7-2015

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*The Journal for Nurse Practitioners*, Vol. 11, No. 7 (July-August 2015): 717-722. DOI. 

# Weight Loss Intervention Efficacy Among Black Women

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## Abstract

Obesity is a complex disease state that has challenged the health of Americans and has become a main concentration in health care. The highest rates of obesity are observed among black women. The purpose of this evidence-based review was to find evidence that specifically examined black women to determine if participation in weight loss interventions led to successful weight loss compared with usual care and control groups. Twelve experimental studies and 4 systematic reviews revealed that interventions contributed to successful weight loss among black women with obesity. However, maintenance of weight loss is an ongoing challenge.

## Keywords

Black, obesity, weight loss interventions, women

Obesity is a complex disease that has challenged the health of Americans and has become a recognized treatable disorder in health care. Approximately 78.6 million people in the United States have been diagnosed with obesity, costing an estimated $147 billion in 2008.[1] A diagnosis of obesity is associated with an increased risk for the development of diabetes mellitus, heart disease, hypertension, hyperlipidemia, certain cancers, sleep apnea, osteoarthritis, stroke, and liver disease.[2] In the United States, the highest rates of obesity and the highest rates of morbidity and mortality related to obesity-induced diseases are observed in black women.[3]

Primary care providers play a vital role in the treatment of obesity, and effective weight loss methods are needed to combat this issue.[4] Treatment of obesity includes diet, physical activity, and behavior change education; however, specific and effective ways to treat individuals with obesity in a primary care setting are still unclear.[5] It is important to determine what interventions and treatment options specifically work in high-risk populations, such as black women. Previous research has shown that black women enrolled in weight loss intervention studies are usually compared with white women and typically lose less weight and are also underrepresented.[3, 5, 6]

The purpose of this evidence-based review was to determine if participation of black women in weight loss interventions led to successful weight loss compared with usual care or control groups. The usual care of obesity treatment delivered by a provider in a primary care setting is usually one on one, verbal, and brief. The secondary outcome of this review was to identify specific weight loss interventions that provided the most weight loss success among black women.

## Strategy for Literature Retrieval and Appraisal of Evidence

A literature review was conducted in October and November 2014. Databases used in the search included CINAHL and PubMed. Other search strategies included using the reference lists of relevant studies and systematic reviews. The keywords used in various combinations in the search included African American, women, weight loss, clinics, interventions, and usual care. In CINAHL, the most effective combination was “African American & weight loss.” In PubMed, the most effective combination was “African American women & weight loss.” Many duplicate studies were seen within the respective searches of the 2 databases.

Randomized controlled trials, systematic reviews, and quasi-experimental studies were considered for this review. Examining both individual experimental studies and systematic reviews ensured that the most up-to-date and thorough evidence was used to answer the review question. Separate inclusion criteria for experimental studies and systematic reviews were created because systematic reviews examined multiple studies and had their own inclusion criteria.

The inclusion criteria for experimental studies included (1) English language, (2) randomized controlled trial or quasi-experimental design, (3) published after 2004, (4) included adults aged 18 years or older, (5) examined a weight loss intervention, (6) weight loss and/or body mass index change and/or

percentage of body weight change was an outcome, (7) had a majority (> 70%) of women participants, and (8) had a majority of black participants (> 70%) unless the study separately discussed black participant results. The inclusion criteria for systematic reviews included (1) English language, (2) published after 2004, (3) examined adults aged 18 years or older, (4) specifically focused on black participants, and (5) examined weight loss outcomes and/or weight loss intervention effectiveness.

The search of reference lists and databases yielded 504 articles that met the initial search criteria. Titles and abstracts of these articles were scanned to determine whether they met the inclusion criteria. Fifty-six articles appeared to meet the inclusion criteria. Further evaluation of the articles led to the exclusion of 40 articles. Reasons for exclusion included that the article was not written in English, included children, primarily focused on weight loss medication or surgery, did not have a high enough representation of black women, and/or did not have weight loss as an outcome. Sixteen articles met the inclusion criteria. The Figure (available online at http://www.npjournal.org) shows an attrition diagram and the number of publications at each step of the literature search.

