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PSYCHOLOGICAL CHARACTERISTICS OF EATING DISORDERS IN ADOLESCENTS WITH TYPE 1 DIABETES

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CONTENT

CONCEPTUAL FRAMEWORK FOR RESEARCH.....4

THESIS CONTENT…….....7

GENERAL CONCLUSIONS AND RECOMANDATIONS.....22

BIBLIOGRAPHY.....24

LIST OF THE AUTHOR'S PUBLICATIONS ON THE THESIS' TOPIC.....26

ADNOTARE.....28

ANNOTATION.....29

АННОТАЦИЯ.....30

CONCEPTUAL FRAMEWORK FOR RESEARCH

Relevance and importance of the studied topic. Eating disorders (EDs), present in various pathologies, pose a significant challenge in type 1 diabetes (T1D), affecting both physical and psychological aspects. In the context of diabetes, the strict dietary requirements can generate psychological stress, leading to unconstructive attitudes. It is important to mention that current clinical observations, epidemiological data, and scientific studies focusing on individuals with type 1 diabetes (T1D) indicate a potentially higher risk of developing eating disorders (EDs) in this group compared to the general population. Type 1 diabetes (T1D) is a chronic condition characterized by the partial or total deterioration of the beta cells of the pancreatic islets, resulting in a progressive inability to synthesize insulin. The goal of diabetes treatment is to control blood glucose levels through diet, physical exercise, medications that enhance insulin secretion, or short- or long-acting insulin, thereby ensuring the adequate supply of energy to cells. These individuals often face stigma and anxiety, which contribute to negative relationships with food. Clinical practice highlights the imperative need to develop a constructive attitude toward eating behavior, going beyond a strictly biomedical approach. Education and psychological support become essential in helping individuals manage the emotions associated with the specific dietary requirements of diabetes. In this context, psychological interventions and counseling emerge as crucial tools. This study explores the profound connections between type 1 diabetes (T1D) and eating disorders (EDs), emphasizing the necessity of psychological approaches to improve adaptation and quality of life for this category of individuals. In a rapidly evolving society where mental and physical health are interconnected, this integrated perspective ensures adequate care and a comprehensive approach for individuals with T1D.

The identification of psychological characteristics as risk factors for behavioral disorders in type 1 diabetes (T1D) holds significant practical value, as it enables the implementation of targeted interventions aimed at preventing or reducing the onset of eating disorders (EDs) and lowering the incidence of hospitalizations and somatic complications in this high-risk group. In our study, we specifically focused on anxiety and maladaptive cognitive schemas as psychological characteristics due to the frequent clinical observation of a high comorbidity rate between anxiety, maladaptive cognitive schemas, and eating behavior disorders among individuals with T1D.

Although the development of eating disorders (EDs) can also be influenced by other variables (such as perfectionism, depressive disorders, and personality disorders), our decision to focus on anxiety and maladaptive cognitive schemas is justified by their high prevalence in individuals with diabetes and their direct impact on eating behavior. In the specialized literature, anxiety and maladaptive cognitive schemas are better-documented risk factors associated with eating dysfunctions in adolescents with diabetes. While other factors are indeed significant, their influence is often indirect or specific to certain groups of adolescents, which does not warrant their inclusion in this study. Instead, our research focuses on the clear link between anxiety, maladaptive cognitions, and eating behaviors. Thus, the choice of anxiety and maladaptive cognitive schemas as study variables is grounded in their importance in the development and maintenance of eating disorders in adolescents with T1D. This provides a clear direction for personalized psychological interventions aimed at reducing the risk of these disorders and improving the quality of life of the studied individuals.

The rapid increase in type 1 diabetes (T1D) cases represents one of the most pressing health challenges of the 21st century, placing a significant burden on healthcare systems at global, international, and national levels. The causal relationship between T1D in adolescents, EDs, and psychological risk factors remains insufficiently studied, which motivated our choice of this research topic. The need to develop an intervention plan stems from the lack of psychological approaches within hospital settings.

Framing the topic in the international, national, and local preoccupations of the research team and an inter- and transdisciplinary context, presentation of previous research results related to the research topic. The topic of eating disorders (ED) in adolescents with type 1 diabetes (T1D) is a major global concern, with significant implications for their physical and mental health. Studies in recent years have highlighted a strong connection between anxiety, maladaptive cognitive schemas (MCS), and the development of pathological eating among individuals with T1D. The first research on the comorbidity between ED and T1D dates back to the 1970s–1980s when cases of intentional insulin restriction for weight control were reported, revealing major health risks (Steel et al., 1987; Striegel-Moore et al., 1992).

American and British researchers, such as Fairburn (1991) and Jones (2000), analyzed the prevalence of eating disorders in adolescents with type 1 diabetes, demonstrating a higher likelihood of developing these disorders compared to control groups. European studies, such as the one conducted by Colton et al. (2004), revealed that adolescents with type 1 diabetes have an increased risk of eating disorders, which has led to further research on the psychological impact of diabetes.

In the 2000s, studies became more complex, including the analysis of the interaction between

glycemic control and pathological eating behaviors. For example, research conducted by Helgeson et al. (2014) in Denmark highlighted the importance of family support in preventing and managing eating disorders in adolescents with type 1 diabetes. Other studies, such as those by Hagger et al. (2015), explored the link between diabetes-related stress and mental health, emphasizing the need for regular screening for anxiety and depression.

In Scandinavia, researchers have underscored the importance of support groups for adolescents with type 1 diabetes, reducing social isolation and improving disease management (Haugstvedt et al., 2011). More recently, Hood et al. (2017) studied psychological stress and glycemic control in adolescents with type 1 diabetes, demonstrating that high levels of stress negatively affect glycemic balance and increase the risk of complications.

In the Republic of Moldova, research on type 1 diabetes and eating disorders is still in its early stages. However, local studies address relevant aspects such as anxiety and perfectionism in adolescents (Racu, 2019; Cerlat & Angheluță, 2022). Additionally, the applications of cognitive-behavioral therapy in bulimia nervosa among young individuals provide a valuable model for managing eating disorders in the context of type 1 diabetes (Glavan & Rusu, 2018).

This study is based on a theoretical and empirical analysis of the interaction between anxiety, glycemic control, and pathological eating behaviors, aiming to contribute to improving the quality of life for adolescents with type 1 diabetes. Investigating these aspects offers opportunities for developing psychological intervention programs that address the complex needs of this vulnerable group. Through an interdisciplinary approach, the study highlights the necessity of integrating psychological support into diabetes care, thereby promoting optimal mental health and preventing associated complications.

Research purpose: Identifying the psychological particularities manifested in eating disorders in adolescents with type 1 diabetes, determining the relationship between these disorders, anxiety, and maladaptive cognitive schemas, as well as developing a psychological intervention program aimed at improving the indicators associated with eating disorders, anxiety, and maladaptive cognitive schemas.

Research objectives:

1) Analyzing and synthesizing specialized literature regarding the psychological particularities associated with eating disorders in adolescence in general and in adolescents with type 1 diabetes in particular.

2) Identifying the particularities of anxiety and maladaptive cognitive schemas in adolescents with type 1 diabetes and eating disorders and conducting a comparative analysis of these variables in adolescents with and without type 1 diabetes.

3) Establishing the correlation between maladaptive cognitive schemas, anxiety, and the behavioral indicators of eating disorders.

4) Developing psychological profiles of diabetic adolescents with and without eating disorders.

5) Designing a psychological intervention program to improve the indicators associated with eating disorders, anxiety, and maladaptive cognitive schemas.

6) Validating and evaluating the effectiveness of the psychological intervention program in reducing anxiety and maladaptive cognitive schemas associated with eating disorders.

The general hypothesis of the research is based on the idea that an integrated psychological approach, which considers the specific characteristics of anxiety and maladaptive cognitive schemas (MCS) in adolescents with type 1 diabetes (T1D), contributes to understanding the relationships between these variables and the behavioral indicators of eating disorders (ED). This approach, complemented by the implementation of a personalized psychological intervention program, can significantly improve eating behaviors, reduce anxiety, and decrease the intensity of maladaptive cognitive schemas, thereby generating positive changes in the psychological functioning of adolescents with T1D and ED**.**

The research methodology integrates theoretical methods such as the analysis and synthesis of specialized literature and comparative analysis, alongside empirical methods through the use of the Eating Disorder Inventory-3 FT (EDI-3 FT) (D.M. Garner), the School Anxiety Questionnaire (B.N. Phillips), and the Young Schema Questionnaire – Short Form 3 Revised (YSQ-S3R) (J. Young). The collected data were statistically processed using frequency and percentage analysis, descriptive statistics, Pearson correlation coefficients, and independent T-tests, as well as pre/post-test comparisons. Data processing was conducted using SPSS version 23.0 to ensure the validity of the results.

Scientific novelty and originality. Within the context of the Republic of Moldova, this research is one of the few that addresses the psychological aspects related to eating disorders (ED), anxiety, and maladaptive cognitive schemas (MCS) among adolescents with type 1 diabetes (T1D). The originality of the study lies in identifying the specific characteristics of anxiety and cognitive schemas in this group of participants, developing a detailed psycho-emotional profile, and designing an innovative, comprehensive psychological intervention program. These contributions provide a deeper understanding of the

psychological complexity of adolescents with T1D and ED, opening new directions for research and psychological interventions in the field of mental health for this vulnerable population in the Republic of Moldova.

The scientific problem addressed in this research consists of identifying and assessing the impact of eating disorders (ED) in adolescents with type 1 diabetes (T1D) in the Republic of Moldova. The study identified the relationships between the specific characteristics of eating disorders, anxiety, and maladaptive cognitive schemas (MCS) in adolescents with T1D. Additionally, the research determined the prevalence of eating disorders among adolescents with and without T1D and analyzed the psychological characteristics of anxiety and maladaptive cognitive schemas within this population. Furthermore, the study proposed a psychological intervention program focused on reducing anxiety and maladaptive cognitive schemas, aiming to improve the psychological well-being of adolescents with T1D and ED.

Theoretical significance. The research contributes to the scientific understanding of the psychological nature of eating disorders in adolescents with type 1 diabetes and their essential characteristics in relation to other psychological disorders. The study offers new perspectives on anxiety and maladaptive cognitive schemas, highlighting how these psychological elements correlate with the behavioral indicators of these disorders in adolescents with type 1 diabetes.

Practical value: The study develops the "Theoretical Psychological Profile of the Adolescent with Type 1 Diabetes" and the "Theoretical Psychological Profile of the Adolescent with Type 1 Diabetes and Eating Disorder." Additionally, it implements and validates a psychological intervention program aimed at reducing anxiety and maladaptive cognitive schemas in adolescents with type 1 diabetes and eating disorders, which can be used in clinical psychology practice. This program can be applied within medical and psychological assistance services, contributing to better diabetes management and mental health improvement for these adolescents. Furthermore, the study provides practical recommendations for optimizing psychological support activities for adolescents with type 1 diabetes and eating disorders.

