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A randomized controlled pilot study testing three types of health coaches for obesity treatment: Professional, Peer, and Mentor

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Abstract

Despite their popularity, empirical support for health coaches is limited. This study examined the feasibility and preliminary efficacy of 3 types of coaching models for obesity treatment. Participants (N=44) were randomized to 6 months of reduced intensity group behavioral weight loss (rBWL) plus 1 of 3 types of health coaches: a) Professional (rBWL interventionist); b) Peer (group members randomly paired and coached one another); or c) Mentor (successful weight loser). Groups met weekly for the first 6-weeks, biweekly for the next 6-weeks, and monthly thereafter, for a total of 12 meetings. During weeks that group did not meet, participants emailed their weight loss information to their coach and received feedback. Coaches were trained on appropriate coaching strategies and feedback delivery. Retention was 95%. Participants emailed their progress to their coach 10.8±1.9 out of the 12 weeks that there were no group meetings. Coaches responded with feedback 94% of the time. Percent weight losses at 6-months were 9.6±8.1, 9.1±5.0, and 5.7±5.6 for the Professional, Peer, and Mentor conditions, respectively. More participants in the Professional and Peer conditions lost 10% of their initial body weight (Professional: 56%; Peer: 50%; Mentor: 17%), with a statistically significant difference between the Professional and Mentor conditions (p=0.03). These preliminary data suggest that combining a reduced intensity BWL program with health coaching may hold significant promise as a cost-effective obesity treatment paradigm. Larger trials are needed to conclusively determine whether adding coaches improves weight loss outcomes in reduced intensity treatments and to examine which type of coach is most effective.

Keywords

obesity treatment; health coach; weight loss; peer; mentor; professional

Over the past few decades, researchers have compared the efficacy of lay versus professional interventionists for behavioral weight loss. Studies have shown that lay group

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leaders may be as effective as professionals [1, 2]. Thus, lay individuals are currently being used as a cost-effective method for the dissemination of behavioral weight loss interventions [3].

Unlike these earlier paradigms where lay or professional individuals are the sole provider of treatment, more recent models are testing lay and professional individuals as health coaches [4, 5]. In the health coach treatment model, health care professionals deliver treatment and health coaches are used to supplement treatment; between treatment visits, coaches provide ongoing support, accountability, and information to promote behavior change. Health coaching typically occurs via the Internet or over the phone. There are three main types of health coaches: Professionals, Peers, and Mentors. Professional health coaches are health care providers that offer pertinent health care information and support. For example, a diabetes educator may coach diabetic patients with goals of increasing self-management behaviors and improving glycemic control. Peer health coaches are individuals *currently* facing the health problem, who coach one another to promote health behavior change. For example, two patients newly diagnosed with diabetes may coach each other in lifestyle modification. Mentors, or master coaches, have *previously* faced the health situation and have demonstrated that they are capable of *successfully* coping with the situation (e.g., diabetics with HbA_{1c} levels > 7% coach newly diagnosed patients). Given their experience with the health problem, Peer health coaches and Mentors are thought to provide unique support, something not duplicated by professionals or family members [6].

Despite their increase in popularity, empirical support for health coaches is limited. The vast majority of the literature on health coaches is from non-randomized trials, studies with high levels of attrition, or studies with limited objective health-related outcome data [e.g., [7, 8], [9], [10]]. However, a few rigorous trials have been conducted and results suggest that adding coaches to treatment may enhance health outcomes. In a 6-month trial, Vale and colleagues (2003) found that compared to usual care alone, cardiac patients who received usual care plus Professional health coaches had significantly greater decreases in cardiovascular risk factors, including total cholesterol and LDL cholesterol [11]. To our knowledge, only two studies have evaluated the efficacy of different types of health coaches on health outcomes, one in the area of physical activity and the other for diabetes. In the physical activity (PA) trial [4], participants were randomized to one of the following: 1 PA session + Professional Coach, 1 PA session + Mentor, or control condition; participants in the Professional Coach and Mentor conditions had significantly greater increases in moderate or vigorous PA compared to the control condition but there was no difference between the two coach conditions (Professional: +178 MVPA min/week, Mentor: +216 MVPA min/week). Heisler and colleagues (2010) randomized patients with diabetes to a diabetes care group that involved either nurse care management with a Peer Coach or nurse care management alone and found that participants in the Peer condition had superior changes in HbA_{1c} at 6-months follow-up (−0.3% vs. +0.3%) [5]. Taken together, these results suggest that health coaches may be an effective approach for health behavior change; however, these results are inconclusive regarding which type of health coach is most effective for health promotion.

