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Self-esteem and depressive symptom levels in adolescents with Type 1 Diabetes

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ABSTRACT

Objective: This study aimed to examine self-esteem and depressive symptom levels in adolescents with Type 1 Diabetes, shedding light on the impact of living with a chronic illness on adolescent mental health.

Material and Methods: The study population consisted of patients followed in the Pediatric Endocrinology Outpatient Clinics of three Educational and Research Hospitals located on the Anatolian side of Istanbul between September 2023 and November 2023. The sample consisted of 202 adolescents aged 13-18 who met the inclusion criteria and agreed to participate in the study. Data were collected using the "Personal Information Form," "Coopersmith Self-Esteem Inventory (CSEI)," and the "Adolescent Quick Depressive Symptom Inventory (AQ-DSI-17-SF)." Data were analyzed using the SPSS for Windows 26.0 software package.

Results: The results of this study revealed that the self-esteem levels of adolescents with Type 1 Diabetes were moderate (26.06±7.9), while their depressive symptom levels were mild (10.73±3.5). There was a negative correlation between HbA1c levels and CSEI scores (r = -0.228; p=0.001), and a statistically significant positive correlation between HbA1c levels and AQ-DSI-17-SF scores (r = 0.401; p=0.001).

Conclusion: The findings indicate that the HbA1c levels of the adolescents who participated in the study were generally within the target range, reflecting a successful approach to disease management. In this context, it can be suggested that adolescents who manage their disease effectively are also able to maintain their psychological well-being in a healthier manner.

Keywords: Adolescent, depression, nursing, self-Esteem, Type 1 Diabetes Mellitus

INTRODUCTION

Type 1 Diabetes is one of the most frequently encountered chronic diseases during adolescence. In Türkiye, it is estimated that approximately 17.000 to 18.000 adolescents under the age of 18 have Type 1 Diabetes (1). According to the 2022 IDF Diabetes Atlas, Türkiye ranks 13th globally in terms of the number of adolescents under 20 with Type 1 Diabetes. By 2035, Türkiye is expected to be among the top 10 countries in this ranking (2).

Receiving a diagnosis of Type 1 Diabetes, which requires lifelong adherence to diet and treatment protocols, may cause adolescents who are already going through a turbulent period to encounter various psychosocial problems (3). It has been reported that adolescents with Type 1 Diabetes experience a decrease in self-esteem due to feeling different from their peers and the widespread perception that individuals with chronic illnesses are not "normal," leading to reduced adaptation to the disease (4). The limitations they experience in peer relationships and interactions due to treatment programs may result in feelings of worthlessness and hopelessness (5-7). Adolescents with Type 1 Diabetes have reported experiencing stress because the disease is incurable, feeling restricted by the need for a diet, and feeling embarrassed due to frequent fingerstick blood glucose measurements and insulin injections. They also expressed that their social lives and interpersonal relationships were negatively affected due to being excluded from social activities because of diabetes (8).

It has been observed that adolescents with Type 1 Diabetes feel different from their peers and are unable to integrate into their

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groups, leading to a negative impact on their self-esteem (9). As self-esteem decreases, depression emerges as the most common psychiatric problem among adolescents with Type 1 Diabetes (7). Depression, which often accompanies Type 1 Diabetes, affects adolescents' adaptation to the disease, response to treatment, quality of life, and diabetes control and progression (10).

During adolescence, ongoing monitoring is required to ensure proper adaptation to Type 1 Diabetes and successful disease management (7). Since Type 1 Diabetes affects adolescents both psychologically, physiologically, and socially, nurses must be aware of these challenges (11). Early identification of self-esteem problems and depressive symptoms will help reduce potential complications (12). Managing Type 1 Diabetes, which begins in childhood, during adolescence is critical for ensuring better disease adaptation and control in adulthood (13). Educational interventions provided to adolescents during this period aim to facilitate disease adaptation, improve quality of life and self-esteem, and reduce depressive symptoms (6, 12).

