



Feedback Following a Family-Focused Pediatric Weight Management Intervention: Experiences From the New Impact Program

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Abstract

Weight management interventions have the potential to reduce body mass index and help families adopt healthier behaviors. This study examined feedback from families to identify central aspects of various intervention strategies based on self-determination theory constructs that have the strongest influence on patient success, with the aim of understanding how best to approach weight management in a clinical pediatric setting. Telephone interviews were conducted with 22 individuals (20 parents/guardians and 2 teenagers) who participated in a multidisciplinary weight management program and data was analyzed using inductive and deductive thematic analysis processes. Participants identified motivational interviewing strategies that were most influential to their success. Parents and patient's identified barriers and facilitators to success included patient readiness to change, personal logistics, family engagement, and establishing long- and short-term goals. Successful pediatric obesity management requires consideration to both the patient and family's readiness, structured implementation adaptations to address barriers, intentional efforts to move from external reward to internal motivation, and strategies to ensure families develop self-efficacy toward achievable healthy behaviors.

Keywords

childhood obesity, weight management, self-determination theory, motivational interviewing, pediatrics

Introduction

Childhood obesity represents a significant threat to a child's physical and mental health, with potential long-lasting effects (1). Despite substantial clinical and policy efforts, there is no evidence of a significant change in prevalence (2,3). In fact, severe obesity is on the rise among certain demographic groups, including adolescents, non-Hispanic black children (2), and children with lower socioeconomic status (4). The Centers for Disease Control and Prevention places the prevalence of obesity among American children at 18.5%, or about 13.7 million children and adolescents (3). Childhood obesity puts young people at a much higher risk for multiple chronic illnesses as they grow into adulthood (5,6). In addition to health impacts, the economic repercussions of obesity are staggering. An estimate of US medical spending attributed to obesity was approximately US\$1901 in 2014 (US\$1239-US\$2582) for each individual with obesity, which totaled approximately US\$149.4 billion costs nationally (7).

Results from primary care weight management interventions in children and adolescents have varied, while some are

effective (8,9). Recent research demonstrates only marginal effect for these interventions with respect to body mass index (BMI) reduction or a positive change in healthy behaviors, articulating the need for renewed, more novel approaches to pediatric weight management (10). Some of the more effective studies include family-based pediatric lifestyle modification interventions focused on reducing BMI and improving healthy behaviors, (11–13). Lifestyle

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programs that use a multidisciplinary team approach have also been found to be beneficial (14–16).

Motivational interviewing (MI) is a core component of many programs aimed at producing health behavior change, including obesity (17,18). Motivational interviewing is a widely adopted counseling technique, but also criticized for lacking a coherent theoretical framework to determine efficacy of its use (19). Self-determination theory (SDT) is used to identify relationships between a child with obesity initiation of, and adherence to, healthy behaviors and the psychological barriers influencing the child's success in weight management or loss (20,21). Self-determination theory operates on the premise that people have an innate tendency toward growth and emphasizes factors that facilitate or disrupt intrinsic motivation (19), including self-perceived autonomy and competence. While SDT is a theory and MI a technique, research suggests that pairing SDT with MI techniques may be a useful combination in the field of health behavior change (20).

The purpose of this study is to examine feedback from families who participated in a multilevel weight management program to identify the central aspects of various MI techniques and SDT competencies that have influence on patient success, with the aim of understanding how best to approach weight management in a pediatric setting.

