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*South Dakota State University*

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SUCCESSFUL WEIGHT MANAGEMENT: BARRIERS AND FACILITATORS TO  
MAINTAINING WEIGHT AFTER WEIGHT LOSS VIA A MEAL REPLACEMENT  
PROGRAM

BY

HOPE D. KLEINE

A thesis submitted in partial fulfillment of the requirements for the

Master of Science

Major in Nutrition, Exercise, and Food Science

Specialization in Exercise Science

Certificate in Transdisciplinary Childhood Obesity Prevention

South Dakota State University

2016

SUCCESSFUL WEIGHT MANAGEMENT: BARRIERS AND FACILITATORS TO  
MAINTAINING WEIGHT AFTER WEIGHT LOSS VIA A MEAL REPLACEMENT  
PROGRAM

This thesis is approved as a creditable and independent investigation by a candidate for the Master of Science degree in Nutrition, Exercise, and Food Science and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Jessica Meendering, Ph.D.  
Thesis Advisor

Date

Matthew Vukovich, Ph.D.  
Head, Department of Health & Nutritional Sciences

Date

Dean, Graduate School

Date

This thesis is dedicated to my husband, Daniel, and daughter, Alayna. Thank you both for your loving support in my hours away from you in order to better myself.

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## ABBREVIATIONS

MR	Meal Replacements
MRP	Meal Replacement Programs
BMI	Body Mass Index
AND	Academy of Nutrition and Dietetics
TFRCD	Traditional Foods, Reduced Calorie Diet
HC	Health Coach

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## ABSTRACT

SUCCESSFUL WEIGHT MANAGEMENT: BARRIERS AND FACILITATORS TO  
MAINTAINING WEIGHT AFTER WEIGHT LOSS VIA A MEAL REPLACEMENT  
PROGRAM

HOPE D. KLEINE

2016

**Purpose:** Meal replacement programs (MRPs) facilitate weight loss. Unfortunately, a large percentage of individuals that lose weight through MRP are not successful at maintaining their weight. Weight regain one year following weight loss via meal replacements has been as high as 40-50%, demonstrating a critical need to improve weight maintenance in MRP participants. Therefore, the purpose of this study is to identify barriers and facilitators of weight maintenance after reaching a goal weight in MRP participants. **Methods:** Seven focus groups of  $\leq 8$  clients were conducted to discuss barriers and facilitators of weight maintenance prior to reaching a point of saturation. Participants were thirty-two MRP participants (31-82 years old) who had reached their goal weight via a proprietary MRP that included an element of health coaching.

**Statistical Analysis:** Data were analyzed with NVivo10 qualitative software using content analysis theory to identify emerging themes. **Results:** “Program logistics” was the most commonly discussed program barrier, which included subthemes of nutrition and physical activity education, support from health coaches, and confidence in health coach knowledge. “Outside influence” emerged as the second most robust barrier discussed, which included work environments and social interactions. “Interpersonal relationships” emerged as a primary weight maintenance facilitator, which encompassed interactions from family, friends, and coworkers. Health coaches also emerged as a

facilitator of weight maintenance in terms of support, knowledge, and consistency.

**Conclusions:** While different themes emerged as the most prominent barriers and facilitators to weight maintenance, strengths and weaknesses were noted within each theme highlighting the vast variation in participant needs. MRPs should consider adding a program screening tool to learn about the needs of program participants in order to tailor the program to each individual and thus, maximize weight maintenance.

## CHAPTER 1

### INTRODUCTION

Sixty-nine percent of adults in the United States are classified as overweight or obese with one third having a body mass index over 30 (obese).<sup>1</sup> Of these, 4.2% of men and 7.2% of women were classified as stage 3 obese (having a BMI greater than or equal to 40), demonstrating the need for dramatic weight loss. Being overweight or obese has been shown to increase the risk of many chronic diseases, such as of heart disease, stroke, diabetes, cancers, osteoarthritis and respiratory problems.<sup>2-4</sup> As public awareness of health consequences associated with a higher body weight has risen, individuals have gained interest in adopting strategies to manage their weight. In 2004, 24% of men and 38% of women were attempting to lose weight.<sup>5</sup> The Academy of Nutrition and Dietetics (AND) recommends weight management be achieved through sustained behavior change including enjoyable eating practices and daily physical activity and supports meal replacement programs (MRP) as an effective diet-related weight loss strategy.<sup>6</sup>

Meal replacement (MR) products are portion-controlled, vitamin and mineral fortified, prepackaged, and contain a known energy and nutrition content, usually in the form of a bar or shake. Utilized since 1994,<sup>7</sup> MRs have been a popular choice for weight loss strategies.<sup>8-11</sup> Individuals enjoy meal replacements as they provide a convenient way to meet their daily nutritional values with convenience and ease.<sup>9</sup> Specifically, the simplicity of not needing to plan for healthy meals or find the time to prepare meals for oneself is a factor many dieters enjoy about meal replacements.<sup>11</sup> When compared to a traditional foods, reduced calorie diet, MRs provide greater weight loss success, resulting in an average of two times more weight lost over a three month period.<sup>8,9</sup>

Although individuals using MRs may experience greater weight loss, many who utilize MRPs regain the weight lost following MRP participation. Weight regain one year following a MRP has been as high as 40-50%.<sup>7,12,13</sup> Individuals who lose weight on MRPs that do not partake in continued guidance, such as meetings with a health coach after weight loss goals are met, are more apt to regain weight compared to individuals who utilize continued guidance.<sup>14,15</sup> While the additional support of a health coach has aided in continued weight maintenance, gaps within the health coaching framework exist as weight regain continues to occur after initial weight loss.<sup>13,15,16</sup> Factors such as busy schedules,<sup>11,17,18</sup> living a sedentary lifestyle, and having less focus to prepare and consume healthy meals<sup>17,19</sup> have been previously identified as long-term weight maintenance barriers individuals are not learning how to overcome within MRPs. Currently, there are gaps in the strategies used to address these barriers within the current health coaching framework.<sup>11,14,17,20-22</sup>

There is a need to better understand the barriers and facilitators of weight maintenance in MRP participants. Understanding participant's barriers and facilitators may aid in the development of health coaching protocols that assist participants in identifying and overcoming their barriers to weight maintenance. Previous studies have shown that support in the form of a health coach can reduce weight gain after initial weight loss, but that even with support, participants in MRPs are unable to maintain their full initial weight loss attained during MRPs.<sup>15,23-26</sup> Therefore, there is a need for the development of innovative behavior change and support strategies that promote long-term weight maintenance after participation in a MRP. The purpose of the current study was to identify specific, personal barriers to and facilitators of successful weight

maintenance among participants who have reached their goal weight and are working to maintain their initial weight loss. Identifying the barriers and facilitators associated with weight maintenance can then be used to utilize evidence-based strategies to improve long-term weight maintenance among MRP participants.

## **CHAPTER 2**

### **REVIEW OF LITERATURE**

#### **OVERWEIGHT AND OBESITY OVERVIEW**

Over one-third of adults within the U.S. are obese.<sup>1</sup> Although no significant fluctuations in obesity rates among adults has occurred since 2011-2012 data,<sup>27</sup> the percentage of those classified as morbidly obese (BMI>50) has increased greater than 10 fold since 1986, making the morbidly obese the most rapidly occurring BMI category.<sup>28</sup> Obesity related conditions account for an increased occurrence of heart disease, stroke, diabetes, cancers, osteoarthritis and respiratory problems.<sup>2,3</sup> Every year, approximately 300,000 people in the U.S. die of obesity-related, preventable deaths.<sup>1,4</sup> In 2000, Flegal and colleagues<sup>3</sup> identified an increased mortality associated within the obese category in comparison to those in the normal weight category. Obesity also inflicts a large economic burden.<sup>29-31</sup> Obese individuals have 36% higher inpatient and outpatient medical costs compared to those at a healthy weight.<sup>29</sup> In 2008, it was estimated that obesity accounted for nearly 10% of all medical spending, or \$147 billion annually.<sup>30</sup> Looking at the amount of preventable deaths and the burden of health care costs, reducing the prevalence of obesity needs to be a public health priority.

