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Relationship between Perceptions of Obesity Causes and Weight Loss Expectations Among Adults

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Abstract

Objective: To examine relationships between the demographic characteristics of subjects with obesity seeking pharmaceutical-assisted weight loss and their weight loss expectations and perceptions of the causes of their obesity.

Methods: 225 adults with obesity completed an Obesity Perceptions Questionnaire (OPQ), which includes four attribution subscales – biological, psychological, environmental, and lifestyle. Relationships between OPQ subscales, subject characteristics, and self-perceived “ideal” 12-month weight loss were analyzed.

Results: Subjects desired to lose 26.4 (7.7)% of their body weight (“ideal weight loss”). Ideal weight loss correlated positively with the OPQ ‘biological’ subscale ($P = .008$), BMI ($P < .001$), female sex ($P < .001$), and past weight loss attempts ($P < .001$). Cronbach’s α was only good (>. 70) for the psychological subscale. White race ($P = .02$), being married ($P = .01$) and high school or higher education ($P = .02$) were negatively correlated with ideal weight loss.

Conclusions and Implications: When designing interventions for preventing and treating obesity, patient perceptions should be considered.

Keywords

obesity; weight loss; beliefs; perceptions; expectations

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INTRODUCTION

Individuals with obesity typically achieve ≤10% weight loss over a year with lifestyle therapy that combines diet, exercise, and behavior modification delivered by experts; disappointingly, most regain their lost weight within 3 to 5 years [1]. Long-term benefits with anti-obesity drugs are modest at best with less than half of patients achieving ≤10% weight loss [2]. Therefore, a better understanding of patient-related factors that influence weight loss outcomes could be beneficial. Such knowledge could be used to align interventions with patient perceptions, thereby enhancing compliance, retention, and possibly overall success.

Causal attributions about illness are known to influence health behaviors, capacity for lifestyle change, and compliance with medical recommendations [3, 4]. Individuals' perceptions regarding the causes of their obesity may influence their goals and expectations for weight loss, readiness to lose weight, and capacity and willingness to adopt and implement changes in diet and physical activity [5–7]. Weight loss expectations are an important issue among patients with obesity. It is well established that individuals with obesity have unrealistic goals of losing >30% of their body weight [8]. In reality, the average weight loss achieved in behavioral weight loss programs and clinical trials of one-year duration is about 10% or less [1, 8, 9]. Patients presenting with unrealistic weight loss goals are more likely to abandon their goals, have less success in maintaining their weight loss, and give up their efforts [10–12]. Characteristics found to be associated with higher weight loss expectations include female gender, higher body mass index (BMI), younger age, and those seeking treatment for the purpose of better appearance[10,13,14].

Although there have been studies linking patient beliefs and selection of treatment, few studies have examined the effect of patient perceptions on expectations. This study aimed to survey subjects with obesity entering a clinical trial with a pharmaceutical weight loss intervention regarding their perceptions of the causes of their obesity and their expectations for weight loss, along with examining relationships between their perceptions and expectations and demographic characteristics.

METHODS

Study subjects were recruited using newspaper advertisements and flyers posted in the community for a one-year weight loss study using an investigational study medication. Of the 260 subjects with obesity (defined as a BMI ≥ 30 kg/m^2) screened [15], 225 (91 men and 134 women; mean age 43 years; mean BMI 37.6 kg/m^2) met eligibility criteria and were enrolled in the study conducted at Duke University. This sample size was chosen based on a power analysis conducted for the primary endpoint of the main study (weight loss). The study was approved by the Institutional Review Board and all subjects provided written informed consent.

Male and female subjects aged 18–65 years with a BMI of 30–50 kg/m^2 who expressed motivation to lose weight were included. Major exclusion criteria were type 1 or type 2 diabetes, obesity related to endocrine disease such as Cushing's syndrome or hypothyroidism, and drug-induced obesity. Subjects with suicidal ideation, major

depression, alcohol or substance abuse within the past 6 months, Hospital Anxiety and Depression – Depression subscale (HADS-D) [16] score of ≥11, and history of psychosis, bipolar disorder, or severe personality disorders were also excluded. Detailed eligibility criteria were described in a prior publication[15].