Literature suggests that low self-esteem is a significant risk factor for the development of depression. The vulnerability model of depression posits that low self-esteem predisposes individuals to depression, contributing to its development through both interpersonal processes (e.g., excessive reassurance seeking, negative feedback seeking, social avoidance) and intrapersonal processes (e.g., focusing on negative aspects of the self) (14). Research has confirmed the relationship between self-esteem and depression, indicating that implicit self-esteem can predict future depressive symptoms (15). Furthermore, it has been reported that low self-esteem is not only a predictor of depression but may also have indirect effects on depression through a lack of psychological flexibility (16,17).

In adolescents with Type 1 Diabetes, the stress of managing a chronic illness, fear of exclusion, and concerns about body image can result in both decreased self-esteem and increased depressive symptoms. The interaction between these two psychological constructs is crucial in understanding mental health risks in this population.

Given the importance of self-esteem development for all adolescents, particularly in the context of chronic illness, it is evident that a more detailed examination of these issues and the prevention of potential psychiatric problems is crucial. Thus, this study aims to contribute to the field by providing a more in-depth examination of the risks faced by adolescents with Type 1 Diabetes.

Research Questions:

- What are the depressive symptom levels of adolescents with Type 1 Diabetes?
- What are the self-esteem levels of adolescents with Type 1 Diabetes?
- Is there a relationship between depressive symptoms and self-esteem levels in adolescents with Type 1 Diabetes?
- Are there differences in self-esteem and depressive symptom levels based on specific descriptive characteristics?

MATERIALS and METHODS

This study was designed as a descriptive and cross-sectional research aimed at determining the self-esteem and depressive symptom levels of adolescents with Type 1 Diabetes.

Population and Sample

The study population consisted of 260 adolescents with a diagnosis of Type 1 Diabetes who had been followed for at least one year at the pediatric endocrinology outpatient clinics of the University of Health Sciences Zeynep Kâmil Women and Children's Diseases Training and Research Hospital, the University of Health Sciences Ümraniye Training and Research Hospital, and the Marmara University Pendik Training and Research Hospital, Department of Pediatric Endocrinology, all located on the Anatolian side of Istanbul, between August 1 and August 31, 2023. A sample size calculation based on a known population size with 95% confidence level and 5% margin of error determined a required minimum of 155 participants. Considering possible data loss, a 30% increase was applied, resulting in 202 participants. A stratified sampling method, one of the probabilistic sampling techniques, was used in the study. Stratification was based on the hospitals where the study was conducted. For this purpose, the "k" constant was first calculated, and based on this constant, the number of adolescents with Type 1 Diabetes to be included from each unit was determined.

Inclusion Criteria:

- Willingness to participate in the study
- Being between the ages of 13 and 18
- Patients diagnosed with Type 1 Diabetes by a relevant specialist physician and followed for at least one year (criteria such as antibody status and type of diabetes [MODY, Type 2] were taken into consideration, and only children diagnosed with Type 1 DM were included).
- Being literate
- No cognitive or communication impairments
- No psychiatric diagnosis (Adolescents with psychiatric diagnoses were excluded from the study to reduce confounding factors that could directly impact depression scores. This exclusion also allowed the study to focus on subclinical symptoms in a general adolescent diabetic population.)

Data Collection and Instruments

The researcher collected the data for the study. Adolescents and their families who visited the outpatient clinics were interviewed,

and those who voluntarily agreed to participate were included in the study. During the data collection phase, an environment where adolescents could feel comfortable was provided, and interviews lasting approximately 20-25 minutes were conducted at a time that would not interfere with diagnosis or treatment.

Data Collection Tools:

Personal Information Form: The personal information form includes 17 questions regarding the participants' gender, age, education, diabetes history, daily insulin doses, diabetes education status, diet, and daily activities (7, 8, 11).