#### **MEAL REPLACEMENT PROGRAMS**

MR products are portion-controlled, vitamin- and mineral-fortified, prepackaged, and contain a known energy and nutrition content, usually in the form of a bar or shake.<sup>8,15</sup> The use of MR products has grown in popularity as a common tool for weight loss and maintenance, reaching a market revenue of over three billion dollars in 2014.<sup>32</sup>

As independent use of MR products has grown, MRPs have been developed to advise proper use of MR products and provide guidance for weight loss and weight maintenance. Choosing a low-energy, nutrient-dense diet while in an environment that provides multiple opportunities for energy-dense, nutrient-poor food choices can easily overwhelm anyone trying to manage their weight. MRPs are designed to be simple, effective, and generally provide a reduced calorie meal plan involving a combination of MR products as well as traditional, grocery store foods. MRPs generally suggest replacing 1-2 meals each day with a MR product, and limit caloric intake between 800-1600 calories/day.<sup>8,15</sup> Furthermore, many MRPs are composed of phases, separating the initial weight loss phase and the subsequent weight maintenance phase. Phased MRPs allow participants to gather knowledge and skills specific to their journey of weight loss and weight maintenance. Therefore, helping participants lose weight and assist in the transition off of MR products to grocery store foods.

During the initial weight loss phase, individuals who utilized MRPs experienced significantly more weight loss and exhibited a higher rate of adherence to the program when compared to counterparts utilizing a traditional foods, reduced calorie diet (TFRCDD).<sup>8,33-35</sup> After three months of utilizing 1-2 MR products/day, individuals on a MRP lost 7.1 kg compared to their counterparts on a TFRCDD who lost 1.3 kg.<sup>35</sup> A meta-analysis by Heymsfield and colleagues<sup>8</sup> analyzed six studies comparing a MR product diet and a TFRCDD and found that the MR product group averaged 47% more weight lost during initial weight loss. Flechtner-Mors and colleagues<sup>24</sup> studied the weight loss success of individuals who utilized a form of coaching after MR use, or a TFRCDD with personalized menus. Monthly instruction for behavior modification was provided by a

dietitian, using sample menus, recipes and instruction on implementing food diaries. After one year, those who utilized MR products lost 8.4% of baseline body weight, while those who were provided with personalized menus lost 3.2% of baseline body weight. Results of these studies have indicated that MR products and programs were effective because of the simplicity of the MR program as they were structured in a way to help participants improve eating habits.<sup>8,15,36,37</sup>

Weight management programs vary in that not all provide a weight maintenance phase, suggest continued MR use, and/or meeting with an individual such as a health coach. Therefore, previous literature presents a variety of barriers to and facilitators of varying weight maintenance techniques.

#### *Barriers and Facilitators to Weight Maintenance Within a MRP*

A barrier is an obstacle that results in less success toward a goal, in this case, weight maintenance. Lack of long-term behavior change presents to be the over-arching barrier identified by those who regain weight.<sup>21,22,25,38,39</sup> Continuing behaviors such as proper nutrition, physical activity, weight monitoring, responding to weight gain, and motivation are often put aside due to environmental barriers such as having children, poor access to parks, walking trails, or gym equipment.<sup>11,25,40,41</sup> Data from Byrne and colleagues<sup>25</sup> found those who are unable to maintain their weight were more likely to eat to regulate their mood, achieve their goal weight, yet continued to be dissatisfied and thus revert to old behaviors. From this data, those who are unsuccessful appear to lack the knowledge on how to adopt healthy behaviors long-term and how to cope with stress in their lives.



Facilitators are identified strengths that assist in reaching a goal, in this case the success of weight maintenance. Facilitators that have previously been identified are commonly associated with one's ability to continue self-management behaviors introduced during weight loss. Self-management behaviors include being mindful of food choices, committing to an exercise routine, regular weight monitoring and planning ahead.<sup>14,15,37,42</sup> Age has also been associated with successful weight maintenance, with older participants having more success than their younger counterparts.<sup>16</sup> Five themes were found to be primarily present when working with individuals who were successful with weight maintenance. Themes included 1) achievement of initial goal weight, 2) less emphasis on the importance of weight and shape, 3) remaining vigilant about weight, 4) being open minded to mistakes and getting back on track, and 5) the ability to cope with negative events.<sup>25</sup> Current findings of facilitators to weight maintenance suggest that those who are successful with long-term weight maintenance are adopting learned habits as a lifestyle change, continuing on with mindful choices to remain on the path of success.

Continued use of MR products has been acknowledged as a facilitator as they enforce healthy behaviors with minimal effort. MR products are commonly used during weight maintenance as they provide nutritionally balanced choices, portion control, and reduced probability of poor food choices by providing easily accessible, healthy food options.<sup>13,24,43</sup> Many participants of MRPs are continuing the use of MR products for long-term weight maintenance.<sup>8,15,16,24,35,37,39</sup> After one year, four studies confirmed that individuals who had used traditional foods as their weight loss method experienced twice the weight gain after initial weight loss compared to those who continued to consume one

MR for weight maintenance after initial weight loss.<sup>8</sup> In a separate study, following a 12 week MR diet, participants were instructed to consume one MR each day for weight maintenance, or to revert back to 2 MR each day if weight gain occurred.<sup>37</sup> At five year follow up, 80% of females and >90% of males weighed less or within 0.8 kg of their pre-program weight compared to controls who gained 6.6 kilograms over the five year period. These findings are consistent with other studies.<sup>34,35,37</sup> Therefore, MR use as a continued behavior when transitioning into the weight maintenance phase is beneficial as they keep individuals nutrition on track while reintroducing grocery store foods, with minimal effort.

While the continued use of just one MR product has been shown to be sufficient to prevent weight gain, individuals are not able to adhere to MR use for long periods of time, making extended MR use a barrier. Following a 12 week diet, participants that were instructed to use one MR product/day for weight maintenance experienced a substantial dropout rate (44.1%) over a two year period due to lack of continued MR product use.<sup>7</sup> Another study experienced a similarly high drop out at two years, and successfully recruited just over half of these participants back into the study. In analyzing results, participants experienced weight fluctuations over the four year study period.<sup>24</sup> In other reports, nine months following weight loss via the use of MR products, participants self-reported using MR products only 71% of the time<sup>15</sup> and at two year and three year follow up, self-reports of continued MR use was 69.5% and 43.1%, respectfully.<sup>16</sup> These findings demonstrate how difficult it is for individuals to continue MR use over long periods of time, making long-term MR use for weight maintenance an unfeasible option. Rather, MR products should be used short-term to aid in the ease of adopting lifelong

behavior change such as increased physical activity, proper nutrition, and weight monitoring.

There is a need for continued support following weight loss for successful lifelong behavior change. Previous research shows a trend that unsuccessful individuals revert back to their previous unhealthy habits as they have not understood that the practices introduced during weight loss are to be lifelong changes.<sup>11,18,21,22,25,39-41,44</sup> The goal of MRPs is to transition participants to a diet primarily consisting of grocery store foods once weight loss goals are achieved. Unfortunately, due to the lack of implementing lifelong behavior change, many do not continue the healthy choices necessary for long-term weight maintenance.

To assist in successful weight maintenance, some MRPs have added a health coaching component for added support, accountability, and education toward adopting the previously mentioned behaviors.<sup>45</sup> Self-monitoring, goal setting, stimulus control, problem solving, cognitive restructuring and relapse prevention are all avenues that have been used by health coaches to increase behavior change success.<sup>43</sup> Health coaching results in improved behaviors related to nutrition, weight management, self-control in social settings, medication adherence and program participation by focusing on client's current behavior and providing guidance for successful behavior change.<sup>16,43,46</sup> Meetings with a health coach typically start at once per week during the weight loss phase and reduce to bi-monthly or monthly during the weight maintenance phase, based on the participant's choice. Health coaching can be based on a variety of models. The model that has demonstrated the most impactful is motivational interviewing.<sup>47</sup> Motivational interviewing is an approach that guides goal setting, information delivery, motivation-

building, behavior change planning, implementation and follow-up. More specifically, when revisiting education about reading nutrition labels and meal preparation, reminding participants to keep a vigilant eye on weight, and continued accountability has shown to keep participant motivation at its peak.<sup>14,25,48</sup>

Long-term behavior change is an important piece to successful weight maintenance. However, not all participants utilize the support a health coach has to offer. Participants who do not continue to partake in maintenance support or are not offered continued support following weight loss typically experience weight regain. One year after using 2 MR products/day for three months for weight loss, 59% of participants had regained weight.<sup>7</sup> In another study, those who seized program participation after initial weight loss regained twice as much weight at 36 month follow up compared to their counterparts who continued guidance.<sup>16</sup> Eight years after weight loss, those with provided support lost more than half of baseline body weight compared to those who did not have support.<sup>49</sup> Annunziato and colleagues<sup>13</sup> let participants use the knowledge they gained from their weight loss experiences and instructed participants to continue weight maintenance behaviors on their own. Just nine months after weight loss goals were achieved, an average of 52% of weight lost was regained. Experiencing such a substantial weight gain after initial weight loss demonstrates the importance of continued involvement of a program to reiterate learned behaviors and disseminate knowledge on long-term behavior change. In a separate study, women who had tried to maintain weight loss efforts stated they wished they had more help for weight control efforts such as support groups.<sup>50</sup>

