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Effect of Dietary Self-Monitoring in Caucasian and African-American Women

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Abstract

Purpose: The purpose of the study is 1) to assess the effect of dietary self-monitoring on weight loss in a population of Caucasian and African-American women and men; and 2) to determine if there is a difference in African Americans' and Caucasians' use of self-monitoring in weight loss.

Review of the Literature: Previous studies demonstrated increased weight loss with dietary self-monitoring; however, these studies' samples are 70-80% Caucasian women and cannot be generalized to African-Americans or men. Studies confirming the effectiveness of dietary intake self-monitoring in non-Caucasian women and men are needed.

Methodology: Using a cohort design with prospective and retrospective components, collected data included demographics, dietary self-monitoring use, body mass index (BMI) fat mass lost, overall weight loss, and percentage weight lost.

Results: The results of the study support the previously conducted studies' findings of the effectiveness of self-monitoring of diet in promoting weight loss attempts in females and extends the results to African-American females. The results also showed no significant difference in effect or degree of self-monitoring in African-American and Caucasian women participants who chose self-monitoring in addition to the basic clinic approach. An insufficient number of males participated to allow a comparison on the effects of self-monitoring on weight loss in men.

Implications for NPs: Dietary self-monitoring is an effective strategy in African-American and Caucasian women for increased weight loss as a part of a medically managed weight loss program. Nurse Practitioners (NPs) should employ this strategy with more confidence in the evidence for a wider population.

Keywords: dietary self-monitoring, weight loss, behavioral intervention

Effect of Dietary Self-Monitoring in Caucasian and African-American Women

The obesity epidemic in the United States is finally at a plateau after 30 years of steady increase (Flegal, Carroll, Kit, & Ogden, 2012). Self-monitoring in conjunction with diet has shown favorable results in combating obesity in the Caucasian, female population, but has not been adequately studied in other races or males (Burke, Wang, & Sevick, 2011b). Despite extensive literature on obesity treatment during the past 10-15 years, little research has focused upon overweight and obesity treatment modalities applicable to a broader population. In this scholarly project, the project leader sought to determine whether a previously utilized intervention of self-monitoring of diet affected African-American females at the same level of success as it had Caucasian females in previous studies.

Purpose

The purpose of the DNP Scholarly Project was to: 1) assess the effect of dietary self-monitoring on weight loss, and 2) determine if a difference results in African-Americans' and Caucasians' use of self-monitoring in weight loss.

Self-Monitoring

Currently, behavioral treatment is the cornerstone of obesity treatment (Bray, 2015). Self-monitoring, a treatment concept in use with cognitive behavioral and social cognitive therapy since the 1970s, is an initial step in learning self-regulation and promoting behavior change (Kanfer, 1970). Self-efficacy and one's belief in their self-efficacy are important factors contributing to a person embracing the importance and utilization of self-monitoring to combat their negative health state (Bandura, 1998).

The theoretical framework that influenced this study is the Social Cognitive Theory of Self-Regulation as it explains the importance of self-monitoring. The three foundations of the

Social Cognitive Theory of Self-Regulation are self-monitoring, self-judgement, and self-evaluation. Each of the foundations has various numbers of components pertaining to it. Self-monitoring has eight components, while self-evaluation has three. Simply stated, Social Cognitive Theory of Self-Regulation proposes that people regulate their actions through the use of both external and internal cues. When people understand the circumstances surrounding their behaviors, they are more likely to institute change which in turn leads to a healthier personal, emotional, and physical state (Bandura, 1991). Since the theory's creation by Bandura in 1991, the self-monitoring component has been utilized frequently (40% of the time) as a conceptual framework for intervention studies addressing the overweight and obese populations (Tougas, Hayden, McGrath, Huguet, & Rozario, 2015). Applied to the scholarly project, self-monitoring is an internal cue that serves two important purposes in self-regulation by imparting information necessary for realistic goal setting (e.g., calorie intake) and gauging progress towards the goals (e.g., weight reduction achieved).

