Available online at www.sciencedirect.com
ScienceDirect
Eating Behaviors 8 (2007) 185–194
EATING BEHAVIORS

Taking action to lose weight: Toward an understanding of individual differences

Rachel A. Annunziato [a,*], Michael R. Lowe [b]

[a] Mount Sinai School of Medicine, Department of Psychiatry, One Gustave L. Levy Place, Box 1230, New York, NY 10029, USA
[b] Drexel University, Department of Psychology, 1505 Race Street, Mail Stop 626, Philadelphia, PA 19102, USA

Received 4 November 2005; received in revised form 18 April 2006; accepted 24 April 2006

Abstract

The purpose of the present study was to understand differences in obese/overweight individuals who do and do not seek ongoing external assistance for weight loss. Help-seeking was examined as a dichotomous and as a continuous variable. Measures of body mass index, comorbid medical conditions, socioeconomic status, psychological distress, disordered eating behavior, body image, and obesity-related knowledge were administered to a community sample of 120 overweight women (age: 22–65 y, BMI: 25–63 kg/m^2). Fewer predictors of help-seeking were identified when measuring help-seeking as a dichotomy than when measuring it as a continuum. All predictors were from psychosocial domains, with obesity-related knowledge being the strongest, most consistent predictor. Help-seeking for weight control in a community sample of overweight and obese individuals appears to be motivated by psychological aspects of obesity, rather than obesity's physical or medical burden.

Keywords: Treatment-seeking; Help-seeking; Predictors; Obesity; Dieting

1. Introduction

The vast majority of obese individuals do not seek professional help to control their weight (Valdez, Gregg, & Williamson, 2002; Womble, Wang, & Wadden, 2002). Very little is known about obese people who are not participating in formal weight loss programs, many of whom may be engaging in little or no weight control efforts at all. In the United States, approximately 60% of overweight or obese people who accurately perceive themselves as such say they are trying to lose weight (i.e., either losing weight on their own or taking some specific action) (Horm & Anderson, 1993). A similar figure has been reported in England (Wardle & Johnson, 2002). Of the over 50 million Americans who report that they are trying to lose weight, only eight million use commercial products or programs (Womble et al., 2002) and even fewer utilize university-based programs. In one study, among women who reported that they were attempting to lose weight, 50.9% of those who were overweight and 48.2% of those who were obese reported that they were doing so without outside assistance (Wardle & Johnson, 2002). Therefore, although a significant

* Corresponding author. Tel.: +1 212 659 8776; fax: +1 212 849 2561.
E-mail addresses: rachel.annunziato@mssm.edu (R.A. Annunziato), lowe@drexel.edu (M.R. Lowe).

1471-0153/$ - see front matter © 2006 Elsevier Ltd. All rights reserved.
doi:10.1016/j.eatbeh.2006.04.004

proportion of overweight and obese women are trying to lose weight, we have little understanding of what may differentiate those who do and do not seek more formal assistance.

In order to encourage obese people to engage in weight control efforts, it is important to understand how people who are attempting to control their weight differ from those who are not. One way to do so is to examine differences between those who do and do not seek ongoing external assistance; this is the approach that has been used in past studies (Fitzgibbon, Stolley, & Kirschenbaum, 1993; Kolotkin, Crosby, & Williams, 2002). However this approach does not include the vast majority of individuals who diet on their own, that is, without seeking outside assistance. Therefore, it is necessary to expand the definition of help-seeking when examining factors related to how and why one engages in weight control.

2. Variables related to weight control

Sociodemographic variables appear to play an important role in help-seeking behavior. In regards to gender, men are less likely to engage in such weight control efforts than women (Wardle et al., 2004; Wolfe & Smith, 2002). Socioeconomic status (SES) also has important implications for many facets of weight control including resource availability (e.g., means to purchase healthy foods or to seek external help, safety of and time for physical activity, etc.), degree of body image dissatisfaction, and appeal of seeking external help (Kumanyika, 2002).

