

This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.



ISSN: 2165-7904

Journal of Obesity & Weight Loss Therapy

**The International Open Access
Journal of Obesity & Weight Loss Therapy**

Special Issue Title: Influence of Diet and Nutrition on Obesity

Handling Editor

Dr. Reza Hakkak

University of Arkansas for Medical Sciences, USA

Available online at: OMICS Publishing Group (www.omicsonline.org)

This article was originally published in a journal by OMICS Publishing Group, and the attached copy is provided by OMICS Publishing Group for the author's benefit and for the benefit of the author's institution, for commercial/research/educational use including without limitation use in instruction at your institution, sending it to specific colleagues that you know, and providing a copy to your institution's administrator.

All other uses, reproduction and distribution, including without limitation commercial reprints, selling or licensing copies or access, or posting on open internet sites, your personal or institution's website or repository, are requested to cite properly.

Digital Object Identifier: <http://dx.doi.org/10.4172/2165-7904.S4-005>

Initial Evaluation of a Scalable Lifestyle Program for Sustained Weight Loss

Brent Hamar, Carter Coberley, James E. Pope and Elizabeth Y. Rula*

Center for Health Research, Healthways, Inc., Franklin, TN, USA

Abstract

The growing prevalence of obesity and associated morbidity indicates the need for effective programs for sustainable lifestyle changes to achieve and maintain meaningful weight loss. The Practice-based Opportunities for Weight Reduction (POWER) trial found that a scalable, remotely-delivered intervention achieved significant and meaningful weight loss over 24 months compared to a usual care control group, with results that were statistically comparable to an in-person-based intervention also tested in the study and designed with the same principles. Given that results from clinical trials in research settings do not necessarily translate to larger scaled delivery of interventions, the objective of this study is to evaluate a pilot-implementation of Innergy, a weight loss program designed to replicate the remote-arm of the POWER trial that provided online support and regular telephonic coaching. An intention-to-treat retrospective design evaluates weight loss within 6-months among 265 participants offered the program through their employer. The mean change in weight from baseline for the study group was -6.8 lbs. ($P < 0.0001$) and 23% of participants lost 5.0% or more of their initial starting weight. Greater weight loss was associated with greater levels of participation. Specifically, members who utilized a broader range of program support components, took more coaching calls, regularly used the website, and tracked their weight, food and exercise lost significantly more weight. Similarly, longer duration of active participation was associated with greater weight loss. Participants who interacted with the program into the final month of study lost an average of 11.5 lbs, 5.0% of their starting weight. Study results show that Innergy is an effective weight loss program that can be delivered at scale, and thus can have a broad-spanning impact on obesity.

Keywords: Obesity; Morbidity obesity; Life style; Weight Loss;

Introduction

The problem of obesity has grown dramatically in American society over the last two decades and is now one of our nation's major health threats. The prevalence of obesity has risen from 30.5% of the adult population in 1999-2000 to 35.7% in 2009-2010. Nearly 69% of the U.S. adult population can now be classified as overweight or obese [1]. With obesity comes the increased risk of a variety of serious health conditions, including hypertension, coronary artery disease, type 2 diabetes, stroke, certain types of cancers, and premature death. Recent research estimates that medical costs due to obesity reached to \$147 billion dollars in 2008 and that the medical costs of obese patients were, on average, \$1,429 higher than patients of normal weight [2]. Additionally those suffering from obesity can also face stigmatization and a reduced quality of life as additional consequences of having this undesired condition [3,4].

The National Health Interview Survey data has revealed that 24% of men and 38% of women are actively trying to lose weight, and together Americans spend over \$33 billion annually on weight-loss products and services. Interestingly, only one-third of those trying to lose weight reported eating fewer calories or exercising more [5]. Research has also shown that diets do not lead to sustained weight loss for the great majority of people. A review of lifestyle modification randomized controlled weight loss trials by Wadden et al. found that participants regained 30%-35% of their lost weight in the immediate year after the weight loss intervention [6]. A review of long-term outcomes of calorie-restricting diets found that one third to two thirds of dieters regain more weight than was lost on these diets [7]. Weight regain frequently continues until the participant's weight is near their starting point within the following three to four years [8]. Research has also shown that dieting and weight cycling (repeatedly losing and regaining weight) is a valid predictor of a person's future weight gain [9,10]. Some research points to evidence that weight cycling may be tied to increased

cardio-metabolic risk and adverse health outcomes [11-13]. Taken together, not only are most diets ineffective for sustained weight loss, the resulting weight cycling has the potential to cause harm.

Interestingly, while nearly all obese patients are aware that they need to lose weight, fewer than half report having had discussions about weight loss with their physician [14]. A reason for this may be that as many as 44% of physicians do not report feeling qualified to treat obesity, and fewer than half felt they were successful in helping patients lose weight [15]. The resulting inaction on the part of physicians has been referred to as "clinical inertia", in this case seeing nothing they can do to adequately address the obesity problems of their patients based on their knowledge and training related to obesity and effective treatments currently available [16].

Together this evidence indicates a need for a sound weight loss method for individuals trying to lose weight and as a tool for the primary care provider. The Innergy program was developed to help fill this void by offering a research-based strategy for creating long-term lifestyle changes that lead to achieving and maintaining meaningful weight loss.