No studies have compared the three primary types of health coaches (Professional, Peer, and Mentor) in a randomized trial. Moreover, no one has examined health coaches for obesity treatment. Given the nature of the relationships created between coaches and patients, the three types of health coaches may be effective for different reasons: Professional coaches provide expert advice and information; Peers provide a non-hierarchical, reciprocal, supportive relationship for the facilitation of health behavior change; and Mentors offer patients hope and inspiration and effective modeling of optimal health behaviors. Thus, in the present study, obese individuals received a reduced intensity behavioral weight loss treatment and were randomized to one of three types of health coaches: Professional, Peer, or Mentor. Given that the literature on health coaching is in its infancy, with some studies showing that lay coaching may be as effective as professional coaching, combined with the fact that no one has tested the three types of health coaches for behavior change in general or for obesity treatment, no specific a priori hypothesis was made regarding the efficacy of the three types of coaches for weight loss. Instead, the primary aim of this trial was to determine the feasibility, acceptability, and preliminary efficacy of the three types of health coaches for obesity treatment.

Methods and Procedures

Participants

Forty-four obese individuals were recruited through advertisements placed in local newspapers or online. Given that similarity between health coaches and the individuals they coach has been shown to be important [12], we sought to maximize the similarity between participants and coaches by limiting the age and BMI range of individuals enrolled. The majority of participants who enter our trials are between 40 and 60 years of age, thus, we recruited individuals within this age range and limited our BMI range from 30 to 40 kg/m².

Individuals were excluded for current participation in a weight loss program; recent weight loss, defined as a 5% weight loss within the 6-months prior to screening; pregnancy; serious medical conditions; serious psychological disorders; or planned relocation. Participants who reported medical conditions that may interfere with their ability to safely complete the intervention or engage in regular physical activity were required to obtain written permission from their physician to participate in the study.

Study design

Forty-four participants received a reduced intensity behavioral weight loss program (rBWL), and were randomly assigned to one of the three coach conditions stratified within gender: Professional Coach (N=16), Peer Coach (N=16), or Mentor (N=12) (see Figure 1 for participant flow). In the Mentor condition, 6 Mentors were in attendance at each group session, thus, to maintain consistency in treatment group size, we limited the number of participants assigned to the Mentor condition to 12, for a total of 18 individuals at weekly group meetings. All individuals provided written informed consent to participate, and all study procedures were approved by an Institutional Review Board.

Interventions

Components common to all three conditions—All three treatment arms received 6-months of a reduced intensity group behavioral weight loss program [13]. Unlike typical BWL programs where participants meet weekly for 6-months, a tapered group meeting schedule was used; participants met weekly for the first 6-weeks, biweekly for the next 6-weeks, and monthly thereafter, for a total of 12, 1-hour group sessions. Per definitions provided by the US Preventive Services Task Force, this intervention is considered high intensity for the first 3 months and then medium intensity for the next 3-months [14]. During the 12 weeks the group did not meet, participants emailed their weight, calorie, fat gram, and physical activity information to their Professional Coach, Peer Coach, or Mentor, depending on condition assignment, and received feedback. During weeks 6 through 24, when group met, participants completed goal contracts with their coaches, setting weight loss, calorie, and activity goals to be obtained between treatment sessions.

All participants were given calorie goals of 1200 or 1500 kcal per day and 33 or 42 grams of fat (i.e. 25% kcal from fat) depending on initial body weight. Using a calorie and fat gram reference book, participants recorded and calculated their calorie and fat intake throughout the intervention. Participants were instructed to increase their minutes of activity gradually throughout the program until they reached 40-minutes on 5 days per week. All participants were given a weight loss goal of 1- to 2-pounds per week. Standard behavioral strategies were taught to promote the modification of diet and exercise habits including self-monitoring, stimulus control, problem solving, goal setting, assertiveness training, and relapse prevention. All intervention components were delivered by a clinical psychologist and a masters level interventionist with experience in behavioral weight loss.

