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**Implementation of the Diet Readiness Test to Assess Self-Efficacy and Education
Effectiveness in Overweight Women**

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Abstract

Purpose: The purpose of this evidence-based Doctor of Nursing Practice (DNP) project was to assess perceived self-efficacy in overweight women who are participating in a weight loss program and the effectiveness of education being provided using the Diet Readiness Test (DRT).

Background: Obesity is a rapidly growing public health problem affecting an increasing number of countries worldwide because of its prevalence, costs, and health effects. Among women between the ages of 40 and 60, more than 80% report that they are either trying to lose weight or trying to maintain weight. The overall prevalence of obesity was similar among men and women, but the prevalence of severe obesity was higher among women. Among women, 39.7% of those aged 20–39, 43.3% among those aged 40–59, and 43.3% among those aged 60 and over were characterized as being obese. Readiness to change seems to be one of the most promising factors promoting behavior change in individuals who need to modify their lifestyle for health purposes. Personal motivation can, in fact, dramatically influence treatment adherence and effectiveness as well as the choice of intervention. Self-efficacy beliefs provide the underpinning for motivation, well-being, and achievement, which are rooted in the core belief that one has the power to effect changes through one's actions.

Methods: Administration of the Diet Readiness Test (DRT) to all patients coming into an identified weight loss clinic to assess perceived self-efficacy and knowledge of behaviors. Patients who completed the test moved on to receive standard education on the diet and exercise program provided in the clinic guidelines. After an eight to twelve-week period, the test was re-administered to each client to determine if perceived self-efficacy improved showing effective education.

Results: Twenty-one surveys were administered during the project. Two were given to clients to take home, complete, and return to the clinic. However, these still need to be returned, leaving a total of 19 surveys completed. Out of the 19 surveys administered, ten surveys were completed at the end for a completion rate of 52%. The data recorded showed that the scores from the two subsections (3 and 5) assessing eating behaviors of the DRT improved their control over eating, and when emotions were high, they also improved, respectively.

Evaluation: Given the benefit of behavioral weight loss programs to overweight and obese adults, it is important to determine which psychosocial variables are reliable predictors of successful behavior and weight change. Additional research is needed to determine these barriers before clients sign up for a fee-for-service which could assume a certain level of readiness. Implementing this in a primary care setting could lead to more information on behaviors needing change before completing a diet and exercise program.

Keywords: Obesity, Self-efficacy, Women, Weight-loss, Education, Standardized

Literature Search Strategy

The literature review for this evidence-based project focused on key concepts pertinent to obesity in middle-aged women, implementation of pre-dieting surveys to gather information on perceived knowledge, and determining client attitudes and behaviors and how those affect weight loss. The literature search strategy included the use of several databases: CINAHL, PubMed, Google Scholar, EBSCO, National Institute of Health, and ProQuest Nursing & Allied Health. The keywords *obesity*, *middle-aged women*, *health*, *diet readiness*, *mediators in weight loss*, *attitudes and behaviors*, and *survey implementation* were used. The initial search began with determining which survey was to be used in the implementation process. The process began with a search through PubMed using the keyword *diet*, which yielded 62,889 results. To narrow the

search down, the word *readiness* was added to the search criteria, which resulted in 514 articles. Filters for systematic reviews or randomized control trials (RCTs) were then added to narrow down results further, which led to 33 results. This search led to the identification of multiple questionnaires that could be used for this project. After careful consideration and comparing each survey, the Diet Readiness Test was chosen as the survey that would be used.

The next search to explore the Diet Readiness Test was conducted with CINAHL using the keywords *diet readiness test*, which resulted in only one article. This article was of relevance in that it researched the predictive validity of the DRT. The search was expanded to include articles using the DRT within PubMed, which also yielded three results, with one article of relevance. This led to the identification that the DRT is sometimes referenced as the "Dieting Readiness Test" rather than the "Diet Readiness Test". This prompted a search using the terms *DRT* and *diet*, which yielded ten results. With this low-yielding result, Google Scholar was then used to expand the search to all scholarly articles possibly referencing the DRT outside of medical journals.

PICO:

Did providing standard education lead to a change in the client's self-reported perception of self-efficacy through control over eating and emotional eating in overweight women over an eight to twelve-week period?

