

Background: Out-SMART Obesity Program (Assignment 3)

Within the past few decades, the prevalence of childhood obesity has become a public health issue in the United States. From the 1960s and 1970s to now, obesity rates have significantly risen from 5-7% to 17-18% in children and adolescents.^{1,2} The incidence and prevalence of obesity is predominantly present in minority populations, impacting 29% of African-American adolescent girls and 27% of Mexican-American adolescent boys.¹ Without appropriate and adequate intervention through health promotion and prevention services, these numbers will continue to rise at an exponential rate. More and more children will suffer from obesity's repercussions, including decreased life expectancy, "severely compromised" quality of life, and the physical, psychological, and social consequences that accompany this disease.¹ Furthermore, childhood obesity is associated with an increased risk for the development of diabetes, stroke, cardiovascular disease, certain types of cancer, osteoarthritis, depression, anxiety, etc.^{1,3,4}

Out-SMART Obesity is based on the Social Cognitive Theory (SCT) and aims to reduce overweight and obesity rates in children and adolescents in minority populations by improving self-efficacy levels, increasing parenting skills and knowledge, and, in turn, improving health-related quality of life in program participants. Hidayanty et al.'s recent study incorporated a similar program based on the SCT in overweight children between 11 and 15 years of age, and the study suggests that increasing physical activity and healthy eating habits while modifying self-efficacy, motivation, perseverance, and self-regulation demonstrates a higher reduction in BMI and waist circumference, decreased snacking habits, and improved self-efficacy. Furthermore, this suggests that modeling

health promotion programs after the SCT and intervening at the individual and interpersonal levels is a promising strategy to address this public health concern.

Due to the influence parents have on their child's health, parent education is a key component in targeting obesity rates in Out-SMART Obesity participants. In a 2010 study conducted by West et al., researchers implemented a family-based intervention that exclusively focused on the involvement of the parents to facilitate behavior change for overweight and obese children between the ages of 4- and 11-years-old.⁵ The study results imply that increasing parents' skills and confidence in managing children's weight-related behavior via motivational interviewing and parent education regarding nutrition, physical activity, and positive parenting strategies are associated with decreased body mass index (BMI) in study participants.⁵ These results further imply that parents who are encouraged to serve as a positive role model in their child's life can, in fact, facilitate health behavior change to reduce overweight and obesity rates in the United States. Observational learning involves acquiring knowledge through the observation of select "behaviors and the consequences of others' behaviors," which may be accomplished via observing an "influential role model or peer-leader performing a behavior and achieving an outcome."⁶ More specifically, this thought is based on the observational learning construct from the Social Cognitive Theory (SCT), which emphasizes the importance of social and parental support to augment health behavior change at the interpersonal level. A similar study conducted by Golan et al. also targeted parents exclusively in the treatment of childhood obesity.⁷ However, children between the ages of 14- and 19-years old were randomly assigned to either the parent-only group, where only parents were targeted, or the child-only group, where only

children were targeted, to assess the long-term effects of the intervention.⁷ The results from this study suggest that targeting the parents specifically may lead to better long-term outcomes regarding BMI reduction and overall health as compared to targeting the children alone.⁷ Additionally, Margarey et al. aimed to evaluate the short- and long-term outcomes for a parent-led family-focused treatment program that incorporated parenting skills training in addition to traditional education.⁸ Researchers discovered that coupling traditional education such as serving size recommendations, practical skills for healthy eating and reducing sedentary behavior, monitoring lifestyle behaviors, etc. with parenting skills training resulted in reduced BMI and waist circumference values in overweight children between the ages of 5- and 9-years-old.⁸ Lastly, Sacher et al. incorporated a family-based community intervention to address childhood obesity concerns through the MEND Program, which focused on education, skills training, and motivational enhancement.⁹ Unlike the studies conducted by West et al, Golan et al., and Margarey et al., researchers found that participation in a program that engaged both children and their parent(s) resulted in significant improvements in terms of the degree of adiposity as well as indicators of cardiovascular health and psychological well-being for obese children in the study.⁹ Study results also emphasize the importance of incorporating physical activity and sedentary behaviors into family-based,⁹ community outreach programs targeted to address childhood obesity concerns, which will be another primary focus for Out-SMART Obesity. Considering the result findings from the evidence above, the Out-SMART Obesity program will provide parent education topics similar to those presented in each of these studies in addition to parenting skills training in three session scenarios: Children-only, parent(s)-only, and combined children and