The Johns Hopkins Individual Evidence Summary Tools were used to critically evaluate the strength and quality of the research evidence.[7] The appraisal tool for experimental designs evaluated the clarity of the problem statement, description of gaps, and purpose of the study; sufficiency of sample size; adequacy of methodology; quality of control groups and settings; reliability and validity of instruments; limitations; and strength of the conclusions.[7] The systematic review appraisal tool evaluated clarity of the purpose, comprehensiveness of the search strategy, inclusion of an attrition diagram, adequate description of each study, appraisal of the level of evidence, and explanation of the methods used to summarize the findings.[7] The appraisal tools facilitated determination of the level of evidence and the quality of each study. The level of evidence was rated on a scale of 1 to 3. Quality was rated A to C, with 1A indicating the strongest evidence and highest quality and 3C the weakest evidence and less quality.

## Examining the Evidence

### Description of Studies and Range of Weight Loss Interventions

Characteristics of the experimental studies are included in the Table (available online at http://www.npjournal.org). These studies exclusively included adults who were obese and overweight. There was a variety of weight loss interventions used. Ten of the studies included interventions with behavioral, dietary, and physical activity components. One study had only a physical activity intervention.[8] In 9 studies, interventions were delivered in group settings,[6, 8, 9, 10, 11, 12, 13] 3 studies used one-on-one counseling,[14, 15, 16] and 1 used telephone counseling and self-monitoring.[17] Weight changes were the focus of this review; however, other outcomes were measured in the studies including daily steps (1), blood pressure (3), waist circumference (1), glucose (1), cholesterol (2), hemoglobin A1C (3), perceived stress level (1), energy intake (2), self-reported physical activity (2), breast health knowledge (1), self-breast examination proficiency (1), intervention feasibility (1), and depression (1).

In the experimental studies, the number of participants ranged from 21 to 309. One thousand two hundred sixty-five participants were examined. Attrition rates ranged from 5% to 37%. Attrition rates were higher in studies that were longer than 12 months. The length of the studies varied from 3 to 24

months. The most common length was 18 months, which was observed in 5 of the 12 experimental studies.[8, 11, 13, 17, 18] The experimental studies took place in the US. Specific settings included community health centers, a YMCA, a university conference center, family practice clinics, churches, and a senior center. The most common setting was primary care clinics.[6, 14, 15, 16, 18] The studies compared interventions with usual care and control groups. Four studies described usual care, typical care, or advice from a primary care provider as the control.[6, 14, 16, 18] Other control groups included newsletters mailed to the participants, breast health education, lack of stress management techniques in the intervention, and attention groups. All results were reported in kilograms except for 2 studies, which reported change in the percent of weight lost.[9, 12]

All 4 of the systematic reviews examined obese and overweight adults. The level of evidence and quality rating was 2/A for 2 reviews and 2/C for 2 reviews. Quasi-experimental and nonexperimental designs were included in all reviews that decreased the level of evidence to a score of 2. Three of the 4 systematic reviews were done in the US and focused on black women.[3, 5, 19] The participant numbers ranged from 16 to 2,921.[3, 5, 19] The systematic review by Osei-Assibey and Boachie[20] gave no specific details about the participants and did not specify the number of studies that included men. It was done in the United Kingdom; however, all the studies reviewed were performed in the US.[20]

## Weight Loss Outcomes

Significant weight loss occurred in each of the experimental studies. The amount of weight loss was considered modest and ranged from 1 to 8.6 kg. The experimental study that best answered the review question (ie, Do weight loss interventions help black women lose weight?) was a randomized controlled trial performed by Davis-Martin et al.[14] Black women (N = 106) were randomized to either attend 6 monthly meetings with a trained physician receiving behavioral, physical activity, and dietary counseling or standard care from their primary provider. The intervention group lost an average of 2 kg compared with the control group, which gained 0.2 kg ($P$ = .03).[14] At 9 months, the intervention group continued to have statistically significant weight loss (1.5 vs 0.6 kg, $P$ = .01).[18] At the 18-month follow-up, there were no longer significant differences in weight loss between the 2 groups.[18] Weight gain was also noted at the 18-month follow-up in 3 other studies.[8, 11, 13]

The greatest weight loss among participants was reported in a small quasi-experimental study describing 21 black women who participated in a physical activity intervention for 12 months.[8] At 12 months, the mean weight loss was 8.6 kg.[8] However, as in other studies, the participants had gained weight at 18 months. In fact, the mean weight of the participants at 18 months was actually more than their baseline weights.[8] The statistical significance of these findings was not given. This study included a small sample and had no control group; thus, further study is needed to understand the results and implications for weight loss interventions.