Methodology

Setting and Population

All study participants are either patients of the New Impact weight management intervention or parents/guardians of New Impact patients. New Impact is a family-centered pediatric weight management program focused on lifestyle behavior modification for children and adolescents with a BMI percentile greater 85%. The program is based on the Obesity Care Model and delivered by an interdisciplinary team (22). New Impact is described in more detail in an earlier publication, but generally, it consists of a pretreatment assessment followed by an 8-session active treatment phase and a 3-session maintenance follow-up phase (11). Each session is tailored to family needs using goal setting, food logs, and exercise logs. The program is offered through a hospital system specialty clinic by an interdisciplinary treatment team composed of a registered dietitian, psychologist, pediatrician, and an exercise specialist (later replaced with a reduced cost Young Mens Christian Association (YMCA) membership). This phase of the program had a US\$250 program fee that included a reduced cost YMCA membership fee. Physician visits were billed to participant insurance using standard evaluation and management codes. Other out-of-pocket costs included co-pays dictated by insurance providers. The program team, trained in MI, engage with children and their families about lifestyle changes for weight management during a 2- to 3-month active treatment phase, followed by a maintenance phase

that may last up to a year. Program participants receive a clinical assessment, psychological assessment, nutrition education, access to physical activity programs, and assistance with setting individual and family goals for nutrition and physical activity behaviors.

Data Collection

A pool of potential study participants was created by identifying all program participants who completed a minimum of 4 active treatment sessions. Patients completing less than 4 active treatment sessions were not eligible for this study. This yielded 102 potential study participants who were divided into 4 groups based on the number of sessions completed and if the patient maintained or gained weight during the program. We randomly selected 5 patients from each group for the first round of recruitment. We repeated this process until we successfully recruited 5 patients and/or their parents/guardians from each group. Participants were recruited, and interview data collected by phone. Parents provided consent and children assented verbally prior to initiating the interviews. For children younger than 12 years, we encouraged parents and children to complete the interview together. For children older than 12 years, we encouraged parents and children to complete the interview independently.

All interviews followed a semistructured format. A script was used to guide the interview to ensure that questions were asked regarding their experience with each primary component of the program and their perception of program impact. Generally, each interview lasted about 15 minutes. All interviews were audio-recorded, and detailed notes were taken for each interview. Audio recordings and notes were used to create transcripts of each interview. All interviews were completed by the same trained interviewer who was not part of the clinical team.

Data Analysis

Thematic analysis (23) was completed using a hybrid inductive and deductive approach (24) in Atlas.ti version 8. The analysis process began by reviewing all transcripts using an open coding format to identify various ways participants described their experience and the elements of the program they remembered (or did not remember) as they described their experience in the program (25). A second round of inductive coding was driven by the codebook developed in round 1, completed by a 4-person research team, and yielded a percent agreement of 81.7%. This round of coding focused on patient and family member experiences related to success or lack of success with the program, their personal behavior change process as an individual or family, and implementation suggestions to improve patient experience. Once all data were coded, a 3-person team constructed themes from the coded data and used a deductive approach to triangulated codes with STD constructs (26–28) and MI strategies (18).

Results

Participant Demographics

Individual interviews were conducted with 22 individuals representing 20 current or former New Impact patients (see Table 1 for demographics). Twenty interviews were conducted with a parent or guardian, and 2 interviews were conducted with a teenage patient separate from their parent or guardian. Interview candidates consisted of parents and children (aged 6-18 years old, English, or Spanish speaking) previously enrolled in the New Impact program and met the inclusion criteria described above.

Thematic Analysis Results

Qualitative analysis identified participant outcomes beyond weight loss and BMI change; participants and their families gained knowledge, attitudes, behaviors, and skills related to healthy eating, exercise, and positive self-concept. Motivational interviewing techniques deployed by staff provided a framework for these achievements through goal setting,

raising awareness about dissonance between goals and behavior, and expressing empathy. Program success was impacted by barriers and facilitators, primarily regarding patient readiness, program logistics, family engagement, and long-term goals.

