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Systematic review of behavioral interventions with culturally-adapted strategies to improve diet and weight outcomes in African-American women

Angela Kong^{1,2}, Lisa M. Tussing-Humphreys^{1,2,3}, Angela M. Odoms-Young^{2,4}, Melinda R. Stolley^{1,2,3}, and Marian L. Fitzgibbon^{1,2,3,5}

¹University of Illinois at Chicago, Institute of Health Research and Policy, Chicago, IL

²University of Illinois Cancer Center, Chicago, IL

³University of Illinois at Chicago, Department of Medicine, Chicago, IL

⁴University of Illinois at Chicago, Department of Kinesiology and Nutrition, Chicago, IL

⁵University of Illinois at Chicago, School of Public Health, Chicago, IL

Abstract

Behavioral interventions incorporating features that are culturally salient to African-American women have emerged as one approach to address the high rates of obesity in this group. Yet, the systematic evaluation of this research is lacking. This review identified culturally-adapted strategies reported in behavioral interventions using a prescribed framework and examined the effectiveness of these interventions for diet and weight outcomes among African-American women. Publications from January 1, 1990 through December 31, 2012 were retrieved from four databases, yielding 28 interventions. Seventeen of 28 studies reported significant improvements in diet and/or weight change outcomes in treatment over comparison groups. The most commonly identified strategies reported were ‘socio-cultural’ (reflecting a group’s values and beliefs) and ‘constituent-involving’ (drawing from a group’s experiences). Studies with significant findings commonly reported ‘constituent-involving’ strategies during the formative phases of the intervention. Involving constituents early on may uncover key attributes of a target group and contribute to a greater understanding of the heterogeneity that exists even within racial/ethnic groups. Available evidence does not, however, explain how culturally-adapted strategies specifically influence outcomes. Greater attention to defining and measuring cultural variables and linking them to outcomes or related mediators are important next steps.

Keywords

African-American women; obesity; diet; weight loss; interventions; culture

Corresponding Author: Angela Kong, PhD, MPH, RD, Institute for Health Research and Policy, University of Illinois at Chicago, 1747 W Roosevelt Rd, Chicago, IL 60608, akong@uic.edu.

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Introduction

African-American women are disproportionately impacted by obesity(1) and related comorbidities such as diabetes (2) and hypertension (3). Developing effective interventions to reduce obesity, therefore, remains an important research priority (4). In AACORN's (African-American Collaborative Obesity Research Network) Expanded Obesity Research Paradigm (5), Kumanyika and colleagues illustrated that weight control behaviors are embedded within a number of overlapping contexts, including history (e.g., population origin); culture (e.g., morals, religious, and social values); and physical and economic environments (e.g., food costs, finances, access to foods, food marketing, and media). Factors related to one or all of these domains could play an important role in promoting or hindering healthful dietary behaviors or weight control practices. Therefore, developing interventions that take into account these cultural and contextual domains could lead to better outcomes.

Several behavioral lifestyle interventions incorporating culturally-adapted strategies for African-American communities, particularly women, have been conducted over the past two decades. However, the strategies used have varied widely (5). Interventions may include one or a combination of culturally-adapted strategies, such as hiring racially or ethnically matched staff; recruiting only African-American women; and modifying program content to be consistent with the cultural norms, values, and traditions. The wide range of strategies, coupled with the lack of a consistent framework, makes it challenging to compare across studies and to identify patterns or cultural strategies that contribute to better outcomes. Previously, systematic reviews that examined behavioral interventions with culturally-adapted strategies focusing on weight or diet outcomes among African-American women either concluded that these strategies do not improve outcomes (6) or drew no definitive conclusions (7). Limitations included deficiencies in defining culturally-adapted strategies and in understanding the mechanistic link(s) between cultural factors and health outcomes (7).

A number of frameworks have been developed to improve the planning and organization of culturally-adapted strategies in behavioral interventions (8, 9). For example, a model developed by Resnicow and colleagues (10) characterizes strategies as having either "surface" or "deep" structures. "Surface structure" involves matching intervention components with observable characteristics of the target population. "Deep structure" incorporates elements that require a more in-depth understanding of a group's core cultural values (10). Alternatively, Kreuter and colleagues offer a framework consisting of five types of strategies: 1) *peripheral* (conveying the appearance of cultural appropriateness, similar to "surface structure"); 2) *evidential* (seeking to put into context the health impact for a target population); 3) *linguistic* (using language to make materials more accessible to the target audience); 4) *constituent-involving* (informed by experiences or input from the target group); and 5) *socio-cultural* (reflecting the underlying beliefs, values, and norms of a group, similar to "deep structure") (11).

Applying one of these frameworks to the current literature may aid researchers in the systematic evaluation of behavioral interventions that incorporate culturally-adapted

strategies. Therefore, the purpose of this systematic review was to: 1) identify the types of culturally-adapted strategies used in behavioral interventions using a prescribed framework, and 2) assess how these strategies relate to weight or diet outcomes among African-American women.

Methods

We searched the MEDLINE (via PubMed), CINAHL, Academic Premier, and PsycINFO databases for studies published from January 1, 1990 through December 31, 2012.

Combinations of the following search terms were used to identify articles: obesity, weight loss, dietary intervention, change, and African American or Black. “Culture” and variations of this word were incorporated in the initial search, but only generated minimal results; therefore, we opted to use broader search terms. We did not limit the search to randomized controlled trials, but we did restrict our search to interventions with a control or comparison group. The presence of a control or comparison allowed us to better evaluate the treatment effect (i.e., diet or weight outcomes) of the intervention over no intervention, usual care, or another treatment option.

Inclusion criteria

Studies were included if they met the following criteria: 1) inclusion of African-American women (≥ 18 years); 2) a behavioral lifestyle intervention that specified at least one culturally-adapted strategy for African-Americans; 3) diet or weight change outcomes reported; 4) diet or weight change outcomes reported separately for African American women when <90% of participants were African-American women; and 5) inclusion of a control or comparison group.

This review included behavioral interventions with at least one specified culturally-adapted strategy that reported dietary change, weight outcomes, or a combination of the two. Of the studies reporting only weight outcomes, our aim was to examine studies where weight loss was the primary focus. However, we included two studies (12, 13) that randomized participants to the treatment arm(s) immediately after initial weight loss because many participants in these reports were still losing weight during the treatment phase. Therefore, we reported the weight outcomes for these studies immediately after the treatment phase. Among studies where both diet and weight outcomes were reported, weight loss did not need to be the primary focus of the study. Thus, we also included weight gain prevention or weight management studies in this review. Studies reporting dietary change only did not need to have a weight-related focus; dietary change interventions were included as long as they met inclusion criteria.

Exclusion criteria

Studies were excluded if they 1) were published in a language other than English or conducted outside of the United States; 2) did not include an intervention; 3) included women who were recently postpartum or pregnant; 4) had as a primary focus a surgical or pharmacological weight loss intervention; 5) provided prepared meals, meal replacements, or dietary supplements as main intervention components; 6) did not report weight loss or

diet outcomes; 7) included children or adolescents (<18 years); or 8) excluded African-American women.

Identification of eligible articles

The primary search yielded 624 articles; a total of 523 articles remained after eliminating duplicates (Figure 1). The primary author reviewed titles, abstracts, and full text (when necessary) for possible inclusion. When eligibility was not clear, articles (full text) were reviewed by co-authors and a consensus was reached. After reviewing all of the articles from the primary search, 497 articles were excluded, leaving 26 articles. An additional 15 studies were identified from references cited in primary search articles and reviewed for eligibility. Overall, a total of 29 articles (based on 28 studies) were included in this review. In the study by Yancey *et al.* (14), dietary intake and weight change outcomes were reported in separate articles (15); therefore, we included both articles in this review.

Data extraction

Data were extracted by the first author (AK) and then reviewed by co-authors. For each study included in this review, we extracted: 1) first author and year of publication; 2) study design; 3) study arms and intervention components; 4) sample size and characteristics; 5) delivery, duration, and frequency of the intervention; 6) retention and adherence rates; and 7) diet or weight loss outcomes (including within- and between-group differences) (Table 1).

Culturally-adapted strategies

We used the five categories (i.e. peripheral, constituent-involving, evidential, social-cultural, and linguistic) from the framework described by Kreuter *et al.* to categorize the various types of culturally-adapted identified in studies (Table 2). This framework has similarities with the cultural sensitivity model developed by Resnicow *et al.* (10). For instance, “surface structure” (Resnicow) resembles “peripheral strategies” (Kreuter) in that both seek to convey observable traits; similarly, “deep structure” elements (Resnicow) resemble “socio-cultural” strategies (Kreuter), since both are informed by broader cultural, social, and contextual factors. However, we chose the classification scheme developed by Kreuter *et al.* because it is somewhat more comprehensive. For example, it also considers how language (‘linguistic’), experiences of the target population (‘constituent-involving’), and evidence (‘evidential’) could be incorporated as strategies to culturally enhance health behavior interventions. To our knowledge, only one other systematic review specifically targeting African-American women (16) applied this organizational framework, but others have cited this schema as viable for organizing this type of information (9, 17).

To summarize the types of cultural adapted strategies reported in each study, we extracted the following information (Table 2): 1) setting of the intervention; 2) theoretical framework; 3) examples of culturally-adapted strategies; and 4) overall summary of types of culturally-adapted strategies reported based on the work by Kreuter *et al.* (11). Strategies were categorized by the first author and two co-authors (MF, MS) independently; the authors arrived at a consensus when categorization of strategies differed. We included strategies reported during all phases (i.e. planning, recruitment, implementation) of the intervention.

Tailoring

We also assessed whether studies integrated any form of “tailoring” into their program (Table 3). Kreuter *et al.* defined tailoring as information or strategies related to outcome of interest that are individual-specific and based on an assessment of that individual (18). Although a construct such as culture reflects shared beliefs within a group, “tailoring” assumes heterogeneity is still possible even within a subgroup; therefore, information or strategies can be tailored based on individual differences.

Quality assessment

Study quality (Table 3) was assessed with the Quality Assessment Tool for Quantitative Studies developed by the Effective Public Health Practice Project (EPHPP), which has been previously tested for validity and reliability (19, 20). The Cochrane Review Group recommends this tool as a way to assess public health and health promotion studies that use multiple types of study designs (21, 22). The tool guides raters to estimate an overall global rating (‘weak’, ‘moderate’, ‘strong’) based on selection bias, study design, confounders, blinding, data collection methods, and withdrawals and dropouts. For this review, two co-authors (AK, MF) independently assessed the quality of each study and arrived at a consensus when ratings conflicted.

Results

Study design and sample size

Table 1 summarizes the study and participant characteristics. Most studies included were randomized controlled trials (RCTs) ($n=20$); another eight studies used non-randomized designs with comparison groups. The sample sizes in each study ranged from 21 to 1,501 participants. Studies with larger sample sizes (range: 110 to 1,501) were either multi-site ($n=2$) or full-scale, single-site studies ($n=10$). Pilot studies ($n=16$) had smaller samples (range: 20 to 64).

