

# A PILOT STUDY OF SELF-MANAGEMENT IN AFRICAN AMERICANS WITH COMMON CHRONIC CONDITIONS

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**Objective:** Self-management as a tool to manage chronic conditions has been well-described for majority populations. Limited studies exist on the potential benefit of self-management programs for African Americans with chronic conditions. The purpose was to demonstrate the feasibility, effectiveness and acceptability of a structured self-management program in African Americans with one or more chronic conditions.

**Methods:** This pilot study involved an intervention-only arm of a six-week peer-led program aimed at improving important self-management skills, including self-efficacy and physical activity. Participants were recruited from local churches and independent living senior centers, and trained lay leaders served as facilitators of the self-management program.

**Results:** A total of 46 people participated in this program. Participants were mostly African American (96%), female (91%), with a mean age of 65(11), and 2.7 (1.5) chronic conditions. We found significant increases in pre- to post-intervention self-efficacy ( $P<.01$ ) and self-reported walking for exercise ( $P<0.05$ ). Self-rated health also had significant improvement ( $P<.01$ ). Qualitative feedback revealed a desire for more support with transforming traditional foods and creative exercise strategies.

**Conclusions:** A standardized peer-led self-management course was effective at improving self-efficacy, walking for exercise and self-rated health in African Americans with a variety of common chronic conditions. Future self-management interventions should focus more on cultural interests and strengths such as spirituality, existing support networks for behavioral change, and retention strategies to achieve long-term lifestyle changes. (*Ethn Dis.* 2007;17:611–616)

**Key Words:** Self-Management, Pilot Study, Chronic Disease, African American, Community

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## INTRODUCTION

Chronic disease disproportionately affects African Americans through increased morbidity and lower life expectancy. For example, African Americans experience a substantially higher prevalence in a number of common chronic conditions, such as diabetes, asthma, hypertension, cardiovascular disease, in particular stroke, and chronic renal disease.<sup>1–6</sup> These disparities in health result in significant inequalities in mortality and life expectancy for African Americans.<sup>7</sup> Reduction and elimination of disparities in chronic disease outcomes is recognized as an important societal problem and is considered a primary objective of the national public health agenda.<sup>8</sup>

Reducing and eliminating health disparities will depend on the proper treatment and prevention of these conditions and their clinical sequella, especially among minority populations. A particular challenge in this effort is that successful treatment and prevention of most chronic conditions require complex treatment regimens, which typically involve a combination of multiple medications and changes in lifestyle behaviors. Adherence to these treatment regimens has proven to be a significant challenge for many patients.<sup>9–12</sup> In recent years, this has led to the development of treatment programs that have incorporated self-management strategies, which are generally aimed at promoting adherence to medical treatment and obtaining optimal quality medical care.<sup>13–21</sup>

## BACKGROUND

Self-management is generally defined as the ability to manage the

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symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition.<sup>22</sup> The Institute of Medicine acknowledges that self-management is an important tool to achieve quality care.<sup>23</sup> Self-management programs encourage patients to assume a more active role in the management of their health conditions. These programs are designed to teach patients the skills necessary to better manage their own illness by following prescribed treatment regimens, making appropriate lifestyle changes, and communicating more effectively with their healthcare providers. Although self-management programs have shown benefit in the management of chronic conditions, this work has been mostly limited to majority patient populations.<sup>13–21</sup>

The purpose of this study is: 1) to examine the feasibility of developing a peer-led self-management program in an African American population; 2) to conduct a pilot-study of a peer-led self-management program in African American patients with chronic conditions, and to test its effect on changes in self-efficacy and physical activity; and 3) to examine the acceptability of a peer-led self-man-

**Table 1. Characteristics of peer leaders**

Age m (sd)	53 (10)		
Level of education (HS or greater) n, %	10 (67)		
Female (n, %)	15 (100)		
Profession	Recruited to participate	Received certification*	Co-led a SM
	N=15	n=13	Course n=6
Nurse (n, %)	7 (47%)	7 (54%)	4 (67%)
Teacher, other Professional (n, %)	4 (27%)	3 (23%)	1 (17%)
Other† (n, %)	4 (27%)	3 (23%)	1 (17%)

\* Reasons for not receiving certification: not what she expected/did not want to follow a scripted manual (1); could not read leader manual to complete practice teach (1). †Barber (1), unemployed (1), retired administrative (1), cook (1)

agement program in African American patients with chronic conditions.

