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# Race, Menopause, Health-Related Quality of Life, and Psychological Well-Being in Obese Women

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## Abstract

LAFERRÈRE, BLANDINE, SHANKUAN ZHU, JENNIFER R. CLARKSON, MARIANNE R.M. YOSHIOKA, KATHERINE KRAUSKOPF, JOHN C. THORNTON AND F. XAVIER PI-SUNYER. Race, menopause, health-related quality of life, and psychological well-being in obese women. *Obes Res.* 2002;10:1270–1275.

**Objective:** To investigate the health-related quality of life (HR-QOL) in African-American (AA) and white (W) obese women.

**Research Methods and Procedures:** Participants were 145 obese women (80 AA and 65 W; 87 premenopausal and 58 postmenopausal) who completed the Medical Outcomes Study short form, the Brief Symptom Inventory, the Life Distress Inventory, the Satisfaction With Life Scale, and the Rosenberg Self-Esteem Scale before entering a weight-loss study. The mean age of the subjects was  $46.3 \pm 11.1$  years and the mean body mass index was  $35.2 \pm 4.2$  kg/m<sup>2</sup>.

**Results:** Although AA women were slightly heavier ( $95.3 \pm 10.3$  kg vs.  $91.5 \pm 11.6$  kg,  $p < 0.05$ ) and less educated ( $14.2 \pm 3.7$  years vs.  $15.7 \pm 3.7$  years,  $p < 0.05$ ) than the W women in the sample, there was no difference between the two ethnic groups in any of the reported HR-QOL variables. Menopausal status had a significant effect on HR-QOL, with premenopausal women being more distressed ( $p = 0.002$ ), having more limitations in social activity ( $p = 0.007$ ), and having less vitality ( $p < 0.001$ ) than the postmenopausal women. This was especially true in the AA women.

**Discussion:** These data show no difference in HR-QOL between AA and W obese women and suggest that menopausal status may have an impact on HR-QOL, especially in AA women.

**Key words:** quality of life, race, menopause, overweight

## Introduction

Obesity has been associated with compromised health-related quality of life (HR-QOL) and psychological well-being (1–9). Poorer HR-QOL in obese individuals has been related to constraints in physical functioning (8,10–15), perceived limitations in physical ability (6,11,16–18), and reported increased bodily pain (1,2,9,14,16,19). Obese subjects have been shown to have poorer psychological profiles than chronically ill people (20,21). Also, for women, there is an inverse relationship between obesity and socioeconomic position and success (11).

The relationship between ethnicity and HR-QOL has been examined in individuals with chronic conditions (22–25). Some studies have attributed the difference in HR-QOL between ethnic groups to socioeconomic status and life burden rather than ethnicity (22). In a study of older women, after adjusting for disability status, “black race” was one of the determinants of poorer HR-QOL (26). However, studies that examine the role of ethnicity in obese individuals in relation to HR-QOL are rare. One study suggested that obese whites were more likely to report pain than non-whites (14).

Studies on the impact of menopause on HR-QOL have focused on issues such as hormone replacement therapy (27–33), with most studies showing a deterioration of HR-QOL after menopause (34).

To our knowledge, no study has assessed and compared measures of HR-QOL, as well as measures of self-esteem, life satisfaction, and psychological functioning, in African-American (AA) and white (W) obese women.

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## Research Methods and Procedures

### Study Design

Participants were invited to participate in a 1-year longitudinal study including measurement of body composition and a weight-loss program. The data related to HR-QOL, life satisfaction, and psychological well-being were collected at enrollment and are presented here.

### Subjects

A total of 145 obese women (age, 24 to 74 years), either AA or W, were recruited through newspaper advertisements and word of mouth. All women lived in one of the five boroughs of New York City. Subjects were categorized as AA or W if both parents and all four grandparents were of the same self-reported race. Women did not take any oral contraceptives or estrogen for 6 months before enrollment. Participants reported consuming <2 drinks per day, most were nonsmokers or smoked <10 cigarettes per day, and all were healthy (none reported having any chronic illness such as diabetes or active cancer). A medical history, laboratory tests, anthropometric measurements, and DXA measurements were performed at baseline. Menopausal status was defined as at least 1 year having passed since the last menstrual period and was confirmed with measurements of estradiol (<10 ng/dL), luteinizing hormone, and follicular stimulating hormone (more than 40 mIU/mL). Eligible women signed an informed consent form approved by our Institutional Review Board before entering the study.

