

**Research and Professional Briefs**

# “Restrained Eating” vs “Trying to Lose Weight”: How Are They Associated with Body Weight and Tendency to Overeat among Postmenopausal Women?

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**ABSTRACT**

In an effort to control body weight, many women diet or adopt a restrained approach to eating. Although common, dieting and dietary restraint remain poorly understood. Clarification of their association with health-related factors, such as body weight and overeating, is required. In this study, we explored how dieting and dietary restraint were associated with body mass index (BMI; calculated as kg/m<sup>2</sup>) and disinhibition (tendency to overeat) in a sample of 1,071 postmenopausal women aged 45 to 75 years. In a survey of dietary attitudes and body image, we asked about current dieting status and measured restrained eating and disinhibition. Self-reported height and weight were used to calculate BMI, which was confirmed in a subset. Participants were classified by dieting status (yes/no) and level of dietary restraint (high/low by median split). We examined the independent effects of dieting and restrained eating on BMI and disinhibition. More than half of the sample (53%) reported current dieting. Dieting and dietary restraint showed opposite associations with BMI. Among dieters, BMI was 4.1 higher (95% confidence interval: 3.6 to 4.6) than among nondieters. In contrast, BMI of restrained eaters was 1.0 lower (95% confidence interval: -1.6 to -0.5) than unrestrained eaters. Dieters had higher scores for disinhibition, but disinhibition scores of restrained eaters did not differ from those of unrestrained eaters. Our results suggest that dieting and

dietary restraint are not equivalent. Finding that dietary restraint is associated with lower BMI (when considered independently of dieting) suggests that restrained eating, rather than dieting, may contribute to successful weight management.

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**W**ith the increasing prevalence of overweight and obesity (1), it would be helpful to clarify how common strategies for weight control are associated with body mass index (BMI; calculated as kg/m<sup>2</sup>). Women of all body weights diet to control body weight (ie, intentionally restrict dietary intake to lose weight), and to explore dieting behavior, researchers have often measured dietary restraint (ie, the perception that one monitors and makes an effort to limit dietary intake to achieve or maintain a certain body weight) (2). By definition, dieting and dietary restraint seem similar. Yet restrained eating may not be equivalent to dieting: it may not necessarily involve time-limited dietary restriction (3,4) and not all restrained eaters are dieters per se (5).

It is particularly relevant to explore how dieting and dietary restraint may be associated with body weight and disinhibition (ie, susceptibility to overeating due to a loss of eating control [2]), given that both approaches are motivated by a desire to control body weight, and that overeating associated with disinhibition can hinder weight-loss efforts. While dieting is commonly associated with higher body weight (6) and disinhibition of control over dietary restriction (7), the nature of the association between dietary restraint and BMI or disinhibition is less clear. Thus, it is possible that dietary restraint may be distinct from (albeit related to) dieting in these respects. Additional data are required to clarify the relationship between dieting and dietary restraint. We therefore undertook this study to examine the independent associations of dieting and dietary restraint with BMI and disinhibition in a sample of generally healthy community-dwelling postmenopausal women.

**METHODS**

Generally healthy postmenopausal women volunteers (≥1 year since last menses, aged 45 to 75 years) were recruited primarily by newspaper advertisements in free community newspapers (in an urban center and surrounding suburban areas) to a survey of dietary attitudes and body image. Questionnaires were mailed to 1,237

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women and 1,078 completed surveys were returned (87% response rate); 1,071 respondents met both age and menopausal status inclusion criteria and were included in analyses. The study received institutional ethics review board approval and all respondents consented to participate.

We measured dietary restraint with the Three-Factor Eating Questionnaire (also known as the Eating Inventory) cognitive restraint scale (2). This 21-item scale is a widely used measure of dietary restraint and has advantages over the restraint scale (8) because its measurement of restrained eating is not confounded by weight fluctuation or disinhibited eating (9). Scores for dietary restraint range from 0 to 21 (higher scores reflect higher dietary restraint). Disinhibition (tendency to lose control over eating) was measured with the Three-Factor Eating Questionnaire disinhibition scale (2). Scores for disinhibition range from 0 to 16 (higher scores reflect higher disinhibition). We assessed dieting status with the question: "Are you trying to lose weight at the present time?" (yes/no). A single clear question such as this is a robust measure of dieting status (5,10). BMI was calculated from self-reported height and weight. BMI from self-reported values correlated highly with that calculated from direct measurements in a subsequent study of 78 of these participants ( $r=0.89$ ;  $P<0.0001$ ) (11). We assessed participants' perceptions of their current weight using a 5-point scale (1=very underweight, 2=slightly underweight, 3=about right, 4=slightly overweight, 5=very overweight). Additional questions pertained to habitual weekly exercise, smoking history, ethnicity, education, and annual income.