**METHODS**

This project took place in two phases: 1) the recruitment and training of peer leaders to conduct the intervention groups; and 2) the pilot testing of the Chronic Disease Self-Management Program (CDSMP) intervention and subsequent feedback sessions to assess acceptability of the intervention in an African American community.

**Recruitment and Training of Peer Leaders**

Peer leaders were recruited from a network of 20 medium and large African American churches on the southside of Chicago who had come together to work on health improvement projects. A total of 15 potential peer leaders from four congregations were identified and asked to participate in the training program. Potential peer leaders were asked to make a commitment to attend all 24 hours of training before they were allowed to participate. They were provided free manuals, relevant books, all meals, and a \$125.00 stipend for completing the training. Peer leaders who co-led self-management groups were paid \$250–\$300 per 6-week session. This stipend covered gas and expenses and administrative efforts related to the study.

Of the 15 peer leaders who started, 13 (87%) successfully completed the

training and were certified to teach the program. One person dropped out because the training failed to meet expectations, and one person was unable to complete the required teaching component of the training due to literacy related issues (see Table 1).

**Recruitment of Study Participants**

African American participants were recruited opportunistically from various community sites in the city, including an independent living senior center and two community churches. Participants were eligible if they reported either having a chronic condition or being the primary caretaker for a family member with a chronic condition. (Table 2) Participants were asked to complete a questionnaire before and after the self-management program, and were offered a small stipend (\$10) or gift card (\$10) for each questionnaire they completed. The protocol was approved by the Rush University institutional review board and 46 participants provided written informed consent. Six people refused to provide written consent; three had concerns about privacy issues and three did not want to fill out a questionnaire. These six participated in the program only and are not represented in the analyses.

**Self-Management Program**

The Chronic Disease Self-Management Program (CDSMP) is a highly standardized course that is taught by

**Table 2. Sample characteristics N=46**

Characteristic	Mean (Std)
Age (yrs)	65 (11)
Education (yrs)	11 (4)
Chronic conditions	2.7 (1.5)
Classes attended	4.6 (.9)
African American	96%
Female	91%
Marital status	
Married	35%
Single	22%
Separated	4%
Divorced	17%
Widowed	22%
Chronic condition	
Diabetes	33%
Heart attack	4%
Arthritis	54%
Hypertension	72%
Cancer	13%
Asthma	17%
Low back pain	39%
Lung disease	13%
At least one condition	91%
Three conditions or more	59%

trained lay leaders who also have a chronic condition.<sup>13–14</sup> Thus far, this program has been tested primarily in Caucasian patient populations and has been shown to improve self-efficacy and self-management behaviors, while also reducing healthcare utilization.<sup>13–14</sup> A Spanish version has been developed for, and tested in, a Hispanic population.<sup>21</sup>

For this study, a total of five groups were conducted in three sites during a 24-month period in an African American community. Each group met for six weekly sessions, which were led by trained African American peer leaders. The content of the program included a combination of brief didactic sessions along with experiential activities related to exercise, nutrition, relaxation exercises, cognitive restructuring techniques, and managing depression. The theoretical basis for this program is based on self-efficacy theory as described by Bandura and included activities designed to build self-efficacy: setting weekly, achievable action plans and peer-modeling of desired behaviors in a group setting.<sup>24</sup>

## Measures

### Primary outcomes

Self-efficacy was measured by asking the participant to rate his/her degree of confidence in doing seven kinds of self-management behaviors.<sup>25</sup> Three questions pertained to self-efficacy to engage in exercise (eg, "How confident are you that you can exercise without making your symptoms worse?") and four questions asked about self-efficacy to manage prescribed medication (eg, "How confident are you that you can take your medication regularly?"). Participants rated questions on a scale from 0 (no confidence) to 10 (total confidence). For total self-efficacy, scores were summed across all seven questions to create a summary score (higher score = higher self-efficacy). Scores were summed for each set of questions (three for exercise, four for medication management) to create separate scores for exercise and medication self-efficacy.

Physical activity was assessed using questions about three forms of physical activity, including walking for exercise, other walking (to store, to church, etc.), and other physical activity such as stretching, yoga, and lifting weights.<sup>26</sup> Participants were asked how many times they had performed each type of physical activity in the past two weeks and the average number of minutes per occasion. The total amount of each type of physical activity was computed by multiplying the number of times by average duration per occasion. These measures were administered at baseline and immediately following the last session of the self-management program.