Components that differed between the three conditions

Professional coach condition: One of the rBWL interventionists served as the Professional Coach. Given her experience conducting BWL treatment, significant training in content and feedback delivery was not necessary. However, she was provided with the rationale for health coaching and trained in the coach protocol. During weeks that group did not meet, participants in the Professional Coach condition emailed their weight, calorie, and activity information to the Professional Coach and received semi-automated feedback. Weekly feedback was dependent on whether participants met their 1-pound weight loss goal; participants in each category (met goal v. did not meet goal) received similar feedback.

Peer coach condition: Prior to treatment, Peer Coach participants were randomly paired (16 participants; 8 pairs) to coach and be coached by another member of their weight loss group. Peer coach pairings were announced at the first treatment session. During the first 6 sessions, in addition to learning BWL strategies, Peer Coach dyads engaged in brief relationship building activities shown to promote cohesive relationships among group members in BWL programs [15]. Moreover, during sessions 1 and 2, which lasted for 1 ½ hours, participants received Peer Coach manuals and received training in how to be an effective health coach. Peers were taught to (1) provide support and encouragement and (2) promote key behavioral weight loss strategies to help their partner meet their weight loss goals via weekly feedback. Feedback examples were given and role plays were conducted.

Peer Coach dyads were instructed to contact an interventionist if there were issues. To track program adherence and ensure appropriate email communication, Peer Coaches “cc’d” an interventionist on all email correspondence.

Mentor condition: Successful weight losers (i.e. mentors) were recruited to coach participants assigned to the Mentor condition. Six participants from one of our recent BWL programs who (1) agreed to be contacted for future studies, (2) had demographic characteristics (sex, age) similar to members randomized to the Mentor condition, and (3) lost at least 10% of their initial body weight and maintained a 10% weight loss were invited to mentor incoming participants. All mentors had completed 12-months of a BWL program and a total of 12-months had passed between their completion of the program and baseline assessments for the coach pilot. During their baseline assessment mentors had their weight verified.

Prior to the first treatment session mentors were given coaching manuals and completed a 1-hour training session. Given their success at weight loss and weight loss maintenance, their role as a positive, inspirational role model was stressed. Mentors were instructed to emphasize core BWL strategies and draw on their weight control experience when providing advice and encouragement to their mentees. Given that it is important for mentees to perceive their mentors as similar and their success as attainable, mentors were instructed to identify things they had in common with their mentees and share how they successfully managed weight loss hurdles. Primary mentorship roles were similar to those of Peer Coaches, including providing support and encouragement and promoting key BWL strategies via weekly feedback. Mentors were given examples of appropriate feedback. Mentors were instructed to contact study staff if issues arose.

After their training, each of the 6 mentors was randomly assigned to coach 2 participants assigned to the Mentor condition. Similar to the Peer Coach condition, during weeks 1 through 6, in addition to standard weight loss treatment, mentors and mentees engaged in relationship building activities. During weeks that group did not meet, mentees reported their progress to their mentors via email and received feedback. Mentors and mentees “cc’d” an interventionist on all email correspondence.

Dependent measures

Demographics: Prior to treatment, participants reported basic demographic information.

Weight, height, BMI: Weight was measured to the nearest 0.1-kg using a digital scale; height was measured to the nearest millimeter using a stadiometer. BMI was calculated with the formula weight in kg/height in meters². Percent weight loss was calculated as follows: $((\text{baseline weight} - \text{post-treatment weight}) / \text{baseline weight}) * 100$.

Adherence measures: Session attendance (mean and percentage), frequency of email communication between participants and coaches, dietary intake, and physical activity data were collected. Dietary intake was obtained from participants’ self-monitoring records. The Paffenbarger assessed minutes of physical activity per week [16].

Autonomous support: Autonomous support (affirming relationships that allow choice; AS) from health care providers has been shown to promote behavior change [17, 18]. The Climate Questionnaire, a widely accepted measure of AS [19], was modified for the present study. The original measure assesses AS received from physicians; thus, we replaced “physician” with “weight loss coach” in the instructions and in each item. Item scores range from 1 to 7. This questionnaire yields a mean score for all items; higher scores indicate greater AS. The original measure has excellent psychometric properties [19]. The adapted version also demonstrated excellent internal consistency and test-retest reliability ($\alpha=0.95$; $r=0.91$).