### Questionnaires

HR-QOL was assessed with the Medical Outcomes Study short form (MOS SF-36) (35,36). Psychological distress was assessed with the Anxiety and Depression subscales of the Brief Symptom Inventory (BSI) (37) and the Life Distress Inventory (LDI) (38,39). Life satisfaction was assessed with the Satisfaction With Life Scale (SWLS) (40,41). Self-esteem was assessed with the Rosenberg Self-Esteem Scale (RSE) (42).

### Statistical Analyses

Comparisons of subjects' characteristics between AA and W and between pre- and postmenopausal women were made using Student's *t* test and  $\chi^2$  test. In addition, race-specific differences in subjects' characteristics between pre- and postmenopausal women were also statistically compared using Student's *t* test and  $\chi^2$  test. Because the QOL scales were moderately correlated ( $r = -0.2$  to  $-0.7$  and  $0.2$  to  $0.6$ ), we used a one-way multivariate ANOVA (MANOVA) to determine the differences on 14 QOL measures between AA and W women and between pre- and postmenopausal women. The differences in QOL measures were compared separately for AA and W between pre- and postmenopausal women. The interaction between ethnicity and menopausal status was tested using two-way

MANOVA. In addition, age, body mass index (BMI), education levels, and marital status were used as covariates in the above MANOVA models to adjust the effects of socioeconomic factors on QOL. All analyses used SPSS statistical package (SPSS for Windows, 9.0; SPSS Inc.). Significance level was set at  $p < 0.05$ ; otherwise, the Bonferroni correction was used as indicated.

## Results

Participants were 145 women with a mean age of  $46 \pm 11$  years, weight of  $93.6 \pm 11$  kg, and BMI of  $35.2 \pm 4.1$  kg/m<sup>2</sup>. They had an average of  $14.8 \pm 3.8$  years of education and most of them were working. Sixty-five women were W (45%) and 80 were AA (55%), and 87 were premenopausal (60%) and 58 postmenopausal (40%).

The AAs were younger ( $44.2 \pm 11.3$  vs.  $49.0 \pm 10.3$  years,  $p < 0.01$ ) and heavier ( $95.3 \pm 10.3$  vs.  $91.5 \pm 11.6$  kg,  $p < 0.05$ ) than the W subjects. The difference in body weight was because of a higher proportion of fat-free mass in AAs ( $53.1 \pm 5.5$  vs.  $49.4 \pm 6.1$  kg,  $p < 0.001$ ), whereas fat mass was identical between the two groups. There was no difference between ethnic groups in marital or menopausal status. The average duration of menopause was  $7.7 \pm 6.7$  years. The W women were slightly more educated than their AA counterparts ( $15.7 \pm 3.7$  vs.  $14.2 \pm 3.7$  years,  $p < 0.05$ ).

There was no significant difference in the measures of HR-QOL, anxiety and depression, life distress, life satisfaction, and self-esteem between African-American and white women. However, a significant difference was found between pre- and postmenopausal women (Table 1). Premenopausal women reported less vitality ( $p < 0.001$ ), assessed by the MOS-36, and more life distress ( $p = 0.002$ ), assessed by the LDI, than the postmenopausal women.

There was no interaction between ethnicity and menopausal status in the two-way MANOVA (Wilks'  $\lambda = 0.900$ ,  $p = 0.436$ ). Differences in the HR-QOL measures between pre- and postmenopausal women were observed only in the AA group. The AA postmenopausal women reported less life distress, more satisfaction, and more vitality than their premenopausal counterparts (Table 2). The significant differences between pre- and postmenopausal AA women persisted after adjustment for age, BMI, education level, and marital status.