Other psychosocial and physiological variables also appear to be relevant to understanding help-seeking efforts. These factors have been elucidated in studies comparing treatment-seeking and non-treatment-seeking individuals. Higher levels of psychological distress and binge eating have been associated with treatment seeking (Fitzgibbon et al., 1993) as has poorer obesity-related quality of life (Fontaine, Bartlett, & Barofsky, 2000; Kolotkin et al., 2002) and poorer body-image (Brink & Ferguson, 1988). Higher Body Mass Index (BMI) has also been associated with help-seeking (Fitzgibbon et al., 1993; Fontaine et al., 2000; Kolotkin et al., 2002). In addition, the presence of health risks associated with overweight is associated with engagement in weight control efforts (Brink & Ferguson, 1988; Fontaine et al., 2000). Finally, evidence suggests obesity-related knowledge may impact weight control efforts as well (Johansson, Granlund, & Sojka, 1986) with higher levels of knowledge about obesity, particularly its risks, predicting increased help-seeking.

The aim of the present study is to further explicate variables that are associated with differences in help-seeking and whether predictors vary when help-seeking is measured dichotomously and continuously. A similar approach was used by Ruderman, Belzer, and Halperin (1985) to measure dietary restraint in their experimental tests of Restraint Theory. We used a dichotomous definition because there is a natural "break-point" between those who have and have not sought outside help. On the other hand, dichotomous variables can be less powerful in detecting relationships than continuous ones. The continuous definition of help-seeking is also meant to capture the behaviors tried by those who chose to attempt weight loss via methods outside seeking ongoing external assistance. To our knowledge, no one has considered examining this construct by both methods.

The primary hypothesis in the present study is that higher levels of help-seeking will be associated with a number of variables related to the severity of obesity. These include higher levels of disordered eating (e.g., binging, disinhibition), restrained eating, hunger, psychological distress, poorer body-image, more medical comorbidities, and higher BMI. Obesity-related knowledge and SES will also be examined as possible predictors of help-seeking level. Because help-seeking for weight control is much more common in women than in men (Wardle et al., 2004; Wolfe & Smith, 2002), only women were recruited and studied.

3. Methods

3.1. Participants

The sample consisted of 120 participants. Women with a BMI above 25 and between the ages of 21–65 were included in the study. A majority of the participants were African-American (58.3%) and single (52.5%), with a mean age of 39.5. Sixty percent of participants had completed at least some college or post-secondary specialized training. The mean SES level of the sample was 38.69 (on a scale of 9–66) using the Four Factor Index of Social Status (Hollingshead, 1975). The majority of participants were in the fourth Hollingshead category (of five), with all categories represented. Hollingshead's categories correspond to what he calls "social strata." Category four consists

mainly of "medium professional, minor professional and technical workers." The mean BMI of participants was 33.79±7.44. Sixty-five percent of the sample was obese. Overall, these data suggest that the sample recruited was diverse in terms of race/ethnicity, educational background, socioeconomic status, and body mass.

Participants were recruited from community settings and offered either monetary compensation or attendance at a seminar on weight control and nutrition as an incentive for participation. Participants were drawn from two sources. A pool of those who had expressed interest in a workplace based intervention for the prevention of weight gain being held in a local hospital cafeteria but who had not enrolled in this project were invited to participate. Potential participants were contacted via email and provided information about the present study. Fifty-two of the 88 individuals contacted who met criteria agreed to participate in the present study. Of these, 34 (65%) completed the questionnaire packet.

The second recruitment source was an ad placed in the *Metro* [a newspaper offered free of charge on all South Eastern Pennsylvania Transportation Association (SEPTA) vehicles and stations]. The ad was designed to emphasize the monetary compensation of the study in an effort to minimize the response by individuals high on the help-seeking dimension. Three hundred people responded to the ad and the first 113 were sent a questionnaire packet. Of these, 86 (76%) completed the questionnaire packet. The combined 120 participants overwhelmingly selected monetary compensation over the seminar as remuneration (112 selected payment, while eight selected attending the seminar).

3.2. Procedures

Participants were asked to fill out a packet of questionnaires, which were completed at home and returned via mail. Task completion took approximately one hour. Participants who agreed to these requirements signed an informed consent form.

3.3. Measures

3.3.1. Help-seeking

Help-seeking behavior was measured both categorically and continuously. Participants were asked to indicate first if they had ever tried to lose weight; those who said "yes" were asked to indicate what behaviors they had tried to control their weight. French and Jeffery (1996) used a similar approach to measure their independent variable, which was the construct "dieting practices." The list used in the present study was adapted from French and Jeffrey with additions. Participants were finally asked to indicate how often they had tried each behavior to lose weight in their lifetime. Table 1 depicts the help-seeking behaviors surveyed and the percentage of participants who tried them.

