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Fit Kids/Fit Families: A Report on a Countywide Effort to Promote Healthy Behaviors

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ABSTRACT

Introduction: Funded by the Wisconsin Partnership Fund for a Healthy Future and Aurora Health Care, Fit Kids/Fit Families (FKFF) is a multidisciplinary, family system approach to weight management that was developed and implemented by a community-academic partnership with the goal of reducing and preventing childhood overweight and obesity, increasing physical activity, and improving overall family health.

Program Description: A sample of Washington County children and their families participated in this 12-week program, which promoted healthy lifestyle changes. Data was collected pre- and post-intervention on age, height, weight, body mass index (BMI), body circumference measurements, child and family habits, and child self-esteem. A weekly nutrition, activity and behavioral log captured behaviors. Weekly 2-hour meetings in a community setting using a dietician, behaviorist, and exercise specialist addressed each of these areas.

Results: FKFF has served 68 children and their families. Two-thirds are female; the mean age is 10.4 years (age range, 5-16). Both parents (96%) and children (81%) demonstrated improved knowledge and attitudes regarding healthy lifestyle changes. Logs report that 59% of the children increased their physical activity and 32% reduced their sedentary activity. While 81% improved and 13% maintained BMI, 74% of the children showed decreased total body circumferences. Nearly two-thirds demonstrated improved self-esteem on the Rosenberg Self-Esteem Scale.

Conclusion: Preliminary results suggest FKFF has an effect on healthier nutritional choices, increased physical activity, decreased sedentary activity, overall healthier behaviors, and body circumference and BMI reductions.

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INTRODUCTION

Overweight and obesity are prevalent and associated with health problems in virtually all populations. Recent estimates from the National Center for Health Statistics suggest that 32% of US adults >20 years of age are obese, and an additional 34% are overweight.[1] The percentage of young people who are overweight has more than tripled since 1980, with 16% of children in the United States aged 6-19 years considered overweight.[2]

Wisconsin ranks as the 28th heaviest state in the United States.[3] The Washington County Health Department's "Healthy Washington County Health Improvement Plan, 2000-2005," indicates that 59% of adults in the county are at risk of becoming overweight, and 53% engage in insufficient physical activity. In addition, 55% consume fast food weekly, and only 29% of adults have sufficient intake of vegetables.[4] The Wisconsin Youth Risk Behavior Surveys (2001, 2003, and 2005) estimate that 24% of all students are at risk for overweight or are overweight based on their Body Mass Index (BMI.) Only one-third reported eating ≥3 servings of fruit, and 18% reported eating ≥3 servings of vegetables the day before the survey. Approximately 15% reported not eating breakfast at all in the last 7 days, and nearly 60% had gone without breakfast 2 or more days. In 2001, 64% of the students reported exercising or participating in vigorous physical activities that made them sweat or breathe hard for at least 20 minutes on ≥3 of the past 7 days. In 2005, the prevalence of students reporting vigorous activity increased significantly (67%); however, this reflects increases among males not females. Also, 26% of students reported watching ≥3 hours of television per day on an average

school day.[5] One of the 11 *Healthiest Wisconsin 2010* health priorities is to improve health status related to overweight, obesity, and lack of physical activity among Wisconsinites.[6]

According to a 2005 review by the US Preventive Services Task Force, childhood overweight is associated with a higher prevalence of risk factors for adverse health outcomes, such as insulin resistance, elevated blood lipids, increased blood pressure, and impaired glucose tolerance.[7] Severe childhood overweight is associated with immediate morbidity from conditions such as slipped capital femoral epiphysis, fatty liver, and sleep apnea. The Task Force also found fair evidence that BMI is a reasonable measure for identifying children and adolescents who are overweight or at risk of becoming overweight. At the same time, the US Preventive Services Task Force's 2005 review found insufficient evidence that behavioral or other preventive interventions are effective in treating overweight children—a knowledge gap that additional studies can address.

Fit Kids/Fit Families (FKFF) was developed and implemented to meet the needs of overweight youth in Washington County, Wis—a top priority of the county health improvement plan—and to evaluate the effectiveness of an evidence-based program tailored to this population.

PROGRAM DESCRIPTION

In 2004, Aurora Medical Center of Washington County expanded community nursing outreach services to address a *Healthiest Wisconsin 2010* health priority. Aurora and the Washington County Health Department, the YMCA Kettle Moraine, and the West Bend schools formed a multidisciplinary partnership that identified a common interest in developing and implementing a program designed to increase healthful behavior for overweight children. A local pediatrician and a University of Wisconsin School of Medicine and Public Health (UWSMPH) faculty member agreed to advise this coalition.

