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UNREALISTIC DREAM WEIGHT GOALS AND STUDY COMPLETION IN P.R.I.S.E.®: a LIFESTYLE MODIFICATION INTERVENTION FOR EMPLOYED AFRICAN AMERICAN WOMEN

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UNREALISTIC DREAM WEIGHT GOALS AND STUDY COMPLETION IN P.R.I.S.E.®: a LIFESTYLE MODIFICATION INTERVENTION FOR EMPLOYED AFRICAN AMERICAN WOMEN

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Abstract

UNREALISTIC DREAM WEIGHT GOALS AND STUDY COMPLETION IN P.R.I.S.E.®: a LIFESTYLE MODIFICATION INTERVENTION FOR EMPLOYED AFRICAN AMERICAN WOMEN

By Siyu Zhang

Purpose: Obesity (body mass index (BMI) ≥ 30) and being overweight (BMI 25 – 29.9) are predictors for many diseases such as diabetes, hypertension and cardiovascular disease. African American females have high rates of obesity and being overweight. The aim of P.R.I.S.E®, a worksite fitness program was to increase physical activity and promote weight loss among employed African American women. Unrealistic dream weight goals (UDWG) may impede the success of weight loss and attribute to study drop-out. The purpose of this study was to investigate the relationship between UDWG and study completion.

Method: UDWG is defined as when one's personal weight loss goal exceeds the medically advised goal by 50%. In this intervention study, 208 employed African American women were included. Participants were classified as completers if enrolled for over 168 days. Data from P.R.I.S.E.® including age, BMI, past weight loss experience, and weight efficacy lifestyle (WEL) were potential predictors of completion. Multiple logistic regression models were developed to evaluate the association between predictors and outcome. Collinearity, interaction and confounding were assessed for all variables.

*Results***:** The majority of participants were obese (59.6%) and almost half were over 40 years old (45.7%). Data revealed a high drop-out rate for participants with 61.5% of the women (80 women) completing the intervention program. Odds of completion were low among participants who were young and had UDWG. Age, BMI, past weight loss experience, and WEL were confounders of the association between UDWG and completion. Having less success in previous weight loss attempts was predictive of higher drop-out rates than those who were successful losing weight in the past. Participants who were currently trying to lose weight were more likely to complete the program.

Conclusion: High drop-out rates among those enrolled in fitness and weight loss intervention programs are critical concerns. Through examining characteristics of completers and non-completers, more effective health lifestyle programs can be developed. Based on study results, having an UDWG reduces the likelihood of completion. Including information on how to have an appropriate perspective towards one's weight loss and how to establish a reasonable weight loss goal is important for program completion.

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List of Abbreviations

P.R.I.S.E.® = Preps, Reps, Increased Steps and Encouragement

UDWG = Unrealistic Dream Weight Goals

RDWG = Realistic Dream Weight Goals

WEL = Weight Efficacy Lifestyle (instrument)

CHAPTER 1:

BACKGROUND/LITERATURE REVIEW

Overweight and obesity

Obesity is a growing health care concern in the world. Overweight and obesity are terms that are used to identify ranges of weight which are greater than healthy ranges, and being overweight or obese has been well documented to increase the risk of developing certain diseases and other health problems (1). Being obese (body mass index BMI>=30) or overweight (BMI 25 – 29.9) are significant threats to people's health, particularly in the United States, leading to cardiovascular disease and other chronic diseases including diabetes which can reduce quality of life and increase the risk for premature death. Severe obesity (BMI>=40) is also a factor for increased risk of morbidity and mortality (2), and it has shown to double health-care costs (3). The prevalence of obesity in the United States has increased during recent decades, as have more severe levels of obesity. From WHO data, in 2008, America has the highest prevalence of obesity and being overweight (62% for overweight in both sexes, and 26% for obesity) (4). As such, weight control continues to be a prevalent concern among many people who are overweight or obese.

Overweight statistics in African American Women

Health disparities are common in a multiracial country like the United States. While a little more than forty-one percent (41.2%) of non-Hispanic black women older than 18 years old were considered to be obese, the percentage for their non-Hispanic white counterparts was 24.5% and the obesity rate among black women was nearly two times

that of white women (5). In 2000, African American women were also 50% more likely to be severely obese than white women in the United States (6). Obesity among African American women results in higher mortality and increased rates of coronary heart disease (CHD), hypertension, diabetes, and certain cancers (7) (8) (9). As such, obesity-related health problems disproportionately impact African American women in the United States (10). While explanations for these weight disparities among different ethnic groups remain unclear, it has been suggested that genetic, socioeconomics factors and the environment are involved (11).

Cultural differences are also another important factor associated with racial disparities in obesity and being overweight. Several studies indicate that African American women including adolescents have a greater acceptance of large body size (12) (13) (14). Many researchers suggest that overweight African American women are less likely to consider themselves to be overweight or obese. Instead, African American women perceive themselves attractive even when they are dissatisfied with their weight (15). Cultural differences in concepts of feminine beauty appear to contribute to the racial disparities seen in those who are overweight, obese or who have obesity-related health problems (16).

Benefits of physical activity and relationship with obesity

Although exercise is one the strongest predictors of long-term success with weight loss (17), the majority of adults in western countries do not meet the recommendations for physical activity needed to reduce morbidity and mortality (18). According to the 2008 Physical Activity Guidelines for Americans, there are two types of physical activity

recommended for improved health: aerobic and muscle-strengthening. The 2008 Physical Activity Guidelines for Americans suggests that adults engage in at least 150 minutes of moderate aerobic activity and muscle-strengthening activities on two or more days each week (19). In North America, less than 4% of adults achieve these recommended minimum amounts of physical activity even though most of them are aware of the value that exercise and maintaining an appropriate weight has on long-term health (20). In addition, physical activity also helps reduce dysfunctional eating patterns in multiple ways which indirectly contributes to the goal of weight management (21).