Background and Significance: Obesity and Women

As a healthcare professional, seeing the rising rates of obesity in the United States is worrisome. Obesity is a rapidly growing public health concern affecting an increasing number of countries worldwide because of its prevalence, costs, and health effects (Agha & Agha, 2017). Obesity is commonly defined as a condition of abnormal or excessive fat storage in the adipose tissue to the extent of health impairment (El Kishawi et al., 2020). Excess weight is considered a

serious public health concern contributing to several preventable chronic diseases such as diabetes, hypertension, heart disease, stroke, different types of cancers, osteoarthritis, and reproductive conditions (El Kishawi et al., 2020). Despite efforts to tackle this increasing problem, so far, there has not been much success. There are differences between men and women regarding the way that weight loss is perceived and achieved. There is a known stigma for those who are classified as obese as being lazy, lacking confidence, and non-compliant. To tackle the issue of increasing compliance and, in turn, increasing success in a weight loss program, further interventions are needed to determine where the gaps in care are—moreover, identifying these gaps in care, then using that knowledge to improve interventions so that patient education is effective.

In other words, the problem is not to start a diet but to continue it, avoiding regaining the previously lost weight and slipping into a vicious cycle (Tremblay & Sánchez, 2012). In this respect, readiness to change seems to be one of the most promising factors promoting behavior change in individuals who need to modify their lifestyle for health purposes (Ceccarini et al., 2015). Personal motivation can, in fact, dramatically influence treatment adherence and effectiveness as well as the choice of intervention (Ceccarini et al., 2015). Determining these personal motivating factors is key to evaluating successes in weight management.

Among women between the ages of 40 and 60, more than 80% report that they are either trying to lose weight or trying to maintain weight (Teixeira et al., 2002). The overall prevalence of obesity was similar among men and women, but the prevalence of severe obesity was higher among women (Hales et al., 2020). Among women, 39.7% of those aged 20–39, 43.3% among those aged 40–59, and 43.3% among those aged 60 and over were characterized as being obese (Hales et al., 2020). In the USA, the dire projections based on earlier secular trends point to over

85% of adults being overweight or obese by 2030 (Hruby & Hu, 2015). In addition to the medical emphasis on the importance of this health concern, the public health explanation places emphasis on the preventive and causative factors, and effective treatment requires the identification and modification of these etiological vectors (Agha & Agha, 2017).

Female gender is associated with twice the risk of being overweight or having obesity (Kapoor et al., 2021). While obesity affects both men and women across all ages, multiple issues are particularly germane to women's health, as obesity is more prevalent among women than men in the United States (Tauqeer et al., 2018). While this disproportionately large obesity-related disease burden in women is partly due to differences in medical comorbidities, it is also related to emotional and psychological issues (Kapoor et al., 2021). Psychologically, obese women experience greater weight-related stigma and discrimination and are at increased risk for depression (Azarbad & Gonder-Frederick, 2010). Women are also more susceptible to psychological stress, sleep debt, and lack of physical activity, all of which are risk factors for the development of excess weight (Azarbad & Gonder-Frederick, 2010).

Attitudes, Behaviors, and Weight-Loss

Self-efficacy beliefs provide the underpinning for motivation, well-being, and achievement, which are rooted in the core belief that one has the power to effect changes through one's actions (Klassen & Klassen, 2018). These factors that influence behavior are embedded in the belief that one has the capability to accomplish that behavior (Klassen & Klassen, 2018). Self-efficacy has been repeatedly shown to predict physical activity behavior in healthy adults (Kaewthummanukul & Brown, 2006) and is predictive of both the adoption and the maintenance of physical activity (Ashford et al., 2010). In a randomized control trial among active-duty military personnel enrolling in a weight-management program, Morse et al. (2022) found that the

participant's motivation to lose weight conferred a sense of self-efficacy and those who have made more attempts to lose weight in the past may have more familiarity and confidence in employing behavioral strategies. Given the benefit of behavioral weight loss programs to overweight and obese adults, it is important to determine which psychosocial variables are reliable predictors of successful behavior and weight change (Nezami et al., 2017).

