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Diabetes Obesity-Wellness Opportunity Program (DOWOP) Evaluation

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Abstract

The aim of the study was to evaluate Diabetes Obesity - Wellness Opportunities Program (DOWOP) for overweight and obese adolescents aged eight to 14 years.

The study was conducted over 14 weeks at Victor J. Cassano, Sr. Health Center in Dayton, Ohio. Thirteen weekly nutrition, exercise and cognitive presentations were held. Cooking class was held on week thirteen. Participants completed food and activity diaries. The program sessions focused on healthy eating, increasing physical activity, decreasing sedentary behavior and supporting participants maintain healthy lifestyle.

Nurses recorded BMI and waist circumference at baseline, week 7 and week 14. Program administrators were interviewed at baseline and week 14. Satisfaction and intention survey was administered on week 14. Program evaluation questionnaire were completed by adolescents and their parents.

Fourteen participants completed the program and a high retention rate (91%) was achieved. Eighty three percent of participants decreased BMI and waist circumference. Both adolescents and their parents expressed high satisfaction of the program activities. Adolescents strongly agreed to continue exercising and eating healthy and parents reported increase in knowledge from the program.

DOWOP was successful in meeting its goals to change behavior, increased knowledge, and decreased BMI and waist circumference. The program was very innovative because it incorporated cognitive component, parents' involvement, and used culturally relevant dance and movement. The program was popular with participants as well as program administrators.

Table of Contents

CHAPTER ONE

1.1 Introduction.....	5
1.2 Statement of purpose.....	6
1.3 Significance of the study.....	7
1.4 Methodology.....	7

CHAPTER TWO

Literature Review.....	9
------------------------	---

CHAPTER THREE

DATA PRESENTATION AND ANALYSIS	14
3.1 Sample.....	14
3.2 Program Description	14
3.2(a) Exercise Component.....	15
3.2(b) Nutrition Education Component	16
3.2(c) Parents' Psychology Session	17
3.2(d) Daily Diary Component	17
3.3 Study Measures.....	18
3.4 Results.....	19
3.5 Participants' Feedback	25
3.6 Program Administrators' Feedback	26
3.7 Discussion.....	26
3.8 Conclusion	30
REFERENCES.....	31
APPENDIX 1.....	34

APPENDIX 2.....36

List of Tables

Table 1: DOWOP Components15

Table 2: Study Measure Flow Chart.....19

Table 3: Mean (Range) Values of Age, Height, Weight, BMI and Waist Circumference at the
Start and End of the Program.....20

Table 4: Adolescents Satisfaction with DOWOP21

Table 5: Adolescents’ Intentions to Exercise and Eat Healthy and Perception of
Parent’s Help.....22

Table 6: Reasons that Adolescents Exercise and Make Healthy Food Choices at Home23

Table 7: Parents’ Satisfaction with DOWOP Activities24

Table 8: Parents’ Increased Knowledge on Food Choices and Daily Exercise.....24

Table 9: Parents’ Perception of Children Enjoyment of DOWOP.....25

CHAPTER ONE

1.1 Introduction

Childhood obesity has been a major public health concern for the last three decades. Since the 1970's, the prevalence of obesity has more than doubled for pre-school children aged 2-5 years and adolescents aged 12-19 years, and it has more than tripled for children aged 6-11 years. In the United States, 16.3 percent of children and adolescents between the ages of 2 and 19 are obese (Institute of Medicine, 2009).

The increased number of obese children and youth in the United States has led policy makers to rank it as a critical public health threat. Obesity developed in childhood, and particularly in adolescence, is associated with morbidity and mortality in adulthood from asthma, diabetes (type2), hypertension, orthopedic complications, psychological stigmas and effects, and sleep apnea (America Obesity Association, 2005). In 2000, it was estimated that 30 percent of boys and 40 percent of girls born in the United States are at risk for being diagnosed with type 2 diabetes at some point in their life (Institute of Medicine, 2004). Type 2 diabetes accelerates the development of cardiovascular disease, stroke, blindness, kidney failure and limb amputation (North American Association for the Study of Obesity, 2007).

There are, however, many measures in place to combat childhood obesity. In 2001, the United States Surgeon General issued a Call to Action to prevent and decrease overweight and obesity to stimulate the development of specific agendas and actions targeting this public health problem (U.S. Department of Health and Human Services, 2001). In 2002, Congress charged the Institute of Medicine (IOM) with developing a prevention focused plan to decrease the number of obese children.

States and communities are also responding to the obesity epidemic by working to create environments that support healthy eating and active living. In 2003, the Arkansas legislature, for instance, passed Act 1220, a comprehensive and coordinated approach to combat childhood obesity (State of Arkansas, 2007). Components of the State of Arkansas law included the creation of nutritional and physical activity advisory committees in every school district to implement new standards and develop applicable local policies and prohibition of student access to food and beverage vending machines in all Arkansas elementary schools.

