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Feasibility of utilizing an all-volunteer workforce as a disruptive innovation for the US obesity epidemic

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Abstract

Objectives—As the prevalence of obesity in US adults continues to increase, addressing weight control will require an effective, lower-cost intervention. A model for delivering free peer-to-peer counseling has the potential to create a paradigm shift in the way weight and other chronic illnesses are addressed in the US. The objective of this study is to understand the potential for utilizing successful peer volunteers as counselors in weight control programs and as a possible intervention strategy to address the global obesity epidemic in a cost-effective manner.

Study Design—This cross-sectional study surveyed a nationwide panel of US adults (n=806) in 2010.

Methods—We created survey items to identify participant interest in three specific types of weight control programs; a free program led by successful peers, a paid program led by successful peers and a program led by trained paid professionals. Statistical analysis was conducted in 2011.

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Logistic regression was used to adjust for the effect of potential confounders on participant interest in different weight control programs and willingness to volunteer.

Results—More than three times as many subjects (27.4% v. 8.3%) were interested in the free peer-led program versus the expert-led paid option. Of participants who had ever had successful weight loss, 15% were interested in volunteering to help others lose weight.

Conclusions—Individuals appear to be willing to both attend and conduct peer volunteer-led weight control groups. Further research is necessary to develop and test interventions to assess the effectiveness of such interventions.

Keywords

obesity; weight control interventions; disruptive innovation

INTRODUCTION

If current trends continue, the prevalence of obesity in US adults will rise from 32% in 2008 to 50% in 2030 [1]. Although it would be preferable to develop more effective weight control interventions, identifying a lower-cost intervention that is of similar efficacy has the potential to be a disruptive innovation in health care [2]. Given that the majority of US adults are overweight or obese [3], a model for delivering free peer-to-peer counseling interventions has the potential to create a paradigm shift in the way weight and other chronic illnesses are addressed in the US.

Program cost remains an important barrier to participating in weight control programs. Although counseling interventions are effective and recommended by the United States Preventive Services Task Force (USPSTF) [4], physicians are often unable to provide such counseling even if covered by insurers, because physicians lack the time, training, and supportive infrastructure [5–8]. Further, commercially-available weight control programs are associated with high costs, high attrition rates, and a high probability of weight regain [9]. Additionally, costs are a barrier to both physician referral to external weight control programs as well as patient participation. Krist and colleagues, for example, observed that when a health behavior counseling program that was previously free to patients began requiring patients to pay, physician referrals decreased by 97% and patient interest in being referred decreased by 62% [10].

Peer volunteers may represent an untapped workforce for conducting weight control interventions. A strong positive link between peer support and weight loss has been demonstrated in traditional [11–16] as well as online [17–20] weight loss programs. Paid experts from varying professional backgrounds (e.g., nutritionists, dietitians, cooperative extension workers, psychologists) have previously been trained to deliver weight control interventions and have all demonstrated successful outcomes [21,22]. In contrast to expert-led interventions, Weight Watchers is led by successful peers, yet these persons are still paid [9]. While peer volunteers have not yet been trained to deliver weight control interventions, this source of support has been utilized extensively in Alcoholics Anonymous (AA), and has been found to be equally effective when compared to doctoral-level counselors in the NIH-

funded MATCH [23,24]. Developing an effective peer volunteer-led weight control program could be a disruptive innovation, a term used in the business literature defined as one that is open to a whole new population because it is less expensive and more readily available [25].

We conducted this study to understand the potential for utilizing successful peer volunteers as counselors in weight control programs and as a possible intervention strategy to address the global obesity epidemic in a cost-effective manner.

METHODS

This cross-sectional study surveyed a nationwide panel of US adults (Knowledge Networks, Inc.) in 2010. Details about the panel's nationally-representative sampling approach and recruitment process are available elsewhere [26]. In brief, panel members are recruited using random digit dialing, sampled from the entire US population. Potential panel members are offered free Internet access and a web appliance (e.g., WebTV) in addition to monetary compensation in exchange for completing Web-based surveys several times per month. This study was approved as exempt by the Penn State College of Medicine Institutional Review Board.