Table 1
Help seeking category and percentage of participants who tried each behavior

Weight loss behavior	Hi or Lo help-seeking	% Tried
Cut back on eating certain types of foods (e.g., fats, carbohydrates)	Lo	96
Used my own willpower	Lo	82
Cut calories on my own	Lo	81
Started my own exercise plan	Lo	77
Joined a gym to start my own exercise program	Lo	66
Used meal replacements (e.g., Slim Fast, protein bars)	Lo	61
Diet pills (e.g., Dexatrim)	Lo	51
Joined an exercise class	Lo	50
Sought the advice of a physician, nutritionist, or other health professional	Lo	42
Purchased and followed a self-help book (e.g., Atkins diet, Zone diet)	Lo	39
Commercial weight loss program (e.g., Weight Watchers, Jenny Craig, LA Weight Loss)	Hi	38
Took herbal supplements	Lo	35
Sought advice from a personal trainer or other exercise expert	Lo	29
Internet diet plan	Lo	12
Hired a personal trainer	Hi	9
Hospital or university-based weight loss program	Hi	7
Went to a hypnotist	Hi	7
Psychotherapy	Hi	4

Based on their responses, participants were grouped into one of two categories, low help-seeking or high help-seeking. The low help-seeking category consisted of those individuals who had never taken the step of enrolling in a weight control program. This also included those who answered "no" to "have you ever tried to lose weight," those who had dieted without relying on any professional assistance (e.g., following a diet book, cutting calories, using over-the-counter medications, etc.) or those who had sought advice from a professional but without ongoing assistance. The high help-seeking category consisted of individuals who had sought on-going help from a professional (e.g., hiring a personal trainer, psychotherapy, etc.) or an organization (e.g., Weight Watchers, Overeaters Anonymous, etc.).

Participants also received a continuous score on the help-seeking measure. Scores were calculated as follows. Each item on the scale was given a weight that was multiplied by the number of times tried. Any high help-seeking behavior was weighted a "3," moderate help-seeking behaviors were weighted as a "2," and low help-seeking behaviors were weighted as "1." The total score of all items was then calculated. The assignment of help-seeking items to these categories was determined a priori and rated by two doctoral level clinicians specializing in obesity and nutrition research and one advanced graduate student in this area. Interrater reliability was high, $r = .86$, $p < .01$ indicating agreement on the placement of items in each category.

3.3.2. Body Mass Index (BMI)

Participants were asked their current weight and height in order to calculate BMI. Previous studies have indicated that self-reported weight and measured weight are highly correlated (Lowe, Miller-Kovach, & Phelan, 2001). Furthermore, although body weights tend to be underreported, this possible bias should affect all participants to an approximately equal degree. Therefore the relation of BMI to independent variables should be minimally influenced by bias in self-reported weight.

3.3.3. Medical risks

3.3.3.1. Obesity-associated medical conditions from the Weight and Lifestyle Inventory (WALI). The WALI (Wadden & Foster, 2001) assesses weight and dieting history, eating and exercise habits, medical history, and relationships with family and friends. The WALI includes a one-page checklist that assesses the presence of both current and past medical conditions associated with obesity (24 conditions are listed including heart disease, high blood pressure, back problems, etc.). This list was used in the present study with the addition of "High cholesterol." The total number of conditions indicated served as the instrument's score.

3.3.4. Measures of eating behavior

3.3.4.1. Three-Factor Eating Questionnaire (TFEQ). This 65-item measure [i.e., the expanded version of the original (Stunkard & Messick, 1985) that also improves the assessment of rigid and flexible restraint (Westenhoefer, Stunkard, & Pudel, 1999)] assesses cognitive restraint, disinhibition, and hunger. Restraint measures the tendency to control food intake in order to prevent weight gain or achieve weight loss. Disinhibition assesses tendencies toward overeating evoked by various situations. Hunger measures the susceptibility to feelings of hunger, as well as the tendency to eat when feeling hungry. These subscales are reliable and their ability to predict various aspects of eating behavior has been demonstrated (Westenhoefer et al., 1999).

3.3.4.2. Power of Food Scale (PFS). This 18-item scale is designed to assess the perceived psychological influence of food in the environment (sample item: "I feel like food controls me rather than the other way around"). It separately measures the perceived influence of food when it is available but not present, present but not tasted, and tasted. Research supports the internal consistency (alpha = .93), test–retest reliability ($r = .80$) and validity of the PFS (Lowe et al., submitted for publication).

