

Overweight and Obesity in Young Children: A Critical Period for Intervention

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Trends in Prevalence of Child OW/OB

- Since 1980 the prevalence of obesity in children has tripled for teens and schoolagers (18%)
- Including those teens and schoolagers who are overweight the prevalence has been estimated to be approaching 34% (Ogden, Carroll, Kit, & Flegal, 2014)



Trends in Prevalence of Child OW/OB


- These changes over time have been mirrored by increases in the prevalence of OW/OB in children, 2-5 years, approximating 27% in 2010
- These prevalence rates appear to have stabilized
- Until very recently the prevalence in preschool aged children continued to increase

Trends in Prevalence of Child OW/OB

- The increase in the prevalence of obesity across child age groups continues to be the greatest between the preschool and school-age groups; underscoring the importance of intervening with young children.

Prevalence Estimates

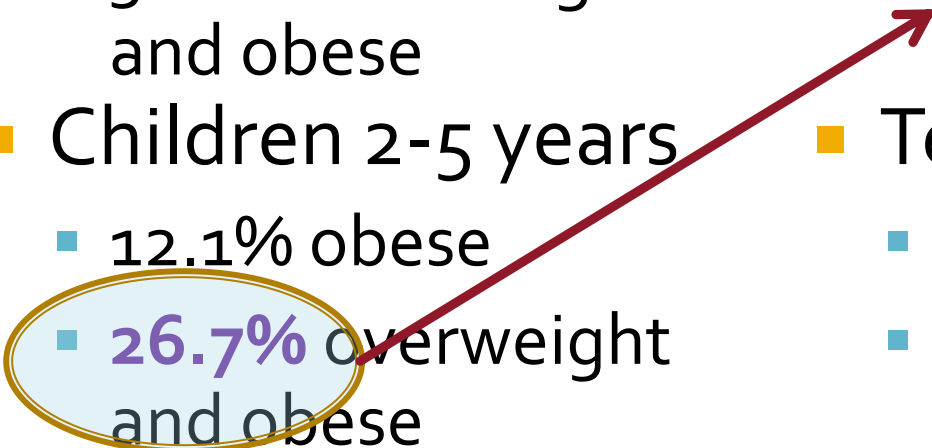
2007-2008

- Youth 2-19 years
 - 16.9% obese
 - 31.7% overweight and obese
 - Children 2-5 years
 - 10.4% obese
 - **19.6%** overweight and obese
 - Children 6-11 years
 - 19.6% obese
 - **35.5%** overweight and obese
 - Teens 12-19 years
 - 18.1% obese
 - 34.2% overweight and obese
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An increase of 15.9% across age categories

Recent Prevalence Estimates

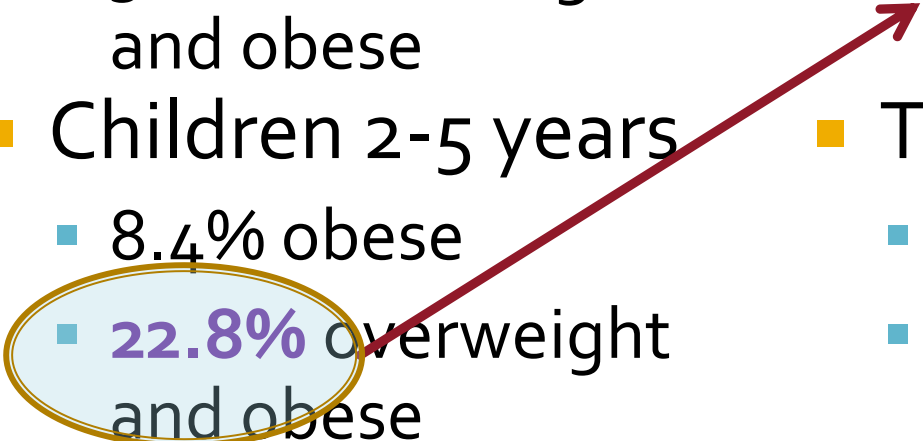
2009-2010

- Youth 2-19 years
 - 16.9% obese
 - 31.8% overweight and obese
 - Children 2-5 years
 - 12.1% obese
 - 26.7% overweight and obese
 - Children 6-11 years
 - 18.2% obese
 - 33.2% overweight and obese
 - Teens 12-19 years
 - 18.4% obese
 - 33.6% overweight and obese
- 