Subjects included all participants over 21 years of age who were at least a normal weight at the time of the survey (i.e. body mass index (BMI) greater than 18.5 kg/m²) and who were ever overweight (i.e. maximum BMI > 25 kg/m²). We excluded individuals currently considered underweight due to a concern that they may utilize unsafe dietary practices. A total of 806 participants were contacted by email through Knowledge Networks to complete an online informed consent and questionnaire. We created survey items to identify participant interest in three specific types of weight control programs; a free program led by successful peers, a paid program led by successful peers and a more traditional program led by trained paid professionals. The order of these questions was random and they were preceded by the following explanation: "We are interested in your thoughts about attending a group to help you control your weight." For these questions, we define a successful peer as "someone like you, who has additionally been successful at losing weight and keeping it off". We defined an expert as "someone who is a trained weight loss professional, like a nutritionist or a physician." To assess participant interest in being a volunteer peer leader, subjects who had lost at least 10 pounds once in the past were asked how strongly they agreed with this question: "I am willing to volunteer to meet with a group of people to help them control their weight." Interest was assessed using a 5-point Likert-type scale including the following responses: "strongly agree," "agree," "undecided," "disagree," "strongly disagree." The 10 pound criteria was based on the desire to recruit individuals with some prior experience successfully losing weight, which we hypothesized would both increase volunteer interest and increase their credibility as leaders.

Additionally, weight history was assessed using items from the National Health and Nutrition Examination Survey (NHANES) Weight History Questionnaire [27]. Overall weight control efforts were assessed using items from a weight control supplement to the 1989 Behavioral Risk Factor Surveillance System (BRFSS). Weight loss history was determined from a weight cycling survey item from the 1989 BRFSS [28]. Self-reported

past medical history was obtained, including high blood pressure, diabetes, and high cholesterol. Health status was measured using a single item from the CDC Healthy Days Quality of Life measure [29]. Experience in volunteering was assessed with one survey item (“Have you done any volunteer activities through or for an organization?”) with the responses “yes” and “no,” from a measure used previously in the Current Population Survey from the Census Bureau [30]. Sociodemographic variables were obtained using standard validated measures and included: age, gender, race, ethnicity, household income, educational attainment, metropolitan residence, and region of country.

For all analyses, we used sampling weights to adjust the distribution of respondents to match the distribution of the US population, thereby correcting for oversampling and survey nonresponse. All statistical analyses were conducted in SAS Statistical Software Version 9.2 (Cary, NC) in 2011. Descriptive statistics were applied to determine participant interest in varying formats of weight control group meetings and volunteering. Logistic regression was used to adjust for the effect of potential confounders on participant interest in different weight control programs, including age, gender, race, education, income, health status, self-reported medical history, BMI, weight loss intent, prior participation in a weight loss program, and prior weight loss.

RESULTS

A total of 752 subjects (response rate: 93.3%) completed the online informed consent and the questionnaire. Of the 752, 176 (23.4%) subjects were not overweight (BMI > 25.0) at their maximum weight, had a current BMI < 18.5, or were under the age of 21 and were excluded from these analyses. Demographic, weight history and medical history are shown in Table I. The sample had the following characteristics: average age of 54 years (range: 23–86), 46% were female, 20% were at least 65 years old, 34% were college graduates, 53% had a household income of greater than \$50,000 and 42% were overweight. Most (54%) reported that they were currently trying to lose weight and the majority (70%) had lost at least 10 pounds once in the past.

Interest in different group-based weight control format types can be seen in Table II. Of the three program formats (peer-led free, peer-led paid, expert-led paid), subjects were most interested in the peer-led free program. More than three times as many subjects (27.4% v. 8.3%) were interested (agree/strongly agree) in the free peer-led program versus the expert-led paid option. After controlling for demographics, weight history, medical history and weight loss intention, variables that were associated with a preference for a peer-led free program, versus an expert-led paid program, are shown in Table I. The adjusted odds ratios represent the odds by subject characteristic of preferring an unpaid successful volunteer over a paid expert. Hispanic ethnicity (adjusted odds ratio [AOR] = 4.0; 95% CI: 1.6, 10.0) was associated with increased preference for a peer-led free program, while having hypertension was associated with a lower odds of preference for a peer-led free program over an expert-led paid program (AOR = 0.5, 95% CI: 0.3, 1.0).