Participant characteristics

Most studies enrolled only African-American women (90% of study sample); however, four studies contained samples of mixed race/ethnicity and/or gender (23–26) and reported their results by race/ethnicity and/or gender. The mean age of study participants ranged from 40–60 years, except for two studies with slightly younger participants (27, 28). Only a few studies reported results for women who were low-income (28–32) or had less than a high school education (27, 33, 34). Since many were weight loss studies, most study samples included women who were either overweight or obese. Some studies also targeted women with conditions such as type 2 diabetes (33), hypertension (24), impaired glucose tolerance (23), and breast cancer (13).

Setting

Table 2 summarizes the settings and types of culturally-adapted strategies reported in each study. Most studies were conducted in a community-based setting, such as churches (25, 26, 34–37), community centers (27, 38–40), and health care clinics (30, 31, 33, 41). Other

settings included a beauty salon with primarily African-American clients (42), an African-American-owned health club (14), and a worksite with a substantial number of African-American women as employees (43).

Types of culturally-adapted strategies

Peripheral strategies—Fifteen of 28 studies reported using peripheral strategies (12, 14, 24, 26, 28–33, 35, 36, 38, 40, 42), most often during the recruitment phase. For instance, many studies advertised their studies in media outlets such as newspapers and radio stations targeting African Americans (14, 24, 29, 38) and recruited potential participants at locations such as churches (35, 36), community health care clinics (31, 33), predominantly African-American neighborhoods (24, 29, 38), and a social service agency (32). In some studies, peripheral strategies such as logos (12), artwork (30, 40), and colors (28) were used to enhance program materials.

Constituent-involving strategies—Twenty-three of 28 studies reported constituent-involving strategies, frequently in the planning and implementation phases of the intervention. During planning, studies most commonly reported conducting focus groups with African-American women to identify relevant themes and content for their intervention and pilot testing materials (13, 14, 31–33, 35, 36, 43–45). Another constituent-involving strategy during the planning phase was forming advisory boards with key stakeholders from the community to inform the intervention (24, 30, 32, 36, 40). During the implementation phase, studies reported using church members or leaders (35–37, 39, 45), peer or lay educators and mentors (31–33, 40, 42), and other African-American health professionals (12, 14, 46), either to deliver the intervention or aid in its implementation.

Evidential and linguistic strategies—We could only identify four studies that reported evidential strategies (29, 34, 38, 45). Three used evidential strategies in the implementation phase (29, 34, 38) and one during the planning phase (45). For instance, breast cancer risk was communicated in both studies by Fitzgibbon *et al.* (29, 38), and osteoporosis risk in African-American women was discussed in Babatunde *et al.* (34). We found only three studies reporting linguistic strategies; in all three cases, program materials were adapted so they would be appropriate for the participants' literacy levels (23, 31, 33).

Socio-cultural strategies—Twenty-three of 28 studies reported using socio-cultural strategies to enhance intervention delivery. Themes or content that were commonly addressed included spirituality, religiosity, and faith (13, 29, 30, 35, 36, 44); traditional and cultural foods (12, 23, 25, 28, 29, 32, 33, 35, 36, 38, 40); family and social support (14, 29, 31, 38, 44, 46); barriers (e.g., economic, structural, cognitive) (27–29, 31, 32, 35, 37, 38, 44); and body image specific to African-American women (31, 35, 44).

Weight loss and diet change outcomes

A total of 14 studies (based on 15 articles) (13–15, 24, 25, 28, 29, 31–33, 35, 36, 38, 39, 44) reported both diet change and weight loss outcomes; weight change was a secondary focus in 5 studies (14, 32, 33, 36, 39) (Table 1). Of these, 7 studies reported significant between-group differences in both weight and diet outcomes (24, 25, 28, 35, 36, 39, 44); 2 studies

found between-group differences in diet only (13, 32); and one study found significant between-group differences in weight only (38). A total of 10 studies (12, 23, 26, 27, 37, 41, 43, 45–47) reported only weight loss outcomes. Of these, 4 found significant between-group differences in weight (23, 26, 41, 43). Finally, 4 studies (30, 34, 40, 42) reported only diet change outcomes; of these, only 2 found significant between-group differences (30, 34).

The amount of weight loss varied across the 12 studies (23–26, 28, 35, 36, 38, 39, 41, 43, 44) that reported significant between-group findings by weight. Most studies reported weight loss ranging from 2 to 5 kg (baseline to $\approx$ 6 months) (23, 24, 28, 35, 38, 41, 43, 44). Most of these studies enrolled mainly African-American women (90%) (28, 35, 36, 38, 39, 41, 43, 44); however, three studies recruited women of mixed race/ethnicity (23–26). In the two large trials including women of mixed race/ethnicity, weight loss was significantly less for African-American women compared to non-African-American women across treatment arms (23, 24). The studies that reported the lowest weight loss (0.5 to 0.7 kg) were not primarily focused on weight loss (36, 39). For instance, the aim of the study by Yanek *et al.* (36) was to reduce cardiovascular risk; thus, although their intervention emphasized weight management, it did not encourage women to target a specific weight loss goal. Similarly, the intervention developed by Kennedy *et al.* aimed to improve dietary intake by offering access to healthful foods. As a consequence, their intervention successfully prevented weight gain among participants in the treatment arm compared to controls (39).

The studies reporting significant between-group differences by diet (13–15, 24, 25, 28, 30, 32, 34–36, 39, 44) examined various diet change outcomes. Compared to controls, African-American women in the treatment arms had significantly lower reported intakes of total calories (36), total fat (35, 36), and saturated fat (24, 32), and greater increases in dietary fiber (15, 39), calcium (34), fruits (13, 28, 30, 39, 44), and vegetables (28, 39).

Study quality, culturally-adapted strategies, and tailoring relative to weight and diet outcomes

Study quality

As shown in Table 3, the overall quality of studies in this review ranged from “weak” to “moderate” (19). Nineteen of 28 studies were rated “moderate”, and 9 were rated “weak”, mostly because of 1 or more deficiencies in factors such as blinding, attrition, and study design. Of the 7 studies that reported significant between-group differences for both weight and diet outcomes (24, 25, 28, 35, 36, 39, 44), 3 received a rating of “moderate” (24, 35, 44) and 4 received a rating of “weak” (25, 28, 36, 39). A rating of “moderate” was also given to all 5 studies that reported significant between-group differences for weight only (23, 26, 38, 41, 43) and all 5 studies that reported significant between-group differences for diet only (13, 15, 30, 32, 34). Nine studies found no significant between-group differences; five of these studies received a quality rating of moderate and the other four received a study rating of weak.

Culturally-adapted strategies

Of the 7 studies with significant between-group differences for both weight and diet outcomes, constituent-involving (24, 28, 35, 36, 39, 44) and socio-cultural (25, 28, 35, 36, 39, 44) strategies were most frequently reported, followed by peripheral strategies (24, 28, 35, 36). Commonly reported socio-cultural strategies addressed cultural and traditional foods (25, 28, 35, 36, 44); food insecurity (28, 39); and spirituality, religiosity, and faith (36, 44). Commonly reported constituent-involving strategies included conducting focus groups (35, 36, 44) and using lay or peer educators (35, 36, 39).

Among the 5 studies that found significant between-group differences by weight only (23, 26, 38, 41, 43), socio-cultural strategies were most commonly reported (23, 38, 41, 43), followed by constituent-involving strategies (23, 41, 43). Of the 4 studies reporting significant between-group differences for diet only (13, 30, 32, 34), all four reported constituent-involving strategies and 3 of 4 studies reported socio-cultural strategies (13, 30, 32). Commonly observed socio-cultural strategies addressed cultural and traditional foods (23, 32, 38); barriers (32, 38); and spirituality, religiosity, and faith (13, 30). Commonly reported constituent-involving strategies included conducting formative assessments with target audiences or tailoring (30, 41, 43) and focus groups (13, 30, 32).

Of the 11 studies that reported no significant between-group findings for diet or weight outcomes, socio-cultural (12, 27, 31, 33, 40, 42, 45, 46) and constituent-involving strategies (12, 31, 33, 37, 40, 42, 45–47) were the most frequently reported, followed by peripheral strategies (12, 29, 33, 40, 42). The most commonly reported socio-cultural strategies included cultural and traditional foods (12, 29, 33, 40, 46), social support (29, 33), and barriers (27, 29, 33). Constituent-involving strategies mainly involved using lay or peer educators for intervention delivery (33, 37, 40, 42, 45) and inclusion of African-American interventionists or staff (12, 46, 47).

Tailoring

We identified four studies that reported tailored intervention components on dietary factors (26, 32, 41) or both dietary factors and cultural constructs (30) (Table 3). One study examined diet change outcomes (30) and two others tested only weight outcomes (26, 41). All three studies reported significant between-group differences; however, Kreuter *et al.* reported beneficial effects only in the treatment arm tailored to both cultural and diet-related constructs, but not in the treatment arm based on cultural tailoring alone (30). The fourth study tested both diet and weight change outcomes (32) and found significant between-group differences in diet change, but not weight.

Discussion

The modest results of lifestyle behavioral interventions, coupled with the high prevalence of obesity among African-American women, has led to a significant interest in how culture may influence outcomes (4). To date, we know little about the effectiveness of interventions that incorporate cultural components into intervention development and delivery. In fact, no scientific standard exists to categorize the various components specific to ‘culture’. We

applied a rubric for categorizing the strategies used to culturally enhance behavioral interventions, and examined these strategies relative to weight and diet outcomes among African-American women. Overall, 17 of 28 studies demonstrated significant improvements in outcomes in the treatment arms over controls, which suggests behavioral interventions incorporating culturally-adapted strategies may be effective over control (e.g. usual care) or comparison arms. The most commonly identified strategies reported were *socio-cultural* and *constituent-involving*. Studies with significant findings often reported using constituent-involving strategies during the formative phases of research. What is still unknown is how any of these strategies actually influence outcomes. As part of our discussion, we offer some guidance for future directions.

In this review, we applied a clear framework to define what constitutes a culturally-adapted strategy so that we could better compare results across studies. Studies with significant between-group differences (by weight, diet, or both) commonly reported using both socio-cultural and constituent-involving strategies, but this was also often true of less effective studies. Specifically, socio-cultural strategies that addressed traditional foods and barriers (e.g., economic, family obligations) were common to both sets of studies. However, the types of constituent-involving strategies did differ between these studies. Studies with significant findings more commonly reported using constituent-involving strategies during planning and recruitment (e.g., focus groups, advisory groups, formative assessments). Studies with null findings often reported using such strategies during intervention delivery (e.g., racially/ethnically matched interventionists, lay leaders, community workers, peer educators, church members).