3.3.5. Measures of psychological distress

3.3.5.1. The Brief Symptom Inventory (BSI). This 53-item questionnaire is a measure of psychological symptoms (Derogatis, 1993), with participants rating how much distress they have experienced from such symptoms in the last

seven days. The BSI has been shown to have test–retest reliability ranging from .68 to .91 and internal consistency ranging from .71 to .85 (Derogatis, 1993).

3.3.5.2. Impact of Weight on Quality of Life-Lite (IWQOL). The IWQOL (Kolotkin, Crosby, Kosloski, & Williams, 2001) is a 31-item self-report instrument used to measure the impact of obesity and weight reduction on quality of life. The five subscales (Physical Function, Self-Esteem, Sexual Life, Public Distress, and Work) have demonstrated construct validity and excellent reliability (Kolotkin et al., 2001). The Physical Function subscale measures mobility and day-to-day physical functioning. The Self-Esteem subscale assesses how weight influences one's self-esteem. The Sexual Life subscale examines sexual limitations related to obesity. The Public Distress items measures both physical comfort and negative reactions by others in public places. Finally, the Work subscale assesses the impact of weight on work performance.

3.3.6. Body-image

3.3.6.1. The Body Shape Questionnaire (BSQ). This 34-item scale measures concern about body weight and shape. Rosen, Jones, Ramirez, and Waxman (1996) conducted extensive psychometric studies on the BSQ. They demonstrated strong test–retest reliability as well as concurrent and criterion-related validity.

3.3.7. Obesity-related knowledge

3.3.7.1. Obesity knowledge quiz. This 12-item scale measures four aspects of obesity-related knowledge: etiology of obesity, diseases related to obesity, weight loss techniques, and general information about obesity. Price, O'Connell, and Kukulka (1985) developed the instrument which has displayed both internal and test–retest reliability.

3.3.8. SES

3.3.8.1. Four factor index of social status. Socioeconomic status was measured using Hollingshead's four-factor index of social position (Hollingshead, 1975). This method uses the head(s) of the household's occupation and income to measure socioeconomic status and is a widely used method for assessing SES.

3.4. Data analysis

Analyses used the SPSS 12.0© statistical package. Statistical tests are two-tailed whenever applicable. An alpha level of 0.05 or less was chosen as the level of statistical significance. When measuring help-seeking dichotomously, logistic regression was used to compare scores on the predictor variables between high and low help-seekers. To reduce the number of comparisons, measures were analyzed together if they were highly correlated or were subscales of the same overall measure. Univariate logistic regression models were used on those measures that could not be logically grouped together. To examine help-seeking as a dimension, a series of simultaneous linear multiple regression analyses were applied to each dependent measure. Measures were entered in the same groupings as was done for the logistic regression. The following measures were grouped together: PFS, TFEQ disinhibition and hunger subscales; TFEQ rigid and flexible restraint subscales; and all subscales of the IWQOL. The following measures were examined as univariate analyses: BMI, comorbid medical conditions, BSI, BSQ and the Obesity Knowledge Quiz.

4. Results

4.1. Preliminary analyses

There was no correlation between the continuous help-seeking measure and BMI. There was a significant correlation between the continuous measure of help-seeking and age, $r = .35$, $p = .00$. To control for this potential confounding relationship, age was entered first in all analyses involving help-seeking.

Table 2
Means and standard deviations of all measures by help-seeking level

Measure	Low help-seekers	High help-seekers
Body mass index (BMI)	33.90 (8.52)	33.65 (5.75)
Comorbid medical conditions (total)	1.65 (1.81)	1.77 (1.90)
TFEQ-disinhibition	7.94 (4.67)	9.95 (4.27)
TFEQ-hunger	5.63 (3.02)	6.75 (3.89)
TFEQ-rigid restraint	7.68 (2.71)	7.95 (3.05)
TFEQ-flexible restraint	6.47 (2.78)	5.45 (2.88)
Power of food scale (PFS)	51.10 (17.99)	58.59 (20.46)
Brief symptom inventory (BSI)	0.58 (0.62)	0.67 (0.62)
IWQOL-physical function	22.31 (9.35)	22.72 (9.18)
IWQOL-self-esteem	16.13 (7.59)	18.66 (7.71)
IWQOL-sexual life	6.67 (3.65)	7.98 (3.86)
IWQOL-public distress	7.65 (4.15)	8.18 (4.58)
IWQOL-work	5.75 (2.57)	5.98 (3.49)
Body shape questionnaire (BSQ)	99.04 (31.91)	109.29 (33.31)
Obesity Knowledge Quiz	8.18 (1.80)	9.18 (1.58)

The relationship between help-seeking, as both a dichotomous and continuous variable, and SES was examined. When measured continuously, there was no relationship between SES and help-seeking. However, when measured as a dichotomy (e.g., whether or not one has sought help from a professional for weight control) the relationship between help-seeking and SES was significant, $F(1, 116)=6.83$, $p=.01$, with higher SES associated with help-seeking.