Of participants who had ever had successful weight loss (n=395), defined as 10 pounds [31], 15% were interested (agree/strongly agree) in volunteering to help others lose weight and an

additional 35% were undecided (Table II). After controlling for demographics, weight history, medical history and weight loss intention, the only variables that were associated with willingness (agree/strongly agree) to be a group leader in a peer-led free program were African-American race (AOR = 7.0; 95% CI: 1.8, 24.5), prior history of volunteering (AOR = 4.4; 95%CI: 1.8, 11.0) and not having hypertension (AOR = 0.2; 95% CI: 0.1, 0.7) (Table III).

DISCUSSION

Overall, we observed that interest in a free, peer volunteer-led program was more than three times greater than the interest in participating in groups led by paid experts (27.4% v. 8.3%) and five times greater than interest in participating in groups led by paid peers (e.g., Weight Watchers) (27.4% v. 5.4%). Also, interest in volunteering was high. Approximately one in 6 (14.7%) adults expressed a willingness to serve as a peer volunteer, and an additional 35.2% were undecided and could potentially be engaged. Further, interest in volunteering was consistent across age and gender groups.

These results are consistent with other studies that have established high levels of volunteering nationally. In 2010, the national volunteer rate was 26.3 percent, with 62.8 million volunteers donating approximately 8.1 billion hours of service, valued at nearly \$173 billion [30]. As others have observed, it is likely that – in addition to the desire to serve others and contribute purposefully to one’s community – a key underlying rationale for volunteering is increasing feelings of self-esteem, usefulness, growth, fulfillment, autonomy, self-respect, and meaningful relationships [32–34]. Providing people with opportunities to directly help others overcome a problem that they have personally succeeded in may be particularly attractive to volunteers. Further, a widening evidence base has demonstrated that adults who volunteer may experience a range of biopsychosocial benefits from physical, mental, and emotional health to longevity [35–38]. In recent years, a new field of inquiry has consolidated around a more rigorous study of altruistic actions and their positive association with better health outcomes, while exploring the potential mechanisms underlying these health benefits [39,40]. Communicating these potential benefits to volunteers may be a means of further improving recruitment rates and promoting program sustainability.

Peer-based health interventions have taken a variety of different forms, ranging from peer-led support groups [41] to mentorship and instruction on self-management of health conditions [42,43]. Although peers may be trained as instructors for a health intervention, such as described in this study, it is important to note that they are not simply expected to function as “mini-experts.” Peers can also share practical strategies for day-to-day challenges gained through trial and error of experience and offer actionable advice through personal narratives [44]. These additional abilities may allow peers to be equally effective to their professional counterparts, as has been found in research comparing a twelve step facilitation program, modeled after AA, to professional counselors for treating alcoholism [24]. Further, given the importance of social ties in the spread of obesity [45], one could hypothesize the public health benefits of a reverse influence through peers engaged in weight control programs.

We found that African-Americans had 7 times the odds of being willing to volunteer to meet with others to help them lose weight when compared to Whites. This is of particular interest as African-Americans have higher rates of overweight and obesity [3]. These results are consistent with findings from a survey study that demonstrated that African-Americans were more likely than other racial groups to be interested in promoting health screening among their peers through the sharing of personal narratives [46]. Further, Hispanics had 4 times the odds of preferring a free peer-led program, as compared to a paid, expert-led program. Identifying ways to target peer volunteer-led interventions towards racial and ethnic groups who are particularly interested in these types of programs could potentially help address significant health disparities.

