

ORIGINAL ARTICLE

Perceived helpfulness of the individual components of a behavioural weight loss program: results from the Hopkins POWER Trial

A. T. Dalcin^{1,2}, G. J. Jerome^{1,3}, S. L. Fitzpatrick⁴, T. A. Louis⁶, N-Y. Wang^{1,2,6}, W. L. Bennett^{1,2,7}, N. Durkin¹, J. M. Clark^{1,2,5}, G. L. Daumit^{1,2,5,8}, L. J. Appel^{1,2,5}, J. W. Coughlin^{2,8}

¹Division of General Internal Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, USA; ²Welch Center for Prevention, Epidemiology and Clinical Research, Johns Hopkins University, Baltimore, MD, USA; ³Department of Kinesiology, Towson University, Towson, MD, USA; ⁴Department of Preventive Medicine, Rush University Medical Center, Chicago, IL, USA; ⁵Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA; ⁶Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA; ⁷Department of Population, Family and Reproductive Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA; ⁸Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, USA

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Address for correspondence: A Dalcin, Division of General Internal Medicine, Johns Hopkins University School of Medicine, 985 Overlook Drive Ashland, OR 97520, USA. E-mail: adalcin1@jhmi.edu

Summary

Background

Behavioural weight loss programs are effective first-line treatments for obesity and are recommended by the US Preventive Services Task Force. Gaining an understanding of intervention components that are found helpful by different demographic groups can improve tailoring of weight loss programs. This paper examined the perceived helpfulness of different weight loss program components.

Methods

Participants ($n=236$) from the active intervention conditions of the Practice-based Opportunities for Weight Reduction (POWER) Hopkins Trial rated the helpfulness of 15 different components of a multicomponent behavioural weight loss program at 24-month follow-up. These ratings were examined in relation to demographic variables, treatment arm and weight loss success.

Results

The components most frequently identified as helpful were individual telephone sessions (88%), tracking weight online (81%) and coach review of tracking (81%). The component least frequently rated as helpful was the primary care providers' general involvement (50%). Groups such as older adults, Blacks and those with lower education levels more frequently reported intervention components as helpful compared with their counterparts.

Discussion

Weight loss coaching delivered telephonically with web support was well received. Findings support the use of remote behavioural interventions for a wide variety of individuals.

Keywords: Motivational Interviewing, perceived helpfulness, primary care, weight loss.

Introduction

Obesity is a major public health problem affecting more than one-third of adults in the USA (1). Some groups, including Blacks, Hispanics, older adults and those with lower education are at higher risk of being obese (1–3). Given obesity's association with a number of serious medical comorbidities (4,5), effective treatments are needed that engage a wide variety of demographic groups.

Behavioural weight loss programs are effective first-line treatments for obesity (6–8) and are recommended

by the United States Preventive Services Task Force (USPSTF) (9) and in the 2013 Guideline for the Management of Overweight and Obesity by the American College of Cardiology/American Heart Association/The Obesity Society (6). Traditionally, these programs have multiple components and include behavioural strategies and goals, recommendations for self-monitoring and support from a coach either in group or one-on-one sessions. In order to broaden the reach of more traditional programs, behavioural weight loss programmes are now using technologies such as telephone, email and text messaging

(10,11). Web-based educational materials and self-monitoring tools are being used in conjunction with or in place of print materials in order to improve the flexibility of traditional approaches (12–15). Primary care providers (PCP) have also played both a primary and supportive role in behavioral weight loss efforts (16–21), and PCP services for weight loss are now reimbursable through the Centers for Medicare and Medicaid Services (CMS). Although the effectiveness of multicomponent approaches to obesity treatment has been demonstrated (7), less is known about participants' perceived helpfulness of the various components of these empirically supported programs.

Eliciting participants' perspectives regarding helpfulness of program components is an often-overlooked step in evaluating and improving behaviour change programs (22). Few studies report process evaluations that identify which aspects of these multicomponent programs participants found helpful. One study examined participants' ratings of weight loss website components and reported the highest satisfaction ratings for the information and self-monitoring features (23). Another study reported participant satisfaction ratings with components of a weight maintenance intervention; 76% of participants were satisfied with their telephone sessions and 91% with their in-person visits (24). Another study reported that 78% of participants were satisfied with the in-person counseling sessions that were part of a diabetes prevention program (25).