Program satisfaction: Participants reported overall program satisfaction and whether they would recommend the program to a friend. Each item was rated on a 7-point scale. Higher scores indicate greater program favorability.

Statistical analyses

Group differences on baseline characteristics and all dependent variables were examined using Analysis of Variance or chi-square tests for continuous or categorical variables, respectively. An intent-to-treat approach was used to compare the three conditions on percent weight loss where non-completers were assumed to have remained at their baseline weight. A priori contrasts were conducted to compare the three coach conditions on weight loss. Hierarchical linear modeling was used to examine the similarity in weight loss among peer coach dyads and among participants with the same mentor; an unconditional model was specified and an intraclass correlation coefficient (ICC) was computed using between and within group variance components ($ICC=U_0/U_0+R$). In addition, in order to provide a context for the ICCs produced in the Peer and Mentor conditions, we randomly paired participants in the Professional coach condition and examined the resulting ICC for weight loss. Correlations were conducted to examine the relationship between participant weight change and coach support.

Results

Participant characteristics and feasibility of weight loss coaches

There were no significant differences between Professional, Peer, and Mentor participants on baseline characteristics (see Table 1). Participants in all three conditions were highly adherent to the treatment protocol. Number of group meetings attended (out of a possible 12) did not differ between the three arms (Professional: 10.1 ± 3.0 , or 84%; Peer: 9.9 ± 1.3 , or 83%; Mentor: 10.3 ± 2.8 , or 86%; $p=0.92$). Participants emailed their progress to their coach 10.8 ± 1.9 out of the 12 weeks that there were no group meetings, with no difference between conditions (Professional: 11.0 ± 1.9 ; Peer: 10.7 ± 2.1 ; Mentor: 10.7 ± 1.7 ; $p=0.89$). Coaches responded with feedback 94% of the time (Professional: 100%; Peer: 90%; Mentor: 92%). Completion of post-treatment assessments was excellent (95%) and did not vary by condition (Professional: 88%; Peer: 100%; Mentor: 100%; $p=.16$).

Preliminary efficacy of weight loss coaches

There were differences in weight losses produced by the three coach conditions (see Figure 2). Participants in the Professional and Peer Coach conditions lost 9.6 ± 8.1 and 9.1 ± 5.0 percent of initial body weight, respectively. In contrast, the Mentor condition produced a weight loss of only 5.7 ± 5.6 percent. However, given the pilot nature of this study and associated small sample size, these effects were not statistically significant ($F(2,41)=1.4$, $p=0.26$). Completer analyses revealed a significant difference in percent weight loss between Professional Coaches and Mentors ($10.9 \pm 1.8\%$ v. $5.7 \pm 5.6\%$; $F(1,24)=3.8$, $p=0.04$). Finally, whereas only 17% of Mentor participants lost 10% of their initial body weight, 56% of participants in the Professional coach condition ($p=0.03$) and 50% of participants in the Peer coach condition ($p=0.08$) lost at least 10% of initial body weight.

Weight losses were similar among Peer Coach dyads and among participants with the same mentor. The ICC for weight change among Peer Coaches was 0.21. Likewise, participants coached by the same mentor had similar weight losses ($ICC=0.26$). In contrast, to provide a context for these effects, we randomly paired participants in the Professional Coach condition and conducted ICC analyses and found no intraclass correlation ($ICC=0.00$). ICCs greater than 0.15 are considered large [20]; therefore, the ICCs produced suggest that Peer Coaches influenced each other's weight loss during the intervention and that Mentors tended to produce similar weight loss results in their mentees.