An alternative explanation of the higher rates of interest in the peer-led program is that the key variable is cost. In fact, there were large differences in interest (agree/strongly agree) between a free, peer-led program (27.4%) versus interest in a peer-led program that was not free (5.4%). This suggests strongly that program cost is a key barrier to participation in weight control programs. Adults were also more than three times as interested in participating in a program led by a successful peer volunteer that was free than one led by a paid expert. This suggests both that cost drives interest and also that adults may perceive that personal experience, a genuine interest in helping, and a lack of financial motive could make the peers more effective leaders. The high rate of interest in peer-led programs suggests that this type of program would be well received, and this is supported by studies showing that peer volunteer-led programs can be quite effective to help others overcome a variety of mental (e.g., eating disorders) and physical health issues (e.g., diabetes) [42,47].

Despite the availability of commercial weight control programs, fewer than 10% of obese patients participate in any weight control program [48,49]. To successfully address the obesity epidemic, large increases in participation are necessary. Our results suggest that successful peer volunteers may be one possible cost-effective approach. Nearly one in 6 (17.3%) US adults has had success with long-term weight loss maintenance, defined as having lost at least 10% of their body weight and maintained that loss for at least one year [50]. This suggests that a significant percentage of the population would potentially be eligible to volunteer as a successful peer, and therefore, a peer workforce exists to lead weight control programs. However, the efficacy of a free peer volunteer-led weight control program is unknown. Potential adherence to these types of programs is also unclear. Adherence may be hypothesized to be higher if subjects perceive a greater level of commitment from the peer leader, or even lower if subjects perceive such programs are less efficacious. Our study was designed only to identify whether interest in this type of program existed, from both the perspective of potential peer leaders as well as participants.

This study has several limitations. First, our questionnaire did not include the interest of subjects in all permutations of possible program types, including free programs led by experts. However, given the unlikely nature of such a program's disseminability, we view this as a minor limitation. A conjoint analysis experiment would be an appropriate follow-up study to determine the aspects of a program (e.g. free, peer) that are most valued. Further, we only assessed interest in groups, given the cost-effectiveness of these types of programs. Some individuals would prefer one-on-one interactions with peers or experts, which may

partially explain why approximately 1 in 3 individuals (36%) were not interested in attending a group at all. However, it can be argued that we include relevant examples of both currently available and potentially feasible program types. We also did not specify that volunteers would “lead” group sessions, but rather that they would “meet with” a group of participants interested in losing weight. Without a full explanation of a program description, these questions may not accurately capture an individual’s willingness to participate. In addition, we asked this question among individuals who have ever lost 10 pounds without assessing their ability to maintain their weight loss, which could further add to their credibility as leaders. Lastly, the hypothetical nature of the questions limits our ability to determine whether people would actually attend such a group, or if this type of volunteer arrangements would be possible using technology-based social media platforms.

In conclusion, individuals appear to be willing to both attend and conduct peer volunteer-led weight control groups. Further research is necessary to develop and test interventions to assess the effectiveness of a volunteer peer-led weight control intervention and establish the potential reasons for the efficacy of these programs.

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Table 1

Association of Subject Characteristics with Preference for Group Weight Control Program Format.

