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Results of An Academic, Medical Worksite Weight Loss Contest In Southeastern Americans Over Three Years: Scale Back Alabama 2011–2013

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Abstract

Few studies have assessed the effectiveness of competitive and incentivized worksite weight loss programs. Scale Back Alabama (SBA) is a free, state-supported weight loss program designed to promote weight loss among overweight and obese citizens. The purpose of this manuscript is to describe the design and preliminary findings of SBA as a worksite intervention among employees at a collegiate institution and university hospital. In teams of four employees, SBA participants volunteered to engage in a 10-week competitive weight loss contest where both teams and individuals who lost a significant amount of weight were eligible for randomly drawn cash incentives. Trained staff objectively measured participants' weight before and at the conclusion of the contest. Preliminary analysis suggest that SBA as a worksite program can promote weight loss among employees. Future analyses are warranted to understand the context of our findings and to determine if current results are confounded by unmeasured factors.

INTRODUCTION

Obesity remains a public health challenge for the US. Recent estimates suggest that approximately 33% of US adults are obese (Ogden et al., 2014). It has been well documented that weight loss can reduce the risk of cardiovascular disease, diabetes,

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hyperlipidemia, and decrease mortality (Whitlock et al., 2009). The southern region of the US has historically been challenged by the obesity epidemic (Wang and Beydoun, 2007).

In a statewide effort to mitigate obesity prevalence, the Alabama Department of Public Health (ADPH) in collaboration with organizations, including hospitals, around the state and supported by Blue Cross and Blue Shield of Alabama, has hosted the Scale Back Alabama worksite weight loss contest, a social marketing and public awareness campaign. In 2014, Scale Back Alabama (SBA) was in its seventh year of existence, and it has won awards for its success to motivate weight loss among its participants. In 2014, there were 25,352 enrolled participants in the statewide contest, of whom 5,908 participants lost at least 10 pounds. SBA's 2014 successes resulted in an estimated total of 114,511 pounds lost statewide among participants (Blackmon, 2014).

The results from SBA suggest that human interactions are an important factor that can promote significant weight loss (Forbus & Synder, 2013). There is a need to evaluate existing wellness programs using sound scientific methodology (Goetzel & Ozminkowski, 2008). In this study, we evaluated the effectiveness of SBA, a competitive weight loss contest, at a large academic, medical worksite. To our knowledge, the impact of SBA has not been evaluated.

Planning

SBA is a 10-week social marketing and public awareness healthy weight campaign that occurs during the spring of every year in Alabama. The aim of the contest is to motivate adults to exercise and have fun losing weight. Each participating organization's designated staff obtains participants' weekly weights in pounds. There are team and individual cash prizes awarded to various participants. To be eligible for entrance into the statewide random drawing for an individual prize, participants must lose at least one pound (5 qty. \$50 prizes) or at least 10 pounds (100 qty. \$100 prizes) at the end of 10 weeks. To be eligible for the statewide three-team prize random drawings, each member on a team of 4 must lose 10 pounds in 10 weeks (1st team drawing \$1000 per team member, 2nd team drawing \$500 per team member, and 3rd team drawing \$250 per team member). Team prizewinners are not eligible for individual prizes.

ADPH provided the university's office of employee wellness staff with program rules and the scheduled dates to do the weights. We recruited volunteer coordinators from our worksite via the ADPH website. These volunteers signed up to be weighed on scheduled dates at various sites across our worksite campus. We promoted SBA several weeks before initiating the program using online promotion (e.g., website advertising) and print advertising (e.g., institution's weekly newsletter, campus electronic billboards, etc.) approximately 2 months before the program start date. We secured calibrated scales and taught designated volunteers standard, confidential weigh-in and tracking procedures to assure measurement accuracy. Volunteer coordinators were responsible for management of the weigh-in sites and tracking participants' weights. The aforementioned volunteers manually recorded participants' weights on a form. Thereafter, volunteers transferred participants' data to an excel spreadsheet and entered it in the ADPH SBA database after the

weigh-in or out sessions. Weigh-in and out was defined as obtaining participants' weight at SBA's inception (or weekly) and at the end of the program, respectively.