## Discussion

Contrary to previous findings, our data revealed that HR-QOL, life satisfaction, psychological distress, and self-esteem did not differ between AA and W subjects. This is contrary to findings from other studies where AA women experience poorer HR-QOL compared with W women (22–26). The nature of our sample, middle-class professional women of comparable socioeconomic position and marital status from the New York metropolitan

**Table 1.** Health-related quality of life and other psychological measures according to race or menopausal status

	Wilks' $\lambda = 0.916, p = 0.598$					Wilks' $\lambda = 0.832, p = 0.037$				
	<i>n</i>	White (mean $\pm$ SD)	<i>n</i>	African American (mean $\pm$ SD)	<i>p</i> * Value	<i>n</i>	Premenopause (mean $\pm$ SD)	<i>n</i>	Postmenopause (mean $\pm$ SD)	<i>p</i> * Value
LDI										
Life distress	65	40.1 $\pm$ 15.2	80	40.2 $\pm$ 15.6	0.741	87	43.5 $\pm$ 15.7	58	35.1 $\pm$ 13.6	0.002
BSI										
Anxiety	65	0.5 $\pm$ 0.6	80	0.4 $\pm$ 0.5	0.433	87	0.5 $\pm$ 0.5	58	0.4 $\pm$ 0.6	0.801
Depression	65	0.6 $\pm$ 0.7	80	0.5 $\pm$ 0.7	0.637	87	0.6 $\pm$ 0.7	58	0.5 $\pm$ 0.7	0.254
RSE										
Self-esteem	60	31.9 $\pm$ 5.1	77	33.0 $\pm$ 5.6	0.259	83	32.0 $\pm$ 5.5	54	33.2 $\pm$ 5.2	0.236
SWLS										
Satisfaction	65	19.7 $\pm$ 8.4	79	19.5 $\pm$ 8.2	0.818	87	18.1 $\pm$ 8.0	57	21.8 $\pm$ 8.3	0.010
MOS-36										
Physical activity	65	76.9 $\pm$ 22.0	80	74.1 $\pm$ 24.0	0.328	87	75.3 $\pm$ 22.6	58	75.3 $\pm$ 24.0	0.767
Role-activity	65	71.9 $\pm$ 37.1	80	75.3 $\pm$ 34.6	0.808	87	69.0 $\pm$ 38.1	58	81.0 $\pm$ 30.5	0.031
Bodily pain	65	72.4 $\pm$ 22.6	80	66.7 $\pm$ 22.8	0.141	87	67.1 $\pm$ 23.4	58	72.6 $\pm$ 21.8	0.094
General health	65	73.1 $\pm$ 18.8	80	71.0 $\pm$ 21.2	0.632	87	68.5 $\pm$ 21.1	58	77.1 $\pm$ 17.3	0.015
Vitality	65	52.3 $\pm$ 23.3	80	54.7 $\pm$ 21.2	0.430	87	48.2 $\pm$ 20.7	58	61.7 $\pm$ 21.8	<0.001
Social activity	65	80.6 $\pm$ 21.7	80	76.7 $\pm$ 24.6	0.448	87	74.0 $\pm$ 23.6	58	85.1 $\pm$ 21.4	0.007
Emotional										
problem	65	70.3 $\pm$ 39.6	80	73.3 $\pm$ 37.3	0.559	87	66.3 $\pm$ 41.1	58	80.5 $\pm$ 31.9	0.033
Mental health	65	72.3 $\pm$ 17.1	80	73.5 $\pm$ 16.1	0.563	87	70.3 $\pm$ 16.9	58	77.0 $\pm$ 15.1	0.029

\* Statistical significance is set at  $p < 0.004$ ;  $p$  was adjusted by Bonferroni correction. LDI, Life Distress Inventory; BSI, Brief Symptom Inventory; RSE, The Rosenberg's Self-esteem Scale; SWLS, The Satisfaction with Life Scale; MOS-36, Medical Outcomes Study form (short form-36).

area, may explain the similar scores across all our subjects. This is in line with previous studies showing that differences between ethnicity disappear after adjusting for socioeconomic status (23). It may be that the HR-QOL of all the participants, African American and white, was affected enough that they would seek a therapeutic option for weight loss. The use of community samples could lead to different results.