Thesis structure: Introduction, 3 chapters, general conclusions and recommendations, bibliography with 272 titles, 15 appendices, 165 pages of main text, 64 figures, and 22 tables. The results are published in 12 scientific papers.

Keywords: adolescent, type 1 diabetes, eating disorder, anxiety, maladaptive cognitive schema, behavioral indicators of eating disorders, behavioral indicators of eating disorders.

Implementation of scientific results. The key aspects of this research have been reported, discussed, and analyzed within the meetings of the Department of Psychology at the State University of Moldova and at various scientific forums and events, such as the International Symposium "Integration Through Research and Innovation" in 2021, the National Conference with International Participation of Teaching Staff in Medical Professional Education in 2021, the Conference "Applied Psychology from the Perspective of Contemporary Societal Approaches" in 2021, the National Scientific Conference "Research in Educational Sciences and Psychology: Challenges, Perspectives" in 2021, the International Conference "Current Affairs and Perspectives in Psychological Research" in 2022, and the Sixth International Conference on Adult Education "Education for Peace and Sustainable Development" in 2023. The research findings have also been published in specialized journals such as *Studia Universitatis Moldaviae* in 2021 and 2024, *Arhipelag XXI Press* in 2024, and *Revista Psihologie* in 2024. The developed psychological intervention program has been implemented in professional practice through individual psychological counseling and psychotherapy sessions with adolescents with type 1 diabetes, as well as in the teaching of university courses such as *Health Psychology*, *Clinical Counseling*, *Cognitive-Behavioral Therapies*, *Psychological Counseling*, and *Narrative and Positive Therapies*.

THESIS CONTENT

The **Introduction** presents the relevance and significance of the research topic, emphasizing the connection between type 1 diabetes and eating disorders. It outlines the research aim, objectives, and methods, highlighting the importance of investigating anxiety and maladaptive cognitive schemas for the development of tailored psychological interventions.

Chapter 1. Theoretical and methodological foundations on the psychological characteristics of eating disorders in adolescents with type 1 diabetes contains 4 subchapters. In the first, **1.1. Synthesis of international studies on the psychological functioning of adolescents with type 1 diabetes**, the main concepts regarding the behavioral, cognitive, and emotional functioning of adolescents with T1D are analyzed. The importance of understanding these dimensions for the development of appropriate psychological interventions and the improvement of quality of life is emphasized.

The study was initiated by analyzing the psychological functioning of adolescents with T1D, focusing on three main dimensions: behavioral, cognitive, and emotional. In the behavioral dimension, it was highlighted that adherence to treatment represents a major challenge, significantly impacting adolescents' health. Difficulties include insulin administration, blood glucose monitoring, and maintaining a balanced diet, often influenced by social pressure and the desire for integration (Hood et al., 2006). Additionally, risky behaviors, such as substance use or rebellion against the constraints of the disease, are common (Kakleas et al., 2009). Eating behaviors and physical activity are also problematic, and the lack of adequate support increases the risk of disordered eating episodes (Caruso et al., 2014). Finally, social stigma associated with the visible management of diabetes in public can amplify stress and negatively impact glycemic control (Eilander et al., 2015).

The cognitive dimension reflects the impact of diabetes on essential mental processes. Poor glycemic control can lead to deficits in attention, memory, and executive functioning (van Duinkerken et al., 2020). Hypoglycemia causes acute cognitive deficits, negatively affecting academic performance, while chronic hyperglycemia impairs neurocognitive development (Cameron et al., 2005). Executive functioning and planning ability are often compromised, making it more difficult to manage the disease and daily tasks (Caruso et al., 2014).

In the emotional dimension, the prevalence of depression and anxiety is considerable, influenced by the constant demands of the disease and the fear of complications (Hood et al., 2006; Delamater et al., 2018). Emotional tension and diabetes-related distress can lead to feelings of frustration and burnout (Kakleas et al., 2009). A positive family dynamic and peer support are essential for managing emotional burdens, while a sense of control and autonomy helps adolescents effectively cope with their condition (Hansen et al., 2012).

As a result of the theoretical analysis, the "Theoretical Psychological Profile of Adolescents with Type 1 Diabetes" was developed, providing a detailed understanding of behavioral, cognitive, and emotional dimensions. This profile serves as a framework for identifying the psychological needs of adolescents, facilitating the development of tailored interventions aimed at improving their quality of life.

In subchapter **1.2. Conceptual approaches to eating disorders from a psychological perspective**, eating disorders (EDs) are analyzed from multiple perspectives, including psychological, medical, and sociocultural, in the context of type 1 diabetes (T1D). EDs are defined as complex conditions that integrate a variety of predisposing, triggering, and perpetuating factors. In individuals with T1D, these disorders are characterized by the interaction of unique factors, such as fluctuating body weight due to insulin therapy or compensatory behaviors like insulin omission.

Additionally, the literature highlights the high prevalence of EDs among young women with T1D, driven by sociocultural pressures to conform to thinness ideals and heightened body dissatisfaction. Anorexia nervosa and bulimia nervosa are the most studied eating disorders, with significant implications for both physical and psychological health. These disorders are often associated with psychosocial factors, such as depression, anxiety, family conflicts, and body dissatisfaction, which contribute to their onset and persistence.

An important aspect is the limited use of standardized screening tools, such as DEPS-R (Diabetes Eating Problem Survey-Revised) and SEEDS (Severe and Enduring Eating Disorder Scale), which, while useful for detecting EDs, do not account for T1D-specific variables, such as glycemic management or fear of weight gain caused by insulin therapy. Additionally, these tools fail to differentiate symptom severity or ED subtypes, complicating diagnosis and intervention.

From a treatment perspective, cognitive-behavioral therapy (CBT) is considered an effective approach for managing EDs, including those comorbid with T1D. However, studies indicate that psychotherapeutic interventions are more effective when integrated into a multidisciplinary model, combining diabetes management with specialized psychological support. Moreover, theoretical models,

such as the multidimensional model and the dual-pathway model, emphasize the importance of a holistic approach that includes biological, psychosocial, and behavioral factors in both the development and treatment of EDs in adolescents with T1D.

In subchapter **1.3. Explanatory models of maladaptive cognitive schemas in individuals with eating disorders,** the role of maladaptive cognitive schemas (MCS) in eating disorders (EDs) is analyzed. Young (1999) defines MCS as dysfunctional cognitive structures formed during childhood or adolescence that influence behaviors and emotions throughout life. These schemas develop due to unmet fundamental emotional needs, such as secure attachment, autonomy, emotional expression, spontaneity, and realistic limit-setting.

In EDs, MCS generate rigid negative cognitions about the self, such as "I am a failure," which differ from specific eating disorder-related cognitions, like "I must be thin to have value." Studies indicate that individuals with EDs score higher on MCS assessments compared to both healthy individuals and those on a diet (Waller et al., 2000). The most frequently associated schemas include defectiveness/shame, social isolation, mistrust/abuse, and emotional deprivation, contributing to the persistence of maladaptive behaviors and exacerbating emotional dysfunctions, such as difficulty in recognizing and managing emotions.

The identity impairment model (Stein, 1996) explains the connection between maladaptive schemas and negative self-image in EDs, highlighting how schemas shape pathological cognitions and behaviors, while emotional dysfunctions amplify their severity. Schema-focused therapies have proven effective, offering an alternative to traditional cognitive-behavioral therapies (CBT). The study by McIntosh et al. (2016) confirms the effectiveness of this approach, although differences between schema therapy and CBT remain minor.

Therefore, MCS play a crucial role in the etiology and maintenance of EDs, and therapeutic interventions should address both maladaptive schemas and emotional regulation for effective treatment.

In subchapter **1.4. Theoretical clarifications on anxiety in adolescents with eating disorders**, the manifestations of anxiety in adolescents with type 1 diabetes (T1D) and EDs are explored, emphasizing anxiety as a predisposing and maintaining factor. Anxiety disorders affect approximately 31% of the global population, being particularly common in children and adolescents (Rapee, 2020; Grant, 2013). Adolescents are especially vulnerable to these disorders due to age-specific physiological and psychological transitions, which can lead to dysfunctional eating behaviors (Schaumberg et al., 2018).

Anxiety disorders include panic disorder, social anxiety, generalized anxiety disorder, and school refusal, with prevalence rates varying across countries (Al-Yateem, 2020). Their primary characteristic is avoidant behavior, triggered by situations or stimuli that cause discomfort (Rapee, 2020). Risk factors for anxiety include genetic vulnerabilities, negative family experiences, abuse, and school-related stressors. Eating disorders frequently co-occur with anxiety, with comorbidity rates ranging from 51% to 78% among adolescents with EDs (Hughes et al., 2013; Rojo-Moreno et al., 2015). Comorbidity worsens symptoms, making treatment more challenging and increasing the risk of premature death (Desocio, 2019). Additionally, premorbid anxiety can negatively affect the prognosis of EDs, underscoring the need for simultaneous treatment of both disorders.

Chapter 1 concludes with **1.4. Conclusions**, summarizing the key findings of the investigated aspects:

1. Adolescents with type 1 diabetes (T1D) face significant challenges in managing their chronic condition, which affects their behavioral, cognitive, and emotional aspects. These challenges include difficulty adhering to treatment regimens, engagement in risky behaviors, cognitive difficulties, and high levels of depression and anxiety. Behavioral problems include low self-control over diet and avoidance of diabetes management tasks due to anxiety or fear of failure. Additionally, catastrophic thinking patterns and perfectionism contribute to cognitive difficulties, while body dissatisfaction and the desire to lose weight can exacerbate eating disorders. These behaviors negatively impact the overall psychological well-being of adolescents, increasing the risk of complications related to both diabetes and eating disorders.
2. Eating disorders (EDs) are common among individuals with type 1 diabetes (T1D) and are influenced by psychological, sociocultural, and diabetes-specific factors, such as pre-diagnosis weight loss and rapid weight gain after insulin therapy initiation. Adolescents with T1D often experience increased pressure to maintain an ideal body image, which can amplify bulimic behaviors and body dissatisfaction. Moreover, these disorders are

exacerbated by anxiety and stress related to the constant management of diabetes, creating a vicious cycle between food control and chronic disease management.

