Service Learning in a Pediatric Weight Management Program to Address Childhood Obesity

Fengyi Kuo1, Laurie A. Goebel2,3, Nicole Satkamp3, Rachel Beauchamp3, Julie M. Kurrasch1, Asia R. Smith1, & Julia M. Maguire1

1Department of Occupational Therapy, Indiana University School of Health and Rehabilitation Sciences, Indianapolis, IN, USA, 2Indiana University School of Medicine, Indianapolis, IN, USA, 3Eskenazi Health Services, Indianapolis, IN, USA

ABSTRACT. This paper describes an inter-professional service learning collaboration and reflects benefits and considerations when incorporating a family-oriented approach in the community-based pediatric weight management program. Because obesity has tremendous consequences on a nation's health and economy, a pediatrician in a community health network has utilized an inter-professional team to implement a pediatric weight management program targeting children between the ages of 8 and 15 years. The team incorporates a culturally sensitive curriculum using a family-oriented approach for obesity prevention and intervention. Physicians, registered dietitians, occupational therapists, nurse practitioners, and mental health professionals assist participants in adopting a healthier lifestyle by addressing physical and psychosocial issues related to obesity, developing a nutrition plan, making healthier food choices, and finding fun ways to be more physically active. Graduate occupational therapy students work closely with the team members to assist delivery of interactive activities and behavior intervention.

KEYWORDS. Childhood obesity, family-oriented care, inter-professional collaboration, service learning

SERVICE LEARNING

Service learning has been found to be an effective way not only to enhance the understanding and application of theories learned in the classroom but also to improve the professional skills needed to be an effective clinician (Hoppes, Bender, & DeGrace, 2005; Knecht-Sabres, 2010; Waskiewicz, 2001). Community service learning offers students an enriched quality education by enhancing collaboration and fostering the integration of knowledge via applying it to real life situations.
Service Learning in Childhood Obesity

(Butin, 2010). According to Vogt and colleagues (2011), increases in professional knowledge and skills related to cultural awareness, social justice, and empathy with students are the “life-changing” aspects of service learning experience.

Service learning promotes learning by doing, whereby students actively apply not only to the social needs in the community but also to the unique needs of the individuals residing within the community (Bazyk, Glorioso, Gordon, Haines, & Percaciane, 2010; Gitlow & Flecky, 2005; James, 2001). As the literature shows considerable racial and ethnic disparities in obesity among US children and adolescents (Balistreri & Van Hook, 2009; Franzini et al., 2009; Story et al., 1999; Wang & Beydoun, 2007), future occupational therapy practitioners need to be aware of populations who might be more genetically predisposed to obesity in order to provide preventive strategies and intervention. When it comes to addressing obesity, practitioners should promote healthy lifestyles within family routines and in the community regardless of genetic susceptibility and environmental exposure.

As stated by Kumanyika (2008, p. 68), “recognizing the contributions of environmental variables that are rooted in the social structure and, therefore, beyond the control of individuals is key to understanding the nature of solutions that will be needed.” This is especially important when addressing obesity and issues surrounding food, eating habits, and lifestyle as these are often deeply rooted in culture. As health professionals, it is pivotal that we put cultural, ethnic, and racial influences at the forefront of our minds when working with clients and families.

THE PROBLEM OF OBESITY

Overweight and obesity have tremendous consequences on a nation’s health and economy. Obesity is linked to a number of chronic diseases and long-term psychosocial impact, including cardiovascular risk, hyperlipidemia, hypertension, diabetes, sleep apnea, lack of body image, and bullying (Deckelbaum & Williams, 2001; Han, Lawlor, & Kimm, 2010; World Health Organization, 2000). Since 1980, the percentage of children in the USA who are obese (having a body mass index [BMI] at or above the 95th percentile for children of the same age and gender) has more than doubled to 16.9% (Ogden, Carroll, Kit, & Flegal, 2012). Obesity in children is associated with an increase in blood pressure, dyslipidemia, increased factors related to insulin resistance, and other diseases in adulthood (Crawford, Timperio, Telford, & Salmon, 2006; Deckelbaum & Williams, 2001). Further, obesity may hinder a child’s ability to successfully participate in meaningful occupations (AOTA, 2011).

Obesity also has wide-ranging personal and societal impacts, including psychosocial well-being, employment, and even parental rights. Children with obesity are often subjected to stigmatization and discrimination that can further influence their body image, self-confidence, and may lead to bullying in school (Bellisari, 2013; Janssen, Craig, Boyce, & Pickett, 2004). An editorial in the Journal of the American Medical Association suggested that severe childhood obesity could be identified as a sign of poor parenting, which may warrant placement of the child in protective custody (Murtagh & Ludwig, 2011).

Several variables have been identified as risk factors leading to childhood obesity including decreased physical activity, unhealthy eating habits, biological factors, and environmental and societal influences (AOTA, 2011; Caroli, Argentieri,
Genetic risk factors connected with obesity include “thrifty genotype” (Neel, 1962), obesity–susceptibility genes (Bouchard, 2010; Li et al., 2010; Stutzman et al., 2009), and variants that influence levels of physical activity (Choh, Demerath, & Williams, 2009). Stunkard (1977) invented the term “obesogenic” environment to describe the inactive lifestyle in North America. The obesogenic environment consists of several components such as energy intake, the ways kids are fed, poverty, sleep deprivation, sedentary lifestyle, inactive work, and living environment (Bellisari, 2013). Complex contextual factors have also been identified to influence access to greenspaces (Powell, Slater, & Chaloupka, 2004), physical activities (Evans, 2004), nutritious foods (Drewnowski & Specter, 2004; Suarez-Balcazar et al., 2006), and health (Cahill & Suarez-Balcazar, 2009).