parent(s) throughout the program's duration. The studies also suggest that this strategy will lead to more favorable short- and long-term outcomes for overweight or obese children/adolescents in minority populations, further validating its use.

In addition to targeting the families of children who are at risk for the development of obesity at the interpersonal level of the SCT, Out-SMART Obesity will further impact the interpersonal level through the implementation of peer support and the individual level via nutrition, behavior, and physical activity intervention. Nemet et al. and Rimke et al. demonstrate the positive short- and long-term benefits of a family-based multidisciplinary approach, suggesting the use of nutritional, behavioral, and physical activity interventions to facilitate health behavior change in this patient population.^{10,11} Members of the multidisciplinary team included physicians, dieticians, physiotherapists, and child-psychologists, all of which will be encouraged to participate in Out-SMART Obesity. Moreover, researchers such as Barkley et al. and Stock et al. demonstrate the positive influence group-based environments and peer-related support can have on increasing physical activity levels and preventing obesity and eating disorders in children such as those projected to participate in the Out-SMART Obesity program.^{12,13} Therefore, an additional focus will be to encourage physical activity and education in a group-setting while instructing older participants to serve as a positive role model for younger students throughout the program's duration.

The following three outcomes will be implemented to assess participant progress and program effectiveness: BMI z score, Lifestyle Behaviour Checklist (LBC), and Perceived Physical Ability Scale for Children. For children and adolescents, BMI scores are compared to age- and sex-specific percentile ranges.¹⁴ If the participant is between

the 85th and 95th percentile, he or she is classified as being overweight, and if the participant is greater than or equal to the 95th percentile, he or she is classified as being obese. Research suggests that BMI is associated with other direct measures of body fat such as skinfold measurements and densitometry, but BMI is deemed an “easy-to-perform method of screening for weight categories that may lead to health problems.”¹⁴⁻

¹⁷ The LBC was developed to “assess parents’ perceptions of children’s problematic behaviors related to overweight and obesity regarding eating, physical activity, and screen time and overweight (the Problem scale), and parents’ self-efficacy in dealing with these behaviors (the Confidence scale).”¹⁸ The LBC has been utilized to evaluate obesity treatment programs in the past, and “has been shown to capture changes in both the child’s behavior and the parent’s confidence in managing their child’s behavior.”¹⁸ The Perceived Physical Ability Scale for Children will be used to assess participant’s self-efficacy, in which evidence suggests that individuals with “high self-efficacy scores” participate in “significantly more physical activity compared to their low physical self-efficacy score counterparts.”¹⁹ Furthermore, interventions that focus on “psychological mediators of change” such as self-efficacy are deemed the “most effective,” and self-efficacy is termed “one of the key determinants” of physical activity promotion and engagement among children.²⁰

In summary, Out-SMART Obesity: A School-based Management Approach to Reducing Trends of Obesity is a health promotion program that aims to identify children and adolescents in minority groups who are at risk for obesity. Furthermore, the program will implement evidence-based intervention strategies in the after-school setting including parent education with a focus on lifestyle modification strategies and a

combined nutritional, behavioral, and physical activity intervention with a focus on education and exercise.