Coopersmith Self-Esteem Inventory (CSEI): The Coopersmith Self-Esteem Inventory measures individuals' attitudes toward themselves and can be applied to children and adults (18). The inventory consists of 58 items and five subscales, each scoring separately. The subscales include: 1) General self-esteem (26 items), 2) Academic self-esteem (8 items), 3) Social self-esteem (8 items), 4) Family and home self-esteem (8 items), and 5) Lie scale (8 items). The lie scale is included to measure defensive attitudes rather than self-esteem, and its scores are not added to the total score. Participants answer the items with "yes" or "no," and scores of 1 or 2 are given for answers indicating high self-esteem, while other answers receive a score of 0. After removing the eight lie items, the maximum possible score for self-esteem is 50 or 100 (if doubled). The Cronbach's alpha value of the scale was found to be 0.745 in previous studies, and 0.71 in this study.

Adolescent Quick Depressive Symptom Inventory (AQ-DSI-17-SF): The Adolescent Quick Depressive Symptom Inventory (AQ-DSI-17) consists of 17 items and is used to assess the presence and severity of depressive symptoms over the past seven days. The inventory addresses nine significant categories of major depressive disorder, with each item scored between 0 and 3, yielding a total score between 0 and 27. The highest score among items addressing the same depressive criterion is considered valid. The first four items assess sleep patterns; items 5 and 6 evaluate sad and irritable mood; items 7 to 10 determine appetite; item 11 evaluates concentration and decision-making; item 12 addresses self-perception; item 13 assesses suicidal thoughts, item 14 addresses general interest, item 15 evaluates energy levels, and items 16 and 17 assess restlessness and agitation. The Turkish validity and reliability of the AQ-DSI-17-SF were confirmed by Mergen et al. (19), with a Cronbach's alpha value of 0.81. In this study, the Cronbach's alpha value was 0.77.

Data Analysis and Interpretation

The study data were analyzed using the IBM SPSS for Windows, version 26.0 software package (IBM Corp., Armonk, N.Y., USA). Skewness and kurtosis values were examined to assess normal distribution, while Cronbach's alpha reliability coefficient was used to evaluate the reliability of the scales. Descriptive statistics such as counts, means, minimum, maximum, standard deviations and percentages were presented. The t-test was used to compare normally distributed variables, while the Mann-Whitney U test was used to compare non-normally distributed variables. Correlations between continuous variables were calculated using Pearson's correlation coefficient since the distribution of the data was approximately normal based on skewness and kurtosis values. In addition, multiple regression analysis was conducted to evaluate the effects of the independent variables on the dependent variable. In the regression analysis, the dependent variable was the level of depressive symptoms (AQ-DSI-17-SF total score). Independent variables included HbA1c level, duration of diabetes diagnosis, and age. These variables were selected based on their clinical relevance reported in the literature and the correlations observed in the present study, as they are known to be associated with psychosocial outcomes in adolescents with type 1 diabetes. It was assumed that a result with a p-value less than 0.050 was statistically significant.

RESULTS

EEvaluation was made of 202 adolescents, the majority of whom were male (52.5%). The proportion of individuals diagnosed with diabetes 1-2 years ago was 61.9%, and 94.6% of the participants reported receiving diabetes education. The percentage of those using insulin 3-4 times daily was 74.3%, while 69.8% of participants indicated they frequently measure their blood sugar levels. The proportion of participants using

Table I: Descriptive information about the participants

Gender*	
Female	96 (47.5)
Male	106 (52.5)
Duration of diabetes diagnosis*	
1-2 years ago	125 (61.9)
3-4 years ago	77 (38.1)
Diabetes education*	
Yes	191 (94.6)
No	11 (5.4)
Daily insulin use*	
1-2 times	52 (25.7)
3-4 times	150 (74.3)
Frequency of daily blood glucose measurement*	
Sometimes	61 (30.2)
Frequently	141 (69.8)
Using an insulin pump*	
Yes	77 (38.1)
No	125 (61.9)
Family history of depression*	
Yes	15 (7.5)
No	187 (92.5)
Age†	15.5±1.4 (12-18)
HbA1c†	6.6±.4 (5-7)