In North America, food is abundant and readily available everywhere in a variety of forms as incentives to over-consume. Food portions and drinks served in restaurants today are several times larger than the U.S. Department of Agriculture (USDA) standard (Young & Nestle, 2002). Many vending machines in school and at work sell sweetened beverages containing high-fructose corn syrup (HFCS; Bray, Nielsen, & Popkin, 2004; Johnson & Andrews, 2010) and unhealthy snacks (Currie, Vigna, Moretti, & Pathania, 2009). Ice cream or pizza rewards for academic performance and positive behaviors, industrially processed lunches served in school cafeterias, and candy sales to raise funds for school programs also promote unhealthy food consumptions in school-aged children (Bellisari, 2013).

**INTERVENTION APPROACHES**

Promotion, prevention, and intensive interventions are commonly utilized to address childhood obesity with varying levels of efficacy. Promotion refers to approaches that encourage and empower children and families to engage in a healthy lifestyle (AOTA, 2011). Healthy lifestyles, including healthy eating and physical activity, have been demonstrated to lower the risk of becoming obese and developing related diseases. Health promotion is often school based and incorporates a combination of nutrition education and physical activity (Brown & Summerbell, 2008; Cahill & Suarez-Balcazar, 2009; Katz et al., 2005). *Healthy Choices For Me*, a school-based health promotion program developed by an occupational therapy faculty, focused on goal setting and building self-efficacy in addition to nutrition and physical activity (Lau, 2011). Health promotion can also be family oriented, in which parent engagement and caregiver education are encouraged (Bluford, Sherry, & Scanlon, 2007; Crawford et al., 2006). Community-based campaigns can be utilized, which focus on facilitating healthy lifestyles across an entire community (de Silva-Sanigorski et al., 2010). Participation in community-based programs has been demonstrated to be associated with positive changes in weight status and health behaviors in youth (Whetstone, Kolasa, & Collier, 2012).

Among acculturated immigrants, the rise of obesity is particularly evident (Balistreri & Van Hook, 2009; Goel, McCarthy, Phillips, & Wee, 2004; Himmelgreen et al., 2004). Non-Hispanic white children had the lowest prevalence
of obesity compared with non-Hispanic black and Mexican-American children (Story et al., 1999; Wang & Beydoun, 2007). Additional identified groups who are at a higher risk of developing obesity may include children whose BMIs are currently between the 50th and 85th percentile for their age (Lu, Thompson, Baranowski, Buday, & Baranowski, 2012), children who are becoming more autonomous in their decision making (Munguba, Valdes, & da Silva, 2008), and non-obese children of obese parents (Epstein et al., 2012). As with health promotion, obesity prevention can target children who are at risk of being overweight or obese. The use of technology may provide additional support in community-based and family-oriented prevention programs. Tate, Wing, and Winett (2001) found positive outcomes using online technology through a behavioral weight management program. The researchers concluded that individuals who received organized and structured interventions with weekly meetings and individual critiques lost more weight compared to those who solely used the links provided on the Internet.

For children who are identified as overweight or obese, intensive interventions connected through the children's primary care providers using family-oriented approaches that address nutrition, physical activity, and behavior might be more effective (Epstein et al., 2012; Nemet et al., 2005; Quattrin et al., 2012; Sacher et al., 2010). Unlike health promotion and obesity prevention, intensive interventions are rarely conducted within the school, as this setting may present the risk of stigmatization toward participants (Ebbeling, Pawlak, & Ludwig, 2002; Katz et al., 2005). Considerations when developing family-oriented intensive interventions include programming that addresses the needs of all family members (Berry et al., 2004), creating culturally relevant curriculum (Williamson et al., 2012), incorporating concepts of volition (McWhorter, Wallmann, & Alpert, 2003; Mendonca & Brehm, 1983), establishing the role of parents and family members within the program (Epstein et al., 2012; Quattrin et al., 2012; West, Sanders, Cleghorn, & Davies, 2010), and strategically addressing the barriers associated with low rates of attendance (Jensen, Aylward, & Steele, 2012; Williams et al., 2010).

Another approach to ensure positive program outcomes for obesity intervention is to consider contextual factors and lifestyle changes. Promoting healthy lifestyles includes limiting access to poor food choices and making extensive changes to policy and societal norms (Ebbeling et al., 2002; Kumanyika, 2008; Kumanyika et al., 2008). Cahill and Suarez-Balcazar (2009) suggest engaging children by empowering them through participatory action research in order to identify environmental barriers to healthy lifestyles and problem solve ways to remove barriers. One possible method would be the introduction of PhotoVoice, in which children are given the opportunity to take photos within their contexts, participate in group discussion related to the photos that document barriers to healthy lifestyles, problem solve together as a group, and advocate for changes (Cahill & Suarez-Balcazar, 2012).