Those who continue meetings with a health coach report a better adoption of weight maintenance habits such as self-weighing, use of MR products and tracking activity throughout the day.<sup>15,25</sup> Duration of program participation positively correlates with duration of weight maintenance.<sup>38,51</sup> In a study by Perri and colleagues<sup>51</sup> participants were assigned to a 20 or 40 week support group. Those in the 20 week support group regained 48% of weight lost at 72 week follow up while the 40 week support group regained 2.4%. Such a high success of weight maintenance the 40 week support group experienced demonstrates the strong association between continued program participation and weight maintenance success. Wadden and colleagues<sup>21</sup> studied how the frequency of meeting during weight maintenance would affect success. Participants were assigned to an intensive lifestyle intervention, or an education intervention. Those in the intensive lifestyle intervention received counseling on diet and physical activity for a total of 42 sessions over a one year period. At the end of the intervention, those going through the intensive lifestyle intervention had maintained keeping 8.6% of their initial weight off compared to 0.7% for those who had met for three education interventions in the one year duration.

While we know that duration of meeting with an individual like a health coach is positively associated with successful weight maintenance, it is unclear how modes of health coaching affect weight maintenance success. Ames and colleagues<sup>15</sup> studied individuals following a MRP to determine how a choice-approach focused on small, cumulative changes in physical activity and nutrition would affect weight maintenance. The intervention included 20 sessions offered over the course of a year and provided MR products free of charge as incentive for study participation. Participants were provided

with strategies for maintaining calories within personalized calorie ranges. During the sessions, maintenance behaviors included self-weighing, use of food diaries, use of MR products, physical activity education, and self-selected goals were discussed. Participants who completed the program regained 14% of weight lost compared to controls who regained 56% following a MRP. Further research reviewed eight weight management interventions. Of the eight, the interventions that had the highest success after one year were those utilizing MR products as well as in person health coaching (7.4 kg) and those utilizing MR products as well as health coaching over the phone (6.3 kg).<sup>52</sup> Participants also showed a significant decrease in depression at the end of the intervention, showing how a health coach is able to support individuals in more than just long-term weight maintenance behaviors.

While individuals who continue program participation regain less weight than those who do not, weight regain still occurs. As noted above,<sup>15</sup> after just one year, participants who had met for 20 sessions over the course of the year regained 14% of their weight lost. Even with the continued support through weight maintenance, individuals were unsuccessful in maintaining weight for one year. It is important to understand what interventions help individuals adopt lifestyle changes. After 23 weekly sessions covering environmental control of food cues, changing eating behaviors, increase physical activity, nutritional guidelines and social support, those who utilized MR use only maintained 5.4% of the 11.3% of their baseline weight.<sup>13</sup> Cognitive restraint, disinhibition, hunger level and binge eating were also measured at baseline, following weight loss, and at one year follow up. In all categories, participants started to revert back to their old behaviors, and lose what they had learned in the weekly sessions.

In a separate study, at 12-, 24- and 36-month follow up, weight regain for those individuals was 0.86 kg, 2.70 kg, and 4.55 kg, respectively.<sup>16</sup> Based off previous findings, weight maintenance skills are slowly practiced less and less, contributing to weight regain.

While the role of a health coach is to combat these barriers, 30% report being dissatisfied with their health coach sessions.<sup>42</sup> While health coaching is a piece of providing success to participants, it is essential that evidence-based health coaching interventions be patient centered. Barriers continue to remain for MRP participant's and further development of a weight management program that provides successful long-term weight maintenance remains. Research has indicated pieces of a successful weight loss program but has lacked reporting participant's perceived barriers to and facilitators of long-term weight maintenance following initial weight loss.

## **PROFILE BY SANFORD**

Profile by Sanford is a MR weight loss program that utilizes MR strategies, and offers health coaching and behavior change support for optimal weight management success. Profile was developed by a team of physicians and scientists at Sanford Health and consists of three phases: Reduce, Adapt, and Sustain. In the Reduce phase, clients are encouraged to replace two meals each day with high protein, low carbohydrate Profile MR products. The Adapt phase transitions clients off of MR products by teaching them how to select healthy groceries and prepare healthy choices at home. The last phase of the program is Sustain. The Sustain phase consists of clients who are primarily consuming healthy grocery store foods and working to maintain their new weight. The focus of the Sustain phase is to provide clients the opportunity to practice their new healthful

behaviors under the direction and support of the Profile team. The rate of progression through each phase differs according to each individual participant. The meal replacement products available for purchase are fortified with vitamins and minerals and are high in protein to increase satiety. The meals are prepackaged and are offered in more than 70 flavors and varieties. Unique to Profile, each participant has the opportunity to purchase a smart scale. The scale is wireless and automatically uploads your data to your Profile account for the convenience of tracking your weight loss and maintenance. This data is available for the client to see as well as the health coaches. Each participant is urged to interact with a health coach, who will help each participant through his or her weight loss journey.<sup>53</sup> The health coach works with clients individually on their quest to adopt healthy nutrition, physical activity and lifestyle practices that support long-term success.

Profile provides health coaching throughout all three phases of their client's weight loss journeys. The goal of the health coaches is to provide education and support for program participants. Coaches are available for in person meetings, by telephone or email. Clients are encouraged to meet with available health coaches once a week for the first 8 weeks and then switch to what the client is comfortable with, such as every other week, every third week, or once a month. Coaches encourage clients to contact them if questions arise before their next scheduled meeting. Clients are encouraged to meet with a new coach every meeting, or can meet with the same coach repeatedly.

### **NEED FOR MRPS THAT ARE SUCCESSFUL AT BEHAVIOR CHANGE**

Even with the support and accountability health coaches offer, participants continue to struggle with successful weight maintenance.<sup>15,23-25,37,42</sup> Previous studies have



shown that support in the form of a health coach can reduce weight gain after initial weight loss, but that even with support, participants in MRPs are unable to maintain their full initial weight loss attained during MRPs. Therefore, there is a need for the development of innovative behavior change and support strategies that promote long-term weight maintenance after participation in a MRP. Barriers and facilitators can be very specific to each individual, and while many MRPs use the same health coaching approach with each client, developing a more personalized health coaching approach may be more beneficial for a long-term behavior change. Therefore, the goal of this project is to identify the barriers to and facilitators of long-term weight maintenance in participants currently participating in the Profile weight maintenance phase. By identifying the perceived barriers to and facilitators of long-term weight maintenance among participants following weight loss via a MRP, we can use the information to create a more personalized model of health coaching in an effort to improve weight maintenance rates.

## CHAPTER 3

### METHODS

The methodology of the present study will be reported in this chapter. A clear description of the participants, procedures, and data analysis follows.

### PARTICIPANTS

Profile provided the research team with de-identified participant information, such as: user ID, program start date, start date of the Sustain phase, gender, height, initial weight and weight lost. With this information, the research team was able to determine who had been a part of the Sustain phase for 8-12 weeks to allow time for individuals to adopt weight maintenance behaviors. With these individuals, the research team calculated percent change in body weight by dividing their weight from the most recent weight into the weight from their first weigh in. Potential participants were separated into tertiles by their percentage of weight loss. Participants in the highest tertile were classified as Maintainers, and those in the lowest tertile were classified as Regainers.

Participants (656) in the Sustain phase of the Profile program living locally were contacted by Profile personnel via phone or email and invited to participate in the present study. Recruitment scripts were written by the research team, making it clear the study was not being conducted by Profile personnel. Focus groups were organized into Maintainers and Regainers, ranging in size from one to eight participants. Participants gave written and verbal consent prior to participation. Participant characteristics are reported in **Table 1**. The experimental protocol and procedures were approved by the Institutional Review Board at South Dakota State University.

