

Lifestyle Change Interventions for Children and Adolescents With Diabetes or Kidney Disease

By: Lori Sanderson, LCSW, MPH, PhD

Date: April 26, 2016



Objective

- Report on the availability of evidence-based interventions for promoting lifestyle change in children and adolescents with diabetes or kidney disease.



Methods

- References gathered from several electronic databases:
 - Ebsco Host
 - Psych Info
 - Medline

Statistics

- Decline in morbidity and mortality rates of children
- Increase in chronic disease in children. (Torpy, Lynm, & Glass, 2007).
- Common childhood chronic disease:
 - Kidney disease
 - Diabetes
 - Obesity

Statistics Cont.

- 1-2 children per 100000 diagnosed with kidney disease
- 1.7 per 1000 children diagnosed annually with insulin dependent diabetes

Statistics Cont.

- Slightly over 31% of 8165 children and adolescents
 - BMI for age at or above the 85th percentile between years 2003-2004 (Ogden, et al.).
- About 30% of 3958 children and adolescents
 - BMI for age at or above the 85th percentile between years 2005-2006 (Ogden, et al.).

Statistics

- **Childhood Diabetes**
 - **Total**
 - 20 years or older
 - 28.9 million
 - **By age**
 - 20-44 years
 - 4.3 million
 - 45-64 years
 - 13.4 million
 - 65 years or older
 - 11.2 million

Statistics

- Childhood Obesity
 - Ages 2-19
 - 31.8%: Overweight or obese
 - 16.9%: Obese
 - Ages 6-19
 - 33.2% or 1 in 3: Overweight or obese
 - 18.2%: Obese



Health Education and Counseling

- Health education and counseling is large portion of the current intervention requirements of most hospitals (Bandura, 1990).

Intervention

- Education and counseling alone fails to motivate children to lose weight and participate in cardiovascular activity (Bandura, 1990).
- Obesity rates among children are likely to increase without intervention beyond education and counseling.



Adherence to Treatment

- Previous studies have sought to understand how to more effectively change unhealthy behavior
 - i.e. medication adherence or compliance
 - appointment adherence etc.
- However, few have addressed weight loss adherence for this patient population.



Chronic Disease Intervention Programs

- Seek to improve adherence to medication & physical activity & to maintain a healthy weight.
- Few intervention studies have been developed specifically for obese pediatric patients with kidney disease or diabetes.



Diabetes Intervention

- Diabetes intervention (National Diabetes Information Clearing House, 2006).
 - Medication
 - Daily glucose monitoring
 - Education or counseling regarding diet
 - Education or counseling regarding physical activity
 - Weight control

Diabetes, Kidney Disease, and Obesity Treatment

- Medical treatment adherence aims to:
 - Increase medication adherence
 - Increase physical activity
 - Promote healthy eating
 - Promote weight loss if indicated
 - Decrease BMI if indicated



Diabetes Treatment Intervention

- Patients that follow treatment guidelines should lose weight, decrease BMI, and maintain a healthy blood pressure (NIDDK, 2009).



Obesity Intervention Study

- Nutritional program aimed to help obese children to establish a healthy lifestyle and lose weight, compared to the patient's own initiative.
 - One-year intervention
 - Physical activity (2x week)
 - Nutritional education (2x week)
 - Coping strategies (2x week)
 - Quarterly meetings
 - Medical supervision
- Followed by admission to a local sports club

Obesity study continued

- Comparison group received
 - written therapeutic advice during a physician visit at 0 and 6 months.
- Primary Outcome measure was a body mass index z score.



Intervention Results

- Active treatment group reduced total BMI and showed beneficial effects for BMI, fat mass and systolic blood pressure 12 months after starting the intervention program ($P < .05$).
- Illustrates the potential effectiveness of a comprehensive weight loss program for obese children.
- It did not specifically address children who are diagnosed with diabetes or kidney disease.



Results

- Few effective lifestyle interventions have been shown to be effective for obese children or adolescents and none for children and adolescents with diabetes or kidney diseases.