As described by Cahill and Suarez-Balcazar (2009, p. 114), “occupational therapy practitioners can provide interventions to children in underserved communities by addressing family habits and routines as well as school and community supports.” Children’s inclination to actively participate in physical activity is likely established in early childhood and continues through adulthood (Kohl & Hobbs, 1998). Therefore, caregiver education and parent involvements are critical success factors for pediatric weight management program. As children often imitate the behaviors and
lifestyles of people they admire, it is important to involve parents and guardians in obesity prevention and intervention (Crawford et al., 2006).

Because the variables associated with childhood obesity are often multidimensional, finding a holistic approach that addresses all of the relative factors can be difficult. For this reason, multicomponent interventions that utilize inter-professional collaboration and family-oriented approaches are suggested (Berry et al., 2004; Brown & Summerbell, 2008). Additionally, interventions that emphasize children's strengths over their weaknesses, promote healthy lifestyles over weight loss, and engage both children and their guardians are essential (AOTA, 2011; Epstein et al., 2012).

**S.T.O.P. PROGRAM**

Indiana’s estimated total population in 2007 is over six million, with roughly 4.7 million adults. According to the Centers for Disease Control and Prevention (CDC), of those adults, approximately 36% are considered overweight and another 27% are obese (CDC, 2012a). The problem of obesity is not limited to adults alone. In accordance to the CDC’s Youth Risk Behavior Surveillance System (YRBSS) report, 15.5% of Indiana youth (9th–12th grades) are overweight and another 14.7% are obese (Easton et al., 2012, p. 150).

Since 1998, a pediatrician practicing general pediatrics and adolescent health in central Indiana has witnessed the rise in childhood obesity through her practice. Despite a routine referral of many children with obesity to dieticians, the rate of family follow up is unsatisfactory. To address the need for obesity prevention and intervention, the pediatrician started utilizing an inter-professional team to implement a 16-week pediatric weight management program in 2006. Implementation of the program is targeted to children who are at risk of being overweight or obese in urban, low-income, and working class African American and Latino communities (Veugelers & Fitzgerald, 2005). In 2008, the inter-professional team started to incorporate a culturally sensitive curriculum at two health centers located in African American and Latino communities. The curriculum includes a six-month weight management, called the S.T.O.P. Program—Stop Taking on Pounds (Goebel et al., 2011; Reid Hospital, 2008), for children between the ages of 8 and 15 years that uses a family-oriented approach for obesity prevention and intervention.

In January of 2009, a 12-session after-school curriculum covering fitness, nutrition, and behavioral management was included in the S.T.O.P. Program. The participants meet once per week, for two hours each session. Within a year, a bilingual S.T.O.P. Program was offered for Spanish-speaking participants at a health center serving the Latino community. Since then, both English and Spanish S.T.O.P. Programs have been offered three times per year. A summary description of the S.T.O.P. session outline is included in Appendix A.

As a community and family-oriented weight management program, S.T.O.P. focuses on three main goals: (1) to teach families how to eat nutritious foods in the right amount, (2) to teach families fun ways to be more physically active together, and (3) to help families change behaviors that may lead to gaining more weight. These goals are met by providing hands-on educational sessions, participating in physical activities, working toward weekly nutrition and fitness goals, and giving
positive reinforcements through social supports and weekly prizes. Each S.T.O.P. session includes interactive fitness activities designed to engage children and their family members, a nutrition session led by a registered dietician, and a behavior session focused on physical and mental health promotion, therefore empowering participants to make healthier choices together through goal setting and self monitoring.

From the beginning, a key component of the S.T.O.P. Program has been the presence of inter-professional collaboration. The medical director of the S.T.O.P. Program stresses that this approach is critical when addressing a multifaceted issue such as obesity, which requires an understanding of family dynamics, environmental variables, comorbidities, nutrition, mental health, cultural differences, and psychosocial dimensions related to weight management. By involving physicians, nurse practitioners, registered dieticians, occupational therapists, and mental health professionals, the S.T.O.P. Program team is able to offer their families in-depth expertise in each of these areas. The Program’s team members find the contributions from occupational therapy to be valuable in addressing obesity from a holistic perspective that is both client centered and family oriented.

An important aspect of the S.T.O.P. Program is its referral process. Families of children who are between the ages of 8 and 15 years and have BMI of 85% or more are given a S.T.O.P. Program intake packet by their primary care providers. Because a relationship of trust has already been established, the concerns from their primary care providers are often powerful for families to start taking actions. The S.T.O.P. Program intake packet includes an overview of the Program, and information regarding the child’s physical health and psychosocial and emotional developments. Once an application is filled out and returned, it is reviewed by a nurse practitioner to ensure the child is a good fit for the Program. When determined as a fit, the family is scheduled to attend a S.T.O.P. Clinic. This two-hour clinic includes an in-depth physical examination by a nurse practitioner or physician, who is looking for comorbidities such as diabetes, thyroid disease, asthma, high blood pressure, and sleep apnea that may need to be addressed. Nutrition, fitness, and behavior evaluations are also conducted at the S.T.O.P. Clinic.

In addition to the S.T.O.P. Clinic, after 10 weekly after-school sessions, participants are encouraged to participate in S.T.A.R.T. Group (Start Today and Reach for Tomorrow) that meets once a month for three months. The S.T.A.R.T. Group is designed to provide the children and families a sense of empowerment as they begin taking ownership for their health. Each S.T.A.R.T. session includes 45 minutes of physical fitness in which the children lead the activity for a new cohort of S.T.O.P. participants, a 30-minute cooking session with the dietician, and a curriculum review. Six months after completing the S.T.O.P. Program, participants take part in a final visit to the S.T.O.P. Clinic for a follow-up physical examination and an exit interview. At this time, occupational therapy practitioners meet with the participants to craft a lifetime wellness plan.

