**SUBJECTS AND METHODS**

**Study population and data collection**

SEARCH ascertained cases of diabetes diagnosed before the age of 20 years from 2002 onward. A detailed description of SEARCH study methods has been published elsewhere.(1) Briefly, SEARCH participants who were newly diagnosed in 2002-2005 and who completed a baseline study visit were invited for follow-up visits at approximately 12, 24, and 60 months after baseline visit. Questionnaires were used to obtain demographic and diabetes-related information. Fasting blood samples were obtained under conditions of metabolic stability, defined as no episode of diabetic ketoacidosis during the previous month. Samples were analyzed for glutamic acid decarboxylase-65 (GAD65) and insulinoma-associated-2 (IA-2) diabetes autoantibodies using a standardized protocol and a common serum calibrator.(2) Anthropometrics (height, weight, waist circumference) were measured. IS was estimated using an equation validated for youth with diabetes,(3) which includes waist circumference, HbA1c and triglycerides levels. Human leukocyte antigen (HLA) class II genotyping was performed with a PCR-based sequence specific oligonucleotide probe system.(4) For SEARCH participants with type 1 diabetes or type 2 diabetes diagnosed in 2002-2005, SNAS collected an included an infant diet history, modeled after that used by Norris et al (5). Mothers or primary guardians of SEARCH participants reported information on breastfeeding initiation and duration.

The sample included 1,387 youth with T1D defined by physicians as type 1, type 1a, or type 1b diabetes, plus a positive test for at least one diabetes autoantibody (GAD65 or IA-2) (mean age at diagnosis: 8.9 ± 4.0 years) and 204 youth with physician-diagnosed T2D (mean age at diagnosis: 13.8 ± 2.6 years).

**Statistical Analysis**

To examine the association between neonatal breastfeeding prevalence and duration and IS, we used multivariable linear and logistic regression models stratified by diabetes type. Neonatal breastfeeding was examined as a continuous (duration in months) and categorical variable (never breastfed, breastfed < 6 months, and breastfed ≥ 6 months). Participants’ first IS measurement was used in the analyses (from baseline visit: T1D [87%] and T2D [89%]), and examined as a continuous and categorical variable. Consistent with previous categorization of IS among youth with T1D in SEARCH(6), low IS was an IS score < the 25th percentile for the NHANES population (IS < 8.15) and high IS was an IS score ≥ the 25th percentile (IS ≥ 8.15), which Because only 7% of youth with T2D had IS ≥ 8.15, IS was categorized into T2D-specific tertiles and defined as low (IS < 3.14), moderate (3.14 ≤ IS ≤ 5.04), and high (IS > 5.04). Potential confounding factors included: age at visit (continuous); gender (male or female); race/ethnicity (non-Hispanic white, non-Hispanic black, or other); household income (<$25,000, $25,000-$49,999, $50,000-$74,999, ≥$75,000, or refused/don’t know); SEARCH clinic site (California, Colorado, Hawaii, Ohio, South Carolina, or Washington); age at diagnosis (continuous); diabetes duration (continuous); insulin regimen (T1D only); and human leukocyte antigen (HLA high risk or low risk; T1D only). Given evidence that the potential positive effect of breastfeeding on IS may be mediated by body mass index (BMI),(7) we further adjusted for BMI z-scores. Interaction terms were added to test for potential effect modification by the HLA risk group and age at diagnosis. In linear multivariable models, an indicator breastfeeding variable (never vs. ever) was included to account for the high percentage of individuals who were never breastfed. Data were analyzed with SAS software (version 9.3; SAS Institute).

**References**

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