## PROCEDURES

Perceived barriers to and facilitators of weight maintenance were identified through the collection of qualitative data completed by the conduction of focus groups. Focus groups were conducted separately for the Maintainers and Regainers and were audio recorded. When participants arrived at the research location, consent was obtained and the focus group took place to promote discussion of participant's perceptions, experiences and opinions related to weight maintenance. The purpose of the study was read at the beginning of each focus group for consistency of context and orientation to discussion. Participants were asked to respond to 10 open ended questions, as found in **Figure 1**. The questions included probing statements covering weight maintenance facilitators, barriers, success, limitations, perceptions of the program and health coach, and outside influences. All focus groups were facilitated by one graduate student, with the help of timing and note taking from one undergraduate student. Focus groups lasted 23-62 minutes, with an average of 48.86 minutes. Focus groups were conducted until saturation was reached. Participants were provided with a \$30 stipend for participation.

1. Let's start by introducing ourselves. Please share your first name and when you began participation in the Profile program.
2. Why did you decide to join the Profile program?
3. What do you think are the strengths of the Sustain phase of the program?
4. What do you think are the weaknesses or needs of the Sustain phase of the program?
5. Please share with me your perception of the health coaches that you interacted with during your time on the Sustain phase of the program.
6. How did you feel about the nutrition information you were to follow during the Sustain phase?
7. How did you feel about the physical activity information you were to follow during the Sustain phase?
8. Can you share factors that you think may have contributed to your successes while in the Sustain phase of the program?
9. Can you share factors that you think may have limited your successes while in the Sustain phase of the program?
10. Are there any other things you would like to share with us today that we did not ask about?

**Figure 1:** Focus Group Questions

## **DATA ANALYSIS**

### *DATA PROCESSING*

After each focus group, the research team gathered to debrief information provided by the focus group participants. Focus group recordings were sent to TranscribeMe (TranscribeMe Inc., Berkeley, CA)<sup>54</sup> in which an employee transcribed the recordings. Once transcripts were received, they were imported into NVivo 10 qualitative software (QSR International Pty Ltd. Version 10, 2012) for qualitative analysis.

### *DATA ANALYSIS*

Qualitative focus group data were analyzed using content analysis theory. Content analysis theory is a qualitative research method which involves analyzing any form of communication.<sup>55</sup> Content analysis was used to specifically identify themes in a systematic and objective fashion.<sup>56</sup> The analytic process of immersion and crystallization were also used by researchers. The immersion process occurs when the researchers analyzing the data immerse themselves into the data by reading and/or examining the data in great detail.<sup>57</sup> The crystallization process occurs when the researchers temporarily pull themselves away from the data in order to gain a sense of what patterns or themes are emerging.<sup>57</sup>

In this study, data analysis was completed on focus group responses to look for themes regarding barriers to and facilitators of weight maintenance among participants. Two graduate students worked individually to first code each response to a neutral node. Nodes can be thought of as a folder, collecting references about a specific theme. Coding is when the researcher decides on tentative conceptual nodes into which the data will be

coded, such as words, phrases, items or events.<sup>56</sup> Barriers to and facilitators of weight maintenance were first categorized into broad categories (parent nodes), which are then broken down into more specific subcategories (child nodes), and further subcategorized (baby nodes). Once the initial coding of questions was complete, researchers met to come to a consensus over discrepancies. Researchers then updated their codes in order for the data to be recoded into barriers and facilitators. Once the data were updated, two additional researchers reviewed the coding. After finalizing the coding of focus group responses, a coding comparison was ran to determine the kappa coefficient between coders to test for consistency. A kappa coefficient is a statistical measure which takes into account the amount of agreement that could be expected to occur through chance.<sup>58</sup> When kappas across all nodes were 0.4 or higher (average 0.66), as recommended by McHugh,<sup>59</sup> queries were run to identify common themes in the data and examine the frequency distribution of themed responses across all participants, the Maintainers and the Regainers (group). Frequency distribution is a summary of data showing the number of items that appear in each theme, providing a quick insight that cannot be easily obtained by looking at original data.

The barriers to and facilitators of weight maintenance among all participants are reported as the frequency of references within each theme. The barriers to and facilitators of weight maintenance that emerged by group (Regainers vs. Maintainers), are reported as the percent coverage of each theme  $((\text{frequency of theme references within each theme})/(\text{total references})) \times 100$  to account for sample size differences between groups. The differences in barriers to and facilitators of weight maintenance that emerged

between groups (Regainers vs. Maintainers) are reported as a difference in the percent coverage of each theme ( $\% \text{ coverage of Regainers} - \% \text{ coverage of Maintainers}$ ).

## CHAPTER 4

### RESULTS

Thirty two adults currently participating in the Profile MRP and categorized within the Sustain phase participated in a focus group to discuss the barriers to and facilitators of weight maintenance. A total of seven focus groups took place, four with the Maintainers and three with the Regainers. The majority of participants were middle aged, married, and worked full time. Refer to **Table 1** for participant characteristics.

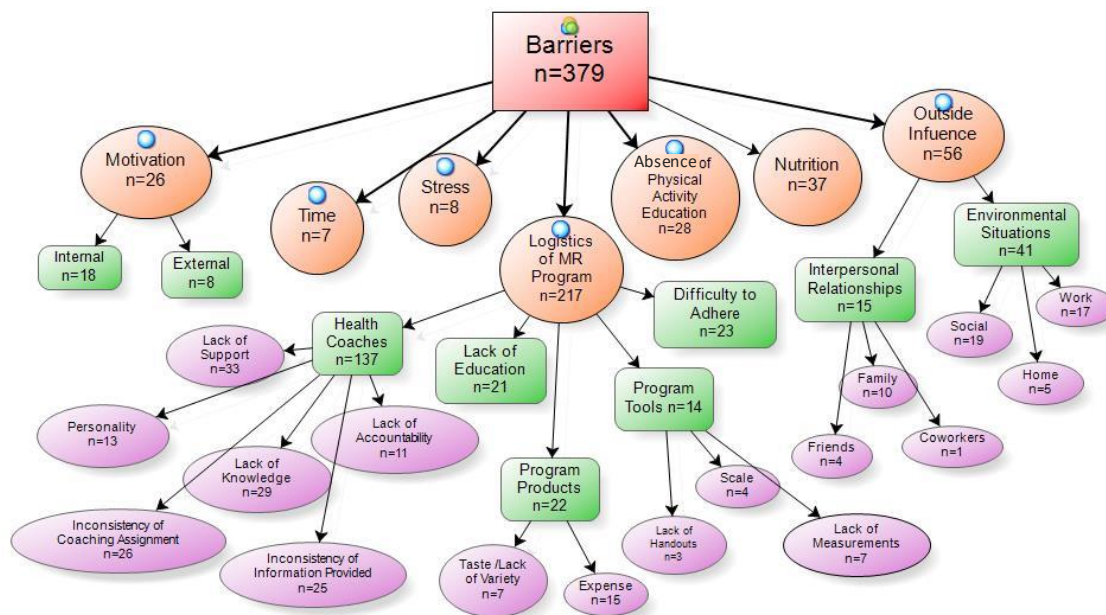
	Sustain Phase(n = 31)	Regainers (n = 7)	Maintainers (n = 24)
Sex	19 Females	5 Females	14 Females
	12 Males	2 Males	10 Males
Age Range (y)	28 - 82	28 - 65	31 - 82
Marital Status	3 Single	-	3 Single
	24 Married	7 Married	17 Married
	2 Divorced	-	2 Divorced
	2 Widowed	-	2 Widowed
Age (y)	54 ± 2.33	47 ± 4.36	56 ± 2.66
Average Hours Worked/week	41.39 ± 2.51	42.5 ± 3.59	41.09 ± 3.08

**Table 1:** Participant Characteristics

### THEMES OF REFERENCED BARRIERS ACROSS ALL PARTICIPANTS

A total of 379 statements were made regarding barriers during focus groups. These statements were categorized into 7 parent nodes, 9 child nodes, and 17 baby nodes. The most commonly discussed barrier among all participants fell into the general theme, logistics of the MRP (217), including child and baby themes of: health coaches (137),

lack of education (21), dislike for MR products due to taste and lack of variety (22), program tools (14), and difficulty to adhere to the program (23) (**Figure 2**).



**Figure 2:** Barriers to Weight Maintenance Among All Participants: Themes are organized into hierarchies moving from general topics at the top to more specific themes. N=frequency of references within each node, circles= parent nodes, rectangles= child nodes, ovals= baby nodes.