Missing values were rare, although 173 (16%) respondents omitted  $\geq 1$  Three-Factor Eating Questionnaire restraint scale response and 100 (9%) omitted  $\geq 1$  Three-Factor Eating Questionnaire disinhibition scale response. If  $\leq 2$  values were missing, the median response was substituted, resulting in dietary restraint scores for 1,044 (97%) respondents and disinhibition scores for 1,046 (97%) respondents. Missing values were otherwise excluded on a pairwise basis. Respondents were classified according to dieting status (yes/no) and dietary restraint (high/low by median split of Three-Factor Eating Questionnaire restraint scale scores, median score=10) as restrained dieters ( $n=342$ ; 34%), unrestrained dieters ( $n=206$ ; 20%), restrained nondieters ( $n=174$ ; 17%), and unrestrained nondieters ( $n=298$ ; 29%). Secondary analyses were conducted in a subset ( $n=562$ ) scoring in the lowest or highest dietary restraint quartile (Three-Factor Eating Questionnaire restraint scale scores  $\leq 6$  or  $\geq 13$ , respectively).

Categorical variables were compared using  $\chi^2$  and correlations were examined with Pearson's correlation coefficients. Differences in BMI and other continuous variables between dieters and nondieters and restrained and unrestrained eaters were compared by multiple regression using contrast codes for dieting status and level of dietary restraint (12). Contrast codes are somewhat similar to dummy variables for categorical data because numerical values are created and used in the regression to represent the variables under investigation. Regression allowed us to explore differences associated with one variable (either dieting or dietary restraint) while controlling

for the other (12). This was critical to the analysis because it allowed us to statistically separate these two characteristics to determine whether they have similar or different effects. Our data did not fulfill the assumption of homoscedasticity (uniformity of variance), which is required for regression analyses. Thus, we calculated 95% confidence intervals (CI) with the bias corrected and accelerated bootstrap method, using case resampling (with replacement) in 999 random bootstrap samples. Analyses were conducted in SPSS (version 11.5, 2003, SPSS Inc, Chicago, IL) and Arc (version 1.06, 2004, University of Minnesota, St Paul) with the bootstrapping add-on (13). Results were considered statistically significant at  $P<0.05$ .

## RESULTS AND DISCUSSION

Most participants were white (87%), roughly two thirds had completed at least postsecondary school (68%), many (44%) had an annual income  $> \$50,000$ , and most (62%) had never smoked. Dieters did not differ from nondieters in these respects. The only difference between restrained and unrestrained eaters was that proportionally more restrained eaters reported higher income (50% vs 42%;  $\chi^2=6.6$ ;  $P=0.04$ ).

Mean BMI for the total sample was  $24.8 \pm 4.5$  (range=16.7 to 52.3) and 53% reported current dieting. More dieters than nondieters had BMI  $\geq 25$  (58% vs 19%;  $\chi^2=169.9$ ;  $P<0.0001$ ), reflecting a body mass above the normal weight range, but the proportions of restrained and unrestrained eaters with BMI  $\geq 25$  were similar (41% vs 39%;  $\chi^2=0.7$ ;  $P=0.4$ ). Scores for dietary restraint were similar to those typically reported for younger women (14,15), with a mean score of 9.8 and a median score of 10. With no consideration given to dieting status, dietary restraint and BMI were not correlated ( $r=-0.01$ ;  $P=0.84$ ).

