Published in final edited form as:

Addict Behav. 2007 October ; 32(10): 2329–2334.

Body image, body satisfaction, and eating patterns in normal-weight and overweight/obese women current smokers and never-smokers

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Abstract

In order to explore differences between women smokers and never-smokers in body image and eating patterns, we analyzed data obtained from 587 women (18–55 years old) recruited to participate in laboratory investigations not focused on weight concerns. The sample consisted of 420 current smokers and 167 never-smokers; 44% of each group were overweight or obese (BMI ≥ 25). Questionnaires included measures of body image, body dissatisfaction, and restrained and disinhibited eating. Smokers did not differ from never-smokers on perceived body shape but endorsed a thinner preferred body shape and scored lower on body satisfaction than never-smokers. Smokers also scored higher on measures of disinhibited eating. Among smokers, those who were overweight/obese scored higher than normal-weight smokers on concerns about post-cessation weight gain and lower on self-efficacy to avoid relapse if weight increased. Our findings suggest that women smokers may require help in attaining a more realistic body image and attention to dysfunctional eating patterns if they are to achieve and maintain a healthful weight and/or to quit smoking successfully. They also indicate that overweight smokers may be at elevated risk of relapse in the face of post-cessation weight gain.

Keywords

body image; eating; obesity; overweight; smoking; women

1. Introduction

Nicotine suppresses body weight, an effect that has been shown to encourage initiation and maintenance of smoking in women (e.g., French, Perry, Leon, & Fulkerson, 1994; Klesges, Somes, Pascale, Klesges, Murphy, Brown, et al., 1988; Levine, Perkins, Marcus, 2001; Pomerleau, Zucker, Namenek-Brower, Pomerleau, & Stewart, 2001; Pomerleau, Zucker & Stewart, 2001). Women with strong concerns about weight have been shown to be overrepresented among smokers compared with women who have never smoked (Clark et al., 2005; Wee, Rigotti, Davis & Phillips, 2001).

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Conflicting findings have been reported on whether this excess preoccupation with weight among smokers translates into poorer body image and body dissatisfaction. King, Matarin, Marcus, Bock, and Tripolone (2000), for example, found that adult smokers tend to feel relatively unattractive compared with a normative sample. Crohan and colleagues (2006), on the other hand, recently reported no differences between college women smokers and never-smokers in body satisfaction; they observed, however, that among smokers, body dissatisfaction positively predicted *amount* of smoking.

The present study was designed to determine whether smokers differed from never-smokers with respect to body image. Data were collected from women current smokers and never-smokers recruited from the local community on variables related to body image and body satisfaction, as well as on patterns of disordered or maladaptive eating (e.g., high scores on cognitive restraint—that is, excess dieting; and disinhibited eating—that is, uncontrolled and labile eating behavior). We hypothesized that women smokers would exhibit poorer or less realistic body image than their never-smoking counterparts, and that these differences would be particularly salient among overweight and obese women.

2) Method

2.1 Participants

Participants were 587 women (420 current daily smokers, 167 never-smokers), 18–55 years old, recruited from the local community between 1994 and 2002 (mostly in 1994–1995) to participate in biobehavioral laboratory investigations of smoking and nicotine dependence and in clinical trials of smoking cessation medications. Although qualifications varied by study, most smokers were required to smoke at least 10 cigarettes/day for at least 3 years. Never-smokers were required to have smoked <100 cigarettes in their lifetime and not to have smoked within the past year. Individuals recruited to participate in studies focused on weight concerns were excluded in order to obtain an approximation of a random sample with respect to key variables. Consent for the collection of data via a standard baseline assessment battery was obtained, and individuals who did not qualify for subsequent participation in a laboratory study or clinical trial were paid for completing this battery.

2.2 Study instruments

In addition to providing demographic data and smoking history, participants completed the following measures:

1) the *Body Image Questionnaire* (Fallon & Rozin, 1985), which asks respondents to identify which of ten silhouettes of increasingly larger female bodies best represents a) how she looks (perceived body shape); and b) how she wishes she looked (preferred body shape). The discrepancy between the two was also computed.