Effects of coaching on adherence to diet and physical activity prescriptions

The three conditions did not differ in kcal or percent of calories from fat (kcal: Professional: 1416.1 ± 214.7 , Peer: 1299.8 ± 120.3 , Mentor: 1318.1 ± 132.7 , $p=0.23$; % fat: Professional: 23.8 ± 6.5 , Peer: 23.2 ± 4.2 , Mentor: 24.6 ± 5.1 , $p=0.82$), nor did they differ in change in physical activity minutes per week (Professional: $+179.6 \pm 198.4$, Peer: $+100.0 \pm 93.7$, Mentor: $+46.9 \pm 123.2$, $p=0.16$). There were no significant differences in percentage of participants meeting the physical activity goal (i.e. 200 min/week) in the three conditions (Professional: 38%, Peer: 44%, Mentor: 17%, $p=0.34$).

Effects of coaching on process variables

There was a significant difference between conditions in autonomous support (AS) ($F(2,39)=3.9$, $p=0.03$). Participants in the Professional coach condition reported receiving significantly more AS from their coach compared to participants in the Mentor condition (6.6 ± 0.4 v. 5.4 ± 1.6 ; $p=0.008$), with the Peer Coach condition in the middle and not significantly different from the other two (6.0 ± 1.0 ; p 's > 0.15). Interestingly, there was an overall positive association between AS and weight loss ($r=0.38$, $p=0.015$); this association was also found in all 3 coach conditions (Professional: $r=0.38$; Peer: $r=0.42$; Mentor: $r=0.41$).

The three conditions did not differ on any program satisfaction items. Ratings of overall satisfaction and willingness to recommend the program to a friend both approached the maximum level of 7.0 in all treatment arms (Satisfaction: Professional: 6.2 ± 1.5 , Peer: 6.5 ± 1.1 , Mentor: 6.4 ± 0.7 , $p=0.84$; Recommend: Professional: 7.0 ± 0.0 , Peer: 6.8 ± 0.4 , Mentor: 6.8 ± 0.6 , $p=0.27$).

Effects of coaching on Mentors

Six successful weight losers (i.e. Mentors) coached participants in the Mentor condition. Mentors were predominantly female (83%), White (100%), college-educated (67%), and had a mean age and BMI of 53.8 ± 6.4 years and 28.9 ± 3.3 kg/m² at program entry. Mentors attended 10.5 ± 1.2 , or 88%, of the 12 treatment sessions and 100% completed the study.

Prior to beginning this study, Mentors had achieved an impressive weight loss of $19.9 \pm 5.5\%$ in a 12-month behavioral weight loss program. However, they had experienced weight regain between their participation in the initial weight loss program and the beginning of the coach pilot ($+4.4\% \pm 2.0$), which continued during the coach pilot intervention ($+3.1\% \pm 3.6$). Despite this regain, Mentors managed to maintain a clinically significant weight loss of $12.3 \pm 6.2\%$ of initial body weight at the end of their participation in the present study. We conducted exploratory analyses to determine whether mentors' weight change during the intervention was associated with their mentees' weight change and there was a negative association ($r = -0.27$), suggesting that mentors who regained the most weight actually had the most successful participants.

Discussion

The purpose of this randomized controlled pilot study was to test the feasibility and preliminary efficacy of 3 types of health coaches for obesity treatment. All participants received a reduced intensity behavioral weight loss program (rBLW) that met 12 times over the course of 24-weeks and 1 of 3 types of health coaches: Professional, Peer, or Mentor. Participants reported their weekly weight, calorie, and activity information to their coach during weeks that group did not meet and received feedback. Results suggest that health coaches for obesity treatment are feasible and that incorporating coaches into a reduced intensity treatment may yield weight losses comparable to more intensive programs that involve weekly group sessions.

Given that no studies to date have tested health coaches for obesity treatment and that no one has examined which type of health coach, Professional, Peer, or Mentor, would be most appropriate for weight loss, we first sought to determine the feasibility and acceptability of each approach. Participants in all three conditions were highly adherent to the coaching protocol. Moreover, participants reported being quite satisfied with the programs. Thus, Professional, Peer, and Mentor health coaches are all feasible and acceptable approaches to weight loss treatment.

