INNOVATIONS in pharmacy lip

Volume 5 | Number 3 Article 170

2014

Implementation of a financially incentivized weight loss competition into an already established employee wellness program

Andrew M. Schramm

Kristen L. DiDonato

Justin R. May

D. Matthew Hartwig

Implementation of a financially incentivized weight loss competition into an already established employee wellness program

Andrew M. Schramm, PharmD, Red Cross Pharmacy, Inc; Marshall, MO.; Kristen L. DiDonato, PharmD, BCACP, School of Pharmacy, University of Missouri-Kansas City and Red Cross Pharmacy, Inc; Excelsior Springs, MO.; Justin R. May, PharmD, Red Cross Pharmacy, Inc., Marshall, MO.; and D. Matthew Hartwig, RPh, Red Cross Pharmacy, Inc; Excelsior Springs, MO

Acknowledgements: To Red Cross Pharmacy, Inc. and Amy Bennett for data collection. To Wayne Schramm and Yifei Liu for statistical analysis and support. We would also like to acknowledge Camille Beckstrand for developing the "8-week Get Healthy Challenge" points log.

Disclosure: The authors declare no conflicts of interest or financial interests in any product or service mentioned in this article, including grants, employment, gifts, stock holdings or options, honoraria, consultancies, expert testimony, patents, and royalties for all authors and members of their immediate families.

Funding Support: The Red Cross Pharmacy Residency Program is funded by a Community Pharmacy Residency Expansion Project grant from the National Association of Chain Drug Stores Foundation.

Keywords: Competition, Weight Loss, Community Pharmacy, Lifestyle Modifications

Abstract

Objective: *To assess improvement in clinical outcomes and patient satisfaction of a financially incentivized weight loss competition adjunct to a currently established pharmacist-directed employee wellness program.* ***Design:*** *Retrospective, cohort, pilot study* ***Setting****: 6 independent community pharmacy chain locations, two long-term care pharmaLJ ůŽĐĂŁšŽŶƐ and a pharmacy corporate office in northwest and central Missouri, from January 2013 to April 2013.* ***Participants:*** *24 benefit-eligible patients employed by the self-insured pharmacy chain.* ***Intervention****: A financially incentivized weight loss competition focusing on healthy lifestyle practices was implemented at nine pharmacy locations over an eight week period.* ***Main outcome measure(s):*** *Change from baseline in mean total cholesterol, serum triglycerides, high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), systolic blood pressure (SBP), diastolic blood pressure (DBP), weight, and body mass index (BMI). Patient satisfaction was also assessed after completion.* ***Results:*** *24 patients completed the competition. The average weight loss among all participants was 10 ± 7.3 pounds. A mean decrease in serum triglycerides was significant at 36.9 mg/dL per participant (p<0.05) ŝŶ ƐŽďŐĐĂŽŽĐ ĂŶĂůLJƐŝƐ. Pearson correlation coefficients between healthy lifestyle practice points earned and clinical measurements were significant for total cholesterol (r = -0.54), LDL-C (r = -0.50) and triglycerides (r = -0.49).* ***Conclusion:*** *The implementation of a financially incentivized weight loss competition provided significant short-term weight loss to a patient population that was already enrolled in an established pharmacist-directed employee wellness program and had not shown clinical improvement prior to the intervention. Overall the patients were satisfied, felt healthier, and agreed to continue following the recommendations of the program.*

Introduction

The prevalence of Americans who are overweight or obese has increased significantly since the 1960s.[1] National survey data collected between 2009 and 2010 found that nearly 70% of all adults in the United States are overweight or obese.[2] These observations are not surprising as Americans are living busier, more fast-paced, and technology-dependent lifestyles resulting in physical inactivity and poor nutrition.