In our sample, BSI anxiety ( $0.47 \pm 0.54$ ) and BSI depression ( $0.56 \pm 0.68$ ) were slightly above scores obtained from a non-obese control population (0.35 and 0.28, respectively) and lower than scores published for patients with psychiatric disorders (1.7 and 1.8, respectively) (37). Life satisfaction ( $19.6 \pm 8.2$ ) and bodily pain ( $69.3 \pm 22.8$ ) scores were within the range of those for a normal control population (15 to 28 and 72 to 77, respectively) (35,38).

Despite the fact that the AA subjects were slightly less educated and heavier than W women, on average both groups reported identical perceived QOL. The perception of

body size has been shown to be different among ethnic groups (43). Some studies indicate that for AA individuals, a higher relative body weight did not coincide with a lower self-concept, and AA subjects tended to report concerns or show distress related to their weight at higher BMI than did the W subjects (44).

Postmenopausal women reported better scores than premenopausal women. This result persisted even after adjusting for age, education levels, and marital status. This difference between the pre- and postmenopausal groups arose because of differences in the AA group, where the postmenopausal women reported less life distress, more vitality, and fewer limitations in social activities than their premenopausal counterparts. These data are contrary to other studies that have shown that QOL deteriorates after menopause (45) and tends to decrease with age (46,47).

In conclusion, the most significant finding in our study is that in obese AA and W women, ethnicity (being AA or W) does not seem to have an effect on HR-QOL. A second finding was that postmenopausal AA women reported better

**Table 2.** Comparisons of health-related quality of life and other psychological measures between pre- and post-menopausal status by race

	Walks' $\lambda = 0.860, p = 0.860$					Walks' $\lambda = 0.635, p = 0.004$				
	White					African American				
	Pre-menopause <i>n</i>	Post-menopause (mean $\pm$ SD)	<i>n</i>	Post-menopause (mean $\pm$ SD)	<i>p</i> Value	Pre-menopause <i>n</i>	Post-menopause (mean $\pm$ SD)	<i>n</i>	Post-menopause (mean $\pm$ SD)	<i>p</i> Value
LDI										
Life distress	36	42.9 $\pm$ 15.3	29	36.6 $\pm$ 14.6	0.126	51	43.9 $\pm$ 16.1	29	33.7 $\pm$ 12.6	0.007
BSI										
Anxiety	36	0.6 $\pm$ 0.6	29	0.4 $\pm$ 0.5	0.685	51	0.4 $\pm$ 0.5	29	0.4 $\pm$ 0.7	0.991
Depression	36	0.7 $\pm$ 0.8	29	0.4 $\pm$ 0.6	0.188	51	0.6 $\pm$ 0.6	29	0.5 $\pm$ 0.7	0.749
RSE										
Self esteem	35	31.5 $\pm$ 5.3	25	32.3 $\pm$ 4.9	0.553	48	32.4 $\pm$ 5.7	29	33.9 $\pm$ 5.4	0.263
SWLS										
Satisfaction	36	19.0 $\pm$ 8.4	29	20.5 $\pm$ 8.3	0.522	51	17.5 $\pm$ 7.7	28	23.1 $\pm$ 8.1	0.003
MOS-36										
Physical activity	36	75.7 $\pm$ 22.2	29	78.5 $\pm$ 22.2	0.498	51	75.1 $\pm$ 23.1	29	72.2 $\pm$ 25.8	0.812
Role-activity	36	63.9 $\pm$ 41.6	29	81.9 $\pm$ 28.3	0.041	51	72.6 $\pm$ 35.4	29	80.1 $\pm$ 33.0	0.303
Bodily pain	36	69.1 $\pm$ 26.3	29	76.5 $\pm$ 16.6	0.132	51	65.7 $\pm$ 21.2	29	68.6 $\pm$ 25.6	0.416
General health	36	69.9 $\pm$ 9.6	29	77.0 $\pm$ 17.3	0.108	51	67.4 $\pm$ 22.3	29	77.2 $\pm$ 17.7	0.074
Vitality	36	48.5 $\pm$ 22.3	29	57.1 $\pm$ 23.9	0.193	51	48.0 $\pm$ 19.8	29	66.4 $\pm$ 18.8	0.000
Social activity	36	75.4 $\pm$ 23.2	29	87.1 $\pm$ 17.8	0.019	51	73.0 $\pm$ 24.0	29	83.2 $\pm$ 24.6	0.125
Emotional problem	36	63.0 $\pm$ 43.5	29	79.3 $\pm$ 32.6	0.112	51	68.6 $\pm$ 39.7	29	81.6 $\pm$ 31.6	0.150
Mental health	36	69.4 $\pm$ 17.9	29	75.9 $\pm$ 15.5	0.310	51	70.9 $\pm$ 16.3	29	77.9 $\pm$ 14.8	0.37