Review of the Literature

In 2011, a systematic literature review of 22 qualitative and quantitative scholarly articles published between 1993-2009 examined self-monitoring and weight loss (Burke, Wang, & Sevick, 2011). Fifteen articles focused on dietary self-monitoring and weight loss, while the remaining 7 studies focused on self-monitoring of exercise and weight loss. Study participants' BMIs ranged from overweight to morbidly obese. The 15 studies found significant association between increased weight loss and dietary intake self-monitoring with p-values ranging from less than 0.01 to 0.007. In addition, the documentation of positive impact of dietary self-monitoring on weight loss, two additional themes from the systematic review emerged. The first was increased adherence to self-monitoring and increased frequency of self-monitoring positively correlated with increased weight loss. The second result of the systematic review revealed that the studies' samples were homogenous with a majority of participants reported as Caucasian and female. The results therefore, cannot be generalized to African-Americans or men (Burke, Wang, & Sevick, 2011).

Only one study reviewed in the Burke and colleagues systematic review compared pharmacological treatment to pharmacological treatment plus self-monitoring for weight loss. The study by Wadden and colleagues, found a strong correlation between the amount of self-monitoring and weight loss at 18 and 52 weeks with an $r^2=0.08$, $p <0.001$ and $r^2=0.09$, $p<0.001$, respectively. Wadden et al reported that treatment with medication and self-monitoring accounted for 8% of the variance in weight loss in their population. This finding supports the knowledge that successful weight loss and obesity treatment require a multifaceted approach (Wadden et al., 2007). Other published research examining the use of self-monitoring and weight loss also supports the findings reported by Burke, Wang, & Sevick (Allen et al., 2013; Baker & Kirschenbaum, 1993; Baker & Kirschenbaum, 1998; Boutelle & Kirschenbaum, 1998; Boutelle et al., 1999; Burke et al., 2006, Burke et al., 2008; Burke et al., 2009; Carels et al., 2008; Helsel et al., 2007; Hollis et al., 2008; Shay et al., Tate et al., 2001; Tate et al., 2006; Turk et al., 2012; Wharton, Johnston, Cunningham, & Sterner, 2014; Yon et al., 2007).

Lieffers and Hanning conducted a systematic review evaluating available articles from 2000 to 2011 that compared electronic resources to paper records for self-monitoring. This review had equivocal results since neither traditional paper monitoring nor the use of electronic application (app) or device to record dietary intake showed a clear superior choice. The authors noted that further research was needed to determine whether the type of dietary self-monitoring shows a clear difference in its impact on weight loss (Lieffers & Hanning, 2012).

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Some promising studies further examining other factors in self-monitoring and weight loss have been completed since the systematic reviews by Burke, Wang, & Sevick and Lieffers & Hanning. In 2012, Turk et al demonstrated the positive correlation between self-monitoring adherence and feedback frequency on weight loss. Their findings corroborate earlier evidence regarding the value of self-monitoring. A 2014 study by Wharton et al reported use of technology for dietary self-monitoring was not correlated with dietary quality. The lack of correlation between dietary self-monitoring technology with dietary quality highlights the distinction between weight loss and lifestyle change (Wharton, Johnston, Cunningham, & Sterner, 2014). The findings bring another issue to light in the use of dietary self-monitoring in that the goal of clinicians treating those in the overweight and obese populations is not only to help them lose weight, but also to learn to lead healthier lifestyles including improving the quality of their diets.

Another result from the literature review also looked at the use of technology as an aid to self-monitoring in conjunction with counseling. This study's findings are important because of the inclusion of African-American participants (49%) and because of demonstration of the synergy between treatment strategies for weight loss. The treatment strategies of electronic app and counseling demonstrated best results when employed together (Allen, Stephens, Himmelfarb, Stewart, & Hauck, 2013).

