Journal of Pediatric Nursing (2015) **30**, 821–828

The Feasibility and Efficacy of Healthy Weight Management Program for Low Income Chinese American Overweight and Obese Children in a Primary Care Clinic

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Received 25 July 2014; revised 26 January 2015; accepted 27 January 2015

Key words:
Childhood obesity;
Community;
Primary care clinic;
Chinese American

Introduction Childhood obesity is one of the most prevalent public health concerns.
Method: A pre and post study design was used to explore the efficacy of an obesity prevention program. Children had weight, height, blood pressure, and waist circumference measured, and completed self-reported questionnaires on food intake, knowledge, self-efficacy, and health-related quality of life. Parents completed demographic and acculturation surveys.
Results: Seventy children participated in the study. Results demonstrated significant reduction of BMI, systolic blood pressure, and fast food consumption and improvement of self-efficacy, knowledge, and quality of life.
Discussion: Childhood obesity intervention is feasible and has short-term efficacy.

OBESITY IS PROBLEMATIC in children of all ethnic and cultural backgrounds in the United States (US). Recent data suggests that 25% of Chinese American children and 30% of low-income children in California are overweight or obese (Au, Kwong, Chou, Tso, & Wong, 2009). Although Asian American children do not have a higher prevalence of obesity compared to other ethnicities, the percentage of Asian American children in California at risk for obesity has risen fast in the last decade (Asian Pacific Fund, 2008). Thus, it is crucial to develop effective obesity interventions for high risk immigrant children from low-income families.

Obesity in children is associated with many medical and psychosocial problems (Noal, Menezes, Macedo, & Dumith, 2010). A recent study indicates that obese children and adolescents are 1.5 to 2 times more likely to develop metabolic syndrome and insulin resistance compared to normal weight children (Weiss et al., 2004). In obese children, a reduction of BMI of only 5% is associated with improvements in insulin sensitivity and lipid profiles (Savoye et al., 2007). Because many obese children will become obese adults, (Rademacher et al., 2009) with increased susceptibility to type 2 diabetes mellitus (T2DM) and CVD (Lloyd, Langley-Evans, & McMullen, 2011), healthy weight management in overweight and obese children is critical.

Primary care clinics provide an ideal setting for the development of obesity management programs in high risk minority children because of their accessibility (Jacobson & Gance-Cleveland, 2011). Primary care clinics allow access and outreach to large proportions of the community, especially underserved, low-income, and new immigrants. Partnership with community centers or other settings where

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http://dx.doi.org/10.1016/j.pedn.2015.01.026
0882-5963/

children can gain access to recreational opportunities is another important step towards developing a successful program, especially for low-income families with less available resources (Duggins, Cherven, Carrithers, Messamore, & Harvey, 2010). However, few studies have been conducted in primary care settings, or in collaboration with local community centers for underserved low-income immigrant children (Dolinsky, Armstrong, Walter, & Kemper, 2012; Duggins et al., 2010). Thus, we developed a healthy weight management program (iStart Smart) targeting low-income Chinese immigrant children co-located at a community-based center and a primary care clinic. The purpose of the study was to explore the feasibility and short term efficacy of the iStart Smart program for overweight and/or obese Chinese American children in a community-based and primary care setting.

Study Methodology

This study utilized a pre and post study design with a total of 70 overweight and/or obese Chinese American children included in the study. To be eligible for participation, children were: (1) 7 to 12 years old; (2) had a body mass index (BMI) percentile above the 85th percentile, as defined by the Centers for Disease Control (Centers for Disease Control and Prevention, 2007); (3) self-identified as Chinese and/or Chinese immigrants; (4) lived with at least one parent in the same household; (5) able to speak and read English. In addition, the child's parents were able to speak English, Mandarin, or Cantonese and were able to read in English or Chinese. Children with chronic health problems that included any dietary modifications or activity limitations (e.g., diabetes, exercise-induced asthma) were excluded.

Study Procedure

Upon approval from the Committee on Human Research, 7- to 12-year-old children who met the inclusion criteria and their parents were invited to participate in this study. A trained research assistant worked with health care providers in a primary care clinic on recruiting overweight and obese children who met the inclusion criteria. Potential eligible participants received an introduction letter explaining the study and research consent form to take home. Parents who were interested in the study signed and returned the consent form, providing their names and contact information to the research team.

After parents gave informed consent and children provided verbal assent, baseline data were collected. Children in the study had their weight, height, blood pressure (BP), waist and hip circumference measured. They also wore ActiGraph monitors (ActiGraph GT1M, ActiGraph, Inc, Pensacola, FL) for one week to measure physical activity levels. Additionally, children completed questionnaires regarding dietary intake, self-efficacy, physical activity, and health-related quality of life at baseline (T_0), 2 months (T_1) and 6 months (T_2) post-baseline. Parents completed questionnaires regarding demographic data and acculturation level at baseline. We have used these surveys in previous pilot work that demonstrated adequate reading level and reliability of these surveys with both children and parents (Chen, Kwan, Mac, Chin, & Liu, 2013).

iStart Smart Program Overview

The intervention, iStart Smart, was based on modifications to the ABC program developed previously by the first author and the national We Can! (Ways to Enhance Children's Activity & Nutrition) program that was developed by the National Institute of Health (National Institute of Health, 2013). The intervention was also based on social cognitive theory (Bandura, 2004). The theory indicates that cognitive factors, behavioral factors (including other personal factors such as preferences and competencies), and environmental influences are interactive and integrated determinants. The iStart Smart program aimed to address these concepts by increasing children's and parents' self-efficacy through setting realistic and achievable goals, and providing necessary skills to achieve mastery. The program intended to improve self-efficacy in maintaining healthy weight and healthy lifestyles.

The iStart Smart program utilized small group teaching with up to ten children in each group. Children in the program are stratified by age (7–9 vs. 10–12 years) for 8 weeks of developmentally- and culturally-appropriate lessons and activities. The parents and children met separately for small-group sessions. Children attended 8-weekly, 2 hour small group sessions while parents attended a single 2-hour parent workshop.

The 8-weekly program for children was led by a bicultural, bilingual research assistant and included 60 minutes of interactive health curriculum, and 60 minutes of physical activity each session. The health curriculum encompassed educational play-based activities aimed to improve children's self-efficacy and facilitate their understanding and use of critical thinking and problem-solving skills related to nutrition, physical activity, and coping with stress. Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen, Powell, & Christenson, 1985). The intervention intended to improve self-efficacy and self-competence via interactive activities aimed to promote internal motivation to change health behaviors and maintain a healthy weight. Educational video clips were interwoven into each classroom session as a fun way to reinforce concepts learned in the program. The iStart Smart program also utilized high-quality and age-appropriate online resources from the United States Department of Agriculture (http://www.choosemyplate.gov/); The Child and Youth Health Network of Eastern Ontario, Canada (http://www.cyhneo.ca/); and the Department of Public Health Services at Clemson University (http://www.clemson.edu/hehd/departments/public-health/). These videos provided accurate and entertaining content that supplement iStart Smart's interactive classroom activities. Video clips used story-telling to teach health topics; hands-on activities accompanied each video clip to reinforce the concepts being taught. For