Innergy is a 24-month program that provides comprehensive coaching and Web-based support for weight loss for scaled delivery. The program replicates an intervention tested and proven successful in

*Corresponding author: Elizabeth Y. Rula, PhD, Center for Health Research, Healthways, Inc, 701 Cool Springs Boulevard, Franklin, TN 37067, USA, Tel: 615-614-4921; Fax: 615-764-0343; E-mail: elizabeth.rula@healthways.com

Received January 20, 2014; Accepted March 10, 2014; Published March 13, 2014

Citation: Hamar B, Coberley C, Pope JE, Rula EY (2014) Initial Evaluation of a Scalable Lifestyle Program for Sustained Weight Loss. J Obes Wt Loss Ther S4: 005. doi:10.4172/2165-7904.S4-005

Copyright: © 2014 Hamar B, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

the Practice-based Opportunities for Weight Reduction (POWER) [17] weight loss trial conducted by researchers at Johns Hopkins University (JHU), a comparative effectiveness randomized clinical trial funded by the National Institutes of Health (NIH). The purpose of the POWER clinical trial was to test, relative to a usual care control group, two interventions designed to promote initial and sustained weight loss and differing in the delivery of coaching support, one remote and one in-person. The in-person group attended individual and group sessions delivered by health coaches at JHU whereas the remote support group received telephonic coaching from Healthways coaches. Both intervention groups had access to an interactive website. Control group members were also referred to the trial by their physician, met with a weight-loss coach at the time of randomization, and were provided with brochures and a list of recommended Web sites for weight loss.

Results from the POWER Trial showed that participants in both the in-person and remote support groups achieved and sustained clinically significant weight loss over the 24 month study period. The goal of the program was achievement of 5% weight loss, an amount associated with clinical benefits for the incidence and severity of diabetes and cardiovascular risk factors [18-22]. Results between the two intervention groups were not statistically different, while results of both intervention groups were statistically different from the control group ($P < 0.001$). The remote support group, specifically, lost an average of 10.1 lbs during the study period and 38.2% of the group lost 5% or more of their initial body weight.

The success of the remote support intervention in the POWER trial led to the collaborative development of Innergy by JHU and Healthways, which translated the web and phone support developed in the trial into a program applicable for scaled delivery. Relative to the POWER trial, Innergy broadened criteria for entry into the program and delivery of the intervention outside of a research setting required some program modifications. Therefore, this pilot study was conducted as an early evaluation of real-world effectiveness of the Innergy program in its first implementation for an employer population. Initial program outcomes included population weight loss within six-months and subgroup analyses to determine the impact of level of program engagement/participation on weight loss levels.

Methods

Program description

Innergy is a 2-year weight loss program that offers intensive support by phone from health coaches and through web and mobile applications. The primary features of the POWER trial remote support group including the type, content and frequency of intervention in the first six months are maintained in entirety in the Innergy program. Intervention details have been previously published; in brief, dietary and caloric recommendations are from the Dietary Approaches to Stop Hypertension (DASH) diet, and regular moderate-intensity physical activity is stressed (expected to build to at least 180 minutes per week) [17]. Experienced and specifically-trained health coaches with minimum qualifications of a bachelor's degree in nutrition or other health-related fields use behavioral intervention and motivational interviewing techniques to support and reinforce behavior change for lasting weight change.

Features of Innergy include frequent member – coach contact, education and guidance, realistic goal setting, self-reporting and accountability, and online social networking. Emphasis is placed on the self-monitoring of weight, calorie intake, and physical exercise through the program website that has other features including learning modules

that help to build member skills each week, dietary information with meal plans and recipes, personalized email reminders, a social support application, and progress reports with real-time feedback and visual displays. Members are encouraged to use the Innergy website or mobile application at least weekly to report weight, track food intake and physical activity.

Each member is assigned to a single health coach responsible for scheduling and delivering coaching calls to that member. Cadence of telephonic contact is weekly for the first three months of the program (30 minute calls), monthly for the remainder of the first year, and every 6 to 8 weeks in the second year (15 minute calls) based on the member's need.

Some modifications to the POWER remote-arm protocol were necessary to ensure scalability of the program and to meet expectations of organizations funding the program for their population (i.e., inclusivity considerations). In this pilot study, the enrollment process was less stringent than the trial and there was no process for determining commitment level as a prerequisite for enrollment. Enrollment was open to all Healthways employees, spouses / partners, and dependents age 21 and older with a body mass index (BMI) of 30 or above. POWER trial participants had to have one or more cardiovascular risk factors (hypertension, hypercholesterolemia, or diabetes) to be eligible for study inclusion whereas Innergy enrollment had no such requirement.

The POWER trial required members to make in-person clinic visits during the program to document weight at planned time points, whereas the Innergy program required only self-reported weights provided through the Innergy website in order to remove the barrier associated with scheduling and attending in-person visits. POWER trial participants who had challenges in making their appointed clinical visit were offered home visits in order to collect follow up study data. The POWER trial had quick re-engagement procedures for participants not staying engaged using automated email messages to members after 7-10 days without a website log-in and telephone calls to participants after 14 days without a log-in. This initial offering of Innergy did use reengagement phone calls to members after 14 and 30 days without a log-in, however the process in this pilot was not as intensive in repeated attempts to track down those lost to follow up.

Comparing the actual program components, the POWER trial provided progress reports to participants' physicians that were not available to physicians of this pilot population. Innergy included a program support application for mobile devices and an online social support application that were not available through the POWER trial Website.

As opposed to typical weight loss programs, the Innergy program was offered at no cost to participants. In fact, participation was incentivized through monetary rewards in a health savings account. Additional incentive to join Innergy may have resulted from benefits policy changes intended to promote employee health through a premium health plan option and lower monthly health premiums for employees with a BMI below 30 and/or who were enrolled in an available weight program.