The FKFF project team established the following objectives: helping the children maintain or decrease BMI, increase physical activity, decrease sedentary activity, improve self-esteem, and increase overall knowledge about healthy lifestyle behaviors. This project advances a *Healthiest Wisconsin 2010* health priority through the promotion of good nutrition and increased physical activity for overweight children and their families by utilizing a multidisciplinary, community-based, family system approach that engages local health care professionals with community agencies.

Aurora Medical Center of Washington County applied for and received a 3-year grant in December 2004 from the UWSMPH's Wisconsin Partnership Fund for a Healthy Future to establish FKFF in Washington County. The project manager and the project coordinator were both Aurora employees, while the exercise component, specialized services, and project evaluation were subcontracted out. A project Advisory Committee, consisting of project partners and parents of participants, guided project design to meet the community needs and expectations. The Aurora Health Care Research Subjects Protection Program reviewed the project in January 2005 and determined that the intent was not research, and as such it was exempt from Institutional Review Board (IRB) oversight. Nevertheless, project leadership built in appropriate protection for the rights of participants, maintaining confidentiality and reporting data in the aggregate.

FKFF is based on the evidence-based pediatric weight management program Committed to Kids (CTK), now called the Trim Kids Program.[8-11] Developed and tested by Louisiana State University Health Sciences Center, under the direction of Melinda Sothern, PhD, this program has met the rigorous scientific review process and qualifications of the National Cancer Institute (NCI) and is now on the NCI's Research Tested Intervention Program (RTIP) Web site.[12] Select materials from a family-based program, SHAPEDOWN, which was developed by the University of California-San Francisco School of Medicine, were integrated into the CTK framework by the FKFF team.[13-15] The FKFF staff, consisting of a registered nurse, a registered dietician, an exercise specialist, and a behavior specialist, was trained by the originators of the CTK program.

FKFF is a 12-week program that focuses on the core objectives of nutrition, exercise, and behavioral components. Program participants are self-selected or referred by their physician. A child's weight is the criteria for participation, and all participants are overweight or at risk of obesity. Children with eating or mood disorders are excluded. The program was originally to be provided free of charge to participant families. However, the project Advisory Committee felt that some level of financial buy-in would enhance commitment to the program. The fee was set at $120 for the 12-week program ($10/week, an amount similar to that charged by commercial weight management programs). Families pay as much as they are able or have the opportunity to receive full scholarships. A maximum of 12 children is enrolled in each FKFF class.

FKFF has been offered 3 times per year with ses-

sions typically starting in the months of February, May, and September. During each 12-week session, the group meets 1 time per week for 2 hours. Sessions have been conducted in both a local school and at the YMCA. The FKFF curriculum consists of lessons equally divided between nutrition, exercise, and behavior. Each child receives a logbook and is asked to complete a section on each of these areas daily. Instructors review the logbooks weekly, providing stickers and comments to motivate and reinforce behavior change. During the weekly meetings, a dietician, behaviorist, and exercise specialist work with the children and families on strategies that promote lifestyle changes. Some sessions focus on the entire family, while others are dedicated specifically to the child or parent, in which case the groups meet separately. Due to the variability in the children's age, special consideration is given to address age-specific issues. FKFF does not promote weight loss through dieting. Rather, the program strives to help participants maintain or improve BMI scores through healthy lifestyle changes.

The FKFF dietician provides a nutrition plan appropriate for each child and parent (if desired). It is used as a guide as they learn about food groups. Lessons include identification of carbohydrates, proteins, and fats in various foods; portion sizes; label reading; beverage selection; and choices when dining out—including school lunches, holiday, and party eating. The children are involved in preparing a snack each week and sampling a variety of foods. Emphasis is placed on the importance of eating breakfast and regular meals including snacks, soda alternatives, and creative ways to prepare fruits and vegetables. Shopping with parents and eating family meals together are encouraged.

Two exercise specialists provided by the YMCA Kettle Moraine organize the activity portion of the FKFF. The children learn about core muscle groups and are given exercise bands to take home for practice. The games and activities provide fun aerobic exercise. The children exercise so their heart beats fast and they breathe hard for 30 minutes in each session. Parents and staff are encouraged to participate in the activities with the children. Goal setting is done weekly to increase the amount of time spent doing physical activity at home. The logbook requires monitoring sedentary activity by recording time spent watching TV, playing video games, and using the computer ("screen time"). One hour of physical activity is recommended each day, as well as families enjoying activities together. A list of Washington County recreational resources is provided to each family.