Corresponding author: Kristen L. DiDonato, PharmD, BCACP, 3244 Health Sciences Building, 2464 Charlotte St., Kansas City, MO 64108. Fax: 816-235-6008
E-mail: didonatok@umkc.edu

Obesity is a multifactorial problem stemming from many genetic and environmental factors.[3] The largest of the modifiable contributing factors in Americans are lack of physical activity and easy accessibility to nutritionally poor foods.[4,5] Despite an increased focus on the issues surrounding obesity, little has been accomplished to improve prevention and treatment of the disease. However, complications are confounded by the simple truth that many occurrences of success or failure in management of non-genetically attributed obesity rests with the individual to develop a motivational force to create an established behavior change.[6]

Obesity is a growing concern in the health care system due to the increased costs associated with developing obesity-

related chronic diseases such as diabetes, hypertension, heart disease, stroke, gallstones, and colon cancer.[7,8] It is estimated that obesity in the United States results in $147 billion of direct medical costs annually.[9] Obesity also increases the patient's risk of all-cause mortality when compared to people of normal body weight.[10]

In order to lower health care costs, improve employee well-being, and create a health-conscious atmosphere, Red Cross Pharmacy, Inc. developed an employee wellness program (EWP) in 2010 designed to utilize pharmacist coaching and monitoring to improve overall health and wellness. Utilizing pharmacist's clinical expertise and knowledge of pharmacological and non-pharmacological disease state therapy, previous research has shown that pharmacist-directed services can have a significant effect on patient's clinical, humanistic, and economic outcomes.[11-21] A study by DiDonato, et al. demonstrated that pharmacist-directed wellness coaching provided significant improvements in cardiovascular risk.[22] Pharmacist providers of the DiDonato, et al. study provided education and coaching for patients categorized into cholesterol, hypertension, diabetes, and weight monitoring groups. Point-of-care testing utilizing Cholestech LDX [Alere] and physical assessment were utilized to monitor progress and guide education and coaching sessions. The study showed a significant improvement in clinical outcomes for all monitoring groups except weight loss, which prompted further study.

An alternative successful strategy for improving patient outcomes is the use of financial incentives. Previous studies have shown financial incentives and group support programs to be successful methods for patients to lose weight and to reduce the risk of developing chronic diseases in the short-term. Though encouraging, prevention of obesity requires life-long commitment and support. No study to date has assessed a successful strategy to facilitate weight loss for a period greater than 36 weeks.[23-27]

Inspired by the short-term success of financial incentives and ongoing support of the EWP, this study attempts to combine methods with desires of improving long-term clinical outcomes in the DiDonato et al. study population, which previously showed no significant improvement in weight loss. This is the first pilot study to look at the effect of a financially incentivized competition facilitated by a pharmacist-directed EWP on the short-term success on weight loss.

Objective

The purpose of this study was to evaluate the short-term clinical improvement in mean total cholesterol, serum triglycerides, high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), systolic blood pressure (SBP), diastolic blood pressure (DBP), weight, and body mass index (BMI) in patients who completed the 8-week, financially incentivized weight loss competition. Patient satisfaction was evaluated post-competition. The authors hypothesized that the addition of a financially incentivized weight loss competition to an already established pharmacist-directed EWP would motivate obese and overweight patients to lose weight through healthy lifestyle practices thus resulting in clinical improvements.

Methods

This retrospective pilot study was conducted at six Red Cross Pharmacy independent community pharmacy chain locations, two long-term care pharmacy locations, and a pharmacy corporate office between late January 2013 to early April 2013. The pharmacy corporation is a self-insured, independent, small chain of pharmacies located in mostly rural communities in northwest and central Missouri. Patients were eligible for enrollment if they were 18 years or older, non-pregnant, employed by the company, and enrolled in the company's EWP. Patients were aware of the guidelines and prize structure for the 8-week competition prior to participation with enrollment being voluntary. Pharmacist coaches provided pre- and post-study screenings of total cholesterol, triglycerides, HDL-C, LDL-C, SBP, DBP, weight, BMI and satisfaction surveys for all participants who completed the competition.

The study was approved by the University of Missouri–Kansas City Adult Health Sciences Institutional Review Board. All patients enrolled voluntarily and provided informed consent before receiving services.