Program impacts on knowledge, attitudes, behavior, skills, and weight. Participants described success in multiple ways including improvements in knowledge, attitude and confidence, sustained behavior change, learning or adopting new skills, and weight management. Most participants described becoming more aware of or more knowledgeable about some aspect of nutrition/eating during their experience with the program. Sometimes they could remember specific program elements such as “Go Slow Whoa,” “My Plate,” or “Let’s Go 5210,” but more often, they described becoming more aware of general eating habits in a way that related to messages conveyed through these program elements. Regarding attitude and confidence, participants described being more open to eating healthy and working out, understanding that weight management is a lifestyle approach, having confidence to play sports, or gaining a boost in confidence and self-esteem. Behavior successes were most often described as sustained small changes in eating such as continuing to drink more water and less or no soda or continuing to eat smaller portions. However, most participants did not explicitly link these behaviors back to goals set during the program; they listed and described these behaviors as specific focus areas for them during the program. Example quotes related to knowledge, attitudes, behaviors, and skills can be found in Table 2. Although all participants described some form of success in their weight maintenance journey, there were no clear patterns connecting program participation, changes in knowledge, attitude, or behaviors with weight management or weight loss.

Motivational interviewing strategies. As interviewees described their experience with the program, elements of MI were frequently recognized; strategies most often described

Table 1. New Impact Qualitative Study Participant Demographics.

	N (%)
Gender	
Male	11 (55)
Female	9 (45)
Race/ethnicity	
Non-Hispanic black	9 (45)
Non-Hispanic white	10 (50)
Hispanic	1 (5)
Program completion	
Not completed	9 (45)
Completed	11 (55)
zBMI postprogram change	
Increased zBMI	6 (30)
Decreased zBMI	7 (35)
Unknown zBMI change	7 (35)

Abbreviation: zBMI, body mass index z-score.

Table 2. Interview Excerpts of Knowledge, Attitudes, Behaviors, and Skills Thematic Areas.

Thematic area	Quotes
Knowledge	“She learned to drink more water and to stay away from the sugar, also she learned to eat more fruits and vegetables, and also learned to exercise while watching TV.”
	“The plate diagram was very good . . . liked how they brought out different recipes that would be similar . . . and also really liked seeing how much sugar was in soda.”
Attitudes	“Just the motivation, we feel better, we feel better about ourselves, we have more energy, we feel better health wise, lots better sleep. In general, lots of things that keep motivating you to do the right thing.”
	“They just changed her outlook on how she ate food. It just made her more conscious of what she was eating . . . she may not need as much of this or she may need more water vs soda or juice.”
Behaviors	“We have . . . started eating more green vegetables and fruit and started watching their portion sizes and drinking more water.”
	“Well, of course our diet. We follow it very closely and still do. And then exercise we made a point to have dedicated exercise for our entire family, as well as extracurricular type activities for the kids.”
Skills	“How to cook meals and how to cook things they like with less calories, fat, and salt . . .”
	“The biggest thing we changed is really starting to paying attention to the food labels and then the portion size.”

include goal setting, raising awareness about dissonance between goals and behavior, and expressing empathy. Participants described being guided to set reasonable, modest goals that focused on either eating less, changing how food is prepared, drinking less sugary drinks, or exercising more frequently. Many participants used phrases such as “trying to eat better” or “trying to make better choices.” However, others described following a prescribed diet very closely and making dedicated time for family exercise. Many participants described ways that the program staff encouraged them to go at their own pace and that the staff encouraged moderation. They also discussed becoming more aware of the level of commitment and work that would be required to see the level of weight loss they desired. Some parents voiced frustration about their child not being ready or willing to put in the effort needed to see success. Additionally, participants shared several ways that staff demonstrated empathy. Most often, they discussed how they valued the experience of having someone spend time with them and talk with them about their weight or their child’s weight. They also emphasized that the staff made learning easy and that they included the family in the sessions. Several participants mentioned their time with the counselor and how much they valued the counselor talking with them about their concerns and helping them with self-esteem and body image.

Across all strategies, participants described external and internal factors contributing to their motivation. External factors focused mostly on receiving incentives from the program for participation and reaching goals. Internal factors, such as the changes in knowledge and attitudes discussed in Table 2, were most often discussed as they described what motivated them to continue with their new behaviors after completing the program.