Subject Characteristics	% (n= 541) ^a	Preferred an Unpaid Successful Volunteer over a Paid Expert (%)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio ^c (95% CI)
Overall	100	20.8	n/a	n/a
Age				
21–34	17.6	23.3	1.5 (0.7, 3.7)	0.9 (0.4, 2.2)
35–44	17.0	18.9	1.6 (0.7, 3.7)	0.6 (0.3, 1.5)
45–64	45.0	22.0	1.4 (0.7, 2.5)	0.8 (0.4, 1.6)
65+	20.4	17.7	1.0	1.0
Gender				
Female	46.3	25.5	1.0	1.0
Male	53.7	16.8	0.6 (0.4, 1.1)	0.6 (0.4, 1.1)
Race				
White	74.9	19.0	1.0	1.0
Black	11.3	26.0	1.4 (0.5, 3.3)	1.9 (0.7, 4.5)
Hispanic	8.0	36.7	2.8 (1.1, 7.4) [*]	4.0 (1.6, 10.0) ^{**}
Other	5.8	12.4	0.6 (0.2, 1.8)	0.4 (0.1, 1.5)
Education Level				
Less than high school	8.8	17.4	1.0	1.0
High school graduate	31.6	21.9	1.5 (0.5, 4.5)	1.8 (0.5, 6.0)
Some college	25.2	21.4	1.4 (0.4, 4.1)	1.7 (0.5, 6.0)
College graduate	34.4	20.3	1.3 (0.4, 4.1)	2.1 (0.6, 7.4)
Household Income				
< \$25,000	18.0	24.6	1.0 (0.5, 1.8)	1.2 (0.6, 2.7)
\$25,000–\$50,000	28.6	15.7	0.8 (0.4, 1.5)	0.6 (0.3, 1.2)
\$50,000	53.4	22.3	1.0	1.0
Health Status				
Excellent/Very good	21.4	22.0	1.2 (0.6, 2.2)	1.0 (0.4, 2.2)
Good	41.0	22.0	1.4 (0.7, 2.5)	1.1 (0.6, 2.0)
Fair/Poor	37.7	18.8	1.0	1.0
History of Hypertension ^b	34.9	19.7	0.9 (0.5, 1.5)	0.5 (0.3, 1.0) [*]
History of Diabetes ^b	12.8	25.0	1.4 (0.7, 2.7)	1.5 (0.6, 3.7)
BMI Categories				
18.5–25	15.0	8.1	1.0	1.0
25–30	42.1	21.7	3.3 (1.3, 8.2) ^{**}	3.3 (1.3, 8.2) ^{**}

Subject Characteristics	% (n= 541) ^a	Preferred an Unpaid Successful Volunteer over a Paid Expert (%)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio ^c (95% CI)
30–35	23.3	20.2	3.2 (1.3, 8.2) *	3.1 (1.1, 8.2) *
35–40	11.1	20.8	3.1 (1.1, 8.2) *	2.3 (0.7, 8.2)
40	8.5	40.8	7.7 (2.7, 22.2) ***	8.7 (2.5, 30.0) ***
Trying to Lose Weight ^b	54.4	27.3	2.2 (1.2, 3.7) **	1.9 (1.0, 3.7)
Participation in a weight loss program ^b	2.7	22.3	1.7 (0.4, 6.7)	0.5 (0.1, 3.0)
Has ever lost at least 10 pounds				
Never	29.5	11.8	0.3 (0.2, 0.6) ***	0.5 (0.2, 1.1)
1–2 times	35.6	21.6	0.7 (0.4, 1.2)	0.9 (0.4, 1.6)
3 or more times	34.9	27.7	1.0	1.0

^a The lower base n is due to missing values

^b reference group were those who responded opposite to a yes/no item

^c Adjusted for age, gender, race, education, income, health status, self-reported medical history, BMI, weight loss intent, prior participation in a weight loss program, and prior weight loss.

* p < 0.05,

** p < 0.01,

*** p < 0.001

Table 2

Interest in participation in and volunteering to lead weight control group meetings.

Questionnaire Item (n= number of respondents)	Responses	% Responding
I would be interested in attending a group led by a successful peer that was free. (n=570).	Strongly agree	9.7
	Agree	17.7
	Undecided	36.5
	Disagree	16.9
	Strongly disagree	19.1
I would be interested in attending a group led by a successful peer that you would pay money to attend (n=570).	Strongly agree	2.1
	Agree	3.3
	Undecided	24.3
	Disagree	29.3
	Strongly disagree	40.9
I would be interested in attending a group led by an expert that you would pay money to attend (n=569).	Strongly agree	2.4
	Agree	6.0
	Undecided	26.0
	Disagree	29.3
	Strongly disagree	36.4
Preference for type of weight control group (n=566).	Successful Peer Free Preferred	21.1
	Expert Paid Preferred	2.5
	No Preference	76.4
I am willing to volunteer to meet with a group of people to help them control their weight (n=395).	Strongly agree	3.6
	Agree	11.1
	Undecided	35.2
	Disagree	31.3
	Strongly disagree	18.8

Table 3

Association of subject characteristics with likelihood of willingness to volunteer to help others lose weight.