Measurements

Trained clinical research coordinators measured the body weight and height of participants. Body weight was measured to the nearest 0.1kg on a calibrated digital scale with lightweight clothing and no shoes. Height was measured to the nearest centimeter with a wall mounted stadiometer. BMI was calculated using the formula: weight (kg)/height^2 (m^2).

An Obesity Perceptions Questionnaire (OPQ) was developed for this study by the principal investigator to assess the subjects' perceptions of their obesity. The questionnaire was based on the Explanatory Model of Depression (EMD) Questionnaire [17] and consisted of 12 statements regarding the subject's perception of the causes of his/her obesity rated on a 5-point Likert scale ranging from "not true" to "definitely true".

Four subscales – biological, psychological, environmental, and lifestyle – were developed from the OPQ, each comprised of 3 questions. Similar to the EMD, principal component analysis (PCA) with promax rotation was conducted. Four factors were retained, with each of the 3 corresponding questions loading on the appropriate factor. Internal consistency was assessed using Cronbach's coefficient α [18], resulting in the following: biological (α=.439), psychological (α=.800), environmental (α=.615), and lifestyle (α=.474). Subjects were also asked ideally how much weight they wished to lose, coded as "ideal weight loss". For analysis purposes, ideal weight loss (IWL) was expressed as a percentage (IWL/baseline weight X 100).

Another questionnaire collected demographic information including marital status, education level (Grade 1–12, College 13–16, or Postgraduate >16), past weight loss attempts (0, 1–3, 4–10, or >10), years overweight (1–5, 6–10, 11–20, or >20), personal and family history of obesity, etc. Both self-report questionnaires were given at the baseline visit and were completed by all 225 subjects.

Statistical Analyses

T-test and chi-square test of homogeneity were used as appropriate to compare the demographic variables of men and women. Correlations were determined using the Pearson correlation test. All statistical analyses were conducted using SAS statistical software (SAS Institute, Cary, NC) [19] and $P < .05$ was used as the criteria for statistical significance.

RESULTS

A total of 225 subjects completed the Obesity Perceptions Questionnaire at the beginning of the study. The sample was 59.6% female and 63.6% White with a mean (SD) age of 43.4 (10.1) years (Table 1). BMI at baseline was 38.2 (5.0) kg/m^2 for women and 36.8 (4.6) kg/m^2 for men. By the time subjects entered into the study, 98% (100% of women and 95% of men) had made at least one previous weight loss attempt. Of these, greater than 60% of

the subjects had tried to lose weight at least four times and almost a quarter reported more than 10 prior attempts.

This sample of subjects considered a mean (SD) weight loss of 26.4 (7.7)% as “ideal” at one-year. Characteristics significantly correlated with higher expectations for weight loss, as shown by Pearson correlations, included female gender ($P < .001$), non-White race ($P = .02$), lower level of education ($P = .02$), unmarried status ($P = .01$), higher BMI ($P < .001$), numerous past weight loss attempts ($P < .001$), and belief that biological causes contributed to obesity ($P = .008$) (Table 2).

Relationships between baseline subject characteristics and OPQ biological subscale scores meeting significance criteria included women ($P < .001$), non-Whites ($P = .04$), higher BMI ($P = .03$), family history of obesity ($P < .001$), and more past weight loss attempts ($P < .001$) (Table 3). White race ($P = .001$), history of depression ($P < .001$), more past weight loss attempts ($P = .001$), and higher level of education ($P = .04$) were the subject characteristics that significantly correlated with the OPQ psychological subscale. Those of a younger age were significantly more likely to relate their obesity to environmental causes ($P < .001$). Finally, the subject characteristics that significantly correlated with the OPQ lifestyle subscale were White race ($P = .003$), higher body weight ($P = .003$), and family history of obesity ($P = .01$).

DISCUSSION

Expectations

This study provides support for previous findings that subjects with a higher BMI have higher expectations for weight loss [20]. The finding of previous studies [8, 13, 21, 22] that women have higher expectations for weight loss compared to men was also confirmed. Women tend to have higher body image dissatisfaction and distress than men and the societal pressure for women to be thin may increase their desire to lose more weight [23, 24]. Furthermore, prior research has suggested that men primarily seek weight loss for health-related reasons and women for appearance-related reasons [25, 26].