Recent evidence from the Weight Loss Maintenance (WLM) trial suggested that race concordance between interventionists and participants was not associated with greater weight loss for African Americans (48). This lends some support to our findings because studies with significant findings in our review were more likely to report constituent involving strategies that involved input from constituents (e.g. focus groups, advisory committee) to guide intervention content rather than race concordance between interventionists and participants alone. Perhaps involving constituents at the development stage may lead to more relevant content. In clinical psychology, involving constituents and other key stakeholders is a crucial step in order to adapt existing interventions (e.g., stage models) (8, 49). Barrera and Castro suggest involving constituents at an early stage may help uncover the perceived positive and negative aspects of the original intervention (8, 49). Furthermore, this approach may help to address important aspects of the target audience and contribute to a greater understanding of the heterogeneity that exists within racial/ethnic groups.

Heterogeneity inherent in any group can also be addressed through tailoring. Only four studies in this review incorporated tailored content (26, 30, 32, 41) and all four reported improvements in either weight (26, 41) or dietary intake (30, 32). Interestingly, a study by Kreuter *et al.* only found dietary improvements among individuals who received content tailored to both diet and cultural factors, rather than either alone (30). Although it would be premature to conclude from this review which factors should be tailored, there is some evidence that tailoring based on dietary factors may lead to improved dietary intake in adults

(50). In a meta-analysis of 15 studies, Eyles *et al.* found tailored nutrition education produced greater mean increases in fruit and vegetable intake and greater mean decreases in total energy and percent energy from fat, compared to nutrition education that was not tailored or compared to controls (50). However, most of the adults in the meta-analysis were non-Hispanic white women, and only 4 of 15 studies included racial/ethnic minorities. Therefore, further testing is needed to confirm that tailored nutritional content is the most effective approach in improving diet among African-American women. Evidence is also needed to determine if receiving tailored nutrition education also translates into better weight outcomes.

Limitations

Some limitations in this systematic review deserve mention. The difficulty of comparisons across studies was further complicated by varying study designs (RCTs, non-randomized studies), sample sizes (ranging from 21 to 1501), and quality of studies (ranging from weak to moderate). Furthermore, the cultural framework that we used to define what constitutes a culturally-adapted strategy across studies also has limitations. For example, we could only identify and categorize strategies based on what was reported. We likely did not include all possible strategies, since details could have been omitted from the original reports because of space limitations or other reasons. We did, however, make every effort to examine pertinent secondary published sources to identify strategies, when available.

Conclusion

Currently there is no systematic basis for the design or reporting of culturally-adapted strategies. The use of a common framework, such as the one used in this review (11), could aid researchers in reporting pertinent details of their research and allow for more valid comparisons between studies. But even if this framework is not chosen, researchers should explain how their selected framework informed their use of strategies.

However, even with an understanding of the types of strategies used and frameworks selected, we need to know more about how these strategies influence outcomes. It is important to note that the lack of scientific evidence supporting culturally-adapted strategies does not nullify the importance of culture; rather, it highlights the challenge inherent in conceptualizing, defining, operationalizing, and measuring culture in this context (51–54). In a special “Forum on Culture” published in *Preventive Medicine*, experts offered varied perspectives on ways to more thoughtfully consider the role of ‘culture’ relative to health-related outcomes (52–54). One recommendation urged researchers to clearly define their use of cultural constructs and identify measures for them (53). In our review, only Kreuter *et al.* defined their cultural constructs of interest (i.e. religiosity, collectivism) and measured them (30). Greater attention to defining and measuring cultural constructs would allow researchers to link these constructs to outcomes (e.g., weight loss, diet change) or to related mediators (53, 55). Ultimately, such efforts would contribute to a further understanding of mechanisms linking cultural factors to health-related endpoints. For obesity, specifically, it will be necessary to further examine cultural and contextual influences and potential causal pathways (e.g., neighborhood stability, discrimination, social networks, norms, poverty,

social cohesion, health care access, and public policy) that lead to the disproportionate levels of obesity and associated comorbidities among African-American women.

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Figure 1.

Search strategy for this review

* Multiple publications from a single study were included only if data reported were relevant to the purpose of this review; otherwise, article was excluded (redundant).

Table 1

Participant and study characteristics, sample size, and weight/diet outcomes

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f frequency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
McNabb <i>et al.</i> , 1997 (35)	RCT, pilot	Study arms I: Intervention C: Control Intervention components Nutrition, behavioral components, physical activity Weight loss focus Active weight loss	Sample size <i>n</i> =39 African-American women I: <i>n</i> =19 C: <i>n</i> =20 Age (yr) I: 56.5/ C: 56.6 SES Did not report Education (% completed high school) I: 89% C: 85% Health status BMI 30–45 kg/m ² with no known physical limitations to prevent moderate exercise	Delivery Small group sessions Duration 14 weeks Frequency: Weekly (90 minutes)	Retention 84.6% (total) I: 78.9% C: 90.0% Adherence Session attendance 71%	Results based on completers (<i>n</i> =33). Data extrapolated from figure, exact means and variance not reported in paper. Within groups: High-fat foods Change score I: ≈ -10 C: $\approx +4$ Fiber-rich foods: Change Score I: $\approx +9$ C: ≈ -5 Between groups High-fat foods change score significantly different at $p<.05$, but not for fiber-rich foods.	Results based on completers (<i>n</i> =33); however, authors note that intention-to-treat analysis yielded similar results Within groups: Mean change (sd) Weight (lb) I: -10.0 (10.3) C: +1.9 (4.3) Between groups Difference was significant between groups ($P < 0.0001$).
Yanek <i>et al.</i> , 2001 (36)	RCT	Study arms SI: Spiritual Intervention S: Standard Intervention (combined with SI for analysis) C: Self-help control <i>Note: spiritual elements were added to standard intervention; two arms almost identical (SI + S)</i> Intervention components Nutrition education Physical activity Spiritual component Weight loss focus Secondary aim: cardiovascular risk reduction	Sample size <i>n</i> =529 African-American women SI: <i>n</i> =267 S: <i>n</i> =188 C: <i>n</i> =74 Age (yr) SI: 53.6 S: 51.9 C: 53.9 Annual income SI: \$42,070 S: \$33,267 C: \$33,945 Education (% completed high school) SI: 92.9% S: 90.4% C: 93.2% Health status Medically cleared	Delivery Group sessions Duration 20 sessions weekly and then support from health educators for rest of the year Frequency Weekly (30 to 45 minutes)	Retention 56% (total) SI: 59.6% S: 56.4% C: 39.2% Adherence Session attendance ranged from 65% (1 st session) to 26.1% (last session), did not vary by standard or spiritual intervention arms	Results based on intent-to-treat analyses; combines standard and spiritual intervention arms Within groups: Baseline to 1 year Energy intake (se) SI + S: -117(16) C: -7(32) % Energy from fat SI + S: -8.1(.99) C: -2.3(.2) Between groups Significant decrease in energy intake in treatment arms vs. control for energy intake ($p=.0038$) and % fat intake ($p=.025$)	Results based on intent-to-treat analyses; combines standard and spiritual intervention arms Within groups: Baseline to 1 year Mean weight change(se) SI + S: -1.1(.42) C: + 0.83(.52) Between groups Difference was significant between groups ($p=.0008$)
Keyserling <i>et al.</i> , 2002 (33) New Leaf (56)	RCT	Study arms Group A: New Leaf (clinic + community) Group B: Clinic intervention Group C: Minimal Intervention New Leaf: Nutrition, physical activity, diabetes care Weight loss focus	Sample size <i>n</i> =200 African-American women Group A: <i>n</i> =67 Group B: <i>n</i> =66 Group C: <i>n</i> =67 Age (yr) Group A: 58.5 Group B: 59.8 Group C: 59.2	Delivery Group (community) and individual (clinic) Duration 6 months Frequency Group A: Four individual counseling sessions (1–90 minutes, 4–45	Retention At 6 months Group A: 89.6% Group B: 90.9% Group C: 88.1% Adherence All participants; Attended at least 1 session: 81%	Results based on completers at 6 months (<i>n</i> =156) Within groups: Mean (se) % calories from fat: Baseline: Group A: 11.3 (0.5) Group B: 10.7 (0.4) Group C: 10.6 (0.3)	Results based on completers at 6 months (<i>n</i> =179) and at 12 months (<i>n</i> =170) Within groups: Mean (se) Weight (lb) Baseline Group A: 207 (5.5) Group B: 204 (6.2)

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
		C: Weight loss Intervention Weight loss intervention Nutrition Physical activity Behavioral components Breast health Faith-based component Faith/spirituality issues, scripture Weight loss focus Active weight loss	C: <i>n</i> =29 Age (yr) I: 47.8 C: 49.1 SES Median income: \$20,500 Education (yr) I: 13.6 C: 12.9 Health status Healthy or medically cleared	12 weeks Frequency Twice weekly First meeting: 90-minute (45- min interactive didactic component + a 45-min exercise component). Second meeting: 45-min physical activity session.	Adherence I: mean 53% of 12 sessions C: mean 54% of 12 sessions	I: 36.1 (6.2) C: 35.4 (6.4) % calories from fat at 12 weeks I: 33.3 (5.1) C: 32.7 (6.1) Between groups No significant differences between groups [−0.25 (−4.45 to 3.95); <i>p</i> = 0.91].	C: −1.6 (3.2) <i>p</i> <0.05 Mean % weight change I: −2.4 (2.9) <i>p</i> <0.001 C: −1.7 (3.1) <i>p</i> <0.05 Between groups No significant differences between groups [−0.95 (−2.94 to 1.04) <i>p</i> =0.34]
Fitzgibbon <i>et al.</i> , 2005 (38)	RCT, pilot	Study arms I: Weight loss/breast health intervention C: General health topics (control) Intervention Nutrition Physical activity Breast health Weight loss focus Active weight loss	Sample size <i>n</i> =64 African-American women Cohort 1, <i>n</i> = 27 I: n =13 C: n =14 Cohort 2, <i>n</i> = 37: I: n =18 C: n =19 Mean age (yr) Cohort 1: 44.4 Cohort 2: 45.1 SES Median income: \$42,500 Education (yr) Cohort 1: 14.7 Cohort 2: 14.9 Health status Healthy or medically Cleared	Delivery Group Duration 20 weeks Frequency Twice-weekly sessions	Retention Cohort 1: I: 100% C: 93% Cohort 2: I: 83% C: 95% Adherence Cohort 1 41% session attendance (out of 37 sessions) Cohort 2 55% session attendance (out of 38 sessions)	Within groups % calories from fat at baseline: mean (sd) Cohort 1 I: 34.4 (3.4) C: 35.8 (4.1) Cohort 2 I: 34.7 (5.3) C: 34.8 (4.7) % calories from fat at 20 weeks I: 35.3 (9.6) C: 35.8 (3.8) Cohort 2 I: 32.2 (3.1) C: 34.7 (4.3) Between groups No significant difference in cohort 1 (<i>p</i> =0.77); near significance for cohort 2 (<i>p</i> = 0.07)	Within groups Mean weight change (kg): Cohort 1 I: +0.5 (± 2.2) C: +0.7 (±2.6) Cohort 2 I: − 3.4 (±3.8) C: +0.9 (±3.4) Between groups No significant difference in cohort 1 (<i>p</i> =0.86) Significant difference in cohort 2 (<i>p</i> =0.002)
Kumanyika <i>et al.</i> , 2005 (12) Healthy Eating and Lifestyle Program (HELP)	RCT**	Phase 1: Healthy eating and lifestyle program for weight loss (no randomization) Intervention components Nutrition (≈1,200 to 1,500 kcal/d) Physical activity Behavioral components (e.g. goal setting, self-monitoring, overcoming barriers) Weight loss focus Active weight loss (Phase 1) Phase 2 Study arms HC: HELP classes SH: Self-help C: Clinic visits (usual care) Weight loss focus Weight maintenance or additional weight loss (Phase 2)	Sample size <i>n</i> =237 African-American adults (Study sample 89.9% AA female) (Phase 1) Age (yr) 43.4 (Phase 1) Education % > 12 yr 65% (Phase 1) Health status 75% obesity-related co-morbidity (Phase 1)	Delivery Group (phase 1) Group or telephone (phase 2) Duration Phase 1 10 weeks Phase 2 (begins 3–6 months after baseline) 18 months (cohorts 1 and 2) 12 months (cohorts 3 and 4) Frequency Phase 1 Weekly (75 minutes) Phase 2 HC: 2 group classes/month (1 hr and 6 total) Telephone calls 2–3 clinic visits SH: 1 in-person group meeting	Retention 56.5% (Phase 1) Phase 2: 66% (all treatments) Adherence Phase 1 1–2 classes: 13% 3–6 classes: 35% 7–9 classes: 41% All classes (10 max): 11% Phase 2 Group HELP Mean attendance 40% at biweekly classes Mean attendance 31% at monthly classes Self HELP: 35–55% of participants were successfully reached for	Not applicable	Phase 1 results based on completers at the end of phase 2 (<i>n</i> =87) Weight change (sd) Weight (kg) <i>Phase 1</i> −1.5 (3.5), <i>p</i> <.001 Within groups End of Phase 2 (from baseline) Mean change (95% CI) Weight (kg) HC: −0.8 (−2.5,0.9) SH: −1.3 (3.4, 0.9) C: −1.2 (2.3,−0.1) <i>p</i> =0.038 Between groups Not significantly different across treatment arms