Study design

An intention-to-treat pre-post retrospective study design was selected to evaluate weight loss results of Healthways Innergy participants 6 months after the enrollment period. Innergy participants were defined as follows for the purposes of this study: (1) Healthways colleagues, spouses, or dependents, (2) age 21 or older, (3) enrolled

in Innergy during July, 2012, and (4) two or more weight records reported on the Innergy website (minimum necessary to calculate weight change). The goal was to be as inclusive as possible to obtain a realistic assessment of program effectiveness; therefore, no minimum participation criteria were used beyond the requirement for two weight records. All enrollments were completed on the Innergy website and, thus, availability of internet access was assumed for enrolled members.

A main objective of the study was to determine the initial effectiveness of the Innergy program by evaluating weight change among participants (pounds and percent) from first weight record to last weight record. Starting weight (baseline) was collected at the time of enrollment and members were expected to weigh themselves and report their weight online at least weekly. The program did not require weigh-in at fixed intervals to eliminate this potential barrier to participation and program scalability; therefore, only self-reported weights were available for this analysis. Although studies have reported imprecision in self-reported weights at the individual level, any difference from measured weights is typically of small magnitude (<1 kg) [23-25], and self-reported weights have been concluded as sufficient for epidemiological studies of disease biomarkers [23], and in studies of surgical weight loss intervention [26].

The final weight record represents the last weight reported by each participant during the study period. Therefore, the time duration between first and last weight entry varies as a result of some enrollees discontinuing active participation before the end of the 6-month assessment period. To better understand the relationship between sustained participation and weight loss, the average duration of participation (days between first and last weight record) was evaluated. Additionally, weight change was assessed with respect to the month of last interaction, after which participants were lost to follow up.

Additional sub-analyses were conducted to explore the relationship between the level of member engagement and amount of weight loss to test the hypothesis that higher engagement is associated with increased weight loss. To determine how the availability and use of the multiple program channels impacts weight loss, a multi-modal engagement count metric was developed. Median counts using all participation records (number of interactions by member) in the study period were obtained for each of the following engagement modes: website logins, food tracking, weight tracking, physical activity tracking, and telephone calls. Members were given 1 point for each mode for which their record count (e.g., total number of website logins) was above the median record count for the study population. The developed multi-modal engagement count is the sum of the points across the five modes, and thus ranges from 0 to 5.

The association of weight loss with health behavior changes was evaluated by scoring Well-Being Assessment items about diet and exercise (healthy behavior score) on a 1 to 100 scale as previously described [27] using data collected in January of 2012 and 2013, available for 192 of the 265 study members.

Statistical comparisons of weight change were conducted using the one-sample t-test. One-way analysis of variance (ANOVA) was used to compare weight change across members grouped by their level of engagement; however, the non-parametric Kruskal Wallis test was applied in engagement group comparisons when parametric test assumptions were of question. Health behavior score changes from 2012 to 2013 were categorized into three change groups (decrease, no change, and increase) and used as a categorical predictor of percent of weight lost using a general linear model while adjusting for other significant predictors, relationship status and race.

Results

There were 265 Innergy members that fulfilled the study inclusion requirements and that represent the full study population. Population characteristics are shown in Table 1. The mean change in weight from baseline for the study group was -6.8 lbs. (95% confidence interval [CI], -8.0 to -5.7, $P < 0.0001$). The mean percent change in weight for the entire study group was -3.0% (95% CI, -3.5% to -2.5%; $P < 0.0001$). On average, there were 91.8 days between members initial reported weight and last reported weight. No significant differences were noted in the comparison of weight loss or the percentage of weight lost between genders (male or female), age groups (21-34, 35-44, 45-54, 55+), chronic condition status (yes or no), or in regard to job type (corporate or call center).

Table 2 displays study group members grouped by ranges of percent of weight lost. Sixty of the 265 study members (23%) lost 5.0% or more of their initial starting weight within 6 months. On average these members lost 19.7 lbs., 8.7% of their starting weight. There was a clear trend in which groups with higher weight loss had a longer duration between first and last weight reported, suggesting a relationship between sustained participation and successful weight loss.

The relationship between Innergy phone coaching calls and weight loss was evaluated by grouping participants by the number of successful phone calls with their health coach (Figure 1). Study members who completed a greater number of health coaching calls lost, on average, a greater percentage of weight than members with no health coaching telephone calls (model $P < 0.0001$). To continue the evaluation of how participation in specific modes of support offered by the Innergy program are related to level of weight loss, the average percent weight loss was evaluated among members grouped by the number of times they recorded their weight on the Innergy website (Figure 2). Results show a significant association between the number of weight tracking

Variable	N (%)
Mean Age (SD)	47.6 (11.1)
Age Group	
21 - 34	38 (14.3)
35 - 44	62 (23.4)
45 - 54	83 (31.3)
55+	82 (30.9)
Female	210 (79.2)
Mean Starting Weight (SD)	229.0 (45.0)
Mean Starting BMI* (SD)	36.9 (7.2)
Worker Status	
Colleague	237 (89.4)
Spouse / Partner	27 (10.2)
Dependent	1 (0.4)
Reported Medical Condition	
Diabetes	23 (8.7)
Pre-Diabetes	15 (5.7)
High Blood Pressure	84 (31.7)
Low HDL Cholesterol	48 (18.1)
High Total or LDL Cholesterol	77 (29.1)
Osteoarthritis	53 (20.0)
Depression	45 (17.0)
Sleep Apnea	40 (15.1)

*Available for 213 of 265 study members who reported height SD, standard deviation.