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Community Program Proposal: Out-SMART Obesity Program (Assignment 4)

Program Goals

Out-SMART Obesity: A School-based Management Approach to Reducing Trends of Obesity is a community outreach program designed to identify children and adolescents in minority groups who are at a heightened risk for developing and/or sustaining overweight and obesity statuses. The program will take place in the after-school environment with the mission to reduce childhood and obesity rates in North Carolina, the United States, and nationwide. Without this, obesity rates will continue to rise along with the repercussions that accompany the disease including an increased risk for developing certain cancers, cardiovascular disease, sleep disturbances, diabetes, depression, anxiety, and much more.¹ The program's vision is to intervene early in an environment that is familiar to this cohort in hopes of improving the overall health and quality of life of these individuals. Specifically, the following goals have been established to quantify and assess the program's effectiveness in terms of individual progress and intervention efficacy, both short- and long-term.

1. In 10 weeks, the program participants will demonstrate "clinically significant"² reductions in Body Mass Index (BMI) z-scores³ of ≥ 0.5 in order to improve function, optimize quality of life, and reduce the risk for developing other debilitating conditions such as cardiovascular disease.⁴ BMI scores will be assessed at baseline (pre-intervention), post-intervention, and at 1-year post-intervention. This goal will be assessed by comparing pre- (0 weeks) and post-intervention (10 weeks) BMI scores of participants.

2. At 1-year follow-up visit, the program participants will demonstrate maintenance of reductions in BMI z-scores in order to ensure the program's impact persists following treatment termination. This will be assessed by comparing post-intervention (10 weeks) and 1-year post-intervention BMI scores of participants.
3. In 10 weeks, 75% of program participant parent(s) and/or caregiver(s) will demonstrate a score of >50 for the Problem scale (range of 25 to 175) and <204 for the Confidence scale (range of 25 to 250) on the Lifestyle Behaviour Checklist (LBC) assessment tool in order to demonstrate improved "perceptions of children's obesity related problem behaviors" and self-efficacy in handling these behaviors.⁵ Evidence suggests scores of >50 for the Problem scale and <204 for the Confidence Scale on the LBC to be "clinical cut-off values" when compared to a community sample of healthy weight population.⁵ LBC values will be measured at baseline, pre- and post-intervention. This goal will be evaluated by comparing LBC scores at baseline (0 weeks) and post-intervention (10 weeks). Improvements in LBC scores are important, for research implies that "childhood obesity is one problem which few parents feel capable of managing" despite their influential role on obesity-related risk factors such as nutritional and physical activity habits in the home environment.¹
4. At 1-year follow-up visit, the parent(s) and/or caregiver(s) of program participants will demonstrate maintenance of LBC values determined post-intervention (10 weeks) to ensure the program's impact persists following treatment termination. The program will provide the parent(s) and/or caregiver(s) with the tools needed

to maintain these improvements both short- and long-term following the 10-week intervention.

5. In 10 weeks, 75% of program participants will demonstrate an increase in Physical Self-Efficacy Scale for Children scores by ≥ 4 points in order to increase the confidence levels of these individuals and improve their perceptions regarding their physical abilities. Research suggests that improved self-efficacy is “both an important determinant and a consequence of physical activity,” playing a key role in health promotion program’s such as Out-SMART obesity aiming to increase overall health and wellness of minority children and adolescents.⁶ Although no minimal clinically important difference nor cut-off score(s) have been established for this specific scale, this goal is both reasonable and attainable for this patient population following rigorous intervention. This goal will be assessed by comparing Physical Self-Efficacy Scale for Children scores at pre- and post-intervention.
6. At 1-year follow-up visit, the program participants will demonstrate maintenance of improvements in Physical Self-Efficacy Scale for Children scores in order to ensure the program’s impact persists following treatment termination. This will be assessed by comparing post-intervention and 1-year post-intervention self-efficacy scores of participants.