A Chi-square test was conducted to discern if help-seeking group placement varied by race. For this test, the eight participants who described themselves as an ethnicity other than African-American or Caucasian were not included. This test was not significant.

4.2. Primary analyses

4.2.1. Help-seeking as a categorical variable

Forty-three percent of participants had at some point engaged in ongoing treatment with a professional or organization. The dichotomy used divided the sample into those who had (high help-seeking, $N=51$) and had not (low help-seeking, $N=68$) sought help from some kind of professional. Means and standard deviations for all measures by help-seeking group are presented in Table 2. Table 3 displays the correlations among all tested predictors of help-seeking.

Table 3
Correlation matrix of help-seeking predictors

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. BMI	–	.30**	−.02	−.04	−.07	−.05	−.21*	.09	.51**	.04	.06	.53**	.38**	.17	−.20
2. Medical conditions		–	.07	.05	−.01	−.09	−.16	.27**	.40	.04	.16	.17	.10	−.01	−.12
3. PFS			–	.58**	.73**	.02	−.22*	.37**	.38**	.57**	.48**	.39**	.25**	.54**	.02
4. TFEQ-D				–	.53**	.02	−.19	.34**	.26**	.34**	.27**	.16	.10	.36**	−.05
5. TFEQ-H					–	.03	−.18	.35**	.36**	.53**	.48**	.27**	.18	.51**	.09
6. TFEQ-RR						–	.54**	.01	−.11	.16	.23*	.01	.07	.20	.22*
7. TFEQ-FR							–	−.18	−.25*	−.08	−.03	−.18	−.03	.03	.03
8. BSI								–	.31**	.53**	.49**	.32**	.25**	.53**	−.04
9. IWQOL-PF									–	.36**	.40**	.63**	.50**	.34**	−.33**
10. IWQOL-SE										–	.62**	.42**	.40**	.79**	.04
11. IWQOL-SL											–	.43**	.53**	.53**	.04
12. IWQOL-PD												–	.70**	.48**	−.17
13. IWQOL-W													–	.46**	−.20*
14. BSQ														–	.03
15. OKQ															–

*$p<.05$. **$p<.01$.

Logistic regression was used to examine whether scores on the independent measures predicted membership in the high versus low help-seeking group. The Obesity Knowledge Quiz was the only significant predictor of help-seeking with higher levels of obesity-related knowledge associated with seeking outside help, odds ratio (OR)=1.44, 95% confidence interval (95% CI)=1.13–1.83, p=.00. There was a significant inverse correlation between the Obesity Knowledge Quiz score and BMI such that higher scores on the measure were associated with lower BMI, r=−.20, p=.03. There was also a significant correlation between the Obesity Knowledge Quiz score and SES such that higher scores on the measure were associated with higher SES, r=.28 p=.00. The relationship between help-seeking and the Obesity Knowledge Quiz was therefore reexamined controlling for SES. The results continued to be significant.

To summarize, when help-seeking was measured as a dichotomy only obesity-related knowledge, controlling for SES, was associated with help-seeking. The following measures were not associated with help-seeking level: BMI, comorbid medical risks, the PFS, the TFEQ subscales, the IWQOL subscales, the BSI, and the BSQ.

4.2.2. Help-seeking as a continuous variable

A series of simultaneous linear multiple regression analyses for the dependent measures was conducted with continuous help-seeking score as the independent variable. Table 4 lists the results of these analyses. The following were not significant predictors of help-seeking level as a continuous measure: BMI, comorbid medical risks, and the two Cognitive Restraint and Disinhibition subscales of the TFEQ. As in the categorical analyses, the Obesity Knowledge Quiz was a significant predictor of help-seeking behavior. In addition, the PFS, the BSI, the IWQOL Sexual Life subscale, and the BSQ emerged as indictors of help-seeking.