Having higher rates of obesity, African American women are less likely to participate into regular physical activity (22). Even though nearly more than 60% of African American women indicate they would love to lose weight and attempt to do so, their weight loss results tend to be less successful compared with white women. African American women have shown to lose half as much weight as white participants in several weight loss programs (23) (24). In Wing and Anglin's 1996 one-year behavior weight loss program, participants' weight, dietary intake and exercise were measured at baseline, 6 months, and 12 months during treatment (23). Overall, weight loss was approximately 7.1 kg for blacks and 13.9 kg for whites. In Kumanyika et al's 2002 study to assess ethnic differences of weight loss among 421 overweight white and 164 overweight black healthy elderly patients in their Trial of Nonpharmacologic Interventions program revealed that the black participants lost about 2.7 kg at 6 months, while the white participants lost more than double the blacks during the same interval, about 5.9 kg (24).

Although the prevalence of obesity has slowed over the last few years in the United States, the United States still has the highest rate of obesity. According to Flegal

et al., 2/3^{rds} of adults in the Unites States are overweight or obese (69%), and 1/3rd are obese (36%) (6) . Many weight management programs have been developed in order to help individuals obtain healthy weight and BMI. However, high drop-out rates for weight management programs are not uncommon (25). For example, in an obesity treatment study conducted by Elfhag and Rossner, the overall drop-out rate reported was 63% and it was found to be associated with lower education background, lack of occupation, and higher body dissatisfaction (26). In another study, Inelmen et al. reviewed the medical charts of 383 patients between the ages 15-82 years attending an outpatient clinic for obesity treatment. They classified patients on the basis of their socio-demographic characteristics, socioeconomic status, obesity-related diseases and dietary habits, and followed them over a one-year period. Attrition in their sample was 77.3% (27).

Early dropout will affect the effectiveness of any intervention. Prior research studies attempted to illuminate the characteristics for the program completers and non-completers. Age, education level, initial fitness, weight loss expectation, self-efficacy, and number of weight loss attempts are all potential related factors.

However, few factors are known to consistently affect the completion or drop-out from weight loss intervention programs. In a study conducted by Teixeira et al., 158 healthy overweight and obese women enrolled in a 16-week lifestyle weight loss program consisting of group-based behavior therapy to improve diet and increase physical activity (28). Initial BMI was positively associated with the likelihood of dropping out of the weight loss management program (28). However, BMI showed little or no link to adherence to the weight loss program in either the Fabricatore et al. or the Honas et al.

studies (29) (30). These inconsistent results might be due to the various definitions of completion in these different intervention programs (31). By examining these related factors for African American women, low completion rates might be explained.

Over expected weight loss for physical activity

Weight loss expectation refers to the percentage or amount of weight individuals expect to lose within a weight loss program (32). Participants typically set ambitious weight loss goals in these programs, and this is sometimes referred to as the individual's "dream weight" (33). Individuals typically conceptualize their dream weight as a 24% to 38% loss in body weight, and these percentages are significantly greater than what is medically advised. Medically-based weight loss typically falls between 10-20% of one's total body weight. Individuals who set ambitious weight loss goals usually recognize the need of greater action or effort which might, in turn, lead them to increase their physical activity and thus, have a higher likelihood to complete a weight loss program, but some do not. In Dutton et al.'s study which followed 107 overweight African American women, dream weight turned out not to be related to effort expectations (32), while many other researchers have suggested that having less realistic weight loss goals can undermine the outcome of the weight loss program or obesity treatment (32). As Oettingen (34) and Fabricatore et al. (29) note, expectations and fantasies regarding weight loss are varied. These investigators have suggested that having an optimistic expectation, but negative fantasies often promotes weight loss, but they also suggested that expectations, but not fantasies influence program attendance. However, having an

UDWG might also result in higher dropout rates for physical activity intervention programs (34).

Self efficacy

Participants who have difficulties with internal inhibition such as eating in response to various emotions or thoughts tend to lose less weight in behavior intervention weight loss programs (35). Self-efficacy is the measure of one's own ability to complete tasks and reach goals (36). Increasing one's self-efficacy regarding weight can lead to increasing the time engaged in a weight loss program (37). In a 2011 study conducted by Shin et al. focusing on the relationship between self-efficacy and subsequent weight loss during a 6-month weight loss intervention, individuals with higher self-efficacy for resisting eating were able to lose more weight (38). Results from Baker and Brownell's 2000 study suggested that positive attitude and self-efficacy are associated with increased exercise and provide better psychological environments for dieting (39). Furthermore, from an earlier study conducted by Armstrong et al., self-efficacy was predictive of one's progression through program stages which they posed reflected healthier lifestyle and long-term behavior choices (40).

Having a higher eating self-efficacy has also been reported to be associated with less UDWG which is another potential factor of adherence to weight loss intervention (33). However, there are also some conflicting reports of weight efficacy in intervention studies. Vancouver, Thompson and William proposed a theory suggesting that only correlation, not causation, exists between self-efficacy and weight loss outcome. According to their position, high performance in a weight management program causes

an increase in self-efficacy rather than the reverse (41). The effect of weight-efficacy on the outcome of participating in weight management programs needs to be further evaluated.

Weight loss experience

Attempts to lose weight are common among U.S. adults. About 30% of adults in the United States reported a recent weight loss attempt (42) (43), and it's been suggested that more weight loss attempts are associated with weight cycling of regaining weight (44). A study by Stalonas et al. followed-up with thirty-six of the original forty-four people who participated in a 10-week behavior weight control program five years earlier. The average subject had gained about 11.94 pounds since their initial weight loss (44). As it is difficult to maintain weight loss for prolonged periods, for some individuals, dieting has become a part of their lifestyle (45). The association between weight loss attempts and subsequent weight gain of >10 kg has been confirmed in a study conducted by Korkeila et al. who followed 3,536 men and 4,193 women (46).

Other common behavioral factors have shown to be associated with weight loss attempts. A study examining the prevalence of weight loss maintenance among 17,233 postmenopausal women revealed that individuals who are heavy consumers of alcohol or tobacco are also more likely to attempt to lose weight (47). Socioeconomic status differences in health behaviors has also been associated with weight loss (49). In a 1991 examination of obesity related health behaviors in a population of 4,647 working men and women, Jeffery et al. found that it was more common for people with high

socioeconomic status to report a higher prevalence of dieting and exercise to control weight (48).