3. Eating disorders are complex and debilitating phenomena, influenced by multiple psychological factors and early life experiences. Maladaptive cognitive schemas (MCS), formed during childhood due to unmet basic emotional needs, play a crucial role in the development and maintenance of these disorders. Individuals with EDs tend to score higher on early maladaptive schemas, which shape their perception and response to their environment. Effective therapeutic approaches, such as schema-focused therapy, have shown potential in treating EDs, emphasizing the need for integrated and personalized interventions.
4. Eating disorders and anxiety are highly prevalent among adolescents, with a significant comorbidity that complicates treatment and negatively affects quality of life. Anxiety, often manifested through avoidant behaviors and persistent fears, is frequently a precursor to EDs, highlighting the importance of early interventions. Adolescents with co-occurring EDs and anxiety have an increased risk of developing other psychiatric disorders and struggles in managing their symptoms. Studies indicate that adolescents with these comorbidities have higher mortality rates and require integrated, personalized treatment strategies.
5. Theoretical data emphasize the need for empirical research on the relationship between eating disorders, anxiety, and maladaptive cognitive schemas in adolescents with type 1 diabetes. This research is crucial for better understanding the psychological mechanisms underlying these disorders, identifying specific risk factors, and developing more effective, personalized therapeutic interventions.

Chapter 2. The experimental study of the psychological characteristics in adolescents with type 1 diabetes and eating disorders includes five subchapters. In the first subchapter, **2.1. The design of the psychological assessment approach**, based on the theoretical analysis of existing studies, we identified a connection between the symptomatology of individuals with type 1 diabetes (T1D) who suffer from eating disorders (EDs) and their relationship with anxiety and maladaptive cognitive schemas. This serves as the foundation for a deeper practical investigation.

Thus, the **purpose** of the exploratory experiment is to highlight the psychological characteristics of eating disorders in adolescents with type 1 diabetes, comparing them to adolescents without T1D but with eating disorders.

The **objectives** set to achieve the research aim are:

1. Identifying the specific manifestations of anxiety and maladaptive cognitive schemas in adolescents with T1D and eating disorders, as well as conducting a comparative analysis of anxiety and maladaptive cognitive schemas among three groups: Adolescents with T1D and eating disorders Adolescents with T1D without eating disorders Adolescents without T1D but with eating disorders
2. Determining the degree of correlation between maladaptive cognitive schemas, anxiety, and the behavioral indicators of eating disorders.
3. Developing psychological profiles for adolescents with T1D, both with and without eating disorders.

Based on the analysis of the specialized literature and preliminary observations, the following **hypotheses** have been formulated:

1. We hypothesize the existence of specific characteristics in the manifestation of anxiety and maladaptive cognitive schemas in the psychological functioning of adolescents with type 1 diabetes, with these characteristics being more pronounced in diabetic adolescents with eating disorders compared to diabetic adolescents without eating disorders and adolescents without type 1 diabetes but with eating disorders.
2. We assume that there is a certain degree of correlation between maladaptive cognitive schemas, anxiety, and the behavioral indicators of eating disorders in adolescents with type 1 diabetes.

The experimental group was established to study the manifestation of eating disorders, anxiety, and maladaptive cognitive schemas in adolescents with type 1 diabetes (T1D). The field research was conducted in 2022 with the participation of 132 diabetic adolescents, all officially diagnosed and receiving treatment at the IMSP Institute of Mother and Child, Pediatric Clinic, Endocrinology Department, with parental consent. The participants were aged between 12 and 18 years, with a disease duration ranging from one to fifteen years. Data were collected from the participants regarding age, living environment, disease duration, and gender (Condrea, 2022).

To obtain a clear comparative picture of eating disorder manifestations in individuals without T1D, a second experimental group was selected. This group included 132 adolescents without a T1D diagnosis or chronic pathologies, aged between 13 and 19 years, chosen randomly.

In total, 264 adolescents participated in the study. During test administration, a safe and supportive environment was ensured, allowing participants sufficient time to complete the assessments without pressure or external influence. The results and interpretations of the tests were provided to the participants along with the necessary explanations..

Psychometric instruments used in the exploratory experiment

To achieve the research objectives and test the formulated hypotheses, the following psychodiagnostic methods were employed:

1. Eating Disorder Inventory-3 FT (EDI-3 FT) – assessing the following variables: desire to be thin, bulimic behavior, body dissatisfaction, and global risk of eating disorders (EDs).
2. Phillips School Anxiety Questionnaire – evaluating general anxiety, fear of self-assertion, and low stress tolerance.
3. Young Schema Questionnaire (YSQ-S3R) – measuring 18 maladaptive schemas, grouped into five domains: separation and rejection, low autonomy and poor performance, impaired limits, dependence on others, and hypervigilance/inhibition.

In subchapter **2.2. Analysis of preliminary research results**, a detailed analysis of the initial data collected in the study was conducted, aiming to highlight the differences between adolescents with type 1 diabetes (T1D) and those without this condition. The study sought to identify and compare the manifestation of behavioral indicators of eating disorders, maladaptive cognitive schemas, and anxiety characteristics in the two groups. Additionally, the subject groups were delineated and analyzed based on the presence or absence of eating disorders for a more detailed understanding of the psychological specifics of adolescents with T1D. This subchapter establishes the necessary context for further deepening the research in the following sections.

In subchapter 2.2.1, the manifestation of behavioral indicators of eating disorders (EDs) in adolescents with type 1 diabetes (T1D) was investigated in comparison to those without this condition. By applying the EDI-3 questionnaire, bulimic behaviors, body dissatisfaction, the desire to be thin, and the overall risk of developing an ED were assessed.

The results revealed differences between the two groups. Adolescents with T1D exhibited higher tendencies toward bulimic behaviors and significantly greater body dissatisfaction compared to those without T1D. The desire to be thin was more pronounced in diabetic adolescents, suggesting an increased awareness of body weight in the context of diabetes management. The overall risk of EDs, assessed through the composite scale, was higher in diabetic adolescents, indicating the influence of chronic and psychosocial factors associated with this condition (*Table 1*).

Table 1. Distribution of results for behavioral indicators of eating disorders in the experimental group with t1d and the group without t1d

	Clinical significance of the presence of *Bulimic behavior*					
	Low		**Typical**		**High**	
	Frequency	n	Frequency	n	Frequency	n
Experimental group with T1D	95,5%	126	3,0%	4	1,5%	2
Experimental group without T1D	100%	132	0%	0	0%	0
	Clinical significance of *Body dissatisfaction*					
	Low		**Typical**		**High**	
	Frequency	n	Frequency	n	Frequency	n
Experimental group with T1D	25,7%	34	45,5%	60	28,8%	38
Experimental group without T1D	36,4%	48	54,5%	72	9,1%	12
	Clinical significance of the *Desire to be thin*					
	Low		**Typical**		**High**	
	Frequency	n	Frequency	n	Frequency	n
Experimental group with T1D	95,5%	126	4,5%	6	0%	0
Experimental group without T1D	100%	132	0%	0	0%	0
	Clinical significance of the *Global risk of eating disorders*					
	Low		**Typical**		**High**	
	Frequency	n	Frequency	n	Frequency	n
Experimental group with T1D	95,5%	126	3,0%	4	1,5%	2
Experimental group without T1D	100%	132	0%	0	0%	0

For a detailed analysis, the subjects were grouped as follows: adolescents with T1D and EDs, adolescents with T1D without EDs, and adolescents without T1D but with EDs. This classification will be used in the subsequent stages of the research to explore the relationship between diabetes, eating behavior, and psychological factors. The results highlight the need for personalized psychological strategies for diabetic adolescents, aimed at preventing and managing eating disorders (*Figure* 1).

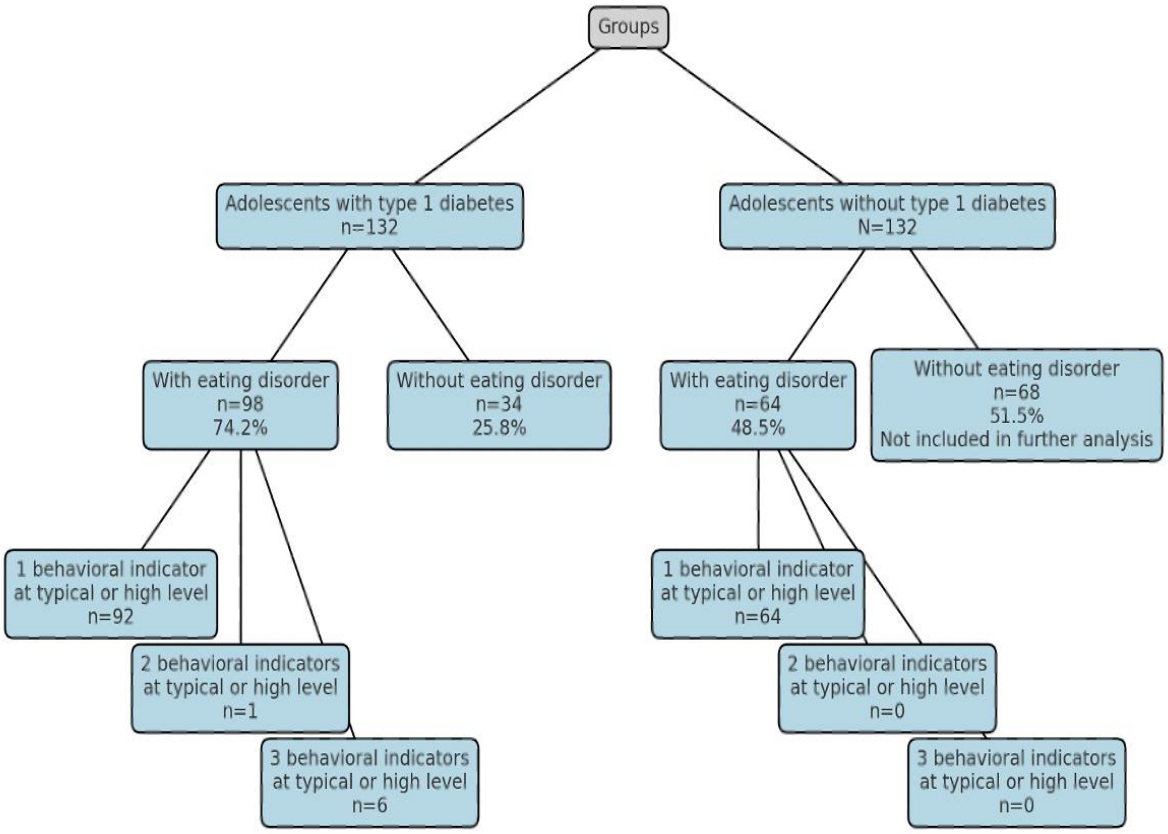


Fig. 1. Organization of the experimental group with T1D and the group without T1D, based on the presence or absence of an eating disorder.

Subchapter 2.2.2 explores the manifestation of maladaptive cognitive schemas and anxiety in adolescents with type 1 diabetes (T1D) and eating disorders (EDs). Adolescents with T1D and EDs frequently exhibit maladaptive cognitive schemas that negatively impact both disease management and mental health. The self-sacrifice and approval-seeking/recognition schemas are among the most prominent, indicating a strong tendency to neglect personal needs in favor of others and a constant search for social acceptance. Additionally, the vulnerability to harm and illness schema reflects an excessive concern for health, exacerbating diabetes-related stress, while the dependence/incompetence schema highlights difficulties in making autonomous decisions related to diet and the management of the chronic condition. These cognitive patterns significantly contribute to maladaptive eating behaviors and increase the complexity of diabetes management during adolescence (*Figure* 2).