Table 1: Study population characteristics (N = 265 unless otherwise noted).

Weight Loss Group	N (%)	Metric	Mean	SD	95% CI
less than 1%	82 (30.9)	Weight change (lbs.)	1.7	5.6	0.5, 3.0
		Weight change (%)	0.8%	2.3%	0.3%, 1.3%
		First to last weight (days)	58.3		
1.0-1.9%	36 (13.6)	Weight change (lbs.)	-3.1	0.1	-3.3, -2.8
		Weight change (%)	-1.4%	0.3%	-1.5%, -1.3%
		First to last weight (days)	79.7		
2.0-2.9%	43 (16.2)	Weight change (lbs.)	-6.0	1.7	-6.5, -5.4%
		Weight change (%)	-2.4%	0.3%	-2.5%, -2.3%
		First to last weight (days)	81.2		
3.0-3.9%	24 (9.1)	Weight change (lbs.)	-8.2	1.6	-8.8, -7.5
		Weight change (%)	-3.4%	0.3%	-3.5%, -3.3%
		First to last weight (days)	86.2		
4.0-4.9%	20 (7.5)	Weight change (lbs.)	-10.7	3.0	-12.1, -9.2
		Weight change (%)	-4.5%	0.3%	-4.6%, -4.4%
		First to last weight (days)	122.9		
5.0% +	60 (22.6)	Weight change (lbs.)	-19.7	9.0	-22.0, -17.4
		Weight change (%)	-8.7%	3.5%	-9.6%, -7.8%
		First to last weight (days)	144.3		

SD, standard deviation; 95% CI, 95 percent confidence interval

Table 2: Weight change statistics of the study population grouped by ranges of percentage reported weight loss.

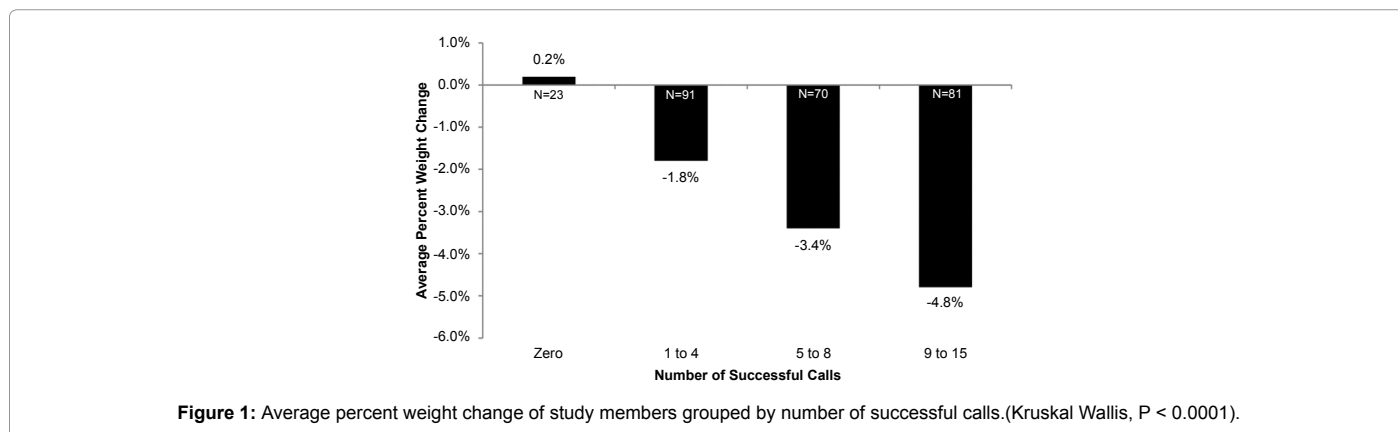


Figure 1: Average percent weight change of study members grouped by number of successful calls.(Kruskal Wallis, P < 0.0001).

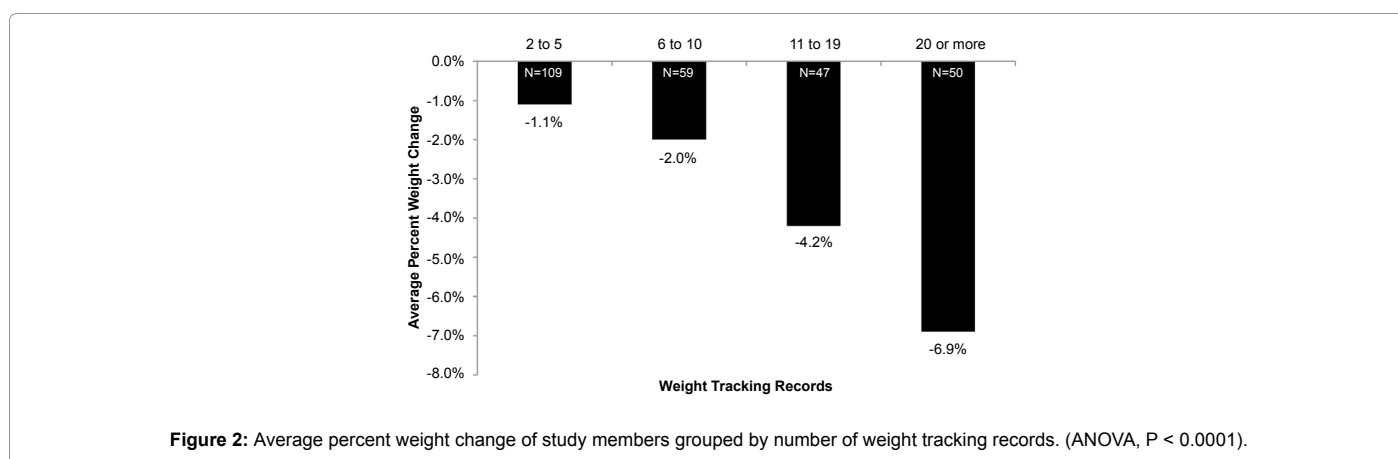


Figure 2: Average percent weight change of study members grouped by number of weight tracking records. (ANOVA, P < 0.0001).