These significant predictors were entered together into a simultaneous regression. The IWQOL Sexual Life subscale, t(6, 101)=2.68, p=.01, was the only significant predictor in the resulting model, though the Obesity Knowledge Quiz approached significance, t(6, 101)=1.87, p=.064.

5. Discussion

Previous research has viewed engagement in weight control efforts as a dichotomy of whether or not one seeks help from a professional or organization (Fitzgibbon et al., 1993; Kolotkin et al., 2002). This distinction does not sufficiently account for the range of dieting behaviors that can be used for weight control, particularly dieting on one's own (Horm & Anderson, 1993; Wardle & Johnson, 2002). Furthermore, dichotomous measures fail to account for the frequency with which an individual might seek outside assistance. The present study examined correlates of help-seeking behavior with help-seeking defined both dichotomously and continuously. We predicted that differences in help-seeking level would largely be dictated by the severity of the obesity and obesity-related quality of life.

Table 4
Linear regressions to predict help-seeking level

Predictor variable	R^2	Unstandardized B	T value	p value
Body Mass Index (BMI)	.12	.19	.20	.84
Comorbid medical conditions (total)	.12	.65	.14	.89
Power of Food Scale (PFS)[a]	.26	1.53	2.64	.01
TFEQ-Disinhibition[a]	.26	−1.97	−1.02	.31
TFEQ-Hunger[a]	.26	3.09	.98	.33
TFEQ-Rigid restraint[b]	.13	5.08	1.54	.13
TFEQ-Flexible restraint[b]	.13	−3.58	−1.09	.28
Brief Symptom Inventory (BSI)	.19	38.72	3.27	.00
IWQOL-Physical function[c]	.34	−1.72	−1.60	.11
IWQOL-Self-esteem[c]	.34	.78	.62	.53
IWQOL-Sexual life[c]	.34	9.71	5.54	.00
IWQOL-Public distress[c]	.34	3.10	1.22	.23
IWQOL-Work[c]	.34	1.50	.44	.66
Body Shape Questionnaire (BSQ)	.24	.90	4.21	.00
Obesity Knowledge Quiz	.17	9.62	2.48	.02

[a,b,c]Indicates that measures were grouped together.

5.1. Correlates of help-seeking as a dichotomy

Higher levels of knowledge about obesity, particularly its risks, were associated with seeking help. When measured as a dichotomy, the findings of previous studies (Kolotkin et al., 2002) indicating that there are psychosocial correlates of help-seeking were not replicated, though this pattern was displayed when help-seeking was measured continuously. The fact that obesity-related knowledge was a predictor (controlling for SES) suggests that many of those who do not seek outside assistance for weight control may not be as cognizant of the numerous adverse consequences of overweight. This finding supports suggestions that education about the dangers of overweight could be an important component of public health efforts to combat the obesity epidemic.

5.2. Help-seeking as a dimension

Several additional significant relationships were uncovered when help-seeking was scored as a continuous measure. Obesity-related knowledge was again associated with increased help-seeking. Higher levels of psychological distress (the BSI), self-reported responsiveness to the food environment (the PFS) and concern about body shape and weight (the Body Shape Questionnaire) were associated with greater help-seeking. Lower scores on the sexuality aspect of weight-related quality of life as measured by the IWQOL were significantly associated with increased help-seeking. When these significant predictors were entered together into a multiple regression, the significant predictor in the emerging model was the IWQOL Sexual Life subscale.

5.3. Clinical significance

Clinically, the present results may be relevant to understanding the disappointing long-term outcome of most organized weight control programs (Perri & Corsica, 2002). The greater psychological distress of those who seek formal assistance may contribute to poorer long-term outcomes in this group. The weight-related psychosocial distress of treatment seekers might not be sufficiently addressed in existing programs. Alternatively, it is possible that current attempts to ameliorate weight-related psychological concerns are not sufficiently effective. A third possibility is that the greater psychological distress of treatment-seekers is also reflected in disinhibited eating which undermines long-term success at weight loss. Finally, many weight loss programs advocate the loss of a "medically significant" amount of weight. Perhaps such modest weight losses are unacceptable to persons with more negative perceptions of their bodies and their resulting quality of life, a conclusion consistent with the work of Cooper and Fairburn (2001).

5.4. Limitations

The present study had limitations. It is unclear how long participants followed through on behaviors they used for weight control. For example, a participant could have enrolled in commercial weight loss programs on several occasions but only attended a few sessions each time. Future attempts to assess help-seeking behavior could assess how many weeks a person attended a program and/or how much weight was lost per attempt.