METHODS

We conducted a retrospective cohort study using data from a convenience sample of employees who participated in a worksite weight loss contest. This weight loss social marketing contest was conducted at a large academic, medical university. Each year, employees, family members, and community members were invited to form teams of four members to compete in the weight loss social marketing public awareness contest. Motivated teams of employees, family members, and community members 19 years and older competed for cash prizes to lose the most weight over 10 weeks. Between 2011–2013, there were 3,007 visits for weigh-ins. To be considered for the study, participants must be (a) an adult 19 years or older, and (b) screened at the academic, medical university for weight in and out.

Implementation

We registered with the ADPH and volunteered to be a SBA weigh-in site. Each year, weigh-in was implemented as planned and each team was given a schedule of the dates and locations for weigh-in and out. The Wellness director, who coordinated and supervised the entire program, designated several convenient locations. Participants were encouraged to attend the next weigh-in before departing. Kick-off of the program was done the first week in January and weigh-out was scheduled for the second week in April. The volunteer coordinators entered the participant's weight into the SBA database for weigh-in and out.

We utilized the weigh-in site coordinator tool kit, which included fact sheets, promotional emails, suggested activities, and team registration forms. Weigh-ins and weigh-outs were conducted during the weeks designated by SBA. All information collected was kept confidential.

ANALYSIS

The authors received the de-identified weights (pounds) collected by the Wellness Program director and staff for year 2011–2013. Sequential numbers were applied in a spreadsheet by the wellness center staff to track the participants' weights at the baseline visit and at the end of 10 weeks for three years. After IRB approval de-identified weights and year of visit were analyzed using SAS.

There were 3,007 visits for weigh-ins across the three years. However, only individuals with a valid, non-missing weight measurement at both time points (baseline and post weight loss) were included in the analyses. Implausible weight values were not included in the analyses. We anticipate that these implausible values might be due to data entry errors (n=7). Therefore, our final sample size is 2,432 visits, with 958 visits in 2011, 623 visits in 2012, and 851 visits in 2013. Descriptive statistics such as means, standard deviations, frequencies, and proportions were calculated. The distribution of weight change was determined to be non-normal based on stem-and-leaf plots, normal probability plots, and the

Kolmogorov-Smirnov test. Comparisons of participants' weight change were performed, by year, using the exact Wilcoxon signed-rank test. Statistical tests were two-sided and were performed using a significance level of 5%. Statistical analyses were performed using SAS (version 9.3; SAS Institute, Cary, NC).

We analyzed the data for each year separately. Longitudinal analyses across the three years were not attempted since the study lasted for only 10 weeks each year, there was no further contact with the participants after the 10-week study period, specific individuals who participated in the study varied widely for each of the three years, and some of the individual participants each year did not have valid, non-missing weight measurements at both time points. In addition, we were not able to perform any adjusted analyses due to the fact that the participant demographic variables and clinical variables were not observed or measured as part of the study protocol.

RESULTS

Of the 2,432 visits, 958 visits were in 2011, 623 visits were in 2012, and 851 visits were in 2013. The average amount of weight loss among participants each year were as follows: 3.57 (SD=5.83), 8.27 (SD=6.94), and 3.16 (SD=5.54), respectively. The mean weight at weigh-in and weigh-out for each year are displayed in Figure 1. There was a highly significant difference in weight loss for all three years (2011, $p<0.001$; 2012, $p<0.001$, and 2013, $p<0.001$). We compared the weight change by year and categorized the weights in three categories to describe the weight lost. The distribution of weight loss during the 10 weeks of the weight loss contest for 1 lb and <5 lbs was 13.36% (128), 20.71% (129), 10.81% (92), for the year of 2011, 2012, and 2013, respectively. There was a similar pattern of weight loss for the 5 lbs and less than 10 lbs category: 13.05% (125), 29.37% (183), 12.34% (105), for the year of 2011, 2012, and 2013, respectively. The largest proportion of weight loss was seen in the 10 lbs or greater category: 18.27% (175), 38.84% (242), and 15.75% (134) for the year of 2011, 2012, and 2013, respectively. The percentages of participants who lost 1 pound or less each year between 2011–2013 at this worksite location, 59.19%, 12.84%, and 63.10%, respectively. Many participants lost at least one pound or more over the 10-week period: 2011, 44.68% (438); 2012, 88.92% (554); and 2013, 38.9% (331). Of note, many patients did not weigh out in 2012 because the prizes were set up that year such that only those participants who lost the 10 lbs weight were eligible. In 2013 the game changed and we offered prize drawings for those who lost at least 1 pound and weighed out. For example, if a participant did not think they lost at least 10 lbs, there was less motivation to weigh out, even if they lost 7 or 8 pounds.

