

# Effectiveness of the MOVE! Program Among African American Veterans: Weight Loss and Quality of Life

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African American veterans show different results using the MOVE! weight management program compared with other participants.

**G**lobal rates of obesity and overweight diagnoses have reached epidemic levels in the last 20 years.<sup>1</sup> At even greater risk for these diagnoses are veterans of the U. S. military.<sup>2</sup> Veterans receiving services with the VA health care system are significantly more likely to be overweight than veterans who do not use the VA health care system<sup>2-5</sup> and the general population.<sup>2</sup> Factors that contribute to increases in body mass index (BMI) among veterans include changes in dietary behavior as a result of military service,<sup>6</sup> having a diagnosis of posttraumatic stress disorder,<sup>7</sup> and no activity due to physical disability.<sup>2</sup>

Race is also related to increases in BMI with racial minority groups at least 2 times more likely to be overweight and report having diabetes than are whites.<sup>8</sup> These combined factors suggest that African American veterans are at a significant risk for developing obesity and obesity-related illness. Overweight or obese individuals increase the risk for weight-related illness<sup>9</sup> while also ad-

versely affecting their health-related quality of life (HRQOL).<sup>10</sup> Physical aspects of HRQOL, such as bodily pain, vitality, and physical functioning tend to be impacted more than mental health.<sup>11-16</sup>

Several individual and group treatment programs have emerged to attempt to offset increases in obesity rates. Many of these use a behavioral or cognitive-behavioral paradigm.<sup>17-19</sup> The effectiveness of using a traditional cognitive-behavioral treatment approach within minority populations has received attention.<sup>20</sup> Caution has been advised when using this form of treatment with emphasis placed on providing culturally relevant treatments to racial minorities for certain conditions,<sup>20</sup> including weight management.<sup>21</sup> Although obesity-related HRQOL has been evaluated in other populations, minimal data exist pertaining to perceptions of personal changes in HRQOL among veterans, despite the documented high-prevalence rates of obesity in this population.

To reduce veteran obesity, the Jesse Brown VAMC (JBVAMC) implemented the customized 8-week, multidisciplinary, cognitive-behavioral, weight-management program "MOVE!" in 2006.<sup>22-24</sup> MOVE! is a "national weight management program designed by the VHA Na-

tional Center for Health Promotion and Disease Prevention (NCP)...to help veterans lose weight, keep it off and improve their health."<sup>22</sup> Data on the effectiveness of MOVE! are still in preliminary stages,<sup>25-29</sup> and the present study is one of the first to evaluate this program among racial minority veterans at an urban VAMC.

This study evaluated the effectiveness of an evidence-based, cognitive-behavioral treatment approach in improving HRQOL in obese veterans from a predominantly African American racial background. Effectiveness was evaluated for improvements in HRQOL measurement as well as changes in veterans' BMI. We hypothesized that veterans with regular and consistent attendance will achieve greater weight loss and that weight loss will be influenced by sociodemographic and clinical variables. We also hypothesized that participation in MOVE! will improve veterans' HRQOL, specifically in the physical functioning domains. Finally, we hypothesized that participation in MOVE! will yield improvements in HRQOL that are independent of actual weight lost during the program.

## EVALUATING MOVE!

### Study Design

This study used repeated measures, archival data research design. A con-

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venience sample of veterans consecutively enrolled in MOVE! at JBVAMC between October 2007 and November 2008 were evaluated. Primary care physicians referred their patients in a closed-group format; each group session was directed by a registered dietician, a doctoral-level clinical health psychologist, an advanced nurse practitioner, and a predoctoral psychology intern. MOVE! used a standardized curriculum that addresses 3 modules for weight management: nutrition, exercise and activity, and eating attitudes and behaviors.<sup>24</sup> Nutrition topics include reading food labels, calorie reduction via portion control, and making healthy food choices. Exercise and activity topics include increasing daily physical activity and developing a regular exercise regimen. As part of this module, veterans are given a pedometer and the option to meet with a recreational therapist within the wellness center at JBVAMC. The behavioral classes include emotional eating, motivational interviewing techniques, and cognitions related to progress in MOVE! Each class had a representative present for 2 of the 3 education modules (eg, a dietician and psychologist) and incorporated interactive group discussions to process the material presented. Classes were offered on several days and times per week to accommodate veterans' work or other treatment schedules.

