also represents a small joy during the day, such as eating something sweet (a cake or the like). A person with diabetes mellitus type 2 must also pay attention to this. This alone brings us to the very important concept of one's own awareness and reaction to the disease and the recognition of one's own emotions and conditions related to the reaction to a disease such as diabetes mellitus. Alexithymia in patients with diabetes mellitus has been investigated for some time, but the results and conclusions are still sometimes contradictory and the discussion about the exact connection and causal effect is still being investigated. Melin et al., 2017, in a study comparing patients with DM type 1 and 2, reported that depression is strongly associated with alexithymia in patients with DM type 2 and that this is attributable to features of atypical depression since other results indicated no association with anxiety and elevated levels secretion of cortisol. Furthermore, their results indicate that people with DM type 2 and depressive symptoms also have a high prevalence of obesity [9]. Friedman et al. found that alexithymia is associated with depression in type 1 DM patients as well [17]. In 2021, Dincer et al. published a paper in which during 2020 (the pandemic period) they studied the connection between alexithymia, depressive symptoms, and changes in sexual behavior in patients with DM type 2, and their results show that after diabetes, 83.3% of patients had impaired sexual functioning, which could be associated with high levels of depressive and anxiety symptoms, especially during a pandemic, and alexithymia stands out as a possible connection [12]. Our team's research from 2021 revealed that approximately one third of obese patients have sexual dysfunction and that this association is more pronounced in female obese patients, as well as those who have more pronounced anxiety and depressive symptoms [18]. All of the above indicates that difficulties in sexual functioning could be related to depressive symptoms in patients

with DM type 2 and obesity, where alexithymia could play a significant role, which is still insufficiently defined. The connection between cognition and alexithymia is increasingly being investigated, including in patients with DM type 2. Hintistan et al., 2013, in patients with DM type 2 older than 60 years without a psychiatric diagnosis, found the presence of alexithymia in 75.8% of patients, and the association was not related to professional status or level of education. Furthermore, other studies also question whether alexithymia is only a consequence of a certain cognitive deficit, especially in patients with obesity and DM type 2 [11,19,20]. Martino et al. note in their review that the prevalence of alexithymia in patients with DM type 2 ranges from 25 to 50% which is noteworthy as they found that alexithymia is a predictor of poor glycemic control. They hypothesize that poor awareness of bodily sensations in alexithymic patients negatively impacts coping strategies in the management of DM type 2 in both self-care and disease knowledge. They also highlight how patients with alexithymia may be less prone to recognize their illness and seriously follow their doctors' instructions. On the other hand, they explain that poor glycemic control might negatively impact cognitive and emotional processing, resulting in greater alexithymia levels overall, which might explain the increased hospitalization rates some studies found in patients, with those studies finding a correlation between alexithymia and diabetes. Martino et al. also note the correlation of alexithymia with depression and anxiety which might prevent the patient making sense of the illness without adequate psychotherapeutic intervention [14]. Lemche et al. conducted a study exploring the connection between alexithymic symptoms in patients with metabolic syndrome and those patients developing DM type 2. They found that alexithymia severity is a predictor of DM type 2 in patients with metabolic syndrome as well as that alexithymia statistically significantly predicts other indicators of obesity like BMI and waist girth and risk factors like dyslipidemia, hypertension, and microalbuminuria, all relevant biomarkers in long-term outcomes in metabolic syndrome patients [21]. These findings collectively highlight the potential relationship between alexithymia and T2DM, as well as their impact on glycemic control and emotional well-being. However, it is important to note that research in this area may vary in terms of study populations and methodologies, and more research may be needed to further understand the complex interactions between alexithymia, T2DM, and related factors. (Table 2).

Table 2. This table summarizes findings from various studies regarding the relationship between alexithymia and type 2 diabetes mellitus (T2DM), as well as their potential impact on glycemic control and related factors.

Study	Results
Melin et al. (2017) [9]	Depression was associated with alexithymia in T2DM patients
Luca et al. (2014) [13]	Alexithymic patients presented higher HbA1c levels compared to non-alexithymic ones
Martino et al. (2020) [14]	Patients with T2DM reflected greater values of alexithymia
Avci et al. (2016) [16]	Alexithymia was 2.09 times higher among T2DM patients who had HbA1c \geq 7%
Friedman et al. (2003) [17]	Alexithymia is not correlated with glycemic control
Lemche et al. (2014) [21]	Alexithymia is a substantial indicator of T2DM and cardiovascular risks in patients with metabolic syndrome
Celik et al. (2022) [22]	The majority of T2DM patients showed signs of alexithymia and positive relationship between HbA1c and alexithymia score was found

T2DM—type 2 diabetes mellitus.