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
		HC: Individualized nutrition, PA or behavior Individualized nutrition, PA or behavior Individualized nutrition, PA or behavior SH: Self-help kit (local restaurant and fitness guide, diaries, pedometer) Teams formed to promote peer support; group walks (occasional)	behavioral consultations upon request; group walks (occasional) behavioral consultations upon request; group walks (occasional) behavioral consultations upon request; group walks (occasional)	monthly phone-based contact			
Kennedy <i>et al.</i> , 2005 (37)	RCT, pilot	Study arms Weight loss intervention arms G: Group I: Individual Both intervention groups Nutrition education Physical activity Behavioral components (social support, self-monitoring, stress management, relapse prevention) Weight loss focus Active weight loss	Sample size <i>n</i> =40 African-American adults (Sample 92.5% AA female) Age (yr) 44 SES Did not report Education Did not report Health status Overweight or obese (BMI 27 kg/m ²)	Delivery Group or individual Duration 6 months Frequency G: Six monthly meetings I: 15 meetings	Retention 90% overall G: 14/20 I: 20/20 Adherence Did not report	Not applicable	Within groups Mean change (sd) Weight (kg) 6 months-baseline G: -1.0 (1) I: -1.3 (1.3) (<i>p</i> <.05) Between groups No significant differences between groups
Kreuter <i>et al.</i> , 2005 (30)	RCT	Study arms BCT: behavioral construct tailoring CRT: Culturally relevant tailoring BCT + CRT: Combination C: Delayed intervention Intervention Nutrition Breast cancer screening Weight loss focus No (dietary behavior change and mammography use)	Sample size <i>n</i> =1,227 African-American women Age (yr) BCT + CRT: 35.4 BCT: 35.8 CRT: 35.4 C: 35.7 SES % income <\$20,000/yr: BCT + CRT: 71.2% BCT: 65.0% CRT: 68.0% C: 68.7% Education (mean yr) BCT + CRT: 12.2 BCT: 12.4 CRT: 12.2 C: 12.2 Health status Did not report	Delivery Individual (mail and phone) Duration 18 months Frequency Six tailored magazines mailed over 18 months	Retention 83.1% at 1 month BCT + CRT: 80.6% BCT: 87.1% CRT: 83.8% C: 80.9% 77.3% at 6 months BCT + CRT: 74.0% BCT: 82.0% CRT: 76.4% C: 76.5% 71.8% at 18 months BCT + CRT: 68.7% BCT: 73.6% CRT: 71.8% C: 72.1%	Within groups Median change in servings of fruits and vegetables consumed per day Baseline to 6 months BCT + CRT: +0.29 BCT: 0.00 CRT: +0.14 C: +0.21 Baseline to 18 months BCT + CRT: +1.00 BCT: +0.43 CRT: +0.36 C: +0.57 Between groups No difference between groups at 6 months. At 18 months, BCT + CRT was significantly greater than CRT group, but not compared to BCT or control	Not applicable
Yancey <i>et al.</i> , 2006 (14) Note: diet outcomes reported in McCarthy <i>et</i> <i>al.</i> , 2007 (15)	RCT	Study arms I: Fitness C: Knowledge Fitness intervention Physical activity Nutrition Social support Weight loss focus No (physical activity and dietary behavior change)	Sample size <i>n</i> =366 African-American women I: <i>n</i> =188 C: <i>n</i> =178 Age (yr) I: 44.6 C: 46.5 SES Average income ≈ \$40,000–59,000 (both groups)	Delivery Group Duration 8 weeks Frequency Weekly sessions (2 hr)	Retention 71% (overall at 12 months) Attended one class I: 98.4% C: 93.2%	Results reported in McCarthy <i>et al.</i> , (15); only 12-month follow-up results available Within groups % Energy from fat Baseline I: 38.4 (8.4) C: 38.2 (8.6) 12 months: I: 35.2 (8.7) <i>p</i> <.01	Within groups Mean change (sd) weight (kg) 2 months – baseline I: -0.26 <i>p</i> =0.38 C: +0.28 <i>p</i> =0.36 6 months –baseline I: +0.02 <i>p</i> =0.95 C: +0.02 <i>p</i> =0.93 12 months –baseline

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
			Education (yr) I: 15.1 C: 15.0 Health status Healthy and capable of physical activity (1 mile walking)			C: 36.8 (8.9) p<.01 % Energy from saturated fat Baseline I: 13.0 (3.2) C: 12.7 (3.3) 12 months I: 11.7 (3.4) p<.01 C: 12.2 (3.2) p<.05 Dietary fiber Baseline I: 14.4 (6.8) C: 15.0 (7.9) 12 months I: 16.1 (7.3), p<.01 C: 14.1 (6.6), p<.01 Between groups Change in fiber significantly different in intervention compared to controls (p<.05)	I: +1.93 p=0.0002 C: +0.63 p=0.28 Between groups No difference between groups
Davis Martin <i>et al.</i> , 2006 (41)	RCT	Study arms I: Tailored intervention + Standard care Intervention Nutrition Physical activity Behavioral components Weight loss focus Weight loss and weight gain prevention	Sample size n=144 African-American women I: n=71 C: n=73 Age (yr) I: 40.7 C: 42.9 SES Low income Education Did not report Health status Healthy and medically cleared	Delivery Individual Duration 6 months Frequency Monthly (15 min, physician- delivered)	Retention 73.3% overall Adherence Session attendance 50% (1)	Not applicable	Within group Mean change (sd) Weight (kg) Baseline to 6 months I: -2.0 (3.2), p=0.002 C: +0.2 (2.9) p= NS Between groups Weight change significantly differed by treatment group (I vs. C), p=0.03
Befort <i>et al.</i> , 2008 (31)	RCT, pilot	Study arms I: Behavioral weight loss program + motivational interviewing/weight loss C: Behavioral weight loss program + health education Behavioral weight loss program Nutrition Physical activity Behavioral components Motivational interviewing or health education Weight loss focus Active weight loss	Sample size n=44 African-American women I: n=23 C: n=21 Mean age (yr) I: 41.6 C: 47.2 SES Low income Education (% completed high school) 74% Health status Medically cleared	Delivery Group Duration 16 weeks Frequency Weekly weight loss sessions (90 min) Four motivational interviewing sessions (30 min)	Retention 77.3% overall Adherence mean 53% of 16 group sessions overall mean 80% of 4 individual sessions overall Self-monitoring logs (range: 0–15) I: 5.00 (5.93) C: 5.78 (3.85)	Within groups Mean change (sd) Total kcal/d I: -434 (538) C: -486(801) Percent kcal from fat I: -3.4 (9.1) C: -5.5 (7.7) Fruit and vegetable (svg/d) I: +1.2 (2.8) C: +2.0 (3.2) Between groups No significant differences	Within groups Weight (kg) Mean change (sd) I: -2.6 (4.2) C: -3.2 (5.7) Between groups No significant differences
West <i>et al.</i> , 2008 (23)	RCT, multi-site	Study arms IL: Intensive lifestyle SL+ M: Standard lifestyle + Metformin	Sample size n=1,501 adults IL:	Delivery Individual Duration	Retention (6 months) IL: AAW: 93.3% NHW: 98.9%	Not applicable	Within group Mean change (sd) Weight (kg) Baseline to 6 mo

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
Diabetes Prevention Program		SL: Standard lifestyle alone Intensive lifestyle Nutrition Physical activity Behavioral components Weight loss focus Active weight loss	n = 120 African-American women (AAW) n =381 non-Hispanic White women (NHW) SL+ M: AAW: <i>n</i> = 110 NHW: <i>n</i> =377 SL: AAW: <i>n</i> =111 NHW: <i>n</i> =402 Age (% > 40 yr) AAW: 77.4% NHW: 75.6% SES Did not report Education Did not report Health status Impaired glucose tolerance	6 months (active weight loss phase) Frequency IL: 16 sessions SL+ M/SL: 1 individual session and written materials	SL + Metformin AAW: 93.6% NHW: 96.0% SL + Placebo AAW: 90% NHW: 94% Adherence IL only (AAW and NHW): Mean session attendance (sd) at year 1: 23.6 (7.1) Mean self-monitoring of fat records (SD) at 6 months: 11.3 (5.3); range: 0–23		AAW: IL: -4.7 (5.1) SL+M: -2.1 (3.6) SL: +0.2 (3.7) NHW: IL: -7.5(5.6) SL+M: -2.3(4.2) SL: -0.5 (4.4) Between groups In IL arm, AAW lost significantly less weight than NHW (p<0.01). AA women in both the lifestyle and Metformin arms achieved significantly greater weight loss than those in the placebo arm.
Stolley <i>et al.</i> , 2009 (44)	RCT	Study arms I: weight loss intervention C: General health and safety education Weight loss intervention Nutrition Physical activity Behavioral components Motivational interviewing Weight loss focus Active weight loss	Sample size n =213 African-American women I: <i>n</i> =107 C: <i>n</i> =106 Age (yr) I: 46.4 C: 45.5 SES Median income: \$42,500 Education (yr) I: 14.6 C: 15.1 Health status Healthy or medically cleared	Delivery Group and individual (Motivational interviewing) Duration 6 months Frequency Twice-weekly sessions Session 1: Didactic nutrition Supervised physical activity (90 min) Session 2: Supervised physical activity (45 min) Once-monthly motivational interviewing session	Retention I: 93.5% C: 92.5% Adherence 53% session attendance (overall) 53% session attendance of motivational interviewing sessions	Within groups: Mean(sd) Energy (kcal) At baseline I: 2538 (1088) C: 2302 (949) At 6 months I: 1994 (919) C: 1911 (858) Fat (% kcal) At baseline I: 420 (6.4) C: 40.6 (6.1) At 6 months I: 38.2 (7.0) C: 38.9 (6.3) Fiber (g/1000 kcal) At baseline I: 8.57 (3.27) C: 8.65 (2.98) At 6 months I: 10.65 (3.92) C: 3.39 (2.47) Vegetables (svg/d) At baseline I: 3.47 (2.05) C: 3.41 (2.18) At 6 months I: 3.94 (3.25) C: 3.39 (2.47) Fruits (svg/d) At baseline I: 1.31 (1.02)	Results based on completers at 6 months Within groups: Mean change (sd) Weight (kg) I: - 3.0 (4.9) C: + 0.20 (3.7) Between groups: Sig. difference in weight change between I vs. C -3.27 (95% CI: -4.50 to -2.05); p<0.001

