Yo-Yo Dieting in African American Women: Weight Cycling and Health

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Introduction

Obesity and Weight Cycling

Nearly 80% of African American (AA) women are overweight or obese and obesity-related health disparities significantly affect their lives. Dieting, once considered as a nearly exclusive Caucasian enterprise, is quite common among AA women. A survey of 1,150 AAs conducted in 2002 revealed that nearly 14% reported dieting and in a study of weight-control practices among AAs, 61% reported trying to lose weight. In a recent study of low-income post-partum AA women, 75% reported dissatisfaction with current body size and 55.9% wanted to lose weight. However, a historically-biased view that body image disturbance and self-esteem effects of dieting are more common among Caucasian women may partially explain the limited research among ethnic minority groups.

The number of weight-loss studies targeting AA women, however, has increased. Unfortunately, data suggest that AA women may be at greater risk of weight regain after loss than their Caucasian counterparts. Therefore, as more AA women attempt to lose weight, they may be more likely to weight cycle (WC), or to have repeated loss and regain of body weight. Weight cycling has been reported in up to 80% of weight-loss treatment-seeking women of unreported ethnicity.

Weight Cycling and Physical Health

Links between WC and increased weight, hypertension, and eating-disordered cognitions have been proposed, however, studies on the physical and/or psychological health risks associated with WC have produced mixed results. Some studies report no relation between WC and physical health, while others suggest that cycling increases health risks. Specifically, WC has been associated with increased weight and central adiposity, hypertension, and type 2 diabetes. None of these studies, however, have examined an entirely AA sample or did not include information on participant ethnicity, limiting their generalizability. Consequently, the physical health risks associated with WC among AA women are unknown.

Weight Cycling and Psychological Health

Links between WC and psychological health are inconclusive. Studies have reported WC is associated with binge eating, anxiety, depression, and lower overall well-being in undefined or primarily Caucasian samples. Yet, other studies suggest no association with psychological health, and again, there is no information on these outcomes within different ethnic groups. Since dieting has been linked to increased eating disorder symptoms among Caucasian women, it is worth investigating whether similar links exist among AA women who diet. Although past research suggests AA women may accept and appreciate larger body sizes and are less likely to view themselves as overweight than other cultural groups, this finding may not apply to all AA.

As more AA women attempt to lose weight, they may be more likely to weight cycle (WC), or to have repeated loss and regain of body weight.
Given the increased rates of obesity among AA women, subsequent increased rates of dieting may mitigate this buffering effect on body image and the gap between Caucasian and AA women in body image disturbance is reportedly narrowing. As such, further investigation of the psychological impact of WC among AA women is warranted, rather than assuming that ethnic minority women are protected from low body esteem and drive for thinness.

**Purpose of Present Study**

Inconclusive results on the physical and psychological health problems associated with WC may be due, in part, to factors such as sex, age, and current weight of participants. And limited data among ethnic minority groups prevent adequate understanding of WC’s effects on much of the population. The prevalence of obesity and related health disparities among AA women require a thoughtful examination of weight control efforts, including WC. As a fundamental step, the current study aimed to identify the prevalence of WC among overweight or obese AA women seeking weight-loss treatment. Further, we examined the association between WC and physical and psychological variables known to influence health. The amount of weight lost (20+ lbs) required to meet definition of WC in this study is the same amount as was used in the Nurses’ Health Study II, a large trial that investigated the influence of WC on physical health factors. While the Nurses’ Health Study II required participants to be overweight/obese (BMI: 27–40 kg/m²), female nonsmokers aged 18–60 years. Exclusion criteria included medical problems affecting metabolism or exercise participation including heart disease, recent weight loss (ie, more than 9.1 kg in the past 6 months or 4.5 kg in the past month), thyroid disease, renal failure, diabetes, current tobacco use, pregnancy, antidepressant use, or uncontrolled high blood pressure defined by physician evaluation. Physician approval was required. Height, weight, and blood pressure were measured at baseline and participants completed self-report measures related to psychological health and history of eating behavior.