### Secondary outcomes

Self-rated health was assessed by a five-point rating scale (poor to excellent) of the participant's perception of their health.<sup>27</sup> This measure was administered at baseline and immediately following the last session of the self-management program. Variables

collected at baseline only included age (in years), sex, marital status, education (years of schooling completed), and self-reported chronic conditions.

### Focus Groups

A total of five focus groups were held immediately following the last session of the self-management program. Each focus group was facilitated by the principal investigator and ranged in size from 7-12 participants. A total of 46 participants attended a focus group. The goal of each focus group was to obtain feedback on the acceptability of the self-management program, and to inquire about the usefulness and relevance of specific elements of the program, such as action plans, nutrition, advanced directives, communication with healthcare teams, and medication management teaching. Participants were also given an opportunity to provide suggestions on how to improve the acceptability and effectiveness of the self-management program.

### Analysis

All statistical analyses were performed using the SAS 9.1 software.<sup>28</sup> Basic summary statistics (mean, median, standard deviation) were computed for all outcome variables before and after the intervention. Pre- to post-intervention change in the outcome variables were analyzed using paired *t* tests for the self-efficacy variables. Due to the skewed distributions, a Wilcoxon matched pairs signed-rank test was used for the physical activity outcome variables. Self-rated health was dichotomized to poor-fair and good-excellent and a McNemar's (exact) test was used to assess the change in this outcome variable.

Audiotapes of the focus groups were transcribed and analyzed using the method of constant comparative analyses.<sup>29</sup> This qualitative analytic strategy compares each focus group to the others to examine similarities and differences in the data. The formal analysis was

completed by the principal investigator (CRW), who developed categories and themes based on a line-by-line review of the transcripts. A second investigator (MB) reviewed the analyses to provide additional insight, refinement, and corroboration of results.

## RESULTS

### Quantitative Results

As shown in Table 2, participants were on average 65 ( $\pm 11$ ) years of age, mostly female (91%), and African American (96%). They had 11 ( $\pm 4$ ) years of education and about one-third (35%) were married. Participants had an average of 2.7 ( $\pm 1.5$ ) medical conditions, with the most prevalent being hypertension (72%), arthritis (54%), low back pain (39%), and diabetes, (33%). More than half (59%) were living with at least three chronic conditions.

A significant improvement was made in self-efficacy ( $P < .01$ ) scores from pre- to post-intervention (Table 3). The improvement was evident for both physical activity self-efficacy ( $P < .01$ ) and medication management self-efficacy ( $P < .01$ ). A significant increase was also made in self-reported walking for exercise, from a median of 60 minutes to 145.5 minutes per week ( $P < .05$ ). Gains were evident for other forms of physical activity as well, in particular the amount of time spent on all walking ( $P < .05$ ) and on physical activities ( $P < .05$ ). Finally, there was significant improvement in self-rated health, with the proportion reporting good or better self-rated health increasing from 50.0 % to 75.6% ( $P < .01$ ) from before to after the self-management intervention.

### Qualitative Results

Analysis of focus group transcripts generally supported the acceptability of a peer-led self-management program in this patient population (see Table 4).

**Table 3. Self-efficacy and physical activity results**

Variable	Before intervention	After intervention
Self-efficacy in exercise, mean	7.9	8.8† ‡
Self-efficacy in medication, mean	8.6	9.3† ‡
Self-efficacy total, mean	8.3	9.0† ‡
Walking for exercise (minutes/2 weeks), median	60.0	145.0* §
Other walking (minutes/2 weeks), median	60.0	112.0 §
Other physical activity (minutes/2 weeks), median	45.0	127.5* §
Self-rated health - good to excellent, %	50.0	75.6†

\*  $P \leq .05$ .

†  $P \leq .01$ .

‡ Paired Student's *t* test.

§ Wilcoxon matched pairs signed-ranks test.

|| chi-square.

For example, participants indicated they liked the action plans of the self-management program. Participants valued the group support and the opportunity to think through problems or obstacles in getting their action plans completed each week. Participants enjoyed the healthy eating section of the curriculum and the examples of healthy breakfasts that were provided before each morning session.