An increase of 7.1% in the same age category
An increase of 6.5 percent across age categories

Recent Prevalence Estimates

2011-2012

- Youth 2-19 years
 - 16.9% obese
 - 31.8% overweight and obese
 - Children 2-5 years
 - 8.4% obese
 - 22.8% overweight and obese
 - Children 6-11 years
 - 17.7% obese
 - 34.2% overweight and obese
 - Teens 12-19 years
 - 20.5% obese
 - 34.5% overweight and obese
- 

An increase of 11.4% across age categories

“There is no choice but to act today to find solutions to the child obesity epidemic”.

Richard Carmona, Former Surgeon General

Purpose

- The purpose of this pilot study was to appreciate the effect of a parent-focused intervention conducted in an office setting on child (4-8 years of age) anthropometric and behavioral outcomes.
 - BMI percentile, Waist Circumference, and waist-by-height ratio
 - Internalizing and externalizing behaviors



Research Design

- Randomized Controlled Trial
 - Experimental group parents
 - Control group parents
- Dependent variables assessed pre-intervention, immediately post-intervention, 3, and 6 months following the intervention period.

Methods

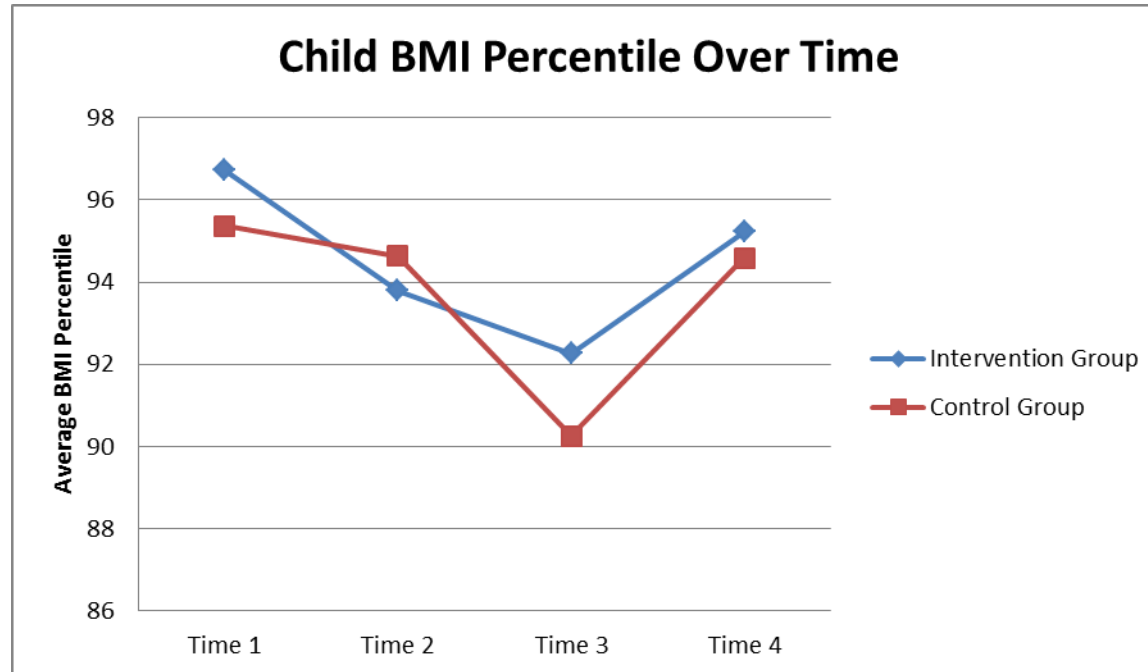
- An intervention conducted in the child's primary care provider office.
- Four intervention sessions were conducted with the parents.
 - Experimental group parents received a multi-faceted intervention (i.e., portion control, recommended macronutrient intake, sedentary time reduction, increase physical activity, positive parenting strategies).
 - Control group parents received health and safety information.