The severity of this epidemic and the resulting cost to individuals, communities and the nation has recently inspired non-governmental organizations to take action to combat obesity. One such organization is the Grandview Foundation, which supports the Diabetes Obesity - Wellness Opportunity Program (DOWOP). DOWOP is a 14 week program for children in Dayton who have body mass index (BMI) greater than the 85th percentile and their parents/guardian. The program offers a safe environment where children and their parents participate in weekly 90 minute sessions featuring nutrition education and physical exercise, as well as a program to change beliefs and behaviors about lifestyle activities and food choices, with the goal of reducing their weight.

1.2 Statement of purpose

The purpose of this study is to evaluate the Diabetes Obesity - Wellness Opportunity Program in order to enhance its effectiveness in achieving program goals. The specific objectives of the study are:

- (1) To identify rationale and supporting evidence for DOWOP.
- (2) To determine the quality of DOWOP's action design.

- (3) To identify whether the program was implemented as planned.
- (4) To determine whether the program had positive outcomes.

1.3 Significance of the study

DOWOP is non-profit program delivered by voluntary resource personnel and administered by the Grandview Foundation. Evaluation of DOWOP is an important component of the health intervention because it will help program designers make informed judgments about the effectiveness of the program. This study will, among other benefits, identify promising practices for the program designers. It is also expected to give DOWOP implementers a formal way of assessing the program. In sum, this study will foster collective learning, support accountability, will reduce uncertainty, and will guide improvement and innovation of community interventions on childhood obesity.

1.4 Methodology

The methodologies this study employed include surveys and interviews with program designers and participants. The focus is DOWOP's innovative approach, its ability to reach the target population, and the program's impact on obesity-related knowledge and behaviors.

Information was obtained from the program designers and implementers as well as participants and parents in the 2009 fall session, to assess the effectiveness of the program. Meetings were held with program designers to illicit information about the goals, objectives, achievements, and constraints of the program. This study made use of a pre-measurement conducted at the beginning of the 2009 fall session and post measurement conducted at the end of the session by the program implementers. Pre- and -post intervention information was

compared to determine the effectiveness of the program. At the end of the fall 2009 session, a questionnaire designed to illicit information regarding readiness and willingness to sustain the lessons learned, was administered to the children and their parents. Direct observation, through participation of DOWOP weekly meetings, was also used to obtain information about the programs impact.

CHAPTER TWO

Literature Review

This nation is in the midst of initiating policies and actions that are intended to combat the childhood obesity epidemic across many sectors, including schools, worksites, communities and health care. The nature of the obesity problem and the cost borne by the nation, states, and individuals, has inspired action at both the national and state levels to control childhood obesity. The Institute of Medicine (2004) states that although a number of organizations, industries, institutions and agencies must be involved in designing changes in obesity prevention programs, efforts cannot succeed unless they also engage the families, schools and communities that create the environments in which children live and their behaviors are formed. Obesity prevention involves a focus on energy balance, that is, calories consumed versus calories expended, so initiatives against childhood obesity must address factors that influence both eating and physical activity (Institute of Medicine, 2004). Programs are currently underway to increase physical activity and promote healthy eating among children and youth (Institute of Medicine, 2006). American children live in a society that has changed dramatically in the three decades over which the obesity epidemic has developed. Taking actions that could change children's dietary behaviors and make them active can help reduce the problem of overweight.

In a 2006 report, the Institute of Medicine states that childhood obesity intervention programs lack monitoring and evaluation, which has hindered the development of an evidence base to identify, apply and disseminate lessons learned and support promising childhood obesity efforts. Policy makers, program planners, program implementers and other interested stakeholders should evaluate all childhood obesity prevention efforts in order to develop quality interventions that use culturally relevant approaches and that meet the needs of diverse

populations and contexts (Institute of Medicine, 2006). According to Swinburne et al. (2007), obesity prevention programs should be evaluated thoroughly so that they can contribute to continuous program improvement to prevent obesity. Once effective interventions are identified, they can be replicated or adopted to specific contexts and circumstances, scaled up and widely disseminated (Institute of Medicine, 2005).

As actions are taken, evidence should be collected to assess whether these actions have made a difference in reaching childhood obesity prevention goals. Action should be based on the best available evidence as opposed to waiting for the best possible evidence. The challenge noted in the IOM *Health in the Balance* report is to develop a robust evidence base of effective intervention and practices (Institute of Medicine, 2005). Evaluation is central to identifying and disseminating effective initiatives at all levels of intervention.

Between May 2006 and February 2007, the Robert Wood Johnson Foundation contracted with the OMG Center for Collaborative Learning to conduct an evaluation of their eight childhood obesity prevention programs delivered at Injury-Free Kids Coalition (IFKC) sites to determine the programs' capacities and to assist the Foundation in identifying promising approaches that deserved further attention (Robert Wood Johnson Foundation, 2009). The assessment was done over an eight month period through document reviews, in-person interviews and program observation. A major finding from the evaluation was that the IFKC sites lent resources and credibility to the obesity prevention program. However, the obesity prevention work was not as easily integrated with the injury-free site as was predicted in the initiative design. The evaluation also showed that an overly ambitious set of goals for the program hindered the staff in delivering work of consistent quality across the multiple areas of focus.