records and the percent of weight loss during the study period (model P<0.0001). A similar linear relationship was seen when food tracking records were evaluated (data not shown, model P<0.0001). Together these results indicate that each of these program channels supported weight loss, with greater levels of engagement in a given program component associated with more weight loss.

Comprehensive engagement and its relationship with weight loss was evaluated by assigning each member a score based on number of program support modes (coaching calls, website logins, weight reporting, food reporting, and activity/exercise reporting) in which that member participated above the population median level. Results, depicted in Figure 3, showed regular participation in the different

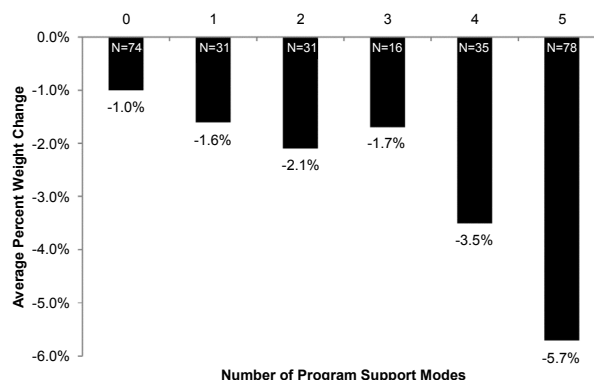


Figure 3: Average percent weight change of study members grouped by their program support modes score. Score was calculated by assigning 1 point for each mode (phone coaching, website logins, weight tracking, diet tracking, and exercise tracking) for which a member participated above the median number of times for the study population. (Kruskal Wallis, $P < 0.0001$).

Last Interaction Month	N (%)	Metric	Mean	SD	95% CI
July 2012	28 (10.6)	Weight change (lbs.)	0.0	8.3	-3.2, 3.3
		Weight change (%)	-0.1%	3.4%	-1.4%, 1.2%
		First to last weight (days)	13.2		
Aug 2012	38 (14.3)	Weight change (lbs.)	-3.3	4.0	-4.6, -2.0
		Weight change (%)	-1.5%	1.8%	-2.1%, -0.9%
		First to last weight (days)	32.8		
Sept 2012	18 (6.8)	Weight change (lbs.)	-3.2	4.4	-5.4, -1.1
		Weight change (%)	-1.3%	1.8%	-2.2%, -0.4%
		First to last weight (days)	47.3		
Oct 2012	19 (7.2)	Weight change (lbs.)	-5.6	5.0	-8.0, -3.2
		Weight change (%)	-2.6%	2.5%	-3.8%, -1.5%
		First to last weight (days)	84.5		
Nov 2012	56 (21.1)	Weight change (lbs.)	-5.5	7.1	-7.4, -3.6
		Weight change (%)	-2.3%	2.8%	-3.0%, -1.5%
		First to last weight (days)	89.3		
Dec 2012	106 (40.0)	Weight change (lbs.)	-11.5	11.6	-13.7, -9.3
		Weight change (%)	-5.0%	5.0%	-5.9%, -4.0%
		First to last weight (days)	143.9		

SD, standard deviation; 95% CI, 95 percent confidence interval

Table 3: Weight change statistics of the study population grouped by month of last interaction.

channels of support available, represented by higher multi-modal count, was associated with a higher percentage weight loss (model $P < 0.0001$).

Specific analysis to assess the importance of sustained program engagement focused on weight loss outcomes of study members grouped by their month of last interaction (Table 3). Their last interaction is defined as participating in a successful telephone call with their health coach or recording weight using the Innergy weight tracking capability. Forty percent of study members ($n=106$) showed engagement during the final month this study covered, losing on average of 11.5 lbs, 5.0% of their initial body weight. Therefore, members who maintained participation achieved, on average, the clinically-significant benchmark of 5% weight loss.

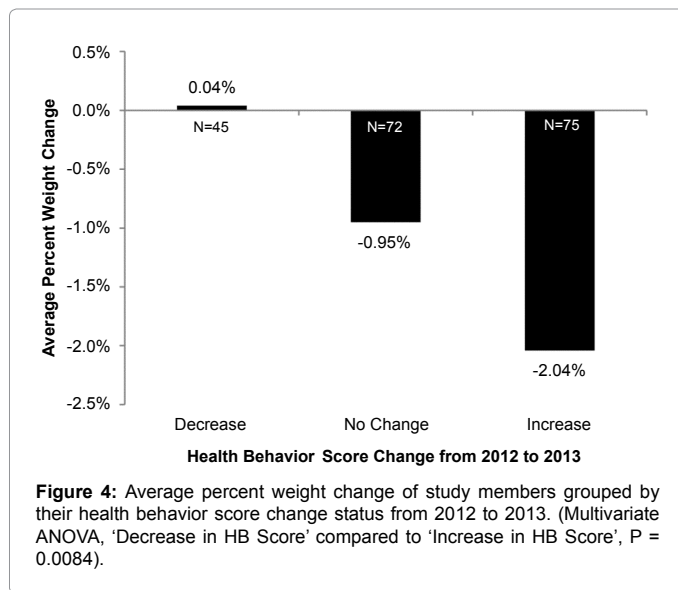
Figure 4 depicts the average percent of weight lost for member groups by their health behavior score change status from 2012 to 2013 (model $P=0.012$). Members who showed an increase in health behavior score lost weight, while members who reported a decrease in health behavior score displayed an average gain in weight ($P=0.0084$). All three survey questions that are a part of the health behavior score showed an increase from 2012 to 2013 in the percent of members responding favorably. The question asking members if they ate healthy yesterday,

including eating a diet low in fat with a healthy number of calories showed the most favorable increase.