The weight loss competition

The 8-week format of the competition was developed based on the "8-week Get Healthy Challenge" available at www.SixSistersStuff.com and modified to follow the National Heart, Lung and Blood Institute guidelines for the clinical treatment of obesity.[28] Specific healthy lifestyle practices were adapted to be consistent with treatment guidelines of hypertension, cholesterol, and diabetes.[29-31] The healthy lifestyle practices included in the study were: adequate water intake, regular exercise, adequate consumption of fruits and vegetables, maintaining a food log, avoiding sugary snacks, contact with another competition participant, and avoidance of eating after 9 pm. Minimum water, fruit and vegetable requirements were derived from the American Dietary Guidelines and the practice of avoiding eating after 9 pm is recognized to promote healthy sleep hygiene.[32, 33] Healthy lifestyle practices were then modified for patient understanding and generalized to fit all patient populations.

Once the healthy lifestyle practices were defined, they were organized into daily and weekly goals and assigned point values (Figure 1). Starting on the second week, one of the healthy lifestyle practices was doubled in point value for one week, alternating for subsequent weeks, to encourage participants to vary their focus and utilize all of the different healthy lifestyle practices. Patients received the full amount of points if the healthy lifestyle goal was achieved for the day. Partial point totals were not given. Patients were instructed to document their weekly point total and weight each Monday by midnight Central Standard Time. The weekly reports allowed the investigator to monitor excessive or unhealthy weight loss and allowed participants to know how they are doing compared to other participants.

To provide the patients with a financial incentive, patients participating in the program each deposited $25 into a winner's cash pot. An additional $500 was deposited by the pharmacy owner to provide further incentive for EWP enrollees to participate. The total cash pot was divided between the winners of the weight loss competition. The patient who lost the highest percentage of their starting body weight received 50% of the total money pot, the second highest percentage lost received 30% of the total money pot, and the patient who had accumulated the most healthy lifestyle practice points received 20% of the total money pot. All participants were notified of the prize values and prize structure at the beginning of the program. Patients were required to report their weights and weekly point totals by the defined deadline and to provide documentation that they completed the objectives of the healthy lifestyle practices in order to be eligible for the financial awards.

Data Collection

Patients were instructed to keep track of their daily points and weekly weights. To provide consistency, patients were asked to weigh themselves weekly on the same scale and under the same conditions. These conditions were monitored by a site coordinator to help facilitate the program and enforce uniformity. Once the site coordinator collected the data, the data was sent via secure fax to a data collection coordinator. Log sheets containing the weekly weights and healthy lifestyle point totals were obtained by the investigator at the conclusion of the competition for analysis.

As part of the EWP 2013 enrollment, all participants completed weight, BMI, blood pressure, and cholesterol screenings in January and February. These clinical parameters were repeated at the end of the 8-week study period for participants who completed the competition. Clinical laboratory data were obtained through physical assessment, Cholestech LDX [Alere] point-of-care lipid testing and from physician or laboratory collections. Each pharmacy followed manufacturer recommendations, performed quality control testing to ensure reliability of the study data, and had a Clinical Laboratory Improvement Amendments certificate of waiver to conduct point-of-care testing on site.

All patients who participated in the weight loss competition were provided patient satisfaction surveys following the completion of the program. Surveys were completed anonymously and returned via secure fax to the investigator. Patients were asked six questions in regards to their perceived personal health and overall satisfaction with the program. The questions utilized a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Patients were also asked to provide feedback on the competition and to make suggestions for the improvement of future weight loss competitions.

Clinical data were compiled and de-identified. Following the completion of the competition, clinical and demographic data were obtained from enrollment questionnaires and patient charts.

Analysis

The main outcomes of the study were to assess the mean changes in clinical data between January 2013 and April 2013. The paired *t* test was used to compare pre- and post-competition mean changes in total cholesterol, serum triglycerides, HDL-C, LDL-C, SBP, DBP, weight, and BMI for study participants. Subgroup analyses divided the study population into two groups; those earning more than 1600 points (80 percent of possible points) and those earning less than 1600 points. Pearson correlation coefficients were calculated between total points earned and changes in clinical data. Mean changes and Pearson correlation coefficients were considered statistically significant with an alpha of <0.05. Post-study surveys were also compiled at the conclusion of the competition to assess patient satisfaction and provide feedback. All clinical and patient satisfaction data was exported into Microsoft Excel version 2010 (Microsoft, Redmond, WA) for statistical analysis.

