

Shelley Kirk, PhD, RD, LD

Assistant Professor, Center Director of HealthWorks!

Department of Pediatrics; Center for Epidemiology and Biostatistics

Description of Research:

The treatment of pediatric obesity supported by the medical community is a moderate restriction in calories by modifying intake of fat and simple sugars, along with an increase in energy expenditure through more physical activity. However, this approach is associated with only limited success. As a result, overweight children and adolescents are seeking alternative approaches to weight management, such as diets that modify the type and amount of carbohydrates. However, at this time there is limited data on the safety and efficacy of these diets, particularly with younger children. The focus of Dr. Kirk's research is to compare the safety and efficacy of a low carbohydrate and a reduced glycemic load diets to a more standard dietary intervention for the management of pediatric obesity (i.e. portion-controlled, moderate fat, high carbohydrate diet). The currently funded clinical trial will involve 150 overweight children (ages 7 to 12) who will be randomly assigned to one of the three diet groups for 12 months. The effects of each diet will be determined by measuring changes in anthropometric measures (body weight, height, body mass index, waist circumference, body composition), other cardiovascular risk factors (blood pressure, fasting lipid profile, fasting glucose and insulin, and inflammatory markers of cardiovascular disease), and measures of psychological well-being and mental status. The results of this study will provide needed information to the public in their quest for safe, effective, and health-promoting weight management strategies for obese children. Such information is vital if we are to address the obesity epidemic in the United States.

Collaborations:

Dr. Kirk collaborates with Drs. D'Alessio and Saelens studying the efficacy of a low carbohydrate and low glycemic load diet for management of pediatric obesity, and with Dr. Inge in follow-up of subjects undergoing bariatric surgery. She also works with Dr. Xanthakos on the analysis of the HealthWorks! clinical outcome data with assessing liver function in obese children. As a new member, Dr. Kirk has not used DHC cores.

Representative Data:

Table 4. Predicted changes in clinical measures with change in BMI z score

Clinical measure	Predicted mean change in clinical measure*
Blood pressure	
Systolic (mm Hg)	-1.0
Diastolic (mm Hg)	-1.3
Fasting lipid profile	
Total cholesterol (mg/dL)	-5.5†
Triglycerides (mg/dL)	-11.3†
LDL-cholesterol (mg/dL)	-4.5†
HDL-cholesterol (mg/dl)	+1.3†
Insulin (μ U/mL)	-2.9†

* Based on a mean change in BMI z score of -0.15 SDs.

† $p < 0.05$, results of linear regression analysis ($n = 160$ to 177), indicating a statistically significant relationship between change in clinical measure and change in BMI z score.

In linear regression analysis, change in BMI z score was found to be significantly related to change (improvement) in total cholesterol ($p < 0.001$), triglycerides ($p < 0.01$), LDL-cholesterol ($p < 0.05$), HDL-cholesterol ($p < 0.05$), and insulin ($p < 0.01$). The predicted change in clinical measures for a decrease of 0.15 SD (the mean decrease in BMI z score in this population) is also shown. Table 4 from *Obes Res*, 2005; 13:876-882.