Further Study

- More effective programs that focus on increasing physical activity and healthy eating.
- An important knowledge gap exists about how best to organize effective and comprehensive weight loss treatment programs for obese and overweight children.
- Comprehensive pilot programs needed



Updated Research

- See next slides

Kidney Transplant Study

- Metabolic syndrome in kidney transplant patients:
 - 60% prevalence after 6 years post-transplantation.
- Recommendation:
 - moderate protein intake
 - low lipid diet
 - low calorie intake

Kidney Transplant Study

- Suggested gastric bypass for obese patients
- DiCecco recommended a team weight loss approach with pre-transplant obese patients
 - Uses education
 - Support
 - Medical nutrition therapy
 - Physical therapy
 - Psychological support



Kidney Disease Study

- Prophylaxis and therapy of Metabolic Syndrome in children with CKD, on dialysis, and after Rtx, consist of
 - Physical activity
 - Dietary modifications

Heart Transplant Study

- Interventions
 - Bibliotherapy weight loss program
 - Bibliotherapy plus telephone contact weight loss program
 - Group: lost more weight and returned more 3-day diaries and self-monitoring postcards.
- Conclusion: minimal intervention program involving information plus limited professional contact may assist post-heart transplant patients with weight management.

Heart Transplant Study

- Community intervention pilot study
 - Evaluated effectiveness of wt. mgmt counseling
 - Vs. 6 month scholarship to a weight loss program for heart transplant patients.
 - Found significant differences for weight and cholesterol between weight management counseling and the weight loss program.
- Recommendation
 - More structured weight loss programs

Diabetes Study

- Weight control is a large portion of treatment intervention for diabetes. (17-19)
- Evaluation consists of analyzing the effects of a program that combined several weight loss strategies and diabetes control for overweight patients with type 2 diabetes.
- The C therapy group and the S/C therapy group had significant weight loss ($P < .001$).



Diabetes Study

- The TODAY study
 - Test three approaches
 - Metformin
 - Metformin plus rosiglitazone
 - Metformin plus an intensive lifestyle intervention
 - The principal goal of the TODAY Lifestyle Program (TLP) is to decrease baseline weight of youth by 7–10%
 - Through changes in eating and physical activity habits, and to sustain these changes through ongoing treatment contact.

Diabetes Study

- Vignettes describing an adolescent with **obesity** suffering from **diabetes** were administered to 626 undergraduate students (age $M = 19.15 \pm 1.84$).
 - Participants read about the five intensive treatment options
 - Descriptions of expected benefits
 - Side effects
 - And were asked to rate the acceptability of each treatment using an adapted version of the **Obesity Treatment Acceptability Questionnaire**.



Diabetes Study Continued

- Post-hoc analyses revealed MSFT and eHealth approaches were more acceptable than residential, surgical, and pharmacological approaches.
- Conclusion
 - Results indicate consumers prefer approaches that can be conceptualized as increased “dose” of traditional family-based behavior therapy for obesity.



Diabetes Study Continued

- Results: Six-month improvements were sustained at 12 months in weight management vs control, Conclusion:
- The Bright Bodies weight management program had beneficial effects on body composition and insulin resistance in overweight children that were sustained up to 12 months.

Obesity & Physical Activity Study

- Wiegel et al conducted an outpatient program aimed to help obese children establish a healthy lifestyle and lose weight.
- Intervention
 - physical activity
 - nutritional education
 - coping strategies
- Active treatment group reduced total BMI and showed beneficial effects for BMI, fat mass, and systolic blood pressure ($P < .05$)



Physical Activity Study

- Review study
 - Evaluated weight loss interventions for obese adolescents
- Authors
 - Examined the amount of physical activity participation versus describing effective studies for weight loss



Physical Activity Study

- Study:
 - School-based physical activity programs had a positive effect on physical activity levels
- Recommendation:
 - Combination of printed educational materials and school curriculum changes promoted physical activity

Obesity Study

- Review study
 - Oude Luttikhuis et al
 - examined 54 lifestyle treatment studies that focused on
 - Diet
 - Physical activity or behavior change
 - 10 studies that used drug treatment
- Results:
 - Lifestyle programs can reduce the level of obesity in children
 - Combination of orlistat or sibutramine combined with a lifestyle program was also effective in reducing obesity, although with adverse effects



Obesity Study Continued

- Key components of a successful weight management program
 - Increase in physical activity
 - Dietary modification
 - Targeting reduction in sedentary behavior
 - Involving parents in treatment
 - Employing behavioral techniques

Obesity Study Continued

- These approaches produce modest improvements in weight-related outcomes
 - 10-20% decrease in percentage overweight or 1-3 unit kg/m² change in body mass index [BMI])
- They increase physical fitness, enhance psychosocial functioning, and improve cardiovascular and metabolic health.