

Depression and Health Indicators for Adolescents with Type 2 Diabetes (T2D) and Obesity at a Multidisciplinary Tertiary Care (MTC) Clinic

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Background & Objective: Adolescent type 2 diabetes (T2D) incidence has risen ~5% per year over the past decade, partially due to the persistent pediatric obesity epidemic. T2D-related comorbidities, as well as mental health concerns, are common, requiring multidisciplinary tertiary care (MTC) to address medication, health behaviors, and mental health. Despite the co-occurrence of mental and T2D-related comorbidities, there is limited characterization of depression in adolescent patients with T2D. This study aimed to describe depression and in-clinic psychology contact (PC) and associations of depression with health indices in youth with T2D presenting to MTC.

Methods: Retrospective chart review of youths 12-18y with T2D was conducted for MTC visits at a pediatric hospital from 2016-21 including patients who newly presented with T2D to clinic. Depression was assessed with the 20-item Center for Epidemiologic Studies-Depression Scale (CES-D). PCs were determined by charted encounters. Health indices, including HbA1c, total cholesterol, LDL cholesterol, and HDL cholesterol, were extracted from initial clinic visit. Fisher's exact, t-tests, or Wilcoxon Rank Sum tests were used to describe associations of depression with PC and health indices.

Results: Of $N=126$ adolescents ($M_{age} \pm SD$ $15 \pm 2y$) with T2D (onset age $13 \pm 3y$), the majority (73%) were screened for depression in the first 2 MTC visits. Of those, 48% reported any elevation in depression symptoms ($CES-D \geq 16$); 27% had moderately elevated or more severe depression symptoms ($CES-D \geq 20$). The vast majority (93%; $n=117$) of all patients saw a clinic psychologist in the first 2 MTC visits; PC was more likely for patients with $CES-D \geq 16$ ($X^2=6.97$, $p<.01$). Adolescents with $CES-D \geq 20$ had higher total cholesterol (212 ± 45 vs 176 ± 47 mg/dL, $p<.01$) and LDL (131 ± 43 vs 90 ± 34 mg/dL, $p<.01$) than those with no-to-mild symptoms. HbA1c ($9 \pm 3\%$) and triglycerides (253 ± 191 mg/dL) were elevated in all patients, regardless of depression. There were fewer PCs with adolescents with T2D during/after COVID-19 (03/2020-12/31/2021) than prior to COVID-19 (2 [1, 3.75] vs. 1 [0, 2], $p=.01$), but no differences in depression symptoms prior to vs during/after COVID-19 (16.8 ± 10.4 vs 17.6 ± 12.2 , $p=0.93$).

Conclusion: Depression screening with prompt PC is feasible in MTC for adolescents with T2D, although COVID-19 did diminish consecutive PC visits. Almost half of youth presenting to MTC had some elevation in depression symptoms; those with mild-to-moderate depression symptoms had higher lipids. Future work is needed to delineate the progression of depression with comorbidities, and to evaluate if early PC increases likelihood of positive health outcomes.