The weight and height data used to calculate BMI were based on participant report rather than direct measurement. Despite research suggesting that self-report and measured weights are highly correlated (Lowe et al., 2001), if this discrepancy did vary with high-seeking level, our analyses of BMI as a predictor could have been biased. Similarly, the measure of comorbid medical conditions was based on participant report of such conditions. Physician ratings evaluating the severity of these conditions as well as an overall assessment regarding participants' health would have been desirable. Certainly the gold-standard would be the measurement of accompanying biological indictors (e.g., blood pressure, cholesterol levels, etc.).

Another limitation of the present study is the self-selection of participants. Participants volunteered to enroll in the study as opposed to us selecting certain areas and/or settings to seek participants. Certainly there could be a bias associated with a self-selection recruitment strategy. However in regards to confounding with help-seeking, only eight out of 120 participants chose attendance at a weight loss and nutrition seminar as remuneration, suggesting that participants may have motivated to participate by the cash payment more than for the opportunity to receive help.

There could also have been a bias wrought by recruiting participants who had initially expressed interest in a workplace-based intervention for the prevention of weight gain. However, preliminary analyses showed that by drawing participants from these two community bases, variability across participants actually increased, which strengthens the generalizability of these findings. At the same time the fact that there were no group differences in help-seeking suggests that combining the two groups did not bias the results.

A strength of the present study was the relatively wide range in SES and ethnic diversity of the sample, though the lower end of the Hollingshead classification (Hollingshead, 1975) still was less represented. The recruitment of participants via an inner-city commuter newspaper yielded a high volume of phone calls. Future studies could select callers based on their zip code or other such factors thereby targeting more persons of lower SES.

5.5. Conclusions and future directions

An important future direction in addition to studying physiological predictors of help-seeking level and a lower SES sample would be to assess predictors of help-seeking across different ethnic groups. A review of the relationship between ethnic diversity and weight and eating behavior noted that by collapsing across these subgroups we may be missing important ethnic distinctions and life circumstances that could be especially relevant to weight control behavior (Zoler Dounchis, Hayden, & Wilfley, 2001). Finally, studying the correlates of help-seeking behavior in men is an extremely important next step.

In conclusion, help-seeking for weight control in a community sample appears to be motivated by psychological aspects of obesity, rather than obesity's physical or medical burden. Using a continuous measure of help-seeking may be preferable over categorical approaches because it provides a finer-grained measure of individual differences and because it was associated with more discriminators of differences in help-seeking.

Finally, the strongest and most consistent predictor of help-seeking identified in the present study was obesity-related knowledge, which was associated with lower rather than higher BMI. This finding suggests that population-level public health campaigns to educate people about the nature of and risks associated with obesity might help motivate individuals to take action to help control their weight. This might be especially helpful in high-risk communities where obesity-related knowledge is lacking. Such public health campaigns could perhaps result in increased action to lose weight much in the same fashion as campaigns aimed to promote smoking cessation have helped counteract this similarly perilous public health crisis.

Acknowledgment

The study was supported in part by a Grant-in-Aid from the Society for the Psychological Study of Social Issues (SPSSI).

References

Brink, P. J., & Ferguson, K. (1988). The decision to lose weight. *Western Journal of Nursing Research*, *20*(1), 84–102.

Cooper, Z., & Fairburn, C. G. (2001). A new cognitive behavioural approach to the treatment of obesity. *Behaviour Research and Therapy*, *39*, 499–511.

Derogatis, L. R. (1993). *BSI: Administration, scoring, and procedures manual for the Brief Symptom Inventory* (third edition). Minneapolis, MN: National Computer Systems.

Fitzgibbon, M. L., Stolley, M. R., & Kirschenbaum, D. S. (1993). Obese people who seek treatment have different characteristics than those who do not seek treatment. *Health Psychology*, *12*(5), 342–345.

Fontaine, K. R., Bartlett, S. J., & Barofsky, I. (2000). Health-related quality of life among obese persons seeking and not currently seeking treatment. *International Journal of Eating Disorders*, *2*, 101–105.

French, S. A., & Jeffery, R. W. (1996). Current dieting, weight loss history, and weight suppression: behavioral correlates of three dimensions of dieting. *Addictive Behaviors*, *22*(1), 31–44.

Hollingshead, A. B. (1975). *Four-factor index of social status.* New Haven, CT: Yale University, Department of Sociology.