Understanding why and how some people succeed in changing their weight-related behaviors is a key research priority (Teixeira et al., 2010). Teixeira et al. (2010) completed a randomized control trial consisting of a one-year behavior change intervention and a one-year follow-up period with no intervention. At the end of the intervention, the strongest correlates of weight loss were increases in flexible cognitive restraint, eating self-efficacy, and body attractiveness, as well as reductions in emotional eating, concerns with body shape, and body size dissatisfaction (Teixeira et al., 2010). Knowing which intervention aspects are more effective and at what point in time during weight control is essential for proactively directing intervention resources to factors most clearly associated with success (Teixeira et al., 2010). Being able to determine specific client needs at the beginning of a weight loss program will improve the ability of providers to tailor education and interventions to individual clients, thus leading to an increase in successful weight loss.

One limitation of present interventions is their need for more individualization. Programs remain, for the most part, unidimensional, present few options to participants, and generally cannot adapt to subject characteristics (Teixeira et al., 2002). Better defining the importance of the characteristics of this initial phase and information gathered during or even before participants start may prove to be associated with long-term outcomes (Teixeira et al., 2002). It is clear throughout the research that more is needed on this topic. Successful screening of subjects

who are unlikely to meet even minimal weight loss goals (or that are more likely to drop) would spare them further disappointment and make it possible to direct them to alternative approaches (Teixeira et al., 2002). A common theme among researchers is that the most important part of the weight loss journey is the beginning, when most of the information is gathered.

Diet Readiness Test

To collect this information, an instrument is needed to identify predictors of weight loss prior to the intervention stage of a program. The Diet Readiness Test (DRT), created by Brownell (1990), was developed as a means of measuring a person's readiness to begin a weight loss program (Pendleton et al., 1998). The DRT measures readiness for weight loss across six domains, including (1) Goals and Attitudes, (2) Hunger and Eating Cues, (3) Control over Eating, (4) Binge Eating and Purging, (5) Emotional Eating and (6) Exercise Patterns and Attitudes (Brownell, 1990). The DRT was included as an appendix in *Weighing the Options: Criteria for Evaluating Weight-Management Programs*, published by the Institute of Medicine (1995) for use in screening individuals planning to enter weight loss treatment programs (Pendleton et al., 1998). In the study by Pendleton et al. (1998), participants were randomly assigned to one of two treatment groups for obesity and binge eating (non-dieting vs. standard behavior modification). The two groups included non-dieting vs. standard behavior modification with information on healthy eating, increasing exercise behavior, and addressing psychological factors that may be involved with obesity. The DRT was administered at baseline and at six months. The results failed to predict changes in BMI, binge eating, and exercise; however, Pendleton et al. (1998) discussed that the participants should have been prepared in various ways before being admitted to the program. This could lead to the potential for the DRT to be an

educational assessment tool to direct patient-specific education to those looking to begin weight loss programs.

The study completed by Fontaine (1997) had three aims: (1) to examine the factor structure of the DRT, (2) to determine the internal consistency of the scales derived from factor analysis, and (3) to determine the predictive validity of the DRT relative to two obesity treatment outcome measures (program attendance and weight loss). Fontaine (1997) also discusses that motivational readiness refers to an individual's readiness and willingness to engage in the behavioral practices required to produce a desired outcome (e.g., sticking to a diet and exercise program). Although the DRT failed to predict significant weight loss, Fontaine (1997) recommends using the tool to help clients make informed decisions about whether it is the right time for them to embark on a weight loss effort. Although the DRT may not be a good indicator specifically of decreased numbers in a weight loss program but could be used as a tool to help direct client education that focuses solely on the client's specific readiness at that time. With this, a proposed increase in compliance and, later, success in the program.

Walcott-McQuigg et al. (2002) measured the psychosocial aspect of dietary readiness using the DRT. Upon consent from their physician, women were scheduled to see a dietician and receive pre-program assessments, which included completion of the dietary readiness test (Walcott-McQuigg et al., 2002). Despite the previous studies done, Walcott-McQuigg et al. (2002) found that the psychosocial aspects of eating behaviors were associated with weight loss. A similar study was done by Singer et al. (2017), in which a randomized control trial was used to employ two independent measures of motivation and self-efficacy to capture its many facets. Prior to beginning the trial, participants completed the baseline questionnaires, which included the DRT and were randomly assigned to one of three intervention groups (Singer et al., 2017). It

was mentioned that motivation is usually looked at quantitatively, though it is better to be assessed qualitatively, as the motivating factors may hold various meanings for different individuals (Singer et al., 2017). The conclusions made using the DRT by Singer et al. (2017) did not show much promise in predicting actual weight loss, but it did show that self-efficacy is dependent on specific behaviors, goals, and intentions.