Programmatic barriers and facilitators. Families described key factors about their experience with the program they considered either barriers or facilitators for program completion. These were identified across all demographics, levels of program completion, and levels of success with weight management. See Table 3 for example quotes related to thematic areas for barriers and facilitators. Participant readiness begins with recognizing a need to change followed by a careful consideration of the pros and cons of change, understanding the commitment needed to make change and still being motivated to change. Participants described personal readiness characteristics such as having a good attitude, being persistent, and being self-aware as attributes for their success. They provided examples of how family members helped provide support to keep them motivated by providing social support and encouragement. Identified readiness

Table 3. Facilitators and Barriers Themes.

	Facilitators	Barriers
Patient readiness	“... she was really ready to do something about her weight issues, and um she enjoyed going to the YMCA, doing the fitness classes with her age group; she also enjoyed, well they all liked, the rewards program too.”	“Oh well, of course, it didn’t work like we wanted because he just wasn’t ready.” “Um, like temptations, like having the temptations of like sugary and salty things. Like, it’s really hard for me and I’m lazy so it’s hard for me to get up and go somewhere... like to go work out or something like that.”
Program logistics	“... (he liked that)... where they got together and did exercises, and he wasn’t the only one that was, you know, challenged”. “... the flexibility, the fact that we live an hour away, but they were always willing to work with us, schedule wise. Also, very clear and easily understood information, that was especially helpful for the kids because it was on their level.”	“Um, it was too far away, almost an hour away.” “I tried a few things, I even tried going to the Y, but because I couldn’t afford it so long for them to help me, it didn’t matter that he had high blood pressure or could be a diabetic—could be my weight, it’s all about money, it doesn’t matter if someone cares if you don’t have the money.”
Family engagement	“It’s a matter of time—sometimes it’s hard to keep up with the exercise and family, but it’s more fun with family.” When they were attending, they were very involved, especially “when we were going to the gym (mother, participating daughter and sister) would all workout at the gym together”	“We try, but not all the time. And I don’t know because I’m at work all day and they’re home with their dad so I don’t think he’s as strict...” “Well, a lot of nutrition facts, and I think she learned, she learned more than I did because I already knew a lot of it.”
Long-term goals	“Well, we have made a lot of changes... I am waiting on her to come out of volleyball camp, we’re trying to get her into an organized sport that she’s interested in. And she loves it... that’s a big deal, a great thing!”	“... he wanted that, to have lost more weight. And that’s what his frustration is, he doesn’t understand why he doesn’t lose weight, he gains weight. I try to explain that he’s growing and he’s changing but he’s just like “no matter what I do, I can’t lose weight. I eat all the right stuff.” “With time I would have liked to see her lose a little bit more weight while she was in the program, but it did help her to make better decisions and she didn’t gain as much weight while she was in the program.”

barriers were that children were not mentally ready or fully understanding of what they were supposed to do in the program, and how not seeing big changes made it difficult to stay motivated.

The New Impact program involves a combination of assessments, nutrition education, access to physical activity programs, and working with the interdisciplinary team to set individual and family goals. There were some group elements (such as exercise classes with other participants), but for the most part, families scheduled individual appointments with providers. A few families found the flexibility with scheduling to be helpful. Most barriers to fully participating in the program were related to distance to the program site and program cost. Cost was most frequently discussed in terms of program costs; however, some families also noted food cost as barriers.

Adoption of healthy behaviors required some level of family support. Parents provided examples of how family members provided tangible support, such as attending the program with the child, buying healthy food, and working out together as a family to help them succeed. Interestingly, no one expressly identified their family dynamic as a barrier to program completion. Several participants described family members stopping a supportive behavior, such as no longer buying healthier food or no longer going to the YMCA together as a family.

Families defined program success as when they were able to meet short-term goals related to behaviors (such as reducing sugary drinks), self-concept (such as child gained confidence), and physical status (able to exercise). These were facilitating factors for families to engage and continue with behaviors. However, progress in meeting long-term goals was frequently difficult to achieve. Many families discussed wanting to see larger changes in their weight (or their child's weight) more quickly. Additionally, many expressed frustrations at not being able to maintain the changes beyond the program.