The results of this study showed that more prior weight loss attempts were correlated with higher expectations. Because the study sample was comprised of individuals seeking to lose weight using a pharmaceutical intervention, it is understandable that they had a history of numerous prior weight loss attempts with diet and exercise. Previous studies have shown that those who attempted to lose weight more than 10 times used more methods and sources of advice [27]. Perhaps those who have had many unsuccessful previous weight loss attempts may believe they do not have the ability to lose or maintain weight. Studies have also suggested that how one attributes their obesity and how vulnerable they feel being obese may determine how much effort patients are willing to put into their weight loss [5].

Obesity Attribution

In this sample, subjects who attributed their obesity to biological factors, such as genes, hormonal balance, and slow metabolism, had high self-perceived weight loss expectations, similar to those seeking surgical treatment for obesity [28]. This attribution to biological

factors may lead to the belief that they have a greater chance at weight loss with "mechanical" treatments, such as medication and surgery. Attributions to obesity may also show how patients approach the weight loss process. Some patients may believe they are not able to control their weight or believe that losing a substantial amount is too difficult. Therefore, those who believe their obesity is primarily caused by biological or environmental factors may be less successful than those who relate their obesity to a lack of personal effort [5]. Consistent with previous studies [14, 22], among those who attributed their obesity to biological factors were those with a greater number of past attempts, women, and those with a higher BMI.

Causal attributions of obesity have been studied, however this study adds to the literature by breaking down causal attributions into specific categories, relating attributions to expectations and demographics, and doing so in a sample seeking a pharmaceutical intervention.

Limitations

This sample was recruited via advertisements for a clinical trial with a pharmaceutical intervention, therefore findings may only be relatable to those who seek medication weight loss trials. This study also did not have a control group of individuals with obesity who were not seeking treatment. There are various factors that contribute to which type of weight loss intervention a person chooses [27], therefore future studies should include people seeking a variety of treatment types. The validity of the OPQ should be further analyzed, as the Cronbach's α levels were marginal at best for some subscales. According to the guidelines for evaluating Cronbach's α described by George and Mallery [29], only the psychological subscale showed good internal consistency. This may be explained by the low number of questions comprising each subscale, however reliability and validity should be thoroughly assessed in future studies using this scale.

Another limitation is that BMI was not broken down into categories for analysis. Since the average BMI in this group belongs to Category 2 Obesity, it is possible that the relationships identified may differ for other categories. Subjects with significant weight-related comorbidities and those with significant depressive symptoms were excluded; therefore, these findings might not be generalizable to those who seek surgical treatment for weight loss.

IMPLICATIONS FOR RESEARCH AND PRACTICE

These study findings emphasize the importance of incorporating the expectations and perceptions of patients with obesity in determining and implementing individually tailored weight loss treatment plans in clinical practice. For example, when discussing a treatment plan with patients who believe that their obesity stems from biological causes, the clinician could lead the discussion using a medical, rather than a behavioral model. It is also important to be able to identify unrealistic weight loss expectations and encourage more realistic goals. This knowledge will prove helpful since one method may work for some but be ineffective for others and targeting obesity from various treatment angles may be more efficacious than any single approach. Furthermore, when clinicians can predict markers for

success and match programs to the needs and strengths of the individual, the patient's overall healthcare is improved [30, 31]. By assessing patients' perceptions regarding the causes of their obesity and the particular strategies they believe may be beneficial for weight loss and management, future interventions can be designed appropriately for the prevention and treatment of obesity in specific populations.

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Table 1.

Baseline Characteristics of Adult Subjects with Obesity Entering a Pharmaceutical Weight Loss Trial