Methods

As indicated above, the following outcome measures will be conducted for the program participants and the parent(s) and/or caregiver(s) of these individuals: BMI z-score, Lifestyle Behaviour Checklist (LBC), and Perceived Physical Ability Scale for

Children. These tools will be administered by experienced physical therapists, occupational therapists, or other licensed health care professionals. Each of these assessment tools will be administered pre-intervention (0 weeks), post-intervention (10 weeks), and at the 1-year follow-up visit. The administration of these measures will take place at a local elementary school in which the program will be held. Two classrooms within the school will be used: One for male participants, and one for female participants. The following materials will be needed for pre-intervention, post-intervention, and 1-year follow-up assessments: Chairs, desks, scale (pounds and/or kilograms), tape measure, calculator, BMI z-score chart, LBC assessment form, and Perceived Physical Ability Scale for Children assessment form. Additionally, participants and participants' parent(s)/caregiver(s) will be asked to fill out a brief survey immediately post-intervention regarding their feedback and overall satisfaction with the program. This will be used for program evaluation.

Potential program participants will be recruited from local healthcare professional referrals (primary care physician, physical therapy, occupational therapy, etc.) or via self-referral. Flyers will be made and distributed to students within the local school systems as well as parents of students within the local district (i.e. parent-teacher meetings, student orientation). Furthermore, flyers will be posted in the schools, health care clinics, the health department, and local gyms. Prospective participants will be screened for overweight and obesity status, and, if eligible, provided information about the program's mission, what the program will entail, and participant requirements. Once recruited and screened for eligibility, participants and their parent(s)/caregiver(s) will

sign consent forms and provided an overview regarding program dates and scheduling. Assessments will be administered the week prior to the program start date.

This 10-week program will take place in the after-school setting for two hours per day bi-weekly. Sessions will be held every Tuesday and Thursday from 5:30 to 7:30 pm, which will be organized as follows:

Tuesdays (Family-Oriented Intervention)

5:30 pm – 6:30 pm: Program participants and participants' parent(s)/caregiver(s) will partake in family-led activities in the school gymnasium or on the sports' fields (i.e. soccer field, football field, etc.).

6:30 pm – 7:30 pm: Program participants and participants' parent(s)/caregiver(s) will be educated on topics and strategies to facilitate obesity-related behavior change *together*. Only one classroom will be required.

Thursdays (Peer- and Individually-Oriented Intervention)

Program Participants:

5:30 pm – 6:30 pm: Program participants will partake in individual- and peer-based activities in the school gymnasium or on the sports' fields to increase physical activity levels.

6:30 pm – 7:30 pm: Program participants will be educated on topics and strategies to facilitate obesity-related behavior change *in a group environment*. Only one classroom will be required.

Participants' Parent(s)/Caregiver(s)

5:30 pm – 7:30 pm: Participants’ parent(s)/caregiver(s) will be educated on topics and strategies to facilitate obesity-related behavior change in the home environment. Only one classroom will be required.

Out-SMART Obesity will incorporate intervention topics and strategies based on the Lifestyle Triple P and MEND programs, which are two evidence-based programs with similar objectives and aims.^{7,8} The following chart depicts an overview of what the program will entail:

Session	Topics and Strategies (T&S)
Week 1: Preparing for change ⁸	T&S: Obesity overview, nature and causes of obesity, readiness to change ⁸ Physical activity: Kickball
Week 2: Nutrition ⁸	T&S: Food groups, daily servings, reducing sugar intake, incorporation of fruit and vegetables into daily routine, establish nutrition goals and management strategies ^{7,8} Physical activity: Ultimate Frisbee
Week 3: Physical activity ⁸	T&S: Increasing physical activity in the home, encouraging healthy behaviors and habits, establishing physical activity goals ⁸ Physical activity: Flag-football

