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"The Association Between Breastfeeding and Insulin Resistance in Prepubertal Children"

Introduction: The prevalence of obesity has increased among children and adolescents; therefore, this increase in obesity has contributed to the increased risk of developing metabolic disease. Obesity during childhood is linked to a multitude of disease such as insulin resistance and type 2 diabetes mellitus. The idea of breastfeeding having an influential role in the prevention of obesity is a matter of scientific debate. Although breastfeeding has many health benefits for child development, there are limited studies pertaining to its influence on the development of type II diabetes. The purpose of this study was to determine if breastfeeding has protective properties against the development of insulin resistance in prepubertal children which can lead to type II diabetes.

Methods: In this study, data were collected from children (N=94, male=41, female=53) with a mean age of 8.1±0.8 years. The representation of this study sample included Black, White, Asian, Pacific Islander and Hispanic children. These groups were collapsed into "White" and "non-White" groups due to low enrollment numbers of non-Black minority groups. Height and weight measurements of each participant were used to calculate measurements. The mothers of the study subjects were asked via telephone if they breastfed exclusively, formula-fed exclusively, or employed a mixed feeding method. The duration of breastfeeding was also recorded in weeks. Measurements included BMI (kg/m^2), fasting insulin (uIU/mL) and insulin resistance by homeostatic model assessment (HOMA-IR). Comparisons were made between children who were either breastfed (n=65) or exclusively formula fed (n=33) via independent samples t-test. Comparisons were also made based on BMI-z groups (obese, n=21 and non-obese, n=73).

Results: Children with obesity had significantly higher average fasting insulin levels and HOMA-IR than the non-obese group (8.4±6.7 uIU/mL vs. 2.8±1.7 uIU/mL, $p<0.001$; and 1.7±1.5 vs. 0.5±0.3, $p<0.001$, respectively). Further, breastfed children with obesity (n=7) had lower fasting insulin and HOMI-IR than formula fed children with obesity (5.1±1.2 uIU/mL vs. 12.9±8.7 uIU/mL, $p=0.05$; and 1.0±0.2 vs. 2.7±2.1, $p=0.04$, respectively).

Conclusion: The results suggest that breastfeeding appeared to be beneficial in terms of insulin resistance and development of type II diabetes in children with and without obesity. New mothers should be encouraged to breastfeed, if possible, with the suggestion that doing so could prevent the onset of insulin resistance in their children. More studies are needed to determine the precise mechanisms of how breastfeeding reduces risk in children.