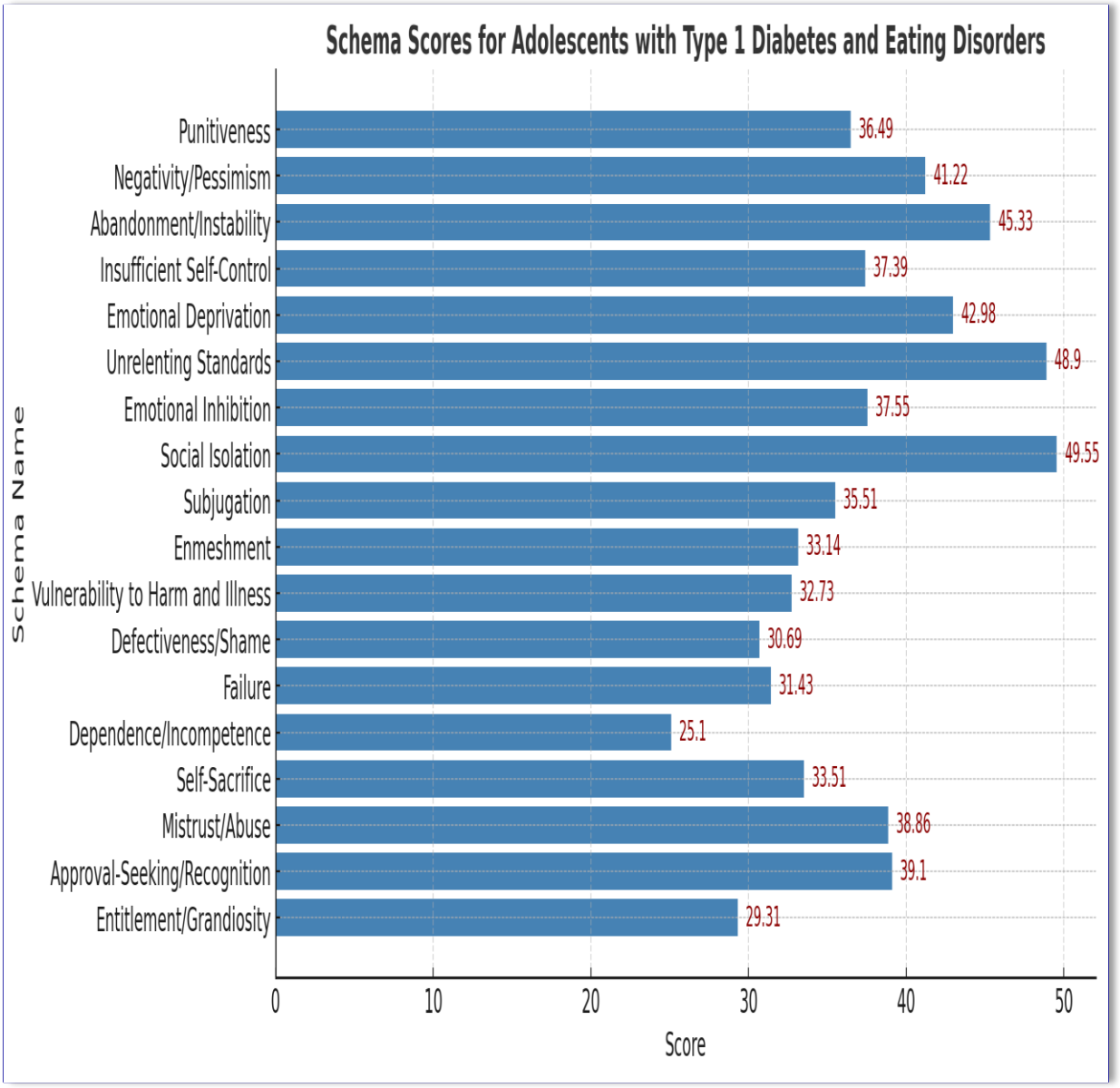


Fig. 2. Average scores of maladaptive cognitive schemas in adolescents with T1D and eating disorders

Adolescents with T1D and EDs exhibit significantly higher levels of certain maladaptive cognitive schemas compared to those without EDs. For example, they experience more intense feelings of emotional deprivation and abandonment/instability, indicating an emotional experience characterized by neglect and fear of instability in relationships. Schemas such as mistrust/abuse and defectiveness/shame suggest heightened perceptions of victimization and stigmatization, negatively impacting self-image. Additionally, self-sacrifice and negativity/pessimism are more prevalent in adolescents with EDs, indicating a tendency to neglect personal needs and maintain a pessimistic outlook on life. These differences highlight the added impact of EDs on the emotional and cognitive vulnerabilities of adolescents with T1D.

When comparing adolescents with T1D and EDs to those without T1D but with EDs, it is observed that the former group presents higher levels of schemas such as emotional deprivation and abandonment/instability, suggesting that diabetes further contributes to emotional vulnerability. Common schemas, such as self-sacrifice, appear at similar levels in both groups, indicating a general tendency toward self-neglect in the context of EDs. However, schemas such as negativity/pessimism are more pronounced in adolescents with T1D, reflecting a more pessimistic perspective on life, likely influenced by the additional challenges of a chronic illness. These differences underline the complex interaction between diabetes and EDs in shaping emotional health and maladaptive cognitive schemas (Table 2)..

Table 2. Mean differences in maladaptive cognitive schema levels

Maladaptive cognitive schemas	T-test between adolescents with T1D with and without EDs			T-test between adolescents with T1D and EDs and adolescents without T1D but with EDs		
	t	Sig. (2-tailed)	Mean difference	t	Sig. (2-tailed)	Mean difference
Emotional deprivation	-2,467	,015	-11,424	7,26	,000	20,744
Abandonment/instability	-4,626	,000	-16,749	2,790	,006	11,290
Mistrust/abuse	-3,339	,001	-13,916	-2,618	,010	-9,955
Social isolation/alienation	-2,711	,008	-11,863	1,830	,069	7,010
Defectiveness/shame	-4,024	,000	-13,220	3,495	,001	10,852
Failure	-1,919	,057	-7,664	2,920	,004	10,366
Dependence/incompetence	-1,083	,282	-4,106	4,595	,000	15,631
Vulnerability to harm and illness	-3,036	,003	-12,264	2,728	,007	9,672
Punitiveness/infantile ego	-2,898	,005	-11,261	1,783	,076	5,643
Subjugation/entitlement	-3,292	,001	-14,804	3,948	,000	14,385
Self-sacrifice	-5,450	,000	-21,786	-1,108	,270	-4,199
Emotional inhibition	-2,625	,010	-10,727	2,807	,006	8,989
Unrelenting standards/hypercriticism	-3,185	,002	-12,192	-,906	,366	-2,915
Grandiosity	-3,342	,001	-12,862	-1,810	,073	-6,833
Insufficient self-control/self-discipline	-1,822	,071	-6,564	,789	,431	2,513
Approval-seeking/recognition	-2,443	,016	-11,915	,845	,399	3,530
Negativity/pessimism	-2,840	,005	-12,754	-1,460	,147	-6,588
Punitiveness	-2,039	,046	-8,490	-1,081	,281	-3,573

Adolescents with type 1 diabetes (T1D) and eating disorders (EDs) exhibit high levels of general anxiety, fear of self-assertion, and low physiological resilience to stress. The mean score for general anxiety is significantly higher than in adolescents with T1D without EDs and those without T1D but with EDs, indicating that the simultaneous presence of diabetes and EDs intensifies anxiety symptoms. Additionally, fear of self-assertion is more pronounced in adolescents with T1D and EDs compared to those without EDs or without T1D, suggesting major difficulties in expressing personal needs and adopting assertive behavior. Low physiological resilience to stress is a common trait, with adolescents with T1D and EDs showing similar scores to those without T1D but with EDs, yet much higher than those with T1D without EDs, indicating a reduced capacity for stress management (*Table* 3).

Table 3. Mean differences in anxiety levels

Anxiety variables	T-test between adolescents with T1D with and without EDs.			T-test between adolescents with T1D and EDs and adolescents without T1D but with EDs		
	t	Sig. (2-tailed)	Mean diff.	t	Sig. (2-tailed)	Mean diff.
General anxiety	-3,924	,000	-13,287	2,499	,013	6,660
Fear of self-assertion	-3,011	,003	-18,150	2,508	,013	10,748
Low stress tolerance.	-4,488	,000	-24,490	2,537	,012	11,677

Subcapitolul **2.3. Stabilirea relației dintre constructele psihologice (anxietate și scheme cognitive dezadaptative) și indicatorii comportamentali ai tulburărilor de comportament alimentar la adolescenții cu diabet zaharat tip 1** evidențiază următoarele constatări:

Subchapter **2.3. Establishing the relationship between psychological constructs (anxiety and maladaptive cognitive schemas) and behavioral indicators of eating disorders in adolescents with type 1 diabetes** highlights the following findings.

The correlation between anxiety and eating disorders (EDs) shows that body dissatisfaction is significantly correlated with general anxiety and low stress management capacity, which intensifies concerns about physical appearance. Bulimic behavior is associated with fear of self-assertion, suggesting that a lack of assertiveness leads to the use of compulsive eating as a strategy to manage unexpressed

emotions. The desire to be thin has significant links to general anxiety and fear of self-assertion, being fueled by a need for control and external validation. The composite ED risk scale indicates that general anxiety disrupts emotional balance, increasing the risk of developing eating disorders.

The correlation between maladaptive cognitive schemas and EDs reveals that schemas such as abandonment/instability, mistrust/abuse, social isolation, and defectiveness/shame play a significant role in increasing body dissatisfaction, bulimic behavior, and the desire to be thin. These schemas reflect emotional insecurities, past negative experiences, and a critical self-perception, negatively impacting mental health and eating behaviors. Additional schemas, such as insufficient self-control, approval-seeking, and negativity, further contribute to the increased risk of eating disorders.

Regarding the *correlation between disease duration, age, and EDs, age* does not have a significant influence on the predisposition to EDs in adolescents with T1D. However, a longer disease duration is associated with an increased risk of bulimic behavior, the desire to be thin, and overall ED risk. This finding emphasizes the importance of long-term psychological monitoring and intervention to prevent and manage eating behavior problems in this vulnerable group.

In subchapter **2.4. The psychological profile of the diabetic adolescent with an eating disorder**, an integrated psychological profile of adolescents with T1D and EDs has been outlined (*Figure* 3).

This profile synthesizes cognitive, emotional, and behavioral traits, providing a detailed perspective on how these adolescents perceive their bodies and manage emotional and psychological challenges. The figure illustrates the organization of these characteristics, highlighting the main psychological mechanisms involved.