Demographics	Sample (*N*=225)	Female	Male	t-test or chi sq[a]	Prob
Age, yrs	43.4 (10.1)	43.1 (9.5)	43.7 (11.0)	$t = 0.4$	.68
White	143 (63.6%)	66 (49.3%)	77 (84.6%)	$\chi^2 = 29.3$	<.001*
Education				$\chi^2 = 2.4$	.30
1–12 yrs	32 (14.2%)	23 (17.2%)	9 (9.9%)		
13–16 yrs	142 (63.1%)	81 (60.5%)	61 (67.0%)		
> 16 yrs	51 (22.7%)	30 (22.4%)	21 (23.1%)		
Married	139 (61.8%)	65 (48.5%)	74 (81.3%)	$\chi^2 = 24.7$	<.001*
Weight, kg	110.4 (18.4)	104.7 (17.9)	118.7 (15.9)	$t = 4.9$	<.001*
BMI, kg/m^2	37.6 (4.9)	38.2 (5.0)	36.8 (4.6)	$t = 2.2$	.03*
Years Overweight				$\chi^2 = 4.2$	.24
1–5 yrs	35 (15.8%)	24 (18.1%)	11 (12.4%)		
6–10 yrs	45 (20.3%)	29 (21.8%)	16 (18.0%)		
11–20 yrs	64 (28.8%)	32 (24.1%)	32 (36.0%)		
> 20 yrs	78 (35.1%)	48 (36.1%)	30 (33.7%)		
Past Attempts				$\chi^2 = 25.2$	<.001*
0	3 (2%)	0 (0%)	3 (5%)		
1–3	85 (38.0%)	36 (26.9%)	49 (54.4%)		
4–10	81 (36.2%)	55 (41.0%)	26 (28.9%)		
> 10	55 (24.6%)	43 (32.1%)	12 (13.3%)		
Family history of obesity	145 (64.4%)	90 (68.2%)	55 (61.1%)	$\chi^2 = 1.2$	.28
History of depression	34 (15.1%)	21 (15.7%)	13 (13.3%)	$\chi^2 = 0.2$	.63
Ideal weight loss %	26.4 (7.7)	28.9 (7.8)	22.6 (6.0)	$t = 6.9$	<.001*
OPQ – Biological	6.3 (2.3)	6.7 (2.2)	5.6 (2.3)	$t = 3.7$	<.001*
OPQ – Psychological	8.2 (3.4)	8.6 (3.5)	7.7 (3.2)	$t = 1.8$	.07
OPQ – Environmental	6.7 (2.6)	6.6 (2.5)	6.8 (2.8)	$t = .04$	.70
OPQ – Lifestyle	11.7 (2.4)	11.5 (2.6)	12.0 (2.2)	$t = 1.4$	.17

Notes. BMI = body mass index, kg/m^2. Data shown are mean (SD) or number (%).

[a] T-test and chi-square results comparing males and females

* $P < .05$

Table 2.

Correlations Between Weight Loss Expectations and Subject Characteristics and Perceptions

Demographics	*r*	Prob
Female	0.40	<.001*
White	−0.16	.02*
Married	−0.17	.01*
Education level	−0.15	.02*
Weight, kg	0.25	<.001*
BMI, kg/m^2	0.54	<.001*
Past attempts	0.26	<.001*
OPQ – Biological	0.18	.008*
OPQ – Psychological	0.04	.59
OPQ – Environmental	−0.04	.58
OPQ – Lifestyle	0.09	.16

Notes. Shown are Pearson correlations with ideal % weight loss.

*$P < .05$

Table 3.

Correlations Between OPQ Subscales and Subject Characteristics

	Biological		Psychological		Environmental		Lifestyle	
Demographics	***r***	**Prob**	***r***	**Prob**	***r***	**Prob**	***r***	**Prob**
Age, yrs	0.05	.49	−0.01	.90	−0.27	<.001*	−0.06	.40
Female	0.24	<.001*	0.12	.07	−0.03	.70	−0.09	.17
White	−0.13	.04*	0.22	.001*	−0.03	.70	0.20	.003*
Education	0.00	.96	0.13	.04*	0.03	.69	−0.02	.79
Married	−0.10	.15	0.03	.62	−0.07	.30	0.13	.05
Depression history	0.04	.60	0.23	<.001*	0.08	.26	0.06	.34
Weight, kg	0.01	.87	−0.05	.44	0.07	.33	0.20	.003*
BMI, kg/m^2	0.14	.03*	−0.01	.91	0.04	.52	0.13	.06
Family history of obesity	0.22	<.001*	0.12	.09	−0.02	.79	0.17	.01*
Past attempts	0.26	<.001*	0.21	.001*	−0.04	.58	0.00	.96

Notes. Shown are Pearson correlations.

*P < .05