

# New study unravels the complexity of childhood obesity

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The World Health Organization has estimated more than 340 million children and adolescents ages 5-19 are overweight or obese, and the epidemic has been linked to more deaths worldwide than those caused

by being underweight.

The Centers for Disease Control recently reported an estimated 1 in 5 children in the United States, ages 12-18, are living with prediabetes—increasing their risk of developing type 2 diabetes as well as [chronic kidney disease](#), heart disease and stroke.

Efforts to stem the crisis have led clinicians and health professionals to examine both the nutritional and psychological factors of childhood obesity. In a new study led by the University of Notre Dame, researchers examined how various psychological characteristics of children struggling with their weight, such as loneliness, anxiety and shyness, combined with similar characteristics of their parents or guardians and family dynamics affect outcomes of nutritional intervention.

What they found was a "network effect," suggesting a personalized, comprehensive approach to treatment could improve results of nutritional interventions.

"Psychological characteristics clearly have interactional effects," said Nitesh Chawla, the Frank M. Freimann Professor of Computer Science and Engineering at Notre Dame, director of the Center for Network and Data Science and a lead author of the study. "We can no longer simply view them as individualized risk factors to be assessed. We need to account for the specific characteristics for each child, viewing them as a holistic set for which to plan treatment."

The Notre Dame team collaborated with the Centre for Nutritional Recovery and Education (CREN), a not-for-profit, nongovernmental nutritional clinic in São Paulo, Brazil, where patients participate in a two-year interdisciplinary treatment program including family counseling, nutritional workshops and various physical activities. Researchers analyzed the medical records and psychological assessments of 1,541

children who participated in the program.

The study's key takeaway points to the significant impact parents and guardians have on their child's health when it comes to nutrition. Strong family dynamics, such as concern for behavior and treatment and a sense of protectiveness for the child, led to improved outcomes of nutritional interventions. A lack of authority, however, led to minimal changes in results.

"This is quantitative evidence of the success and failure of interactions as they relate to the characteristics and interactions between the child and the parent or guardian," Chawla said.

The study also highlights the need for clinics to expand their views on patient populations. For example, while treatment programs that incorporate development of interpersonal relationship—familial and otherwise—may improve outcomes of nutritional interventions, the same treatment plan may not have the same result for children experiencing loneliness coupled with anxiety.

"For the group without anxiety, this makes sense when you consider a treatment plan focused on strengthening a child's [social circle](#) and address issues stemming from loneliness, such as poor social network, bullying or self-imposed isolation," said Gisela M.B. Solymos, co-author of the study, former general manager of CREN and former guest scholar at the Kellogg Institute for International Studies at Notre Dame and at the Center for Network and Data Science. "But patients feeling loneliness and anxiety actually showed minimal changes to nutritional interventions, and may be more likely to benefit from additional services at clinics like CREN."

Co-authors of the study include Keith Feldman, also at Notre Dame, and Maria Paula Albuquerque at CREN.

Provided by University of Notre Dame

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