In their evaluation of the “Loozit” community-based management program, O’Connor et al. (2008) administered questionnaires to the adolescent participants and their parents at the beginning and end of the program. Loozit is a group-based adolescent weight management program located in a medical care setting in Sidney, Australia. The program is based upon cognitive behavioral principles to change dietary and activity behaviors as well as social cognitive approaches to modify self-efficacy, motivation, perseverance and self- regulation. Seven 75-minute afternoon sessions were held weekly at the community health center for the first four weeks and one session each at two, four and five months. At two and five months, adolescents completed program evaluation questionnaires about aspects of the group sessions they rated most highly and they made suggestions for improvements to the program. Parents completed questionnaires about which aspects of the program they felt were most helpful for their child, and indicated how satisfied they were with the program. Adolescents’ suggestions for improving the Loozit program provided valuable input for further development of the program. For instance, feedback from participants indicated that future programs should incorporate a higher number of sessions for adolescents together with several concurrent sessions for parents during the initial stages. The study concluded that the Loozit intervention led to a significant improvement in participants’ blood pressure and self esteem but there was no significant change in their dietary fat intake, physical activity, and sedentary behavior.

The impact evaluation study by Lyle et al. (2008) on Welling Tonne Challenge (WC) concluded that the program achieved a modest weight reduction in participants, and changes in diet and physical activity that, if sustained, could lead to a significant benefit based on new evidence for prevention of diabetes. The Welling Tonne Challenge was a local health promotion project in rural New South Wales, Australia that aimed at mobilizing the community and

supporting overweight and obese residents to lose weight to reduce chronic diseases. Objectives of the program included; (1) community-wide effort to lose 1000 kg; (2) the promotion of healthy lifestyle behaviors such as increased consumption of fruits and vegetables and; (3) increasing participation in physical and incidental activity. For each objective, a range of strategies were developed and incorporated into a 12-week schedule of activities. Core activities included information sessions, supermarket tours, exercise circuits and participant weigh-ins. The information sessions for WC covered topics such as individual and public ‘costs’ of obesity, what are healthy foods, why physical activity is important and how to get moving, self esteem and food portion sizes. The Welling Tonne program had positive impact on participants but did not achieve its goal of accumulated weight loss of 1000 kg (Lyle et al., 2008).

The Kids Living Fit (KLF) program was a hospital-based intervention in Leesburg, Virginia to reduce body mass index (BMI) for children ages 8 – 12 years with BMI percentiles greater than 85. The KLF program included both physical exercise and nutrition education components. The exercise sessions were held for one hour weekly over 12 consecutive weeks. The objective of the exercise sessions was to expose the participants of the program to a variety of activity behaviors that could be perform independently following the conclusion of the program. These sessions were led by physical fitness trainer. The nutritional component included three lectures taught for 30 minutes once per month by a registered dietitian. During week one, balanced nutrition was taught. Week four focused on food portion sizes while week eight focused on making the best choices at fast food restaurants. An evaluation found that the KLF intervention was effective in decreasing BMI and waist circumference in children both “at risk” for becoming overweight and those who were overweight. The study however noted that the KLF intervention appeared to be more effective in the “at risk” group compared to the

overweight group. One important finding of the KLF study was that weight loss was sustained by the study participants after the program ended (Speroni et al., 2007).

Huberty et al. (2009) evaluated the Club Possible program (community collaborative after-school physical activity program for children ages 5-12 and their parents in Omaha) and concluded that the family components were an effective way to involve the family as a unit in physical activity and appeared to be a more effective strategy than programs involving only children. Site staff members were encouraged to be more creative in the physical activity choices so that the children could sustain the activities. However, the program participants did not report improved self-efficacy to do physical activity over baseline. Children 10 to 12 years reported an increase in enjoyment of physical activity. Club Possible staff was encouraged to have a stronger commitment to the program and more training on how to enable children to feel confident about their ability to be active and feel supported by others.

In 2006, Health Resource in Action was hired by the Williamsburg Community Health Foundation in Virginia to gauge the effectiveness of an obesity intervention program (Health Resource in Action, n.d). Health Resource in Action conducted a survey of 4,800 students, 1,700 parents, and 766 school staff members. Height and weight data of third, sixth, and seventh graders were analyzed. After two years of the program, another wave of height and weight data was analyzed and a follow up survey was conducted. Health Resource in Action is currently analyzing these data and determining whether students' and parents' attitudes and behaviors about healthy eating and physical activity have significantly changed after two years of intervention. Findings from the study will provide insight to the foundation about successes and challenges of the program as well as opportunities for the future.