A cross-sectional study by Avci and Kelleci, which enrolled 326 DM2 patients (37.3% determined to have alexithymia), reported that alexithymia was 2.09 times higher among those who had worse glycaemia control (HbA1c \geq 7.0% vs. <7.0% group), as well as 3.77

and 2.57 times higher for those in whom anxiety (≥ 11 vs. ≤ 10) and depression (≥ 8 vs. ≤ 7) were more expressed, respectively. The latter is obviously an interesting finding; however, the obtained results should be interpreted accordingly bearing in mind the study methodology [16]. What is more, as per Luca et al. data, alexithymia more than depression influenced glycemic control, and HbA1c was only significantly associated (logistic regression), with alexithymia and insulin therapy, which clearly highlights the importance of this topic [13]. To deduce, a well-summarized body of the literature within the Martino et al. systematic review revealed a strong correlation between alexithymia, HbA1c and fasting blood glucose levels: 0.75 and 0.77 (for TAS-20 total scores), respectively. Also, significantly higher levels of HbA1c and blood glucose were present among alexithymic (25–50% of DM2 population in general) compared to the non-alexithymic participants [14]. To the best of our knowledge, there are no RCT designs yet, so we can only talk on association, but not on causality. However, we can speculate that improving glycemic control, and decreasing anxiety and depression levels, might result in better alexithymia control, and vice versa. All things considered, it is evident that management of patients living with DM2 should be arranged to include psychopathological alterations screening and mental health care services for those at risk in order to improve both DM2 control as well as quality of life [14,23]. On the other hand, well-management of alexithymia is a cornerstone for improving the psychiatric treatment outcomes in general also [24,25]; thus, it can be seen as a strong ‘knot’ within the DM2–psychiatry vicious circle. To clarify, alexithymia is implicated in a wide variety of psychological problems (depression and schizophrenia), emotional deficits in autism spectrum disorder, suicidality, increased psychosomatic complaints, and elevated mortality rates; thus, achieving optimal/rational and personalized antidepressant, antipsychotic, mood stabilizer, and anxiolytic prescribing (alongside cognitive-behavioral therapy and psychodynamic therapy) is a hard, but indispensable task for clinicians working with patients in such a setting [26]. Simultaneously, it is of utmost importance to choose an optimal antihyperglycemic therapeutic approach (always, but especially in alexithymic patients), bearing in mind the efficacy/effectiveness, safety profile, comorbidity profile (both potential benefits and harms), as well as medication adherence rates, and costs [27]. A recent meta-analysis by Pei et al. 2022 [28] aimed to explore the prevalence of alexithymia in T2DM patients and its implications. The analysis found a high prevalence of alexithymia in T2DM patients, with 43.0% of individuals affected, which was much higher than the general population (12.8%), which suggests that a significant proportion of T2DM patients are at risk of developing alexithymic traits. It should be noted that most studies excluded individuals with pre-existing psychiatric disorders. The analysis highlighted the potential impact of alexithymia on glycemic control, as patients with alexithymia may struggle to recognize bodily sensations, leading to poorer disease management. Conversely, poor glycemic control may exacerbate alexithymia due to vascular and neural effects of T2DM. The study noted differences in alexithymia prevalence between China and non-China populations which was likely influenced by cultural, religious, and socio-demographic factors, and it should be noted that the majority of studies originated from China, which means more research on this topic may further elaborate this phenomenon. The authors highlight the importance of screening T2DM patients for alexithymia and raising awareness of the condition among healthcare professionals. The study also notes that most studies use self-report questionnaires for alexithymia assessment, which may limit the accuracy of current research.

6. Ways to Fight Alexithymia and Diabetes Mellitus Type 2

When we discuss the therapeutic options for patients with pronounced alexithymia, it is important to think about how we will consider alexithymia. This points us to the fact that alexithymia is probably not an entity in itself, but a phenomenon that most likely occurs either as a symptom or even more likely as some kind of personality trait [24,29,30]. However, it is clearly present in a large proportion of patients, as our review of the literature shows. Managing obesity and type 2 diabetes mellitus (T2DM) through psychotherapy