Sample Characteristics

Demographics	Treatment (n=33)	Control (n=27)	Total Sample (N=60)
Child			
Female	17	19	36
Age (yrs)	5.73 (1.38)	5.41 (1.50)	5.58 (1.43)
BMI percentile	96.7 (4.04)	95.4 (4.62)	96.1 (4.32)
% obese	72.7	65.4	69.5
Waist circumference	28.68 (4.17)	27.10 (4.15)	27.98 (4.20)
Waist-by-height ratio	.60 (.06)	.50 (.05)	.60 (.06)
Maternal age (yrs)	36.03 (8.23)	34.67 (5.12)	35.40 (6.93)
Maternal BMI (self-report)	31.56 (8.80)	31.89 (8.79)	31.71 (8.72)

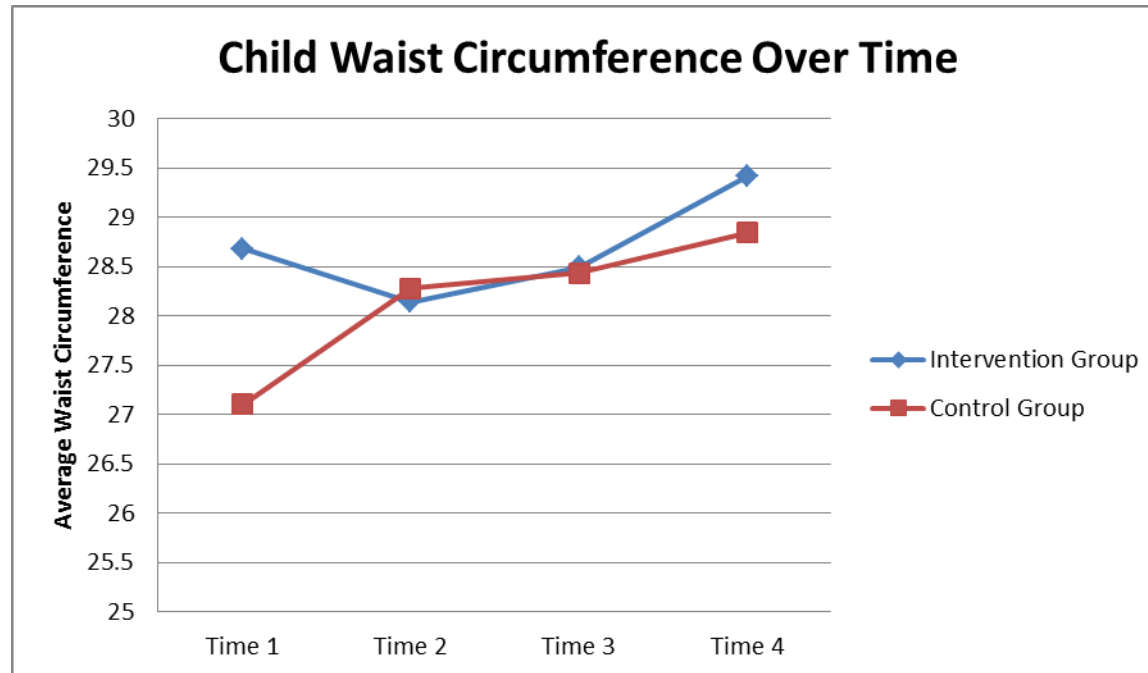
Results



Group specific BMI percentile at baseline (T₁), immediately following (T₂), 3 months (T₃) and 6 months (T₄) following the intervention