**Method**

**Participants**

Participants were 167 overweight or obese AA women enrolled in a community-based weight-loss program. Participants gave written consent to participate and completed 13 weeks of weight-loss treatment, however the present data are from baseline assessments completed prior to the program. This study was approved by the university’s human subjects review board.

**Procedure**

The current investigation is part of a larger ongoing study that recruited only AA women by newspaper advertisements and church bulletins. Inclusion criteria required participants to be overweight/obese (BMI: 27–40 kg/m²), female nonsmokers aged 18–60 years. Exclusion criteria included medical problems affecting metabolism or exercise participation including heart disease, recent weight loss (ie, more than 9.1 kg in the past 6 months or 4.5 kg in the past month), thyroid disease, renal failure, diabetes, current tobacco use, pregnancy, antidepressant use, or uncontrolled high blood pressure defined by physician evaluation. Physician approval was required. Height, weight, and blood pressure were measured at baseline and participants completed self-report measures related to psychological health and history of eating behavior.

**Adequate understanding of WC’s effects among ethnic minority groups prevent**

**Blood Pressure**

Blood pressure (BP) measurements were taken by a registered nurse or trained research assistant using a random zero sphygmomanometer and appropriately-sized cuffs. Readings were classified according to the Joint National Committee (JNC) V Guidelines for Blood Pressure (Table 1). Participants’ blood pressure readings were measured after the orientation session, which allowed participants to rest in the seated position for approximately 40 minutes prior to measurements. Pressures were measured one time unless a high reading (>120/80 mm Hg) resulted. In these cases, pressures were measured a second time and the first reading was excluded from the present analysis.

**Height and Weight**

Participants’ height (centimeters) and weight (kilograms) were assessed using a standard balance beam scale. Body mass index (BMI) in kg/m² was calculated from these measurements.

**Self-esteem**

The State Self-esteem Scale (SSES) was used to assess global and appearance-specific self-esteem. The measure...
Table 1. Demographic information*

<table>
<thead>
<tr>
<th>Weight Cyclers (n=105)</th>
<th>Non-Cyclers (n=62)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>41.57 (9.41)</td>
</tr>
<tr>
<td>Education, ≥16 years</td>
<td>54.52%</td>
</tr>
<tr>
<td>Full-time employment</td>
<td>94 (90%)</td>
</tr>
<tr>
<td>Individual income, &gt;$40,000</td>
<td>70 (67%)</td>
</tr>
<tr>
<td>Married</td>
<td>49 (47%)</td>
</tr>
<tr>
<td>Hypertension classification†, mm Hg</td>
<td></td>
</tr>
<tr>
<td>Normal, &lt;120/80</td>
<td>29 (28%)</td>
</tr>
<tr>
<td>Pre-HTN, 120–139/80–89</td>
<td>46 (44%)</td>
</tr>
<tr>
<td>Stage 1 HTN, 140–159/90–99</td>
<td>22 (21%)</td>
</tr>
<tr>
<td>Stage 2 HTN, &gt;160/100</td>
<td>6 (6%)</td>
</tr>
</tbody>
</table>

* Results are given as mean (SD) for age or n (%).
† Joint National Committee 7 Guidelines for Blood Pressure.37

RESULTS

Demographics

Analyses are based on 167 AA women with a mean age of 42 years (SD=9.11) and BMI of 36.08 kg/m² (SD=5.81). Cyclers and non-cyclers did not differ on demographic information including age, education, employment status, income, marriage, or medication use (all $P>0.05$). See Table 1 for a list of all demographic information.

Sixty-three percent of participants (n=105) were defined as cyclers. See Table 2 for a description of reported WC history. Interestingly, more than half of cyclers had cycled more than three times. Analysis of variance tests were used to assess differences in physical health, psychological health and eating pathology between cyclers (n=105) and non-cyclers (n=62).