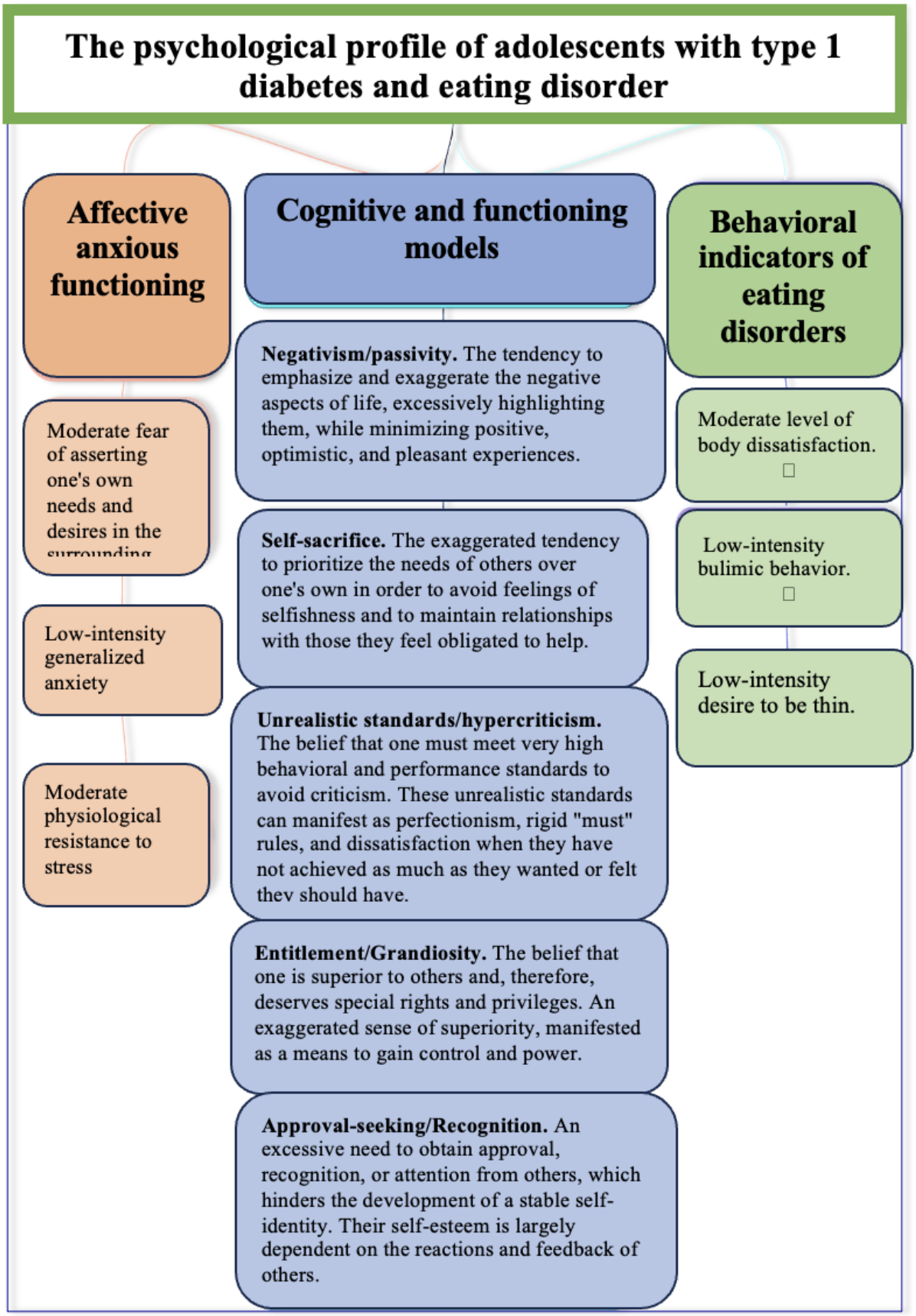


Fig. 3. Psychological profile of the adolescent with T1D and eating disorder

Based on the results obtained from the diagnostic process, in subchapter **2.5. Conclusions for Chapter 2,** the following key findings were formulated:

1. The study highlighted the specific characteristics of eating disorder (ED) manifestations in adolescents with type 1 diabetes (T1D) compared to healthy adolescents. The analysis of behavioral

indicators, such as bulimic behavior, body dissatisfaction, and the desire to be thin, showed significant differences between the two groups. Adolescents with T1D exhibited slightly higher bulimic behavior, significantly greater body dissatisfaction, and a stronger desire to be thin compared to healthy adolescents. Additionally, the overall risk of developing EDs, evaluated through the composite Eating Disorder Risk scale, was higher in diabetic adolescents.

2. A significant presence of maladaptive cognitive schemas was observed in adolescents with T1D and EDs. Schemas such as "Self-sacrifice," "Approval-seeking/recognition," "Negativity/passivity," and "Vulnerability to harm and illness" were particularly prominent, reflecting tendencies to neglect personal needs, a constant search for external validation, pessimism, and excessive fear of health problems. These findings emphasize the complexity of psychological challenges faced by adolescents with T1D, which can intensify diabetes management difficulties and fuel unhealthy eating behaviors. The significant differences between adolescents with T1D with and without EDs, as well as between those with and without T1D, highlight the need for personalized therapeutic approaches that integrate both psychological and medical aspects of treatment.
3. Adolescents with T1D and EDs experience significantly higher levels of general anxiety, fear of self-assertion, and lower stress resilience compared to adolescents without T1D or without EDs. Generalized anxiety is particularly prevalent in those with T1D and EDs, indicating a major challenge in this group. Additionally, difficulty in expressing personal needs is reflected in the fear of self-assertion, likely exacerbated by the burden of managing both diabetes and eating disorders. Low stress resilience suggests a significant negative impact on diabetes management and overall mental health.
4. Significant correlations were confirmed between anxiety and behavioral indicators of EDs, as well as between maladaptive cognitive schemas and these behavioral indicators. Specifically, general anxiety, fear of self-assertion, and other anxiety-related variables were strongly correlated with body dissatisfaction, bulimic behavior, and the desire to be thin. Furthermore, maladaptive cognitive schemas, such as abandonment/instability and mistrust/abuse, also showed strong correlations with these behavioral indicators.
5. The necessity of implementing integrated interventions, both biomedical and psychosocial, for adolescents with T1D was identified. The high levels of anxiety, maladaptive cognitive schemas, and eating disorders indicate that psychosocial support is essential for improving mental well-being and effectively managing diabetes.

Chapter 3. Psychological intervention program for reducing anxiety, maladaptive cognitive schemas, and eating disorders in adolescents with type 1 diabetes

Subchapter **3.1. The relevance of psychological intervention in adolescents with type 1 diabetes** emphasizes the necessity of psychological interventions in managing diabetes among adolescents, as they contribute to both physical and mental health. However, access to psychological support is often limited by factors such as stigma, anxiety related to therapy, and a lack of adequate resources. In Moldova and Romania, psychological counseling is not sufficiently integrated into the care of individuals diagnosed with T1D, despite international studies, such as DCCT and DAWN2, highlighting the significant benefits of therapies like CBT, schema therapy, and mindfulness.

Adolescents with T1D and eating disorders (EDs) require tailored interventions such as diabetes-adapted CBT, mindful eating, and support groups, which specifically address body image concerns and unhealthy eating behaviors. Integrating psychological interventions into T1D treatment enhances disease management, reduces emotional distress and the risk of complications, and promotes a better quality of life. An interdisciplinary approach is essential to meet the complex needs of these adolescents.

In subchapter **3.2. Description of the psychological intervention program for adolescents with type 1 diabetes**, a psychological intervention program designed for these individuals is presented, aiming to reduce anxiety, decrease maladaptive cognitive schemas, and prevent the risk of developing eating disorders (EDs). The 7-day inpatient program is structured as a group training, integrating exercises and techniques that address cognitive, emotional, and behavioral dimensions. The main objectives include providing emotional support, developing coping strategies, and improving emotional well-being, all adapted to the specific needs of adolescents.

The goal of the narrative and cognitive-behavioral group psychological intervention program is to provide adolescents with T1D a therapeutic support environment where they can address anxiety, maladaptive cognitive schemas, and body dissatisfaction. This program aims to help participants develop coping strategies, improve self-esteem, and build resilience, while effectively managing their diabetes.

The objectives of the psychological intervention program focus on the following dimensions and

goals:

- Developing trust in psychological support and building a connection with the facilitator.
- Understanding anxiety by exploring and reconstructing the meanings of personal experiences. Identifying maladaptive cognitive schemas.
- Rewriting anxiety narratives.
- Reframing narratives related to body dissatisfaction.
- Creating future-oriented narratives and setting personal goals.

Program participants. Six adolescent participants, aged 14 to 15 years, diagnosed with Type 1 Diabetes (T1D) and patients at IMSP Institute of Mother and Child, were selected for the program. The selection criterion required the presence of at least one behavioral indicator of an eating disorder (ED) at a typical or high level. The number of six participants was chosen due to their inpatient status, the simultaneous selection of participants on the first day of hospitalization, and their physical condition, which did not allow for work with a larger group.

Intervention program structure. The psychological intervention program consisted of seven group sessions, each lasting 60 minutes, conducted daily over a period of seven days in 2023. The schematic presentation of the intervention program follows (*Table* 4).

Table 4. Intervention program for adolescents with type 1 diabetes

Session 1: Building Trust and Establishing the Framework **Objective:** Establishing trust within the group and presenting program objectives.	Welcome message and introduction. The facilitator and participants introduce themselves, establishing mutually agreed-upon rules, framework, and confidentiality. Icebreaker activities are conducted to build rapport. Participants share initial narratives about life with T1D and any fears or concerns related to body image.
Session 2: Understanding Narratives About Anxiety **Objective:** Exploring and understanding anxiety-saturated narratives in T1D.	Guided journal writing Participants write about their experiences with anxiety and T1D. A group discussion follows, where they share and reflect on anxiety-related narratives. An introduction to narrative techniques is provided, helping them identify patterns and themes in their anxiety stories.
Session 3: Challenging Maladaptive Cognitive Schemas **Objective:** Examining maladaptive cognitive schemas through personal narratives.	Exploring cognitive schemas Group discussions focus on cognitive schemas and their impact on anxiety and well-being. Participants share personal stories that illustrate maladaptive thinking patterns. They are introduced to cognitive restructuring techniques to challenge and reshape their thoughts.
Session 4: Rewriting Anxiety Narratives **Objective:** Starting the process of reframing anxiety narratives**.**	Guided narrative exercises Participants rewrite a past anxiety-inducing experience with T1D from a more empowered perspective. They then share their revised narratives in a group discussion, exploring changes in perspective. Breathing and relaxation techniques for managing anxiety are introduced and practiced.
Session 5: Exploring Body Image Narratives **Objective:** Addressing body dissatisfaction narratives in the context of T1D.	Body image perceptions and T1D Group discussions explore body image perceptions and their connection to T1D. Through guided narrative exercises, participants create counter-narratives that challenge negative beliefs about body image. They then share and reflect on their revised body image narratives, fostering a healthier self-perception.
Ș Session 6: Developing Positive Self-Image Narratives **Objective:** Encouraging narratives that promote a positive self-image.	Building positive self-concept and self-Esteem A group discussion focuses on self-esteem and the concept of a positive self-image. Participants engage in guided narrative exercises, creating personal stories that highlight their strengths and unique qualities. They then share and reflect on these personal narratives, reinforcing self-acceptance and self-worth.
Session 7: Integration,	Reflection, celebration, and future steps

Celebration, and Next Steps **Objective:** Reflecting on the journey, celebrating progress, and planning for continued growth.	A final group discussion allows participants to reflect on their seven-day narrative journey and the personal growth they have achieved. A celebration activity follows, where participants share their success stories. The program concludes with encouragement to continue using narrative techniques for ongoing self-improvement and as a tool for managing anxiety, cognitive schemas, and body image concerns.