:** *n(%),* **†:** *mean±SD (min-max),* ***HbA1c: *hemoglobin A1c*

Tablo II: Symptoms of diabetes

	n(%)
Dry mouth	
No	130 (64.4)
Yes	72 (35.6)
Fatigue	
No	114 (56.4)
Yes	88 (43.6)
Tiredness	
No	99 (49)
Yes	103 (51)
Desire to drink water	
No	100 (49.5)
Yes	102 (50.5)
Abdominal pain	
No	121 (59.9)
Yes	81 (40.1)
Vomiting	
No	175 (86.6)
Yes	27 (13.4)
Weight loss	
No	190 (94.1)
Yes	12(5.9)

Table III: Mean and Standard Deviations of CSEI and AQ-DSI-17-SF Scores

Variable	Mean±SD
CSEI Total	26.06±7.9
General self-esteem	15.22±4.5
School academic self-esteem	4.32±2
Social self-esteem	2.92±1.7
Self-esteem related to family and home	3.60±1.3
AQ-DSI-17-SF Total	10.73±3.5
Sleep	2.02±0.5
Sad and irritable mood	1.4±0.6
Appetite	0.7±0.7
Concentration and decision-making	1.2±0.6
Interview with him	1.2±0.8
Suicidal thoughts	1.05±0.8
General interest	0.10±0.7
Energy level	1.1±0.4
Restlessness and agitation	1.1± 0.5

CSEI: *Coopersmith Self-Esteem Inventory,* ***AQ-DSI-17-SF:*** *Adolescent Quick Depressive Symptom Inventory*

an insulin pump was 38.1%, while 61.9% did not use one. The average age of the participants was 15.5±1.4 years, and the average HbA1c level was 6.6±0.4. (Table I).

The findings related to diabetes symptoms are summarized in Table II. As seen in the table, 35.6% of the participants experienced dry mouth, 43.6% reported fatigue, 51% felt tiredness, 50.5% experienced excessive thirst, and 40.1% reported abdominal pain.

The results of the Coopersmith Self-Esteem Inventory (CSEI) and the Adolescent Quick Depressive Symptom Inventory (AQ-DSI-17-SF) have been summarized (Table III). The average total score for the CSEI was 26.06±7.9, with the subscales as follows: General Self-Esteem (15.22±4.5), School Academic Self-Esteem (4.32±2), Social Self-Esteem (2.92±1.7), and Family and Home Self-Esteem (3.60±1.3).

For the AQ-DSI-17-SF, the average total score was 10.73± 3.5, with subscales as follows: Sleep (2.02±0.5), Sad and Irritable Mood (1.4±0.6), Appetite (0.7±0.7), Concentration and Decision Making (1.2±0.6), Self-Perception (1.2±0.8), Suicidal Thoughts (1.05±0.8), General Interest (0.1±0.7), Energy Level (1.1±0.4), and Restlessness and Agitation (1.1±0.5).

As shown in Table IV, the median score of the Coopersmith Self-Esteem Inventory (CSEI) for those who received diabetes education was 25 (min–max: 5–43), while for those who did not receive diabetes education, the median CSEI score was 19 (min–max: 17–38). A statistically significant difference was found between the two groups ($Z = -2.174$; $p=0.030$), indicating that the self-esteem levels of those who received diabetes education are higher.

The mean CSEI score for those who reported measuring their blood sugar sometimes was 28.07±7.7, while for those who reported measuring it frequently, the mean score was 25.19±7.8. A statistically significant difference was found between the two groups ($t = 2.411$; $p=0.017$), suggesting that adolescents who measure their blood sugar less frequently had higher self-esteem.