CHAPTER THREE

DATA PRESENTATION AND ANALYSIS

3.1 Sample

Study participants were a convenience sample comprised of community members who responded to an advertisement to participate in the Diabetes Obesity - Wellness Opportunity Program (DOWOP) in Dayton, Ohio. Participants who met the following eligibility criteria were enrolled in DOWOP: (1) Eight to fourteen years old, (2) body mass index (BMI) for age and gender greater than or equal to 85th percentile, (3) able and willing to perform physical fitness activities as required in the exercise component of the program, and (4) able and willing to complete study diaries. While 16 participants were enrolled into the program, only 14 met the criterion of BMI equal to or greater than the 85th percentile and were included in the study analysis.

Institutional Review Board approval was obtained for this evaluation. Informed consent was obtained from parents of all study participants, and all study participants provided assent.

3.2 Program Description

The DOWOP program was held from 5:30 pm to 7:00 pm Monday nights at a community health center site for fourteen weeks. The program was advertised by word of mouth from previous participants, program brochures made available at community gatherings, primary health care physician referrals, and Dayton public school nurse referrals. Participants in fall 2009 were referred by primary care physicians (30%), flyers (30%), and word of mouth from previous participants (20%) and school nurses (20%). As an incentive to complete participation in the program and all program activities, all participants who were punctual to weekly meetings and

completed their journal earned “DOWOP dollars,” coupons that could be exchanged later for a gift card. Table 1 demonstrates the scheduling of the program.

Table 1: DOWOP Components

	Week 1-12	Week 13	Week 14
Weekly Exercise	X		X
Dietary/Nutrition presentation(30 min)	X		X
Parents Psychology class (1hr)	X		X
Daily Diaries	X	X	X
Cooking class		X	

3.2(a) Exercise Component

The one-hour exercise sessions were held weekly over 14 consecutive weeks, with the exception of week 13, at the Cassano Health Center. Exercise sessions were led by physical fitness trainers from the Dayton Contemporary Dance Company (DCDC). The exercise component of the DOWOP intervention focused on physical fitness (e.g. aerobic dance, basic muscle groups, stretching and balancing techniques). Participants were introduced to African dance, hip-hop, jazz, liturgical dance, salsa and swing. During the exercise sessions, trainers also addressed lifestyle choices. Best or healthier lifestyle choices were reinforced by encouraging participants to select more active behaviors compared to sedentary behaviors. The objective of the exercise session was to expose the study participants to a variety of activities that could be performed independently following the conclusion of the program.

During weeks 7 and 14, the exercise session lasted for 30 minutes to accommodate body measurement. On these weeks parents danced with the children. The exercise session was omitted during week 13, when a cooking class was held instead.

3.2(b) Nutrition Education Component

The dietary/nutritional component included weekly 30 minute lectures by a registered dietitian and psychologist, with the exception of week 7, when measurement was performed. The objective of all presentations was to provide information that facilitates children's and parents' abilities to make best choices regarding daily meal and snack selections. The purpose of focusing on best/healthier choices was to expose the participants to thinking about the most nutritious or best/ healthiest choice, versus momentary food desires.

Emphasis was placed on the need to consume more "God-made" food (whole food or food in its natural state) and less "man-made" food (processed food) daily. Benefits of eating food in its natural state were emphasized in every lesson and were supported by bringing samples of God-made food to class and telling participants the nutrients they contained and benefits they have for our bodies.

Balanced nutrition was taught using the United States Department of Agriculture (USDA) food pyramid (USDA, n.d). Food models were used to provide participants a visual and tangible model of recommended serving sizes, the group to which each food belonged and whether the item represented a best choice, "ok" choice, or limited choice. Participants and their parents worked together in groups to construct balanced and healthy meal and snack selections. There were "portion distortion" presentations, emphasizing smaller portion sizes. The presentations were used to teach calories in simplistic terms. As a part of this interactive teaching, participants guessed how long it would take to perform specific activities to burn extra energy due to the larger serving sizes.

Fast food dietary presentations focused on making best choices at fast food restaurants, in moderation, and less than one time per week. Participants were taught to eat slowly, avoid emotional eating, and alternatives to stressful or emotional eating.

In week 13, a cooking class was held. Participants were grouped and each group was assigned to prepare a different type of food. At the end of the cooking section, each group presented what they did by telling the nutrients and calories their food contained, serving size and portion sizes needed.

3.2(c) Parents' Psychology Session

The one hour psychology session for parents was held at the same time that the children exercised. This session was taught by a psychologist and aimed toward changing participant behavior and lifestyle choices. Parents were taught how to deal with stress, emotions, and how to implement strategies to help change their children's sedentary behavior and unhealthy food choices. Parents were asked how they were doing each week and parents who had outstanding problems modifying their children's behavior were given one-on-one counseling. Special strategies were taught about how to deal with their children's food choices during Halloween, Thanksgiving, and other holidays. Alternatives to eating because of stress, emotions, and reasons other than hunger were taught.