The techniques used focused on several key areas:

1. **Building trust:**
   - *Group agreement and confidentiality:* Establishes clear rules for respect and confidentiality.
   - *Icebreaker activities:* Playful exercises such as "Name and Funny Fact" or "Two Truths and a Lie" to reduce anxiety..
2. **Awareness and management of anxiety:**
   - *Guided journaling*: Expressing thoughts and emotions related to anxiety.
   - *Identifying and externalizing anxiety narratives*: Narrative therapy for separating anxiety from the self.
   - *Identifying unique episodes*: Reflecting on successes in managing anxiety.
   - *4-7-8 breathing technique*: Inducing a state of calm through controlled breathing.
   - *Progressive muscle relaxation*: Reducing muscle tension through relaxation techniques.
3. **Addressing dysfunctional cognitive schemas:**
   - *Thought journal:* Recording and analyzing dysfunctional thoughts.
   - *Socratic dialogue:* Reevaluating thoughts through critical questioning.
   - *"Thoughts, Emotions, Actions" technique*: Analyzing the relationship between thoughts, emotions, and behaviors.
4. **Addressing self-image:**
   - *Psychoeducation on self-image and body image*: Providing information about external influences on body perception.
   - *Externalization of the problem:* Separating negative thoughts about the body from personal identity.
   - *Compassionate letters to the body:* Expressing self-compassion toward one's own body.

Subchapter **3.3. Evaluating the impact of the group psychological intervention program** in the Context of Type 1 Diabetes presents the assessment of the impact of the group psychological intervention program on adolescents with Type 1 Diabetes (T1D). The evaluation was conducted by retesting the six participants, using the Eating Disorder Inventory-3 (EDI-3), the Young Schema Questionnaire (YSQ-S3R), and the Phillips School Anxiety Questionnaire. The statistical analysis of pre-test and post-test data, employing methods such as the t-test and the test-retest method, revealed significant changes in the investigated variables.

Behavioral indicators of eating disorders

The results for Body Dissatisfaction show a significant reduction in scores, with a mean difference of 21.0 and a p-value of 0.000, confirming the effectiveness of psychotherapy in reducing this indicator. For the Bulimia variable, although the correlation between pre-test and post-test is moderate and significant ($r = 0.864$, $p = 0.026$), the mean difference was not large enough to demonstrate a statistically significant change ($p = 0.124$). For the Desire to Be Thin variable, the results indicate a significant reduction in mean scores, with a difference of 10.667 and a p-value of 0.032, suggesting a positive impact of the intervention (*Table* 5).

Table 5. Pre-Test/Post-Test values of behavioral indicators of eating disorders

Scale	***Mean Scores***		***Mean Score Diff.***	**Correlation Value**	**Significance (sig.)**	**t-Test Value**	**Significance Threshold (p)**
	Pre-test	Post-test					
Body dissatisfaction	65,67	54,67	21,0	,994	,000	17,340	,000
Bulimia	16,33	12,00	4,333	,864	,026	1,846	,124
Desire to be thin	27,50	16,83	10,667	,988	,000	2,938	,032

Manifestation of maladaptive cognitive schemas

The evaluation of the impact of the psychological intervention program on maladaptive cognitive schemas in adolescents with Type 1 Diabetes (T1D) revealed significant changes for most of the analyzed schemas. The results were obtained by comparing pre-test and post-test scores using statistical methods, including correlation analysis and the paired-sample t-test.

The program had a significant impact in reducing cognitive schemas such as "Body Dissatisfaction," "Social Isolation/Alienation," "Defect/Shame," "Failure," "Dependence/Incompetence," "Self-Sacrifice," "Unrealistic Standards/Hypercriticism," "Approval-Seeking/Recognition," and "Negativity/Passivity." These changes were supported by high correlation values and statistical significance, indicating the considerable effectiveness of the psychological intervention.

For the "Emotional Deprivation" schema, although a significant correlation was observed, the difference between pre-test and post-test scores was not large enough to reach statistical significance. Similarly, for "Abandonment/Instability," the observed changes were not statistically conclusive, suggesting the need for additional interventions or a larger sample size.

Cognitive schemas such as "Mistrust/Abuse," "Grandiosity," "Subjugation/Entitlement," and "Punishment" showed significant post-test score reductions, confirming the positive impact of psychotherapy. Additionally, the reduction in the "Emotional Inhibition" schema was supported by a t-test with a high level of significance, demonstrating a significant improvement in emotional regulation (*Table* 6).

Tabelul 6. Prezentarea datelor statistice la etapa pre-test/post-test privind manifestarea schemelor cognitive

	Mean Scores		**Mean Score Difference**	**Correlation Value**	**Significance (sig.)**	**t-Test Value**	**Significance Threshold (p)**
	Pre-test	Post-test					
Emotional deprivation	24,5	25,00	-,500	,909	,012	-,147	,889
Abandonment/instability	33,00	26,00	7,000	,820	,046	2,073	,093
Mistrust/abuse	61,17	36,17	25,000	,072	,892	4,686	,005
Social isolation/alienation	40,50	21,00	19,500	,991	,000	21,151	,000
Defectiveness/shame	42,33	34,50	7,833	,964	,002	3,871	,012
Failure	41,00	33,67	7,333	,926	,008	3,427	,019
Dependence/incompetence	38,00	31,67	6,333	,961	,002	3,099	,027
Vulnerability to harm and illness	39,50	32,83	6,667	,954	,003	3,093	,027
Punitiveness/infantile ego	40,83	34,33	6,500	,978	,001	2,735	,041
Subjugation/entitlement	41,00	34,00	7,000	,965	,002	4,398	,007
Self-sacrifice	82,33	56,17	26,167	,819	,046	6,563	,001
Emotional inhibition	55,67	40,83	14,833	,980	,001	10,972	,000
Unrelenting standards/hypercriticism	61,00	42,00	19,000	,968	,002	6,635	,001
Grandiosity	61,50	41,50	20,000	,908	,012	7,131	,001
Insufficient self-control/self-discipline	58,67	39,67	19,000	,817	,047	6,922	,001
Approval-seeking/recognition	76,83	39,50	37,333	,965	,002	14,783	,000
Negativity/pessimism	64,17	46,50	17,667	,876	,022	4,981	,004
Punitiveness	58,17	40,33	17,833	,892	,017	6,347	,001

Anxiety

The evaluation of the impact of psychotherapy on general anxiety in adolescents with Type 1 Diabetes (T1D) revealed a significant reduction in anxiety levels. The strongly significant correlation (0.876) between pre-test and post-test mean scores indicates a positive relationship between the intervention and the decrease in anxiety. A mean difference of 18.0, a t-test value of 6.677, and a significance level of 0.001 support the conclusion that this change is statistically significant (Figure 4).

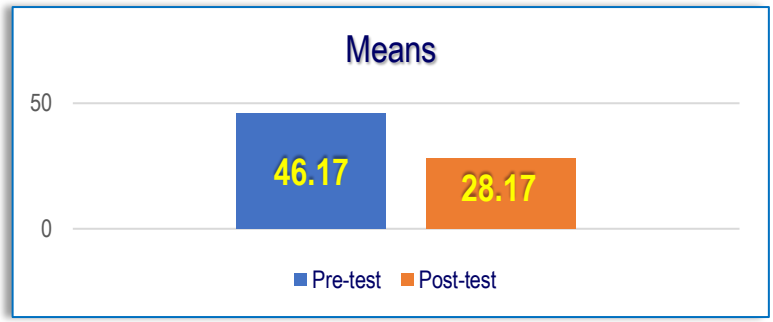


Fig. 4. Pre-Test and Post-Test values of the variable "general anxiety"

Subchapter 3.4. Case Study Analysis. This subchapter presents the adaptation of the psychological intervention program for an individual case, conducted over seven days with daily one-hour sessions. The subject of the case study is a 14-year-old adolescent, "Ana" (pseudonym), diagnosed with Type 1 Diabetes (T1D). The case study provides a detailed exploration of Ana's medical and psychological history, initial evaluation, implementation of the psychological intervention, and obtained results.

Ana's background and pre-intervention assessment: **Ana was diagnosed with T1D at the age of 10 and has experienced difficulties in accepting the disease, social withdrawal, increased anxiety, and body image dissatisfaction. The initial evaluation revealed a significant level of anxiety (both general and school-related), maladaptive cognitive schemas, including unrealistic standards/hypercriticism and approval-seeking, as well as a high degree of body dissatisfaction.**

Implementation of the intervention. The program was structured into seven sessions, each with specific objectives and techniques:

- **Session 1**: Establishing the therapeutic relationship, exploring experiences related to diabetes, and setting the framework rules for therapy.
- **Session 2**: Externalizing anxiety using narrative techniques, with Ana naming her anxiety "The Black Cloud."
- **Session 3**: Exploring maladaptive cognitive schemas (self-sacrifice, approval-seeking, and hypercriticism) through Socratic dialogue.
- **Session 4:** Rewriting anxiety narratives and introducing the 4-7-8 breathing technique.
- **Session 5**: Addressing body dissatisfaction through narrative exercises and writing a self-compassion letter to the body.
- **Session 6**: Developing positive self-narratives and identifying personal strengths and resources.
- **Session 7**: Reflecting on progress and consolidating acquired techniques.

Post-Intervention results. The post-intervention evaluation showed significant progress in multiple areas:

- Reduction in anxiety: General anxiety decreased from 55% to 36%, while school-related anxiety dropped from 59% to 31%. Fear of self-assertion significantly decreased from 83% to 33%.
- Improvement in cognitive schemas: Self-sacrifice decreased from 92% to 62%, approval-seeking from 96% to 67%, and unrealistic standards/hypercriticism from 100% to 60%.
- Enhanced body image: Body dissatisfaction reduced from 79 to 64, and the desire to be thin declined from 56 to 26.