Trained research personnel reviewed each veteran's JBVAMC electronic medical record and recorded sociodemographic clinical data, including medical diagnoses and BMI and MOVE! data. Any individually identifiable data were removed to ensure veterans' privacy. This study was reviewed and approved by the institutional review boards of the University of Illinois at Chicago and JBVAMC.



## MEASURING MOVE! OUTCOMES

### Health-Related Quality of Life

Veterans participating in MOVE! completed the Medical Outcome Study Short Form 36 (MOS SF-36) health questionnaire at the first and last session of the 8-week MOVE! course. The SF-36 is a 36-item instrument for measuring health status and outcomes from the patient's point of view, designed for use in surveys of general and specific populations, health policy evaluations, and clinical practice and research.<sup>30</sup> The SF-36 yields 8 subscale values: physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health. Lower scores correspond with poorer HRQOL. This instrument has been widely used in clinical studies and has been demon-

strated to have adequate psychometric integrity (median  $\alpha \geq .8$ ).<sup>31</sup>

### Sociodemographic and Clinical Information

Sociodemographic variables included age, sex, and race. Data from MOVE! included baseline weight, baseline BMI, weight at each week of attendance, and number of sessions attended. Clinical data included the following diagnoses: addiction, a DSM-IV-TR Axis I psychiatric disorder, diabetes, hypertension, stroke, hyperlipidemia, other cardiovascular illness (eg, congestive heart failure), sleep apnea, cancer, arthritis (osteoarthritis or rheumatoid arthritis), and gout. BMI was also evaluated at 12 months posttreatment.

### Statistical Analysis

Statistical analysis was completed

Continued on page 20

**Table 1. Medical and psychiatric diagnoses by race**

	African American (N = 154)	Non-African American (N = 82)
Age (mean ± SEM)	57.4 ± .87	58.2 ± 1.4
Male	85% <sup>a</sup>	95%
Addiction Dx	21%	32%
Arthritis	21%	12%
Cancer	11%	11%
Cardiovascular disease	25%	17%
Cerebrovascular accident	3%	7%
Diabetes	44%	38%
Gout	10%	4%
Hyperlipidemia	58%	63%
Hypertension	82%	78%
Psychiatric Dx	40%	44%
Sleep apnea	25%	24%
Number of medical Dx	2.8 ± .12	± .14

<sup>a</sup>P ≤ .05.

**Table 2. MOVE! data by race**

	African American (N = 154)	Non-African American (N = 82)
MOVE! Attendance (Mean ± SEM)	3.8 ± .18 <sup>a</sup>	4.7 ± .24
Class size (start)	24.9 ± .51	26.2 ± .74
Class size (overall)	13.6 ± .36	14.8 ± .57
Baseline weight (lb)	267.0 ± 5.4	270.1 ± 8.3
Baseline BMI	38.7 ± .63	38.6 ± 1.0
Weight (lb) change	-1.3 ± .45 <sup>b</sup>	-3.0 ± .57
BMI 12 mo. FU	38.5 ± .65	38.6 ± .93
Responder <sup>c</sup>	9%	14%
Completed pre and post SF-36	17% <sup>b</sup>	35%

<sup>a</sup>P ≤ .05; <sup>b</sup>P ≤ .01; <sup>c</sup>Responder: min. 8 lb weight loss.

using SPSS 17.0 for Windows (SPSS Inc., Chicago, IL). Total scores for each measure were computed and tested for normal distribution, with outliers removed from relevant analyses. Statistical significance was set at P ≤ .05. Effect sizes were evaluated

using Cohen's criteria.<sup>32</sup> Preliminary descriptive statistics were completed on relevant variables. All means are reported with standard error of the mean values. Responders to treatment were identified as those veterans who lost at least 8 pounds (lb)

over the course of the program. This is based on the FDA's recommended guidelines of losing no more than 1 to 2 pounds per week. A series of Pearson chi-square analyses, independent samples *t* tests, and one-way analyses of variance (ANOVAs) were performed to evaluate significant differences between sociodemographic and illness groups. Paired samples *t* tests were used to evaluate differences between baseline and postprogram scores on the SF-36, as well as baseline and 12-month BMI. Pearson's correlations were performed to evaluate the relationship between MOVE! variables and HRQOL outcomes.

**RESULTS**  
**Veterans Studied**

A total of 237 veterans who participated in MOVE! were included in the analysis (Table 1). Of these, 132 completed the SF-36 at baseline and 54 completed the SF-36 at the end of the 8-week treatment program. Similar to previous research,<sup>33,34</sup> our sample had several comorbid illnesses, including arthritis, cancer, other cardiac illnesses, diabetes, gout, hyperlipidemia, hypertension, sleep apnea, and at least 1 cerebrovascular accident. There were no significant differences by race for age (P = .79), psychiatric (P = .37), addictions (P = .06), medical diagnoses (all P > .05), or number of medical diagnoses (P = .19).