As psychological and behavioral factors have an important role in both pathogenesis and the treatment of obesity, these issues were investigated in individuals with obesity who reported long-term success or failure in terms of weight loss following medical and nutritional treatment (Buscemi et al., 2013). Prior to the beginning of the weight-management program, the diet readiness test was administered. The DRT has been recommended as a measure of diet and exercise-related motivation and attitudes in those about to embark on a weight loss program; however, not a predictor of weight loss or treatment attendance (Buscemi et al., 2013). Cowan et al. (1995) used the DRT as an instrument to serve as a self-report measure to assess the constructs of interest regarding diet attitude. The data demonstrated that the constructs of diet attitudes, which include goals, motivation, exercise, control, and emotional eating, can discriminate between obese and nonobese primary care patients (Cowan et al., 1995).

Theoretical Framework

The most beneficial framework that was applied to this project was the Plan-Do-Study-Act (PDSA) cycle which is shorthand for testing a change by planning it, trying it, observing the results, and acting on what is learned (Taylor et al., 2013). PDSA cycles offer a supporting mechanism for iterative development and scientific testing of improvements in complex healthcare systems (Taylor et al., 2013). A review of the historical development and rationale behind PDSA cycles has informed the development of a theoretical framework to guide

the evaluation of PDSA cycles against the use of iterative cycles, initial small-scale testing, prediction-based testing of change, use of data over time and documentation (Taylor et al., 2013).

Stage one consists of the planning phase. In this phase, a team is assembled that has knowledge of the opportunity for improvement. In this team, roles and responsibilities are clearly identified, timelines are set, and a schedule is made (Minnesota Department of Health, 2022). Stage two, "do", is the implementation phase. Data collection begins as you go and will help evaluate your plan (Minnesota Department of Health, 2022). It is helpful in this stage to use a flowchart to capture the data/occurrences as they happen or over time. Stage three, "study", is used to determine if the implementation leads to an improvement and by how much or how little (Minnesota Department of Health, 2022). Was this action worth the investment? Were there any unintended consequences? Lastly, stage 4, "act", is where the outcomes are evaluated. If it was determined that the plan resulted in success, standardize the improvement, and begin to use it regularly (Minnesota Department of Health, 2022).

Methods

Intervention

The purpose of this evidence-based project is to implement a survey of women who are looking to begin a diet and exercise program to gather information on their knowledge, behaviors, and attitudes toward weight loss. The survey is the Diet and Readiness Test (DRT), which measures readiness for weight loss across six domains, including (1) Goals and Attitudes, (2) Hunger and Eating Cues, (3) Control over Eating, (4) Binge Eating and Purging, (5) Emotional Eating, and (6) Exercise Patterns and Attitudes.

Each client that came into the clinic, either walk-in or by appointment, and was there for weight loss purposes, received the diet readiness test in December of 2022. These consisted of

new and returning clients. After completing the survey, they were either handed a new patient packet if they were a new patient or re-educated on healthy eating and exercise per the clinic guidelines. The education included but was not limited to topics consisting of daily meal plans, healthy food choices, possible prescription therapy, and healthy eating behaviors. Then depending on follow-up, each client was instructed to come back into the clinic for a reassessment after 8 to 12 weeks. Post-assessment surveys were completed in February of 2023, and due to time constraints, some were completed in the clinic, and some were completed over the phone.

Measurable Outcomes

The outcomes of this project were to determine the effectiveness of education being provided at a weight loss clinic. Evaluating client results using the DRT will help show improvement in two major subgroups defining eating behavior, control over eating, and emotional eating. Each subgroup is graded and scored based on answers from three questions rated on a Likert scale using the range 1 - 5, with the lower scores showing more control. For the purposes of this evidence-based project, the total score for the subgroup was used for the assessment of the results. The results were recorded after an eight-to-twelve-week period when reassessment was completed.