Exercises barriers / benefits

Perceived barriers or benefits are important factors for women in adherence to physical activity which varies among different racial and ethnical groups (49). Perceived barriers for African American women include lack of time, lack of accessible fitness facilities, lack of motivation and support from others, and the high costs. Many attempts to uncover the motivators to exercise for African American women have been done and include weight loss, physical fitness, stress reduction and entertainment. For example, results from a study by Jones and Nies following older black women (age > 60 years old) revealed that exercise barriers played a significant role for exercise maintenance (51). Such barriers included heavy family responsibilities, lack of social support, inaccessibility to exercise facilities, and cost. However, data from this study also revealed that perceived benefits of exercise were linked to increased physical activity (50).

CHAPTER II:

UNREALISTIC DREAM WEIGHT GOALS AND STUDY COMPLETION IN P.R.I.S.E.®: a LIFESTYLE MODIFICATION INTERVENTION FOR EMPLOYED AFRICAN AMERICAN WOMEN

Siyu Zhang

INTRODUCTION

P.R.I.S.E.®: Preps, Reps, Increased Steps and Encouragement

P.R.I.S.E.® is a worksite fitness program aimed at improving long term physical activity among female African American healthcare workers employed at the Grady Health System in Atlanta, GA and at Meharry Medical College in Nashville, TN between 2005 and 2008. P.R.I.S.E.® stands for Preps, Reps, Increased Steps and Encouragement. The following four points briefly reflects the various facets of the program: 1) *Preps* - African American women were prepared for their participation in the program through individual and group counseling sessions with the objective of figuring out their barriers to healthy behaviors; 2) *Reps* – Participants were introduced to weight training, an important part of the intervention, whereby women were encouraged to have weight training 2 – 3 times per week; 3) *Increased Steps* - The primary physical activity intervention was increasing one's average daily steps to more than 10,000 steps/day, and so, pedometers were distributed and used to record the daily steps of participants; and 4) *Encouragement* - Women met to gain social support from individual and group activities. The study's aim was to promote physical fitness and weight loss via intervention. The purpose of the current study is to explore the potential factors (unrealistic dream weight

goal, age, BMI, weight efficacy, and weight loss experience) which affect program completion.

Hypotheses

Null Hypothesis: There is no relationship between unrealistic dream weight goal and the likelihood of completing the P.R.I.S.E program for African American employed women enrolled in the program.

Alternative Hypothesis: Having an unrealistic dream weight goal is associated with an increase in the drop-out rate for African American employed women enrolled in the P.R.I.S.E. study. The relation might be modulated by other variables including age, initial obesity status, weight efficacy lifestyle, and the number of previous weight loss attempts.

METHODS

Study Sites and Target Population

Participants were recruited from two different work settings in two different states. The first location was Grady Memorial Hospital, the primary indigent public hospital and part of the Grady Health System in metro-Atlanta. Grady offers a full-range of specialized medical services to maintain its commitment to the health-care needs of Fulton and Dekalb counties in metropolitan Atlanta. An estimated 80% of all employees of the Grady Health System are African American. Participants were also recruited from Meharry Medical College located in Nashville, Tennessee which historically has a large black population.

Women of any race and ethnicity who were employed at either Grady Health System or Meharry Medical College were eligible to participate in the study whose primary objective of intervention was to test a sustainable approach for physical activity improvement among African American women. Based on recommended guidelines from the American College of Sports Medicine and the American Health Association, women were eligible to enroll if they had no history of heart disease or other severe disease. Also, non-pregnant women age 18 to 55 years old and who walked less than 10,000 steps per day on baseline were also eligible to participate in the study.

A total of 239 participants comprising 181 employees from Grady Health System and another 58 recruited from Meharry Medical College were included in the P.R.I.S.E.® study sample. However the majority of women (88.9%) pooled from both sites were African American and so, the participant pool was constrained to include only these 208 African American women..

Data Collection and Management

All data collected was coded onto DataFax (Clinical DataFax Systems, Inc.) forms. SAS Version 9.2 was utilized for all data analyses. All study protocols were reviewed and approved by respective Institutional Review Boards (IRB) at Emory University and Meharry Medical College. Study staff recruited participants by phone or through department meetings with the permission of supervisors. Eligible employees signed a written informed consent to participate.

Measurement and Instruments

All eligible participants completed a confidential, self-administrated participant questionnaire which included questions focusing on their perceptions towards exercise benefits and barriers, exercise confidence, weight efficacy, energy balance, and their general health and well-being. Additionally, many basic anthropometric characteristics were evaluated by healthcare personnel including weight, height, medical history, and physical condition through an exercise treadmill test (ETT) using standardized procedures at baseline.

Overweight and obesity

Body Mass Index (BMI) is defined by the formula: weight (kg) / [height (m)]2 (51). BMI is a critical indicator of the amount of body fat, and it is usually used to define being overweight or obese (52). An adult whose BMI is between 25 and 29.9 is considered to be overweight, while obesity is defined as having a BMI of 30 or greater (53).

Study Completion

Participants enrolled in the P.R.I.S.E.® intervention study were administered both baseline and follow-up questionnaires, lab tests and treadmill tests. . For the present analysis however, only baseline data are evaluated. Participants also kept a step log diary to keep track of their training and exercise. Several dates along the course of the study were identified and assessed for progress and compliance for each participant. For instance, the visit date referred to as ‘Day 168’ was one of the final visit dates assessed.

As such, remaining in the program through Day 168 served as the primary outcome for this study. It is a dichotomous variable and participants were classified as to whether or not they had remained in the program for at least 168 days. For the present analysis, participants who were enrolled in the study for over 168 days were considered to have completed the program.