Baseline data indicated that mean weight was 268 ± 4.5 lb and mean BMI was 38.7 ± 0.55. Additionally, 8% of veterans were classified "Overweight," 55% were Obese I or Obese II, and 35% were Obese III. On average, veterans attended 50% of 8 MOVE! classes, with a mean class size of 14 people. After 8 weeks, veterans lost an average 1.96 ± 0.36 lb. Weight changes ranged from -16.5 lb to +10 lb. African American veterans attended significantly fewer classes

( $P = .003$ ), demonstrated significantly less weight loss ( $P = .03$ ), and were less likely to complete both pre- and post-HRQOL assessments ( $P = .001$ ) than non-African Americans (Table 2). No differences were shown by race for baseline weight, baseline BMI, starting class size, average class size, or BMI 1 year posttreatment.

### MOVE! AND WEIGHT CHANGE

Weekly weight changes demonstrated that both racial groups lost weight at week 2 and week 3 assessment (Figure 1). At week 4, African American veterans showed an upward trend in weight that remained until week 7, when there was a dramatic increase in the amount of weight lost. However, improvements in weight loss were negated between week 7 and week 8, with African American veterans showing an average weight gain of 2.9 lb after completing MOVE! Comparatively, non-African American veterans demonstrated a general trend toward weight loss with a slight increase at week 7.

Evaluation of BMI demonstrated no significant differences found between groups at baseline or at 12 months posttreatment (all  $P > .05$ ). At 1-year follow-up (FU), 11% of veterans were "Overweight," 51% were Obese I or Obese II, and 36% were Obese III. Paired-samples  $t$  tests showed that no significant changes in BMI had occurred between baseline assessment and 1-year FU, indicating that BMI was not significantly affected by participation in MOVE!

Pearson's correlations showed that for African American veterans, weight change was significantly correlated with class attendance ( $r = -0.19$ ,  $P = .03$ ) but not with average class size, baseline weight, or number of medical diagnoses. For non-African Americans, no significant correlations between weight loss and these vari-

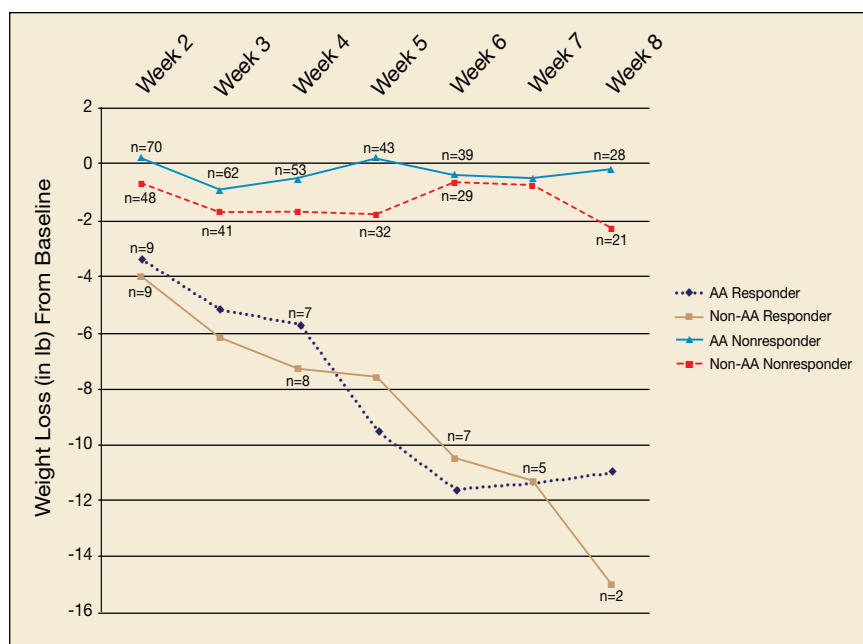


Figure 1. Weekly weight loss (lb) from baseline by race and treatment responder including attrition.

ables existed.

