Long-term Outcomes of a Multidisciplinary Weight Management Intervention for Youth with Special Needs

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Background

- Youth with special needs or developmental delay, such as autism spectrum disorder (ASD), Down Syndrome, intellectual disabilities, or physical disabilities, are at increased risk for obesity as compared to their typically developing peers.

- A limited number of weight management programs are specifically tailored to accommodate youth with special needs and outcomes research in this population is scarce.

- This study assessed the long-term outcomes of a specialized intervention for youth with special needs as well as differential outcomes based on patient characteristics (e.g., special needs diagnosis, age, sex, ethnicity, insurance status).

Participants

- Families of 133 youth receiving care in the Special Needs Weight Management Clinic (SNWMC) at a Midwest children's hospital.

- Average child age was 10.51 years (SD = 3.66), average BMI z-score was 2.48 (SD = .57), and average BMI percentile was 98.80% (SD = 1.16) at their baseline appointment.

- Patients attended an average of 3.76 (range, 1-10) clinic visits by the time of their 12-month follow-up. One-third of the sample had data at 12-month follow-up.

Participant Demographics	
Sex	
Male	86 (64.7%)
Female	47 (35.3%)
Ethnicity	
White	77 (57.9%)
Black	32 (24.1%)
Latino	18 (13.5)
Multiracial/other	6 (4.5%)
Special Needs Diagnosis	
Autism Spectrum Disorder	68 (51.1%)
Down Syndrome	24 (18.0%)
Intellectual disability/dev. delay	36 (27.1%)
Physical disability	5 (3.8%)
Insurance Status	
Medicaid/financial assistance	86 (64.7%)
Commercial	47 (35.5%)

Measures

- <u>Medical Record Review</u>. Demographic data (e.g., special needs diagnosis, age, sex, ethnicity, insurance status) were abstracted from the patient medical records

- <u>Anthropometric Data</u>. Child height and weight were measured at each SNWMC visit (baseline, 6 wks. (±2 wks.), 3 mos. (±1 mos.), 6 mos. (±2 mos.), 12 mos. (±2 mos.) using standardized procedures. Height and weight, along with age and sex, were used to calculate BMI, BMI z-score, and BMI percentile.
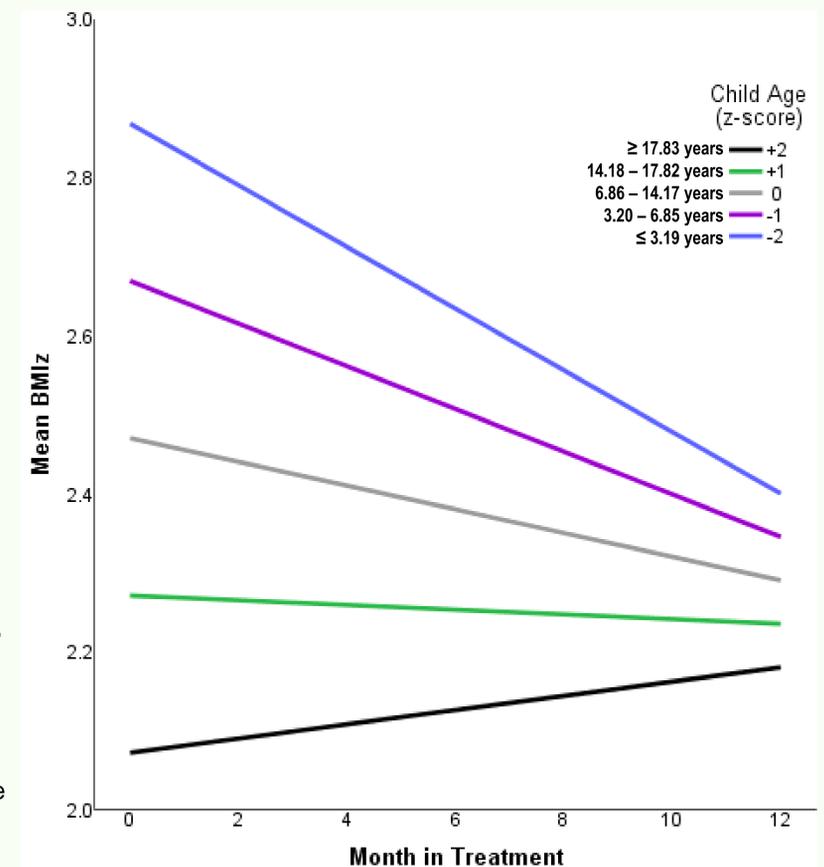
Intervention

- The SNWMC is a hospital based clinical treatment program providing multidisciplinary assessment and treatment for children and adolescents with obesity and their families. The team includes a physician, psychologist, occupational therapist, and registered dietitian, all of whom participate in the appointments at the same time.

- At the initial appointment a complete medical, behavioral, feeding, sensory (related to feeding behaviors), and dietary history is obtained and treatment goals and recommendations are provided taking into account the unique challenges of the child.

- At follow-up sessions, response to treatment is assessed and additional recommendations are provided utilizing a gradual behavioral approach.

Analyses

- A multilevel model was used to test patient-level change in BMIz between baseline and 12-month follow-up. Person-level repeated measures of BMIz (level 1) were nested within individuals (level 2), using a random slope and intercept and a homoscedastic error structure (e.g., scaled identity).

- A variable representing the number of months since baseline for each anthropometric measurement was entered into the model to examine linear change in BMIz over treatment.

- Several possible interactions were also explored to identify whether special needs diagnosis, age, sex, ethnicity, and insurance status relate to differences in the trajectories of BMIz change.

Results

- Significant reductions in BMIz were observed over the course of treatment when controlling for child age (z-score), β = -.02; SE = .002; t = -6.83; p < .001. The slope for time (β = -.02) indicates that children of average age showed a BMIz reduction of .02 per month in treatment.

- The main effect of child age (z-score) indicates that younger children started treatment with a higher baseline BMIz than older children, β = -.20; SE = .05; t = -4.41; p < .001.

- The interaction between child age (z-score) and time indicates that younger children exhibited greater decreases in BMIz over the course of treatment than older children did, β = .01; SE = .002; t = 5.22; p < .001.

- Special needs diagnosis, sex, ethnicity, nor insurance status moderated change in BMIz over the course of treatment.

Discussion

- Younger children exhibit a greater decrease in BMIz over the course of treatment than older children supporting early intervention for pediatric weight management including youth with special needs.

- Utilizing an adaptive design for each patient with various types of neurodevelopmental disorders in SNWMC demonstrates equal effectiveness in managing weight and meeting the needs of children.

- Overall, our findings suggest that a relatively low intensity intervention (average of <4 sessions) demonstrated significant decreases in BMIz over a 12-month period.

- Limitations of this study include the higher level of attrition, heterogeneous population, and specialized/adaptive nature of treatment, which limits the generalizability of findings other settings and patient populations.