Results examining demographic differences in perceived helpfulness of behavioural weight loss programs are equivocal. Studies have reported that satisfaction with components of a weight management program differ by education level and gender. (24,26) Barte *et al.* reported that participants with a lower educational level were more frequently satisfied with their intervention telephone calls than were participants with more education. In the same study, men agreed more frequently than women that the advice they received about healthy eating was beneficial. Mattfeld-Beman *et al.* reported that women rated a majority of the intervention components useful compared with men. These authors also reported differences in satisfaction by race, with a higher percentage of Black than White participants finding feedback on their food records helpful (26). Another study reported no differences between age, gender or education level in overall satisfaction ratings of a telephone-based program (22). However, participants with more success in weight loss have consistently reported higher levels of satisfaction (22,24,26). Also, studies that examine sociodemographic differences in perceived helpfulness of intervention components while accounting for participants' weight loss success are needed.

Gaining an understanding of intervention components that are found helpful by different demographic groups

can inform the design of subsequent weight loss programs. Moreover, finding what is helpful to both those who successfully meet study goals and those who are less successful could help enhance future weight loss interventions. The objective of this analysis was to examine perceived helpfulness of weight loss program components. Specifically, we evaluated participants' helpfulness ratings of intervention components of the weight loss interventions from the Hopkins Practice-based Opportunities for Weight Reduction (POWER) Trial, a two-year randomized comparative effectiveness trial with two weight loss intervention conditions (and a control group) that enrolled a large, diverse sample (27). We also examined differences between demographic groups in perceived helpfulness of intervention components while controlling for weight loss success.

Materials and methods

Design

The POWER Trial compared the effectiveness of two interventions [remote support only ($n = 139$) and in-person support ($n = 138$)] to a control condition ($n = 138$) among adults with obesity. Details of the study design, lifestyle interventions and main results have been published (27). Both the intervention conditions were given the same study goal, namely, to reach and maintain a 5% weight loss or greater at 24 months. The remote support and the in-person support interventions resulted in significantly greater weight loss at 24 months (-4.6 kg and -5.1 kg, respectively) compared with the control group (-0.8 kg) (27).

Participants

Participants had at least one cardiovascular risk factor (hypertension, hypercholesterolemia or diabetes) and were recruited from six primary care practices in the greater Baltimore area over a 1-year period starting in February 2008. The Johns Hopkins Medicine Institutional Review Board approved the study, and all participants provided written informed consent.

Measures

Trained research staff blinded to intervention condition used standardized methods and high-quality digital scales to measure weight at baseline and 24-month follow-up visits. At study entry, participants provided a range of demographic information including age, sex, race and educational status. At the 24-month follow-up visit, after the completion of physical measurements, participants in the two active conditions completed an end of study questionnaire to address perceived helpfulness of

relevant components of the weight loss programme. Specifically, participants indicated on a 5-point Likert scale (*not at all helpful* (0) to *extremely helpful* (4)) 'How helpful were different parts of the POWER intervention for you in your weight control efforts?' The remote support condition was not asked questions regarding the two in-person components of the intervention (i.e. group sessions – in person; individual sessions – in person).

Intervention

Coaching

Participants were assigned a health coach and provided access to a study website. Those in the remote support condition were offered coaching over the phone. Those in the in-person support condition were offered in-person individual and group sessions as well as telephone coaching sessions when scheduling in-person sessions created a hardship. All other aspects of the weight loss programs were similar between the two conditions. The coaching was delivered by trained lifestyle coaches using a motivational interviewing approach and promoted evidence-based weight loss strategies.

Website

The study website had both study-related educational modules and corresponding tracking features. The online learning modules focused on lifestyle modifications: reducing calorie intake; following the DASH diet; increasing moderate intensity exercise to at least 180 min per week; tracking weight weekly; tracking caloric intake at least 3 d per week; and tracking daily exercise. Online tracking features included graphs for each behavioural goal (i.e. weight, calories and exercise). These graphs provided participants a visual display of their progress over time and allowed coaches to give tailored behavioural feedback during individual sessions. The website included three automatic feedback features. Participants received tailored online feedback after each weight entry. Weight progress emails were sent monthly providing a summary of recent weight change. Re-engagement emails were sent if a participant went 8, 11 or 31 days without logging a weight into the site.

Primary care provider

The research team worked closely with medical directors of the participating clinics to determine the role of the PCPs in the intervention. Based on this collaboration, the PCPs were asked to play a supportive role in which they reviewed a weight progress report with their patients in the two active conditions during routine medical visits.