Physical Outcomes

Cyclers weighed more, had a higher BMI, and reported a higher peak weight compared to non-cyclers, despite reporting no differences in ideal weight. Figure 1 depicts cyclers’ and non-cyclers’ current weight, peak weight, and ideal weight. Cyclers reported being at

<table>
<thead>
<tr>
<th>Self Esteem for Appearance</th>
<th>Total Self Esteem</th>
<th>BDI</th>
<th>BAI</th>
<th>Binge Likelihood</th>
<th>Drive for Thinness</th>
<th>Body Dissatisfaction</th>
<th>Systolic BP (mm Hg)</th>
<th>Diastolic BP (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of weight cycles as defined on QEWP-R</td>
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<tr>
<td>0 (n=62)</td>
<td>18.47 (3.52)</td>
<td>79.83 (11.72)</td>
<td>4.89 (5.42)</td>
<td>3.46 (4.42)</td>
<td>15.84 (7.86)</td>
<td>3.02 (3.85)</td>
<td>14.43 (6.43)</td>
<td>125.74 (16.76)</td>
</tr>
<tr>
<td>1–2 (n=50)</td>
<td>16.42 (3.11)</td>
<td>77.25 (9.74)</td>
<td>6.11 (5.13)</td>
<td>4.70 (5.00)</td>
<td>17.45 (8.58)</td>
<td>5.01 (4.43)</td>
<td>18.10 (6.43)</td>
<td>128.21 (17.68)</td>
</tr>
<tr>
<td>3–4 (n=46)</td>
<td>18.37 (3.94)</td>
<td>81.07 (12.03)</td>
<td>7.91 (6.88)</td>
<td>5.29 (9.19)</td>
<td>20.00 (6.92)</td>
<td>3.86 (3.77)</td>
<td>15.81 (5.82)</td>
<td>132.50 (18.08)</td>
</tr>
<tr>
<td>≥5 (n=9)</td>
<td>14.00 (3.38)</td>
<td>73.92 (6.90)</td>
<td>6.50 (5.47)</td>
<td>5.42 (6.08)</td>
<td>22.08 (8.85)</td>
<td>5.91 (4.34)</td>
<td>22.33 (4.58)</td>
<td>125.65 (11.14)</td>
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</table>

QEWP-R, Questionnaire on Eating and Weight Patterns Revised; BDI, Beck Depression Inventory; BAI, Beck Anxiety Inventory; BP, Blood Pressure.
their highest weight ever while non-cyclers were slightly below.

Due to the known association of body weight and BP and the 9.1 kg difference in body weight between cyclers and non-cyclers, weight was controlled in BP analyses. As displayed in Table 3, there were no differences in systolic or diastolic BP between cyclers and non-cyclers. Despite participants’ physician approval to participate in the study and confirmation that all participants had normal BP prior to enrollment, 21% of cyclers and 21% of non-cyclers reported a history of hypertension. Additionally, the groups did not differ in JNC Stage Classification, as depicted in Table 1.

Psychological Outcomes

Since the relationships between body weight and psychological variables remained to be elucidated, all analyses were completed both when controlling for body weight and when not controlling for body weight. When body weight was not controlled, the WC groups differed in depressive symptoms, $F(2,141)=4.92$, $P<.05$, and the likelihood to binge eat, $F(2,139)=8.62$, $P<.05$. Binge scores were in the clinical range, suggesting that participants endorsed some level of disordered eating behaviors.

When controlling for baseline weight, cyclers reported significantly lower self-esteem for their appearance and greater body dissatisfaction and drive for thinness compared to non-cyclers, however, all scores were within clinically normal limits. Average total self-esteem scores, symptoms of anxiety, and symptoms of depression were all clinically nonsignificant and did not differ between cyclers and non-cyclers. Mean and standard deviations for psychological measures are presented in Table 3.

Post-hoc Analyses

The number of cyclers with five or more cycles was very low; analyses to detect differences in psychological measures among individuals who had weight cycled “one or two times, three or four times, or five or more times” were underpowered. Therefore, Pearson’s correlations were calculated to assess the association between number of cycles as a continuous variable and psychological factors. WC was negatively correlated with global self-esteem ($P<.05$) and positively correlated with likelihood of bingeing ($P<.01$), drive for thinness ($P<.05$), and body dissatisfaction ($P<.01$) (See Table 4).