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
						C: 1.39 (0.99) At 6 months I: 1.86 (1.21) C: 1.15 (1.10) Between groups Significant difference in change in fruit intake	
Kennedy <i>et al.</i> , 2009 (39)	RCT, pilot	Study arms I: Intervention (weekly classes and Rolling Store) C: Control (take-home nutrition and physical activity materials) Intervention Nutrition education (e.g. cooking lessons) Physical activity Weight loss focus Weight gain prevention	Sample size n=40 African-American women Age (yr) I: 46.4 C: 45.5 Health status Healthy and met exclusion criteria (e.g. heart disease, stroke, cancer, BMI > 40)	Delivery Group Duration 6 months Frequency Weekly lessons and weekly access to produce truck	Retention 93%	Within groups Mean (sd) change at 6 months Energy (kcal/d) I: -456 (1032) C: -636 (1326) Dietary fiber (g/d) I: +1.7 (5.7) C: -4.3 (19.7) Fruit/fruit juices (svg/d) I: +1.0 (1.7) C: 0 (1.2) Vegetables (svg/d) I: +0.9 (1.2) C: -0.2 (1.8) Between groups: Significant changes in dietary fiber (p=0.03), fruits (p=0.02), and vegetables (p=0.002) between I vs. C.	Within groups Mean (sd) change at 6 months Weight (kg) I: -0.7 (1.2) C: +1.1 (2.0) Between groups Weight change significantly different between I vs. C. (p<0.001)
Djuric <i>et al.</i> , 2009 (13)	RCT* pilot	I: Active weight loss (1 st 6 months) + spirituality counseling for weight loss maintenance (2 nd 6 months) C: Active weight loss (1 st 6 months) + standard counseling for weight loss maintenance (2 nd 6 months) Intervention components Nutrition Physical activity Spirituality (weight loss maintenance phase) or standard counseling Weight loss focus Weight loss + weight loss maintenance	Sample size n= 24 African-American women I: n=12 C: n= 12 Age (yr) I: 55 C: 56 SES (% income < \$30,000/yr) I: 25% C: 25% Education (% college graduate) I: 67% C: 50% Health status Diagnosed with breast cancer in last 10 years, at least 3 months post- treatment	Delivery Individual (in person and phone- based) Duration 6 month (active weight loss phase) + 12 months weight maintenance phase (randomized at 6 months) Frequency 0–3 months: weekly 4–6 months: biweekly	Retention 92% Adherence Did not report	Results based on completers at 18 months (I n=11, C n= 11) Within groups: Mean change (sd) Fat (% calories) I: -5.6 (7.3), p=0.04 C: -7.8 (12.7), p=0.05 Fruits (svg/1,000 kcal) I: +1.2 (0.8), p=0.007 C: +0.3 (0.7), p=0.21 Vegetables (svg/1,000 kcal) I: +0.2 (2.6), p=0.47 C: +0.5 (0.8), p=0.04 Between groups Change in fruits was significantly different between C vs. I (p=0.013)	Results based on completers at 18 months (I, n= 11; C, n=11) Within groups: Mean change (kg) 0 to 6 months I: -1.5 (6.5) C: -2.5 (5.1) 6 to 18 months I: +0.3 (3.4) C: +0.4 (3.0) Between groups No significant differences between groups
Kumanyika <i>et</i> <i>al.</i> , 2009 (46)	RCT	Study arms FHS: Family high support FLS: Family low support HIS: Individual high support ILS: Individual low support All groups included Nutrition education Physical activity	Sample size n=344 African-American adults (study sample 89.9% AA female) Age (yr) 46.5 76.7 SES	Delivery Group Duration 6 moths (initial weight loss phase) Frequency Weekly (90 minutes)	Retention At 6 mo for index participants FHS: 74% FLS: 75% HIS: 59% ILS: 36% Adherence	Not applicable	Phase 1 findings reported for index participants only Within groups Intent to treat: Mean change (sd) Weight (kg) FHS (n=65): -4.1 (4.9) FLS (n=65): -3.5 (4.8)

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
		Behavioral components (e.g. self-motivation, goal setting, problem-solving) Weight loss focus Active weight loss in first 6 months, followed by maintenance Family high support Full participation from partners Family low support Partners support solicited, full participation not required Individual high support Teams formed within treatment group Individual low support No teams (traditional)	Study arms E: Nutritional counseling + gift card for fruits and vegetables only C: Nutritional counseling + gift card for groceries Intervention components: Nutrition Gift card for either fruits and vegetables only or groceries Weight loss focus Active weight loss	Sample size n=21 African-American women Mean age (yr) 26.9 SES (% Medicaid eligible) 62.5% Health status Healthy or medically cleared			IHS (n=32): -2.3 (4.4) ILS (n=11): -1.1 (2.7) Completers FHS (n=48): -5.6 (4.9) FLS (n=49): -4.6 (5.0) IHS (n=19): -3.8 (5.3) ILS (n=11): -3.1 (4.0) Between groups At 6 months, high vs. low support groups were not significantly different
Weerts <i>et al.</i> , 2011 (28)	RCT, pilot	Study arms E: Nutritional counseling + gift card for fruits and vegetables only C: Nutritional counseling + gift card for groceries Intervention components: Nutrition Gift card for either fruits and vegetables only or groceries Weight loss focus Active weight loss	Sample size n=21 African-American women Mean age (yr) 26.9 SES (% Medicaid eligible) 62.5% Health status Healthy or medically cleared	Delivery Individual counseling Duration 3 months Frequency Monthly	Retention 43% Adherence Did not report	Results based on completers at 3 months (E, n=5; C, n=4) Within groups: Mean change (sd) Baseline to 3 months Weight (lb) E: -6.05 (3.93) C: +3.68 (4.06) Between groups Weight change significantly different between E vs. C (p=0.008)	Results based on completers at 3 months (E, n=5; C, n=4) Within groups: Mean change (sd) Baseline to 3 months Weight (lb) E: -6.05 (3.93) C: +3.68 (4.06) Between groups Weight change significantly different between E vs. C (p=0.008)
Anton <i>et al.</i> , 2011 (26)	RCT, pilot	Study arms I: Weight loss + exercise C: Educational control group Intervention components Nutrition education Behavioral strategies (e.g. self-monitoring, goal-setting, group problem-solving) Physical activity Weight loss focus Active weight loss	Sample size n=34 women African-American women (AAW), n=18 Caucasian women (CW), n=16 Mean age (yr) Control group AAW: 60.7 CW: 67.1 Intervention AAW: 64.2 CW: 63.1 Education (yr) Control group AAW: 13.3 CW: 15.5 Intervention AAW: 14.2	Delivery Group Duration 24 weeks Frequency Weekly sessions (60 minutes)	Retention 94% Adherence Mean% attendance 83% weight loss sessions attended; 70% exercise sessions attended By race Weight loss attendance (n=23): AAW: 18 CW: 20 Exercise sessions AAW: 42 CW: 59 Completed food records	Not applicable	Within groups Mean change (sd) at 6 months Weight (kg) CW I: -5.45 (3.24) C: -0.89 (4.12) AAW I: -6.18 (4.42) C: -0.09 (3.91) Between groups Weight change significantly different between I vs. C; did not report differences by race

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
			CW: 14.8 Health status Mild to moderate physical limitations		Both groups completed food records 5 of 7 days/ week (average)		
Babatunde <i>et al.</i> , 2011 (34)	Randomized repeated measures experimental design	E: Experimental C: Wait-list control Intervention components Nutrition education Osteoporosis education Weight loss focus No	Sample size n=110 African-American adults (sample 90% African-American women) Age (% range between 65–79 yr) 57.3% 51.8% Health status Did not report	Delivery Group Duration 6 weeks Frequency Weekly (30–45 minutes)	Retention 84.6% Adherence Did not report	Calcium intake (mg) Mean (sd) Baseline E: 874 (324) C: 817.65 (326.7) At 6 weeks E: 1,430 (331) C: 778.2 (369.31) Between groups Mean increase in calcium intake was significantly different between E vs. C (p<0.001)	Not applicable
Cox <i>et al.</i> , 2012 (47)	RCT, pilot	I: Lifestyle + stress C: Lifestyle alone Intervention components Nutrition Physical activity Stress management (lifestyle + stress) Weight loss focus Active weight loss	Sample size n=44 African-American women Age (yr) 44.5 Education (% graduate school) 40.9% SES Did not report Health status BMI 25–40, elevated stress levels (score >=17 on Cohen’s Perceived Stress Scale), medically cleared	Delivery Group Duration 12 weeks Frequency Weekly (60 minutes)	Retention 86% Adherence % of sessions attended: I: 57.2% C: 65.9% 50% of self-monitoring diaries I: 50.3% C: 49.2%	Not applicable	Based on intent-to-treat analysis Within groups: Mean change (sd) Weight (kg) 3 months from baseline I: –2.7 (3.9), p<0.001 C: –1.3 (2.1), p<0.001 Between groups No difference between groups (p=0.17)
Domel <i>et al.</i> , 1992 (27)	Quasi-experimental pilot	I: Weight loss intervention C: Control Intervention components Nutrition education Behavioral components Weight loss focus Active weight loss	Sample size n=57 African-American women I: n=43 C: n=14 Age (yr) 37.0 SES Low income Education Low literacy Health status >20% ideal body weight	Delivery Group Duration 11 weeks Frequency Weekly	Retention 72% Adherence Mean: 83% of 11 sessions	Not applicable	Within groups: Mean change (range) Weight (lb) I: –3.1 (–19.5 to +7.0) C: –0.3 (–8.5 to +7.8) Between groups Not significantly different
Auslander et al., 2002 (32) “Eat Well Live Well” Study details also obtained from Auslander <i>et al.</i> , 2000 (58) and Williams	Quasi-experimental	Study arms T: Intervention C: Control (self-help booklet) Intervention components Group sessions: nutrition skills areas (e.g. rate your plate, label reading, comparison shopping, recipe modification, eating out) Individual sessions: tailored nutrition education based on individuals stage of change	Sample size n=294 African-American women T: n=138 C: n=156 Age (yr) T: 41.2 C: 40.2 Education (% high school) T: 33% C: 43.6%	Delivery Individual and group Duration 3 months Frequency 6 weekly sessions with peer educator and 6 group sessions	Retention 73.7% Adherence 68.6% attended at least 10 of 12 possible sessions (mean no. of sessions= 9.4)	Within groups: Mean daily energy (kcal) Baseline T: 1099.9 C: 1291.0 3 months T: 1122 C: 1272 Mean % calories from fat Baseline	Within groups: Mean weight (lb) Baseline T: 211.0 C: 206.1 3 months T: 212 C: 206 Between groups