PCPs were given brief training on how to use the progress report to provide support for the participant's weight loss efforts as well as their ongoing participation in the study. A copy of the report was faxed or emailed to the PCP office in advance of patient appointments. The report included a graphical display of initial, target and self-reported weights since the start of the study with a reminder for the PCP to 'HELP' using the following four points (1) Help by acknowledging that losing weight is challenging; (2) Encourage patients to keep scheduled contacts with the coach and to log and record weight, exercise and food/beverage intake; (3) Let patients know the program is based on scientifically verified 'tried and true' principles and (4) Point out individual benefits of weight loss (e.g. blood pressure or glucose control) and that even small weight losses will help. No specific number of visits was required with PCPs during the trial. Coaches encouraged participants to discuss their weight loss progress with their PCPs during routine care appointments.

Analytic plan

Participants who were randomized to the two POWER active treatment conditions, completed the end of study helpfulness questionnaire, and had a 24-month follow-up weight were included in these analyses. Being helpful was defined as having a score of 3 or 4 (above the middle score of 2) on a 0 to 4 Likert scale. McNemar's test was used to examine differences in the percentages associated with the components most frequently identified as helpful and the component least frequently identified as helpful. Chi-square analyses were used to examine differences in perceived helpfulness among the following groups: age < 55 vs. > 55 years; men vs. women; Black vs. non-Black race; less than 4 years in college vs. college graduates; treatment group and weight loss success (< 5% weight loss vs. > 5% weight loss at 24 months). Logistic regression analyses were conducted to examine the association among demographic variables and helpfulness after controlling for achievement of the 5% weight loss goal. Analyses were conducted using SAS version 9.3 (SAS Institute, Inc., Cary, NC, USA) and *p*-values < 0.05 were considered statistically significant.

Results

Of the 277 participants randomized to the two active interventions, 236 (85%) completed the helpfulness questionnaire and had a 24-month follow-up weight. Among these participants, 54% were at least 55 years of age, 38% were men, 39% were Black and 36% had less than a college education. Missingness for individual items was low, ranging from 0 to 6 missing responses per question. As shown in

Table 1, 50–88% of participants rated each of the 15 individual intervention components as helpful. The components most frequently identified as helpful were individual telephone sessions (88%), tracking weight online (81%) and coach review of tracking (81%). The component least frequently identified as helpful was PCP's general involvement in the study (50%). McNemar's test indicated a statistically significant difference in the frequency of helpfulness ratings comparing the three components with the most frequent responses (telephone sessions, tracking weight online and coach review of tracking) and the component with the lowest frequency of responses (PCP's general involvement), p 's <0.001.

As reported in Table 1, a significantly larger percentage of older participants reported coach review of tracking, tracking calories online and general PCP involvement helpful compared with younger participants. Men were significantly more likely to find tracking weight, calories and exercise and PCP involvement (both general and review of graphical information) helpful compared with women. A significantly larger percentage of women than men reported re-engagement emails helpful. A

significantly larger percentage of Blacks compared with non-Blacks reported helpful the following intervention components: telephone sessions, the intervention website, tracking exercise online, online learning modules and all automated web feedback and PCP involvement features. A significantly greater percentage of participants without a college degree compared with college graduates rated online learning modules and all automated website feedback and PCP involvement features helpful (p 's ≤ 0.05).

When examining perceived helpfulness in relation to intervention condition (Table 2), those in the remote condition compared with those in the in-person condition more frequently rated telephone sessions (95% vs. 81%, $p \leq 0.05$) and coach review of tracking (87% vs. 74%, $p \leq 0.05$) as helpful. There were also significant differences in perceived helpfulness comparing those who achieved the 5% weight loss goal and those who did not meet this goal. A larger percentage of those who achieved 5% weight loss compared with those who did not found 11 of the 15 intervention components helpful (p 's ≤ 0.05).