In summary, the literature is clear that dietary self-monitoring is an effective strategy to achieve weight loss. Allen and colleagues' important information about African Americans begins the arduous task of evidence generalization to non-Caucasians. Additional research is recommended for particular elements and components of dietary self-monitoring's impact on weight loss (Allen et al., 2013; Baker & Kirschenbaum, 1993; Baker & Kirschenbaum, 1998;

Boutelle & Kirschenbaum, 1998; Boutelle et al., 1999; Burke et al., 2006, Burke et al., 2008; Burke et al., 2009; Carels et al., 2008; Helsel et al., 2007; Hollis et al., 2008; Shay et al., Tate et al., 2001; Tate et al., 2006; Turk et al., 2012; Wadden et al., 2007; Wharton, Johnston, Cunningham, & Sterner, 2014; Yon et al., 2007). Potential study elements could include adherence, method, and frequency of dietary self-monitoring. See the literature review table for further information.

Methodology

Participants

The convenience sample population utilized for this project was patients at a physician supervised weight-loss clinic in eastern North Carolina with the majority from Pitt County. All participants received treatment from a single provider. The single clinic location and single provider created less risk for bias in the results. Eighty-five percent of the county population have a high school degree or higher and the median household income is $40,000. The income level is lower when compared to the median household income of North Carolina ($46,000) and the United States ($52,000). All participants were a group of motivated individuals voluntarily investing their time and resources to attain weight loss. The project collected data from a 12-month time period in which up to six months of data were collected on each participant. The racial distribution of project participants was evenly distributed with 68 (50.7%) Caucasian and 66 (49.3%) African-American.

At the weight-loss clinic the treatment regime of the intake and treatment visits included time with the provider, a monthly physical, a complete body composition report, counseling (nutrition, plus goal setting and review), and an appetite-suppressant (phentermine or an herbal alternative). A high-protein, low-calorie diet (one gram of protein per kilogram of weight and

300-500 calorie reduction from the basal metabolic rate) was recommended to each participant. The daily calorie intake recommended by the provider was calculated from the monthly body composition report derived from the Tanita printout and never set at less than 1000 calories per day for any participant. The treatment approach at the weight loss clinic is consistent with the strategy reported by Wadden (2007), but is unique when compared to other publications because of its inclusion of African American women and pharmacological co-treatment modality (Allen et al., 2013; Baker & Kirschenbaum, 1993; Baker & Kirschenbaum, 1998; Boutelle & Kirschenbaum, 1998; Boutelle et al., 1999; Burke et al., 2006, Burke et al., 2008; Burke et al., 2009; Carels et al., 2008; Helsel et al., 2007; Hollis et al., 2008; Shay et al., Tate et al., 2001; Tate et al., 2006; Turk et al., 2012; Wharton, Johnston, Cunningham, & Sterner, 2014; Yon et al., 2007).

Existing patients (n=85) were placed in the retrospective participant group whereas new patients (n=49), joining the practice between May 12, and June 30, 2015, were placed in the prospective participant group. Participants in the study self-selected into either dietary self-monitoring or no dietary self-monitoring cohorts. Participants who chose dietary self-monitoring also chose either a paper record or electronic app to accomplish the self-monitoring. Since only three participants chose to paper monitor their diet compared to 94 who chose to use an electronic app, type of self-monitoring was not analyzed. As a result, all 97 participants who self-monitored remained in one group for analysis.

Materials

A specialized body composition analyzer, a Tanita model TBF 300A, was utilized monthly with all participants for collection of BMI, fat mass lost, and overall weight loss variables. The Tanita body composition analyzer uses foot-by-foot bio-electrical impedance analysis in order to provide body composition analysis which has validity and reliability as demonstrated in independent studies comparing it to the traditional skin fold analysis (Aandstad, Holtberget, Hageberg, Holme, & Anderssen, 2014). Gender, race, and age demographics were collected from participants' driver's licenses. The variables of goal weight and self-monitoring status were collected from chart reviews. An Excel database included all study variables as well as pertinent comments from the visit such as non-compliance with protein recommendations or attendance at monthly appointments. Traditional paper and pen recording or utilization of an electronic app were the choices given to patients to self-monitor their intake. Two apps ("Lose It" and "My Fitness Pal") were recommended to the participants. Both apps enable the user to record diet through searching an extensive food library or scanning barcodes of the food consumed. Each participant self-reported their use of dietary self-monitoring. The provider did not review or verify any records of dietary intake.