2) a single-item measure of body satisfaction ("I am satisfied with the shape of my body," rated on a 5-point scale (1=never, 2=rarely, 3=sometimes, 4=often, 5=always; Kurth, Krahn, Nairn, & Drewnowski, 1995)

3) two subscales of the *Three-Factor Eating Questionnaire* (TFEQ; Stunkard & Messick, 1985), Cognitive Restraint (a 21-item index of conscious control of eating) and Disinhibited Eating (a 16-item assessment of unrestrained eating).

In smokers only, degree of concern about post-cessation weight gain was determined by response to the query "If you stopped smoking cigarettes today, how concerned would you be about gaining weight?" Self-efficacy about maintaining abstinence despite weight gain was assessed as response to the question, "If you stopped smoking cigarettes today, how concerned

would you be that you might start smoking again because of any weight gained after quitting?” Both items were rated on a 3-point scale (very, somewhat, not at all; Pomerleau, Zucker, & Stewart, 2001).

2.3 Data analysis

Data were analyzed using 2 (smoker vs. never-smoker) $\times$ 2 (normal-weight vs. overweight/obese) factorial ANOVAs. Because significant differences in age and education emerged for both smoking status and weight category, these variables were included as covariates in subsequent analyses.

3. Results

3.1 Sample characteristics

Baseline and demographic characteristics of normal-weight and overweight/obese never-smokers and current daily smokers are shown in Table 1. Forty-four percent of both smokers and never-smokers fell into the overweight or obese category ($\text{BMI} \geq 25$).

3.2 Current smokers vs. never-smokers

Differences based on smoking and weight status in measures of body image, body satisfaction, and restrained and disinhibited eating are shown in Table 2.

3.3 Normal-weight vs. overweight/obese smokers

Overweight/obese smokers were significantly more concerned than normal-weight smokers about postcessation weight gain (normal weight: 2.02 ± 0.05 ; overweight/obese: 2.33 ± 0.05 ; $t = -4.189$; $p < .001$). They were also higher in concerns (that is, lower in self-efficacy) about avoiding relapse if weight increased (normal weight: 1.82 ± 0.05 ; overweight/obese: 2.13 ± 0.06 ; $t = -4.097$; $p < .001$).

4. Discussion

Forty-four percent of our sample was either overweight or obese. This is somewhat less than the national prevalence of overweight or obesity during the time when most of the data were collected (56% in 1988–1994; National Center for Health Statistics, 1994)—possibly because the participants were drawn from a relatively affluent university community (Zhang & Wang, 2004).

As expected, overweight/obese individuals accurately perceived themselves as larger than normal weight individuals. Smokers did not differ from never-smokers in their perception of their current body size; an interaction emerged that probably reflects differences in actual Body Mass Index. Overweight/obese individuals also (realistically) endorsed a higher preferred weight than normal weight individuals; smokers endorsed a smaller preferred body size than never-smokers. The discrepancy between the two measures was larger for overweight/obese individuals than for normal weight individuals; an interaction emerged such that overweight smokers had a particularly pronounced discrepancy. Overweight/obese individuals had lower levels of body satisfaction than normal weight individuals, and smokers, regardless of weight category, had lower levels of body satisfaction than never-smokers. Although it is possible that the negative effects of smoking on health and appearance contributed to this increased body dissatisfaction in smokers, it is also likely that this dissatisfaction contributes to concerns about post-cessation weight gain. No differences for either grouping variable were detected for Restrained Eating, but significant differences for both grouping variables emerged for Disinhibited Eating.

Overweight/obese smokers were significantly more concerned than normal weight smokers about postcessation weight gain and lower in self-efficacy about avoiding relapse if weight increased.

King and colleagues (2005) recently reported that negative body image ratings predicted greater difficulty in quitting among women in a 12-week randomized clinical trial for smoking cessation. Moreover, in a sample of 41 female weight-concerned smokers, all of whom received open-label bupropion SR, Clark and colleagues (2005) reported promising results of the impact of cognitive behavioral treatment for body image concerns on smoking cessation outcomes: At week 12, 35% of participants who received the intervention and only 24% of controls were abstinent from smoking. In addition, participants who received the intervention significantly reduced their scores on measures of weight concerns and improved their scores on measures of body esteem. Our findings, taken together with those reported by King et al. (2005) and Clark et al. (2005), suggest that smokers have an exaggerated preference for a lean body shape and may require help in attaining a more realistic body image if they are to achieve and maintain a healthful weight and/or to quit smoking successfully, lending support to the need for developing and refining approaches such as those described above. Our findings also support the need for approaches that address concurrent disordered eating and other psychopathology. Overweight smokers may be at elevated risk of relapse because of strong concerns about post-cessation weight gain and low self-efficacy about quitting if weight is gained.