Results

Baseline patient demographics for the competition are summarized in Table 1. The majority of the participants were white women in their late 30s who self-reported exercising 1-2 times a week or less prior to starting the competition. Nearly half of the patients had obtained a graduate or professional degree.

During the enrollment period, 34 patients agreed to participate in the study out of 112 patients enrolled in the

EWP. Twenty-four of these patients completed the competition at the end of the 8-week study period. Pre- and post-competition clinical data analysis is summarized in Table 2. The mean weight loss among the 24 participants was 10 ± 7.3 pounds.

All patient statistical analysis showed a clinically significant mean change in weight ($p<0.001$) and BMI ($p<0.001$) among all patients (n=24). Pearson correlation coefficients between total points earned and changes in five clinical measurements (total cholesterol, LDL-C, HDL-C, triglycerides, and diastolic blood pressure) were negative, meaning that a higher total in points was correlated with a decrease in clinical measurements. Pearson correlation coefficients are summarized in Table 3. Pearson coefficients for total cholesterol ($r = -0.54$), LDL-C ($r = -0.50$) and triglycerides ($r = -0.49$) were significant.

Satisfaction survey results are summarized in Table 4. Overall, patients agreed that the directions were easy to follow, they would participate in the program again, and they would recommend the program to others. Patients agreed that they felt healthier and would continue to follow the healthy lifestyle practices beyond the completion of the program. The lowest scaled score was satisfaction in their individual results (3.9 ± 1.0). The satisfaction in their individual results was also the most varied response among participants. Reasons for varied responses were not assessed.

Discussion

Sustainable and healthy weight loss is most effectively accomplished through education, diet and physical activity.[28] The ultimate goal of the competition was to incorporate clinically recommended healthy lifestyle practices into the daily routines of patients so that they can carry on those practices throughout their lives. Patients who followed the healthy lifestyle practices most closely, represented by patients who earned more "healthy lifestyle points," showed clinically significant improvement in weight and BMI. The study also showed this correlation to be statistically significant for reductions in total cholesterol, LDL-C and triglycerides. This was an interesting observation as most of the enrolled patients had already achieved their individualized non-weight clinical measurement goals through the monitoring and pharmacist coaching provided by the EWP and described in the DiDonato, et al study.[22] The improved clinical outcomes were consistent with guidelines that use therapeutic lifestyle changes as the first-line of treatment for high cholesterol and blood pressure.[29, 30] When therapeutic lifestyle changes are applied to weight loss, the National Heart, Lung and Blood Institute guidelines recommend healthy weight loss between one to two pounds per week until the patients desired weight is reached.[28] The short-term weight loss of this competition was consistent with other studies which showed significant weight loss over 16 , 32 and 36-week study periods. Patients in this study lost an average of 10 lbs over 8 weeks compared to the similar studies which averaged 14 pounds over 16 weeks, 9 pounds over 32 weeks and 10 pounds over 36 weeks.[25-27] Other studies concluding similar weight loss did not discuss patient participation in a EWP or adjunct tool or support system to achieve and maintain weight loss in addition to the financial incentive, nor did they assess cholesterol and blood pressure values. The Kullgren, et al. study focused on group versus individual outcomes in weight loss while the John, et al. study explored self-funded financial contract for weight loss.[26, 27] No study to date has developed a successful method to motivate and facilitate weight loss for a period greater than 36 weeks or has looked at the effect of a financially incentivized competition adjunct to a pharmacist-directed EWP on weight loss.

Participant data was separated into groups of participants earning more than 1600 points and those earning less than 1600 points to compare those who followed the healthy lifestyle guidelines to those who did not. Subgroup analysis of participants (n=10) earning at least 1600 points showed a decrease in mean clinical measurements post-competition but did not achieve statistical significance except in triglycerides, with an average decrease of 36.9 ± 33.7 mg/dL per participant ($p<0.001$). None of the other differences between pre- and post- competition were significant except total cholesterol and LDL-C for the under 1600 points group (n=14). However, a longer and sustaining intervention is necessary to potentially show clinically significant reductions in cholesterol.