The mean score of the Adolescent Quick Depressive Symptom Inventory (AQ-DSI-17-SF) for those diagnosed with diabetes 1-2 years ago 11.45±3.3, whereas for those diagnosed 3-4 years ago, the mean score was 9.56±3.6. A statistically significant difference was found between the two groups ($t = 3.833$; $p=0.000$), indicating that adolescents more recently diagnosed with diabetes have higher levels of depressive symptoms.

There was a negative correlation between HbA1c levels and CSEI scores ($r = -0.228$; $p=0.001$), and a statistically significant positive correlation between HbA1c levels and AQ-DSI-17-SF scores ($r = 0.401$; $p=0.001$). This finding indicates that as the HbA1c levels of adolescents with diabetes increase, their self-esteem decreases and their levels of depressive symptoms rise.

No statistically significant relationship was found between the Self-Esteem Inventory's total score and the Quick Depressive Symptom Inventory ($r = 0.058$; $p=0.415$) (Table V).

Among the independent variables, only the HbA1c level was found to be a significant predictor of self-esteem ($B = –3.857$; $\beta = –0.211$; $p = 0.003$), indicating that higher HbA1c levels were associated with lower self-esteem. The regression model was statistically significant, $F(3,198) = 4.016$, $p=0.000$, explaining 5.7% of the variance ($R^2 = 0.057$). The findings further revealed that duration of diabetes ($B = 0.428$; $\beta = 0.026$; $p =0.740$)

Table IV: Comparison of mean scores of CSEI and AQ-DSI-17-SF according to some descriptive characteristics

Variable	n	CSEI			AQ-DSI-17-SF		
		Values	t/z	p	Values	t/z	p
Gender*							
Female	96	26.39±8.7	0.559	0.577	10.40±3.4	-1.278	0.203
Male	106	25.76±7.1			11.03±3.7		
Duration of diabetes diagnosis*							
1-2 years ago	125	26.11±7.6	0.121	0.904	11.45±3.3	3.833	0.000
3-4 years ago	77	25.97±8.4			9.56±3.6		
Diabetes education†							
Yes	191	103.64 (5-43)	-2.174	0.030	101.77 (2-22)	-0.280	0.779
No	11	64.36 (17-38)			97.73 (8-14)		
Daily insulin use*							
1-2 times	52	25.98±6.5	-0.083	0.934	11.35±3.3	1.476	0.142
3-4 tmes	150	26.09±8.3			10.51±3.6		
Daily blood glucose measurement*							
Sometimes	61	28.07±7.7	2.411	0.017	11.26±3.6	1.425	0.156
Frequently	141	25.19±7.8			10.50±3.5		
Using an insulin pump*							
Yes	77	26.27±8.2	0.302	0.763	11.33±3.8	1.906	0.058
No	125	25.93±7.7			10.36±3.3		

: mean±SD (Indepented t test), †: Mean Rank (min-max) (Mann Whitney U test), **CSEI: Coopersmith Self-Esteem Inventory, **AQ-DSI-17-SF:** Adolescent Quick Depressive Symptom Inventory, **r:** Pearson's Correlation Coefficient, **HbA1c:** Hemoglobin A1c*

and age (B = –0.472; β = –0.085; p = 0.293) did not have a significant effect on self-esteem (Table VI).

Among the independent variables in the second model, the HbA1c level significantly predicted depressive symptoms (B = 3.372; β = 0.413; p=0.001), indicating that higher HbA1c levels were associated with increased depressive symptoms. In addition, duration of diabetes was a significant negative predictor (B = –1.461; β = –0.202; p = 0.005), suggesting that a longer duration of diagnosis was related to lower depressive symptom levels. By contrast, age (B = –0.241; β = –0.098; p = 0.184) did not have a significant effect on depressive symptoms. The regression model was statistically significant, F(3,198) = 19.728, p=0.001, accounting for 23% of the variance (R^2 = 0.230) (Table VII).

