



center for children's
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nutrition

Metabolic comorbidities and obesity severity of treatment-seeking school-age children with obesity

Kelsey Borner, MA^{1,2}, Tarrah Mitchell, MA^{1,2}, Ashleigh Pona, MA^{1,3},
Brooke Sweeney, MD^{1,4}, Meredith Dreyer Gillette, PhD^{1,4}, & Sarah Hampl, MD^{1,4}

¹ Center for Children's Healthy Lifestyles & Nutrition, Kansas City, MO ³ Clinical Psychology Program, University of Missouri-Kansas City, Kansas City, MO
² Clinical Child Psychology Program, University of Kansas, Lawrence, KS ⁴ Children's Mercy-Kansas City, Kansas City, MO



Background

- Categorizing youth into obesity classes (Class 1, 2, and 3) predicts additional cardiometabolic risks.
- However, data on cardiometabolic outcomes following treatment is limited, and does not report outcomes by severity class.

Objective:

- To examine the metabolic risk presentation and outcomes of youth in a family-based behavioral lifestyle intervention (FBLI) for pediatric obesity, according to obesity severity class.

Methods

Participants

- Families of 198 youth, aged 8-18 years (M = 12.33, SD = 2.19), receiving care in a 12-week family-based group pediatric obesity intervention.

Baseline Participant Demographics	
BMIz	2.36 (0.33)
BMI%ile	98.73% (1.16%)
Bmi%ile over the 95 th percentile	135.88% (25.43%)
Sex	
Male	73 (36.9%)
Female	125 (63.1%)
Ethnicity	
White	48 (24.2%)
Black	91 (46.0%)
Latino	51 (28.5%)
Multiracial/other	8 (4.0%)
Obesity Class	
Overweight	5 (2.5%)
Class 1: BMI = 100-119% of 95 th ile	52 (26.3%)
Class 2: BMI = 120-140% of 95 th ile	64 (32.3%)
Class 3: BMI > 140% of 95 th ile	77 (38.9%)

Data Analytic Plan

- Metabolic and blood pressure variables were classified into clinical risk status according to standard cut-off values.
- Frequencies of participants presenting with metabolic and BP variables in the abnormal range were calculated.
- Paired-samples t-tests compared baseline and treatment end values, and between-groups ANOVA tested for differences in number of comorbidities between obesity severity classes.

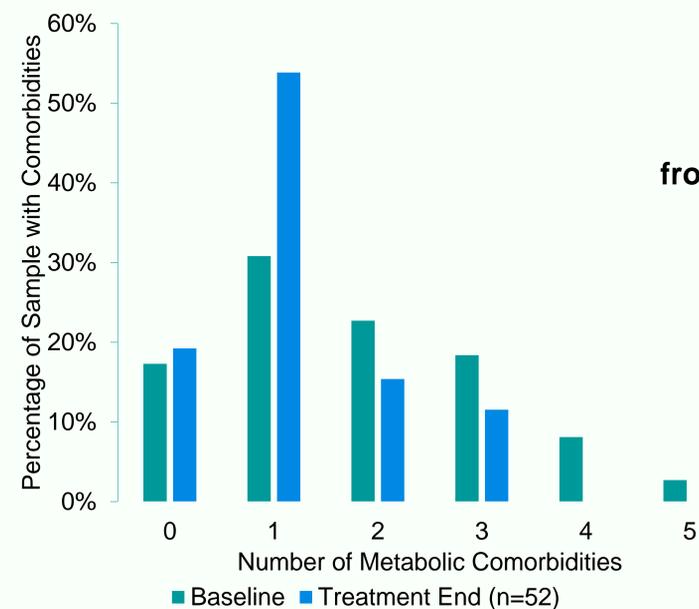
Measures

- Demographic information, such as age, sex, and ethnicity, were assessed at the time of entry to the intervention.
- Child height and weight were measured at baseline, treatment end (12 weeks), and follow-up (6 months) using standardized procedures. Height and weight, along with age and sex, were used to calculate BMI and categorize youth into obesity severity classes.
- Laboratory outcomes were abstracted from the medical records of children who had them drawn as part of their standard medical care at the baseline and 6-month follow up.

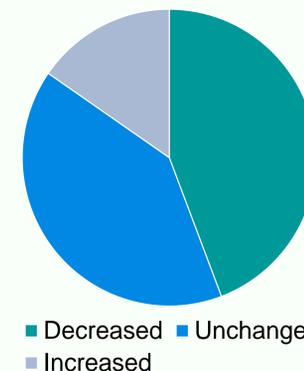
Metabolic and blood pressure variables	Clinical Risk
Diastolic & Systolic Blood Pressure %ile (DBP & SBP)	≥ 95 th percentile
Cholesterol (Chol)	≥ 200
Low-density Lipoprotein Cholesterol (LDL)	≥ 130
High-density Lipoprotein Cholesterol (HDL)	≤ 39
Triglycerides (Trig)	≥ 100
Alanine Aminotransferase & Aspartate Aminotransferase (ALT & AST)	Both: ≥ 40

Results

Prevalence of Metabolic Comorbidities



Change in Number of Metabolic Comorbidities from Baseline to Treatment End



Results (cont.)

- Patients without follow-up data did not differ from those with data on sex, ethnicity, insurance, BMIz, obesity class, any metabolic or blood pressure variables, or total number of cardiometabolic comorbidities at baseline.
- Total number of cardiometabolic comorbidities was not different between obesity severity classes at baseline ($F(2,169)=-2.19, p=.12$) or treatment end ($F(2,48) = -2.40, p = .10$).
- Participants who completed the program with cardiometabolic data at 6-month follow-up (n = 52) demonstrated significant reductions in cholesterol (change = -1.16, t = 2.19, p = .03), TG (change = -31.62, t = 2.30, p = .03), and AST (change = -2.94, t = -3.06, p = .004); all other cardiometabolic changes were nonsignificant.

Conclusions

- More than 80% of youth present to obesity treatment with at least one cardiometabolic comorbidity.
- Treatment completion was associated with a shift towards fewer comorbidities.
- While there were other statistically significant decreases in risk factors (e.g., cholesterol, AST), the only clinically significant reduction was in triglyceride levels.
- In contrast to previous literature, obesity class was not associated with cardiometabolic risk.
- Results demonstrated the importance of intervening early to prevent development of potential serious comorbidities.
- Results on changes in comorbidities are limited by a combination of treatment attrition as well as a lack of participant adherence to follow-up lab draw recommendations.

Acknowledgements

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- For more information, please contact Meredith Dreyer Gillette at mdreyer@cmh.edu.