Subject Characteristics	% (of 244)	Willing to volunteer to lead weight control groups (%)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio ^b (95% CI)
Overall	100	24.1	n/a	n/a
Age				
21–34	15.1	34.5	3.0 (0.9, 10.0)	1.6 (0.3, 7.4)
35–44	16.3	23.7	1.7 (0.5, 5.5)	1.1 (0.2, 5.5)
45–64	49.7	24.6	1.9 (0.8, 4.5)	1.8 (0.5, 6.0)
65+	18.9	15.1	1.0	1.0
Gender				
Female	56.4	22.6	1.0	1.0
Male	43.6	26.1	1.2 (0.5, 2.5)	1.3 (0.6, 3.0)
Race				
White	75.8	21.8	1.0	1.0
Black	10.1	52.9	3.3 (0.9, 12.2)	7.0 (1.8, 24.5)**
Hispanic	11.0	16.4	0.7 (0.2, 2.5)	1.7 (0.3, 10.0)
Other	3.0	15.4	0.7 (0.1, 4.1)	0.5 (0.0, 5.5)
Education Level				
Less than high school	9.8	4.9	1.0	1.0
High school graduate	31.3	20.7	4.8 (0.7, 33.1)	2.3 (0.3, 18.2)
Some college	21.3	27.5	6.9 (1.0, 44.7)*	2.2 (0.3, 18.2)
College graduate	37.6	30.1	9.1 (1.3, 60.3)*	2.2 (0.3, 20.1)
Household Income				
< \$25,000	11.7	20.4	0.6 (0.2, 1.6)	1.0 (0.3, 3.7)
\$25,000–\$50,000	29.9	17.8	0.5 (0.2, 1.1)	1.2 (0.4, 3.0)
\$50,000	58.4	28.2	1.0	1.0
Health Status				
Excellent/Very good	22.4	19.0	0.5 (0.2, 1.3)	0.7 (0.2, 2.5)
Good	40.8	20.6	0.5 (0.2, 1.1)	0.7 (0.3, 1.6)
Fair/Poor	36.8	31.3	1.0	1.0
History of Hypertension ^a	39.1	13.4	0.3 (0.1, 0.7)**	0.2 (0.1, 0.7)*
History of Diabetes ^a	9.0	26.5	1.2 (0.4, 3.3)	3.8 (0.7, 22.2)
BMI Categories				
18.5–25	13.8	14.8	1.0	1.0
25–30	37.3	26.0	1.8 (0.5, 5.5)	1.3 (0.3, 5.0)

Subject Characteristics	% (of 244)	Willing to volunteer to lead weight control groups (%)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio ^b (95% CI)
30–35	23.4	26.5	1.8 (0.5, 6.0)	1.7 (0.4, 8.2)
35–40	17.8	25.2	2.0 (0.5, 7.4)	2.2 (0.4, 13.5)
40	7.7	22.1	1.5 (0.4, 6.0)	1.7 (0.2, 12.2)
Trying to Lose Weight ^a	62.7	27.7	1.7 (0.7, 4.1)	2.0 (0.8, 4.5)
Participating in a weight loss program ^a	4.3	59.7	3.9 (0.9, 16.4)	4.5 (0.7, 27.1)
Has ever lost at least 10 pounds				
Never	0.0	-	-	-
1–2 times	57.4	18.4	0.6 (0.3, 1.1)	0.7 (0.3, 1.5)
3 or more times	42.6	31.8	1.0	1.0
Has experience as a volunteer with an organization ^a	57.0	33.3	3.4 (1.6, 7.4)**	4.4 (1.8, 11.0)** 24

^a reference group were those who responded opposite to a yes/no item

^b Adjusted for age, gender, race, education, income, health status, self-reported medical history, BMI, weight loss intent, prior participation in a weight loss program, and prior weight loss.

* p < 0.05,

** p < 0.01