Table V: Association between CSEI, AQ-DSI-17-SF

Variable	(1)	(2)	(3)	(4)	(5)	(6)
CSEI Total (1)	1	-	-	-	-	.058
CSEI General self-esteem (2)		1	.661	.503	.379	.146
CSEI School academic self-esteem (3)			1	.639	.484	-.195
CSEI Social self-esteem (4)				1	.447	-.315
CSEI Self-esteem related to family and home (5)					1	-.150
AQ-DSI-17-SF Total (6)						1

***CSEI:** Coopersmith Self-Esteem Inventory, **AQ-DSI-17-SF:** Adolescent Quick Depressive Symptom Inventory*

DISCUSSION

In this study, the mean age of adolescents with Type 1 Diabetes was 15.5 years, with most having been diagnosed within the past 1-2 years. The mean HbA1c level was found to be 6.6%. The fact that this value is below the American Diabetes Association's recommended target level of 7% indicates successful disease management among the participants (20). This outcome may be associated with the participants having received diabetes education and being newly diagnosed. However, some studies in the literature have reported higher HbA1c levels (21, 22). It has also been noted that as the duration of diabetes increases, metabolic control becomes more challenging, and the risk of complications rises (23). The participants were selected from among all patients who volunteered at the time of admission; the relatively low HbA1c levels in the sample may be due to the fact that the majority consisted of patients who received regular follow-up and education.

Fatigue was the most frequently reported symptom among participants, consistent with previous studies (24, 25). The prevalence of fatigue is related to impaired cellular energy utilization due to insulin deficiency. In contrast, dry mouth was uncommon among participants, likely reflecting good glycemic control.

The adolescents' self-esteem levels were found to be moderate. The multiple regression analysis revealed that HbA1c level significantly and negatively predicted self-esteem, whereas diabetes duration and age did not have a significant effect on self-esteem. The model explained 5.7% of the variance in self-esteem. This finding indicates that metabolic control influences

Table VI: Multiple regression analysis results for predicting self-esteem

Variable	B	Std. Error $_B$	β	T	p	Zero-order r	Partial r
Constant	58.338	9.487	-	6.149	0.000	-	-
HbA1c level	-3.857	1.295	-0.211	-2.978	0.003	-0.228	-0.207
Duration of diabetes	0.428	1.287	0.026	0.333	0.740	-0.009	0.024
Age	-0.472	0.447	-0.085	-1.055	0.293	-0.112	-0.075
R=0.239	R^2 =0.057						
$F_{(3, 198)}$=4.016	p = .000						

Table VII: Multiple Regression Analysis Results for Predicting Depression

Variable	B	Std. Error $_B$	β	T	p	Zero-order r	Partial r
Constant	-5.885	3.830	-	-1.536	0.126	-	-
HbA1c level	3.372	0.523	0.413	6.447	0.000	0.401	0.417
Duration of diabetes	-1.461	0.519	-0.202	-2.812	0.005	-0.262	-0.196
Age	-0.241	0.180	-0.098	-1.333	0.184	-0.119	-0.094
R=0.480	R^2 =0.230						
$F_{(3, 198)}$=19.728	p = .000						

psychosocial outcomes; however, self-esteem is a multifactorial construct. Artuvan and Yurtsever (26) found that adolescents who adhered to their dietary regimen had higher self-esteem levels. Powers et al. (27) reported that among adolescents under 18 with high HbA1c levels and diabetic stress scores, increased dietary restrictions were associated with decreased self-esteem and life satisfaction. In this study, normal HbA1c levels, diabetes education, adherence to insulin regimens, and attention to diet suggest that participants managed their disease well, which may have prevented negative effects on self-esteem. Additionally, it has been noted that adolescents who adhere to their diet, receive family support, and continue school have higher self-esteem (28, 29).