Although much of the content from the original S.T.O.P. Program is utilized, aspects of the curriculum have been adapted over time to work within the community-based facilities and to meet the needs of the inner-city population. Special attention is focused on incorporating low-cost activities that can increase the children’s exposure to healthy food choices and empower them to become
physically active in daily routines. Occupational therapy practitioners and registered dietitians discuss lifestyle adaptation during weekly sessions. Ample opportunities are provided to program participants to reflect on what weight management strategies may work in their contexts. Participants are encouraged to present their goals, successful lifestyle adaptations, and challenges in the weekly group meetings. This process functions as a support network among participants that provides insights among members.

**SERVICE LEARNING WITH S.T.O.P. PROGRAM**

Occupational therapists, registered dietitians, nurse practitioners, physicians, and mental health professionals assist participants in adopting a healthier lifestyle by addressing physical and psychosocial issues related to obesity, developing a nutrition plan, making healthier food choices, and finding fun ways to be more physically active. Graduate occupational therapy students work closely with the team members to assist with delivery of interactive activities and behavior intervention. The interactive activities include exercises, group fitness activities, playing the Wii or other interactive games, strategies to address bullying, tasting healthy food and drink choices, and learning healthy recipes. Examples of behavior intervention include: (1) setting up S.M.A.R.T. goals (specific, measurable, attainable, realistic, and time-sensitive) (Bovend’Eerdt, Botell, & Wade, 2009; Doran, 1981), (2) positive encouragements and words of praise, (3) self-monitoring, (4) recognizing healthy and unhealthy people, and (5) bullying prevention (Goebel et al., 2011; Reid Hospital, 2008).

This service-learning experience with the S.T.O.P. Program facilitates students’ appreciation of inter-professional collaboration, understanding of health disparities related to obesity, and stimulation of a greater reflection on occupational therapy’s roles in community-based programming and health promotion. Further, the S.T.O.P. Program is offered in two culturally diverse Health Centers: one serving predominately African Americans, and the other targeting Spanish-speaking families. Both Centers provide opportunities for occupational therapy students to collaborate with community members from diverse cultures, and to apply professional communications.

Since the start of this collaboration, approximately 10 graduate occupational therapy students per semester participate in the service-learning project for a total of 28 students. At the beginning of each term, students receive an orientation of the S.T.O.P. Program provided by the occupational therapy faculty and the S.T.O.P. team. They are instructed to consider the service learning experience as a “thinking outside of the classroom” assignment. Students are asked to actively engage in the Program as active participants. Incorporated in a semester-long pediatric course, this service learning experience gives students an opportunity to interact with community stakeholders, apply professional skills and cultural competence, and reflect on what occupational therapy’s roles are from the perspectives of public health and wellness promotion.

In preparing for the experience, students are asked to review service learning materials through an online module including the S.T.O.P. Program website, service learning expectations, and the *S.T.O.P. Program Instructor Manual* (Goebel et al.,
Each student reviews several references and articles related to health promotion for pediatric weight management. In addition, each cohort of students is divided into two groups of five students to visit the health centers where the S.T.O.P. classes take place. During the visit, the faculty member provides a tour of the facility and introduces the students to the professionals and participants. Students then spend the rest of the visit participating in the S.T.O.P. class, including physical activities and behavioral intervention. Throughout the semester, paired students lead three classes, supported by the occupational therapy practitioners. The students also assist the participants develop personal and family goals.

At the end of each session, student leaders debrief with the onsite professionals and then submit reflective journals with recommendations for curriculum enhancements through the course’s online forum. By the end of the semester, students work with their peers to incorporate ideas from the review articles and reflective notes to prepare a final presentation. The final project presentation is arranged as a platform format, with which community partners are invited to attend and provide inputs to this service learning collaboration. Resources for future curriculum enhancement and a plan for future collaboration are discussed at the end of the presentation.

**ANALYSIS OF STUDENT JOURNALS AND PROGRAM MATERIALS**

Thematic analysis (Denzin & Lincoln, 2011; Hesse-Biber & Leavy, 2010; Patton, 2002) was utilized to explore the students’ service learning experience in the S.T.O.P. Program. Braun and Clarke (2006) described thematic analysis as a qualitative methodology of constructivism for identifying, analyzing, and reporting patterns (themes) within data. The process also assisted the authors’ understanding of the students’ perspective on the S.T.O.P. Program for future curriculum enhancement. The Indiana University’s Human Subjects Office determined that the project met the federal exempt categories criteria; therefore, a review and approval process was not required.

Upon completion of each session, students individually documented a self-reflection of the visit, and submitted the journal online via the course’s online forum. A three-part journal format was utilized for the online submission. The format was such that each page of the journal entry was divided into thirds: description, analysis, and application. In the top section, students described aspects of the service experience. In the middle section, students analyzed how their participation in the S.T.O.P. Program related to the learning principles of the service learning. In the application section, students commented on how the experience and Program content can be applied to their professional development and professional growth.