In the Obesity Reduction Black Intervention Trial, black women (N = 213) participated in either a twice weekly weight loss intervention for 6 months or received weekly newsletters.[11] At 6 months, there was statistically significant weight loss in the intervention group versus the control (3 vs 0.2 kg, $P \leq$ .001).[11] Both groups gained weight at the final 18-month follow-up; however, the weight loss in the intervention group was still considered statistically significant (2.3 vs 0.5 kg, $P <$ .01).[11]

The third study that showed weight gain at 18 months was described by Smith-West et al[13] and was different from the other studies because it tested the effects of motivational interviewing on weight loss. The dietary and physical education intervention was provided to both the intervention and control group, but the intervention group was exposed to motivational interviewing and the control was not.[13] Results for black participants were analyzed separately revealing a significant weight loss at 6 months ($P$ = .002) but no significance at 12 and 18 months.[13] Similar to previous research,[3, 5, 6] black women lost less weight than white women (3 vs 4.5 kg, $P$ = .03).[13]

In contrast to the previous 3 studies, a study by Bennett et al[17] showed weight loss was maintained at 18 months postintervention. The 12-month intervention used a combination of telephone calls, self-monitoring techniques, and a gym membership. The study was originally trying to prevent weight gain instead of causing weight loss. At 12 months, 62.1% of the intervention group was at or below their baseline weight. There was a statistically significant difference between the intervention and control group (1 vs 0.5 kg, $P$ = .03). These same findings were observed at the 18-month follow-up.

A moderate-size randomized controlled trial by Kumanyika et al[6] examined 134 blacks; 90% of them were women. The first phase of the study was a 10-week weight loss intervention in which all of the participants attended. Results of the first phase of the study showed that 14% of participants lost 5% or more of their body weight and a modest statistically significant mean weight loss among the participants of 1.5 kg ($P$ = .04).[6] In phase 2, participants were randomized to control and intervention groups. The control group received usual care from their primary care provider. The intervention group continued to receive weight loss counseling either in person or via a home weight loss kit. There were no significant differences in phase 2. A strong prediction of sustained weight loss was participation in phase 1 of the study.[6] Results of this study do not support that a weight loss intervention was superior over usual care in black women, but it did show that interventions could help black women experience weight loss.

A similar sized study by Mayer-Davis et al[15] used 2 different weight loss interventions. The first was a 16-week intensive weight loss counseling intervention, and the second was a condensed version of the intensive intervention titled “reimbursable lifestyle intervention.” Both were compared with usual care. At 6 and 12 months, there were statistically significant weight loss differences in the intensive weight loss intervention versus the usual care group ($P$ < .01 and $P$ < .003, respectively). At 12 months, 49% of those in the intensive weight loss intervention group lost at least 2 kg compared with 25% of those who had received usual care.[15] The reimbursable intervention showed no differences from usual care. These findings indicate that more intensive weekly treatments may be necessary to produce significant weight loss outcomes.

Three smaller studies used group-based weight loss interventions with black women.[9, 10, 12] All 3 had positive weight loss outcomes. Mitchell and Polsky’s study[12] had a group meeting intervention with no control (N = 48) and found that 33% of the black women lost at least 5% of their body weight in 12 months. A randomized controlled trial by Cox et al[9] included 44 participants who were exposed to a behavioral weight loss intervention and found that participants lost an average of 3% of their body weight in 3 months. Fitzgibbon et al[10] compared an attention control group that focused on breast health with an intervention group focused on weight loss. There was a significantly higher percent of body weight lost in the intervention group compared with the control group (4% vs 0.9%, $P$ < .01).