can be a valuable component of a comprehensive treatment plan. Psychotherapy can address various psychological and emotional factors that contribute to these conditions, helping individuals make sustainable lifestyle changes, manage stress, and improve overall well-being. There are various types of psychotherapy which have been shown to be helpful in coping with obesity and TD2M. Psychodynamic psychotherapy stands out as a therapeutic option. Modern psychodynamic therapy primarily concentrates on enhancing self-awareness, through which an individual can achieve a higher level of self-control, leading to improved decision making regarding diet and exercise. It aims to call into the preconscious and conscious an unconscious part of the self that is inhibited by the outer armor, that is, the part from which the inner world of the psyche defends itself, mainly through various defense mechanisms. However, with psychodynamic psychotherapy, it is possible to change the personality level and thus empower the person to abandon the alexithymic pattern [24,29,31]. Furthermore, group psychotherapy, as well as supportive therapy in general, also shows positive therapeutic effects [30], although in general, alexithymia is associated with a minor recovery of psychological symptoms [32]. It is sometimes stated that difficulties in expressing emotions and verbalizing them are the most resistant and least responsive symptom, but that other domains respond better to psychodynamic psychotherapy [29,32]. It was also shown that group therapy or family therapy provides social support, reducing feelings of isolation and increasing motivation. Motivational interviewing techniques also proved effective in finding internal motivation for adopting healthier behaviors. Another therapy worth mentioning is mindfulness-based therapy which through mindful eating techniques promotes awareness of eating habits, making individuals more conscious of portion sizes and food choices. In addition to this, mindfulness meditation can reduce stress, which is beneficial for both weight management and glycemic control. Creative therapies such as drama, music, and art could also be taken in consideration when discussing treatment options of alexithymic patients. Engaging in creative activities can help individuals express emotions indirectly. Creative therapies provide non-verbal outlets for emotional expression, making it easier for some individuals to explore their feelings and therefore fight alexithymia. Cognitive-behavioral therapy (CBT) can be helpful in management of both stress and cravings management as it teaches stress reduction techniques, reducing the likelihood of stress-induced eating. Moreover, it can influence changes in behavioral patterns and therefore help individuals identify and change behaviors related to overeating, emotional eating and sedentary lifestyle. When we talk about patients with DM type 2 and the pharmacological therapy to which they have been exposed, the studies available to date have not determined a difference in the alexithymic status with regard to the exposed therapy (in the sense of a difference depending on whether the patient is on insulin therapy, oral antidiabetic drugs, or diet) [13,14,16]. What is considered important is certainly to be aware of the severity of diseases such as DM type 2 and obesity, and to be aware of one's own reaction to the disease and to act accordingly, accepting one's own weakness and vulnerability, since the acceptance of any disease is also a process, especially when it is a disease that requires a lot of commitment and lifestyle control, which DM type 2 and obesity certainly are.

7. Conclusions

The spread of obesity and diabetes mellitus type 2 today is very high and worrisome, and since these are diseases that, in addition to pharmacological treatment methods, also require lifestyle changes, the study of psychological factors certainly contributes to a better knowledge of the entities themselves and the creation of an environment that would be supportive for people with the mentioned diseases. Studying alexithymia as a factor that makes a difference in these diseases can significantly explain some of the mentioned phenomena. Further well-designed studies that would explain the role of alexithymia in patients with obesity and type 2 diabetes mellitus in more detail are definitely needed.