Design

Using a cohort quasi-experimental design with prospective and retrospective components, data included dietary intake self-monitoring use (reported based on usage per month, i.e., yes/no, not number of days/month) and type (i.e., paper or electronic app), BMI, fat mass lost, overall weight loss, and percentage lost towards goal. Retrospective participants' data was collected via chart reviews focused on the variables previously listed. Because some retrospective participants were also ongoing patients at the weight loss center, their visits (between May and December 2015) were also included in the data collected. The prospective participants were all new patients to the weight loss clinic who started the program between May 13, and June 30, 2015. Participants in the prospective group had monthly provider visits where the variable data was collected during each visit with the provider.

Procedures

Approval from the owners of the weight loss clinic was received in April 2015. Belmont University IRB approval was received May 12, 2015. Prospective participants were consented between May 12 - June 30, 2015, and data collection occurred after consent was received until December 31, 2015, at the weight loss clinic. Retrospective chart reviews and ongoing visits occurred from May 12 until December 31, 2015, at the specific clinic. Data were organized into groups and categories including age, gender, race, BMI, weight, weight lost, goal weight, recording status, and designation of prospective or retrospective participant. Statistical analysis using SPSS occurred in January 2016 in order to answer the questions guiding the scholarly project.

Results

Data analysis occurred with IBM's SPSS software version 23. The statistical calculations included bivariate correlations, frequencies, One-Way ANOVAs with Tukey posthoc set at a significance level of 0.05, and linear regressions.

Initially, this researcher planned to examine the effect of self-monitoring on weight loss in males and females within Caucasians and African-American participants. Because only 3 males participated, the male participants’ results were removed from the data prior to statistical analyses.

There were 134 female participants who began the study. Of the participants, 68 (50.7%) were Caucasian and 66 (49.3%) were African-American. After four months of participation, 97 female participants remained. Participants’ age ranged from 21 to 62 years with a median age of 42 years. The majority of participants (131 of 134) were considered obese because of an initial BMI greater than 30. (See Table 1 for further information on the participant demographics.)

A statistically significant increase in weight loss was achieved with increased months of self-monitoring compared to the baseline. The analysis of weight loss between races was not statistically significant and demonstrated comparable weight-loss results for African-Americans (15.6 pounds) and Caucasians (17.6 pounds). See Table 5 for further information.

Comparing African American and Caucasian participants who did not monitor at all and those who monitored for the entire four months showed significant differences ($p<0.001$ and $p<0.000$). First, in those who did not monitor at all, there was increased variability in the weight-loss achieved during the four months with some participants gaining weight. Secondly, none of those who self-monitored their diets gained weight. Third, for those who monitored the entire four months, weight loss more than doubled from those who did not monitor at all. For those participants who did not self-monitor, there was a range in the effect this had on their weight from a gain of 9.2 pounds to a loss of 44.2 pounds with a mean of 10.9 pounds lost. The participants who chose to monitor their diets for the four-month study duration saw the change in their weights range from a loss of 8.8 pounds to a loss of 58 pounds with a mean loss of 24.6 pounds. See Tables 2 and 6.