Responders (weight loss  $\geq 8$  lb) were evaluated collectively and by racial group to determine what unique characteristics may explain their success in MOVE! (Table 3). There were no significant differences between responders and nonresponders for psychiatric, addiction, and medical diagnoses (all  $P > .05$ ) both collectively and by racial group. Responders attended more classes on average ( $P = .02$ ). No significant differences were found between racial groups for responders (all  $P > .05$ ) for MOVE! data. For nonresponders, non-African American veterans attended more MOVE! classes ( $P = .01$ ), had larger average class sizes ( $P = .04$ ), and had greater weight loss ( $P = .05$ ) than did African Americans.

### MOVE! AND HRQOL

Of the original sample, 54 veterans (23%) had both pre- and post-SF-36 data in their medical record. This sample was analyzed separately

and compared with the total sample for sociodemographic, clinical, and MOVE! data to evaluate any significant differences that were not identified. Independent samples  $t$  tests showed no significant differences in SF-36 subscale score changes between racial groups. Paired samples  $t$  tests indicated that significant improvements were reported for all domains of HRQOL as measured by the SF-36 when comparing baseline and 8-week assessments (Table 4). Effect sizes ranged from small (.26) to large (.77) with the majority falling between .30 and .45. Greatest improvements were in the physical component scale ( $P = .000$ ,  $D = .77$ ); mental component ( $P = .000$ ,  $D = .44$ ); and vitality ( $P = .000$ ,  $D = .42$ ).

### Discussion

Our study examined effectiveness of an 8-week, evidenced-based weight-loss program at an urban VAMC for actual weight loss as well as improvements in HRQOL. Similar to previous

**Table 3. MOVE! data by overall responder status<sup>a</sup> and racial category**

	Responder (N = 20)	Non-responder (N = 163)	African American responder (N = 10)	Non-African American responder (N = 10)	African American non-responder (N = 92)	Non-African American nonresponder (N = 54)
Attendance	5.8 ± .35 <sup>b</sup>	4.8 ± .14	6.1 ± .43	5.5 ± .54	4.5 ± .18 <sup>b</sup>	5.3 ± .24
Class size (start)	25.6 ± 1.6	25.3 ± .52	25.3 ± 2.3	25.9 ± 2.4	24.6 ± .64	26.5 ± .88
Class size (overall)	15.5 ± 1.1	14.6 ± .37	15.4 ± 1.8	15.5 ± 1.5	14.0 ± .44 <sup>b</sup>	15.6 ± .66
Base weight (lb)	278.8 ± 14.8	266.3 ± 5.3	288.5 ± 27.7	269.2 ± 11.8	263.5 ± 6.7	271.1 ± 8.8
Base BMI	38.6 ± 1.7	38.5 ± .65	40.4 ± 2.9	36.8 ± 1.8	38.4 ± .80	38.8 ± 1.1
Week 8 weight loss (lb)	-11.5 ± .56 <sup>c</sup>	-0.80 ± .29	-11.5 ± .65	-11.5 ± .94	-0.36 ± .37 <sup>b</sup>	-1.5 ± .43
BMI 12 mo FU	38.8 ± 1.7	38.3 ± .60	39.6 ± 2.6	40.0 ± 2.3	38.2 ± .79	38.6 ± .92

<sup>a</sup>Responder: min. 8 lb weight loss. <sup>b</sup>P ≤ .05; <sup>c</sup>P ≤ .001.

veteran research,<sup>33</sup> the current study sample had several comorbid physical and psychiatric illnesses. When evaluating differences between African American and non-African American veterans, very few demographic, medical, and psychiatric variables of statistically significant differences emerged between groups. Rather, differences between racial groups were found for MOVE! assessments. Most prominently, African Americans demonstrated significantly less weight loss than did non-African American veterans, a finding that parallels previous minority weight-loss research.<sup>35-37</sup> The findings may be explained partially by attrition; overall, African Americans attended fewer MOVE! classes than non-African American veterans; all other MOVE! class variables were similar between groups.

On average, veterans in MOVE! lost about 2 lb after 8 weeks, which is consistent with other studies.<sup>27</sup> More recent data on the effectiveness of MOVE! for weight loss demonstrate that many veterans will stop an upward trend toward continued weight gain prior to enrollment in the program.<sup>27</sup> Therefore veterans still ben-

efit from participating in MOVE! even if they do not exhibit significant weight loss. In our sample, trend analysis of weekly weight changes indicated that veterans lost weight in weeks 2 and 3 of the program. However, attrition in our sample was significant starting at week 3. Treatment responders, or veterans who lost 8 lb or more during MOVE!, attended 13% more classes than did nonresponders and immediately showed a greater weekly weight loss that was maintained through week 6. At this point, only African American treatment responders began to show a gradual increase in weight. Nonresponders demonstrated a relatively flat weight-loss pattern in both racial groups, although by week 8 non-African Americans lost more weight.