Data Collection

IRB approval was received on December 9th, 2023, permission to use the DRT from Dr. Brownell was also received via email, and data collection began soon after that. For this project, two subgroups were focused on, including Section 3, control over eating, and Section 5, emotional eating. These two sections were focused on identifying eating behaviors that may or may not have changed after receiving the clinic's standardized education packet on healthy eating

and exercise. Since this survey is based on client answers alone, they were expected to answer truthfully on their perceived self-efficacy on control over eating in certain situations. Clients were encouraged to come into the clinic weekly for weight check-ins and follow-ups on any educational needs. The follow-ups varied greatly from weekly to no follow-up, which affected the data collected.

Protection of Human Subjects

As this was a survey completed in-office and over the phone, all client information was kept confidential and anonymous in the results. Each client was assigned a number during the pre-assessment, and that same identifier was used during the post-assessment. During the pre-assessment, each client was informed that their information would be kept confidential via an information letter they read before completing the assessment. Informed consent was then obtained by the client completing the DRT.

Results

Twenty-one surveys were administered during the project; two were given to clients to take home, complete, and return to the clinic, leaving a total of 19 surveys completed. Ten surveys were completed at the end, with two being in person and eight being called and completed over the phone. This resulted in a completion rate of 52%. The data recorded showed that the scores from the two subsections (3 and 5) of the DRT, assessing eating behaviors, decreased, showing that the education helped the clients improve their control over eating and when emotions were high also improved, respectively.

Reflected in each of the figures are the participants' scores pre- and post-assessment for both sections three and five, respectively. Figure 1 describes the results from Section 3: Control over Eating. Out of the 10 participants identified in the study, seven clients' scores improved,

showing better control over eating, and showing effective education; two clients' scores remained the same, and one client's scores went up, indicating less control over eating.

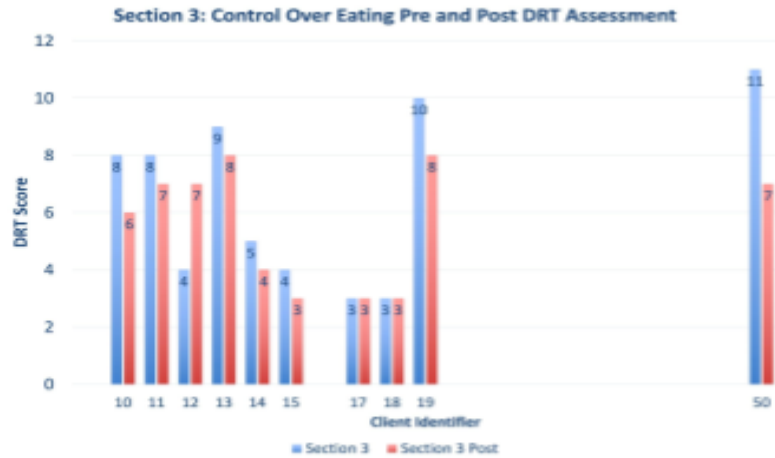


Figure 1 Section 3 Control Over Eating Pre and Post DRT Assessment

In Figure 2, the same ten participants are identified for section 5: emotional eating. Out of the ten clients, seven clients' scores improved, showing better control over emotional eating and effective education on healthy behaviors; two clients' scores remained the same, and the same client from Section 3, number 12, scores worsened. This test did not assess specific behaviors; therefore, identifying why some clients' scores did not improve was unable to be completed.