\* Statistical significance is set at  $p < 0.004$ ,  $p$  was adjusted by Bonferroni correction. LDI, Life Distress Inventory; BSI, Brief Symptom Inventory; RSE, The Rosenberg's Self-esteem Scale; SWLS, The Satisfaction With Life Scale; MOS-36, Medical Outcomes Study form (short form-36).

HR-QOL than premenopausal AA women, for reasons that remain undetermined. Both of these findings suggest the need for additional research, with measurement instruments better targeted to the obese population.

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## Appendix 1

### *MOS-36*

The Medical Outcomes Study short form-36 (SF-36) (MOS-36) is a widely used standardized measure of quality of life. Across eight subscales, it assesses limitations in physical functioning and general mental health. The subscales are: 1) limitations in physical activity because of health problems; 2) limitations in usual role activities because of physical health problems; 3) bodily pain; 4) general health perceptions; 5) vitality (energy and fatigue); 6) limitations in social activities because of physical or emotional problems; 7) limitations in usual role activities because of emotional problems; and 8) general mental health (psychological distress and well-being). Based on a sample of 2462 subjects, McHorney et al. (36) report that based on their scores on the SF-36, patients with minor and with serious medical conditions could be distinguished on aggregate. Patients with serious medical conditions scored significantly lower.

### *Brief Symptom Inventory*

The BSI is a widely used self-report inventory designed to reflect current psychological symptom status. Internal consistency estimates for the depression and anxiety subscales are 0.85 and 0.81, respectively. Estimates of the

construct validity of these subscales also are satisfactory. Correlations between subscale scores and those of the clinical scales of the Minnesota Multiphasic Personality Inventory (MMPI) and the Wiggins content scales of the MMPI are in the order of 0.46 to 0.72 for depression and 0.40 to 0.48 for anxiety.

### *Life Distress Inventory*

The Life Distress Inventory (LDI) [Thomas et al. (38); Yoshioka and Shibusawa (39)] is an 18-item assessment tool measuring self-reported distress across areas of social life and functioning. The  $\alpha$  coefficient for the total scale was 0.89. LDI correlated positively with convergent factors of depression, and anxiety and correlated negatively with life satisfaction and social functioning ( $p < 0.05$ ). LDI scores were unrelated to discriminant factors.

### *The Satisfaction with Life Scale*

This short scale has been found to have a 2-month test-retest correlation coefficient of 0.82 and  $\alpha$  coefficients of 0.83 to 0.87. Additionally, the Satisfaction with Life Scale (SWLS) has been found to be positively associated at statistically significant levels with other measures of subjective well being and negatively associated with measures of psychopathology [Diener et al. (40)].

The Rosenberg's Self-esteem Scale (RSE) is a 10-item uni-dimensional scale designed to measure global self-esteem. Responders rate each item on a four-point response scale ranging from "strongly disagree" to "strongly agree."