Our study is based on a large sample but shares the limitations of all secondary analyses of data using a *post-hoc* statistical design, and prospective studies will be needed to confirm our results and establish causality. Moreover, concepts such as body satisfaction, concern about postcessation weight gain, and self-efficacy, assessed in our study using single-item variables, should be measured using fully validated instruments. Nonetheless, our findings add to the growing body of evidence that measures of body image concerns should be included in clinical trials and laboratory investigations focusing on smoking-related weight concerns in women.

Acknowledgments

Preparation of this manuscript was supported by Grant HL52981 to the first author from the National Heart, Lung, and Blood Institute. A preliminary version of this report was presented at the 2006 Annual Meeting of the Society for Research on Nicotine and Tobacco, Orlando, FL.

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Table 1

Demographic and baseline data by smoking and weight status.

	Never-smokers		Current smokers		p-value
	BMI <25 (n=93)	BMI ≥25 (n=74)	BMI <25 (n=234)	BMI ≥25 (n=186)	
Age (mean ±SEM)	34.5 ± 0.9	37.5 ± 1.2	32.2 ± 0.6	35.6 ± 0.4	Smoke: p<.05 BMI: p<.001 Smoke × BMI: NS
Race (% White)	80%	69%	81%	75%	Smoke: NS BMI: p<.05 Smoke × BMI: NS
Education (mean ±SEM)	16.4 ± 0.2	15.8 ± 0.2	14.2 ± 0.1	13.9 ± 0.1	Smoke: p<.001 BMI: p<.01 Smoke × BMI: NS
Body Mass Index (BMI; Kg/M ²) (mean ±SEM), controlling for age, education	22.1 ± 0.2	31.5 ± 0.7	21.5 ± 0.1	31.1 ± 0.4	Smoke: p<.05 BMI: p<.001 Smoke × BMI: NS
FTND (mean ±SEM)	---	---	4.5 ± 0.2	4.7 ± 0.2	NS
Cigarettes/day (mean ±SEM)	---	---	18.0 ± 0.6	18.2 ± 0.6	NS

Table 2
Differences based on smoking and weight status in measures of body image, body satisfaction, and restrained and disinhibited eating.

	Never-smokers		Current smokers		p-value
	BMI <25 (n=93)	BMI ≥25 (n=74)	BMI <25 (n=234)	BMI ≥25 (n=186)	
BIQ perceived appearance (adj. mean ±SEM)	3.8 ± 0.1	5.4 ± 0.1	3.4 ± 0.1	5.5 ± 0.1	Smoke: NS BMI p<.001 Smoke × BMI: p<.05
BIQ preferred appearance (adj. mean ±SEM)	2.9 ± 0.1	3.7 ± 0.1	2.7 ± 0.0	3.4 ± 0.1	Smoke: p<.01 BMI p<.001 Smoke × BMI: NS
BIQ discrepancy (adj. mean ±SEM)	0.9 ± 0.1	1.8 ± 0.1	0.7 ± 0.1	2.1 ± 0.1	Smoke: NS BMI p<.001 Smoke × BMI: p<.01
Body Satisfaction (adj. mean ±SEM)	3.5 ± 0.1	2.5 ± 0.1	3.3 ± 0.1	2.2 ± 0.1	Smoke: p<.05 BMI p<.001 Smoke × BMI: NS
Cognitive Restraint (adj. mean ±SEM)	8.8 ± 0.5	8.1 ± 0.6	6.9 ± 0.4	8.0 ± 0.4	Smoke: NS BMI NS Smoke × BMI: NS
Disinhibited Eating (adj. mean ±SEM)	3.7 ± 0.2	7.0 ± 0.4	4.7 ± 0.2	8.3 ± 0.3	Smoke: p<.001 BMI p<.001 Smoke × BMI: NS