

'Critical Window' to Intervene for Weight Issues in Early Childhood

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Signs of cardiometabolic damage in children who are overweight appear as early as 6-8 years of age, but were not evident in preschoolers, providing a window of opportunity for intervention, show the latest results from a long-running Danish study of childhood weight.

The proportion of kids who were overweight (nearly 14% in 2015) was similar between the two groups — those of preschool age (2-5 years) and school age (6-8 years) — but only the latter showed significant signs of cardiometabolic abnormalities.

The results, also [published](#) in *Obesity Research & Clinical Practice*, are the latest in a series of many findings from the HOLBAEK study (formerly known as The Danish Childhood Obesity Biobank) that have emerged since it began in 2007. They were presented, along with a meta-analysis of much of their work, at the European Congress on Obesity (ECO) 2022.

"When comparing children with and without overweight, there were only barely significant differences among the preschool children," said investigator Christine Frithioff-Bøjsøe, MD, but in contrast, "the school children with overweight exhibited significantly higher systolic blood pressure, glucose, insulin, and higher HDL-cholesterol," among other markers, she noted.

"Detection needs to start as early as age 2-5 years because if you wait just a few years longer these children will show early signs of disease starting to take hold. This could provide a critical window to detect and manage overweight," said Frithioff-Bøjsøe, of the Children's Obesity Clinic, Copenhagen University, Hospital Holbaek, Denmark.

Asked to comment, Aaron S. Kelly, PhD, professor of pediatrics, codirector, University of Minnesota Center for Pediatric Obesity Medicine, Minneapolis, said: "Recent results from HOLBAEK highlight the critical importance of identifying obesity early in life, before its complications spring up."

"Ideally, we should be in the business of managing and reducing excess adiposity as soon as it surfaces with the goal of preventing the onset of cardiometabolic risk factors, not watchful waiting and hoping for the best."

Routine Dental Visits Checked Overweight

In the newest study, the researchers trained dental assistants to measure weight and height and carried out body mass index (BMI) assessments during routine appointments.

A total of 335 preschool and 657 school-age children were recruited for the study. Of these, 40% attended additional hospital-based examinations including blood pressure measurement and a blood sample. Children were re-examined approximately 1 year later.

Systolic blood pressure, for example, was significantly higher in 6-8 year olds with overweight compared to those of normal weight ($P = .001$). There was no significant difference between systolic blood pressure of 2.5 to 5 year olds without and with overweight.

Likewise, with insulin resistance, there was no significant difference between preschoolers with and without overweight. However, in schoolchildren, homoeostasis model of assessment – insulin resistance (HOMA-IR) was significantly higher in those with overweight, at 2.2, compared to those without, at 0.9 ($P < .001$).

Also, during follow-up (around a year later), the prevalence of overweight did not change in preschool children but increased from 13.7% to 17.0% in schoolchildren.

The researchers note that, in Europe, it is the primary healthcare sector that has continuous contact with the pediatric population, with the potential for early evaluation of children at risk. Their decision to use dental healthcare assistants to assess weight in this particular study is novel, but feasible, they observe.

Danish Model for Treating Overweight and Obesity Is "Game-Changing"

As part of the HOLBAEK initiative, clinical data and biological samples have been collected from children and adolescents receiving treatment at The Children's Obesity Clinic, Holbaek Hospital, using a population-based cohort as a reference group. Data has been collected on around 8000 children and adolescents so far.

Jens-Christian Holm, PhD, along with colleague and research assistant Maria Frauland, both from the Copenhagen University, Hospital Holbaek, presented a review of the HOLBAEK studies (2007-2021) at ECO 2022. They say the results

highlight the importance of taking an integrated approach to managing children and adolescents with obesity.

The review, which included 82 papers, found a wide variety of obesity-related complications already present at a young age in some of the cross-sectional studies, including dyslipidemia in 28% of children with obesity, hepatic steatosis in 31%, obstructive sleep apnea in 45%, and prehypertension or hypertension in 52%.

The family-based interventional weight management programs adopted by HOLBAEK showed a 75% reduction in the "degree of obesity," which comprised a measure of dyslipidemia, hypertension, hepatic steatosis, sleep apnea, and parental obesity.

"The HOLBAEK method is a holistic approach where we integrate everything," Holm told *Medscape Medical News*.

Frauland said: "The HOLBAEK study has provided important insights into childhood overweight. It has highlighted that obesity is a serious multisystem disease that can be managed and treated effectively, reducing the degree of overweight and improving overweight-related complications."

Kelly, the US pediatrician, applauded the HOLBAEK philosophy, which emphasizes that obesity is not the fault of the child or parent, but rather the manifestation of dysregulated energy metabolism. "The recognition that obesity is a biologically driven, chronic, refractory, and relapsing disease is interwoven into the approach, which shifts the responsibility to the care provider for ensuring positive outcomes of treatment."

"Highlighting this fact to the parents and child can be game-changing since it removes the blame and shame associated with obesity and unburdens the family by framing the problem in a different light," Kelly stressed.

Frithioff-Bøjsøe has reported no relevant financial relationships. She works for Novo Nordisk in a different capacity unrelated to the study. Holm has an obesity management company called Holm. Kelly serves as an unpaid consultant for Novo Nordisk, Vivus, Eli Lilly, and Boehringer Ingelheim and receives donated drug/placebo from Vivus for a clinical trial funded by the National Institutes of Health.

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