DISCUSSION

To our knowledge, this is the first study to report on the prevalence of WC among a community sample of AA women presenting for weight-loss treatment. Our findings suggest that this phenomenon is quite common; two thirds of participants in our sample reported losing and regaining 9.1 kg not...
due to illness at least once. One-third reported experiencing this type of WC three or more times. These data are similar to a previous report that 80% of treatment-seeking women of unreported race had weight cycled. This replication of findings in our sample lends support to the notion that intentional weight loss, followed by regain, may be quite common among overweight AA women. Given the increasing prevalence of overweight and obesity among AA women, it is likely that this number will continue to rise as more women attempt weight loss.

With regards to physical health and WC, cyclers weighed more upon entry into treatment and reported higher peak weights compared to non-cyclers. However, reported ideal weight did not differ by group. Surprisingly, almost 70% of the sample’s BP measured in the prehypertensive or hypertensive range, despite being screened for uncontrolled hypertension prior to enrollment. These findings are of concern and may reflect poor BP control among a significant number of individuals. Although research suggests that AA women do not differ from Caucasians on reasons for seeking weight-loss treatment, the finding that many AA women seeking treatment had elevated BP highlights the importance of educating women about the risk factors associated with obesity.

Psychological health also varied by cycling history. African American cyclers were more likely to binge eat and reported greater body image disturbance and drive for thinness compared to their non-cycling counterparts. However, the groups did not differ in depressive or anxious symptomatology, suggesting that the relationship between psychological health and WC may be limited to the domain of body image and eating. These results are similar to existing literature, although such results had previously only been reported among Caucasian samples. Although cyclers reported poorer self-esteem for their appearance, scores were within clinically normal limits. However, it is important to consider that clinical norms have been established in primarily Caucasian samples. Thus, lower self-esteem among AA women cyclers, in combination with our findings that both cyclers and non-cyclers scored above published norms for overweight women on binge eating and body dissatisfaction warrants further research. Future studies should attempt to develop norms on measures of binge eating, body dissatisfaction, and body-related self-esteem among AA women. Without relevant norms, it is difficult to draw appropriate conclusions and determine which scores are clinically significant. Our results do, however, lend support to the notion that AA women experience minimal non-eating related psychological distress related to being overweight as indicated by the low levels of anxiety and depression in both groups.

Limitations of this work should be addressed. Our sample comprised treatment-seeking women enrolling in a weight-management study with several exclusion criteria, therefore the generalizability of our findings may be restricted. For example, recent cyclers may have been excluded from this study due to the exclusion criteria of a loss of 9.1 kg or more over the past six months. Additionally, we attempted to exclude hypertensive patients. While some patients with blood pressure readings in the hypertensive range were enrolled, our exclusion criteria may have increased the likelihood of rejecting a true hypothesis linking weight cycling to higher blood pressure. In addition, due to inconsistency in nonresponse across...

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**Table 4. Intercorrelations for psychological variables, blood pressure, and continuous measure of weight cycling**

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<tr>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>1.Number of weight cycles</td>
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<td></td>
<td></td>
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<tr>
<td>2. Self-esteem for appearance</td>
<td>–</td>
<td>–.082</td>
<td></td>
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<td></td>
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<tr>
<td>3. Global self-esteem</td>
<td>–.235*</td>
<td>–.6721</td>
<td>–</td>
<td></td>
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<tr>
<td>4. Depressive symptomology</td>
<td>.153</td>
<td>–.470†</td>
<td>–.447</td>
<td>–</td>
<td></td>
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<tr>
<td>5. Anxiety</td>
<td>.124</td>
<td>–.435†</td>
<td>–.439†</td>
<td>.598†</td>
<td>–</td>
<td></td>
<td></td>
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<tr>
<td>6. Binge questionnaire</td>
<td>.233</td>
<td>–.021</td>
<td>–.062</td>
<td>.169*</td>
<td>.087†</td>
<td>–</td>
<td></td>
<td></td>
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<tr>
<td>7. Drive for thinness</td>
<td>.172*</td>
<td>–.537†</td>
<td>–.379†</td>
<td>.443*</td>
<td>.260†</td>
<td>.186*</td>
<td>–</td>
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<tr>
<td>8. Body dissatisfaction</td>
<td>.267†</td>
<td>–.096</td>
<td>–.494†</td>
<td>.297†</td>
<td>.123</td>
<td>.106</td>
<td>.134</td>
<td>–</td>
<td></td>
<td></td>
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<tr>
<td>9. Systolic blood pressure</td>
<td>.058</td>
<td>.081</td>
<td>.109</td>
<td>–.028</td>
<td>.059</td>
<td>–.039</td>
<td>–.110</td>
<td>–.061</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>10. Diastolic blood pressure</td>
<td>.056</td>
<td>.041</td>
<td>.114</td>
<td>–.034</td>
<td>.075</td>
<td>–.007</td>
<td>–.049</td>
<td>–.035</td>
<td>.625†</td>
<td>–</td>
</tr>
</tbody>
</table>