At the end of the service learning experience, students worked with peers in small groups to reflect on their service learning experience in a formal presentation. Reflections and discussion through the presentation were captured for analysis and included in the program enhancement. All journal entries, presentations, and recommendations were de-identified before the analysis was completed. One faculty member and a graduate student assistant serving as external reviewers individually coded the data and searched for common patterns. The identified patterns, themes, and extracted quotes were presented to two student representatives for member
The students involved in the service learning experience expressed several benefits of inter-professional collaborations in the S.T.O.P. Program. They recognized the values of family-oriented approaches in community-based obesity intervention and expressed that the experience equipped them with a multitude of personal growth and professional skills, including therapeutic use of self and activity, advanced clinical reasoning, sensitivity to cultural differences, and awareness of health disparities, community resources, and how to carry out community-based programming. Analysis of the student reflections and Program materials revealed five major themes: (1) importance of family-oriented care, (2) encouraging active participation and client-centeredness, (3) valuing contextual factors and providing alternatives, (4) utilizing an inter-professional collaboration, and (5) challenges and opportunities observed through the service learning.

**Importance of Family-Oriented Care**

With the S.T.O.P. Program being within community health care centers, it provided great access for participants. The incorporation of a family-oriented approach that worked closely with the local communities was instrumental to encourage family involvement. Parents who came to the Spanish-speaking center often brought their entire families. Adolescent participants would exercise with their younger siblings and were motivated to be positive role models.

Direct involvement of at least one caregiver with his or her child in pediatric weight management has been found to improve the child’s short-term and lifetime weight regulation (Epstein, 2007). During early childhood and adolescence, parents serve as role models for their children concerning lifestyle, food choices, physical activity, and self-concept. Children depend on their caregivers to provide opportunities to be involved in activities and to validate their life choices. Therefore, the fact that the S.T.O.P Program encourages caregiver involvement is essential. Getting the parents involved for the nutrition portion of the Program encourages their children to try new foods, which may sustain more balanced meals. The student leaders consistently reported that parental engagement was essential to ensure successful carry over of the curriculum:

The fact that the S.T.O.P. Program requires caregiver involvement is key. Since the kids are young, they mostly rely on their guardians to do the grocery shopping and meal preparation. Therefore, getting the parents on board for the nutrition part is the only way the children will have the opportunity to try new foods and eat well-balanced meals.

This service learning experience expanded students’ role as facilitators to work collaboratively with caregivers. The following statement demonstrated this reflection:

The lesson for the parents this week was encouragement and positive support. We supported the session by reviewing strategies with the parents on how to
encourage their children through positive behavior support . . . I am impressed by the parents’ involvement in the session. Two of the parents complete the exercises with their children and participate in the role play. I think that these children are more inclined to participate when their parents are next to them doing the same thing as they are.

**Encouraging Active Participation and Client-Centeredness**

Students repeatedly indicated that this service learning experience enhanced their ability to utilize therapeutic use of self. In these two examples, the students highlight making a personal connection with the adolescents:

The continuity system of having one of us (occupational therapy students) present during consecutive weeks truly helped the sessions. The participants became familiar with us and open dialogues were easily established. It was also easier to encourage participation when a therapeutic relationship had been established from previous weeks.

The participants definitely remembered me from last time and were much more open and willing to talk. Two girls wanted me to sit by them during the session and were excited when I tried the food with them. This is a perfect example of how important it is to build rapport with the participants!

Students utilized therapeutic use of activities to keep the children engaged and to encourage client-centeredness as demonstrated with these statements:

The children and their parents were asked to choose what exercise they wanted to do for the physical activity portion . . . everyone was more motivated to participate when they were allowed to make their own choices.

After our workout, we came to a jenga-type game with different colored blocks. Each time you took out a block you had to answer a question such as, “What was a time when your friend was having a tough time, and how did you help them get through it?” The game was complete with both children and parents together. In order to let us get some experience leading groups, the OT took a step away as we asked the questions and helped facilitate the conversation. We were receiving a lot of great input from the parents, but the children were shy and timid. We then encouraged children’s participation with the next few questions, and heard great responses from the children and really seemed as though some of them had higher interpersonal skills than we may have expected. This led to great conversations on feeling and how to put yourself in another person’s shoes. The children also received a lot of ideas and suggestions from the group for how they can deal with situations that they may never have even thought to talk about with an adult.

When the parents were not able or willing to participate in the physical activities, occupational therapy students served as role models to encourage group interaction and social participation. As participation increased, students were motivated to volunteer in the Program beyond course expectations. As one of them described:
Though I have completed the requirements for our service learning assignment, I hope to attend as many sessions as possible. I want to see how the participants learn and change over the course of the Program as I have already seen small changes in some of them.

Active participation was also observed in nutrition sessions when a variety of healthy food choices were presented. The food items were unfamiliar to some of the participants due to their cultural backgrounds. One adult caregiver expressed her amazement of how delicious the food was after trying a couple pieces of vegetables and fresh fruits. The group finished the food tasting with a lively discussion of food items across cultures and ways to incorporate diverse food choices that were healthier in meal preparations.

Valuing Contextual Factors and Providing Alternatives

During this experience, students became aware of contextual barriers impacting the children’s access to healthy lifestyles and food choices, for example:

I talked to them to see what would motivate them to reach their goals each week. They said they needed to have more fruits and veggies at home which they don’t always have available . . . there are a lot of fast food places, but just not a supermarket available within walking distance.