Dream Weight Goals

Participant's weight loss expectation was determined by her response to several questions included in the participant questionnaire. These questions include the participant's self-reported initial weight in pounds and her ideal weight which is considered as her weight loss goal. For participants with a BMI index (kg/m2) of less than 35, 35 to 40, or over 40, medical advice suggests weight loss goals of 10%, 15% and 20% of the initial weight, respectively (11). While one's weight loss goal is expressed as the amount of weight loss divided by the initial weight, Individuals often can set unrealistic weight loss goals for themselves. For example, for a woman who is 5 feet 4 inches with a BMI equal to 33, her medically advised weight loss goal is 19.2 pounds (10% of her initial weight), and her personal dream weight loss goal could be a 30 pounds reduction. The discrepancy between the two goals is (30-19.2)/19.2≈56% which likely is unrealistic. An unrealistic weight loss goal is defined as when one's personal weight loss goal exceeds the medically advised goal by 50%. The discrepancy between a personal dream weight loss goal and a medically advised one is assessed by the percentage difference divided by the medical goal (11). Therefore, the individual in the example above has set up an unrealistic weight loss goal as the discrepancy is over 50%.

This example (and more examples) about specific medically advised weight loss goals and personal dream weight loss goals for people with different levels of BMI is made available in Appendix A.

Weight Loss History

Participants were also asked about their past experiences with losing weight which included diet, exercise, and taking pills and so on. Since studies have suggested that previous losing weight experiences have a correlation with weight regain (46), the current analysis looked at when was the last time participants tried to lose weight and what was the result of that last weight loss attempt.

Weight Efficacy

In the present study, weight efficacy was assessed using the Weight Efficacy Lifestyle Questionnaire (WEL) which is a commonly used measure of self-efficacy (54). The five main factors in the WEL include: negative emotions (e.g., eating when anxious or nervous); availability (e.g., eating when food is available); social pressure (e.g., eating when there's pressure); physical discomfort (e.g., eating when in pain); and positive activities (e.g., eating when watching TV) (55). The 20 Weight Efficacy Lifestyle (WEL) items in the questionnaire were rated on a 1 – 5 scale with a score of 1 indicating 'not confident that I can resist the desire to eat' and a score indicating of 5 indicating 'very confident that I can resist the desire to eat".

Analysis

Multiple logistic regression was used to evaluate the association between the predictor variable, unrealistic dream weight loss goal, and the dichotomous outcome variable, program completion accounting for the influence of confounding and interacting variables. Confounding variables (Age, BMI, weight loss experience, weight efficacy) were included based on the directed acyclic graph (DAG) (Figure 1). Confounding assessment focused on age, BMI, Weight Efficacy, Resist to eat when depressed, Resist to eat when experienced failure, previous weight loss results and Last time tried to lose weight. If any of these variables changed the effect of having an unrealistic dream weight on program completion by 10% or more, it was considered a confounder and was include in the final model. Collinearity was tested using a condition index (CI) of 20 and a variance-decomposition proportion (VDP) level of 0.5 when the full model was determined. Checking the CI and VDP with SAS 9.3, no collinearity was found in the model. The likelihood ratio test was used to assess interaction, and no interaction was found.

RESULTS

The demographic characteristics of P.R.I.S.E.® participants are included in Table 1. The comparison of characteristics between program completers and non-completers is also shown in Table 1. While P.R.I.S.E.® was designed specifically for employed African American women, only 80 women out of the 208 women included in the study were classified as completers As such, the drop-rate for the program is 61.5%.

Most of the participants were over 40 years old (n=95, 45.7%), about 20%were under 30 years old [n=43, 20.7%], and 34% of women were between 30 and 40 [n=70, 33.6%]. Significant differences in age were observed between completers and non-completers [P=0.01]. The majority of participants [n=124, 59.6%] were classified as obese [BMI >=30]. In addition, the initial BMI at baseline was associated with the drop-out rate [P=0.02] with obese participants more likely to complete the intervention study. Nearly 60% of the women enrolled in the study earned a college or bachelor's degree [n=124, 59.4%]. There were 142 women [68.3%] who indicated that they drank alcohol, but only 7 participants [3.4%] smoked tobacco at the time.

As shown in Table 2, the proportion of participants with an unrealistic dream weight was affected by age [P=0.02], and initial BMI [P<0.001]. Although the likelihood of drinking alcohol among women who had unrealistic weight loss goals was a bit higher [P=0.06], both drinking alcohol and smoking are not considered as potential confounders in the full logistic regression model as they have no statistical significant association with study completion. Participants over 40 years of age demonstrated significantly greater likelihood of being obese (P=0.01).

Table 3 shows the statistical relationship between potential factors affecting outcome (study completion) and exposure (unrealistic dream weight goal). Eating efficacy, e.g., resist to eat when depressed, P<0.01; resist to eat when experienced failure, P=0.02, was significantly greater for people with appropriate expectation about dream weight. Furthermore, having successfully lost weight in the past significantly revealed higher scores in overall WEL (P=0.01). Successfully losing weight in the past also predicted a lower risk of setting up unrealistic dream weight goals (P=0.05).

Table 4 shows the crude odds ratio for the related factors including exposure and the outcomes. While younger participants, those less than 30 years old, had higher drop-out rates [OR=3.32, 90% CI (1.60, 6.89)], women with higher BMI at baseline were more likely to complete the program [OR=0.49, 90% CI (0.30, 0.80)]. Completing the program was easier for participants who were currently trying to lose weight at baseline than women who reported that the last time they tried to lose weight was in the past [OR=2.23, 90%CI (1.28, 3.87)]. Less successful weight loss experience in the past was also a predictor of program completion [OR=2.70, 90%CI (1.03, 7.05)]. The overall weight efficacy scale [WEL] indicated no significant association with the outcomes. However, one item in the Weight Efficacy Lifestyle Questionnaire that assessed the resistance to eating when depressed was associated with the completion rates [OR=0.60, 90%CI (0.38, 0.97)].

Although there was no significant difference for the exposure (unrealistic dream weight goal) and outcome (program completion), the crude odds ratio (crude OR=1.01) indicates a slight trend that women with unrealistic dream weight goals were less likely to complete the program. The adjusted odds ratio for the association between exposure and drop-out rates is seen in Table 5 where several potential confounders were controlled for separately. Confounding is considered present if the adjusted OR is $\pm$ 10% of the crude OR, or $aOR \geq 1.11$ *or* $aOR \leq 0.91$. Age, BMI, weight loss experience, and the level of resistance to food when depressed were revealed to be confounders as they each changed the crude OR by more than 10%.