* P<.05.
† P<.01.

**Our findings suggest that this phenomenon [weight cycling] is quite common; two thirds of participants in our sample reported losing and regaining 9.1 kg not due to illness at least once.**
measures, the subsequent small sample size of nonresponders for each measure does not allow for adequately powered comparisons between responders and nonresponders. However, because this study is the first of its kind, our findings are an important step in expanding the literature in WC to an understudied group.

Also, there is no single agreed upon definition of the WC construct.44 The National Institutes of Health suggest that small weight cycles range from loss and regain of 2.3–4.5 kg, whereas a large cycle may be characterized by 23 kg or more. Assessment methods also vary, from open-ended questions such as, “Have you lost and gained weight in the past?” to measuring a specific number of kilogramlost and regained a particular number of times.46 The definition chosen for this study might not have captured women who cycle more frequently or cycle through smaller losses and gains (eg, 4.5 kg). Yet another assessment issue is that many of the measures we included in this study have yet to be validated among AA samples.

AA women are at increased risk for obesity and obesity-related morbidities and mortality. Yet data rarely include analysis of obesity from a cultural perspective for AA and effective assessment tools and treatment approaches are lacking. Our study used a previously supported definition of WC and found interesting and meaningful differences between cyclers and non-cyclers, which could be useful in expanding on the somewhat confusing extant literature on WC. Our findings support the notion that the buffer proposed to protect AA women’s body image may not uniformly apply.47 Rather, some of the same pressures traditionally faced by Caucasian women regarding appearance, such as pressure to achieve a lower body weight, may be important to assess among AA treatment seekers as well. In fact, very recent data suggest that emphasizing physical appearance in treatment groups resulted in greater weight loss at 6 and 12-month follow up among a group of AA and Caucasian treatment-seeking women.43 Although AA women’s body size and shape ideals may still differ from Caucasians’, understanding the unique physical and psychological impact of weight loss attempts for AA women is important.

Replication of our results in additional AA samples will be important, particularly using measures that have been validated with AA samples. The prevalence of WC in our sample underscores the importance of further exploration of clinically meaningful outcomes which may be related to cycling, such as waist circumference and eating patterns. While AA women have often been considered buffered from body image ideals common among Caucasian women, our findings that WC was associated with poorer self-esteem and body image among AAs highlight the need for further analysis.

ACKNOWLEDGMENTS

Funding for this project was made possible (in part) by P20MD000505 from the National Center on Minority Health and Health Disparities. The views expressed here do not necessarily reflect the official policies of the Department of Health and Human Services nor does mention by trade names, assessment methods also vary, from open-ended questions such as, “Have you lost and gained weight in the past?” to measuring a specific number of kilogramlost and regained a particular number of times. The definition chosen for this study might not have captured women who cycle more frequently or cycle through smaller losses and gains (eg, 4.5 kg). Yet another assessment issue is that many of the measures we included in this study have yet to be validated among AA samples.

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REFERENCES


**AUTHOR CONTRIBUTIONS**

Design concept of study: Osborn, Forys, Sbrocco

Acquisition of data: Osborn, Forys, Sbrocco

Data analysis and interpretation: Osborn, Forys, Psota, Sbrocco

Manuscript draft: Osborn, Forys, Psota, Sbrocco

Statistical expertise: Osborn, Forys, Psota, Sbrocco

Acquisition of funding: Osborn, Sbrocco

Administrative: Osborn, Forys, Psota, Sbrocco

Supervision: Osborn, Sbrocco