Table 3 presents perceived helpfulness by demographic group after controlling for achievement of the

Table 1 Perceived helpfulness of intervention components by demographic groups

Intervention component*	Participants who found intervention components helpful								
	Total <i>N</i> = 236	Age		Sex		Race		Education	
		<55 years	≥ 55 years	Female	Male	Non-Black	Black	≥ 4 years college	<4 years college
		<i>n</i> = 108 (%)	<i>n</i> = 128 (%)	<i>n</i> = 146 (%)	<i>n</i> = 90 (%)	<i>n</i> = 143 (%)	<i>n</i> = 93 (%)	<i>n</i> = 151 (%)	<i>n</i> = 85 (%)
Coaching									
Group session – in person [†]	62	54	70	56	72	59	66	61	65
Individual session – in person [†]	77	76	79	72	86	76	79	76	81
Individual session – telephone	88	87	89	86	91	84	93*	85	93
Coach review of tracking	81	74	86*	77	86	79	83	77	86
Website overall									
Intervention website	68	64	72	67	70	62	78*	66	73
Website features									
Tracking weight online	81	76	85	77	88*	81	80	82	79
Tracking calories online	67	58	75*	58	82*	65	71	64	73
Tracking exercise online	70	67	73	65	77*	65	78*	68	73
Online progress graphs	72	66	77	72	72	68	77	71	74
Website educational content									
Online learning modules	73	72	74	75	70	64	87*	68	82*
Automated feedback									
Online weight feedback	61	60	61	64	55	49	79*	51	79*
Weight progress emails	61	60	62	64	57	53	73*	51	79*
Re-engagement emails	70	69	71	76	61*	61	84*	62	83*
PCP involvement									
PCP involvement -general	50	43	57*	45	59*	42	62*	43	64*
PCP review of weight graph	61	56	65	54	73*	49	78*	55	71*

Note: The *n* for the subgroups indicates overall subgroup size.

[†]Only includes those in the in-person condition.

*Between group difference, $p \leq 0.05$.

Table 2 Perceived helpfulness of intervention components by treatment condition and weight loss success

Intervention component	Participants who found intervention components helpful			
	Treatment condition		Weight loss goal	
	In-person <i>n</i> = 116 (%)	Remote <i>n</i> = 120 (%)	Did not achieve 5% weight loss <i>n</i> = 102 (%)	Achieved weight loss \geq 5% <i>n</i> = 134 (%)
Coaching				
Group session – in person [†]	62	—	52	74*
Individual session – in person [†]	77	—	67	89*
Individual session – telephone	81	95*	84	93*
Coach review of tracking	74	87*	72	91*
Website overall				
Intervention website	66	71	60	79*
Website features				
Tracking weight online	82	81	73	92*
Tracking calories online	66	69	55	83*
Tracking exercise online	70	69	60	82*
Online progress graphs	71	73	63	83*
Website educational content				
Online learning modules	68	78	72	74
Automated web feedback				
Online weight feedback	62	59	57	65
Weight progress emails	60	62	56	69*
Re-engagement emails	67	73	71	69
PCP involvement				
PCP involvement -general	47	54	46	55
PCP review of weight graph	59	63	55	69*

Note: The *n* for the subgroups indicates overall subgroup size.

[†]Denominator only includes those in the in-person condition

*Between group difference, $p \leq 0.05$.

5% weight loss goal. Older compared with younger participants had higher odds of reporting coach review of tracking ($OR_{adj} = 1.98$, 95% CI (1.01, 3.89)), tracking calories online ($OR_{adj} = 2.08$ (1.16, 3.74)) and general PCP involvement ($OR_{adj} = 1.72$, 95% CI (1.02, 2.89)) as helpful. Men had higher odds than women of finding tracking calories online ($OR_{adj} = 3.02$ (1.57, 5.83)) and PCP review of their weight loss progress ($OR_{adj} = 2.17$ (1.22, 3.86)) helpful. When comparing Black participants to non-Blacks, Blacks had higher odds of rating the vast majority (11 of 15) of intervention components helpful, including telephone sessions, the intervention website, tracking calories and exercise online, online progress graphs and learning modules, and all of the automated feedback and PCP features ($OR_{adj} 2.09$ – 5.44). Less educated vs. college educated participants also had greater odds of finding tracking calories online, online learning modules and all of the automated feedback and PCP features helpful ($OR_{adj} 1.89$ – 3.87).