Table 6 describes the characteristics of the full and reduced models for exposure (unrealistic dream weight goal) and outcome (program completion). The proportion of

participants dropping out during the program in the full model was higher among women who had a higher expectation of their weight loss although the result was not statistically significant [OR=1.81, 90%CI: (0.94, 3.45)]. The logistic regression full model assessed whether the drop-out rate of the program could be predicted from a set of independent potential factors including age, initial BMI, past weight loss experience and self-efficacy. After controlling for a full set of variables, backward elimination was used to reduce the set of predictor variables to the number necessary that accounts for nearly as much of the variables as was accounted for the full model. Overall weight efficacy and resistance to eat when depressed were removed during the elimination process one at a time. In the reduced model, the odds ratio was 1.92 [90% CI: (1.03, 3.59)] which assessed the relationship between over-expected dream weight and the likelihood of completing the program adjusted for age, BMI, whether currently trying to lose weight at the moment and the results of weight loss experience in the past..

Additional variables also significantly predicted study completion in the reduced model. Age less than 30 years old was associated with the decreased odds of completing the study. When compared to the referent group (age>40 years olds), the odds of completion was over 4 times as high for women who were less than 30 years old. Initial BMI approached statistical significance with an odds ratio of 0.42, which indicated that obese women were more likely to insist on completing the study. Women who were not trying to lose weight at the moment and women who didn't lose weight in the past had a higher risk of dropping out during the study with odds ratios of 2.42 and 3.29, respectively.

DISCUSSION

The P.R.I.S.E.® study was a lifestyle intervention study aimed at improving long term physical activity among employed African American women. The majority of the participants in the study were overweight or obese. However, only 80 out of 208 (38.5%) women who began the program continued to completion. Exploring the determinants of program completion is important for future similar lifestyle intervention programs.

A significant difference in the proportion of women with an unrealistic dream weight goal between completers and non-completers was found in the final reduced logistic regression model. Results from the study support the hypothesis that participants with higher weight loss expectations were more likely to drop out of a healthy lifestyle intervention program.

Older age at baseline was a statistically significant predictor of study completion in the final model. It is consistent with the theory that when controlling for BMI, younger women had more ambitious weight goals than older women (56). People tend to consider their goal weight based on the body shape of their peers. Since mean weight rises with age, younger people weigh less on average than old people (57). Thus, it is possible that the obese young women in the study had less realistic weight loss goals than their older counterparts of similar BMI. Furthermore, results from the current study showed that greater expected weight loss tended to increase the likelihood of dropping out. The final model also revealed that obese women had lower drop-out rates.

Controlling for the effect of BMI, increased drop-out rates were observed among women with previous successful weight loss attempts. We assumed that women who lost

weight in previous attempts might be more ambitious about their current weight loss and establish greater unrealistic goals to lose weight.

In addition, the determinants of study completion were explored from several diverse sources including their baseline health condition and their initial lifestyle. Evaluation of their understanding, attitude and practical experience with physical activity also contributed to building the final model. Overall, the findings may have important implications for developing similar intervention programs specifically, by providing directions to help participants set up reasonable and achievable dream weight goals.

In the face of the economic crisis, one weakness of the study was the changing financial and political situation at Grady Memorial Hospital and Meharry Medical College. The changes affected women's work and life. Some women lost their jobs during the economic crisis and left Grady Memorial Hospital and Meharry Medical College, which could have affected the completion rates of the intervention study.

Future research investigating the determinants of healthy lifestyle program completion is needed. The impact of exercise benefits/barriers, different diets habits, and exercise confidence to complete the program is important. Further studies should also focus on the association between unrealistic dream weight goals and the pounds they actually lose through the intervention program.

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TABLES

Table 1. Demographic Characteristics of P.R.I.S.E Completers & Non-Completers

	All participants (N=208)	**Completers (N=80)**	**Non-completers (N=128)**	**P value ****
Age				**0.01**
Age(<30)	43 (20.7%)	8 (10.0%)	35 (27.3%)	
Age (30-39)	70 (33.6%)	31 (38.8%)	39 (30.5%)	
Age (40+)	95 (45.7%)	41 (51.2%)	54 (42.2%)	
Marital status				0.69
Married/live partner	86 (41.4%)	36 (45.0%)	50 (39.1%)	
Separated/Divorced/Widowed	46 (22.1%)	17 (21.3%)	29 (22.7%)	
Single	76 (36.5%)	27 (33.8%)	49 (38.3%)	
BMI				**0.02**
Underweight, normal and overweight(BMI<30)	84 (40.4%)	24 (30.0%)	60 (46.9%)	
Obese (BMI >=30)	124 (59.6%)	56 (70.0%)	68 (53.1%)	
Education				0.13
High school or less	39 (18.8%)	14 (17.5%)	25 (19.5%)	
College or bachelor's degree	124 (59.6%)	54 (67.5%)	70 (54.7%)	
Master's or more	45 (21.6%)	12 (15.0%)	33 (25.8%)	
Currently drink alcohol (missing=1)				0.80
Yes	142 (68.3%)	55 (69.6%)	87 (68.0%)	
No	65 (31.7%)	24 (30.4%)	41 (32.0%)	
Current smoker				0.81
Yes	7 (3.4%)	3 (3.8%)	4 (3.1%)	
No	201 (96.6%)	77 (96.2%)	124 (96.9%)	

** Participants met age and health eligibility criteria for the 2005-2008 P.R.I.S.E Study conducted by Emory University and Meharry Medical College*

*** Calculated using chi-square test, P value in BOLD means the variable has significant effect for outcomes*

**** Unrealistic weight loss goal: One's personal weight loss goal exceeds the medically advised goal by 50%*

*Table 2. Characteristics of P.R.I.S.E Participants with Realistic/Unrealistic Dream Weight **