The Table shows differences between dieters and nondieters (controlling for dietary restraint) and restrained and unrestrained eaters (controlling for dieting status). Notably, BMI was 4.1 higher among dieters than nondieters, whereas BMI was 1.0 lower among restrained than unrestrained eaters. There was no interaction between dieting status and dietary restraint group on BMI. Dieters were slightly younger than nondieters, but no differences in weekly exercise were noted. Dietary restraint was slightly higher among dieters than nondieters and more so among restrained than unrestrained eaters (by definition). Dietary restraint score was the only variable for which there was an interaction between dieting status and dietary restraint group ( $B=-0.7$ ; 95% CI:  $-1.2$  to  $-0.1$ ;  $P=0.03$ ): dietary restraint scores were more similar among dieters and nondieters with high dietary restraint (13.6 vs 13.1) than they were among dieters and nondieters with low dietary restraint (6.7 vs 5.6). Dieters had higher scores for disinhibition than nondieters, but restrained eaters did not differ from unrestrained eaters in this respect. Controlling for BMI, dieters felt more overweight than nondieters, but restrained and unrestrained eaters did not differ in their perceptions of their weight.

Secondary analyses in highly restrained (upper quartile) and highly unrestrained (lower quartile) eaters showed a similar BMI difference between dieters and nondieters (3.8; 95% CI: 3.2 to 4.6;  $P<0.001$ ) and an even

**Table.** Differences between postmenopausal dieters and nondieters with high or low levels of dietary restraint<sup>a</sup>

	Total sample	Dieting		Not Dieting		Dieting <sup>b</sup>	Restrained <sup>c</sup>
		Restrained	Unrestrained	Restrained	Unrestrained		
n <sup>d</sup>	1,071	342	206	174	298	← difference (95% CI) →	
	← mean± standard deviation →						
BMI <sup>e</sup>	24.8±4.5	26.3±4.1	27.0±4.9	21.9±2.8	23.2±4.0	4.1 (3.6 to 4.6)***	-1.0 (-1.6 to -0.5)***
Age (y)	59.8±6.8	59.4±6.8	58.9±7.1	60.5±6.6	60.3±6.8	-1.2 (-2.1 to -0.3)**	0.3 (-0.5 to 1.2)
Dietary restraint <sup>f</sup>	9.8±4.4	13.6±2.7	6.7±1.9	13.1±2.5	5.6±2.3	1.0 (0.6 to 1.3)***	7.2 (6.9 to 7.5)***
Disinhibition <sup>g</sup>	5.5±4.1	7.0±4.0	7.6±4.4	3.4±2.8	3.6±3.2	2.4 (1.9 to 3.0)***	-0.1 (-0.5 to 0.4)
Perceptions of weight <sup>h</sup>	3.8±0.8	4.1±0.5	4.3±0.5	3.2±0.6	3.3±0.8	0.5 (0.4 to 0.6)***	-0.002 (-0.06 to 0.06)
	← median (interquartile range) →						
Exercise (h/wk)	4 (2 to 6)	4 (2 to 5.5)	3 (2 to 5)	4 (2.5 to 6)	4 (2 to 6)	-0.1 (-0.6 to 0.4)	0.1 (-0.4 to 0.5)

<sup>a</sup>Participants were classified as dieters if they answered "yes" to the question, "Are you trying to lose weight at the present time?" and as restrained eaters if they scored at or above the median Three-Factor Eating Questionnaire restraint scale score of 10.  
<sup>b</sup>Difference (95% confidence interval [CI]) between dieters and nondieters (controlling for dietary restraint).  
<sup>c</sup>Difference (95% CI) between restrained and unrestrained eaters (controlling for dieting status).  
<sup>d</sup>Subgroups include 1,020 participants for which both dieting status and dietary restraint score were available.  
<sup>e</sup>BMI=body mass index; calculated as kg/m<sup>2</sup>.  
<sup>f</sup>Three-Factor Eating Questionnaire restraint scale (2) score; range=1 to 21. There was a statistical interaction between dietary restraint group (high/low) and dieting status on dietary restraint score.  
<sup>g</sup>Three-Factor Eating Questionnaire disinhibition scale (2) score; range=1 to 16.  
<sup>h</sup>Responses ranged from 1=very underweight to 5=very overweight. Dieting and restraint differences were controlled for BMI.  
\*\*P<0.01.  
\*\*\*P<0.001.

greater BMI difference between restrained and unrestrained eaters (-1.6; 95% CI: -2.4 to -1.0; P<0.001). A similar difference in disinhibition scores between dieters and nondieters was observed (2.6; 95% CI: 2.0 to 3.4; P<0.001), with again no difference in disinhibition scores between highly restrained and highly unrestrained eaters (-0.1; 95% CI: -0.7 to 0.4; not significant). However, the difference in age between dieters and nondieters did not persist, nor did the interaction between dieting status and dietary restraint group on dietary restraint score (data not shown).