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
<i>et al.</i> , 2006 (59)		Weight loss focus Secondary aim—overall reduce diabetes risk	SES (% below poverty line) T: 47.2% C: 48.0% Health status BMI >27 kg/m ² , not diabetic			T: 35.9 C: 36.0 3 months T: 32.1 C: 35.6 Mean % calories from saturated fat Baseline T: 12.4 C: 12.4 3 months T: 10.8 C: 12.4 Between groups: Significantly less fat (% calories) (p<0.0001) and % saturated fat (p<0.0001) for intervention vs. control	No significant differences in weight change
Shrocco <i>et al.</i> , 2005 (25)	Quasi-experimental pilot	UC: University Caucasian UAA: University African American CAA: Church-based African- American Nutrition (non-dieting approach— BCT) Physical activity (walking program) Behavioral components (Self- monitoring end by week 10) Weight loss focus: yes	Sample size <i>n</i> =42 women UC: <i>n</i> =22 UAA: <i>n</i> =10 CAA: <i>n</i> =10 Age (yr) UC: 43.8 UAA: 41.3 CAA: 44.3 Education (yr) UC: 14.8 UAA: 14.1 CAA: 15.9 Health status >30% over ideal body weight, no serious health conditions	Delivery Group Duration 12 weeks Frequency Weekly (90 minutes)	Retention Did not report Adherence Mean (SD) Sessions attended UC: 9.96 (2.16) UAA: 7.83 (3.69) CAA: 11.13(0.64) UAA different (p<0.05) from UC and CAA Diet records/wk UC: 6.37 (0.93) UAA: 6.03 (0.98) CAA: 6.61 (0.55)	Within groups: Mean (sd) % fat Baseline UC: 32.83 (9.21) UAA: 39.67 (7.78) CAA: 37.64 (5.08) Post-treatment UC: 22.65 (3.67) UAA: 25.90 (1.08) CAA: 28.73 (4.76) Between groups % fat less in UC vs. AA groups (p<0.01) at end of treatment. A trend toward less fat in UAA vs. CAA (p=0.07). Did not measure change in diet from baseline to end of intervention	Within groups: Estimated weight change (kg)— based on figure reading (means and sd not reported) UC: $\approx$ -5.5 UAA: $\approx$ -2.5 CAA: $\approx$ -8 Between groups Adjusting for initial weight, weight loss higher in CAA group than in UC or UAA post treatment (p<0.001)
Parker <i>et al.</i> , 2010 (45)	Quasi-experimental pilot	Interventions Non-spiritual Spiritual Intervention components Non-spiritual intervention Nutrition Physical activity Spiritual intervention Nutrition Physical activity Faith component (e.g. scripture verses) Weight loss focus Active weight loss	Sample size <i>n</i> =28 African-American women Non-spiritual: <i>n</i> =9 Spiritual: <i>n</i> =19 Age (yr) Non-spiritual: 52.4 Spiritual: 49.8 Education (% college or graduate degrees) Non-spiritual: 56% Spiritual: 21% SES (% income <\$10,000/yr) Non-spiritual: 25% Spiritual: 11% Health status Did not report	Delivery Group Duration 10 weeks Frequency Weekly	Retention Non-spiritual 9/11=81.8% Spiritual 19/24=79.2% Adherence Did not report	Not applicable	Within groups: Mean (se) Weight (lb) Baseline Non-spiritual: 161.6 (16.4) Spiritual: 216.7 (9.8) Post-intervention Non-spiritual: 158.8 (15.5), p<0.05 Spiritual: 215.7 (9.8), p<0.01 Between groups No significant differences

Study	Study design	Study arms/ intervention components	Sample size and Characteristics	Delivery/duration/f requency	Retention/ adherence	Diet change outcomes*	Weight change outcomes*
Johnson <i>et al.</i> , 2010 (42)	Quasi-experimental pilot	Study arms T: Beauty salon intervention C: Comparison group Intervention components Nutrition education Physical activity Behavioral components Weight loss focus No	Sample size $n=20$ African-American women Age T: 90% aged 40 to 59 y C: 80% aged 30 to 59 y Education (% w/high school degree) T: 50% C: 60% Health status Did not exclude participants based on health; some with high blood pressure and diabetes	Delivery Individual Duration 6 weeks Frequency Weekly	Retention 100% Adherence Did not report	Within groups Mean (sd) Daily servings of fruits and vegetables Pre-intervention C: 3.8 (1.8) T: 1.8 (1.0) Post-intervention C: 3.5 (1.3) T: 3.4 (1.3), $p<0.01$ Fruit and vegetable servings significantly higher for treatment group only Between groups Not reported	Not applicable
Ard <i>et al.</i> , 2010 (43)	Crossover design (sequential control to intervention), pilot	Study arms I : Intervention C: Control Intervention components Nutrition (e.g. low energy-dense dietary pattern) Physical activity Behavioral components Weight loss focus Yes	Sample size $n=37$ African-American women Age (yr) 47.5 SES (% income < \$20,000/yr) 25.6% Education (% high school graduate) 84.6% Health status Did not report	Delivery Group Duration 6 months Frequency Weekly (60–90 minutes)	Retention I: 73.0% C: 83.7% Adherence Attended sessions Day: $n=24$ Night: $n=5$ % of sessions attended Day: 58% Night: 70%	Not applicable	Mean change (se) Weight (kg) I: reports change from crossover C: reports change from baseline I: -2.6 (0.8) C: $+0.7$ (0.3) Between groups: Net difference -3.4 (0.8) (end of intervention-control) significantly different ($p<0.001$)
Backman <i>et al.</i> , 2011 (40)	Quasi-experimental	Study arms T: Nutrition and physical activity intervention C: Control Intervention components Nutrition education Physical activity Behavioral components Weight loss focus No	Sample size $n=327$ African-American women T: $n=156$ C: $n=171$ Age (% 37 yr) T: 59% C: 61% SES (% income < \$17,000/yr) T: 37% C: 34% Health status Did not report	Delivery Group Duration 6 weeks Frequency Weekly (60 minutes)	Retention: 84% Treatment 86% Control Adherence Did not report	Within groups: % daily fruit and vegetable consumption 3.5 cups/d Pre intervention T: 12.2% C: 17.5% Post-intervention T: 31.4%, $p<0.001$ C: 21.6% Between groups Did not report	Not applicable

Table 2

Summary of settings, theoretical frameworks, and types of culturally-adapted strategies

Study	Setting	Theoretical framework	Examples of strategies	Categories ¹				
				Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶
McNabb <i>et al.</i> , 1997 (35)	Church	Did not report	<p><u>Planning:</u></p> <p>Conducted focus groups with African-American women from the community (<i>constituent-involving</i>)</p> <p><u>Recruitment:</u></p> <p>Recruited African-American women from three urban churches (<i>peripheral</i>)</p> <p><u>Implementation:</u></p> <ul style="list-style-type: none">• Trained lay facilitator (church member)(<i>constituent-involving</i>)• Incorporated ethnic foods into program materials (<i>socio-cultural</i>)• Addressed “inner city lifestyle issues”(<i>socio-cultural</i>)	✓	✓			✓
Yanek <i>et al.</i> , 2001 (36)	Church	Social learning theory	<p><u>Planning:</u></p> <ul style="list-style-type: none">• Formed academic/community partnerships(<i>constituent-involving</i>)• Conducted focus groups and in-depth interviews with church-going African Americans (<i>constituent-involving</i>)• Pilot tested materials prior to interventions (<i>constituent-involving</i>) <p><u>Recruitment:</u></p> <ul style="list-style-type: none">• Recruited through church bulletin/announcement (<i>peripheral</i>)• Involved lay leaders/pastors in recruitment (<i>constituent-involving</i>) <p><u>Implementation:</u></p> <ul style="list-style-type: none">• Involved lay leaders/pastor with attendance and intervention delivery(<i>constituent-involving</i>)-Held taste testing/cooking demonstrations (<i>socio-cultural</i>)-Incorporated prayer into sessions (<i>socio-cultural</i>)• Enriched health messages enriched with scripture (<i>socio-cultural</i>)	✓	✓			✓
Keyserling <i>et al.</i> , 2002 (33) New Leaf (56)	Clinic and community-based	Social cognitive theory, transtheoretical model	<p><u>Planning:</u></p> <ul style="list-style-type: none">• Conducted focus groups of African-American women with type 2 diabetes to explore themes for intervention (<i>constituent-involving</i>)• Pretested intervention materials with additional focus groups with target audience (<i>constituent-involving</i>) <p><u>Recruitment:</u></p> <p>Primary care clinics and community health centers serving a large population of African-American women with type 2 diabetes (<i>peripheral</i>)</p> <p><u>Implementation:</u></p>	✓	✓		✓	✓