In response to the questions about the perceived strengths and relevance of the program, participants raised a number of issues. Several participants thought that the group should have continued meetings to talk about the progress with action plans that they made at the end of the program. Another suggestion was to add more specific information and demonstration of cooking and shopping (ie, how to read labels), and more opportunities to share healthy recipes related to traditional cultural foods. When asked about the physical activity component of the program, a common theme of the feedback was that participants would have liked to have more live

demonstrations of specific types of exercise, such as stretching. The program manual provided pictures of stretching and other kinds of exercises and discussed the benefits and types of exercise, but did not offer teaching or practice of these exercises.

## DISCUSSION AND CONCLUSION

### Discussion

This pilot study demonstrates the feasibility, effectiveness, and acceptability of a standardized self-management population in a small group of urban African Americans living with chronic conditions. The highly structured program presented several key observations to guide future intervention design in this population.

#### Feasibility

The use of peer leaders, also known as community health workers or lay leaders, as agents for the delivery of health-related interventions has been

described.<sup>30</sup> Peer leaders have the ability to serve as an important bridge for members of their community and can provide important information, such as that in the CDSMP.<sup>31</sup> Although many of the peer leaders were nurses, this intervention benefited mainly from their familiarity with community behaviors and practices, health beliefs, and verbal and nonverbal language skills attributed to health workers in the community.<sup>31</sup>

The feasibility of this study largely rested upon the ability to recruit, train, and retain such a group. Recruiting and training peer leaders to co-lead the intervention groups presented several challenges during the study. Although 13 completed the training course and received the accompanying certification, only about half of those went on to teach a course. Peer leaders gave several reasons as to why they were not interested in teaching the course. Time constraints prohibited commitment to six consecutive Saturday mornings or Friday evenings. Some leaders did not feel confident standing in front of a group. We negotiated with peer leaders to have a commitment to conduct at least five sessions. In the event a peer leader was absent, a substitute leader co-led the session. Literacy was a challenge among some of the peer leaders. A strategy evolved to pair a nurse, teacher or other formally educated peer leader with one of our other peer leaders (chef, barber, etc.). This arrangement appeared to work well for both sets of leaders and improved our ability to retain a diverse group of leaders that included nurses, teachers, a chef, barber, and a secretary.

**Table 4. Summary of qualitative feedback**

1. Participants desired more time to discuss socioeconomic barriers to improving self-management of their conditions.
2. Participants stated a desire for the addition of an interactive, demonstrative process regarding exercising, new recipes and cooking demonstrations for eating healthier. Transforming traditional "soul food" generated a great deal of discussion among participants. Two groups made session six a potluck event.
3. The group process around making and reporting back on success with action plans generated a great deal of enthusiasm for attempting new behaviors and subsequent success.
4. Participants instituted a spiritual context as a basis for much of their coping during class discussions (which often went outside of the described protocol).
5. Participants stated an interest in meeting again after the six sessions were completed for continued support in making and sustaining behavioral changes.

### *Pilot Study Outcomes*

This study is the first to examine self-efficacy as a target in an African American population with multiple chronic conditions. Nearly 60% of our participants had three or more chronic conditions. Participants demonstrated significantly improved self-efficacy from baseline for managing their medications and physical activity. Improving a person's self-efficacy is thought to increase their ability to perform or carry out a desired task.<sup>24</sup> Higher levels of self-efficacy are associated with improved self-management behaviors.<sup>13-14,17,21</sup> These findings support other data that suggest that self-efficacy can be an important target for future behavioral interventions in this population.

Adequate physical activity is an important behavioral target for persons with chronic disease. Current recommendations for diabetes, hypertension, and heart disease all include a physical activity component.<sup>32-34</sup> During the six weeks of the course, participants showed a substantial increase in self-reported total physical activity, including the time they walked or spent on other types of physical activity. The opportunity for increased physical activity was embraced overwhelmingly by this group, although the formal teaching on physical activity was limited to one session. Action plans for physical activity were among the most frequently chosen by participants. A forum for problem-solving around barriers to increasing physical activity in people with multiple chronic conditions may be an important emphasis of community-based, peer-led interventions.