The feedback received from the patient satisfaction surveys showed us that patients enjoyed the simplicity of the healthy lifestyle practices. The patients stated that the practices were easy to follow once a habit was incorporated into daily routines. Patients liked knowing what their daily and weekly healthy lifestyle practice objectives were because it prompted them to make healthy diet choices and motivated them to help one another accomplish their personal and competition defined goals. Many patients stated that they would continue to follow the healthy lifestyle practices beyond the completion of the competition. Based on feedback from the patient satisfaction survey, the competition was well received and successfully integrated in the EWP. Patients who dropped out of the program were not assessed for reasons of failure nor given satisfaction surveys.

In reference to Prochaska and DiClemente's Transtheoretical Model, because these patients were participants in an already established EWP, it is likely that those who signed up for the challenge were already in the Action or Maintenance stage, wanting to continue their weight loss.[34] The tools provided through the challenge may also have been helpful in assisting those in the Preparation stage to transition into Action. Offering the challenge multiple times throughout the year may provide an opportunity for those in Relapse to restart their cycle of change. This model may be helpful in finding ways to engage additional employees in future challenges.

Limitations

The major limitations were small sample size and the short length of the study. The sample size was limited by the number of employees in the company. The study length was limited by the length of the investigator's residency program and the pilot nature of the study.

Another limitation to the study was the competition's point system. The points were developed to objectively measure the patient's ability to follow the guidelines of the healthy lifestyle practices and to promote competition. The results from the points system were subject to false documentation or subjectivity of the participant. Point uniformity of each category may have helped prevent the bias of focusing on specific healthy life practices. Additionally, the competition instructions did not provide patient specific definitions for exercise, sugary snacks or fruits and vegetables. Generalized healthy lifestyle practices were intentionally simplified to provide the patient with the autonomy to make their own dietary and exercise choices. This lack of standardized definitions was a source of inconsistency between individuals.

All of the patients in the program were enrolled in the EWP and many had met their individualized clinical goals for cholesterol and blood pressure. Patients enrolled were not assessed for the addition or removal of cholesterol and hypertensive medications during the course of the competition. Patients were also not asked about their methods for weight loss as they were encouraged but not required to follow the healthy lifestyle practices to achieve weight loss.

Future Research

The limitations above present avenues for improvement and future research. Several studies have shown financial incentives to be a successful method for producing weight loss in the short-term but have not shown success in the long-term. Improvements for future competitions will be to increase the length of the weight loss competition, investigate reasons for patient dropout, provide standardized definitions for the lifestyle modifications and to implement the competition multiple times a year as an ongoing program adjunct to the EWP. Patient weights will continue to be monitored through the EWP and future studies will assess the strength of the adjunct competitions in the long-term.

The study was created with the goal of providing pharmacists with a tool to achieve patient weight loss beyond the possibility of a financial incentive as an endpoint. Prior to the beginning of the study and during the study patients developed many strategies to achieve personal goals through technology, social support and other various resources. When applying the competition to the Transtheoretical Model, developed by Prochaska and DiClemente, long-term studies could be performed to evaluate patient strategies for success and failure during the Maintenance phase and Relapse stages of change.[34] Offering multiple 8-week competitions, would help patients in the Relapse stage restart the cycle and provide further information on patient success and failure in maintaining weight loss. Other studies evaluating success of financially incentivized weight loss programs do not address this model nor attempt to evaluate success and failure through multiple rounds of the same weight loss program.[25-27]

Conclusion

The implementation of a financially incentivized weight loss competition provided significant short-term weight loss to a patient population that was already enrolled in an established pharmacist-directed EWP who had not shown clinical improvement prior to the intervention. Overall the patients were satisfied, felt healthier, and agreed to continue following the recommendations of the program. The adjunct program will continue to be utilized in the EWP with clinical monitoring and pharmacist coaching to allow all patients an interactive tool shown to facilitate healthy weight loss through financial incentives and competition.