Limited access to healthy food items was identified as a major barrier for some families. One of the communities was located in an inner-city neighborhood where it was considered a “food desert.” CDC (2012b) defined food deserts as “areas that lack access to affordable fruits, vegetables, whole grains, lowfat milk, and other foods that make up the full range of a healthy diet.” Several parents in the Program expressed challenges in lack of public transportation and limited grocery stores with fresh products in the city. Another contextual difficulty was lack of access to green spaces and safe places. Problem-solving strategies and alternatives were discussed in the Program and described below:

This week we talked about fast food with the dietarians and identified the ingredients that made it unhealthy, such as sodium, fat, . . . , which the kids have more access to in their community. We identified some healthy choices the children could order instead of high-fat, high-sodium items like French fries . . . we also discussed what eating behaviors are healthier . . . at the end of the discussion, the kids were really good at identifying food choices and making commitment to healthy eating behaviors.

The lead OT discussed ways to get more exercise by changing routines and visiting places with free membership such as parks, museums . . . to get exercise while having fun . . . by the end of the night, most from the group had two more goals for next week, and they learned several alternatives rather than watching TV, eating unhealthy snacks, and getting sugary drinks.

Utilizing an Inter-Professional Approach

Students highly valued the utilization of inter-professional collaboration within the S.T.O.P. Program. For example, two students conveyed:
One reason why I believe the S.T.O.P. Program has been so successful is its inter-professional teamwork. It blends both the psychosocial and physical elements of weight management in the Program. Appropriate self-care and overall health require more than just food and movement. Ideally, individuals will also possess healthy self-esteem, education on nutrition and fitness, a social support system, access to a variety of quality foods for well-rounded diet, and opportunities for physical activity.

I was very surprised with the amount of resources that the S.T.O.P. had for the program including professionals, location, food, packets, etc. Having these tools really increases the ability to put together a successful program. I was very interested in this line of work within OT and was very glad for this exposure. It was great to see an OT leading this activity and get an understanding of how the scope of our practice covers wellness, which is very relevant.

Students valued the real-life, hands-on experience working with professionals, and were empowered to contribute their psychosocial knowledge and skills to the Program. An essential aspect of the S.T.O.P. Program was its behavior management to develop participants’ self-confidence and address bullying; students stated:

Several parents asked about what to do if they felt their child was having problems with school . . . the pediatric resident at the session told them that if their child is being bullied they should talk to their adult caregivers and pediatricians. The pediatrician can write a letter to the school administrators and teachers to help advocate for the child . . . I also shared a strategy of emailing schools, as an email can be used as a legal document. Thus, official letters and emails can be powerful in meeting with principals and administrators, than over stating “I talked to them on several occasions.”

The behavior aspect of the S.T.O.P Program is important . . . we worked with the team members to give parents the warning signs and advice on addressing bullying with their children. The children are able to share personal experience of bullying and role-play on how to respond when they are experiencing bullying.

**Challenges and Opportunities Observed Through the Service Learning**

During the service learning experience, students observed several challenges while implementing obesity prevention and intervention in the community. As the S.T.O.P Program included children aged 8–15 years in the same group, an in-depth discussion of psychosocial issues with a wide age range of participants became difficult. These issues included self-confidence, body image, and bullying. Students recommended separating younger children and adolescents into two groups. Yet, this arrangement would likely require additional personnel, supplies, equipment, and space.

Although the participants who came regularly were making progress, one of the major challenges was low attendance and retention rate. The challenge was consistent with other pediatric weight management programs (Jensen, Aylward, & Steele, 2012; Williams et al., 2010). Factors associated with low attendance included racial/ethnic minorities, poverty, single parent households, and lack of
access to transportation (Jensen, Aylward, & Steele, 2012; Williams et al., 2010). One student suggested conducting weekly reminder calls to the families. The reminder calls may serve as follow-ups between weekly sessions and as incentives to encourage completion of weekly personal goals.

As psychosocial problems and family dysfunction manifested additional challenges to program outcomes (Williams et al., 2010), engaging families in the early stages of obesity interventions and providing caregivers with parenting support and behavior strategies led to improve participation and greater efficacy of intervention outcomes (Quattrini et al., 2012; West et al., 2010). Therefore, S.T.O.P. Program provides practitioners and students an opportunity to emphasize the importance of addressing both physical and mental health in obesity interventions.

Franzini and colleagues’ (2009) study indicated that Hispanic and black children had lower overall physical activity than did white children. Contextual barriers such as living in a “food desert” and lack of access to healthy food choices frequently showed up on the students’ reflections. This was exemplified by the following student’s observation:

I was shocked when one girl said she had chocolate chip cookies and chocolate milk for breakfast . . . then I found out that was the school breakfast for that day! When I got home, I looked up the public school breakfast and lunch menus (which supply two of three meals for the children who are in their meal program five days a week). What I saw explained why these families need more information on nutrition and support for weight management. The menus were loaded with white bread, sugar, high-fat composite red meats (sausage, pepperoni, hot dogs), battered and fried foods, and greasy pizza. There were very few vegetables offered, and almost no greens. The “juice” offerings were the same sugary juice drinks that the dietitian had identified as unhealthy. Two of the four milk offerings were high-sugar chocolate and strawberry flavored. How can we expect the kids to eat healthy and perform well when the schools are offering them the opposite choices?