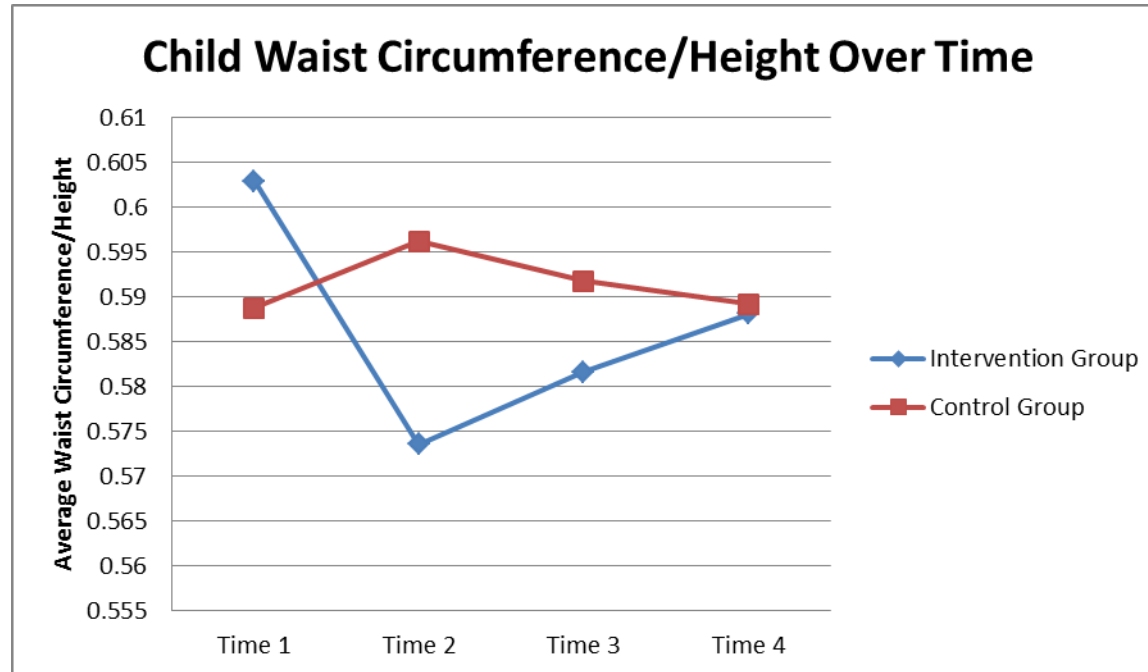
Results



Group specific waist circumference at baseline (T₁), immediately following (T₂), 3 months (T₃) and 6 months (T₄) following the intervention. The 90th percentile = 24.9 inches, the 95th percentile = 26.5 inches (Cook et al., 2005)



Results



Group specific waist-by-height ratio at baseline (T₁), immediately following (T₂), 3 months (T₃) and 6 months (T₄) following the intervention. It is desirable to have a WHtR < 0.5 (Browning, Hsieh, & Ashwell, 2010)



Practice Recommendations

- These promising findings suggest that a primary care-based, parent-focused overweight/obesity treatment program for young children is feasible and demonstrated large positive preliminary effects, improving the children's overall health trajectory.
 - 4 half-hour sessions every 3-4 weeks
 - Booster sessions are needed in 6 months
 - Motivational interviewing included
 - Focus on small realistic, achievable goals
 - Emphasis on positive parenting approaches

Recent Obesity Research Findings

- Visceral adiposity is strongly related to systemic inflammation in adults and older children.
- Chronic inflammation is related to epigenetic alterations evidenced by DNA methylation patterns.

Recent Obesity Research Findings

- The biologic processes associated with the development of type 2 diabetes and cardiovascular disease begin in the early childhood years.
- The transition from insulin resistance to type 2 diabetes is accelerated in young children.

Research Recommendations

- Determine if there is a relationship between visceral adiposity and inflammation in young children.
- Compare the genetics of the biological parents to young overweight/obese children

Research Recommendations

- Enhance and refine elements of the intervention.
 - Positive nutritional effects found.
 - No detectable effect on child physical activity.
- Conduct a large scale study to determine if similar results will be replicated with a larger sample size.
 - Determine if there is a reduction in inflammation subsequent to intervention.

Research Recommendations

- Consider future longitudinal tests to appreciate epigenetic changes over time and learn if negative changes may be reversible.

Thank you!

With questions please feel free to contact:

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