Discussion

In our analysis of the perceived helpfulness of the components of the Hopkins POWER weight loss interventions,

telephone-counseling sessions, online weight tracking and coach review of tracking were the intervention components that were most frequently identified as helpful. Telephone counseling was rated as helpful by the largest percentage of participants overall. Several efforts were made in the POWER Hopkins Trial to develop a patient-centered approach to our intervention; this may have contributed to how well the telephonic coaching was received. While there was a significant difference between the treatment conditions in how participants rated the telephone counseling sessions, this may be less important given that the helpfulness ratings for this feature were very high for both conditions. Even among those who could have received in-person support, telephone counseling was rated helpful more frequently than either type of in-person (individual or group) sessions. Other studies have looked at the effects of telephone counseling on weight loss but, to the authors' knowledge, have not elicited participants' perspectives on the helpfulness of this approach (28,29). Based on the current analyses and the main findings of the trial (27), telephonic delivery of behavioural weight loss sessions is very well received, efficacious and should be considered by those interested in creating scalable programmes.

Table 3 Demographic predictors of perceived helpfulness controlling for weight loss success

Intervention component	Participants who found intervention components helpful							
	Age		Sex		Race		Education	
	<55 years Ref	≥55 years OR(95% CI)	Female Ref	Male OR(95% CI)	Non-Black Ref	Black OR(95% CI)	≥4 years college Ref	<4 years college OR(95% CI)
Coaching								
Group session: in person [†]	—	1.67(0.76, 3.70)	—	1.82(0.79, 4.17)	—	2.13(0.89, 5.10)	—	1.38(0.59, 3.20)
Individual session: in person [†]	—	0.84(0.33, 2.12)	—	2.09(0.72, 5.87)	—	1.99(0.74, 5.36)	—	1.57(0.57, 4.31)
Individual session: telephone	—	1.14(0.51–2.54)	—	1.48(0.62, 3.56)	—	3.52(1.33, 9.31)	—	2.49(0.96, 6.50)
Coach review of tracking	—	1.98(1.01, 3.89)	—	1.52(0.74, 3.14)	—	1.84(0.90, 3.71)	—	2.10(1.00, 4.41)
Website overall								
Intervention website	—	1.34(0.76, 2.36)	—	1.02(0.57, 1.83)	—	3.31(1.73, 6.32)	—	1.60(0.88, 2.92)
Website features								
Tracking weight online	—	1.56(0.79, 3.09)	—	1.85(0.86, 3.96)	—	1.32(0.65, 2.68)	—	0.92(0.46, 1.83)
Tracking calories online	—	2.08(1.16, 3.74)	—	3.02(1.57, 5.83)	—	2.09(1.12, 3.90)	—	1.89(1.01, 3.53)
Tracking exercise online	—	1.20(0.67, 2.15)	—	1.64(0.88, 3.05)	—	2.95(1.53, 5.70)	—	1.41(0.76, 2.59)
Online progress graphs	—	1.61(0.89, 2.90)	—	0.91(0.50, 1.67)	—	2.21(1.16, 4.21)	—	1.32(0.71, 2.45)
Website educational content								
Online learning modules	—	1.06(0.59, 1.90)	—	0.78(0.43, 1.42)	—	4.04(1.96, 8.34)	—	2.16(1.12, 4.19)
Automated web feedback								
Online weight feedback	—	1.00(0.59, 1.70)	—	0.64(0.37, 1.11)	—	5.08(2.66, 9.72)	—	3.87(2.07, 7.24)
Weight progress emails	—	1.02(0.60, 1.75)	—	0.69(0.39, 1.19)	—	3.06(1.67, 5.69)	—	3.85(2.05, 7.22)
Re-engagement emails	—	1.10(0.63, 1.93)	—	0.50(0.28, 0.89)	—	3.50(1.79, 6.84)	—	3.04(1.56, 5.93)
PCP involvement								
PCP involvement -general	—	1.72(1.02, 2.89)	—	1.70(0.99, 2.91)	—	2.71(1.53, 4.78)	—	2.49(1.42, 4.34)
PCP review of weight graph	—	1.39(0.81, 2.38)	—	2.17(1.22, 3.86)	—	5.44(2.82, 10.47)	—	2.13(1.19, 3.81)

Note [†]Denominator only includes those in the in-person condition. Models controlled for achieving >5% weight loss.

Regular weighing and weight tracking are associated with weight loss and weight loss maintenance (30). POWER participants' perception of the helpfulness of this intervention component is aligned with previous reports of its efficacy. Less has been reported about coach review of tracking. Although a number of currently available websites and smartphone applications offer tracking features, there are fewer programs that allow coaches (or a designated provider) to view this self-monitoring information. A unique feature of the POWER study website was the coaches' ability to monitor participants' weights, calories and exercise tracking real-time. This component created accountability and allowed coaches to view participants' progress and provide feedback without needing in-person visits. While there was a statistically significant difference between treatment conditions with respect to the helpfulness of coach review of tracking, both intervention conditions rated this component very favourably; this functionality was perceived as helpful by 81% of participants overall. Another source of accountability, the web-based tracking features, was rated as helpful by over two-thirds of participants.