Horm, J., & Anderson, K. (1993). Who in America is trying to lose weight? *Annals of Internal Medicine*, *119*, 672–676.

Johansson, H., Granlund, B., & Sojka, P. (1986). Towards individual profile analyses for obesity treatment: Actual and self-judged knowledge of nutrition and dieting and perceived self-efficacy. *Scandinavian Journal of Behaviour Therapy*, *15*(4), 127–142.

Kolotkin, R. L., Crosby, R. D., Kosloski, K. D., & Williams, G. R. (2001). Development of a brief measure to assess quality of life in obesity. *Obesity Research*, *9*, 102–111.

Kolotkin, R. L., Crosby, R. D., & Williams, G. R. (2002). Health-related quality of life varies among obese subgroups. *Obesity Research*, *10*(8), 748–756.

Kumanyika, S. K. (2002). Obesity treatment in minorities. In T. A. Wadden, & A. J. Stunkard (Eds.), *Handbook of Obesity Treatment* (pp. 416–446). New York: The Guilford Press.

Lowe, M. R., Butryn, M. L., Didie, E. R., Annunziato, R. A., Crerand, C., Ochner, C. N., Coletta, M. C., Bellace, D. & Halford, J. M. *The Power of Food: A new measure of the psychological influence of the food environment*. Manuscript submitted for publication.

Lowe, M. R., Miller-Kovach, K., & Phelan, S. (2001). Weight-loss maintenance in overweight individuals one to five years following successful completion of a commercial weight loss program. *International Journal of Obesity*, *25*, 325–331.

Perri, M. G., & Corsica, J. A. (2002). Improving the maintenance of weight lost in behavioral treatment of obesity. In T. A. Wadden, & A. J. Stunkard (Eds.), *Handbook of Obesity Treatment* (pp. 357–379). New York: The Guilford Press.

Price, J. H., O'Connell, J. K., & Kukulka, G. (1985). Development of a short obesity knowledge scale using four different response formats. *Journal of School Health*, *55*, 382–384.

Rosen, J. C., Jones, A., Ramirez, E., & Waxman, S. (1996). Body Shape Questionnaire: Studies of validity and reliability. *International Journal of Eating Disorders*, *20*(3), 315–319.

Ruderman, A. J., Beltzer, L. J., & Halperin, A. (1985). Restraint, anticipated consumption, and overeating. *Journal of Abnormal Psychology*, *4*, 547–555.

Stunkard, A. J., & Messick, S. (1985). The three-factor eating questionnaire to measure dietary restraint, disinhibition and hunger. *Journal of Psychosomatic Research*, *29*, 71–83.

Valdez, R., Gregg, E. W., & Williamson, D. F. (2002). Effects of weight loss on morbidity and mortality. In C. G. Fairburn, & K. B. Brownell (Eds.), *Eating Disorders and Obesity* (pp. 490–494). (second edition). New York: The Guilford Press.

Wadden, T. A., & Foster, G. D. (2001). *Weight and lifestyle inventory.* Philadelphia, PA: University of Pennsylvania.

Wardle, J., Haase, A., Steptoe, A., Nillapun, M., Jonwutiwes, K., & Bellisle, F. (2004). Gender differences in food choices: the contribution of health beliefs and dieting. *Annals of Behavioral Medicine*, *27*(2), 107–116.

Wardle, J., & Johnson, F. (2002). Weight and dieting: Examining levels of weight concern in British adults. *International Journal of Obesity*, *26*, 1144–1149.

Westenhoefer, J., Stunkard, A. J., & Pudel, V. (1999). Validation of the flexible and rigid control dimensions of dietary restraint. *International Journal of Eating Disorders*, *26*, 53–64.

Womble, L. G., Wang, S. S., & Wadden, T. A. (2002). Commercial and self-help weight loss programs. In T. A. Wadden, & A. J. Stunkard (Eds.), *Handbook of Obesity Treatment* (pp. 395–415). New York: The Guilford Press.

Wolfe, B. L., & Smith, J. E. (2002). Different strokes for different folks: Why overweight men do not seek weight loss treatment. *Eating Disorders: Journal of Treatment and Prevention*, *10*(2), 115–124.

Zoler Dounchis, J., Hayden, H. A., & Wilfley, D. E. (2001). Obesity, body-image, and eating disorders in ethnically diverse children and adolescents. In J. K. Thompson, & L. Smolak (Eds.), *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment* (pp. 67–98). Washington DC: American Psychological Association.