	All participants (N=208)	Participants with RDGW^ (N=83)	Participants with UDWG^ *** (N=125)	P value**
Age				**0.02**
Age(<30)	43 (20.7%)	25 (30.1%)	18 (14.4%)	
Age (30-39)	70 (33.6%)	27 (32.5%)	43 (34.4%)	
Age (40+)	95 (45.7%)	31 (37.4%)	64 (51.2%)	
Marital status				0.63
Married/live partner	86 (41.4%)	31 (37.4%)	55 (44.0%)	
Separated/Divorced/Widow	46 (22.1%)	20 (24.1%)	26 (20.8%)	
Single	76 (36.5%)	32 (38.6%)	44 (35.2%)	
BMI				**<0.001**
Underweight, normal and overweight(BMI<30)	84 (40.4%)	54 (65.1%)	30 (24.0%)	
Obese (BMI >=30)	124 (59.6%)	29 (34.9%)	95 (76.0%)	
Education				0.72
High school or less	39 (18.8%)	14 (16.9%)	25 (20.0%)	
College or bachelor's degree	124 (59.6%)	49 (59.0%)	75 (60.0%)	
Master's or more	45 (21.6%)	20 (24.1%)	25 (20.0%)	
Currently drink alcohol (missing=1)				
Yes	142 (68.3%)	63 (75.9%)	79 (63.7%)	**0.06**
No	65 (31.7%)	20 (24.1%)	45 (36.3%)	
Current smoker				
Yes	7 (3.4%)	3 (3.6%)	4 (3.2%)	0.87
No	201 (96.6%)	80 (96.4%)	121 (96.8%)	

** Participants met age and health eligibility criteria for the 2005-2008 P.R.I.S.E Study conducted by Emory University and Meharry Medical College*

*** Calculated using Chi-square test, P value in BOLD means the variable has significant effect for exposures*

**** Unrealistic weight loss goal: One's personal weight loss goal exceeds the medically advised goal by 50%*

^ RDWG = Realistic Dream Weight Goal; UDWG = Unrealistic Dream Weight Goal

Table 3. Relationship of Potential Factors Affecting Completion & Unrealistic Dream Weight Goal*

	P value**
Age & BMI	**0.01**
Weight Efficacy & UDWG^	
Overall Weight efficacy	0.12
Eating efficacy	
resist to eat when depressed	**<0.01**
resist to eat when experienced failure	**0.02**
Weight Efficacy & Weight loss experience (Last time tried to lose weight)	
Overall Weight efficacy	0.18
Eating efficacy	
resist to eat when depressed	0.89
resist to eat when experienced failure	0.97
Weight Efficacy & Weight loss experience (Experience and results of past weight loss)	
Overall Weight efficacy	**0.01**
Eating efficacy	
resist to eat when depressed	0.14
resist to eat when experienced failure	0.13
Weight loss experience * UDWG	
Last time tried to lose weight:	0.23
Experience and results of past weight loss	**0.05**

** Unrealistic weight loss goal: One's personal weight loss goal exceeds the medically advised goal by 50%*

*** Calculated using chi-square test; P value in BOLD means variable has significant effect between factors*
^ UDWG= Unrealistic Dream Weight Goal

Table 4. Crude Odds Ratio for Drop-Out by Main Exposures & Potential Confounders

	crude Odds Ratio**	90% CI	
Main Exposure			
UDWG^*	1.01	0.62	1.62
Potential Confounders			
Age			
Age(<30)	**3.32**	**1.60**	**6.89**
Age (30-39)	0.96	0.57	1.61
Age (40+)	Referent		
BMI			
Obese (BMI >=30)	**0.49**	**0.30**	**0.80**
Underweight, normal & overweight (BMI<30)	Referent		
Weight Loss Experience			
Last time tried to lose weight:			
Tried to lose weight in the past	**2.23**	**1.28**	**3.87**
Currently trying to lose weight	Referent		
Experience and results of past weight loss			
Lost weight	**2.70**	**1.03**	**7.05**
Did not lose weight	Referent		
Weight Efficacy			
Overall Weight efficacy	1.16	0.73	1.86
Eating efficacy			
resist to eat when depressed	**0.60**	**0.38**	**0.97**
resist to eat when experienced failure	0.91	0.57	1.46

** Unrealistic weight loss goal: One's personal weight loss goal exceeds the medically advised goal by 50%*

*** An Odds Ratio greater than 1 indicates that the variable is associated with increased drop-out rates. Odds Ratio in BOLD means the variable has significant effect for outcomes*

^ UDWG= Unrealistic Dream Weight Goal

Table 5. Dream Weight Goal & Completion Association, Controlling for Confounding

	Adjusted Odds Ratio for Dream weight goal ***
Crude Odds Ratio* for UDWG^	1.01
Potential Confounders	
Age	**1.205**
BMI	**1.45**
Weight loss experience	
Last time tried to lose weight was in the past vs. Currently trying to lose weight	1.078
Experience and results of past weight loss	**1.155**
Weight Efficacy	
Overall Weight efficacy	1.024
Eating efficacy	
resist to eat when depressed	**0.872**
resist to eat when experienced failure	0.977

** Confounding is considered present if the adjusted OR is +-10% of the crude OR, or aOR>=1.11, or <=0.91*
*** Unrealistic weight loss goal: One's personal weight loss goal exceeds the medically advised goal by 50%*
****aOR for the association of dream weight goal and completion, controlling for each potential confounding variables*
^ UDWG= Unrealistic Dream Weight Goal

Table 6. Coefficients & Statistics for Final Logistic Model of Participant Dropout