In addition, lack of access to green spaces and safe places for children to be physically active was identified as an issue related to social injustice; therefore, this service learning experience created an opportunity for students to be involved in advocacy. One student noted:

I asked the children if they spent less time sitting in front of screens when the weather was warm, and the answer was a resounding YES! That led into an introduction to a local activity center that families could utilize in the colder months (for a small fee). Although the member dues were reasonable for a family, it made me think that the local community is lacking green spaces, safe locations, and low-cost options for physical activities. This reflection motivated me wanting to be involved in advocacy.

**OUTCOMES OF THE SERVICE LEARNING PROGRAM**

The S.T.O.P. Program exemplifies a comprehensive family-oriented model in pediatric weight management for students to experience inter-professional
collaboration. As a result of the service learning aspect of the Program, many students expressed their desires to be more actively involved in community through volunteerism and advocacy. Two students stated:

I am proud to be involved in this Program and look forward to helping out in the future. I came home energized and full of ideas last night. Seeing OT in action and being able to work with other professionals is really rewarding for me. I plan to volunteer as many hours as I am able over the upcoming months.

By attending the S.T.O.P Program, I was able to identify and reflect common behavior issues among children, increase their compliance with activity participation, and guide both parents and children through a variety of exercises. I also was able to advocate for health promotion by explaining the importance of healthy eating and physical activity on daily routines, and encourage participation in activities that they can do together as a family.

By the end of this service learning experience, students were becoming change agents. Examples of students’ advocacy included compiling a list of community resources for participants, researching the state laws and legislations related to bullying prevention, informing parents on anti-bully policies in schools, educating participants on the importance of recess and physical activities, and providing recommendations for curriculum enhancements.

When it comes to weight management, caregivers are often challenged by general public concern about family routines and parenting styles. Through the facilitation of professionals and supports from the group, students assisted parents in brainstorming ideas on how to incorporate healthier food choices into their meals and ways they can reward their children with alternatives other than food. Suggestions from the group members included: a trip to a local park, walking around the mall or downtown, going to a fitness center, and allowing their children to have playtime or sleepovers with trusted friends. The experience also provided students an opportunity to reflect on their own eating habits and activity routines, consequently taking steps to implement a healthier lifestyle. As expressed by one student:

Through this Program, I was able to modify my own eating habits by incorporating the consumption of more fruits, vegetables, and whole grain items and decrease the consumption of meats, and high-fat, high-sugar, or high-sodium items. I also increase my weekly exercise regime. This experience changed my own lifestyle as well.

Although analysis of student journals revealed short-term behavior changes such as increased physical activity and making healthier food choices, long-term outcomes of these behavior changes were beyond the scope of this paper.

Students recognized that obesity, weight management, and exercise are not particularly exciting or “cool” topics for adolescent children to discuss with their caregivers, as adolescents may prefer to hang out with friends during after-school hours. Consequently, the occupational therapy students served as great mentors and excellent contributors in the S.T.O.P Program, as they are closer in age to the adolescents to establish relationships, offer guidance, and encourage social participation.
Students reflected that the discussion of bullying was often a sensitive topic for both parents and their children. Janssen and colleagues (2004) reported that overweight and obese children are more likely to be the victims and perpetrators of bullying than their normal-weight peers. This is no exception among the S.T.O.P. Program participants, as many children in the Program have experienced peer aggression. Therefore, occupational therapy students engaged in such programs will need to be equipped with professional knowledge related to similar issues and demonstrate competence in providing bullying prevention strategies. Working closely with the S.T.O.P. Program, the students searched and located community resources and evidence-based practice in bully prevention using positive behavior support (Ross, Horner, & Stiller, 2009). These resources and strategies were reviewed and incorporated into the behavioral component of the S.T.O.P. Program.

During a behavior management session, several parents indicated the difficulty of praising their children, as they had limited experience with encouragements during their own childhood. Through the facilitation of S.T.O.P. Program leaders, students and parents role-played giving encouragements to each other and discussed strategies to utilize more positive behavior support into family routines. In addition, occupational therapy practitioners and students shared their reflections on the importance of positive encouragements in nurturing self-confidence and emotional development in young children. At the end of the session, parents had identified several goals to integrate the behavior strategies at home. This level of trust and support from the group nurtured family dynamics and encouraged each family as a unit to make a quality-of-life commitment together.

Students identified that hearing the families’ perspectives during the S.T.O.P. sessions provided great insights into the diversity of value system that the children have experienced. The students came to a realization that client-centeredness, respect, sensitivity to participants’ contextual barriers, and utilization of cultural competency are critical success factors to ensure positive outcomes. Making a long-lasting lifestyle adaptation for weight management would require attitude and behavior changes. Becoming familiar with and respectful of the participants’ culture, as well as what is socially relevant for the children and their families, will help improve participation in family-oriented obesity interventions targeting high-risk, socio-economically disadvantaged youth.

**SUMMARY**

This paper describes the implementation of a service learning experience of occupational therapy students in a community-based pediatric weight management program. Through participating in the S.T.O.P. Program, students collaborate both with peers and with community members, while working with an inter-professional team. The experience enables students to develop clinical competence and think of themselves as advocates, which may better prepare their transition into the professional world. The S.T.O.P. Program has provided students with an opportunity to apply skills and to collaborate with community members from diverse cultures in order to improve their physical and mental health. No longer just principles for best practice, inter-professional collaboration, and family-oriented approach are experienced first-hand and become legitimate. As this knowledge translation prepares
students with leadership skills to advocate for obesity prevention and health promotion, the S.T.O.P. Program may serve as a model for training future practitioners, and at the same time making an impact in the community.