Discussion

This pilot study of Innergy showed that the program is effective in supporting weight loss in a real world setting. Over the course of the 6-month evaluation period, Innergy participants demonstrated significant weight loss, with nearly 7 lbs mean weight loss, an average of 3.0% below their initial starting weight. This result was achieved absent any requirement that the participants remain active in the program for the full evaluation period, or for any set duration of that period.

A review of individual results showed that 205 of the 265 participants (77.4%) lost weight and 237 (89.4%) were at or below their initial starting weight at the end of the study period. This latter statistic compares to 85.3% of the remote support group in the POWER trial who were at or below their starting weight at the 6 month measurement. 23% of Innergy participants were at least 5.0% below their starting weight; this compares to 52.7% for the POWER trial remote support group at the six month time point and 38.2% at the 24 month time point [17].



These comparisons are noted in the context that this pilot study also served, essentially, as a beta test of the Innergy program. While the program was essentially the same as the POWER remote-intervention, the few differences, primarily to allow for program scalability, included a less-stringent enrollment process, the absence of a requirement for scheduled weight collection, and a less intensive and consistent re-engagement process and member follow-up after periods of inactivity in comparison to POWER.

Because Innergy required less effort on the part of participants for enrollment and follow up, the program may be considered more inclusive and thus the pilot population may have represented a less motivated group than the participants recruited for the POWER trial. This was evidenced by the fact that the median number of contacts for the remote support group in the POWER trial was very close to the goal. For example the median number of coach contacts was 14, compared to the goal of 15. Therefore, analyses were conducted to determine the relationship between different measures of engagement with level of weight loss to determine whether participants with more recorded contacts with the program, as was the case in the POWER trial, lost a greater amount of weight. Results consistently supported that both the level and duration of participation increases probability for successful weight loss. Members who stayed engaged through the end of the study period, as identified by their last documented month of interaction (Table 3), achieved significant mean weight loss of 5.0% -- an amount associated with clinical benefit [18-22]. Contacts in the form of coaching calls and online weight and food tracking each showed significant positive associations with weight loss. Additionally, members who routinely used the multiple provided channels for support and self-management had a greater weight loss when compared to members who used fewer of these channels, indicating the value of a multi-modal intervention.

Analysis of WBA health behavior score change showed that Innergy participants who made larger changes in their health behaviors over the course of a year lost more weight. Conversely, members with health behavior scores that decreased showed a small amount of weight gain on average, as expected. These results indicate that health behavior change as measured by the WBA is an indicator of success in the Innergy program.

Outside of the current study and the POWER trial, there has been relatively little research conducted to determine weight loss outcomes for remotely-delivered, multi-modal programs. Similar to POWER trial results, past research documents the benefits of extended contact through member participation in weight maintenance group sessions after completing an initial 16 to 26 week weight loss program [8,28,29]. There is also research to support the benefits of different components/modalities in studies of less comprehensive weight loss programs.

Wadden and Butryn postulate that extended contact provides participants needed support and motivation to practice such behaviors as keeping food records and incorporating regular physical activity into their lives [30]. A small scale study by McTigue et al. demonstrates the benefit of translating lifestyle interventions used in the Diabetes Prevention Program into an internet on-line format along with 'as-needed' lifestyle coach interaction in support of participants and their quest for weight loss [31]. A small-scale randomized trial conducted by Leahey and Wing on the use health coaching in a behavioral weight loss program shows significant weight loss in participants who interact with professional health coaches [32].

The use of telephone calls for the delivery of health related programs is gaining more acceptance and use as this approach can be both effective and efficient in terms of cost and time. A review of research provides evidence that telephone calls in support of chronic disease member populations are effective in larger scale disease management programs, resulting in better adherence to diabetes management methods and in mitigating hospital admissions and readmissions [33-35]. More recent studies of telephonic weight loss programs show positive results in support of participant weight loss and less weight regain [36-39]. The POWER trial and the current study extend prior research by evaluating multiple modes, including telephonic support, within a comprehensive intervention. The results of the current study support that a variety of different channels can not only be delivered at scale, but can help achieve significant weight loss among obese individuals.

As intended, this initial implementation provided a learning environment to help identify specific areas for program modifications to optimize engagement and outcomes. During the course of the pilot, technical issues were identified and resolved and it is unclear the extent to which these initial glitches impacted engagement and outcomes. Evaluation of participation levels and associated outcomes has revealed the importance of enrolling members ready to participate in Innergy and open to change. Accordingly, an introductory call has been added to the program to ensure that prospective participants are informed of program details at the outset to set expectations appropriately and reduce early program drop-out. Finally, consistent messaging and follow-up processes have been initiated and improved to re-engage members with brief lags in participation. Given that regular and sustained engagement is critical for success, these program modifications should further improve the potential of Innergy participants to achieve significant and lasting weight change.