This study adds to our understanding of eating attitudes, efforts to lose weight, and BMI among postmenopausal women. While it is informative to note that more than half of the sample reported a current weight-loss effort (ie, diet), the most significant contribution of this study is the observation that differences in BMI and disinhibition are not similar when comparing dieters with nondieters (controlling for level of dietary restraint) and restrained with unrestrained eaters (controlling for dieting status).

Previous research demonstrated that BMI is positively associated with dieting (6), yet large studies in adults showed no overt association between BMI and restrained eating (15,16). For example, the correlation of BMI with dietary restraint was r=-0.02 (not significant) among 1,671 French women with a broad range of BMI (15), almost exactly the univariate correlation in our sample. Our finding that BMI is differentially associated with dieting and dietary restraint (such that dieters have higher BMI than nondieters and restrained eaters have lower BMI than unrestrained eaters) is important for two reasons. First, it highlights the contrasting independent association of each characteristic with BMI (avoiding the confounding of the two variables that has typically occurred). This helps clarify the association between di-

etary restraint and BMI among older women and suggests that dietary restraint (when practiced independent of dieting) is associated with lower BMI and successful weight management. Second, our results indicate that dieting and dietary restraint are not synonymous and that the two terms should not be considered interchangeable. This has implications for the use of dietary restraint scales, which were originally developed to identify dieters (8) and which are still frequently used in that capacity.

Our finding that disinhibition (propensity for overeating) is higher among dieters than nondieters, but not higher among restrained vs unrestrained eaters, further suggests that dieting and dietary restraint are not equivalent. Restraint theory asserts that dieting leads to overeating and bingeing (17); dieting and dietary restraint are considered equivalent and disinhibition of eating control among dieters is considered an inevitable consequence of their dietary restraint (7). Our results are consistent with the hypothesis that disinhibition is greater among dieters, but challenge the assumption that dieting and restrained eating are equivalent strategies. Confirming the differences in BMI and lack of difference in score for disinhibition between the subsets of highly restrained and highly unrestrained eaters lends strength to those findings. Finally, additional evidence of the difference between dieting and restrained eating is provided by the differences in body-weight perceptions between dieters and nondieters, but not between restrained and unrestrained eaters.

Our data suggest that dietary restraint could be consistent with successful ongoing weight management for nondieting postmenopausal women because it was associated with considerably lower BMI. This is not necessarily inconsistent with reports that dietary restraint is not associated with acute (ie, single meal) caloric intake (3) or energy intake over moderate time periods (4). BMI pro-

vides an integrated long-term indicator of energy balance; our data suggest that dietary restraint (independent of dieting) contributes to weight suppression over time. It is possible that the restrained eaters in our postmenopausal sample have been adhering to a restrained eating pattern for many years and have thus become more successful in dietary restraint. Whether similar results would be obtained in a younger sample warrants investigation.

Our study was limited by its cross-sectional design (and thus inability to determine causal relationships), its convenience sample, and its use of self-reported measures of dieting, height, and weight (from which we calculated BMI), and dietary restraint and disinhibition. While our focus on postmenopausal women was warranted given the lack of information regarding dieting and dietary restraint postmenopause, it is unknown whether similar results would be found for younger women. In addition, our sample was predominantly white, so the results may not be generalizable to nonwhite women.

## CONCLUSIONS

Our results support the view that long-term efforts at restricting dietary intake are more effective for achieving and maintaining a lower body weight than is time-limited dieting. Although additional research is required to clarify behavioral distinctions between dieting and dietary restraint, this study suggests that dieting and dietary restraint are somewhat different approaches to dietary restriction, with contrasting implications for BMI and disinhibition of eating control.

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