Study	Setting	Theoretical framework	Categories ¹					Socio-cultural ⁶
			Examples of strategies	Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	
			<ul style="list-style-type: none">• Cookbook included foods of that region (<i>socio-cultural</i>)• Addressed traditional and southern foods (<i>socio-cultural</i>)• Trained community diabetes advisor (CDA) (African-American women with type 2 diabetes) helped deliver the intervention (community-based component) (<i>constituent-involving</i>)• Emphasized social support (<i>socio-cultural</i>)• Addressed barriers to behavior change specific to target population (<i>socio-cultural</i>)• Adjusted materials to literacy levels (<i>linguistic</i>)					
Svetkey <i>et al.</i> , 2005 (24) PREMIER (57)	Clinical/university	Social cognitive theory, transtheoretical model	<p><u>Planning:</u></p> <ul style="list-style-type: none">• Formed a “Minority Implementation Committee” (57) (<i>constituent-involving</i>) <p><u>Recruitment:</u></p> <ul style="list-style-type: none">• Used diverse staff (trained in cultural sensitivity) to aid in recruitment (<i>constituent-involving</i>)• Targeted ethnically appropriate mailing to specific zip codes (<i>peripheral</i>)• Recruited at community-based screening events (<i>peripheral</i>)• Advertised program in media channels (e.g., newspaper, radio) serving minority groups (<i>peripheral</i>)	✓	✓			
Fitzgibbon <i>et al.</i> , 2005 (29)	University/hospital	Social cognitive theory	<p><u>Planning activities:</u></p> <ul style="list-style-type: none">• Developed recruitment and intervention strategies with strong attention to cultural sensitivity based on “surface” and “deep” structure principles (10) <p><u>Recruitment:</u></p> <ul style="list-style-type: none">• Focused on ethnically diverse neighborhoods; advertised in black newspapers (<i>peripheral</i>) <p><u>Implementation:</u></p> <ul style="list-style-type: none">• Addressed breast cancer risk factors (<i>evidential</i>)• Attended to barriers (e.g., structural, environmental, cognitive) to healthy eating and physical activity pertinent to African-American women (<i>socio-cultural</i>)• Taught healthy ways to prepare traditional black foods and what to serve at large family gatherings (<i>socio-cultural</i>)• Emphasized family and social support (<i>socio-cultural</i>)• Discussed issues surrounding childcare and family obligations (<i>socio-cultural</i>)• Addressed spirituality/religion issues (<i>socio-cultural</i>)	✓		✓		✓

				Categories ¹					
Study	Setting	Theoretical framework	Examples of strategies	Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶	
			<ul style="list-style-type: none">Used “stories” of well-known people to communicate health consequences of unhealthy eating and a sedentary lifestyle (<i>socio-cultural</i>)						
Fitzgibbon <i>et al.</i> , 2005 (38)	University/community center	Social cognitive theory	<p><u>Planning activities:</u></p> <ul style="list-style-type: none">Developed recruitment and intervention strategies with strong attention to cultural sensitivity based on “surface” and “deep” <p><u>Recruitment:</u></p> <ul style="list-style-type: none">Focused on ethnically diverse communities; advertised in black newspapers (<i>peripheral</i>) <p><u>Implementation:</u></p> <ul style="list-style-type: none">Addressed breast cancer risk factors (<i>evidential</i>)Taught healthy ways to prepare traditional black foods and what to serve at large family gatherings (<i>socio-cultural</i>)Provided child care (<i>socio-cultural</i>)Held active food demonstrations (<i>socio-cultural</i>)Emphasized family and social support (<i>socio-cultural</i>)Discussed multiple family obligations (<i>socio-cultural</i>)Addressed cognitive and environmental barriers to healthy eating and exercise behaviors (<i>socio-cultural</i>)	✓		✓		✓	
Kumanyika <i>et al.</i> , 2005 (12)	Academic medical center	Social cognitive theory	<p><u>Planning activities:</u></p> <ul style="list-style-type: none">Culturally-adapted previously tested weight loss intervention (based on empirical and theoretical guidance) <p><u>Implementation:</u></p> <ul style="list-style-type: none">Created study logo for African Americans (<i>peripheral</i>)Culturally-adapted materials (e.g. videos, handouts, culturally specific foods/recipes/cookbooks) (<i>socio-cultural</i>)Hired African-American staff (4 of 9) (<i>constituent-involving</i>)Held interactive sessions (e.g. supermarket tour, cooking, restaurant ordering) (<i>socio-cultural</i>)Discussed coping with family issues (e.g. weight problems with children) (<i>socio-cultural</i>)	✓	✓			✓	
Kennedy <i>et al.</i> , 2005 (37)	Church	Did not report	<p><u>Implementation:</u></p>		✓				

				Categories ¹					
Study	Setting	Theoretical framework	Examples of strategies	Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶	
Kreuter <i>et al.</i> , 2005 (30)	Urban health centers	Behavioral construct tailoring	<ul style="list-style-type: none">Church members served as health educators (i.e. peer-delivered intervention) (<i>constituent-involving</i>) <p><u>Planning activities:</u></p> <ul style="list-style-type: none">Formed a community advisory board to guide program development (<i>constituent-involving</i>)Solicited artistic contributions from local artists (<i>constituent-involving</i>)Conducted group interviews with community members, clergy, health workers, and cancer survivors (<i>constituent-involving</i>)Conducted formative research to evaluate program content among women from target population (<i>constituent-involving</i>) <p><u>Implementation:</u></p> <ul style="list-style-type: none">Culturally relevant magazines were tailored on four constructs: religiosity, racial pride, collectivism, and perception of time (women received a score for assessment of each construct; magazines sent based on the two highest scores) (<i>socio-cultural</i>)Magazines featured artwork from local African-American artists; all graphic and text elements developed with input from African Americans from the area (<i>peripheral</i>)Behaviorally tailored magazines were tailored on diet-related knowledge	✓	✓			✓	
Yancey <i>et al.</i> , 2006 (14)	Community (health club)	Social ecological model, social learning theory/social action theory (15)	<p><u>Planning:</u></p> <ul style="list-style-type: none">Intervention materials previously tested in focus groups and pilot-tested (<i>constituent-involving</i>) <p><u>Recruitment:</u></p> <ul style="list-style-type: none">Culturally tailored recruitment strategies included social networking, mass and targeted media, staff presentations, and physician referral (60) (<i>peripheral</i>) <p><u>Implementation:</u></p> <ul style="list-style-type: none">Study site was an ethnically diverse, black-owned community health club (<i>peripheral</i>)Ethnically matched community role models as guest instructors (<i>constituent-involving</i>)Social support component (<i>socio-cultural</i>)Free gym membership	✓	✓			✓	
Davis Martin <i>et al.</i> , 2006 (41)	Primary care clinic	Social cognitive theory, Translational Model	<p><u>Planning:</u></p> <ul style="list-style-type: none">Tailored intervention individualized and based on information gathered at baseline assessment from participants (<i>constituent-involving</i>) <p><u>Implementation:</u></p>		✓			✓	

				Categories ¹					
Study	Setting	Theoretical framework	Examples of strategies	Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶	
			<ul style="list-style-type: none">Nutrition and physical activity recommendations tailored to the cultural preferences and socioeconomic backgrounds of participants and relevant barriers (e.g., unsafe neighborhoods, lack of social support) (<i>socio-cultural</i>)						
Befort <i>et al.</i> , 2008 (31)	Community clinic	Behavioral self-management (adapted “Lifestyle Balance” program from the Diabetes Prevention Program)	<p><u>Planning:</u></p> <ul style="list-style-type: none">Conducted focus groups with obese African-American women (<i>constituent-involving</i>) <p><u>Recruitment:</u></p> <ul style="list-style-type: none">Recruited in a community health center in a lower-income African-American community (<i>peripheral</i>) <p><u>Implementation:</u></p> <ul style="list-style-type: none">Employed community leaders successful at weight loss as peer mentors (<i>constituent-involving</i>)Adapted food and physical activity practices relevant to cultural practices (<i>socio-cultural</i>)Community leaders served as peer mentors (<i>constituent-involving</i>)Participants developed their own group names (<i>peripheral</i>)Sessions were more interactive and less didactic (<i>socio-cultural</i>)Emphasized social support (<i>socio-cultural</i>)Addressed barriers (e.g. transportation, safety, literacy, stressors, child care) (<i>socio-cultural</i>)Acknowledged larger body sizes (<i>socio-cultural</i>)	✓	✓		✓	✓	
West <i>et al.</i> , 2008 (23) Diabetes Prevention Program	Clinical/university	Behavioral self-management	<p><u>Implementation:</u></p> <ul style="list-style-type: none">Used case managers of similar ethnic group as participants (<i>constituent-involving</i>)Tailored reference materials and lesson handouts to foods and cooking methods in ethnic group (<i>socio-cultural</i>)Offered alternative self-monitoring approaches for groups with limited reading or math skills (<i>linguistic</i>)		✓		✓	✓	
Stolley MR <i>et al.</i> , 2009 (44, 61)	University	Social cognitive theory	<p><u>Planning:</u></p> <ul style="list-style-type: none">Conducted focus groups among African-American women (62)(<i>constituent-involving</i>)Refined intervention materials based on pilot study (38) (<i>constituent-involving</i>) <p><u>Implementation:</u></p> <ul style="list-style-type: none">Addressed importance of food in culture (<i>socio-cultural</i>)		✓			✓	

				Categories ¹				
Study	Setting	Theoretical framework	Examples of strategies	Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶
			<ul style="list-style-type: none">Used Afro-centric music during physical activity sessions (<i>socio-cultural</i>)Discussed ways family and social relationships could support and hinder lifestyle behavior change (<i>socio-cultural</i>)Used intervention groups as source of support (<i>socio-cultural</i>)Addressed body image and benefits of weight loss (<i>socio-cultural</i>)Addressed the value of faith for support (<i>socio-cultural</i>)					
Kennedy <i>et al.</i> , 2009 (39)	Community Center	Did not report	<u>Implementation:</u> <ul style="list-style-type: none">Peer-educator delivered intervention (<i>constituent-involving</i>)Improve access to healthy foods (no cost-“Rolling store”; produce truck) (<i>socio-cultural</i>)		✓			✓
Djuric <i>et al.</i> , 2009 (13)	University	Social cognitive theory	<u>Planning:</u> <ul style="list-style-type: none">Conducted focus groups regarding spirituality counseling (<i>constituent-involving</i>) <u>Implementation:</u> <ul style="list-style-type: none">Master’s-level counselor with certification in Biblical counseling delivered intervention (<i>constituent-involving</i>)Program content was spiritually focused and also addressed coping with adversity and stress associated with breast cancer diagnosis (<i>socio-cultural</i>)		✓			✓
Kumanyika <i>et al.</i> , 2009 (46)	Academic medical center	Based on Diabetes Prevention Program (63) and Look AHEAD (64); adapted Wing and Jeffery’s approach (65) for testing effects of social support	<u>Implementation:</u> <ul style="list-style-type: none">Inclusion of African-American interventionist (<i>constituent-involving</i>)Culturally mediated social support networks (<i>socio-cultural</i>)		✓			✓
Weerts <i>et al.</i> , 2011 (28)	Community-university	Did not report	<u>Implementation:</u> <ul style="list-style-type: none">African-American health educator (<i>constituent-involving</i>)Presented colorful handouts (<i>peripheral</i>)Addressed food insecurity (<i>socio-cultural</i>)Addressed foods that were common cultural favorites (<i>socio-cultural</i>)	✓	✓			✓

