

The Importance of Depression Screening in Type One Diabetes and its Association with Glycemic Control

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Background & Purpose

In the United States, around 18,000 children are diagnosed with T1D each year and is the most common chronic disease diagnosed in childhood.¹ With more children being diagnosed with T1D every year, it is important to identify comorbidities that can create barriers to diabetic management for these patients.

Purpose:

The purpose of this research is to study the effects of depression with T1D in children with emphasis on correlation with glycemic control. Different screening options will be studied, including the Patient Health Questionnaire 9 (PHQ-9), The Strengths and Difficulties Questionnaire (SDQ), and The Children's Depression Inventory (CDI) 2 Self-Report.

PICOT

: In children and young adults diagnosed with T1D, does the early diagnosis of depression with regular screening improve their control of diabetes, compared to those who are not screened for depression?

Design & Methods

•**Keywords:** depression; depression screening; PHQ-9; SDQ; children; adolescents; diabetes; and type 1 diabetes

•**Inclusion:** adolescents currently diagnosed with T1D, Articles published after 2017, and peer reviewed articles

•**Exclusion:** adults (over the age of 21) or articles that were published before 2017

Synthesis of Evidence

Type	Included
Meta-analysis	1
Cross Sectional	3
Retrospective	3
Other	3

Results:

- PHQ-9 scores qualifying for mild, moderate, and severe depression were common in patients with T1D, along with higher rates of suicidal ideation. They were also found to have higher scores compared those without T1D.²
- In the participants aged 11-14 with T1D, significant scores on the SDQ screener were found in the categories of total difficulties ($Z = 2.38, P < 0.05$), hyperactivity ($Z = 2.08, P < 0.05$), and emotional difficulties ($Z = 3.79, P < 0.01$).³
- In the age group 15-17 with T1D, emotional problems ($Z = 5.46, P < 0.01$), peer problems ($Z = 4.08, P < 0.01$), hyperactivity ($Z = 2.44, P < 0.05$), prosocial behavior ($Z = -4.66, P < 0.01$), and total difficulties ($Z = 4.34, P < 0.01$).³
- HbA1c was higher in T1D with depression compared to those without depression, type 2 diabetics, and those without diabetes.⁴

Best Practice

Discussion:

- The results of this research demonstrated the importance of depression screening in children with chronic disorders such as T1D.
- PHQ-9, SDQ, and CDI scores were significantly increased for those participants with T1D compared to their peers.
- Children with T1D and depression have higher HbA1c levels than those without comorbid depression and are at an increased risk of complications of poor glycemic control.

Limitations/Further study:

- A cross-section study design limited the ability to assess connections between diabetes distress and glycemic control.⁴
- Couldn't assess the affect in Hispanic and Asian participants because the population was too small.⁴
- Timing of diagnosis was not included with treatment associations with depression and glycemic control and A1c levels before the study.⁵
- SDQ questionnaires could have contained sampling bias and there may have been inconsistency with screening due to high volumes.³
- Further research should be done to discuss possible and effective treatments for helping to better manage these diseases long term.

Conclusion:

Throughout the research, the results have supported the idea that T1D in children can negatively impact their mental health and cause a decrease in their glycemic control. With the research discussed in this study, it can be concluded that beginning screenings for depression in children when they are first diagnosed with T1D should be implemented. SDQ, CDI, and PHQ-9 screeners were used in this research to identify at risk patients. Providers should be encouraged to implement these screening methods into their everyday practice.

Summary of Evidence Search

Database	Yielded	Reviewed	Included in Analysis
PubMed	936	20	10
EBSCO host	2	2	0
Cochrane	76	10	0
Total:	1014	30	10

	T1D with depression	T1D without depression
Mean A1c%	10.5%	9.5%
Percentage of A1c scores greater than 14	20%	6.35%

References:

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3. Duffus SH, Cooper KL, Agans RP, Jain N. Mental Health and Behavioral Screening in Pediatric Type 1 Diabetes. *Diabetes Spectr*. 2019 May;32(2):171-175. doi: 10.2337/ds18-0053.
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5. Hong K.M.C., Glick B.A., Kamboj M.K. et al. Glycemic control, depression, diabetes distress among adolescents with type 1 diabetes: effects of sex, race, insurance, and obesity. *Acta Diabetol* 2021; 58, 1627-1635. Doi: 10.1007/s00592-021-01768-w



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