An important finding from this study is that participation in MOVE! led to clinically significant improvements in all areas of HRQOL with moderate effect sizes, regardless of weight lost. Greatest improvements in HRQOL occurred for overall physical and mental functioning as well as for vitality. Although no significant differences between racial

groups were identified for HRQOL, African American veterans showed improvement on 6 of 8 SF-36 scales, and non-African Americans had improvement on 4 of 8 scales. African American veterans did not show significant improvements for "role physical" and "social function." Non-African American veterans did not show significant improvements for "physical function," "role physical," "bodily pain," or "role emotional." Because MOVE! identifies and specifically addresses veterans' obesity-related health issues in the context of a supportive group environment, this may lead to positive changes in perceptions of HRQOL, especially for mental health domains. The veterans in our sample had multiple chronic physical issues; therefore, they may have been less inclined to view changes in "physical functioning" or "bodily pain" as a result of an 8-week program.

The conclusions of our study are limited by the lack of control subjects. Attrition was a significant problem and is likely influencing our findings with only one-fourth of the sample completing HRQOL assess-

**Table 4. Changes in HRQOL by race for veterans completing baseline and post-MOVE! SF-36**

	Pre-Post SF-36 Sample (N = 54)	African American (N = 25)	Non-African American (N = 29)
Physical function	-1.7 ± .63 <sup>a</sup>	-2.52 ± 1.1 <sup>b</sup>	-1.00 ± .69
Role physical	-0.56 ± .23 <sup>b</sup>	-0.68 ± .40	-0.45 ± .24
Bodily pain	-0.60 ± .28 <sup>b</sup>	-0.93 ± .45 <sup>b</sup>	-0.31 ± .35
General health	-1.6 ± .36 <sup>c</sup>	-1.86 ± .55 <sup>a</sup>	-1.3 ± .48 <sup>a</sup>
Vitality	-1.8 ± .37 <sup>c</sup>	-1.96 ± .58 <sup>a</sup>	-1.6 ± .47 <sup>a</sup>
Social function	-0.69 ± .24 <sup>a</sup>	-0.80 ± .42	-0.59 ± .27 <sup>b</sup>
Role emotional	-0.44 ± .16 <sup>a</sup>	-0.56 ± .27 <sup>b</sup>	-0.34 ± .21
Mental health	-1.78 ± .44 <sup>c</sup>	-1.44 ± .65 <sup>b</sup>	-2.1 ± .61 <sup>a</sup>

Mean ± SD change in pre-post SF-36 scores: <sup>a</sup>P ≤ .01; <sup>b</sup>P ≤ .05; <sup>c</sup>P ≤ .001.

ment at baseline and posttreatment. Our sample is from a VAMC that traditionally services veterans from lower socioeconomic statuses (SES). Although we did not directly measure SES, caution should be used in interpreting these data among other veteran groups. Also, we did not differentiate between psychiatric or arthritic diagnoses, which may influence MOVE! outcomes, depending on a veteran's specific diagnosis (eg, schizophrenia and osteoarthritis). It would also be beneficial to evaluate changes in HRQOL at 1-year FU, to determine whether these significant improvements remain after program completion.

Although minimal data examining effectiveness of weight-reduction programs in minority veteran populations exists, previous research suggests that race is an important factor in obesity treatment program outcomes.<sup>35-38</sup> Programmatically, our data suggest that although MOVE! can be an effective program for improving veteran HRQOL, the program did not demonstrate as much success with weight loss in our sample, even though it uses a multidisciplinary approach that generally leads to positive outcomes.<sup>27,29,38</sup> Previous research shows that using combined group

and individual approaches, involving family members, and teaching problem-solving skills lead to better outcomes among racial minorities.<sup>38</sup>

Furthermore, implementation of interventions that involve more active patient participation, such as motivational interviewing and sharing of information, rather than approaches that predominantly feature didactic or psychoeducational learning may improve outcomes.<sup>21</sup> These techniques have been incorporated into the MOVE! program structure since this study was conducted, thus these data should be reevaluated under the new programmatic guidelines for MOVE! In addition to racial considerations, we also recommend evaluating motivational factors, such as stages of readiness for change that are currently measured via the MOVE 23 baseline questionnaire and how these variables relate to attendance, improvements in HRQOL, and weight-loss outcomes. ●

#### Author disclosures

The authors report no actual or potential conflicts of interest with regard to this article.

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