Themes participants expressed that emerged involving health coaches comprised feeling as though health coaches were not providing enough support (33) during weight maintenance. Participants also commonly expressed that they felt as though their health coaches did not appear as knowledgeable as they should be and expressed concern that the lack of knowledge was limiting their own success on the program (29). More specifically, an absence of physical activity education (28) was noted. Many participants stated that health coaches provided little guidance on how to increase and stick to physical activity efforts. *“Even at the beginning [of the program] I said one of the things I’d really like help with was, not with the diet, but with someone to give me some advice*



*about exercise and I haven't gotten anything. I feel like exercise is a huge part of [weight maintenance], so those were some de-motivating things for me."*

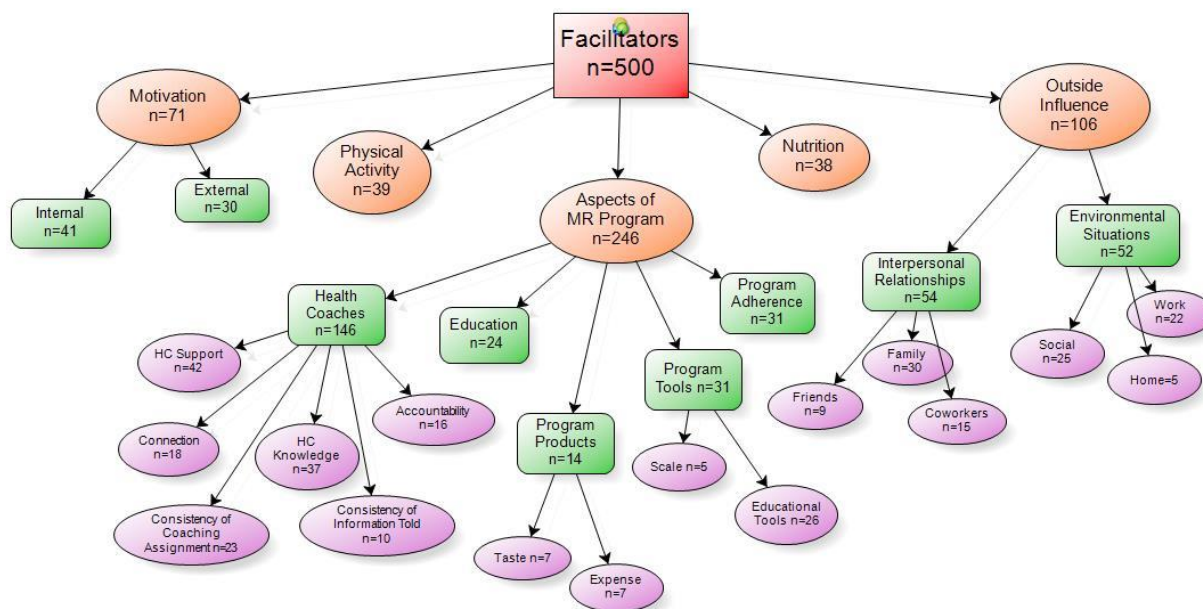
Additionally, participants identified seeing different coaches every visit as a barrier (26), stating they often received inconsistent information from coach-to-coach (25). *"[Coaches] didn't agree on what I was supposed to do. One set me up with this whole plan. The next week I'd go in and another would ask, 'why are you doing that? You shouldn't be doing this.' So I was getting so confused. It wasn't very helpful."* One barrier under program tools that arose in working with a variety of health coaches involved body composition measurements not being taken consistently. Through focus groups, many participants became aware of reading material provided to others by their coaches and were surprised they had not been provided with educational materials through their experience with the program. *"There are things I am not seeing like the measurements that should be part of the routine. Or saying, 'Okay, here's some reading material and stuff I'll send home with you.' That really shouldn't be different between coaches."*

Lack of internal and external motivation (26) were also noted as barriers to weight maintenance success. Participants discussed how health coaches did not provide encouragement to adopt or keep up healthy habits, but rather asked how they've been doing since the last visit, and sent them on their way. This lack of external motivation hindered participant's internal motivation as they were unable to keep up their willpower to continue healthy habits. *"I'd go in, they'd ask me how everything was going, and I'd be right out the door again. They were very, very quick sessions."* Internal motivation (18) was noted as a barrier more often than external motivation (8). Within Outside

Influence (56), family (10) emerged as a more significant barrier compared to friends (4) due to family continuing to bring unhealthy foods home. *“I have teenage boys and a husband who had no desire to eat so many vegetables, so I had to be ready to watch them eat whatever they wanted in front of me.”* However, social (19) and work (17) settings were a greater barrier compared to home settings (5). *“I’m ready to...eat regular food like the rest of my family and go to a restaurant for breakfast and not have to have just my shake.”* With work settings, many referenced traveling for work and being exposed to office treats as a barrier. Many participants stated no matter the environment, adhering to a healthy diet (37) was a barrier, finding difficulty in making healthy choices without the convenience of MR products.

### **THEMES OF REFERENCED FACILITATORS ACROSS ALL PARTICIPANTS**

A total of 500 statements were made regarding facilitators during focus groups. These statements were categorized into 5 parent nodes, 9 child nodes, and 16 baby nodes. The most prominent program facilitators among all participants also included logistics of the MRP (246) including support received from the health coach (42), confidence in health coach knowledge (37), and having the same coach during visits (23) (**Figure 3**). Participants often stated how helpful it was to have the continued support from their health coach while moving from weight loss to weight maintenance. *“The major thing for me was seeing that coach after I got to my goal [weight]. Most programs, you get to where you want to be and you’re done.....I like that the support’s not over.”*



**Figure 3:** Facilitators to Weight Maintenance Among All Participants: Themes are organized into hierarchies moving from general topics at the top to more specific themes. N=frequency of references within each node, circles= parent nodes, rectangles= child nodes, ovals= baby nodes.

Themes of Outside Influence (106) emerged as the second most common facilitator including interpersonal relationships (54) such as family (30) and coworkers (15), and one's environment (52) including social (25) and work settings (22). Internal (41) and external (30) motivation from others emerged as important to weight maintenance success. Participants stated that when family and friends acknowledged their efforts, adherence to weight maintenance behaviors came easier. *"People are really proud of you. They want you to be happy and healthy."* Adopting physical activity (39) as part of one's lifestyle was also mentioned as a facilitator to increased adherence of weight maintenance behaviors. Specifically, it was easier for participants to adopt physical activity when they were able to slowly transition into it. *"When I could wrap my mind around [healthy food options], my coach was like, 'Okay, now let's talk about activity.' It wasn't, 'You have to exercise this many times.' It was, 'What can you do differently?'"* Nutrition (38) encompassed facilitating success as clients were introduced to new healthy

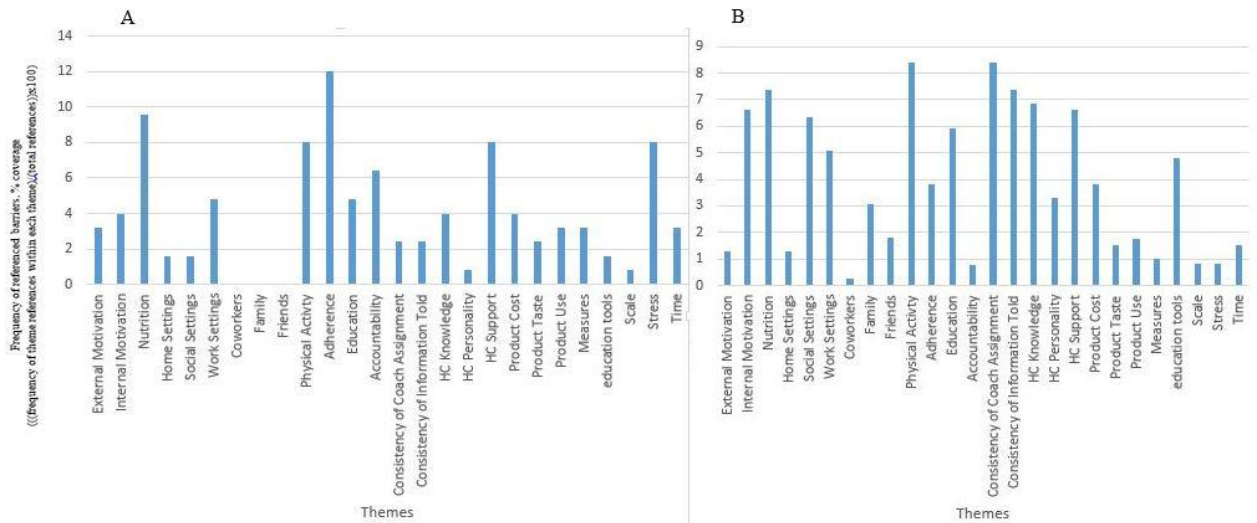
foods to incorporate into their diet, how to plan and prepare meals, and education on the nutritional breakdown of foods. *“There’s a wide variety and if anything, I find that I’ve been eating a lot wider variety of foods than I had before. I didn’t realize how narrow my food choices were....This program has really helped open me to a lot greater variety.”*

