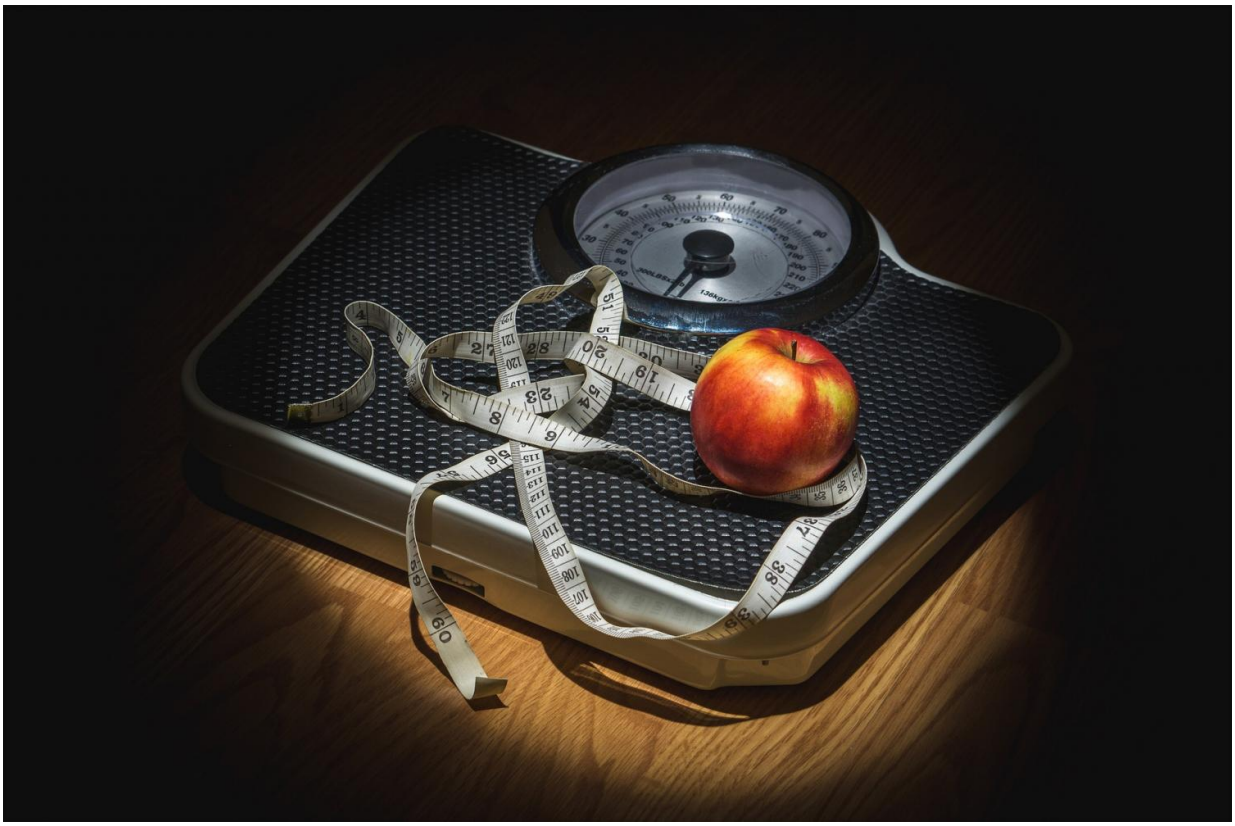
Study shows obesity in childhood associated with more than double the risk of developing multiple sclerosis

March 28 2024



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New research to be presented at this year's European Congress on Obesity held in Venice, Italy (12–15 May), shows that having obesity in childhood is associated with more than double the risk of later developing multiple sclerosis. The study is by Professor Claude Marcus and Associate Professor Emilia Hagman, Karolinska Institutet, Stockholm, Sweden, and colleagues.

Emerging evidence implies a link between high BMI in adolescence and an increased risk of Multiple Sclerosis (MS). Yet, most studies evaluating this association are cross-sectional, have retrospective design with self-reported data, have used solely genetic correlations, or use pediatric weight data before the obesity epidemic. Therefore, the authors aimed to prospectively evaluate the risk of developing MS in a large cohort of patients with pediatric obesity compared with the general population.

They included patients aged 2–19 years with obesity enrolled in the Swedish Childhood Obesity Treatment Register (BORIS) between 1995 and 2020 and a matched comparison group from the general population. Matching criteria included sex, year of birth, and residential area. Exclusion criteria were secondary obesity (e.g., brain tumors such as craniopharyngioma), genetic syndromes (e.g., Prader Willi, Morbus Down), and MS diagnosis before 15 years of age (that is, already developing in childhood). MS was identified through Sweden's National Patient Register.

Individuals were followed from obesity treatment initiation, or from 15 years of age if treatment was initiated earlier, until MS diagnosis, death, emigration, or August 2023, whichever came first. The authors used computer and statistical modeling to calculate any potential association. Due to previously reported genetic associations of MS, the authors also

assessed levels of parental MS, which was present in 0.99% of the obesity cohort and 0.68% in the general population comparators.

The data included 21,661 patients (54% boys) from the pediatric obesity cohort with a median age of obesity treatment initiation (behavior and lifestyle modification) of 11.4 years (years and 102,230 general population comparators. The median follow-up time was 5.6 years, corresponding to a median age of 20.8 years in the follow-up population (and 50% of the population were aged between 18 and 25 at the point analysis, with the highest age in the cohort 45 years).

During follow-up, 0.13% [n=28, 18 (64%) female, 10 (36%) male] developed MS in the obesity cohort, whereas the corresponding number in the general population was 0.06% [n=58, 38 (66%) female, 20 (34%) male]. The mean (SD) age of MS diagnosis was comparable between the groups: 23.4 years in the obesity cohort versus 22.8 years in the general population comparators.

The small number who have developed MS so far means that the study was not sufficiently statistically powered to state the increased risk of females developing MS—however, the results follow the generally increased risk to females (the estimated ratio of female: male affected by MS in the general population is 4:1).

The crude incidence rate of MS per 100,000 person-years was 19.3 in the obesity cohort and 8.3 in the general population cohort. Analyses adjusted for the presence of parental MS (heredity) (which was more prevalent in the obesity cohort, as above) revealed that the risk of developing MS was 2.3 times higher than in the pediatric obesity cohort, with both these findings statistically significant.

The authors say, "Despite the limited follow-up time, our findings highlight that obesity in childhood is associated with an increased

susceptibility of early-onset MS more than two-fold. Given that pediatric obesity is prevalent, it is likely to serve as a critical etiological contributor to the escalating prevalence of MS.

"Pediatric obesity is associated with several autoimmune diseases and the leading hypothesis is that the persistent low-grade inflammatory state, typically observed in obesity, is mediating the association. Understanding these pathways is crucial for developing targeted prevention and intervention strategies to normalize the risk for MS in children and adolescents with obesity."

They add, "There are several studies showing that MS has increased over several decades, and obesity is believed to be one major driver for this increase. Thanks to our prospective study design, we can confirm this theory.

"Even though the risk for MS is more than double among children and adolescents with obesity, the absolute risk for MS remains lower than for many other comorbidities associated with obesity. Nevertheless, our study adds to the evidence that obesity in early life increases the risk for a plethora of diseases, including MS, and not only the well-known cardiometabolic conditions such as heart disease and diabetes."

Provided by European Association for the Study of Obesity

Citation: Study shows obesity in childhood associated with more than double the risk of developing multiple sclerosis (2024, March 28) retrieved 27 April 2024 from https://medicalxpress.com/news/2024-03-obesity-childhood-multiple-sclerosis.html