A series of frequencies and one-way ANOVAs demonstrated the positive influence of self-monitoring as evidenced by the following results. Weight at the initiation of the project ranged from 130.6 to 374.8 pounds with a mean of 221.1 pounds. BMI at the intake of the study ranged from 21.5 to 57.8 with a mean of 36.3. See Table 7 for further information including BMI breakdown by race. Fat mass ranged from 42.2 to 219.8 pounds with a mean of 103.4 pounds at the initial participant intake. At the four month check up, weight ranged from 122 pounds to 330.6 pounds with a mean weight of 202.2 pounds and BMI ranged from 22 to 52.7 with a mean of 33.45. Fat mass ranged from 31.6 to 185.2 pounds with a mean of 89.7 pounds.

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Self-monitoring status of the participants ranged from 48.9% to 60.5% during the study. The weight loss percentage of participants ranged from -10% to 24% with an average of 7.45%. Of the participants who left the study prior to four months of follow-up, the mean BMI was 35.9 with a maximum of 57.6 and a minimum of 24.3. See Tables 2, 3, 4, and 6 for results.

A significant clinical application finding was realized after determining a positive correlation between the number of months a patient self-monitored their caloric intake and their total fat mass reduction. A simple linear regression determined the predicted fat mass decrease by one unit of measurement (i.e., one month). For the 97 participants, the mean fat mass decrease was 12.02 (StdDev 11.99) and the mean number of months patients self-monitored was 2.27 (StdDev 1.553). Additionally, the linear regression showed a significant positive relationship between fat mass loss and months of self-monitoring ($r=0.414$), explaining approximately 17% of the variance. For every month of self-monitoring, the average expected fat mass decrease was 3.195 pounds with lower and upper ranges of 1.739 and 4.651 (i.e., 95% of all cases fell within this range). There was a significant difference at the 0.001 level in the weight-loss attained at four months between the self-monitoring and no self-monitoring groups. A significant difference at the 0.000 level was seen between participants' self-monitoring status and fat mass decrease at four months, as well as self-monitoring status and percentage of weight loss at four months.

For the participants' data, no significant difference in self-monitoring tendencies was found between the races. No correlation was found between age and self-monitoring status or between age, self-monitoring status, and race in either self-monitoring or no self-monitoring cohorts within the retrospective and prospective cohorts. Also, no significant difference existed between the starting weight in either self-monitoring or no self-monitoring cohorts within the retrospective and prospective cohorts.

The results of the comparison of level of self-monitoring and weight loss achieved for the study participants are summarized in the scatterplot in Figure 1 and Tables 2 and 6. The scatterplot is a comparison of the weight lost at four months to the total self-monitoring over four months by the participants.

Discussion

In order to allow comparison of these results to build on previous research, the primary measure of self-monitoring effectiveness used in this project was total weight loss. Other measures of treatment effectiveness used in the project included fat mass loss, BMI change, and percent weight loss. Surprisingly, the results demonstrated that self-monitoring impacted all measures' effectiveness to approximately the same extent. The project leader expected a greater or at least different impact on fat mass compared to overall weight loss from anecdotal experience. Regardless of in the weight loss efficacy measure in question, increased self-monitoring had better results compared to no self-monitoring.

Although 37 of the original participants left prior to completing four months of treatment, the results of the project were not affected by differences in those who left and those who stayed. Comparing these two participant populations (those who left prior to the four-month follow-up and those who stayed), the BMI of those who left was slightly lower than those who stayed. Therefore, any bias in those leaving would tend to reduce observed effect.

In previous studies examining the effect of self-monitoring on weight loss, only one other study utilized pharmacological therapy as a part of their study baseline (Wadden et al., 2007). The results of this current project compare favorably to the longer-term study and actually may be more positive since the weight-loss achieved in four months by those who self-monitored in this project were comparable to the weight-loss achieved in 12 months in the published study by the cohort utilizing self-monitoring in addition to the pharmacological treatment. In addition, the r^2 of the current project was higher (r^2=0.17) than reported by Wadden et al (r^2=0.08), which means that a greater percent of the variability can be explained by the self-monitoring.