## **REFERENCED BARRIERS & FACILITATORS ACROSS GROUPS**

### *BARRIERS*

When looking at the referenced differences of barriers between Maintainers and Regainers, participants classified as Regainers referenced program adherence and adhering to a nutritious diet as the two most common barriers. Regainers stated that as more grocery store foods were reintroduced, meal planning became more extensive and it was difficult to adhere to appropriate portion sizes. Health coach lack of support was another common barrier among Regainers. When they missed meetings or had not come in for an extended period of time, they wished health coaches would have followed up with them to keep them motivated to continue with weight maintenance behaviors. Another barrier involving health coaches includes the absence of physical activity information provided. Many Regainers discussed how they were not currently active and had not been approached by their health coach to change their current physical activity behaviors. Lastly, stress was commonly discussed as a culprit to getting Regainers off track. Regainers discussed how their busy lifestyles did not always allow for them to prepare healthy foods, and they felt that not all health coaches were understanding of their busy lifestyles. Referenced barriers across Regainers can be seen in **Figure 4A**.

Maintainers referenced barriers primarily associated with their health coach experience. The five most referenced barriers by Maintainers included absence of physical activity education, inconsistency of coach assignment, lack of internal motivation, lack of health coach knowledge, and difficulty of adhering to a healthy diet, specifically when reducing the frequency of meal replacements. One Maintainer said, *“How is Profile going to work for me after it’s ‘over’ or the maintenance part of it?”* Many concerns with physical activity included that it was a topic not commonly elaborated on. While some health coaches would mention physical activity recommendations and suggest more activity, they would not provide further guidance for the participant. *“Here’s what [my coach] said, ‘Do you walk when you golf?’ ‘No.’ ‘Well you should.’ Then they would move on to the next subject.”* Others mentioned the lack of environmental resources to exercise as a hindrance to adopting healthy physical activity behaviors, specifically when traveling. With the lack of physical activity education, participants shared feeling as if their health coach was not as knowledgeable as they should be and had a difficult time seeing a variety of coaches. Many Maintainers shared that once they found a health coach in which they felt comfortable with, many would continue with that coach, rather than seeing a variety of coaches. Referenced barriers across Maintainers can be seen in **Figure 4B**.



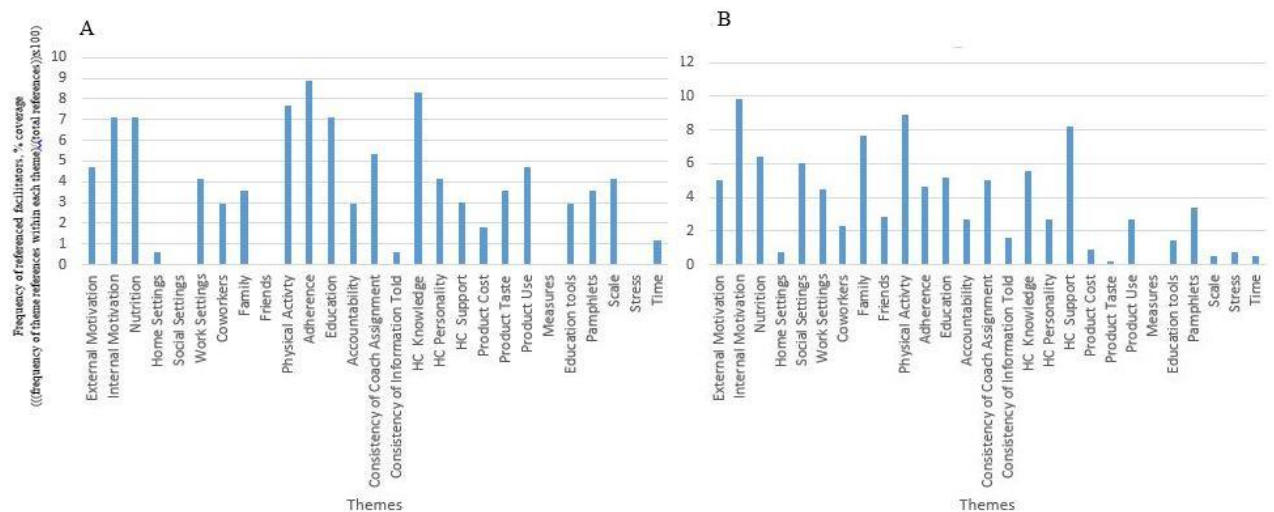
**Figure 4:** Barriers to Weight Maintenance by Group: Regainers (A) vs. Maintainers (B).

### *FACILITATORS*

When comparing the referenced differences of facilitators, Regainers referenced program adherence, health coach knowledge, physical activity, education, program tools and internal motivation as the most significant facilitators of success. Regainers referenced facilitators commonly involved continuing health coach meetings. Through ongoing meetings with a health coach, Regainers were able to receive continued knowledge they needed in order to adhere to healthy habits such as portion control and continuing an active lifestyle. Referenced facilitators across Regainers can be seen in **Figure 5A**.

Maintainers referenced internal motivation, physical activity, health coach support, family, nutrition and social settings as the most common facilitators. Support from health coaches and family encouraged a better adoption of weight maintenance habits such as staying active and adhering to healthy food options.

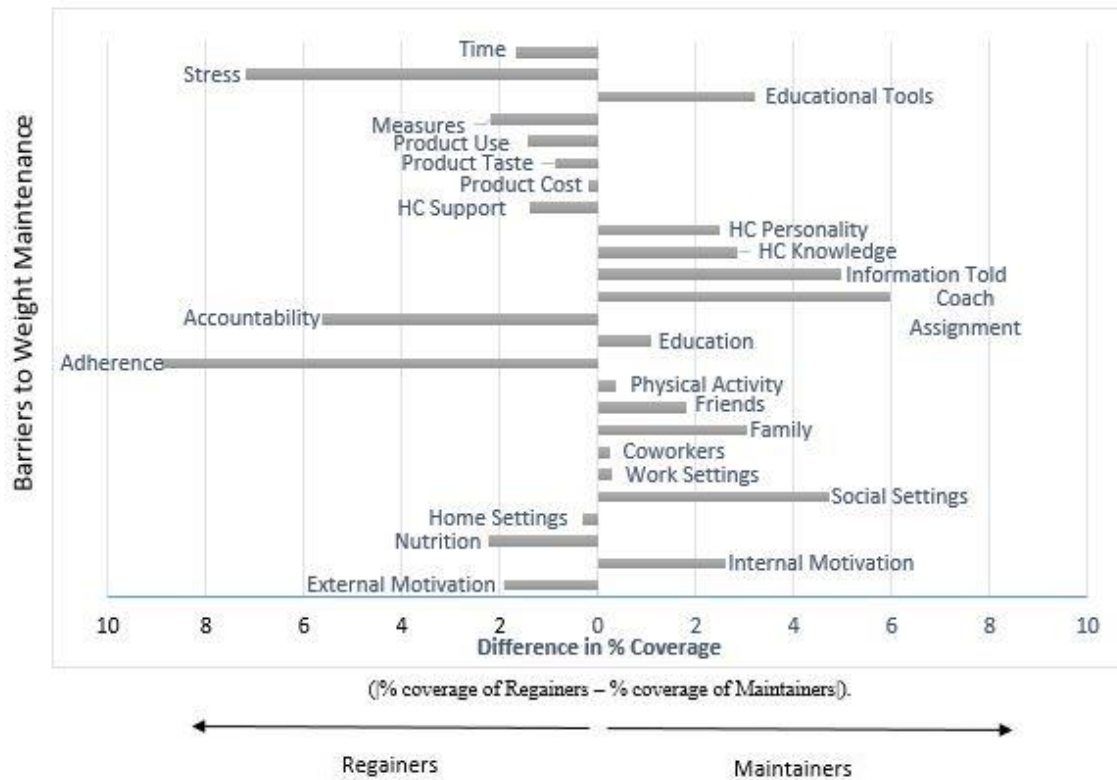
Family was referenced as a facilitator in regards to their accommodation during social settings, such as going out to eat, ensuring to go somewhere their loved one would be able to stay on track. Maintainers referenced that adhering to a physically active lifestyle made them feel better and aided in maintaining their weight loss. Referenced facilitators across Maintainers can be seen in **Figure 5B**.