Although the frequency of perceived helpfulness of PCP involvement ratings was moderately high (42–78%

depending on the demographic group), these received the lowest helpfulness ratings among the components queried. Studies that have examined patients' perspectives on weight management in primary care are equivocal. One study conducted at a Veteran's Administration primary care clinic reported that patients believed they should manage their weight problems on their own and did not think that talking about their weight with their PCP would be helpful (31). This is similar to what is reported from a systematic review of physicians' use of the 5A's (Assess, Advise, Agree, Assist, Arrange) in weight loss counseling (16). Sherson *et al.* reported that when queried about their physicians' use of this model, 32% of overweight and 10% of patients with obesity reported preferring not to discuss weight issues with their doctor (16). Less than half of patients wanted their PCP to advise them or set treatment goals during weight loss counseling. However, about half of patients did want their physician to provide support and/or arrange for more intensive help with weight loss (16).

The USPTF recommends that primary care practitioners offer behavioural counseling to patients with obesity (9), and CMS allows reimbursement for physicians and select practitioners who deliver weight loss

counseling. However, in their systematic review of weight loss trials with PCP involvement, Wadden *et al.* found no studies to support this CMS guidance (20). While PCPs in the current study did not conduct the counseling and their general involvement and review of participants' weight loss progress was rated helpful by at least half of participants, a significantly larger percentage of participants reported that assistance from their health coach was helpful. It is not clear if these differences are due to the greater role coaches played in their weight loss efforts or the amount of training coaches received in the specifics of behavioural weight loss counseling and motivational interviewing (MI) (27). If PCPs continue to be tasked with obesity counseling, more specialized training and use of patient-centered skills, such as motivational interviewing, may be needed. MI strategies are helpful not only for physicians but the method is useful for any healthcare provider who offers behavioural weight loss counseling; in a meta-analysis of the efficacy of motivational interviewing in medical care settings, results from 10 studies were favourable for the impact of this method on participants' body weight (32). Identifying the background and training needed to provide effective weight loss counseling in a variety of settings is needed. Regardless of which practitioners are responsible for weight loss treatment, different methods and more integrative models for providing behavioural weight loss in primary care settings should be considered, rather than PCP counseling alone (17,20).

Consistent with past research linking satisfaction ratings with weight outcomes (22,24,26), we found that achieving the study goal of 5% weight loss was associated with perceived helpfulness scores. In fact, the majority of intervention components were more likely to be rated as helpful by those who achieved greater weight loss success. This may seem intuitive; however, it is unclear why those who reached the study goal more frequently rated intervention components as helpful compared with those who did not have weight loss success. Perhaps weight loss success resulted in recall bias. However, retrospective reporting allows participants to provide an informed perspective based on their experience. In contrast, while prospective approaches are not subject to the same recall bias, individuals in this context are asked to rate helpfulness with less or no practical experience.

We found several demographic differences in perceived helpfulness even after controlling for weight loss success. Older participants rated their PCP's involvement in the program as helpful more frequently than did the younger group. This may be due to older patients having longer, more valued relationships with their PCPs (33) or with this age-group placing a higher value on feedback

from 'authority positions' than a younger generation. The older participants in our study were also more likely than younger participants to find helpful the coach's review of their online self-monitoring data. Although older adults have been reported to slowly adapt to technology (34), we did not find that this subgroup was any less likely than their younger counterparts to find the various web components helpful; in fact, the older participants had twice the odds of finding the online calorie tracking helpful.

There were a few gender differences in helpfulness ratings after controlling for weight loss. Calorie counting, a strategy known to be associated with weight loss success (26,35), was an online feature that men had three times the odds of rating helpful compared with women. Others have not reported a significant gender difference in the usefulness of diet self-monitoring (26); however, participants in that study did not have access to use an online food tracking tool. Although finding innovative ways to encourage and support weight loss participants to consistently monitor their food and beverage intake is essential when designing programs for either gender, our findings suggest that future programs may benefit from enhancing this feature for women. Women were also more likely than men to find re-engagement emails helpful. Women in our study may have been relying on this feature as a prompt to return to the study website, similar to the reminder functionality now available on many calendar and smartphone applications.