The behavioral lessons are provided by a specialist in disordered eating—a professional with expertise in distortions in growth caused by a disruption in the ability to regulate food intake. The key focus is the importance of self-care and self-esteem utilizing a team approach, with parents, kids, and staff working together and encouraging families to do the same. The program emphasizes awareness of feelings and using healthy coping skills to deal with them. The children are taught how to self-monitor food intake by becoming aware of feelings of hunger, appetite, and satiety. Practicing how to eat mindfully and handle relapses is demonstrated. The issue of power struggles between children and parents is addressed by providing guidelines about the division of responsibility in eating and feeding. Careful attention is paid to restrictive eating patterns.

Measures of Evaluation

In 2000, the Centers for Disease Control and Prevention (CDC) recommended use of body mass index (BMI) to describe the weight status of children and adolescents, designating BMI-for-Age of ≥95% as "overweight" and BMI-for-Age of ≥85% and <95% as "at risk for overweight."[16] For instance, if a child's BMI-for-Age falls at the 85th percentile, it means that he/she is at risk of being overweight, and there are only 15 out of 100 children of the same age and gender in the reference population who have a higher BMI-for-Age. For this study, data was collected, pre- and post-intervention, on age, height, weight, BMI, body circumference measurements, child and family habits, and child self-esteem. A FKFF weekly logbook captured behaviors, including foods eaten and amount of time spent in physical activity and sedentary activity. In week 2, pre-test measures were recorded (ie, height, weight, and body circumference) and BMI was calculated. Parents completed a family habit inventory, which is a 48-item scale that evaluated family food consumption, activity, and parenting. The children completed a child's habit inventory, a 36-item scale that reflected current eating, exercise, and other related habits. Each child also completed the Rosenberg Self-Esteem Scale in a 5-point Likert scale format, allowing for a score range of 0-50, with 50 being high self-esteem.[17] In week 11, the same inventories were completed and measurements were repeated.

Overwhelmingly, parents on the Advisory Committee did not want a program that focused solely on weight loss. Many indicated they tried different weight loss strategies with no success. The parents stressed the importance of wanting their children to learn healthy lifestyle changes; this sentiment greatly influenced the

development of the core measurements. Parents also expressed the desire for their children to feel better about themselves. Many of these children have experienced social isolation, strained peer relationships, and bullying. One child explicitly stated her goal was to wear a 2-piece bathing suit like her friends. Therefore, while BMI scores were calculated and used as a quantifiable measure, they were not overly emphasized. Each of the core evaluation measurements was linked back to 1 of the grant's objectives in order to measure the program's effectiveness.

Early Results

To date, FKFF has served 68 Washington County children and their families: 23 boys (34%) and 45 girls (66%.) The mean age was 10.4 years, with an age range of 5-16 years. All the participants were ≥85th percentile for BMI-for-Age, and as such overweight or at risk for overweight.[18] Approximately 40% of participants asked for scholarship assistance. The program yielded an 84% completion rate.

A primary FKFF objective was to promote and educate the families on healthy lifestyle changes. An analysis of pre- and post-session parent and child habit inventory data revealed that 96% of the parents and 81% of the children showed scores indicating improved knowledge and attitudes regarding healthy lifestyle changes. A paired-samples *t* test was calculated to compare the mean pre-test score to the mean post-test score for individual and family habits. The mean score on the child pre-test was 103.37 (SD=12.32), and the mean score on post-test was 114.27 (SD=12.8). A significant change from pre-test to post-test was found ($t(66)=-6.310$, $P<.0001$). Parent scores yielded similar findings.

Another project objective was to challenge the children to increase the amount of time they engaged in physical activity, at the same time reducing time spent in sedentary activities. While the children reported that maintaining a logbook was laborious, 89% of children consistently completed them. Parents were not asked to complete them. Based on the logs, 59% of the children increased their physical activity and 32% reduced their sedentary activity. The parents' estimates were higher, with 100% reporting a noticeable increase in their child's physical activity and 97% reporting decreased sedentary activity.

Maintaining or improving BMI by healthy lifestyle change is another project objective. Thus, BMI and body circumference measurements were taken pre- and post-program and results were analyzed. Eighty-one percent of the children improved, and 13% maintained their BMI. A paired-samples *t* test was calculated to compare the mean pre-test score to the mean post-test score for BMI. Pre-test mean was 30.00 (SD=6.533), and post-test mean was 29.14 (SD=6.193). A significant decrease from pre-test to post-test was found ($t(67)=7.710$, $P<.0001$). Seventy-four percent of the children showed decreases in total body circumferences. A paired-samples *t* test was calculated to compare the mean pre-test score to the mean post-test score for body circumferences. The pre-test mean was 370.06 cm (SD=64.63), and the post-test mean was 362.51 cm (SD=60.41). A significant decrease from pre-test to post-test was found ($t(64)=3.44$, $P<.0004$).