Author Contributions: Conceptualization and design of article: F.M.; literature search, writing—original draft preparation: F.M., T.G., E.P. and A.B.; supervision: M.M. and D.M.; writing—review and editing: all authors. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Westwood, H.; Kerr-Gaffney, J.; Stahl, D.; Tchaturia, K. Alexithymia in Eating Disorders: Systematic Review and Meta-Analyses of Studies Using the Toronto Alexithymia Scale. *J. Psychosom. Res.* **2017**, *99*, 66–81. [[CrossRef](#)] [[PubMed](#)]
- Di Monte, C.; Renzi, A.; Paone, E.; Silecchia, G.; Solano, L.; Di Trani, M. Alexithymia and Obesity: Controversial Findings from a Multimethod Assessment. *Eur. Rev. Med. Pharmacol. Sci.* **2020**, *24*, 831–836. [[CrossRef](#)] [[PubMed](#)]
- Pinaquy, S.; Chabrol, H.; Simon, C.; Louvet, J.-P.; Barbe, P. Emotional Eating, Alexithymia, and Binge-Eating Disorder in Obese Women. *Obes. Res.* **2003**, *11*, 195–201. [[CrossRef](#)] [[PubMed](#)]
- Pinna, F.; Lai, L.; Pirarba, S.; Orrù, W.; Velluzzi, F.; Loviselli, A.; Carpiello, B. Obesity, Alexithymia and Psychopathology: A Case-Control Study. *Eat. Weight Disord. EWD* **2011**, *16*, e164–e170. [[CrossRef](#)]
- Troisi, A.; Scucchi, S.; San Martino, L.; Montera, P.; d'Amore, A.; Moles, A. Age Specificity of the Relationship between Serum Cholesterol and Mood in Obese Women. *Physiol. Behav.* **2001**, *72*, 409–413. [[CrossRef](#)]
- Zak-Gołąb, A.; Olszanecka-Glinianowicz, M.; Kocełak, P.; Chudek, J. [The role of gut microbiota in the pathogenesis of obesity]. *Postep. Hig. Med. Dosw. Online* **2014**, *68*, 84–90. [[CrossRef](#)]
- Fernandes, J.; Ferreira-Santos, F.; Miller, K.; Torres, S. Emotional Processing in Obesity: A Systematic Review and Exploratory Meta-Analysis. *Obes. Rev.* **2018**, *19*, 111–120. [[CrossRef](#)]
- Marchini, F.; Caputo, A.; Napoli, A.; Balonan, J.; Martino, G.; Nannini, V.; Langher, V. Chronic Illness as Loss of Good Self: Underlying Mechanisms Affecting Diabetes Adaptation. *Mediterr. J. Clin. Psychol.* **2019**, *6*. [[CrossRef](#)]
- Melin, E.O.; Thunander, M.; Landin-Olsson, M.; Hillman, M.; Thulesius, H.O. Depression Differed by Midnight Cortisol Secretion, Alexithymia and Anxiety between Diabetes Types: A Cross Sectional Comparison. *BMC Psychiatry* **2017**, *17*, 335. [[CrossRef](#)]
- Luminet, O.; de Timary, P.; Buysschaert, M.; Luts, A. The Role of Alexithymia Factors in Glucose Control of Persons with Type 1 Diabetes: A Pilot Study. *Diabetes Metab.* **2006**, *32*, 417–424. [[CrossRef](#)]
- Hintistan, S.; Cilingir, D.; Birinci, N. Alexithymia among Elderly Patients with Diabetes. *Pak. J. Med. Sci.* **2013**, *29*, 1344–1348. [[CrossRef](#)] [[PubMed](#)]
- Dincer, B.; Yıldırım Ayaz, E.; Oğuz, A. Changes in Sexual Functions and Alexithymia Levels of Patients with Type 2 Diabetes During the COVID-19 Pandemic. *Sex. Disabil.* **2021**, *39*, 461–478. [[CrossRef](#)] [[PubMed](#)]
- Luca, A.; Luca, M.; Di Mauro, M.; Palermo, F.; Rampulla, F.; Calandra, C. Alexithymia, More than Depression, Influences Glycaemic Control of Type 2 Diabetic Patients. *J. Endocrinol. Investig.* **2015**, *38*, 653–660. [[CrossRef](#)] [[PubMed](#)]
- Martino, G.; Caputo, A.; Vicario, C.M.; Catalano, A.; Schwarz, P.; Quattropiani, M.C. The Relationship between Alexithymia and Type 2 Diabetes: A Systematic Review. *Front. Psychol.* **2020**, *11*, 2026. [[CrossRef](#)] [[PubMed](#)]
- Belančić, A.; Klobučar, S.; Rahelić, D. Current Obstacles (With Solutions) in Type 2 Diabetes Management, Alongside Future Directions. *Diabetology* **2023**, *4*, 31. [[CrossRef](#)]
- Avci, D.; Kelleci, M. Alexithymia in Patients with Type 2 Diabetes Mellitus: The Role of Anxiety, Depression, and Glycemic Control. *Patient Prefer. Adherence* **2016**, *10*, 1271–1277. [[CrossRef](#)]
- Friedman, S.; Vila, G.; Even, C.; Timsit, J.; Boitard, C.; Dardennes, R.; Guelfi, J.D.; Mouren-Simeoni, M.C. Alexithymia in Insulin-Dependent Diabetes Mellitus Is Related to Depression and Not to Somatic Variables or Compliance. *J. Psychosom. Res.* **2003**, *55*, 285–287. [[CrossRef](#)]
- Matovinović, M.; IvanaTudor, K.; Mustač, F.; MarioTudor, D.; Kovačević, A.; Bilić, E. Sexual dysfunction in croatian patients with obesity. *Psychiatr. Danub.* **2021**, *33*, 191.
- Reynolds, R.M.; Strachan, M.W.J.; Labad, J.; Lee, A.J.; Frier, B.M.; Fowkes, F.G.; Mitchell, R.; Seckl, J.R.; Deary, I.J.; Walker, B.R.; et al. Morning Cortisol Levels and Cognitive Abilities in People with Type 2 Diabetes: The Edinburgh Type 2 Diabetes Study. *Diabetes Care* **2010**, *33*, 714–720. [[CrossRef](#)]
- Cukierman, T.; Gerstein, H.C.; Williamson, J.D. Cognitive Decline and Dementia in Diabetes—Systematic Overview of Prospective Observational Studies. *Diabetologia* **2005**, *48*, 2460–2469. [[CrossRef](#)]
- Lemche, A.V.; Chaban, O.S.; Lemche, E. Alexithymia as a Risk Factor for Type 2 Diabetes Mellitus in the Metabolic Syndrome: A Cross-Sectional Study. *Psychiatry Res.* **2014**, *215*, 438–443. [[CrossRef](#)] [[PubMed](#)]
- Celik, S.; Taskin Yilmaz, F.; Yurtsever Celik, S.; Anataca, G.; Bulbul, E. Alexithymia in Diabetes Patients: Its Relationship with Perceived Social Support and Glycaemic Control. *J. Clin. Nurs.* **2022**, *31*, 2612–2620. [[CrossRef](#)] [[PubMed](#)]