Observations and conclusions on group and individual interventions

The individual intervention proved to be effective in reducing anxiety, restructuring maladaptive cognitive schemas, and developing a healthier body image perception. Ana showed improved emotional understanding and management, as well as increased self-confidence. Continued therapy was recommended to consolidate progress, along with parental involvement to support the therapeutic process.

A comparison between group and individual interventions highlighted the advantages of each method. Individual interventions were found to be more suitable for addressing sensitive and complex issues, while group interventions provided social support and a sense of belonging.

Subchapter **3.5. Conclusions of Chapter 3** This section identifies and presents, based on observational findings, a psychological intervention program that incorporates the most effective methods for improving mental well-being in individuals with Type 1 Diabetes (T1D). The pre-test/post-test analysis confirmed the effectiveness of the intervention program in various psychological aspects, demonstrating that the main research objective was successfully achieved.

1. *Behavioral indicators of eating disorders.* The psychological intervention program appears to be highly effective in reducing "Body Dissatisfaction" and "Desire to Be Thin" in diabetic adolescents. Regarding bulimia, the results do not provide clear conclusions, suggesting that further investigations or a larger sample size may be necessary to confirm the effectiveness of psychotherapy in this regard.
2. *Manifestation of maladaptive cognitive schemas.* Overall, the results indicate significant effectiveness of the psychological intervention in modifying specific cognitive schemas in adolescents with type 1 diabetes. The schemas that showed significant improvement following psychotherapy include: "Social Isolation/Alienation," "Defect/Shame," "Failure," "Dependence/Incompetence," "Vulnerability to Harm and Illness," "Overprotection/Infantile Ego," "Subjugation/Entitlement," "Self-Sacrifice," "Emotional Inhibition," "Unrealistic Standards/Hypercriticism," "Grandiosity," "Insufficient Self-Control/Self-Discipline," "Approval-Seeking/Recognition," "Negativity/Passivity," and "Punishment." However, the cognitive schemas "Emotional Deprivation," "Abandonment/Instability," and "Mistrust/Abuse" did not show statistically significant differences between pre-test and post-test scores, indicating possible limitations of the intervention in these specific areas. It is essential to consider the individual characteristics of adolescents and adapt therapeutic approaches to maximize psychological benefits.
3. *Anxiety*. The psychological intervention had a significant and positive impact in reducing general anxiety levels in diabetic adolescents, contributing to an improvement in emotional well-being and more effective anxiety management. These results may indicate not only short-term changes but also significant long-term benefits in managing emotional aspects. Thus, this form of intervention appears to be effective and relevant for diabetic adolescents in terms of managing general anxiety..

GENERAL CONCLUSIONS AND RECOMANDATIONS

1. Adolescents with type 1 diabetes and eating disorders face significant challenges in managing their chronic illness, affecting various aspects of their lives. these challenges include difficulty adhering to strict treatment regimens, engagement in risky behaviors, and cognitive and emotional difficulties. eating disorders are common among adolescents with type 1 diabetes, influenced by psychological, sociocultural, and diabetes-specific factors. these disorders have a substantial negative impact on mental health and eating behaviors, ultimately affecting the quality of life and overall well-being of adolescents with type 1 diabetes.
2. Eating disorders and anxiety are frequent and comorbid among adolescents with type 1 diabetes, complicating medical treatment and negatively affecting their quality of life. the study found that adolescents with type 1 diabetes and eating disorders exhibit significantly higher levels of general anxiety, fear of self-assertion, and lower stress resilience compared to adolescents without type 1 diabetes or eating disorders. this comorbidity complicates treatment, emphasizing the need for early and integrated interventions that address both psychological and physical aspects of this condition.
3. There is a significant relationship between maladaptive cognitive schemas, anxiety, and eating disorders among adolescents with type 1 diabetes. The study identified strong correlations between anxiety and behavioral indicators of eating disorders, as well as between maladaptive cognitive schemas and these indicators. These correlations suggest that therapeutic approaches must be comprehensive and personalized, addressing both cognitive and emotional aspects of the individuals. Such an approach can improve mental health and enhance diabetes management.
4. Integrated psychological interventions are essential for improving mental health and managing Type 1 Diabetes in adolescents, providing comprehensive and holistic support. The study highlighted the need for interventions that combine psychological support with biomedical treatment. Psychological interventions have been shown to be effective in reducing general anxiety and the presence of maladaptive cognitive schemas, thereby enhancing emotional well-being and quality of life for adolescents with Type 1 Diabetes. These interventions are crucial for ensuring holistic and effective care for this vulnerable population.
5. The psychological intervention program developed and validated in this study has proven effective in alleviating symptoms associated with eating disorders, anxiety, and maladaptive cognitive schemas in adolescents with type 1 diabetes. The intervention contributed to the reduction of body dissatisfaction, the desire to be thin, and specific maladaptive cognitive schemas, demonstrating a significant positive impact on mental health and diabetes management. This program can be successfully implemented in medical and psychological care, providing long-term benefits for the emotional and physical well-being of adolescents.

Summarizing the obtained scientific results, we can confidently state that the research objectives and goals have been fully achieved. As a result, a significant scientific problem has been addressed, consisting of the identification of psychological characteristics manifested in eating disorders among adolescents with type 1 diabetes, the understanding of the relationship between these disorders, anxiety, and maladaptive cognitive schemas, and the development of a psychological intervention program. This program has effectively reduced anxiety levels and manifestations of maladaptive cognitive schemas, thereby contributing to the well-being of affected adolescents.

The findings of the theoretical and experimental study provide the opportunity to propose a series of recommendations for the advancement of future research and the development of psychological practices aimed at combatting eating disorders and managing type 1 diabetes in adolescents.

Recommendations for mental health professionals

- Active collaboration with the medical team treating diabetes to ensure a holistic approach to treatment, integrating both medical and psychological aspects.
- Focusing on identifying and challenging dysfunctional thoughts and cognitive schemas associated with anxiety and eating disorders, such as unrealistic standards, hypercriticism, approval-seeking, and self-sacrifice.
- Implementing narrative techniques that allow adolescents to rewrite their personal stories about diabetes, emphasizing moments of success and effective coping strategies.
- Providing psychoeducation on the impact of diabetes on body image, fostering body acceptance, and cultivating a kinder and more forgiving relationship with one's own body.
- Using relaxation techniques to reduce overall anxiety levels related to diabetes management.
- Organizing support groups for adolescents with diabetes, creating a safe environment where they can receive validation, express themselves freely, and learn adaptive strategies.

- Periodically assessing levels of anxiety, cognitive schemas, and eating disorder indicators using psychometric tests such as EDI-3, YSQ-S3R, and Phillips, and adjusting the intervention based on each participant's needs and progress.

Recommendations for parents of adolescents

- Creating a supportive family environment, where parents foster an open and understanding atmosphere, allowing adolescents to feel comfortable discussing their challenges related to type 1 diabetes and eating disorders, while also validating their emotions.
- Closely monitoring eating behaviors and behavioral changes in their children, staying attentive to signs of disordered eating or emotional distress.
- Encouraging discussions about stress management and the emotional impact of the illness, providing a safe space where adolescents can express fears, frustrations, and sadness without judgment.

Recommendations for future research development

- Investigating the role of additional psychological factors, such as depression, self-esteem, resilience, and social support, in the relationship between eating disorders and anxiety in adolescents with Type 1 Diabetes. Exploring how these psychological variables interact and influence diabetes management and mental health, to identify new opportunities for psychological intervention and support.
- Conducting studies with larger samples to confirm and expand current findings regarding the effectiveness of psychological interventions. Replicating studies in different cultural and geographical contexts to assess the generalizability of results.
- Developing and testing early prevention programs aimed at reducing the risk of eating disorders and anxiety in adolescents with Type 1 Diabetes. Evaluating the long-term impact of early interventions on emotional well-being and quality of life.
- Assessing the impact on families by studying how Type 1 Diabetes and eating disorders affect family dynamics and parental stress. Investigating the effectiveness of support programs for parents and families in helping them manage their emotional well-being and their adolescents' eating behaviors.

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ADNOTARE

Condrea Victoria, „Particularități psihologice ale tulburărilor de comportament alimentar la adolescenții cu diabet zaharat tip 1”.

Teză de doctor în psihologie. Chișinău, 2025

Structura tezei: introducere, trei capitole, concluzii generale și recomandări, bibliografie din 272 de titluri, 15 anexe, 165 de pagini de text de bază, 64 figuri și 22 tabele. Rezultatele obținute sunt reflectate în 12 lucrări științifice publicate.

Cuvinte-cheie: adolescent, diabet zaharat tip 1, tulburare de comportament alimentar, anxietate, schemă cognitivă dezadaptativă, indicatori comportamentali ai tulburărilor de comportament alimentar.

Scopul cercetării: identificarea particularităților psihologice manifestate în tulburările de comportament alimentar la adolescenții cu diabet zaharat tip 1, determinarea relației dintre aceste tulburări cu anxietatea și schemele cognitive dezadaptative, precum și elaborarea unui program de intervenție psihologică în vederea ameliorării indicatorilor asociați tulburărilor de comportament alimentar, anxietății și schemelor cognitive dezadaptative.

Obiectivele cercetării: 1) Analiza și sinteza literaturii de specialitate cu referire la particularitățile psihologice asociate tulburărilor de comportament alimentar în perioada adolescentină în general și adolescenților cu diabet zaharat tip 1 în particular. 2) Identificarea particularităților manifestării anxietății și schemelor cognitive dezadaptative la adolescenții cu diabet zaharat tip 1 cu tulburări de comportament alimentar și analiza comparativă a acestor variabile la adolescenții cu diabet zaharat tip 1 și adolescenții fără diabet zaharat tip 1. 3) Stabilirea gradului de corelare a schemelor cognitive dezadaptative și a anxietății cu indicatorii comportamentali ai tulburărilor de comportament alimentar. 4) Elaborarea profilurilor psihologice ale adolescenților diabetici cu și fără tulburare de comportament alimentar. 5) Elaborarea unui program de intervenție psihologică în scopul ameliorării indicatorilor asociați tulburărilor de comportament alimentar, anxietății și schemelor cognitive dezadaptative. 6) Validarea și evaluarea eficienței *Programului de intervenție psihologică* destinat ameliorării indicatorilor asociați tulburărilor de comportament alimentar prin diminuarea anxietății și schemelor cognitive dezadaptative,

Rezultatele obținute: Studiul a identificat tipul de relații dintre particularitățile tulburărilor de comportament alimentar la adolescenții cu diabet zaharat tip 1 si manifestarea anxietății si schemelor cognitive dezdaptative. A fost determinată frecvența tulburărilor de comportament alimentar în cazul adolescenților cu diabet zaharat tip 1 și fără și s-au analizat particularitățile psihologice ale anxietății și schemelor cognitive dezadaptative la această categorie de subiecți. De asemenea, cercetarea a propus un program de intervenție psihologică centrat pe reducerea anxietății și a schemelor cognitive dezadaptative.