			Categories ¹					
Study	Setting	Theoretical framework	Examples of strategies	Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶
Anton <i>et al.</i> , 2011 (26)	Community (e.g. church)	Did not report	Implementation: <ul style="list-style-type: none">Intervention delivery in church facilities (<i>peripheral</i>)Tailored dietary intervention	✓				
Babatunde <i>et al.</i> , 2011 (34)	Community-based (church or community organization)	Revised health belief model	Implementation: <ul style="list-style-type: none">African-American PI delivered intervention (<i>constituent-involving</i>)Lessons aimed at osteoporosis risk in the target population (<i>evidential</i>)		✓	✓		
Cox <i>et al.</i> , 2012 (47)	University	Did not report	Implementation: <ul style="list-style-type: none">African-American master's-level counselors delivered intervention and intervention materials (<i>constituent-involving</i>)		✓			
Domel <i>et al.</i> , 1992 (27)	Community center	Did not report	Implementation: <ul style="list-style-type: none">Social support for weight control (<i>socio-cultural</i>)Emphasis on "self-responsibility" (<i>socio-cultural</i>)Address economical barriers to healthful eating (e.g., low-cost cooking methods, low-cost shopping and foods) (<i>socio-cultural</i>)					✓
Auslander <i>et al.</i> , 2002 (32, 58, 59)	Community-based	Transtheoretical model, community organization theory	Planning: <ul style="list-style-type: none">Formed a university-community collaborative to plan, implement, and evaluate intervention (constituent-involving)Provided a 4-month training for peer educators (African-American women from the community) (constituent-involving)Peer educators collaborated with researchers to develop content of dietary intervention (constituent-involving)Conducted focus groups with community members on program materials (constituent-involving) Recruitment: Advertised study at a prominent social service agency in the community and in neighborhood newspapers targeting African-American women (<i>peripheral</i>) Implementation: <ul style="list-style-type: none">Peer-delivered intervention (<i>constituent-involving</i>)Recipe modification (culturally appropriate)(<i>socio-cultural</i>)Discussed role of cultural/traditional foods in disease risk and in role modeling (<i>socio-cultural</i>)	✓	✓			✓

				Categories ¹				
Study	Setting	Theoretical framework	Examples of strategies	Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶
			<ul style="list-style-type: none">Address economic barriers to healthful eating (e.g., budget shopping) (<i>socio-cultural</i>)Tailored dietary content (based on “Dietary Patterns Staging Assessment”)(66)					
Shrocco <i>et al.</i> , 2005 (25)	University- and church-based	Behavior choice treatment (BCT) previously developed by Shrocco <i>et al.</i> , 1997(67)	<u>Implementation:</u> <ul style="list-style-type: none">Tested church setting as a culturally-adapted strategy (<i>socio-cultural</i>)Incorporated culturally relevant foods and recipes (<i>socio-cultural</i>)					✓
Parker <i>et al.</i> , 2010 (45)	University- and church-based	Did not report	<u>Planning:</u> <ul style="list-style-type: none">Conducted forums in four rural and semirural counties of South Carolina to collect residents’ perspectives on health needs and how to deal with them (<i>constituent-involving/evidential</i>) <u>Implementation:</u> <ul style="list-style-type: none">Lay leader or community workers delivered sessions (<i>constituent-involving</i>)Incorporation of faith component (<i>socio-cultural</i>)		✓	✓		✓
Johnson <i>et al.</i> , 2010 (42)	Community-based (beauty salon)	Did not report	<u>Implementation:</u> <ul style="list-style-type: none">Setting (beauty salon) (<i>peripheral</i>)Cosmetologist in an African-American salon delivered intervention (<i>constituent-involving</i>)Emphasized role modeling and used personal testimonials (<i>socio-cultural</i>)	✓	✓			✓
Ard <i>et al.</i> , 2010 (43)	Worksite	Based on previously reported cultural framework (68)	<u>Planning:</u> <ul style="list-style-type: none">Conductive formative assessment with participants (<i>n</i>=14) before intervention to inform program content (<i>constituent-involving</i>) <u>Implementation:</u> <ul style="list-style-type: none">Intervention materials addressed cultural attitudes, beliefs, concerns, and core values of targeted group (based on formative assessment)(<i>socio-cultural</i>)		✓			✓
Backnan <i>et al.</i> , 2011 (40)	Community center and clinics	Social cognitive theory	<u>Planning:</u> <ul style="list-style-type: none">African-American task force adapted intervention for an African-American audience (<i>constituent-involving</i>) <u>Implementation:</u> <ul style="list-style-type: none">African-American lay/community instructors delivered intervention (<i>constituent-involving</i>)	✓	✓			✓

Study	Setting	Theoretical framework	Examples of strategies	Categories ¹				
				Peripheral ²	Constituent involving ³	Evidential ⁴	Linguistic ⁵	Socio-cultural ⁶
			<ul style="list-style-type: none">• Artwork and photos of people, foods, and physical activities relevant to African Americans were included in DVD and lessons (<i>peripheral</i>)• Healthier versions of traditional African-American recipes included in cookbook (<i>socio-cultural</i>)• Gospel and African dance music incorporated into physical activity lessons (<i>socio-cultural</i>)					

¹ Categorization of culturally adapted strategies are based on schema developed by Kreuter *et al.* (11).

² Peripheral strategies: Overtly conveys appearance of cultural appropriateness through use of pictures, colors, images, fonts, and declarative titles.

³ Constituent-Involving strategies: Directly involves members of the target group (e.g., peer educators, hiring staff from target group, etc.) and/or draws from their experiences at any phase of the project (planning, recruitment, implementation, evaluation).

⁴ Evidential strategies: Seeks to put into context the health impact for a target population; often based on empirical evidence (e.g., prevalence or incidence of disease for a given group)

⁵ Linguistic strategies: Seeks to improve the accessibility of materials through language (e.g., translation, readability, literacy levels).

⁶ Socio-cultural strategies: Considers the broader cultural, social, and contextual factors of a given group. Intended to recognize the “inner workings” of a given group to convey salience.

Table 3

Summary table based on study design, quality assessment, culturally-adapted strategies, and diet/weight outcomes

Authors	Study design	Pilot, full scale*, multi-site	Quality assessment	Cultural adaptation categories ¹	Tailoring ²	Retention (%) ³	Outcomes (weight and/or diet)	Diet outcome (between-group differences) ^{**}	Weight outcome (between-group differences) ^{***}
McNabb <i>et al.</i> (35)	RCT	Pilot	Moderate	P, C, S	No	84.6%	WL, Diet	Yes (fat intake)	Yes
Yanek <i>et al.</i> (36)	RCT	Full scale	Weak	P, C, S	No	56 %	WM, Diet	Yes (calories, fat)	Yes
Keyserling <i>et al.</i> (33, 56)	RCT	Full scale	Moderate	P, C, L, S	No	88–90%	WM, Diet	No	No
Svetkey <i>et al.</i> (24, 57)	RCT	Multi-site	Moderate	P, C	No	94–95%	WL, Diet	Yes (saturated fat)	Yes
Fitzgibbon <i>et al.</i> (29)	RCT	Pilot	Moderate	P, E, S	No	77–79%	WL, Diet	No	No
Fitzgibbon <i>et al.</i> (38)	RCT	Pilot	Moderate	P, E, S	No	83–95%	WL, Diet	No	Yes (only in cohort 2)
Kumanyika <i>et al.</i> (12)	RCT	Full scale	Moderate	P, C, S	No	66% (phase 2)	WL, WLM	N/A	No
Kennedy <i>et al.</i> (37)	RCT	Pilot	Weak	C	No	90%	WL	N/A	No
Kreuter <i>et al.</i> (30)	RCT	Full scale	Moderate	P, C, S	Yes	71.8% (18 mo)	Diet	Yes (fruits and vegetables) (BRC+ CT vs. CRT only at 18 months)	N/A
Yancey <i>et al.</i> (14, 15)	RCT	Full scale	Moderate	P, C, S	No	71%	WL, Diet	Yes (fiber intake)	No
Davis Martin <i>et al.</i> (41)	RCT	Full scale	Moderate	C, S	Yes	73.6%	WL	N/A	Yes
Beafort <i>et al.</i> (31)	RCT	Pilot	Moderate	P, C, L, S	No	77.3%	WL, Diet	No	No
West <i>et al.</i> (23)	RCT	Multi-site	Moderate	C, L, S	No	90–98.9%	WL	N/A	Yes
Stolley <i>et al.</i> (44)	RCT	Full scale	Moderate	C, S	No	92.5–93.5%	WL, Diet	Yes (fruit intake)	Yes

Authors	Study design	Pilot, full scale*, multi-site	Quality assessment	Cultural adaptation categories ¹	Tailoring ²	Retention (%) ³	Outcomes (weight and/or diet)	Diet outcome (between-group differences)**	Weight outcome (between-group differences)**
Kennedy <i>et al.</i> (39)	RCT	Pilot	Weak	C, S	No	93%	WM, Diet	Yes (fiber, fruit, veg)	Yes
Djuric <i>et al.</i> (13)	RCT	Pilot	Moderate	C, S	No	92%	WLM, Diet	Yes (fruit intake)	No
Kumanyika <i>et al.</i> (46)	RCT	Full scale	Weak	C, S	No	36–74%	WL, WLM	N/A	No
Weerts <i>et al.</i> (28)	RCT	Pilot	Weak	P, C, S	No	43%	WL, Diet	Yes (fruit, vegetables)	Yes
Anton <i>et al.</i> (26)	RCT	Pilot	Moderate	P	Yes	94%	WL	N/A	Yes
Babatunde <i>et al.</i> (34)	RRME	Full scale	Moderate	C, E	No	84.6%	Diet	Yes (calcium intake)	N/A
Cox <i>et al.</i> (47)	RCT	Pilot	Moderate	C	No	86%	WL	N/A	No
Donel <i>et al.</i> (27)	Quasi	Pilot	Weak	S	No	72%	WL	N/A	No
Auslander <i>et al.</i> (32, 58)	Quasi	Full scale	Moderate	P, C, S	Yes	73.7%	Diet, WM	Yes (fat, saturated fat)	No
Shrocco <i>et al.</i> (25)	Quasi	Pilot	Weak	S	No	Did not report	WL, Diet	Yes (fat intake)	Yes
Parker <i>et al.</i> (45)	Quasi	Pilot	Weak	C, E, S	No	79–82%	WL	N/A	No
Johnson <i>et al.</i> (42)	Quasi	Pilot	Weak	P, C, S	No	100%	Diet	Did not report	N/A
Ard <i>et al.</i> (43)	Crossover	Pilot	Moderate	C, S	No	73–84%	WL	N/A	Yes
Backman <i>et al.</i> (40)	Quasi	Pilot	Moderate	P, C, S	No	84–86%	Diet	Did not report	N/A

¹ P: peripheral strategies, C: constituent-involving, L: linguistic, S: socio-cultural, E: evidential; see Table 2 for category definitions.

² Tailoring: Information or strategies provided to an individual (related to outcome of interest) that is individual-specific and based on an assessment of that individual (18).

* refers to full scale, but single-site;

** refers to statistically significant improvements between experimental/intervention arms over control or comparison arm(s);

N/A: not applicable; RCT: randomized controlled trial or randomized trial with equivalent comparison group; RRE: randomized repeated measures experimental design; Quasi: Quasi-experimental two-group design. WL: weight loss; WLM: weight loss maintenance; WM: weight management or weight gain prevention (not specifically weight loss);

³ overall retention reported; if overall not available, then the range by group was reported.