**Figure 5:** Facilitators to Weight Maintenance by Group: Regainers (A) vs. Maintainers (B).

## GROUP DIFFERENCES IN REFERENCED BARRIERS & FACILITATORS

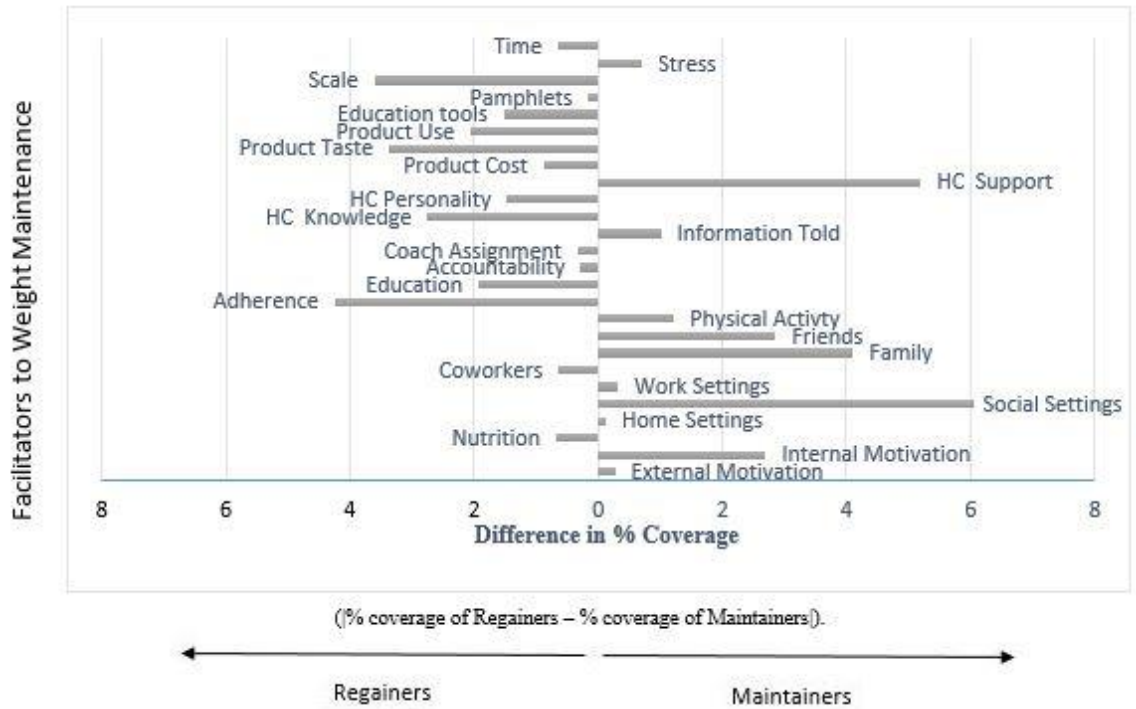
Comparing the differences of referenced themes as a facilitator or barrier across groups provided the opportunity to view the variation of perceptions between groups. There was a wide variation of referenced barriers (**Figure 6**) between groups with stress, accountability and program adherence being referenced as greater barriers by Regainers, while health coach personality, social settings, and inconsistency of coach assignment were referenced as greater barriers to Maintainers.



**Figure 6:** Differences in Barriers to Weight Maintenance Between Groups: All barriers located to the left of the zero on the x-axis indicate barriers referenced more frequently by Regainers. In contrast, all barriers located to the right of the zero on the x-axis indicate barriers referenced more frequently by Maintainers.

When comparing the differences in referenced themes as a facilitator, Regainers voiced product taste, the wireless scale, and educational tools more frequently while Maintainers voiced health coach support, consistency of information told, and family as greater facilitators of success (**Figure 7**).





**Figure 7:** Differences in Facilitators to Weight Maintenance Between Groups: All facilitators located to the left of the zero on the x-axis indicate facilitators referenced more frequently by Regainers. In contrast, all facilitators located to the right of the zero on the x-axis indicate facilitators referenced more frequently by Maintainers.

## CHAPTER 5

### DISCUSSION

The purpose of this study was to identify the barriers to and facilitators of weight maintenance within meal replacement program participants following weight loss. In order to better understand the barriers to and facilitators of weight maintenance, the data were analyzed to allow evaluation of 1) the barriers and facilitators that emerged as main themes among all participants currently in the weight maintenance phase, 2) the differences between the referenced barriers and facilitators between Regainers and Maintainers, and 3) the percent difference of themes referenced as barriers and facilitators between Regainers and Maintainers.

Interestingly, health coaches emerged as both a barrier and a facilitator across all participants. Participants voiced how the continued support of health coaches aided in keeping them accountable to weight maintenance habits. This aligns with previous findings of continued health coach support as a facilitator during weight maintenance efforts.<sup>26,52</sup> Having a consistent coach assignment was commonly referenced as a facilitator as it formulated a connection between coach and participant. Participants shared finding a connection with a health coach was important as coaches had the opportunity to understand participants individualized barriers and were able to assist in overcoming these barriers. *“I loved my coach....you get to form an intimate relationship with them because you have to talk about stuff you don’t want to talk about.....I’m not sure that if I would have seen a different coach that I would’ve been as successful as I was.”* This participant advocated for themselves and made appointments with the same coach once she found one that she felt a connection with. If she had not formed a connection with a coach, she may have held back the topics she was uncomfortable

discussing, which could have hindered the success she experienced. The participant continued to discuss how when her coach left her position, she had a difficult time staying motivated as her coach had a lot of knowledge on her personalized barriers. She felt as if she lost a support system as, when seeing new coaches, sessions mainly consisted of providing a background of her story instead of support. This demonstrates the significant impact a consistent coach assignment could have on participant success as the close relationship that is formed can allow health coaches to enhance participant's facilitators for greater weight maintenance.

Although utilizing health coaching has been shown to be beneficial to the efficacy of weight maintenance compared to when it was not utilized, <sup>7,13,16,49</sup> participants in the present study continued to struggle with weight maintenance despite health coaching and reported dissatisfaction with health coach sessions. Our findings are consistent with earlier reports in which 30% of participants were neutral or dissatisfied with their health coaching experience, measured via survey.<sup>42</sup> In our study, this dissatisfaction may, in part, be due to the program encouraging participants to see multiple coaches. Many participants shared how each coach has their own ideas on what participants should do for successful weight maintenance, which participants found difficult. *"I've been with a different coach every time and I actually am struggling with it. Some have their own strengths and philosophies and I find it confusing....it has been a challenge for me the last few weeks."* In working with a variety of coaches, participants received mixed messages of the correct approaches that should be practiced for successful weight maintenance. Due to various health coach philosophies, participants also stated how quick the sessions were. By the time the health coach had adjusted the participants

approach to successful weight maintenance, very little time was allowed to discuss further education for continued success.

Participants were also concerned of health coach knowledge due to inconsistent information from coach to coach. *“It made it hard for me because some of the information one coach would give me, I’d come back the next week and the next coach would tell me something different. It was also hard because I’d talk to other people on the program and they’d been told something different, too.”* Participants voiced experiencing confusion when presented with different information from coach to coach. They felt as if this inconsistent information was an obstacle to their success as they would have to adjust their approach to weight maintenance with each health coach session. This is a barrier that could be addressed in a few ways. First, if there were consistent guidelines on approaches to weight maintenance that all health coaches were educated on, there would be more agreement among coach suggestions. Second, having a consistent coach assignment would eliminate participants experiencing differing views of weight maintenance. Third, if there was a general guide for health coaches to follow on topics covered during health coach sessions based on the progress of the participant, a wealth of education would be covered during client session as a consistent coach assignment would eliminate the need to take time to get to know the participant at each session. These approaches may result in coaches providing more consistent information, a better understanding of participants personalized barriers, meaning an ability to work with participants to overcome them, and a needed connection between health coach and participant.

Health coaches were often referred to as young and inexperienced. Women commonly shared the frustration of working with a health coach that did not understand the lifestyle of being a mother. Others shared the negative feelings they had toward their coach due to them being young and never having to battle weight management first hand. Participants in one focus group discussed these very barriers in connecting with a health coach and stated, "*Coaches need coaching.*" Supporting research found similar barriers. In conducting focus groups with women working toward weight loss or maintenance, Metzgar and colleagues<sup>48</sup> concluded that women struggled during life transitions (i.e. student status, employment, motherhood). This supports what has been gathered through the current study, and suggests the advantage of pairing participants with a health coach that would be able to share life experiences for additional support. Through this, a more supportive, understanding relationship can be formed between coach and participant.