Noutatea și originalitatea științifică: În cadrul contextului din Republica Moldova, această cercetare reprezintă una dintre puținele care reflectă aspecte psihologice legate de tulburările de comportament alimentar, anxietate și scheme cognitive dezadaptative în rândul adolescenților cu diabet zaharat tip 1. Originalitatea rezidă în elaborarea unui profil psiho-emoțional detaliat și dezvoltarea unui program de intervenție psihologică.

Semnificația teoretică a lucrării vizează cunoștințele științifice obținute despre natura psihologică a tulburărilor de comportament alimentar la adolescenții cu diabet zaharat tip 1 și caracteristicile esențiale ale acestora în raport cu alte tulburări psihologice. Studiul a oferit perspective noi asupra anxietății și schemelor cognitive dezadaptative, evidențiind modul în care aceste elemente psihologice corelează cu indicatorii comportamentali ai acestor tulburări la adolescenții cu diabet zaharat tip 1.

Valoarea aplicativă a lucrării constă în elaborarea ”Profilului psihologic teoretic al adolescentului cu diabet zaharat tip 1” și ”Profilului psihologic teoretic al adolescentului cu diabet zaharat tip 1 și tulburare de comportament alimentar”, implementarea și validarea unui program de intervenție psihologică orientat spre ameliorarea nivelului de anxietate și gradului de manifestare a schemelor cognitive dezadaptative la adolescenții cu diabet zaharat tip 1 și tulburări de comportament alimentar, care poate fi utilizat în activitatea psihologului clinician. Acest program poate fi utilizat în cadrul serviciilor de asistență medicală și psihologică, având un efect benefic asupra gestionării diabetului și îmbunătățirii sănătății mintale a acestor adolescenți. De asemenea, lucrarea promovează un set de recomandări practice privind eficientizarea activităților de asistență psihologică pentru adolescenții cu diabet zaharat tip 1 și tulburări de comportament alimentar.

Implementarea rezultatelor științifice: *Programul de intervenție psihologică* elaborat a fost implementat în activitatea profesională în cadrul ședințelor de consiliere psihologică și psihoterapie individuală cu adolescenții cu diabet zaharat tip 1 și în cadrul predării cursurilor universitare *Psihologia sănătății*, *Consiliere clinică, Terapii cognitiv comportamentale, Consiliere psihologică, Terapii narative și pozitive*.

ANNOTATION

Condrea Victoria, „Psychological Characteristics of Eating Disorders in Adolescents with Type 1 Diabetes”, Doctoral Thesis in Psychology. Chisinau, 2025

Thesis structure: Introduction, 3 chapters, general conclusions and recommendations, bibliography with 272 titles, 15 appendices, 165 pages of main text, 64 figures, and 22 tables. The results are published in 12 scientific papers.

Keywords: adolescent, type 1 diabetes, eating disorder, anxiety, maladaptive cognitive schema, behavioral indicators of eating disorders, behavioral indicators of eating disorders.

Research purpose: Identifying the psychological particularities manifested in eating disorders in adolescents with type 1 diabetes, determining the relationship between these disorders, anxiety, and maladaptive cognitive schemas, as well as developing a psychological intervention program aimed at improving the indicators associated with eating disorders, anxiety, and maladaptive cognitive schemas.

Research objectives: 1) Analyzing and synthesizing specialized literature regarding the psychological particularities associated with eating disorders in adolescence in general and in adolescents with type 1 diabetes in particular. 2) Identifying the particularities of anxiety and maladaptive cognitive schemas in adolescents with type 1 diabetes and eating disorders and conducting a comparative analysis of these variables in adolescents with and without type 1 diabetes. 3) Establishing the correlation between maladaptive cognitive schemas, anxiety, and the behavioral indicators of eating disorders. 4) Developing psychological profiles of diabetic adolescents with and without eating disorders. 5) Designing a psychological intervention program to improve the indicators associated with eating disorders, anxiety, and maladaptive cognitive schemas. 6) Validating and evaluating the effectiveness of the psychological intervention program in reducing anxiety and maladaptive cognitive schemas associated with eating disorders.

Results: The study identified the types of relationships between the particularities of eating disorders in adolescents with type 1 diabetes and the manifestation of anxiety and maladaptive cognitive schemas. The research determined the prevalence of eating disorders among adolescents with and without type 1 diabetes and analyzed the psychological particularities of anxiety and maladaptive cognitive schemas in this population. Additionally, the study proposed a psychological intervention program focused on reducing anxiety and maladaptive cognitive schemas.

Scientific novelty and originality: In the context of the Republic of Moldova, this research is one of the few that examines the psychological aspects of eating disorders, anxiety, and maladaptive cognitive schemas in adolescents with type 1 diabetes. The originality lies in the development of a detailed psycho-emotional profile and the creation of a psychological intervention program.

Theoretical significance: The research contributes to the scientific understanding of the psychological nature of eating disorders in adolescents with type 1 diabetes and their essential characteristics in relation to other psychological disorders. The study offers new perspectives on anxiety and maladaptive cognitive schemas, highlighting how these psychological elements correlate with the behavioral indicators of these disorders in adolescents with type 1 diabetes.

Practical value: The study develops the “Theoretical Psychological Profile of the Adolescent with Type 1 Diabetes” and the “Theoretical Psychological Profile of the Adolescent with Type 1 Diabetes and Eating Disorder.” Additionally, it implements and validates a psychological intervention program aimed at reducing anxiety and maladaptive cognitive schemas in adolescents with type 1 diabetes and eating disorders, which can be used in clinical psychology practice. This program can be applied within medical and psychological assistance services, contributing to better diabetes management and mental health improvement for these adolescents. Furthermore, the study provides practical recommendations for optimizing psychological support activities for adolescents with type 1 diabetes and eating disorders.

Implementation of scientific results: The developed psychological intervention program has been implemented in professional practice during psychological counseling and individual psychotherapy sessions with adolescents with type 1 diabetes, as well as in university courses such as *Health Psychology*, *Clinical Counseling*, *Cognitive Behavioral Therapies*, *Psychological Counseling*, and *Narrative and Positive Therapies*.

АННОТАЦИЯ

Кондря Виктория. «Психологические особенности нарушений пищевого поведения у подростков с сахарным диабетом 1 типа».

Диссертация на соискание степени доктора психологии. Кишинёв, 2025.

Структура диссертации. Диссертация состоит из введения, 3 глав, общих выводов и рекомендаций, библиографии из 272 наименований, 15 приложений, 164 страницы основного текста, 64 рисунков и 22 таблиц. Полученные результаты опубликованы в 12 научных статьях.

Ключевые слова: подросток, сахарный диабет 1 типа, расстройства пищевого поведения, тревожность, дисфункциональная когнитивная схема, поведенческие показатели нарушений пищевого поведения.

Цель исследования: Определение психологических особенностей, проявляющихся при расстройствах пищевого поведения у подростков с сахарным диабетом 1 типа, выявление связи между этими расстройствами, тревожностью и дезадаптивными когнитивными схемами, а также разработка психологической программы вмешательства с целью улучшения показателей, связанных с расстройствами пищевого поведения, тревожностью и дезадаптивными когнитивными схемами.

Задачи исследования: 1) Анализ и обобщение специализированной литературы по психологическим особенностям расстройств пищевого поведения в подростковом возрасте в целом и у подростков с сахарным диабетом 1 типа в частности. 2) Определение особенностей тревожности и дезадаптивных когнитивных схем у подростков с сахарным диабетом 1 типа и расстройствами пищевого поведения, а также сравнительный анализ этих переменных у подростков с диабетом 1 типа и без него. 3) Установление степени корреляции между дезадаптивными когнитивными схемами, тревожностью и поведенческими показателями расстройств пищевого поведения. 4) Разработка психологических профилей подростков с диабетом с расстройствами пищевого поведения и без них. 6) Создание психологической программы вмешательства, направленной на улучшение показателей, связанных с расстройствами пищевого поведения, тревожностью и дезадаптивными когнитивными схемами. Валидация и оценка эффективности психологической программы вмешательства, предназначенной для снижения тревожности и дезадаптивных когнитивных схем, связанных с расстройствами пищевого поведения.

Полученные результаты. Исследование выявило типы взаимосвязей между особенностями расстройств пищевого поведения у подростков с сахарным диабетом 1 типа, тревожностью и дезадаптивными когнитивными схемами. Определена распространенность расстройств пищевого поведения среди подростков с диабетом 1 типа и без него, а также проведён анализ психологических особенностей тревожности и дезадаптивных когнитивных схем у данной категории испытуемых. В рамках исследования была предложена программа психологического вмешательства, направленная на снижение тревожности и дезадаптивных когнитивных схем.

Научная новизна и оригинальность. В контексте Республики Молдова, данное исследование является одним из немногих, рассматривающих психологические аспекты расстройств пищевого поведения, тревожности и дезадаптивных когнитивных схем у подростков с сахарным диабетом 1 типа. Оригинальность заключается в разработке детального психоэмоционального профиля и создании программы психологического вмешательства.

Теоретическая значимость исследования. Исследование расширяет научные знания о психологической природе расстройств пищевого поведения у подростков с сахарным диабетом 1 типа и их основных характеристиках в сравнении с другими психологическими расстройствами. Работа предлагает новые перспективы в изучении тревожности и дезадаптивных когнитивных схем, выявляя их связь с поведенческими показателями расстройств пищевого поведения у подростков с диабетом 1 типа.

Практическая значимость исследования. В исследовании разработаны «Теоретический психологический профиль подростка с сахарным диабетом 1 типа» и «Теоретический психологический профиль подростка с сахарным диабетом 1 типа и расстройством пищевого поведения». Внедрена и подтверждена эффективность программы психологического вмешательства, направленной на снижение тревожности и выраженности дезадаптивных когнитивных схем у подростков с сахарным диабетом 1 типа и расстройствами пищевого поведения, что делает её применимой в практике клинических психологов. Данная программа может использоваться в медицинских и психологических службах, способствуя лучшему управлению диабетом и улучшению психического здоровья подростков. Кроме того, работа предлагает практические рекомендации по оптимизации психологической поддержки подростков с сахарным диабетом 1 типа и расстройствами пищевого поведения.

Внедрение научных результатов. Разработанная программа психологического вмешательства была внедрена в профессиональную деятельность в рамках психологического консультирования и индивидуальной психотерапии подростков с сахарным диабетом 1 типа, а также в процессе преподавания университетских курсов *Психология здоровья*, *Клиническое консультирование*, *Когнитивно-поведенческая терапия*, *Психологическое консультирование*, *Нарративные и позитивные терапии*.

CONDREA VICTORIA

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