3.2(d) Daily Diary Component

Adolescent participants were asked to complete a daily diary, listing their physical activities and food eaten. Daily activities included a list of the number of hours/ minutes per day of physical exercise participants did and how they felt after doing it. The food diary included the

number of servings eaten per day by food group, when they ate and whether they ate alone or with someone else. The purpose of this component was to raise study participants' awareness regarding activities chosen and healthy food consumed.

During the weekly DOWOP program, participants were reminded to complete their diaries, have them signed by parents and return them at the next session. Participants who fulfilled this obligation earned "DOWOP dollars" (coupons that could be exchanged later for a gift card).

3.3 Study Measures

Overall study measures used in the evaluation are provided in the Study Procedures Flow Chart in Table 2. At baseline, week 7 and week 14, registered nurses measured height, weight and waist circumference of adolescent participants. The CDC's online BMI child and teen percentile calculator adjusted for age and gender (CDC, 2006) was used to determine the participants' BMI scores.

Nutrition and activity surveys were administered at the beginning and end of the program to measure the program activity impact. Participants were asked to identify the six groups of food (e.g. grains, vegetables, dairy, meat, fruit, fats,) from the food pyramid and determine their daily intake of the six foods and whether they dined at home or out. Participants were also asked to indicate favorite activities such as watching TV, playing video or computer games, and the number of minutes they exercised per day. This survey was not included in the study analysis because complete post survey information was not available.

Separate surveys were administered to both adolescent participants and parents to assess satisfaction with the program and the readiness of the participants to sustain the program

activities after the program ended (see appendices 1 and 2). Satisfaction questions intended to measure how much adolescents liked the DOWOP program and to what extent parents were satisfied with the program. Intention questions were included to assess whether the participants intended to continue DOWOP's activities after graduating from the program. Adolescents were asked about plans to keep up with DOWOP activities. Parents responded to questions about whether they believe their children will continue to practice DOWOP activities.

The program coordinator, nutritionist, physical exercise trainer and psychologist were interviewed to assess their opinion of the impact of the part they played on the participants.

Table 2: Study Measure Flow Chart

	<i>Baseline</i>	<i>Week 7</i>	<i>Week 14</i>
BMI Measurement	X	X	X
Height & Weight	X	X	X
Waist Circumference	X	X	X
Nutrition and Activity Survey	X		X
Satisfaction and Intention Survey			x
Program Administrators Interview	X*		X

3.4 Results

Data are presented for 14 children who completed the program in the fall of 2009. All participants were female. The mean age of participants was 10 years, with a range of seven to 13 years (see Table 3). About 83 percent of participants decreased their BMI and waist circumference. The average body mass index and waist circumference lost at the end of the program was 1.1 kg/m² and 1.3 inches respectively. Height increased for all participants.

Table 3: Mean (Range) Values of Age, Height, Weight, BMI and Waist Circumference at the Start and End of the Program

	Program start	Program end
Age (years)	10	10
Age range	(7-13)	(7-13)
Weight (lbs)	187.6	187.8
Weight range	(105.4-327.0)	(101.8-316.3)
Height (inches)	60.2	61.1
Height range	(53.5-66.75)	(53.75-66.75)
BMI (Kg/m ²)	35.7	35.5
BMI range	(25.89-59.97)	(24.77-56.47)
Waist circumference (inches)	36.7	35.5
Waist circumference range	(31.0-50.5)	(29.95-47.5)

A high percentage of adolescent participants strongly agreed that they enjoyed DOWOP exercise and food activities (see Table 4), although exercise and dance were more popular than the nutrition classes. Eighty-six percent of participants strongly agreed that they liked the exercise and dance, compared with 70 percent who strongly agreed they liked the food classes. DOWOP's food and activity guides appeared to be written at an appropriate age level, as 95 percent reported that DOWOP food and activity guides were easy to read. A majority (62 percent) agreed that they would recommend the program to others.

Table 4: Adolescents Satisfaction with DOWOP

	Do not agree	Agree a little	Agree a lot
I liked DOWOP’s exercise and dance classes. (%)	0	14	86
I liked DOWOP’s classes about food. (%)	0	30	70
I will tell my friends that they should try DOWOP. (%)	15	23	62
DOWOP’s food and activity guides were easy for me to read. (%)	0	5	95

Adolescent were more likely to strongly agree that their parents reminded them to eat healthy than that their parents reminded them to exercise. More also strongly agreed that they liked to eat God-made food and were planning to continue to eat healthy than strongly agreed that they liked exercising at home or planned to keep exercising every day (see Table 5). Since the parent’s psychology session predominantly focused on how to influence the eating habits of their children, the fact that adolescents showed more interest in nutrition than exercise could be a result of encouragement from parents. However, no participants stated that they disliked healthy food or exercise, or that they had no plans to continue DOWOP recommended activities at home.