References

1. Flegal KM, Carroll MD, Ogden CL, et al. Prevalence and trends in obesity among US adults, 1999-2000. JAMA. 2002;288(14):1723-1727.
2. Flegal KM, Carroll MD, Kit BK, et al. Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. JAMA. 2012;307(5):491-497.
3. Sallis JF, Baumen A, Pratt M. Environment and policy interventions to promote physical activity. Am J Prev Med. 1998;15(4):379-97.
4. Willett WC, Dietz WH, Colditz GA. Guidelines for healthy weight. N Engl J Med. 1999;341:427-434.

5. Blanck HM, Nebeling L, Yaroch AL. Improving fruit and vegetable consumption: use of farm-to-consumer venues among US adults. Prev Chronic Dis. 2011;8(2):49.
6. Gorin AA, Raynor HA, Fava J, et al. Randomized controlled trial of a comprehensive home environment-focused weight-loss program for adults. Health Psychol. 2013:32(2):128-37.
7. Field AE, Coakley EH, Must A, et al. Impact of overweight on the risk of developing common chronic diseases during a 10-year period. Arch Intern Med. 2001;161(13):1581-1586.
8. Manson JE, Willett WC, Stampfer MJ, et al. Body weight and mortality among women. Am J Epidemiol. 1990;132:501-513.
9. Finkelstein, EA, Trogdon, JG, Cohen, JW, and Dietz, W. Annual medical spending attributable to obesity: Payer- and service-specific estimates. Health Affairs. 2009;28(5):822-831
10. Flegal KM, Kit BK, Orpana H, et al. Association of all-cause mortality with overweight and obesity using standard body mass index categories: a systematic review and meta-analysis. JAMA. 2013;309(1):71-82.
11. Fera T, Bluml BM, Ellis WM. Diabetes Ten City Challenge: final economic and clinical results. J Am Pharm Assoc. 2009;49(3):383–91.
12. Bluml BM, McKenney JM, Cziraky MJ. Pharmaceutical care services and results in Project ImPACT: Hyperlipidemia. J Am Pharm Assoc. 2000;40(2):157–65.
13. Cranor CW, Christensen DB. The Asheville Project: short-term outcomes of a community pharmacy diabetes care program. J Am Pharm Assoc. 2003;43(2):149–59.
14. Cranor CW, Bunting BA, Christensen DB. The Asheville Project: long-term clinical and economic outcomes of a community pharmacy diabetes care program. J Am Pharm Assoc. 2003;43(2):173–84.
15. Cranor CW, Christensen DB. The Asheville Project: factors associated with outcomes of a community pharmacy diabetes care program. J Am Pharm Assoc. 2003;43(2):160–72.
16. Garrett DG, Martin LA. The Asheville Project: participants' perceptions of factors contributing to the success of a patient self-management diabetes program. J Am Pharm Assoc. 2003;43(2):185–90.
17. Garrett DG, Bluml BM. Patient self-management program for diabetes: first-year clinical, humanistic, and economic outcomes. J Am Pharm Assoc. 2005;45(2):130–7.
18. Bunting BA, Cranor CW. The Asheville Project: long-term clinical, humanistic, and economic outcomes of a community-based medication therapy management program for asthma. J Am Pharm Assoc. 2006;46(2):133–47.
19. Bunting BA, Smith BH, Sutherland SE. The Asheville Project: clinical and economic outcomes of a community-based long-term medication therapy management program for hypertension and dyslipidemia. J Am Pharm Assoc. 2008;48(1):23–31.
20. Fera T, Bluml BM, Ellis WM, et al. The Diabetes Ten City Challenge: interim clinical and humanistic outcomes of a multisite community pharmacy diabetes care program. J Am Pharm Assoc. 2008;48(2):181–90.
21. Carnethon M, Whitsel LP, Franklin BA, et al. Worksite wellness programs for cardiovascular disease prevention: a policy statement from the American Heart Association. Circulation. 2009;120(17):1725–41.
22. DiDonato KL, May JR, Lindsey CC. Impact of wellness coaching and monitoring services provided in a community pharmacy. J Am Pharm Assoc. 2013;53(1):14-21.
23. Barrington WE, Ceballos RM, Bishop SK, et al. Perceived stress, behavior, and body mass index among adults participating in a worksite obesity prevention program, Seattle, 2005–2007. Prev Chronic Dis. 2012;9:152.
24. Kane RL, Johnson PE, Town RJ, et al. A structured review of the effect of economic incentives on consumer's preventive behavior. Am J Prev Med 2004;27(4) 327-352.
25. Volpp K, John L, Troxel AB, Norton L, et al. Financial incentive-based approaches for weight loss: a randomized trial. J Am Med Assoc. 2008;300(22):2631–7.
26. John LK, Loewenstein G, Troxel A. Financial incentives for extended weight loss: a randomized controlled trial. J Gen Intern Med. 2011;26(6):621–626.
27. Kullgren JT, Troxel AB, Loewenstein G, et al. Individual- versus group-based financial incentives for weight loss: a randomized, controlled trial. Ann Intern Med. 2013;158(7):505-14.
28. NHLBI Obesity Education Initiative Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. Publ. no. 98-4083. Bethesda, MD: National Institutes of Health; 1998.

29. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA. 2001;285(19):2486–97.
30. Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. JAMA. 2003;289(19):2560–72.
31. American Diabetes Association. Standards of medical care in diabetes–2010. Diabetes Care. 2010;33(suppl 1):S11–61.
32. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. 'Ž|ĞƋŶŵĞŷ¨ December 2010.
3ϯ. Harsora P, Kessmann J. Nonpharmacologic management of chronic insomnia. Am Fam Physician. 2009;79(2):125-30.
3ϰ. Prochaska JO, DiClemente CC. Stages of change in the modification of problem behaviors. Progress in Behavior Modification. 1992;28:183-218.

Figure 1. Healthy lifestyle practices points log

WEEK #___	MON	TUES	WED	THURS	FRI	SAT	SUN
1 point: Contact with Teammate							
3 points: 64 Kunces of tater							
3 points: Avoid ating fter 9 pm							
3 points: 2 Fruit Servings							
5 points: 3 Vegetable Servings							
5 points: No Sweets/Sugary Treats (Only 6 days a week)							
5 points: Keep a Food Journal							
5 points: 30 min. xercise **OR** **7 points:** 45 min. xercise (Only 5 days a week)							
TOTAL POINTS: (205 possible for the week)							

Lowest Recorded Weight:_____Weight on Monday Dorning of Week____:_____

Grand Total of Points from Week____: _____

Table 1. Baseline patient demographics		n (%)
Number of patients		24 (100)
Sex		
	Female	18 (75.0)
	Male	6 (25.0)
Race		
	Caucasian	23 (95.8)
	African-American	1 (4.2)
Highest level of education		
	High school graduate	4 (16.7)
	Some college or vocational school	7 (29.2)
	College graduate	2 (8.3)
	Post-graduate or professional school	11 (45.8)
Exercise		
	Never exercise	4 (16.7)
	Less than 1 time per week	4 (16.7)
	1-2 times per week	7 (29.2)
	3 times per week	1 (4.2)
	4 times per week	1 (4.2)
	5+ times per week	5 (20.8)
	No response	2 (8.2)
Age		Mean ± SD
	Years	38.6 ± 10.9