Limitations

This study relied on self-reported weight only because there was no requirement for members to attend a scheduled weigh in. Prior research has indicated that individuals undergoing weight loss intervention self-report weight within 1 kg of measured weight, a smaller difference than has been shown in general population studies, leading to the conclusion that self-reported weights can be used in weight loss studies when measured weights are not available [40]. Each study member's last reported weight was used in determining

their change in weight, regardless of the date relative to the end of the 6-month study period. Further analysis will be needed to evaluate if this initial cohort of Innergy members sustain and continue to lose weight during the remaining 18 program months. Given that only one employee population representing the healthcare management sector was represented in this pilot study, it is unknown if these results are generalizable. Finally, future research should evaluate the program following program modifications stemming from results and insights from this initial evaluation.

Conclusions

This initial pilot study of six-month Innergy outcomes demonstrates that members achieved significant weight loss. These results of the Innergy program indicate that this scaled version of the POWER trial intervention maintains effectiveness. Increased levels of member engagement with Innergy were associated with incrementally greater success in weight loss. Study members who remained engaged for the entire study period achieved an average loss of 5.0% of their initial starting weight. The study provides compelling evidence that sustained and multi-modal member engagement is crucial in affording the greatest opportunity to the Innergy participant in attaining significant and sustained weight loss. Additionally, modest changes planned for Innergy related to the important concepts of enrolling members ready for change and better employment of methods to maintain member engagement should help to assure greater program success. Overall, results show that Innergy is an effective, scalable solution for improving population health through sustained weight loss.

References

1. National Center for Health Statistics (2013) Health, United States, 2012: With Special Feature on Emergency Care. Hyattsville, MD.
2. Finkelstein EA, Trogden JG, Cohen JW, Dietz W (2009) Annual Medical Spending Attributable to Obesity: Payer- and Service-Specific Estimates. *Health Aff* 28: w822-w831.
3. National Heart, Lung, and Blood Institute (1998) Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda, MD.
4. US Department of Health and Human Services (2001) The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity. Rockville, MD.
5. Kruger J, Galuska DA, Serdula MK, Jones DA (2004) Attempting to lose weight: specific practices among U.S. adults. *Am J Prev Med* 26: 402-406.
6. Wadden TA, Butryn ML, Byrne KJ (2004) Efficacy of lifestyle modification for long-term weight control. *Obes Res* 12 suppl: 151S-62S.
7. Mann T, Tomiyama AJ, Westling E, Lew AM, Samuels B, et al. (2007) Medicare's search for effective obesity treatments: Diets are not the answer. *Am Psychol* 62: 220-33.
8. Jeffery RW, Drewnowski A, Epstein LH, Stunkard AJ, Wilson GT, et al. (2000) Long-term maintenance of weight loss: current status. *Health Psychol* 19: 5-16.
9. Kroke A, Liese AD, Schulz M, Bergmann MM, Klipstein-Grobusch K, et al. (2002) Recent weight changes and weight cycling as predictors of subsequent two year weight change in a middle-aged cohort. *Int J Obes Relat Metab Disord* 26: 403-9.
10. Lowe MR, Annunziato RA, Markowitz JT, Didie E, Bellace DL, et al. (2006) Multiple types of dieting prospectively predict weight gain during the freshman year of college. *Appetite* 47: 83-90.
11. Beavers DP, Beavers KM, Lyles MF, Nicklas BJ (2013) Cardiometabolic risk after weight loss and subsequent weight regain in overweight and obese postmenopausal women. *J Gerontol A Biol Sci Med Sci* 68: 691-698.
12. Beavers KM, Lyles MF, Davis CC, Wang X, Beavers DP, et al. (2011) Is lost lean mass from intentional weight loss recovered during weight regain in postmenopausal women? *Am J Clin Nutr* 94: 767-774.
13. French SA, Folsom AR, Jeffery RW, Zheng W, Mink PJ, et al. (1997) Weight variability and incident disease in older women: the Iowa Women's Health Study. *Int J Obes Relat Metab Disord* 21: 217-223.
14. Potter MB, Vu JD, Croughan-Minihane M (2001) Weight management: what patients want from their primary care physicians. *J Fam Pract* 50: 513-518.
15. Jay M, Kalet A, Tavinder A, McMacken M, Messito MJ, et al. (2009) Physician attitudes about obesity and their associations with competency and specialty: a cross-sectional study. *BMC Health Services Research* 9: 106.
16. Phillips LS, Branch WT, Cook CB, Doyle JP, El-Kebbi IM, et al. (2001) Clinical inertia. *Ann Intern Med* 135: 825-834.
17. Appel LJ, Clark JM, Yeh HC, Wang NY, Coughlin JW, et al. (2011) Comparative effectiveness of weight-loss interventions in clinical practice. *N Engl J Med* 365: 1959-1968.
18. Neter JE, Stam BE, Kok FJ, Grobbee DE, Geleijnse JM (2003) Influence of weight reduction on blood pressure: a meta-analysis of randomized controlled trials. *Hypertension* 42: 878-884.
19. The Look AHEAD Research Group (2010) Long-term effects of a lifestyle intervention on weight and cardiovascular risk factors in individuals with type 2 diabetes mellitus: four-year results of the Look AHEAD trial. *Arch Intern Med* 170: 1566-1575.
20. Wood PD, Stefanick ML, Dreon DM, Frey-Hewitt B, Garay SC, et al. (1988) Changes in plasma lipids and lipoproteins in overweight men during weight loss through dieting as compared with exercise. *N Engl J Med* 319: 1173-1179.
21. The Trials of Hypertension Prevention Collaborative Research Group (1997) Effects of weight loss and sodium reduction intervention on blood pressure and hypertension incidence in overweight people with high-normal blood pressure: The trials of hypertension prevention, phase II. *Arch Intern Med* 157: 657-667.
22. Knowler WC, Barrett-Connor E, Fowler SE, Hamman RF, Lachin JM, et al. (2002) Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 346: 393-403.
23. McAdams MA, Van Dam RM, Hu FB (2007) Comparison of self-reported and measured BMI as correlates of disease markers in US adults. *Obesity* 15: 188-196.
24. Merrill RM, Richardson JS (2009) Validity of self-reported height, weight, and body mass index: findings from the National Health and Nutrition Examination Survey, 2001-2006. *Prev Chronic Dis* 6:A121
25. Pursey K, Burrows TL, Stanwell P, Collins CE (2014) How accurate is web-based self-reported height, weight, and body mass index in young adults?. *J Med Internet Res* 16: e4.
26. Christian NJ, King WC, Yanovski SZ, Courcoulas AP, Belle SH (2013) Validity of self-reported weights following bariatric surgery. *JAMA* 310: 2454-2456.
27. Prochaska JO, Evers KE, Castle PH, Johnson JL, Prochaska JM, et al. (2012) Enhancing multiple domains of well-being by decreasing multiple health risk behaviors: a randomized clinical trial. *Popul Health Manag* 15: 276-286.
28. Perri MG, Corsica JA (2002) Improving the maintenance of weight lost in behavioral treatment of obesity. In: Wadden TA, Stunkard AJ (Eds.), *Handbook of Obesity Treatment*. New York: Guilford Press, 357-379.
29. Perri MG, McAllister DA, Gange JJ, Jordan RC, McAdoo G, et al. (1988) Effects of four maintenance programs on the long-term management of obesity. *J Consult Clin Psychol* 56: 529-534.
30. Wadden TA, Butryn ML (2003) Behavioral treatment of obesity. *Endocrinol Metab Clin North Am* 32: 981-1003.
31. McTigue KM, Conroy MB, Hess R, Bryce CL, Fiorillo AB, et al. (2009) Using the internet to translate an evidence-based lifestyle intervention into practice. *Telemed J E Health* 15: 851-858.
32. Leahey TM, Wing RR (2013) A randomized controlled pilot study testing three types of health coaches for obesity treatment: professional, peer, and mentor. *Obesity* 21: 928-934.
33. Hamar B, Rula EY, Wells A, Coberley C, Pope JE, et al. (2013) Impact of a chronic disease management program on hospital admissions and readmissions in an Australian population with heart disease or diabetes. *Popul Health Manag* 16: 125-131.
34. Hamar B, Wells A, Gandy W, Haaf A, Coberley C, et al. (2010) The impact of a proactive chronic care management program on hospital admission rates in a German health insurance society. *Popul Health Manag* 13: 339-345.