Traditional BWL programs involve weekly face-to-face treatment for 24 weeks and yield weight losses of 8 to 10% [21]. We showed that combining a reduced intensity BWL program that involved half the sessions of traditional treatment with Professional, Peer, or Mentor health coaches yields clinically significant weight losses (9.6%, 9.1%, and 5.7%, respectively), with the Professional and Peer conditions achieving weight losses comparable to those of traditional treatment. These preliminary results suggest that Professional and Peer Coaches may be superior to Mentors. However, previous research has shown that successful weight losers (e.g., Mentors) as group leaders produce weight losses comparable to Professionals [1]. Moreover, community-based programs, such as Trevoze and Weight

Watchers, use successful weight losers to deliver treatment and yield impressive results [22, 23]. While not the same paradigm (Mentors as interventionists v. Mentors as coaches) these prior findings combined with the pilot nature of this study indicate that additional research is needed to draw definitive conclusions regarding the efficacy of Mentor Health Coaches for obesity treatment. Future research may also consider manipulating the Mentor-Mentee ratio to determine which ratio yields the best treatment outcomes.

Similar weight losses were achieved among peer dyads and among mentees randomized to the same mentor. These results are consistent with Heisler's (2010) findings in patients with diabetes; peer coach dyads achieved similar changes in HbA_{1c}. Similar findings have also been shown in BWL studies that involved friends or family in treatment. Wing and Jeffery (1999) enrolled individuals and their friends in a BWL intervention that included social support components and found a weight loss ICC of 0.35 among friendship clusters [24]. Thus, consistent with previous findings, our results suggest that social influence occurs among peer coaches and among mentors and mentees. Understanding exactly how peer coaches influence one another and how mentors influence their mentees, whether through social support or some other social influence factor, may be important to maximize the effects of lay health coaches in obesity treatment.

Our findings for autonomous support (AS) paralleled our weight loss results; participants in the Professional condition reported the highest level of AS, Mentor participants reported the lowest, and Peers were in the middle. AS is a measure of health care providers' ability to provide emotional support and offer health care choices [17–19]. Thus, the high levels of AS achieved by the Professional coach condition may result from the fact that Professional Coaches, as BWL interventionists, were trained in both the provision of emotional support and in empirically supported options for weight loss (i.e. offering viable choices). Consistent with other studies demonstrating that AS from health care providers is associated with health outcomes [25], AS in this study was associated with weight loss. Thus, future research may consider explicitly targeting AS when training health coaches.

Study limitations include a predominantly female and White sample and a small sample size of just one cohort of participants; it is possible that the Mentor condition was merely a "difficult cohort" and that their results may not be consistent with those obtained from a larger study with multiple cohorts. In addition, diaries were used to calculate dietary data and physical activity data were self-report. Finally, there was no control group; a treatment arm that received rBWL alone would have allowed us to examine the incremental benefit of health coaches. Strengths of this study are its randomized design and high adherence and completion rates. Moreover, this is the only study to compare the three primary types of health coaches and the only study to test health coaches for obesity treatment. This study provides preliminary evidence that reduced intensity BWL treatment plus health coaches may be feasible, effective, and possibly cost-effective for obesity treatment. Larger trials are needed to conclusively determine whether supplementing reduced intensity BWL treatment with health coaches improves outcomes and to examine which type of coach is most effective.

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Figure 1.
Study flow diagram.

Figure 2.
Participant weight loss.

Table 1

Participant baseline characteristics.

	Professional (n = 16)	Peer (n = 16)	Mentor (n=12)	p-value
Gender (Female n, %)	13 (81)	14 (88)	10 (83)	0.89
Age (years; M $\pm$ SD)	52.2 $\pm$ 5.6	54.6 $\pm$ 3.7	53.6 $\pm$ 3.8	0.32
Ethnicity n (%)				0.41
Hispanic	1 (6)	0 (0)	0 (0)	
Non-Hispanic	15 (94)	16 (100)	16 (100)	
Race n (%)				0.47
Caucasian	15 (94)	15 (94)	12 (100)	
African American	0	1 (6)	0	
Asian	1 (6)	0	0	
Education n (%)				0.40
Less than college	7 (44)	7 (44)	8 (67)	
College or more	9 (56)	9 (56)	4 (33)	
Weight (kg; M $\pm$ SD)	94.4 $\pm$ 10.1	93.6 $\pm$ 15.4	98.8 $\pm$ 14.6	0.57
BMI (kg/m²; M $\pm$ SD)	36.1 $\pm$ 3.1	35.2 $\pm$ 3.4	35.5 $\pm$ 3.3	0.75