Additional barriers such as outside influences and lack of motivation were identified. Participants shared that social and work settings presented difficult nutritional choices that impacted their adherence to a healthy diet. Specifically, going out to eat and choosing a healthy choice off the menu and turning down treats that are available within the work environment. As internal motivation was a common barrier, participants had a difficult time overcoming these obstacles. We can speculate that participants have a difficult time adhering due to a lack of behavior change education. Once they transition to fewer meal replacement products, they have a difficult time adhering to healthy choices in an environment of temptations. While there are education modules health coaches currently have access to in order to disseminate knowledge to participants, these modules lack behavior change education. While one module includes how to set realistic

goals, the integration of additional behavior change education modules could provide benefits to those who are having a difficult time adhering to the program.

Looking at barriers across groups, Regainers primarily experienced difficulties adhering to the program long-term. As was found with previous research, Regainers relapsed into old habits due to stress, family, and a busy lifestyle.<sup>17,25</sup> We can speculate while in the weight loss phase, meal replacement products helped Regainers adhere during busy times. However, after decreasing meal replacement product use, Regainers had a difficult time balancing meal preparation, family and work, causing stress that they have not learned through the program how to handle. If participants are unable to progress past adherence of the program, they will not be able to move forward onto successful weight maintenance. Therefore, there is a need for further education of time and stress management into the current health coaching framework. The health coaching protocol could benefit from helping program participants identify these barriers, recognize them, and provide strategies to help program participants overcome these barriers as a strategy to help improve weight maintenance.

While Regainers experience difficulty with program adherence, Maintainers referenced components of the program as their greatest barrier to successful weight maintenance. Maintainers commonly stated the need to advocate for themselves during health coach sessions for information they felt was lacking. Maintainers shared how health coaches did not stimulate educational guidance, rather, they came to health coach sessions prepared with questions to discuss. For example, physical activity was commonly noted as a topic Maintainers came to their health coach with, as they felt physical activity education was lacking. One Maintainer shared, “*So yes, a lot of [health*

*coaches] did tell me different [exercises] to do, but I also inquired about it. I said, 'what is the best thing to do.'*” While this Maintainer advocated for herself, other participants did not and continued on experiencing the absence of physical activity education as a barrier. As the absence of physical activity education was noted as a common barrier, integrating more physical activity education into the current health coaching framework has potential to increase weight maintenance efforts.

Interestingly, the most referenced barriers by Maintainers involved program logistics, which are external influences beyond a participant’s control. In contrast, Regainers most referenced feelings specific to their own self and their abilities to comply with the program, which are internal, as more impactful barriers. This may suggest that participants that were able to maintain a greater percentage of weight loss after reaching their goal weight (Maintainers) were able to overcome their internal barriers and have moved on to focusing on external barriers and small changes they would like to see within the meal replacement program that would make their experience more positive. In contrast, Regainers had not been successful in overcoming internal barriers associated with program compliance and behavior change. Thus, making it difficult for them to see past these major obstacles. These data suggest a need for further development of the health coaching protocol to include assisting clients with the identification of their personal barriers and coaching to help clients overcome their barriers. This technique may assist clients that struggle with weight maintenance when the meal replacement program is less structured in the later stages of the program by teaching clients to overcome their barriers and fostering positive behavior change strategies to support healthful eating and exercise participation.

When comparing referenced facilitators between groups, interestingly, Regainers enjoyed program tools such as meal replacement products and the wireless scale more than Maintainers. One can speculate that Regainers may be consuming more meal replacements than advised in addition to grocery store foods, causing an increase in calories. It may be that Regainers found weight loss via the use of meal replacement products easy to adhere to as it eliminated food options, and are looking for meal replacements to also aid in weight maintenance efforts. There is a need for Regainers to progress to relying less on meal replacement products, while learning how to make healthy choices with grocery store foods and environmental temptations. Health coaches should be working to motivate these participants to move forward through the program by explaining the benefits of transitioning off meal replacement products.

Facilitators identified by Maintainers involved internal motivation helping them through weight maintenance, and understood the benefits of staying physically active and continuing on with health coach support, which aligns with previous research for successful weight maintenance.<sup>12,16,17,48</sup> This suggests that health coaches should focus on participants internal motivation, emphasize the benefits of physical activity, and stress the importance of continued health coach support to improve weight maintenance among Regainers.

The percent difference of barriers and facilitators between Regainers and Maintainers allowed us to grasp the magnitude of different perceptions across groups. Overall, Regainers experienced a difficult time handling stress and keeping accountable compared to Maintainers who had more difficulty with logistics of the program including the personality of their health coach and variety of coach assignment. These results show



that Regainers fall under stress and have not learned how to incorporate successful behavior change in their lives. Maintainers have incorporated successful behavior change, and instead voiced what they would like to see changed within the program to add to their current success.

Compared to Maintainers, Regainers referenced meal replacement products and the wireless scale as more impactful of success. Maintainers, on the other hand, felt as though support from their health coach and family were more impactful of success. This suggests a need for health coaches to get to know their clients on a more personal level, such as having a consistent coach assignment. Doing so would allow a relationship to build between health coach and participant and provide health coaches with the opportunity to understand participant's stage in life (i.e. having children, work life) and personal barriers. This aligns with previous studies that have reported a need for more support targeting life transitions related to student status, employment, family structure and health status.<sup>11,48,50</sup>

The purpose of the current study was to identify specific, personal barriers to and facilitators of successful weight maintenance among participants who have reached their goal weight and are working to maintain their initial weight loss. Key findings include the variation in health coach perception and the difference in referenced barriers and facilitators between groups. Specifically, common barriers cited by Regainers included factors such as stress and difficulty adhering to the program, while Maintainers common barriers included logistics of the meal replacement program. This indicated the need for Regainers to identify and overcome their barriers, while Maintainers were able to overcome theirs and instead, wanted to see changes within the program.

### *IMPLICATIONS AND FUTURE DIRECTIONS*

In conclusion, health coaches have the unique opportunity to use participant's referenced facilitators to improve participant's success, and help participants address their barriers in order to progress through successful weight maintenance. The variation in how members referenced health coaches may provide insight to the differences of being successful or unsuccessful with weight maintenance. While some participants are able to identify and overcome their own barriers, there are others who are not able to and are unable to move forward into successful weight maintenance. Therefore, these individuals are in need of assistance in identifying and overcoming their barriers, and are currently not receiving the education and guidance needed to overcome these barriers as there is a variety in health coaching methods. Programs may want to consider a consistent coaching protocol in terms of what information is provided to participants to help clients identify barriers and to work on overcoming these barriers so they can successfully change their behavior to support healthful eating and regular exercise.

These findings add to previous research as little research has been conducted on the specific barriers to and facilitators of weight maintenance across those who are successful, and those who are unsuccessful. Findings may suggest program components are geared to be successful in certain personality styles. While these findings have added to previous research, analyzing the barriers to and facilitators of weight maintenance among a larger group may lead to identifying current barriers and facilitators in greater detail. Doing so may lead to uncovering new themes to successful weight maintenance and is needed in order to formulate improvements to the current health coaching framework.

Future directions for research include the integration of a health coaching model that is participant driven, where the participant is involved in choosing topics covered during health coaching sessions in order to sufficiently target personalized barriers and facilitators. In addition, researching the success of integrating group-based health coach sessions should be investigated. Through focus groups, participants gained insight on varying topics including educational tools, healthy food options, food preparation, etc. from other participants they were previously unaware of. Others stated the reassurance they felt hearing others voice similar struggles and mentioned their interest in group sessions that could include health coaching, getting physically active together, sampling recipes from the Profile website, and even participating in preparing healthy meals together. Some participants even exchanged numbers with one another to have another form of support. This suggests the desire participants experience to interact with others who may be experiencing similar barriers to weight maintenance. Previous studies have reported similar findings through the conduction of focus groups where participants stated as experience sharing would increase motivation and accountability.<sup>48,60</sup>

The limitations of this study include the low response rate of participants, specifically of Regainers. The strengths of this study include the use of focus groups to gather detailed perceptions of the Profile program and coding by more than one independent researcher. Findings support that weight loss and maintenance is a multifactorial condition, demonstrating the need for a program that involves the integration of a more personalized model of health coaching to target individualized social, behavioral, and physiological factors.

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