### *Acceptability*

The participant feedback provided several suggestions that might strengthen the intervention in this population of African Americans. First, various physical activity demonstrations during class time would give participants more ideas for activities they might perform at home. Secondly, a translational cooking session

would allow participants to get feedback from other group members about ways to make traditional, cultural foods healthier and provide immediate reinforcement for positive changes in the group setting. Integrating spiritual beliefs and practices with behavioral change processes is supported in other studies targeting health promotion in diabetes and cardiovascular disease.<sup>35-36</sup> Finally, long interventions with regular face-to-face followup have shown success in behavior change interventions.<sup>37</sup> Additional followup sessions might include elements suggested above to facilitate maintenance of change in this chronic disease population.

### *Limitations*

It is unclear what effect incentives had on initial participation and retention to the six sessions or feedback on the written evaluation or qualitative assessments. Incentives for participation in research have been found to be useful in some minority populations.<sup>38-41</sup> These stipends attempt to reimburse people for their time or other inconveniences associated with study participation. In our case, we offered several incentives. A modest stipend was provided (\$10) for completing pre- and post-test questionnaires. Participants were provided the textbooks free of charge (\$25 value) for taking the course whether or not they participate in the study (pre- and post-questionnaires). An example of a healthy breakfast was provided during each session. The book and the breakfast activated participants to organize potlucks, modify old recipes, and try new exercises that they might not have otherwise considered.

No measures of maintenance of effect were conducted in this study past the six-week study period. Future study should assess followup effect to help determine optimal intervention duration needed to sustain behavior change. This study had no control group. One cannot determine if the benefits of the program were due to attention alone without a randomized trial.

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*Tailored self-management interventions have the potential to improve self-management in diverse populations.*

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### **Conclusion**

This pilot study provides evidence for the feasibility of using a peer-led self-management program in a population of African Americans with multiple chronic conditions. The study successfully recruited and trained a group of peer-leaders who, in turn, facilitated a structured self-management intervention program. The program was well-received by the participants, and was associated with improvement in self-management targets, including self-efficacy and physical activity. Future self-management interventions should take advantage of cultural interests and strengths such as spirituality, existing support networks for behavioral change to foster confidence in making change and support for long-term lifestyle changes. The findings require further validation in a randomized controlled trial with more detailed information on outcomes, including change in self-management behaviors and in more objective markers of health.

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### **REFERENCES**

1. Harris MI, Flegal KM, Cowie CC, et al. Prevalence of diabetes, impaired fasting glucose, and impaired glucose tolerance in U.S. adults. The Third National Health and Nutrition Examination Survey, 1998-1994. *Diabetes Care*. 1998;21:518-524.
2. Grant E, Lyttle C, Weiss K. The relation of socioeconomic factors and racial/ethnic differences in US asthma mortality. *Am J Pub Health*. 2000;90:1923-1925.
3. Hertz RP, Unger AN, Cornell JA, et al. Racial disparities in hypertension prevalence, aware-