One study included weight loss medications or meal replacements.[16] This study did not meet inclusion criteria for the percent of black participants (only 50%); however, it was included because it was the longest and largest study found in the literature search. This randomized controlled trial included a control group and 2 intervention arms. The first intervention was 15-minute monthly weight loss meetings with a medical assistant who was trained to perform weight loss counseling. The second intervention included the monthly meetings and was with a weight loss medication or meal replacements. The control was usual care. The enhanced intervention group experienced statistically significant weight loss compared with the other 2 groups at 6 and 24 months. Those who had meetings with the medical assistant only had significant weight loss compared with usual care at 6 months but not at 24 months. These findings may indicate that longer weight loss outcomes may be achieved if medications or meal replacements are used with education and counseling.

Two systematic reviews examined the effect of behavioral weight loss intervention trials among black women.[3, 19] One systematic review focused on interventions that promoted weight loss maintenance in black women.[5] One systemic review studied diet and lifestyle interventions that promoted weight loss and reduced cardiovascular risk in blacks.[20] Fitzgibbon et al[3] performed the highest quality and most detailed systematic review. Twenty-five studies that included black women were reviewed. They described 2 large studies that found black women had more robust weight loss than previously described in any other study; however, it also showed that black women still lost significantly less weight in comparison with white women. Black women lost less weight than white women and had challenges with weight loss maintenance.[5] Among 11 studies of black women reviewed, the mean weight loss ranged from 0.5 to 4.6 kg.[3] Tussing-Humphreys et al[5] found a wider weight loss range of 0.5 to 8.5 kg. Osei-Assibey and Boachie[20] examined 18 studies and found a mean weight loss of 5.4 kg in 3.5 months, 2.5 kg in 6 months, and 2.9 kg in 12 months. Evidence in the systematic reviews implied that successful weight loss in black women was usually short-term, and weight gain was commonly observed at the 18-month follow-up data collection points.[5, 19]

## Limitations of Articles Reviewed

There were different limitations for each of the 12 experimental studies included in this review. Some had small sample sizes, convenience samples, self-reported data, high attrition rates, only short-term results, no identified limitations, or not all participants were Black women. The limitations also varied among the systematic reviews. Systematic reviews were limited by the inclusion of quasi-experimental and non-experimental designs, small sample sizes in some of the studies, social and environmental factors were not addressed, selection bias, and varying lengths of maintenance periods were used. Two of the systematic reviews had limited descriptions of review criteria and appraisal which made it difficult to determine how their information was pooled and conclusions were made.[19, 20] Finally, some of the experimental studies included in the current evidence-based review were also in the systematic reviews.

## Implications for APN Practice

It is important to understand the social, cultural, and environmental factors that affect weight loss behaviors in black women who are trying to lose weight.[3, 5, 19, 20] It is common for blacks to have a different definition of obesity than medical professionals. The term obese has a negative connotation.

Often, black women disagree with the “thin ideal” and like having a more full figure.[21] A more accepting view of larger body types can engender specific barriers to weight loss efforts such as disapproval of weight loss by one’s family and lack of support for weight loss.[21, 22, 23] Some black women may identify with a larger body image and not view themselves as being obese despite an elevated body mass index.[24]

This evidence-based review revealed that in recent years more focus has been put toward this high-risk population. Twelve experimental studies and 4 systematic reviews met inclusion criteria and were thoroughly examined and critically appraised. Overall, black women who participated in weight loss interventions lost significantly more weight than those in usual care or control groups. The amount of weight lost was considered modest ranging from 1 to 8.6 kg. Significant weight loss was usually short-term, and weight gain was common at 12 and 18 months after the intervention. Weight loss data beyond 24 months postintervention was not observed in the literature. Studies in this review included a variety of intervention components delivered to groups and individuals in community settings and primary care offices. In all interventions, participants achieved short-term losses. The most effective aspects of weight loss interventions included the promotion of self-efficacy, goal setting**,** incorporation of patient social relationships, and emphasis on the need for postintervention maintenance.[19]

## Conclusion

This evidence-based review revealed that black women experience modest short-term decreases in weight when exposed to weight loss interventions. However, in these studies, the amount of weight lost was low and was not maintained. It is difficult for black women to lose weight and maintain weight loss; thus, more emphasis on obesity prevention is warranted.[17] When providing weight loss counseling, primary care providers should include 3 essential components: diet, physical activity, and behavior change. Before implementing weight loss interventions, it is important to understand patients’ perceptions of obesity and weight loss, barriers to weight loss, and preferences for weight loss interventions. Other research indicates that black women tend to prefer group meetings with women who are going through similar struggles and/or have a buddy in the intervention.[22, 24] In this review, both group and one-on-one counseling approaches were shown to be effective. Finally, establishment of a long-term view and approach will help patients maintain healthy weights across the life span.