The Centers for Disease Control (CDC) states that losing 5 to 10% of a person's weight will decrease the risk factors for chronic diseases related to overweight and obesity (Center for Disease Control, 2015). Ninety-five of the participants continuing treatment for four-months met this CDC goal.

Results of the linear regression indicated a modest, but significant positive relationship between fat mass loss and months spent self-monitoring. Large standard deviations indicate significant variance between fat mass decreases and the number of months patients self-monitored. These results also indicate that self-monitoring alone is not a successful unilateral approach to obesity management for all patients. These findings support previously discussed research from the literature review by Burke, Wang, & Sevick in 2011 which had r values from -0.69 to 0.53, explaining 8% to 48% of their variances. The linear regression results available from the literature, as well as those from the current study, continue to support a multifaceted approach to obesity treatment and management.

The results of the small scale project discussed in this paper are congruent with previously conducted research that demonstrated the positive impact of dietary self-monitoring on weight loss. African-Americans respond well, just as Caucasians have previously and continue to demonstrate within this project. Previous studies have been primarily Caucasian females, so this project’s finding is useful to furthering the understanding of effective obesity treatment for Caucasian and African American women.

Limitations

This scholarly project only looked at self-monitoring of diet in its relation to weight loss in a single clinic population which showed a statistically significant association, but weak correlation (i.e.; only explained part of the observed weight loss) for both the African American and Caucasian females who participated. There are other well documented factors which may explain more of the variability such as exercise and socioeconomic status which were not assessed or controlled for in this project (Weinsier, Hunter, Heini, Goran, & Sell, 1998; Mayo Clinic, 2013).

In addition, a qualitative measure was used that was not well defined. Participants were questioned whether or not they were participating in self-monitoring, but their individual efforts were not assessed beyond requesting a positive or negative response to the question "Are you or did you self-monitor last month?" by the project leader. The degree of adherence to the self-monitoring scheme may be overstated due to the self-report and the semi-quantitative all or nothing scoring scheme used to express self-monitoring status each period. Anecdotally, in 18% of the follow up visits, the project leader noted some type of non-adherence to the recommended diet and attendance regimen even when participants reported self-monitoring.

Within the study, self-monitoring was not well-defined in that it relied on the patient consistently following the recommended diet and accurately reporting their compliance with self-monitoring. The two apps that were used relied upon different means of measuring participant caloric intake. For example, the serving size of an item can be underestimated by participants unless it is directly weighed or is a single unit item.

As participant participation decreased, the sample size declined from 134 participants to 97 participants at the four-month follow-up mark, and subsequently, to 20 at 6 months. The small sample size potentially caused some correlations not to be as statistically significant as they might be if a larger sample size were available. Further studies with larger sample sizes could evaluate similar correlations. Two additional limitations are the lack of investigation into the differentiation in types of self-monitoring, and the possibility of differences in effect of medication types on weight loss.

Next Steps

The project leader believes the scholarly project results support the incorporation of dietary self-monitoring as an effective adjunct in obesity treatment. Because providers in primary care, internal medicine, cardiology, and gastroenterology care for obese patients, knowledge about the positive impact of dietary self-monitoring could be a valuable tool to improve patient outcomes. To apply this intervention would require educating patients about the availability of and access to the self-monitoring apps and asking an additional question in their follow-up visits. There are four key recommendations from this scholarly project. First, continue to encourage self-monitoring and as a practitioner, hold patients accountable. Second, in future studies, consider more quantitative measures for self-monitoring. Third, consider replicating previously utilized successful study designs applied to males. Fourth, nurse practitioners can confidently recommend the utilization of self-monitoring of diet in the African American female population.

Conclusion

This scholarly project demonstrated that self-monitoring has a positive effect on weight loss, fat mass loss, percent weight loss and BMI change in Caucasian and African-American females. There was no significant difference in self-monitoring between the races. Further research is needed in self-monitoring’s effects on weight loss in males in order to further generalize these results.