<p>Week 4: Limiting sedentary activity⁸</p>	<p>T&S: Education on activities that reduce sedentary behaviors such as cleaning the house, family trips to the grocery store, etc.</p> <p>Physical activity: Basketball</p>
<p>Week 5: Reading food labels⁸</p>	<p>T&S: Components of food labels, how to interpret findings</p> <p>Physical activity: Dance</p>
<p>Week 6: Healthy meals and habits^{7,8}</p>	<p>T&S: What categorizes food to be deemed “healthy,” establishing appropriate snacking habits, effective food preparation</p> <p>Physical activity: Tennis or Badminton</p>
<p>Week 7: Applying behavioral techniques⁷</p>	<p>T&S: Stimulus control, setting appropriate and realistic goals, reinforcement, and “response prevention to establish a health-promoting home environment”⁷</p> <p>Physical activity: Jump rope, hula hoops, hopscotch, Wii games, Twister</p>
<p>Week 8: Motivational enhancement⁷</p>	<p>T&S: Tips and tricks on how to remain motivated, community resource overview,</p>

	<p>increasing physical activity support system (friends and family)</p> <p>Physical activity: Baseball</p>
Week 9: Maintenance strategies	<p>T&S: How to maintain progress upon treatment termination</p> <p>Physical activity: Volleyball</p>
Week 10: Program debriefing	<p>T&S: Program review, problem solving strategies post-intervention</p> <p>Tuesday physical activity: Grocery store tour</p> <p>Thursday physical activity: Free play</p>

*Topics and strategies will be implemented via educational sessions

*Physical activity will take place bi-weekly; other games will be available for children (i.e. Wii-fit games), but they as well as their parent(s)/caregiver(s) will be encouraged to partake in the group-based activities as indicated above

Table 1. Sessions, topics and strategies, and physical activities for Out-SMART Obesity

All sessions will take place at the school-site and will be led by local health care professional volunteers. Teachers will also be recruited and encouraged to supervise/participate in the physical activities and games. The following equipment will be requested for throughout the entire 10-week program duration (Every Tuesday and Thursday, 5:30-7:30 pm): Gymnasium, two classrooms, physical education equipment, including: Basketballs, baseballs, bats, helmets, flag-football belts, football, kickball, frisbees, tennis/badminton racquets and balls/birdies, jump ropes, hula hoops, chalk,

projector and Wii set, twister game-set, volleyball, and volleyball net. For Tuesday of Week 10, parent(s)/caregiver(s) will be asked to meet at local grocery store for tour prior to driving to the school for free-play activities and debriefing.

Final assessments will be administered the week following program termination and at the 1-year follow-up visits. Health care professionals will periodically call parent(s)/caregiver(s) to “check in” throughout the year to ensure they as well as their child are remaining compliance with the maintenance strategies discussed post-intervention.

Program Evaluation

As identified by Wagner et al., traditional “self-management support” and “links to patient-oriented community resources” may assist with the “challenges of living with and treating chronic illness” such as childhood and adolescent obesity.⁹ However, more current evidence suggests that focusing on “patients’ knowledge of the disease and its treatment to their confidence and skills in managing their condition” may be effective in facilitating more long-term, behavioral changes.⁹ Out-SMART Obesity aims to participate in the reduction of obesity rates in this population by truly “translating evidence into action.”⁹

As mentioned above, several goals have been established to determine program effectiveness and patient progress both short- and long-term. Additionally, program staff will periodically “check-in” with participants’ parent(s)/caregiver(s) to ensure participant satisfaction and understanding. This will be achieved via phone both during the 10-week program and following program termination (prior to 1-year follow-up visit).

Moreover, Out-SMART Obesity will evaluate the program based on the Center for Disease Control and Prevention (CDC) Evaluation Framework.¹⁰ The “standards for effective evaluation” – utility, feasibility, propriety, and accuracy – will play an essential role throughout the evaluation process to ensure program effectiveness and fairness to program stakeholders.¹⁰

The CDC’s framework for program evaluation includes six steps, all of which will be incorporated throughout the evaluation process of Out-SMART Obesity each year.¹⁰ The first step involves the engagement of stakeholders, or “those involved, those affected,” and “primary intended users.”^{10,11} Potential Out-SMART Obesity stakeholders include: Local health care professionals, including physical therapists, occupational therapists, physicians, etc., health department staff volunteers, program participants, participant’s parent(s)/caregiver(s), local school systems, teacher and physical education staff members, grocery store staff, and prospective funding sources. By engaging stakeholders, the program can establish the program’s mission, vision, and goals, “build capacity to address health needs” in the community, and build the credibility of the program.¹¹