**ACKNOWLEDGMENTS**

We thank the S.T.O.P. Program participants and staff who made this service learning collaboration possible. The authors also thank Susan Bass, MS, OTR and Thomas Fisher, PhD, OTR, CCM, FAOTA for their managerial support of this collaboration.

*Declaration of interest:* The authors report no conflict of interest. The authors alone are responsible for the content and writing of this paper.

**ABOUT THE AUTHORS**

Fengyi Kuo, DHS, OTR, CPRP, is Clinical Assistant Professor in the Department of Occupational Therapy, Indiana University School of Health and Rehabilitation Sciences, Indiana University–Purdue University, Indianapolis, Indiana, USA. **Laurie A. Goebel** is associated with Indiana University School of Medicine, Indiana University–Purdue University, Indianapolis, and also with Eskenazi Health Services, Indianapolis, Indiana, USA. **Nicole Satkamp** is associated with the S.T.O.P. Program of the Eskenazi Health Services, Indianapolis, Indiana, USA. **Rachel Beauchamp** is associated with the S.T.O.P. Program of the Eskenazi Health Services, Indianapolis, Indiana, USA. **Julie M. Kurrasch** is in the Department of Occupational Therapy, Indiana University School of Health and Rehabilitation Sciences, Indiana University–Purdue University, Indianapolis, Indiana, USA. **Asia R. Smith** is in the Department of Occupational Therapy, Indiana University School of Health and Rehabilitation Sciences, Indiana University–Purdue University, Indianapolis, Indiana, USA. **Julia M. Maguire** is in the Department of Occupational Therapy, Indiana University School of Health and Rehabilitation Sciences, Indiana University–Purdue University, Indianapolis, Indiana, USA.

**REFERENCES**


Deckelbaum, R. J., & Williams, C. L. (2001). Childhood obesity: The health issue. *Obesity Research, 9*(S1), 239S–243S.


**APPENDIX A**

S.T.O.P. Session Summary (Goebel et al., 2011; Reid Hospital, 2008).

<table>
<thead>
<tr>
<th>Session</th>
<th>Nutrition</th>
<th>Behavior</th>
<th>Fitness</th>
<th>Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S.T.O.P. Clinic: 8 am–noon</td>
<td>Nutrition consult, knowledge quiz</td>
<td>Physical examinations, behavior interview</td>
<td>Fitness testing</td>
</tr>
<tr>
<td>2</td>
<td>After-school session #1: 4:30–6:30 pm</td>
<td>Serving sizes, pasta demo</td>
<td>Are you ready?</td>
<td>Warm-up, stretching, family and group games</td>
</tr>
<tr>
<td>3</td>
<td>After-school session #2: 4:30–6:30 pm</td>
<td>Fruit and veggie sampling, eating healthy on a budget</td>
<td>Rewards, words of praise and encouragement</td>
<td>Walking, pedometer activity</td>
</tr>
<tr>
<td>4</td>
<td>After-school session #3: 4:30–6:30 pm</td>
<td>Breakfast, cereal scoop activity, label reading</td>
<td>How emotions lead to eating, hunger vs. cravings</td>
<td>Strength training, toning bands, team resistance ring</td>
</tr>
<tr>
<td>5</td>
<td>After-school session #4: 4:30–6:30 pm</td>
<td>Dairy, calcium, yogurt, and pudding pop demo</td>
<td>Bullying, bully buster bingo</td>
<td>At-home and partner exercises</td>
</tr>
<tr>
<td>6</td>
<td>After-school session #5: 4:30–6:30 pm</td>
<td>Juice, sweetened beverages, sugar-free drink tasting</td>
<td>TV, video game, computer and screen time, time log</td>
<td>Interactive video games—Wii fit, dance</td>
</tr>
<tr>
<td>7</td>
<td>After-school session #6: 4:30–6:30 pm</td>
<td>Fast food, sodium</td>
<td>Healthy vs. unhealthy people</td>
<td>Playground and ball games, jump rope</td>
</tr>
<tr>
<td>8</td>
<td>After-school session #7: 4:30–6:30 pm</td>
<td>Recipe modification, recipe demo</td>
<td>Self-image and self-esteem games, complimenting others</td>
<td>Fitness videos, dance</td>
</tr>
<tr>
<td>9</td>
<td>After-school session #8: 4:30–6:30 pm</td>
<td>Meal planning, healthy lunches, healthy snacks</td>
<td>Goal review</td>
<td>Cardio, strength intervals</td>
</tr>
<tr>
<td>10</td>
<td>After-school session #9: 4:30–6:30 pm</td>
<td>Fun and healthy cooking</td>
<td>Review games (play before cooking)</td>
<td>Circuit training, activity review</td>
</tr>
<tr>
<td>11</td>
<td>After-school session #10: 4:30–6:30 pm</td>
<td>Knowledge quiz</td>
<td>Physician visit</td>
<td>Fitness testing</td>
</tr>
<tr>
<td>12–14</td>
<td>Support Group: 4:30–5:30 pm</td>
<td>Nutrition topic</td>
<td>Self-monitoring</td>
<td>Fun-group fitness</td>
</tr>
<tr>
<td>15</td>
<td>Clinic: 8 am–noon</td>
<td>Nutrition consult, exit nutrition plan</td>
<td>Physician visit, behavior interview (if needed)</td>
<td>Exit fitness plan</td>
</tr>
</tbody>
</table>