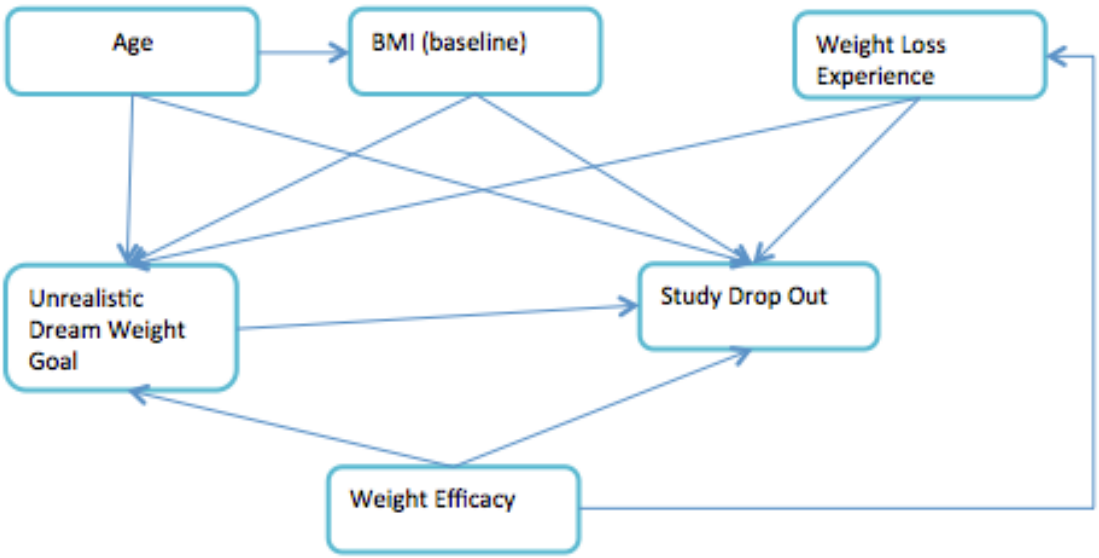
FULL MODEL Variables	Coefficient	Odds Ratio ***	90% CI	
Intercept	0.09			
UDWG^*	0.59	1.81	0.94	3.45
Age				
Age(<30)	1.35	**3.88**	**1.60**	**9.40**
Age (30-39)	-0.18	0.84	0.45	1.54
Age (40+)	Referent			
BMI				
Obese (BMI >=30)	-0.95	**0.39**	**0.20**	**0.74**
Underwt, normal & overwt (BMI<30)	Referent			
Weight Loss Experience				
Last time tried to lose weight:				
Tried to lose weight in the past	0.89	**2.41**	**1.31**	**4.45**
Currently trying to lose weight	Referent			
Experience & results of past weight loss				
Lost weight	1.14	3.12	0.99	9.88
Did not lose weight **	Referent			
Weight Efficacy				
Overall Weight efficacy	0.46	1.43	0.70	2.92
Eating efficacy				
resist eating when depressed	-0.81	**0.45**	**0.22**	**0.92**
resist eating when failed	0.36	1.44	0.69	2.99

REDUCED MODEL Variables	Coefficient	Odds Ratio	90% CI	
Intercept	-0.05			
UDWG^	0.65	**1.92**	**1.03**	**3.59**
Age				
Age(<30)	1.48	**4.37**	**1.83**	**10.46**
Age (30-39)	-0.04	0.96	0.53	1.74
Age (40+)	Referent			
BMI				
Obese (BMI >=30)	-0.87	**0.42**	**0.22**	**0.79**
Underwt, normal & overwt (BMI<30)	Referent			
Weight Loss Experience				
Last time tried to lose weight:				
Tried to lose weight in the past	0.88	**2.42**	**1.33**	**4.41**
Currently trying to lose weight	Referent			
Experience and results of past weight loss				
Lost weight	1.19	**3.29**	**1.06**	**10.22**
Did not lose weight	Referent			

** Unrealistic weight loss goal: One's personal weight loss goal exceeds the medically advised goal by 50%*
*** The category "Did not lose weight" includes people who didn't try to lose weight;*
**** OR >1.0 indicates variable associated with increased drop-out rate. OR in BOLD is significant; ^ UDWG= Unrealistic Dream Weight Goal*

FIGURES

Figure 1. DAG



CHAPTER 3:

Determining an appropriate weight loss goal should be the first step when trying to lose weight. The current study reported a completion rate of 38.5%, and having a realistic dream weight goal was found to be indicative of program completion. While participants were required to log their average daily steps and asked several questions about their weight loss expectation including their self-reported initial weight in pounds and their ideal weight, participants were not educated as to how to set a realistic weight loss goal based on a medically advised weight loss goal and their personal dream weight expectation. This gap between realistic weight loss and dream weight loss is believed to have contributed to the high dropout rate reported in the P.R.I.S.E.® program.

While there are many fitness lifestyle intervention studies like P.R.I.S.E.® revealing low completion rates, there are significant differences in the intervention strategies and methods by which they go about advising people to lose weight (Appendix B). In the Harma et al. study, 119 female nurses and nurse's aide at a hospital in Finland were enrolled into a worksite fitness intervention program (59). Nearly forty percent (40%) of the participants however, dropped out during the four month intervention program which encouraged participants to engage in more physical activities including running, jogging, swimming, walking and gymnastics (58). In another study conducted by Warren et al. where the program's aim was to increase walking steps of workers at rural worksites in New York State, the completion rate for participants after 10 weeks was 61 percent (59). However, a much lower program completion rate was shown in a 2012 study by Ainsworth who evaluated the self-recorded walking steps per day of 2,118 faculty, staff and graduate students from Arizona State University and the Karolinska

Institute in Stockholm, Sweden. The goal for participants in Ainsworth's study was to have each participant walk at least a minimum of 10,000 steps each day during the 9 month intervention period of the program. In this study, only about twenty percent (20%) of participants completed the program. While in another lifestyle intervention study focused in Southern Sweden, Nilsson et al. reported that nearly 70% of the 128 participants completed that 18-month program (61) which focused on improved diet, physical activity, stress management and smoking cessation(60). Obviously, differences in intervention strategies employed, length of the intervention, baseline weight and age as well as other demographics and characteristics of the samples all play a role affecting program completion rates. Although completion rates varied among all the aforementioned studies, none of them included having individuals set a realistic dream weight goal which could have contributed to participant attrition. As such, an objective for future research should be to focus on more effective ways of bridging the gap between participants' knowledge and understanding in thinking about their medically appropriate weight loss and the difference between setting a realistic and unrealistic personal dream weight goal.