The second step involves the description of the program. According to the CDC, approximately 17% of children and adolescents between the ages of 2- and 19-years old in the United States are obese.¹² Furthermore, childhood and adolescent obesity demonstrates “immediate and long-term impacts on physical, social, and emotional health” for these individuals.¹³ Out-SMART obesity aims to reduce the obesity rates among children and adolescents by improving self-efficacy, modifying obesity-related behaviors in the home environment, decreasing BMI scores, and increasing physical

activity levels among program participants. Furthermore, the program aims to improve self-efficacy of participants' parent(s)/caregiver(s) by providing them with the knowledge set and skills required to facilitate and maintain health behavior change within the home.

Step three focuses on the evaluation design, including the evaluation's purpose, the incorporation of evaluation results, and the establishment of questions to be asked.¹¹ For Out-SMART Obesity, the purpose of evaluation is to confirm the need for continuation of the program and to establish new, updated program goals. Evaluation results will be utilized in the tailoring of future programs to ensure participant satisfaction and participation. Participants and their families will be asked to answer a survey upon program termination regarding satisfaction and feedback, all of which will be used in the development of future programs. Lastly, the roles and responsibilities of program staff will be clarified, and agreements will be made regarding the summary of procedures.¹¹

The fourth step includes the gathering of credible evidence, which includes the following indicators: BMI z-scores, LBC scores, and Physical Self-Efficacy Scale for Children values. There are several sources of credible evidence to support the use of these outcome measures as well as the intervention methods depicted in Table 1.

Step five incorporates the elements involved in assuring the justification for conclusions.¹¹ Statistical analysis of program participant progress based on the established goals will be assessed each year at the 1-year follow-up visit to 1) make adjustments as needed and 2) to look for patterns in the results. Significant changes will be determined via a p-value of less than 0.05, and judgments regarding program merit and worth will be established via information gathered during phone call "check-ins" and post-intervention satisfaction/feedback surveys.

Lastly, the final step involves “ensuring that lessons learned from the evaluation are shared in a planned, thoughtful way.”¹¹ “Timely and effective” communication between program evaluators and stakeholders will take place annually to discuss potential alterations in program design, to prepare all stakeholders for the changes that will take place based on the evaluation results, to examine feedback provided by stakeholders, and to discuss information gathered at follow-up.¹¹

Conclusion

Childhood and adolescent obesity continues to pose a serious threat to the overall health and wellness of the United States’ population. While the prevalence of obesity persists among all ethnic and racial groups, “its prevalence is higher in the nonwhite population.”¹⁴ Obesity rates are at an all-time high within this cohort and continue to rise at a significant rate. Furthermore, evidence suggests that obese children are “more likely to become adults with obesity,” which is attributed to other chronic health conditions such as cardiovascular disease, diabetes, and certain types of cancers.¹⁵ Expert panels and leading health organizations including the World Health Organization and Institute of Medicine (IOM) are determined to make an impact regarding this public health issue, recommending the implementation of “comprehensive interventions to combat obesity” such as the Out-SMART Obesity program being proposed.¹⁶

This program aims to reduce the obesity rates among minority children and adolescents in hopes of improving their overall health, well-being, and quality of life. Program goals include facilitating behavior changes in these individuals by improving their self-efficacy, increasing their physical activity levels, educating them on healthy

eating habits, and participating in activities with age-matched peers that are fun and inviting. Additionally, the program will target the parent(s) and/or caregiver(s) of participants with similar strategies to facilitate long-term benefits in the home environment. Out-SMART Obesity will be an effective, multidisciplinary intervention strategy to directly influence and reduce the obesity rates in minority children, adolescents, and their families while focusing on parent education, lifestyle modification strategies, multidisciplinary interventions, and noncompetitive group play.

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