DISCUSSION

The purpose of SBA is to encourage weight loss among citizens of Alabama at risk for obesity, and do so in a manner that is perceived as fun among participants. Preliminary evidence suggests that SBA was effective in promoting weight loss among residents in a region of the US that historically has a high prevalence of obesity. Findings from our pre-test/post-test analyses using objectively measured weight indicate that at least 16% of participants lost 10-pounds or more each year in total body weight. These findings are

consistent with programs of similar stature (Leahey, Kumar, Weinberg, & Wing, 2012) regarding statewide weight loss campaigns. Our findings suggest that SBA as a worksite incentive program maybe more effective when compared to other worksite weight management programs since they normally produce modest weight loss (Roberts & Krebs, 2012).

A recently published literature review suggests that standard worksite weight loss programs often employ physical activity, diet and education (Ausburn et al., 2014), which is intuitive. The social influences of a team-based weight loss intervention and provisions of incentives are two components of SBA's intervention that distinguishes it from standard weight loss programs. Previous findings provide evidence that individual's social networks can encourage health protective behaviors related to weight loss (Gabriele, Walker, Gill, Harber, & Fisher, 2005; Leahey, Gokee LaRose, Fava, & Wing, 2011; Leahey et al., 2012). Though not directly assessed in our analysis, it is an important component of SBA. Another important aspect of SBA is the prize incentives. The literature suggests that the provisions of incentives to lose weight are effective in achieving weight loss goals (Finkelstein, Linnan, Tate, & Birken, 2007; John et al., 2011; Volpp et al., 2008). Relevant to SBA, group-based prize incentives are suggested to be more effective at producing weight loss among participants compared to providing individual-based incentives (Kullgren et al., 2013). Future studies will aim to randomize team assignments among a subpopulation of participants and provide varied cash incentives at differing intervention sites to determine the true magnitude that social influence and incentives have on SBA's results.

There are primary two limitations in this analysis. First, there was not a control group, and various covariates (e.g., socioeconomic status, sex, race, etc.) were not included in our analysis. As such, we cannot say with confidence that our results are free of confounding. We believe that our low attrition rate was not only due to the fact that SBA provided incentives, but also because not reporting such measures increased anonymity during participation. Second, due to the cross-sectional nature of our research design, it was not possible for us to determine whether participants were able to maintain weight loss over the span of three years. That said, now knowing that our findings suggest that SBA might be effective at producing weight loss, future analyses will account for the previously mentioned limitations to understand the context of our findings. We believe that our study limitations are balanced by several strengths. First, our outcome measure (i.e., weight) at both pre-test and post-test was based on objectively measured weight and not self-report. Second, our analysis will be used for SBA's quality control purposes, and as such, future program modifications will be based on sound scientific rationale.

Evaluation

This worksite wellness weight loss incentive program intervention of weigh-in and out was relatively easy to manage without being labor intensive to the wellness staff. SBA was a creative way to engage employees to obtain significant weight loss each year for three consecutive years. Measuring the outcome of weight loss among groups competing for prizes, regardless of method used to lose weight, motivated many employees to lose at least 10lbs within 10 weeks.

IN SUMMARY

- As a cost-effective population-level weight loss intervention, preliminary results suggest that SBA has promise.
- SBA's effectiveness in helping participants lose a significant amount of weight (10lbs) in 10 weeks and for 3 consecutive years warrants further investigation.
- It is our hope to gain a deeper understanding of SBA's results to foster program tailoring of the intervention for various settings in the future.

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Figure 1. Weight of Participants Before and After Intervention

Mean $\pm$ SEM (n=958 for 2011, n=623 for 2012, and n=851 for 2013). The observed decrease in weight was statistically significant for all three years ($p < 0.0001$ for all).