Table 5: Adolescents Intentions to Exercise and Eat Healthy and Perception of Parent’s Help

Parents remind me to :	Do not agree	Agree a little	Agree a lot
Exercise (%)	0	22	78
Eat healthy (%)	0	7	93
I like :			
Doing exercise at home (%)	0	57	43
Eating God made food (%)	0	20	80
I plan to continue :			
To exercise everyday (%)	0	36	64
To eat healthy (%)	0	7	93

All adolescent strongly agreed that they exercised and make healthy food choices at home to be healthy (see Table 6). This indicates that desire to be healthy is the main reason for performing the activities at home, which could strengthen their intentions to continue performing the activities after the program ends. Additionally, a majority stated that they performed these activities in order to make their parents happy, which also makes it more likely that they will continue the activities. On the other hand, they also reported that making their log look good was another reason for exercising and eating healthy, which may decrease the likelihood of continuing the activities since they would not receive regular recognition and feedback after the program ends.

Table 6: Reasons that Adolescents Exercise and Make Healthy Food Choices at Home

I exercise at home to:	Don't agree	Agree a little	Agree a lot
Make parents happy (%)	14	36	50
Make DOWOP log look good. (%)	0	21	79
Lose Weight (%)	0	0	100
Be healthy (%)	0	0	100
I make healthy food choices at home to:			
Make parents happy (%)	7	36	57
Make DOWOP log look good. (%)	7	36	57
Lose Weight (%)	0	7	93
Be healthy (%)	0	0	100

A high percentage of parents were highly satisfied with DOWOP activities (see Table 7). No parent was dissatisfied with any of the program activities. Like the adolescent participants, more parents were very satisfied with the exercise sessions than were very satisfied with discussions on the healthy lifestyle sessions of the program. All parents agreed that they would recommend DOWOP to friends and relatives and would be willing to sign up their children for another DOWOP session.

Table 7: Parents' Satisfaction with DOWOP Activities

	Not Satisfied	Satisfied	Very Satisfied
Nutrition education (%)	0	30	70
Dancing Exercise (%)	0	19	81
Education on good food choices (%)	0	20	80
Discussions on exercise (%)	0	27	73
Discussing on Healthy Lifestyle (%)	0	36	64

All parents reported DOWOP increased their knowledge of food choices a lot and a high percentage of parents reported that the program increased their knowledge about exercise a lot (see Table 8). More parents reported increase in knowledge about food choices than reported a great increase in knowledge about exercise. Parents reported increase in knowledge indicates a likelihood that they will continue to help their children make better lifestyle choices.

Table 8: Parents' Increased Knowledge on Food Choices and Daily Exercise

	No	Yes a little	Yes a lot
Better food choices (%)	0	0	100
Daily exercise (%)	0	18	82

All of the parents indicated that their child enjoyed both the exercise and nutrition components of the program, but a higher percentage perceived that their child enjoyed the exercise sessions very much than reported that their child enjoyed the nutrition sessions very much (see Table 9). Parent's perception of their child enjoyment of DOWOP activities agrees with the adolescents' report (see Table 4).

Table 9: Parents' Perception of Children Enjoyment of DOWOP

How much did your child enjoyed	Did not enjoy	Enjoyed	Enjoyed very much
Exercise//Dance (%)	0	33	67
Nutrition education (%)	0	64	36.

All parents noticed that since participation in DOWOP, the lifestyle choices of their children had changed. This implies that parents perceived DOWOP activities had a positive impact on their children. Also, all parents expressed confidence that their children are very likely to keep exercising, and most were confident that their children are very likely to keep making better food choices.

3.5 Participants' Feedback

Open- ended survey questions allowed participants to make comments about what they liked best and least about the program. Participants offered a number of constructive comments. They reported that the DOWOP experience provided them with support and encouragement and that the co-coordinators made conscious efforts to ensure that the program maintained a sense of fun, enthusiasm and no pressure. The adolescent participants reported that they liked the DOWOP program because of the dancing component, lessons on how to live healthy, and the respect the coordinators had for them, among other reasons. A majority (60 percent) of the children, however, cited the daily journal sheets as something they did not like about DOWOP, saying they were complicated to complete.

Parents predominantly cited the knowledge they gained from the program as the reason why they liked the program. A majority of parents cited the starting time of the program to be a problem, saying it conflicted with dinner.

3.6 Program Administrators' Feedback

The physical fitness trainer felt the program was very successful. According to the trainer, the program was well organized, parents were cooperative and the children seemed to enjoy the dance and physical activities. There were no problems encountered, he said.

The nutritionist also felt that the 2009 DOWOP fall program was very successful but made the following observations: (1) parents did not always review information with their children; (2) some recommendations to increase nutrition/activity level were not followed; and (3) some components of the nutrition session were not reviewed due to time factors. She suggested increasing the length of the nutrition segment of the program.