In this study, depressive symptom levels were found to be mild among adolescents with Type 1 Diabetes. Trief et al. (2019) reported that adolescents with higher depressive symptoms experienced severe hypoglycemic and hyperglycemic episodes more frequently than those without depressive symptoms (30). According to the regression analysis, HbA1c level was found to significantly increase depressive symptoms, whereas the duration of diabetes diagnosis had a reducing effect on depressive symptoms. The model explained 23% of the variance in depressive symptoms. This result suggests that impaired glycemic control may increase depressive symptoms, whereas longer disease duration may contribute to the development of psychological adaptation. Additionally, adolescent depression has been linked to genetic, environmental factors, adverse life events, and parental history of depression, particularly maternal depression (31). In this study, factors such as normal HbA1c levels, the majority of participants having a diagnosis duration of 1–2 years, frequent blood glucose monitoring, the limited presence of diabetes symptoms, and the absence of a family history of depression may account for the low levels of depressive symptoms.

In this study, a positive but weak relationship was found between depressive symptom levels and HbA1c levels. This suggests a possible association.

Contrary to some previous studies, this study did not find a significant relationship between depression and self-esteem in children with type 1 diabetes. This finding may have been influenced by factors such as the majority of participants having received diabetes education, maintaining good glycemic control, and not using insulin pumps. Although the literature frequently reports an association between depression and glycemic control or overall health outcomes, the direct link between depression and self-esteem has not always been consistently demonstrated. This highlights the multifactorial nature of the relationship and underscores the importance of considering potential mediating and moderating variables. Therefore, it is recommended that future research adopt a more holistic approach by taking these variables into account.

Consequently, nurses who adopt a holistic approach to care should assess not only the physical but also the psychosocial needs of adolescents with Type 1 Diabetes in clinical practice; by integrating psychological screening and self-esteem enhancing interventions into routine care, they can contribute to improved health outcomes.

Limitations

This study has several limitations. First, its cross-sectional design prevents establishing causal relationships between psychosocial variables and metabolic outcomes. Second, although HbA1c provides a general estimate of glycemic control over the previous 2–3 months, it does not reflect glycemic variability or the frequency of hypoglycemic and hyperglycemic

episodes. Future studies using continuous glucose monitoring and longitudinal designs may provide a more comprehensive understanding of the relationship between glycemic control and psychosocial outcomes in adolescents with Type 1 diabetes.The cross-sectional design of this study does not allow for causal inferences or forward-looking interpretations. Additionally, self-reporting may introduce social desirability bias. Depression symptoms may also fluctuate due to seasonal or individual stressors, which a single-time assessment may not fully capture.

CONCLUSION

Adolescents with chronic diseases like diabetes frequently experience mental health issues. These challenges may affect their social relationships, family dynamics, and peer interactions, ultimately damaging their self-esteem and increasing the risk of depression. As nurses, it is essential to identify such risks early, especially in adolescents newly diagnosed with diabetes, and refer them for appropriate care. This study found that newly diagnosed adolescents had higher depressive symptom levels. Therefore, educating families of adolescents with Type 1 Diabetes, encouraging participation in programs to enhance self-esteem, organizing peer education on chronic diseases, and promoting awareness campaigns involving adolescents with diabetes could help improve their self-esteem and act as a protective factor against depression. Future studies should employ longitudinal designs and consider mediating/moderating variables such as social support, body image, and coping strategies to better understand the complex relationship between depression and self-esteem in this population.

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Ethics committee approval

This study was conducted in accordance with the Helsinki Declaration Principles. The study was approved by Maltepe University's Non-Interventional (clinical and human) Research Evaluation Board on February 2, 2023, with the number 2022/03-13.

Contribution of the authors

Concept – ***ŞÖ, GD;*** Design –***ŞÖ, GD***; Supervision - ***ŞÖ***; Resources – ***ŞÖ, GD***; Data Collection and Processing – ***GD***; Analysis and Interpretation – ***ŞÖ, GD*** Literature Search – ***ŞÖ, GD***; Writing Manuscript – ***ŞÖ, GD***; Critical Review - ***ŞÖ***.

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Conflict of interest

The authors declare that there is no conflict of interest.

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