23. Marcovecchio, M.L.; Chiarelli, F. The Effects of Acute and Chronic Stress on Diabetes Control. *Sci. Signal.* **2012**, *5*, pt10. [[CrossRef](#)]
24. Pinna, F.; Manchia, M.; Paribello, P.; Carpiniello, B. The Impact of Alexithymia on Treatment Response in Psychiatric Disorders: A Systematic Review. *Front. Psychiatry* **2020**, *11*, 311. [[CrossRef](#)] [[PubMed](#)]
25. Lane, R.D. Alexithymia 3.0: Reimagining Alexithymia from a Medical Perspective. *Biopsychosoc. Med.* **2020**, *14*, 21. [[CrossRef](#)]
26. Samur, D.; Tops, M.; Schlinkert, C.; Quirin, M.; Cuijpers, P.; Koole, S.L. Four Decades of Research on Alexithymia: Moving toward Clinical Applications. *Front. Psychol.* **2013**, *4*, 861. [[CrossRef](#)]
27. Davies, M.J.; Aroda, V.R.; Collins, B.S.; Gabbay, R.A.; Green, J.; Maruthur, N.M.; Rosas, S.E.; Del Prato, S.; Mathieu, C.; Mingrone, G.; et al. Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetes Care* **2022**, *45*, 2753–2786. [[CrossRef](#)]
28. Pei, J.-H.; Wei, Y.-T.; Tao, H.-X.; Yang, Q.-X.; Zhang, G.-L.; Guo, X.-J.; Guo, J.-L.; Yan, F.-H.; HanPhD, L. The Prevalence and Characteristics of Alexithymia in Patients with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis. *J. Psychosom. Res.* **2022**, *162*, 111018. [[CrossRef](#)]
29. Stingl, M.; Bausch, S.; Walter, B.; Kagerer, S.; Leichsenring, F.; Leweke, F. Effects of Inpatient Psychotherapy on the Stability of Alexithymia Characteristics. *J. Psychosom. Res.* **2008**, *65*, 173–180. [[CrossRef](#)]
30. Ogrodniczuk, J.S.; Piper, W.E.; Joyce, A.S. Effect of Alexithymia on the Process and Outcome of Psychotherapy: A Programmatic Review. *Psychiatry Res.* **2011**, *190*, 43–48. [[CrossRef](#)]
31. Cameron, K.; Ogrodniczuk, J.; Hadjipavlou, G. Changes in Alexithymia Following Psychological Intervention: A Review. *Harv. Rev. Psychiatry* **2014**, *22*, 162–178. [[CrossRef](#)] [[PubMed](#)]
32. Leweke, F.; Bausch, S.; Leichsenring, F.; Walter, B.; Stingl, M. Alexithymia as a Predictor of Outcome of Psychodynamically Oriented Inpatient Treatment. *Psychother. Res. J. Soc. Psychother. Res.* **2009**, *19*, 323–331. [[CrossRef](#)] [[PubMed](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.