The psychologist felt that it is much more effective to change the adolescents' lifestyle through educating their parents, rather than relying on education of the children alone. She felt that the involvement of the parents helped to make the program successful. She stated that success in changing children's behavior much depends on their parents since parents make most decisions at home.

3.7 Discussion

DOWOP is an innovative program that targets children aged 8-14 with Body Mass Index (BMI) greater or equal to 85th percentile and had, as its primary goal, to educate participants and families about better nutrition and exercise in order to head off diabetes. More specifically,

DOWOP aimed at changing behavior and ultimately reducing a child's waist circumference and BMI.

Like other programs, DOWOP incorporated physical exercise and nutrition education in order to reduce waist circumference and BMI. DOWOP was also based upon cognitive principles to change dietary and activity behaviors through the involvement of parents.

The DOWOP intervention was effective in decreasing BMI and waist circumference in children both at risk for becoming over weight and those who were overweight. These findings are consistent with other studies that incorporate both exercise and nutrition education (Dreameane et al., 2007, Summerbell et al., 2003).

The high retention rate of participants in the DOWOP program, the constructive comments made in the program evaluation questionnaires and the high level of satisfaction reported by adolescents and their parents are encouraging for program continuation. Parents reported a high level of enjoyment of their children of DOWOP activities, especially the physical fitness component. This is not surprising, considering the fact that the physical activity component was designed for children to have fun and chose a variety of activities.

With the continuous decrease of time spent in physical activity during the school day (Dale, Corbin, & Dale, 2000), after school programs may be a means of increasing children's daily participation in physical activity. Increases in physical activity in children have been linked to the child's level of enjoyment. The more a child enjoys an activity, the more likely he or she is to participate in that activity (Dishman et al., 2005). Feedback from participants indicated that they are aware of making better food choices and were ready to sustain the program activities. This was also confirmed by parents.

The cognitive component of DOWOP may help participants to sustain DOWOP activities because sessions led by the psychologist were designed to help participants know the outcome of their actions. In the program evaluation questionnaire, all parents reported increases in their own knowledge and that their children's lifestyle choices have changed due to DOWOP intervention. All parents had confidence that their children will sustain DOWOP activities.

Parents' involvement is a unique component of the DOWOP and offers a way for families to be involved in what children are doing outside of school. Price and colleagues (2008) determined that physical activity in 9 to 12-year-old girls is significantly associated with parents' education about the activity, parents' self efficacy and being physically active with a parent. Huberty et al. (2009) noted that that the family components were an effective way to involve the family as a unit in physical activity and appeared to be a more effective strategy than programs involving only children.

The parents of DOWOP participants reported experiencing benefits of their participation in the program (e.g., more aware of healthier food, enjoy being active). The program is an avenue by which parents can become more educated about their children's lifestyle and learn to be a role model for their children's behavior. Parent's involvement will potentially help children sustain healthy behaviors beyond DOWOP.

The DOWOP is a community health center-based program. The benefit of a community health center-based program may be the ability to target overweight populations that otherwise might not participate in after- school programs for stigma of being identified as overweight by their peers.

The use of incentives to encourage perfect attendance and participation is a great feature of the program. The opportunity to earn DOWOP dollars encouraged the families to attend

meetings regularly and participate fully in all activities. Another unique feature of DOWOP is that no fees were charged to participate in the program. This presents no financial barrier to families to enroll their children.

Completion of study diaries can be problematic in research, particularly when children are charged with task of completion. As part of the DOWOP, adolescent participants were required to complete daily diaries. Parents were told not to complete the diaries for their children because the completion of the diary by the children was intended to raise the participants' awareness regarding activities chosen and food selected. The children did not like the diary aspect of the program due to the complications involved. In future programs, parents might be allowed to remind and guide their children to complete their daily journals as some children may be too young to take the initiative and complete this daily task. The journal component of the program should be adapted so that parents and children can continue a modified food and activity log at home after the program ends. This will help adolescents to maintain DOWOP activities. Although DOWOP has been able to achieve its goals, it would be helpful if participants are followed up after a year to measure the program impact with time. Information from follow-up can help program designers to make necessary changes to improve DOWOP. Designing the program to include supermarket tours can help the campaign for consuming God-made food. Exposing participants to variety of food and teaching them their importance to our health can complement lessons taught.

Strengths of this study include the use of several strategies to evaluate the program and the practical information obtained through program designers as well as the participants. The primary limitation of this study was that it relied on participants self report of their intentions to maintain behavior change. Follow-up at some time after the program would be necessary to

establish whether behavior change is maintained. Adolescents were self-selected for weight loss so their views of the program may thus not be representative of all overweight adolescents. Additionally, information on post-program food and activity survey was not available in order to measure changes in knowledge and behavior due to after the DOWOP intervention.