It is also important to note that many articles and fitness programs are available to the public. While more and more of them are becoming accessible on-line and include information and tips on how to lose weight and recommendations about the amount of weight to lose, the majority of these are based primarily on BMI. Appendix C lists pertinent information from current popular websites about setting weight loss goals. Comparing the various recommendations from these sample sites on how weight loss goals are to be set provides a usefulness way not only to assess the validity and reliability

of the information being offered but also to evaluate whether these programs provide adequate education to their participants on whether the goals they are setting are realistic and thus attainable. An article by Porter mentioned that people should determine how much weight to lose simply based on BMI which means that the end weight loss goal is determined only by the attainment of a healthy BMI ranging from 18.5 to 24.9 (61). This approach didn't take into account specific personal conditions especially for people who are obese or severe obese. However, another article by Zelman stated a more appropriate way to estimate one's weight loss goal using the concept of a "Set Point". Losing 10% of the body weight at "Set Point" and keeping it off for six months to one year was the strategy offered to reach one's "Set Point" or realistic weight goal (62).

Several free online diet trackers are also available to the public on-line which, in theory, should aid people in adhering to their weight loss progress over time; note however, that the more popular weight loss programs like Weight Watchers, Jenny Craig, and Nutrisystem either do not have diet trackers or do not have diet trackers that are free from costs, and as such these programs were not included in this inventory. With respect to setting realistic weight loss goals, among the several trackers listed in Appendix C, some of them did not allow users to set up specific weight loss goals at all (63), while some encouraged people to intentionally initiate a weight loss program with an unrealistically high goal as a motivator to lose weight (64). Specifically, the SparkPeople website suggested that individuals should lose weight mainly by attaining a BMI of 22.8. For obese or severe obese people, the site's general recommendation was to lose a flat 50 pounds (63). The FitWatch tracker program however, did suggest that people should only lose one to two pounds a week, commonly advised by many weight loss

intervention programs, but FitWatch failed to require its users to set any specific weight loss goal (64). These descrepant features among publically accessible weight loss trackers should make weight loss program consumers realize that they might be misled by unrealistic expectations set forth and promoted by various interventions.

Educating the public to set appropriate weight loss goals should be valued in weight management programs. Equipped with basic knowledge and understanding of one's own weight and health status, and how to determine if the goal weight loss set for yourself is realistic or unrealistic, participants will be more likely to make proper plans for their own weight management, be better able to attain the goals they set, be more likely to adhere to the strategies offered, and more likely to complete an intervention program. Providing valid information and a realistic estimation of one's personal weight loss goal might be the first step in developing effective weight management programs that individual's stick to until completion.

APPENDICES:

APPENDIX A. Medically Advised Weight Loss Goal & Unrealistic Weight Loss Goal

Initial Body Mass Index (BMI)	Initial weight (pounds)	Medically advised weight loss goals (pounds)	Unrealistic weight loss goal * (pounds)
Height: 5 feet 4 inches			
33	192	19.2	≥ 28.8
38	221	33.2	≥ 49.7
42	244	48.8	≥ 79.2
Height: 5 feet 8 inches			
33	216	21.6	≥ 32.4
38	249	37.4	≥ 56.0
42	276	55.2	≥ 82.8

**Unrealistic Weight Loss Goal is defined as when one's personal weight loss goal exceeds the medically advised goal by 50%.*

APPENDIX B. Completion Rates of Several Worksite Fitness Intervention Studies

Study	Study Location	Study Population	Intervention	Follow-up	Conclusion	Completion Rate
Härmä et al. (1988) Härmä , (1988)	Univ. Hospital Kuopio, Finland	119 female nurses; 76 cases & 43control; 49 cases & 26 controls completed	running, jogging, skiing, swimming, walking, & gymnastics (4 mo, 2-6/wk)	4 mo	Moderate physical training reduces musculoskeletal symptoms & fatigue, increases fitness level of female workers	**63.03%**
Warren et al. (2010) (59)	10 small & medium sized worksites in rural NY, USA	188 women enrolled,114 reported steps	increase walking steps/day	10 wks	Workers in rural worksites increased walking steps through the intervention	**61%**
Ainsworth et al. (2012) (65)	Stockholm, Sweden & Phoenix, AZ	2,118 academics (ASU) & Karolinska Institute; 414 completed	10K steps / day; record steps/day on a study specific website	9 mo	Intra & interpersonal determinants to successfully complete intervention; changes in fitness & body composition	**19.50%**
Nilsson et al. (2001) (60)	Southern Sweden	128 baseline; 65 cases & 63 controls). 89 @ 18 mo (43 cases & 46 controls)	Intervention: improved diet, physical activity, stress mgt, & smoking	18 mo	Several cardiovascular risk factors can be improved through long term intervention	**69.50%**

APPENDIX C: Information Available Online RE: Setting Realistic Weight Loss Goals

Program / Article Name	Description	Weight Loss Goals Comments	Realistic or Unrealistic
How much weight should I lose for my height (61)	Article from LIVESTRONG.com - website offers diet, nutrition & fitness tips for a healthier lifestyle	Weight loss goals based on normal BMI range (18.5 to 24.9). Does not account specific weight conditions, no obese or severe obese.	Not realistic for everyone
Ideal Weight or Happy Weight? How much weight do you really need to lose? (62)	WebMD is an organization providing health & medical news & information. It provides info & supportive communities, & in-depth reference material about health projects.	Hormones, chemicals & hunger signals help body keep weight within 10% -20%. The range is defined as "Set Point". Losing 10% of the body weight and keeping it off for six months to one year is recommended to reset the set point.	Realistic weight loss goals
SparkPeople (63)	Online diet & healthy living community to track & record diet plan, workout & weight	Appropriate weight goal in this program is to have the weight reaching a BMI around 22.8. For people who are obese or severe obese, 50 pounds off is the recommendation. The program only provides a rough estimation of goal weight which might mislead people	Not realistic for everyone
FitDay (66)	FitDay a free online diet journal & calorie tracker website	It provides four tips for choosing realistic weight goals including using the lowest adult weight, using healthy BMI range, estimating healthy weight and starting with the 10 percent rule.	Generally realistic weight loss goals
FitWatch (64)	FitWatch - free online calorie counter & diet tracker - weight loss programs & useful fitness calculators for weight loss	It suggests people to aim for a weight loss of 1 to 2lbs a week which is credible. However, it doesn't help people setting up specific weight goals. It even encourages people to come with high weight loss goals as motivation to lose weight	Not realistic for everyone