# Appendix

Table. Summary of Characteristics of the Experimental Studies Reviewed

| Author Date | Participants | Intervention Components | Intervention Duration | Findings |
|---|---|---|---|---|
| Banks-Wallace, 2007 | 21, $\bar{x}$ age 50.3 years 100% black, women | Physical activity, walking partners | 12 months Follow-up at 18 months | Mean body weight decreased 9% at 12 months and increased 4% at 18 months[a] |
| Bennett et al, 2013 | 194, $\bar{x}$ age 35 years 100% Black, women | Physical activity, diet, and behavior change | 12 months Follow-up at 18 months | Significant weight loss (1 vs 0.5 kg, *P* = .04) at 12 months. Loss maintained at 18 months (0.9 vs 0.8 kg, *P* = .03). |
| Cox et al, 2012 | 44, $\bar{x}$ age 46.1 years 100% black women | Physical activity, diet, and behavior change, stress management in intervention group | 3 months | Significant decrease in body weight in intervention and control (2%, *P* < .001), insignificant difference between groups. |
| Davis-Martin et al, 2006 | 106, > 18 years 100% black women | Physical activity, diet, and behavior change | 6 months | Significant weight loss (2 vs 0.2 kg, *P* = .04) at 6 months |
| Davis-Martin et al, 2008 | 106, > 18 years 100% black women | Physical activity, diet, and behavior change | 6 months Follow-up at 9 and 18 months | Significant weight loss at 9 months (1.5 vs 0.6 kg, *P* = .01), no difference at 18 months. |
| Fitzgibbon et al, 2005 | 64, $\bar{x}$ age 44.8 years 100% black women | Physical activity, diet breast health (education emphasis varied in groups) | 5 months | Significant weight loss (4% decrease vs .9% increase, *P* < .01) in weight loss emphasized group. |
| Fitzgibbon et al, 2010 | 213, $\bar{x}$ age 46 years 100% black women | Physical activity, diet, and behavior change | 18 months | Significant weight loss at 6 months (3 vs 0.2 kg, *P* < .001) and at 18 months (2.3 vs 0.5 kg, *P* = .003). |
| Kumanyika et al, 2005 | 134, > 18 years 100% black 90% women | Phase 1: physical activity, diet, and behavior change Phase 2: usual care or continue intervention | Phase 1, 2.5 months Phase 2, 18 months | Significant wt. loss in Phase 1. Insignificant difference between groups in phase 2. |
| Mayer-Davis et al, 2004 | 132, $\bar{x}$ age 60 years 80% black 82% women | Physical activity, diet, and behavior change | 12 months | Significant weight loss at 6 months (2.6 vs 0.4 kg, *P* < .01) in intense lifestyle group. At 12 months 49% had lost ≥ 2 kg (*P* < .05). |
| Mitchell & Polsky, 2013 | 48, $\bar{x}$ age 70 years 99% black women | Physical activity, diet, and behavior change | 12 months | Progressive loss led to loss of 3.5% of body weight at 12 months. |
| Smith-West et al, 2007 | 217, $\bar{x}$ age 53 years 38% black 100% women | Physical activity, diet, and behavior change MI in intervention group | 18 months | Black women had significant weight lost at 6 and & 12 |

| | | | | |
|---|---|---|---|---|
| | | | | months but no difference from baseline at 18 months. |
| Wadden et al, 2011 | 309, $\bar{x}$ 51.5 years 38% black 79% women | Lifestyle coaching, intervention group enhanced with meal replacement or medication | 24 months | Significant weight loss in enhanced lifestyle group only at 24 months (4.6 vs 1.7 kg, *P* = .003). |

MI = motivational interviewing.

a Significance not reported and no comparison group.

## Supplementary Data

Download : **Download Acrobat PDF file (14KB)**

Figure.

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*In compliance with national ethical guidelines, the authors report no relationships with business or industry that would pose a conflict of interest.*