35. Coberley C, Hamar B, Gandy B, Orr P, Coberley S, et al. (2007) Impact of telephonic interventions on glycosylated hemoglobin and low-density lipoprotein cholesterol testing. *Am J Manag Care* 13: 188-192.
36. Madigan CD, Aveyard P, Jolly K, Denley J, Lewis A, et al. (2013) Regular self-weighing to promote weight maintenance after intentional weight loss: a quasi-randomized controlled trial. *J Public Health (Oxf)* [Epub ahead of print].
37. Terry PE, Seaverson EL, Grossmeier J, Anderson DR (2011) Effectiveness of a worksite telephone-based weight management program. *Am J Health Promot* 25: 186-189.
38. Eakin EG, Reeves MM, Winkler E, Healy GN, Dunstan DW, et al. (2013) Six-month outcomes from living well with diabetes: a randomized trial of a telephone-delivered weight loss and physical activity intervention to improve glycemic control. *Ann Behav Med* 46: 193-203.
39. Pellegrini CA, Verba SD, Otto AD, Helsel DL, Davis KK, et al. (2012) The comparison of a technology-based system and an in-person behavioral weight loss intervention. *Obesity (Silver Spring)* 20: 356-363.
40. Christian NJ, King WC, Yanovski SZ, Courcoulas AP, Belle SH (2013) Validity of self-reported weights following bariatric surgery. *JAMA* 310: 2454-2456.

Citation: Hamar B, Coberley C, Pope JE, Rula EY (2014) Initial Evaluation of a Scalable Lifestyle Program for Sustained Weight Loss. *J Obes Wt Loss Ther* S4: 005. doi:[10.4172/2165-7904.S4-005](https://doi.org/10.4172/2165-7904.S4-005)

This article was originally published in a special issue, **Influence of Diet and Nutrition on Obesity** handled by Editor(s). Dr. Reza Hakkak, University of Arkansas for Medical Sciences, USA

Submit your next manuscript and get advantages of OMICS Group submissions

Unique features:

User friendly/feasible website-translation of your paper to 50 world's leading languages
Audio Version of published paper
Digital articles to share and explore

Special features:

350 Open Access Journals
30,000 editorial team
21 days rapid review process
Quality and quick editorial, review and publication processing
Indexing at PubMed (partial), Scopus, DOAJ, EBSCO, Index Copernicus and Google Scholar etc
Sharing Option: Social Networking Enabled
Authors, Reviewers and Editors rewarded with online Scientific Credits
Better discount for your subsequent articles

Submit your manuscript at: <http://www.omicsonline.org/submission>