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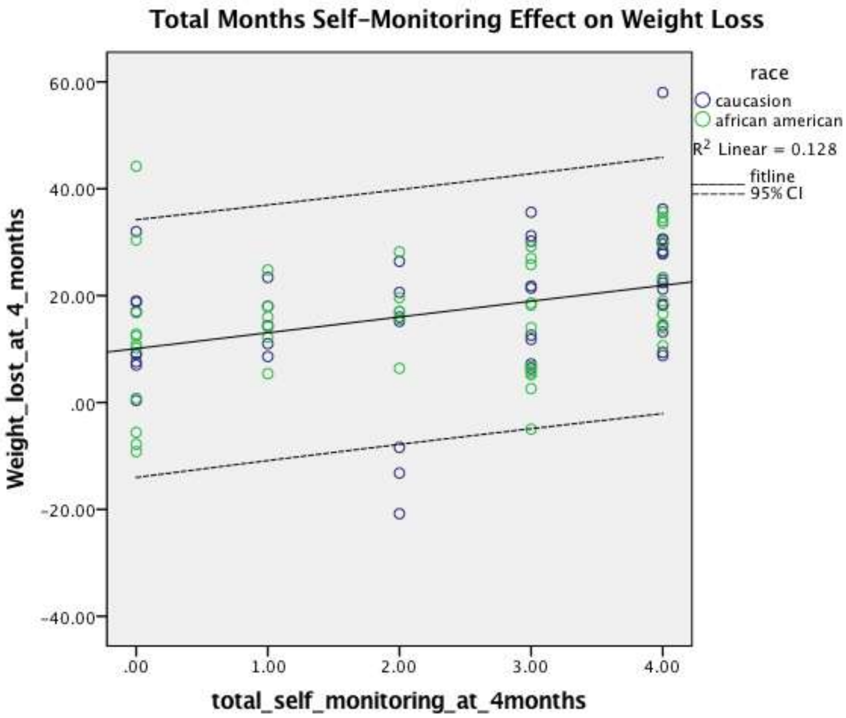
Figure 1.


Total Months Self-Monitoring Effect on Weight Loss
race
caucasion
african american
R^2 Linear = 0.128
fitline
95% CI
Weight_lost_at_4_months
total_self_monitoring_at_4months
60.00
40.00
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-20.00
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Table 1. Participant demographics

Age by range	Total (Percent of population)	Caucasian (Percent of age range)	African-American (Percent of age range)
21-29	16 (12)	11 (69)	5 (31)
30-39	34 (25)	11 (32)	23 (68)
40-49	50 (36)	25 (50)	25 (50)
50-59	28 (22)	17 (61)	11 (39)
60+	6 (5)	4 (67)	2 (33)
All	134 (100)	68 (50.7)	66 (49.3)

Table 2. Impact of self-monitoring on weight loss

	Caucasian		African American		All Participants	
Months of self-monitoring	**Caucasian N (Percent of population)**	**Mean weight loss in pounds**	**African American N (Percent of Population)**	**Mean weight loss in pounds**	**(Percent of Population)**	**Mean weight loss in pounds**
0	9 (17)	13.33*	11 (24)	10.53	20 (21)	11.79*
1	6 (12)	15.08*	6 (13)	15.10	12 (12)	15.09*
2	8 (15)	5.11*	6 (13)	17.30	14 (14)	10.74*
3	10 (19)	18.42*	11 (24)	13.46	21 (22)	16.55*
4	19 (37)	24.88*	11 (24)	24.16	30 (31)	24.61*

* These results are statistically significant at the .01 level

Table 3. Impact of self-monitoring on fat mass loss

Months of self-monitoring	Caucasian		African American		All Participants	
	Caucasian N (Percent of population)	Mean weight loss in pounds	African American N (Percent of Population)	Mean weight loss in pounds	(Percent of Population)	Mean weight loss in pounds
0	9 (9)	9.11*	11 (11)	5.67	20 (21)	7.22**
1	6 (6)	4.16*	6 (6)	10.43	12 (12)	7.58**
2	8 (8)	0.92*	6 (6)	12.97	14 (14)	6.49**
3	10 (10)	12.96*	11 (11)	11.46	21 (22)	12.48**
4	19 (20)	19.19*	11 (11)	20.49	30 (31)	19.68**