Similar to the findings of Barte *et al.* (24), participants with less than a college education were more likely to find many of the website components helpful. The website content was written at a fourth-grade reading level and covered fundamental concepts. Perhaps, those with more education wanted more in-depth information. Alternatively, the less educated participants may have had a stronger appreciation for expert advice that was embedded in the basic weight loss information. Regardless, tailoring the website components of weight loss programs to meet the needs of adults with different education levels should be considered.

Similarly, Black participants were as much as five times more likely than non-Black participants to find several website features helpful. In particular, they were more likely to find feedback about their weight, both online and from their PCP, helpful. This latter finding is of particular interest given that it has been reported previously that Black patients compared with Whites tend to have lower trust in their PCPs (36). Rates of obesity counseling in primary care among Blacks have been reported to be suboptimal (37); this may have contributed to this group's appreciation of their doctor's interest and involvement in the POWER weight loss trial. That a large percent of Black participants rated a telephonic intervention with web

support helpful is noteworthy given the reach and scalability of this type of program to a subgroup where the prevalence of obesity is significantly high (1).

This analysis has limitations. Given this area of research has received scant attention, there are no standard assessment tools for perceived helpfulness. Additionally, the study was conducted at the participants' last encounter in the 2-year trial. Because it was not an anonymous survey, participants may have wanted to provide a positive evaluation of their intervention experience, particularly those who had greater success with the study's primary outcome, weight loss. However, the questionnaire was not administered by the health coaches who delivered the intervention. Finally, we did not have sufficient power to explore interactions between the different demographic groups. Such analyses could be of importance for tailoring weight loss programs for specific subgroups (e.g. Black women).

This study has several strengths. The sample size is large for a weight loss trial, the response rate was high and there was a broad diversity of participants, including a sizeable representation of men and Black participants.

Implications

Heterogeneity in perceived helpfulness supports the need for person-centered approaches to weight loss. Practitioners should be aware that different demographic groups find different components of weight loss programs helpful and should therefore consider tailoring programs to achieve optimal adherence. Delivering coaching telephonically with web support was well received with little difference by demographic group, thus making remote interventions promising for the wide variety of individuals who need obesity counseling. There were several features that were well received by both treatment groups (e.g. telephonic counseling sessions), and as reported in the main results of the paper, both conditions had significant average weight loss (27). However, to optimize the impact of weight loss interventions, regardless of implementation modality, further understanding of the differences between treatment conditions may be necessary. Specific to the current study, coaching that incorporates a motivational interviewing approach with traditional behavioural counseling (e.g. specific recommendations for exercise and reducing calorie intake) appears to be important (20) and very well received. Furthermore, websites designed to help participants lose weight can be positively perceived by many groups. Understanding which specific web components people find most helpful should inform development of such programs. To have the greatest impact on behaviour change, programs that

sustain participants' engagement are likely to produce better outcomes (29) and are needed (10). Incorporating reminder emails with embedded links to the site may be a practical and essential feature to keep users connecting on a regular basis (38). Additionally, developing dynamic websites with interactive features that provide feedback and accountability also seems important. In summary, in a study that tested two multicomponent weight loss programs, the features deemed most helpful by participants were telephone-counseling sessions, online weight tracking and coach review of tracking, while PCP involvement was least frequently mentioned as helpful.

Conflict of Interest Statement

Healthways, Inc. developed the intervention website used in the POWER Trial in collaboration with Johns Hopkins investigators and provided coaching effort for the remotely delivered intervention. Healthways also provided some research funding to supplement NIH support. Under an institutional consulting agreement with Healthways, the Johns Hopkins University received fees for advisory services to Healthways during the POWER trial. Faculty members who participated in the consulting services received a portion of the university fees.

On the basis of POWER Trial results, Healthways developed and is commercializing a weight loss intervention program called *Innergy*.TM Under an agreement with Healthways, Johns Hopkins faculty monitor the *Innergy* program's content and process (staffing, training and counseling) and outcomes (engagement and weight loss) to ensure consistency with the corresponding arm of the POWER Trial. Johns Hopkins receives fees for these services and faculty members who participate in the consulting services receive a portion of these fees. Johns Hopkins receives royalty on sales of the *Innergy* program.

Johns Hopkins University has an institutional consulting agreement with Healthways. The authors have no other potential conflict of interest relevant to this article to report.

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