3.8 Conclusion

DOWOP was successful in meeting its goals. The program was popular with adolescent participants, parents, and program administrators. The incentive introduced to encourage punctuality and participation was successful. DOWOP is innovative because it is designed to change the culture of after-school programs through incorporation of structured physical activities and nutrition education and family involvement that can be applied at home.

Considering the nation's obesity epidemic, the poor health habits and an increasing obesity rate of today's children, provision of successful programs focusing on exercise and education is of utmost importance, both for children and their families.

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Appendix 1

Adolescent questions

Thank you for participating in DO-WOP 2009 fall session. Kindly answer the following questions. Please **do not** write your name on this sheet. Your responses to the questions will help improve DO-WOP.

How much do you agree with each statement below?

Scale: ☹️ means “I do not agree”

😐 means “I agree a little”

😊 means “I agree a lot”

	I do not agree	I agree a little	I agree a lot
1. I liked DO-WOP’s exercises and dance classes.	☹️	😐	😊
2. I liked DO-WOP’s classes about food.	☹️	😐	😊
3. I would tell my friends that they should try DO-WOP.	☹️	😐	😊
4. I like doing exercises at home.	☹️	😐	😊
5. I like eating God-made food.	☹️	😐	😊
6. DO-WOP’s food and activity guides were easy for me to read.	☹️	😐	😊
7. I plan to keep exercise every day after finishing DO-WOP.	☹️	😐	😊
8. I plan to keep eating healthy snacks after graduating from DO-WOP.	☹️	😐	😊
9. My parents remind me to eat healthy foods.	☹️	😐	😊
10. My parents remind me to exercise every day.	☹️	😐	😊

11. I exercise at home to....	I do not agree	I agree a little	I agree a lot	Don't exercise at home
a. Make my parents happy				
b. Make my DO-WOP log look good				
c. Lose weight				
d. To be healthy				

12. I eat God-made food at home to.....	I do not agree	I agree a little	I agree a lot	Don't eat God-made food
a. Make my parents happy				
b. Make my DO-WOP log look good				
c. Lose weight				
d. To be healthy				

13. Did you have trouble reading the food and activity guides from DO-WOP?

_____Yes _____No

14. What did you like about DO-WOP?

15. What did you not like about DO-WOP?

Thank you for taking time to answer the questions!

Appendix 2

Questions for parents

Thank you for participating in DO-WOP 2009 fall session. Kindly answer the following questions. Please **do not** write your name on this sheet. Your responses to the questions will help improve DO-WOP.

1. Which of the following best describes what motivated you to sign up your child for DOWOP?

- Improve my child's health
- Encouragement from family
- Encouragement from friends
- Others-----

2. Which of the following made you aware of DOWOP?

- Promotional posters/ flyers
- Doctor referral
- Word of mouth from friend/relative
- Others-----

3. Indicate your level of satisfaction of the following DOWOP sessions

a) Nutrition education

---- Very satisfied ---- Satisfied ----not satisfied

b) Exercise/Dance

---- Very satisfied ---- Satisfied ----not satisfied

c) Discussions to increase awareness of good food choices

---- Very satisfied ---- Satisfied ----not satisfied

d) Discussions on importance of exercise

---- Very satisfied ---- Satisfied ----not satisfied

e) Discussions on how to help my child live healthy.

---- Very satisfied ---- Satisfied ----not satisfied

4. Has DOWOP increased your knowledge of better food choices?

---- Yes a lot ---yes a little ---- no

5. Has DOWOP increased your knowledge of importance of daily exercise?

---- Yes a lot ---yes a little ---- no

6. Would you recommend DOWOP to somebody else?

---- Yes --No

7. Would you sign up your child for DOWOP again in future?

---- Yes --No

8. Indicate the level of enjoyment of your child for the following DOWOP sessions.

a) Exercise/ Dance

---Enjoyed very much ----- Enjoyed ---Did not enjoy

b) Nutrition education

---Enjoyed very much ----- Enjoyed ---Did not enjoy

9. My child's daily food choices have changed since starting DOWOP lessons.

---- Yes -----No

10. My Child's daily activities have changed since starting DOWOP lessons.

---- Yes -----No

For the next seven questions, circle the options that fit in the blank

11. My child_____ takes initiative to exercise.

---- Always -----often ----never

12. My child_____ takes initiative to make good food choices.

--- Always -----often ----never

13. I _____ remind my child to exercise.

---Always -----often ----never

14. I_____ help my child make better food choices.

----Always -----often ----never.

15. I am confident that my child is ----- to exercise after graduating from DOWOP.

----- very likely ----- somewhat likely ----- not likely.

16. I am confident that my child is ----- to make good food choices after graduating from DOWOP

----- very likely ----- somewhat likely ----- not likely.

17. The DOWOP experience has ----- my commitment to help my child lead healthy lifestyle.

--- greatly increased ----- somewhat increased ----- not increased

18. What did you like about DOWOP?

19. What you did not like about DOWOP?

20. What suggestions do you have to improve DOWOP?

Thank you for taking time to answer the questions!