* These results are statistically significant at the .01 level
** These results are statistically significant at the .000 level

Table 4. Impact of self-monitoring on BMI change

Months of self-monitoring	Caucasian		African American		All Participants	
	Caucasian N (Percent of population)	Mean weight loss in pounds	African American N (Percent of Population)	Mean weight loss in pounds	(Percent of Population)	Mean weight loss in pounds
0	9 (9)	2.20*	11 (11)	1.67	20 (21)	1.91**
1	6 (6)	2.56*	6 (6)	1.97	12 (12)	2.24**
2	8 (8)	1.01*	6 (6)	2.95	14 (14)	1.91**
3	10 (10)	3.00*	11 (11)	2.13	21 (22)	2.68**
4	19 (20)	4.11*	11 (11)	3.91	30 (31)	4.04**

* These results are statistically significant at the .01 level
** These results are statistically significant at the .000 level

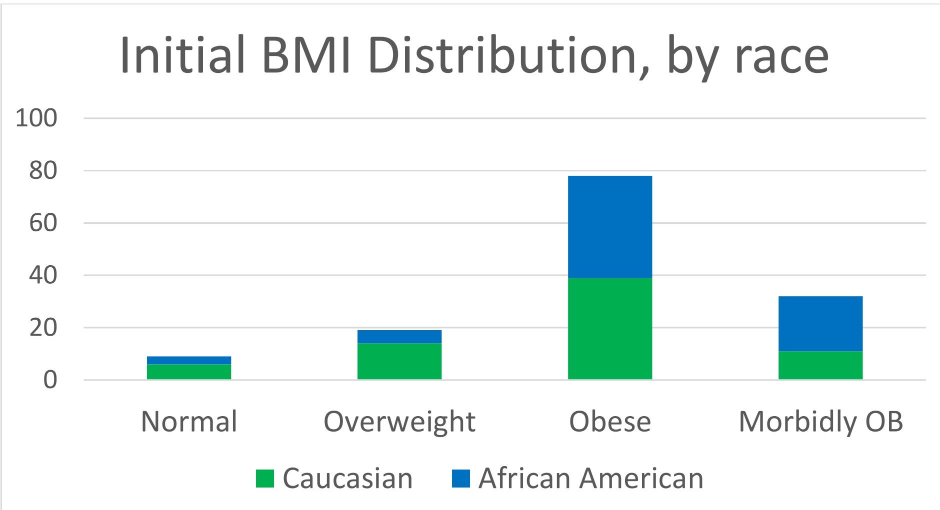
Table 5. T-tests for statistical significance between the races

	Caucasian	African American	p-value
Weight loss at 4 months in pounds	17.49	15.42	0.962
Fat mass decrease at 4 months in pounds	11.81	11.77	0.397
BMI change at 4 months in points	2.95	2.43	0.853

Table 6. Self-monitoring impact on weight loss, fat mass decrease, and BMI change over four months.

	Caucasian			African American		
	With Monitoring	**Without Monitoring**	**Sig. Level of Mean Difference**	**With Monitoring**	**Without Monitoring**	**Sig. Level of Mean Difference**
Weight loss at 4 months in pounds	24.87	12.36	.005	24.16	10.53	.09
Fat mass decrease at 4 months in pounds	19.18	8.16	.002	20.49	5.67	.05
BMI change at 4 months in points	4.11	2.2	.009	3.91	1.67	.09

Table 7. Initial BMI distribution by race


Initial BMI Distribution, by race
100
80
60
40
20
0
Normal
Overweight
Obese
Morbidly OB
Caucasian
African American