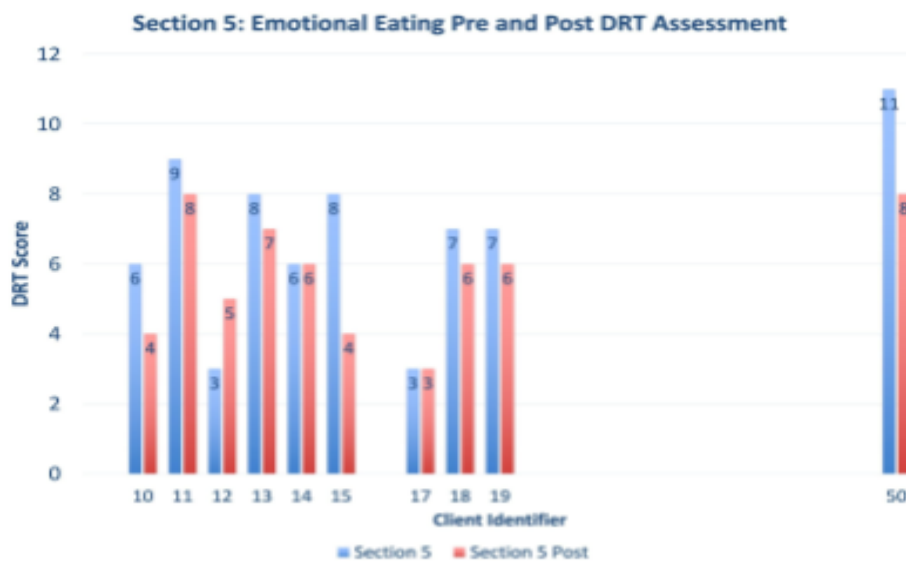


Figure 2 Section 5: Emotional Eating Pre and Post DRT Assessment

Cost Analysis

The entirety of this project was completed by the nurse practitioner student with the help of Dr. Kathy James and support staff. While there were no actual costs associated with the project, the benefits of the project were non-monetary. Non-financial benefits include increasing client awareness of their own perceived self-efficacy and eating behaviors to improve on these behaviors and ultimately become successful in their weight loss journey. Other benefits to the clinic include improved client satisfaction with weight loss success as well as improved self-awareness.

Strengths and Limitations

Strengths for this project included the ease at which clients were available for assessment. This clinic had steady involvement from clients who were being seen for weight-loss appointments or walk-ins, which made it a sample of convenience. Some limitations of this project included time constraints and follow-up. Due to limited time and variability in return follow-ups for clients, most of the post-assessment was completed via phone, while the pre-assessments were completed in person. Another limitation was the amount of research that is out there regarding the DRT. Only a few research articles were available describing its use or effectiveness in the overweight population. More studies are needed for the DRT in order to really evaluate its effectiveness in predicting weight loss or predicting weight loss behaviors, including self-efficacy.

Implications for Future Clinical Practice

Determining a patient's perceived self-efficacy can be beneficial not only to weight loss but to all health outcomes. Learning a client's behaviors prior to initiating a health care plan can help the provider and the patient plan out the process. This includes being able to identify any

potential barriers to the success of the plan ahead of time before they cause an issue. In regards to weight loss, identifying barriers to success in weight loss programs is essential for long-term success and management. Providers should take time to talk about patients' behaviors and attitudes that can be specific to each patient and use that as a tool to guide interventions.

Another important implication for future clinical practice is the need to use evidence-based strategies that enhance self-efficacy in obesity management. These strategies include motivational interviewing, cognitive-behavioral therapy, and social support interventions. Motivational interviewing is a technique that involves engaging the patient in a collaborative, non-judgmental conversation about their motivation to change and their confidence in their ability to do so. Cognitive-behavioral therapy involves identifying and changing negative thoughts and behaviors related to weight management. Social support interventions involve connecting the patient with social networks and resources that promote healthy behaviors.

In conclusion, self-efficacy is an essential factor in achieving long-term weight loss and maintaining healthy habits. The implications for future clinical practice regarding self-efficacy and obesity management include the need to develop patient-centered care models that incorporate a focus on self-efficacy and the use of evidence-based strategies that enhance self-efficacy. By promoting self-efficacy in obesity management, clinicians can help patients achieve their weight loss goals and improve their overall health and well-being.

Future projects could focus on a longer length of time to fully complete the pre- and post-assessments in person. In addition, considering follow-ups varied greatly, with some clients coming in once a week and some did not come back after the initial consultation during the pre-assessment period, future projects could focus on the importance of following up within a

certain time frame and seeing how frequently someone follows up affects their weight loss success or understanding of the education. Lastly, future projects could also focus on either different specific subgroups or on the whole survey.

Conclusion

Utilizing the DRT assessment tool pre- and post-standardized education gave us information on the client's perceived self-efficacy. Given the benefit of behavioral weight loss programs to overweight and obese adults, it is important to determine which psychosocial variables are reliable predictors of successful behavior and weight change. The results yielded showed that eating behaviors improved after clients received standardized education from the clinic. Throughout the research, the DRT, while not a good predictor of weight loss specifically, concluded that self-efficacy is dependent on specific behaviors, goals, and intentions. Identifying these specific behaviors prior to beginning a weight loss program could help improve success in these programs by helping providers pinpoint their education. Additional research is needed to determine these barriers before clients sign up for a fee-for-service which one could assume is already at a certain level of readiness.

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