

**Childhood Obesity Therapy  
Pharmacology vs. Behavioral**

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Physician Assistant Program  
Master's Presentation  
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**Question:**

**In children with obesity, is the efficacy of psychosocial treatment better than pharmacological treatment?**

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**Background:**

- Prevalence of overweight children increased from about:
  - 5% in 1988 – 1994 to
  - 16% in 1999 – 2002.
- According to the National Survey of Children's Health data, there was 31.7% of US children either overweight or obese in 2007.

Tudor-locke, Kronenfeld, Kim, Benin, & Kuby, 2007  
Nemet, Barkan, Epstein, Friedland, Kowen, & Elisakim, 2005

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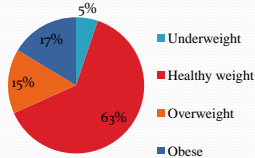
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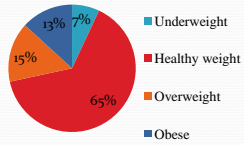
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## Background:

National BMI Status



South Dakota BMI Status



National Survey of Children's Health  
www.aschdata.org

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## Background:

- Childhood obesity has been associated with other medical conditions including:
  - Hyperlipidemia,
  - Hypertension,
  - Arteriosclerosis,
  - Insulin resistance,
  - Type 2 diabetes,
  - Left ventricular hypertrophy,
  - Sleep apnea,
  - Depression, and
  - Social exclusion.

Nemet, Barkan, Epstein, Friedland, Kowen, & Elsakim, 2005  
Wilson, O'Meara, Summerbell, & Kelly, 2003  
Berkowitz, et al., 2006

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## Background:

- Current treatments for adults include:
  - Behavioral changes (diet, activity)
  - Pharmacological (phentermine, orlistat, sibutramine, bupropion, and herbal preparations)
- Current treatments for children include:
  - Behavioral changes (diet, activity)

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## Studies:

- 9 studies reviewed
  - Obtained through computer based search strategies
  - Published between 2002 - 2007
  - Randomized controlled trails
- Outcomes measured
  - Weight loss

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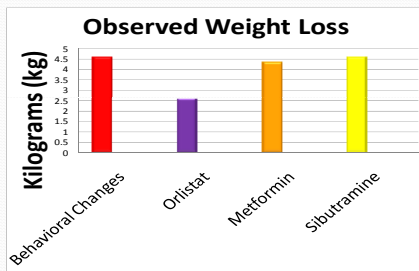
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## Results:



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## Discussion:

- Behavioral therapy
  - Treatment included:
    - Evening lectures (4)
    - Meetings with a dietitian (6 meetings and bi-weekly training sessions)
    - Exercise program (1 hour sessions twice a week)
  - Resulted in a reduction of weight gain of 4.6 kg when compared to a control group over the 1 year period.

Nemet et al., 2005

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**Discussion:**

- Sibutramine (Miridia)
  - Mechanism - serotonin and norepinephrine reuptake inhibitor
  - Resulted in an increased weight loss (4.6 kg) and an increased reduction of the BMI (2.8 kg/m<sup>2</sup>).
  - Adverse effects of treatment included an increase in systolic blood pressure, an increased in diastolic blood pressure, and an increased in the pulse rate.

Berkowitz, et al., 2006  
Daniels, et al., 2007

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**Discussion:**

- Orlistat (Xenical)
  - Mechanism - gastrointestinal tract lipase inhibitor which decreases intestinal fat absorption.
  - Resulted in a reduction of BMI (0.85 kg/m<sup>2</sup>).
  - No reported safety issues due to the administration.

Chanoine, Hampl, Jensen, Boldrin, & Hauptman, 2005

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**Discussion:**

- Metformin
  - Mechanism - oral hypoglycemic agent used in adults for the treatment of conditions with insulin resistance and type 2 diabetes mellitus.
  - Resulted in an increased weight loss (4.35 kg), a decreased BMI (down 1.26 kg/m<sup>2</sup>) and a decreased waist circumference (down 2.8 cm).
  - No significant negative side effects and treatment was well tolerated.

Srinivasan, et al., 2006

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## Conclusion:

- Pharmacological treatment of childhood obesity may provide additional weight loss when combined with behavioral changes.
- The greatest affect was demonstrated with the combination of sibutramine and behavioral therapy.
- A combined weight loss of 9.2 kg may be achieved when comparing the use of sibutramine and behavioral therapy to no treatment.

Berkowitz et al., 2006  
Nemet et al., 2005

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## Clinical Pearls:

- Childhood obesity is problem in the US with consequences effecting future health care options.
- Overweight in children is defined as a BMI between the 85th and 95<sup>th</sup> percentile.
- Obese in children is defined as a BMI greater than the 95<sup>th</sup> percentile.

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## Clinical Pearls:

- Initial treatment should include changes to diet and activity.
- The use of Sibutramine, Orlistat or Metformin to assist with weight loss has been shown to be effective with few side-effects.

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Questions?



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