

Associations of Youth and Parent Weight Status with Reported versus Predicted Daily Energy Intake and Hemoglobin A1c in Youth with Type 1 Diabetes Mellitus

Amanda L. P. Sands, B.S.,¹ Laurie A. Higgins, R.D.,¹ Sanjeev N. Mehta, M.D., M.P.H.,¹
Tonja R. Nansel, Ph.D.,² Leah M. Lipsky, Ph.D.,² and Lori M. B. Laffel, M.D., M.P.H.¹

Abstract

Background:

The epidemic of overweight/obesity affects youth with type 1 diabetes mellitus (T1DM) and their families. In youth with T1DM and their parents, we examined weight status with reported and expected energy intake and with youth hemoglobin A1c (HbA1c).

Methods:

In 243 youth (48% female, 13 ± 3 years) and their parents (84% female, 45 ± 6 years), we assessed body mass index (BMI), prevalence of overweight/obesity, reported energy intake (REI), and youth glycemic control (HbA1c). The REI was compared with predicted daily energy requirements (DER; based on age, weight, sex, and physical activity).

Results:

Youth had diabetes duration of 6.3 ± 3.4 years and HbA1c of 8.5% ± 1.3%; 69% used insulin pump therapy. Overweight and obesity affected 23% and 11% of youth and 30% and 24% of parents, respectively. Youth and parent BMI ($r = 0.38$; $p < .001$) and weight status (overweight/obese; $p < .001$) were significantly associated. The ratio of REI:DER was significantly lower in overweight/obese compared with underweight/normal weight parents (1.0 ± 0.4 versus 1.2 ± 0.5 ; $p = .001$) but did not differ among youth by weight status. Both youth and parent BMI were positively correlated with youth HbA1c ($r = 0.14$, $p = .02$; $r = 0.16$, $p = .01$, respectively). Hemoglobin A1c tended to be higher in obese than in overweight and normal weight youth (mean ± standard deviation [SD] 8.4 ± 1.4 , 8.4 ± 1.3 , and 8.8 ± 1.0 , respectively; $p = .06$) and was significantly higher in youth whose parents were obese versus overweight or underweight/normal weight (mean ± SD 8.2 ± 1.2 , 8.5 ± 1.4 , and 8.9 ± 1.5 , respectively; $p < .001$).

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Author Affiliations: ¹Pediatric, Adolescent, and Young Adult Section, Genetics and Epidemiology Section, Joslin Diabetes Center, Boston, Massachusetts; and ²Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Department of Health and Human Services, Bethesda, Maryland

Abbreviations: (BMI) body mass index, (DER) daily energy requirement, (FFQ) food frequency questionnaire, (HbA1c) hemoglobin A1c, (REI) reported energy intake, (SD) standard deviation, (T1DM) type 1 diabetes mellitus

Keywords: daily energy intake, hemoglobin A1c, obese, overweight, type 1 diabetes mellitus

Corresponding Author: Lori Laffel, M.D., M.P.H., Pediatric, Adolescent, and Young Adult Section, Genetics and Epidemiology Section, Joslin Diabetes Center, Harvard Medical School, One Joslin Place, Boston, MA 02215; email address lori.laffel@joslin.harvard.edu

Abstract cont.

Conclusions:

Similar to the general population, overweight and obesity are prevalent among families of youth with T1DM. Weight status appears to influence self-REI in parents and glycemic control in youth with T1DM, suggesting the need for family-based dietary interventions.

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