Discussion

The primary care medical community has a key role in screening for and discussing behaviors contributing to obesity, as well as, referring to weight management programs when available (29). While attrition rates from pediatric obesity treatment continue to be a concern within programs (30,31), understanding experiences from the patients' perspective is crucial for improving the clinician's ability to effectively assist pediatric patients with obesity (32). Findings illustrate how patient and family readiness underlies patient expectations, patient engagement, and goal attainment. Although not surprising, it does reinforce the need for effective MI in the primary care setting to identify patients and families who are ready for change.

As our results revealed, patient and family "readiness" is critical to success; thus, assessing readiness for change for both the child and parents/guardians should be central to any

healthy lifestyle screening. For example, our study illustrates how program participation and behavior change can stall when the child is not ready for change and the parent/guardian becomes frustrated. Conversely, when parents or guardians were not ready, their engagement was limited and they stopped providing tangible support, such as limiting access to unhealthy foods for the child.

Providing an intensive lifestyle modification program is appropriate for the patient/family who can describe internal motivating factors. Setting a combination of short-term attainable goals and realistic long-term goals can help with participant motivation. Identifying what internally drives patient/family motivation for behavior change is an important element when developing successful weight management goals (33). When the patient or family is not ready, counseling is needed to move them closer to readiness. It should include discussions about the seriousness of obesity, importance of family and child lifestyle changes, attitudes toward physical activity, and identifying outside individuals who will support or undermine efforts, barriers, and financial resources for treatment (32). For example, this study identified cost as a barrier to completing the program. These costs included program fees, healthy food, and transportation. Appropriately identifying barriers led to the clinical team adjusting the program to eliminate the program fee, add resources for budget management, space clinical visits further apart to reduce frequent transportation, and expanding YMCA partnerships across a larger geographic area.

Self-determination theory constructs of autonomy, competence, and relatedness are critical for success in obesity interventions for children and adolescents (34). The MI techniques are powerful in operationalizing these constructs through guided discussion that includes strategies balancing internal and external motivators, ensuring that one component does not undermine the other. For example, external incentives such as water bottles, activity trackers, and lunch bags that may help patients and their families with specific skills should not be so big that they undermine intrinsic motivation and self-regulation (35). Patients and families with some level of autonomy within a structured program and collaborative goal setting with MI provide increased opportunities for self-management (36).

There were no clear patterns between clinical outcomes, behavioral uptake, and program participation. All participants reported success in some area, regardless of the degree to which they participated in the program. It is important to note that the lack of a pattern is likely due to a small sample size. In assessing response saturation within the small sample size, we noticed consistency across demographic groups. A potential limitation is that not all parents completed the interviews with their young children in the room to provide additional context. Additionally, not all older children completed the interviews independently from their parents.

Collaboration and goal adaptation based on a deep understanding of individual motivating factors is critical to success and should be central to obesity treatment. Furthermore,

as patients progress through their goals, it is important to explicitly shift from more externally motivating factors to behavior changes that come from their internal drive. Doing so will allow patients and their families to see value in their progress and experience growth in self-confidence. Patients and their families need to feel that their care team cares about them, that they can share their struggles, and they want to stay engaged. This is always true, but especially for a program where the results are slow, and patients may get frustrated because they want to see change more quickly.

Conclusion

Successful management of obesity in the pediatric population requires consideration of both the patient and family's readiness, structured implementation adaptations to address barriers, intentional efforts to move from external reward to internal motivation, and strategies to ensure families develop self-efficacy toward achievable healthy behaviors. Based on findings from this study, we recommend completion of readiness assessment prior to enrollment in an intensive lifestyle management program. Moreover, lifestyle management programs should be framed in strategies, such as MI, that allow for flexibility based on participant and family barriers, needs, and engagement.

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