Improving the children's self-esteem was also a project objective. As measured with the Rosenberg Self-Esteem Scale, the results show that 65% of the children experienced improved self-esteem. A paired-samples *t* test was calculated. The pre-test mean was 36.31 (SD=7.147), and the post-test mean was 39.54 (SD=8.534). A significant increase from pre-test to post-test was found ($t(65)=2.961$, $P<.0004$).

Finally, the program promoted healthy food choices. The children reported data on healthy and unhealthy food choices in their daily logbooks. As noted previously, they reported that this exercise was laborious, which may lead to inaccuracies. Anecdotal evidence obtained through parent reports suggested many children tried new foods, reduced unhealthy food choices, and actually read labels.

DISCUSSION

FKFF was in its early stages, yet this pre- and post-analysis of participants in a youth healthy lifestyle program provides some evidence that such an intensive effort is effective in changing behaviors and intermediate outcomes, such as improved knowledge and attitudes about healthy behaviors, increased activity, maintained or decreased BMI, decreased total body circumference, and improved self-esteem.

Limitations to this project include the lack of a control group with which to compare the program's effects. Without such a comparison group, we cannot know if non-program effects were present, such as environmental influences. Another limitation is the reliance on self-recording of behavior as measures. Subjects relayed their perception that such recording was tedious, and therefore it is possible that not all behavior was diligently reported. This limitation may be why parents' estimates of their children's increases in physical activity were substantially greater than the children's own estimates. This project also does not include follow-up

measures beyond the 12-week FKFF curricular framework. Collecting measurements at 6 months and 12 months post-program would give some indication of the long-term effect of FKFF participation.

This project involved a community-academic partnership in developing a health improvement intervention for children and families in Washington County. Based on the information provided to the Aurora Health Care Institutional Review Boards at the onset of the project, a decision was made to exempt the project from IRB oversight because "the intent of the project is not research." However, as evidenced by this report, this community project, while not designed as a clinical study, does qualify as community-based participatory research.

This program is being replicated in Waukesha County, where local staff observed the Washington County program in action and received training using the video from the original FKFF training. Curriculum materials developed for Washington County participants are also being used. FKFF proved to be easily transportable. Interest in establishing a similar program has come from Marinette, Manitowoc, Green Bay, and Milwaukee, Wis.

Two modifications to the FKFF program have been developed based on the first 2½ years of experience. Project leadership participated in a sustainability planning process, based on the model developed by LaPelle et al.[19] This process calls for public health programs to redefine scope of services and more creatively use resources, by aligning goals and services, selecting appropriate and affordable services, finding new funding, adjusting staffing patterns, and creating demand for services—or some appropriate combination of these factors. To facilitate enrollment and make it less labor intensive, a referral network and outreach process is being further developed, including providing physicians with a screening tool and developing additional partnerships. A marketing plan provides for presentations at community events and to businesses. Other efficiencies include the following: (1) the project coordinator has received training in motivational interviewing and assumed the behavioral health duties, (2) staffing has been streamlined by sharing personnel between sites, and (3) intake assessment is being done during the interview time. To increase effectiveness, an aftercare and maintenance component has been added. After the completion of the program, participants and families move to the action stage and continue to meet weekly for another 12 weeks under the guidance of YMCA staff, practicing new skills through a variety of formats and involvement of both participant and family at different levels. Following the second 12 weeks, weeks 25-52 consist of the maintenance stage, with participant families meeting once a month at sponsored activities. Participants are invited to attend the YMCA's weekly Fun Family Fitness program for 1 year at no cost, and YMCA scholarships have been arranged.

FKFF has been allowed to carry over unspent funding from the Wisconsin Partnership Fund through 2008, while Aurora Medical Center and the YMCA are providing additional resources to support the program. During 2008, a total of 8 FKFF sessions will be completed, 4 each in Washington and Waukesha counties. With these additional results, a final evaluation of FKFF will be conducted.

CONCLUSION

While this nonexperimental design is inconclusive, the results are encouraging. In light of the recent US Preventive Services Task Force review concluding a lack of sufficient evidence of effectiveness of such interventions in overweight children, further experimental studies in this area are warranted and important to help guide clinicians and patients. Lessons learned from FKFF can be useful to others as this type of community health improvement intervention is modified and replicated in other areas. Obesity and overweight are serious health risks and require population health approaches to meet the challenge of improving health status in Wisconsin and the United States.

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