Table 2. Weight loss competition clinical data analysis

	Clinical data	Pre-weight loss competition	Post-weight loss competition	Mean difference (95% CI)	P[a]
All patients (n=24)					
	Total cholesterol (mg/dL)	163.4±36.8	169.2±32.4	5.8 (-5.4 to 17)	0.302
	LDL-C (mg/dL)	94.2±32.8	100.5±28.1	6.3 (-2.5 to 15.2)	0.153
	HDL-C (mg/dL)	45.7±13.7	45.9±11.7	0.2 (-3.1 to 3.6)	0.899
	Triglycerides (mg/dL)	129.0±44.4	114.04±52.9	-14.5 (-29.0 to 0.1)	0.101
	Systolic blood pressure (mmHg)	119.1±9.6	118.2±10.3	-0.9 (-5.2 to 3.4)	0.660
	Diastolic blood pressure (mmHg)	76.9±8.7	76.7±8.9	-0.2 (-4.4 to 4.0)	0.917
	Weight (lb)	206.9±37.0	196.9±32.4	-10.0 (-13.1 to -6.8)	<0.001
	BMI (kg/m^2)	32.0±6.3	30.4±5.9	-1.6 (-2.1 to -1.1)	<0.001
≥1600 points (n=10)					
	Total cholesterol (mg/dL)	181.5±44.2	170.8±41.3	-10.7 (-26.1 to 4.7)	0.151
	LDL-C (mg/dL)	111.9±39.6	107.4±34.3	-4.5 (-19.6 to 10.6)	0.520
	HDL-C (mg/dL)	44.9±8.3	44.8±6.5	-0.1 (-7.5 to 7.3)	0.977
	Triglycerides (mg/dL)	128.3±35.6	91.4±35.8	-36.9 (-49.1 to 24.7)	<0.001
	Systolic blood pressure (mmHg)	115.3±7.8	115.2±7.7	-0.1 (-7.9 to 7.7)	0.977
	Diastolic blood pressure (mmHg)	73.9±9.5	71.6±6.7	-2.3 (-7.8 to 3.2)	0.372
	Weight (lb)	221.3±26.8	206.4±25.6	-14.9 (-20.6 to -9.2)	<0.001
	BMI (kg/m^2)	33.8±6.1	31.5±5.7	-1.0 (-3.2 to -1.4)	<0.001
<1600 points (n=14)					
	Total cholesterol (mg/dL)	150.5±24.7	168.1±26.0	17.6 (3.2 to 31.9)	0.020
	LDL-C (mg/dL)	81.6±20.1	107.4±34.3	14.1 (3.5 to 24.6)	0.013
	HDL-C (mg/dL)	46.2±16.9	46.6±14.5	0.4 (-3.1 to 4.0)	0.799
	Triglycerides (mg/dL)	129±51.1	130.2±58.2	1.6 (-24.9 to28.0)	0.899
	Systolic blood pressure (mmHg)	121.8±10.0	120.3±11.6	-1.5 (-7.4 to 4.4)	0.592
	Diastolic blood pressure (mmHg)	79.1±7.66	80.4±8.6	1.3 (-5.2 to 7.8)	0.674
	Weight (lb)	196.6±40.7	190.1±40.2	-6.4 (9.0 to 3.9)	<0.001
	BMI (kg/m^2)	30.7±6.4	29.6±6.1	-1.0 (-1.5 to -0.6)	<0.001

Abbreviation£: CI, Confidence Interval; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; BMI, body mass index

[a] Paired two-tailed t test, $P < 0.05$ considered statistically significant

Table 3. Correlation between points earned and clinical data

Clinical data (n=24)	r[a]	P[b]
Total cholesterol (mg/dL)	-0.542	0.006
LDL-C (mg/dL)	-0.500	0.013
HDL-C (mg/dL)	-0.144	0.500
Triglycerides (mg/dL)	-0.488	0.016
Systolic blood pressure (mmHg)	0.019	0.930
Diastolic blood pressure (mmHg)	-0.256	0.230
Weight (lb)	-0.887	<0.001
BMI (kg/m^2)	-0.888	<0.001

Abbreviations: LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; BMI, body mass index

[a] Pearson (r) correlation coefficient between points earned and clinical readings

[b] $P < 0.05$ considered statistically significant

Table 4. Patient satisfaction with the weight loss competition (n=24)[a]

Question	Mean	SD
Did you find the program directions easy to follow?	4.4	0.7
Would you recommend a similar program to friends or family?	4.4	0.8
Will you continue to follow the recommendations of the program?	4.2	0.8
Do you feel healthier after participating in the program?	4.1	0.9
Will you participate in the program again?	4.3	0.9
Are you satisfied with your results?	3.9	1.0

Abbreviation: SD, standard deviation

[a] Likert Scale: 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), 5 (Strongly Agree)