- ness, and management. *Arch Intern Med.* 2005;165:2098–2104.
4. Cooper R, Cutler J, Desvigne-Nickens P, et al. Trends and disparities in coronary heart disease, stroke, and other cardiovascular diseases in the United States: Findings of the National Conference on Cardiovascular Disease Prevention. *Circulation.* 102:3137–3147.
  5. Whittle JC, Whelton PK, Seidler AJ. Does racial variation in risk factors explain black-white differences in the incidence of hypertensive end-stage renal disease? *Arch Int Med.* 1991;151:1359–1364.
  6. Brancati FL, Whittle JC, Whelton PK, et al. The excess incidence of diabetic end-stage renal disease among blacks. A population based study of potential explanatory factors. *J Amer Med.* 1992;268:3079–3084.
  7. Levine RS, Foster JE, Fullilove RE, et al. Black-White inequalities in mortality and life expectancy, 1992-99: implications for Healthy People 2010. *Public Health Rep.* 2001;116:474–483.
  8. Smedley BD, Stith AY, Nelson AR, eds. *Unequal Treatment: Confronting Racial and Ethnic Disparities In Health Care.* Washington DC: The Institute of Medicine; 2002.
  9. Schectman JM, Nadkarni MM, Voss JD. The association between diabetes metabolic control and drug adherence in an indigent population. *Diabetes Care.* 2002;25:1015–21.
  10. Centers for Disease Control and Prevention. Asthma prevalence and control characteristics by race/ethnicity — United States, *Morb Mort Wkly Rep.* 2002;53:145–148.
  11. Ogedegbe G, Harrison M, Robbins L, et al. Barriers and facilitators of medication adherence in hypertensive African Americans: a qualitative study. *Ethn Dis.* 2004;14:3–12.
  12. Morris AB, Li J, Kroenke K, et al. Factors associated with drug adherence and blood pressure control in patients with hypertension. *Pharmacotherapy.* 2006;26:483–492.
  13. Lorig KR, Sobel DS, Stewart AL, et al. Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalization: a randomized trial. *Med Care.* 1999;37:5–14.
  14. Lorig KR, Ritter P, Stewart AL, et al. Chronic disease self-management program: 2-year health status and health care utilization outcomes. *Med Care.* 2001;39:1217–1223.
  15. Gold DT, Silverman SL. Osteoporosis self-management. Choices for better bone health. *South Med J.* 2004;97:551–554.
  16. Barlow JH, Turner AP, Wright CC. Long-term outcomes of an arthritis self-management program. *Br J Rheum.* 1998;37:1315–1319.
  17. Lorig K, Ritter PI, Plant K. A disease-specific self-help program compared with a generalized chronic disease self-help program for arthritis patients. *Arthritis Rheum.* 2005;53:950–957.
  18. Haas M, Group E, Muench J, et al. Chronic disease self-management program for low back pain in the elderly. *J Manipulative Physiol Ther.* 2005;28:228–237.
  19. Brody BL, Roch-Levecq AC, Thomas RG, et al. Self-management of age-related macular degeneration at the 6-month follow-up: a randomized controlled trial. *Arch Ophthalmol.* 2005;123:46–53.
  20. Griffiths C, Motlib J, Azad A, et al. Randomised controlled trial of a lay-led self-management programme for Bangladeshi patients with chronic disease. *Br J Gen Pract.* 2005;55:831–837.
  21. Lorig KR, Ritter PL, Gonzales. Hispanic chronic disease self-management: a randomized community-based outcome trial. *Nurs Res.* 2003;52:361–369.
  22. Barlow J, Wright C, Sheasby J, et al. Self-management approaches for people with chronic conditions: a review. *Pat Educ Couns.* 2002;48:177–187.
  23. Institute of Medicine Committee on Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century.* Washington, DC: National Academy Press, Institute of Medicine; 2001.
  24. Bandura A. *Self-efficacy: The Exercise of Control.* New York: Freeman; 1997.
  25. Lorig K, Stewart A, Ritter A, et al. *Outcome Measures for Health Education and Other Health Care Interventions.* London: Sage; 1996.
  26. McPhillips JB, Pellettera KM, Barrett-Connor E, et al. Exercise patterns in a population of older adults. *Am J Prev Med.* 1989;5:65–72.
  27. Ware JE, Snow KK, Kosinski M, et al. *SF-36 Health Survey Manual and Interpretation Guide.* Boston, MA: New England Medical Center, The Health Institute; 1993.
  28. Version 9.1, SAS System for Windows. Cary, NC: SAS Institute Inc.
  29. Strauss A, Corbin J. *Basic of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* Thousand Oaks, CA: Sage; 1998.
  30. Nemcek MA, Sabatier R. State of evaluation: community health workers. *Pub Health Nurs.* 2003;20:260–270.
  31. Giblin PT. Effective Utilization of indigenous health care workers. *Pub Health Rep.* 1989; 104:361–367.
  32. Centers for Disease Control and Prevention. Strategies for reducing morbidity and mortality from diabetes through health-care system interventions and diabetes self-management education in community settings: a report on recommendations of the Task Force on Community Preventive Services. *Morb Mort Wkly Rep.* 2001;50:1–15.
  33. Chobanian AV, Bakris GL, Black HR. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. *Hypertension.* 2003;42:12-6-1252.
  34. Thompson PD, Buchner D, Pina IL, et al. American Heart Association Council on Clinical Cardiology Subcommittee on Exercise, Rehabilitation, and Prevention; American Heart Association Council on Nutrition, Physical Activity, and Metabolism Subcommittee on Physical Activity. Exercise and Physical Activity in the Prevention and Treatment of Atherosclerotic Cardiovascular Disease: A statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity). *Circulation.* 107:3109–3116.
  35. Yanek LR, Becker DM, Moy TF, et al. Project Joy: faith-based cardiovascular health promotion for African American women. *Public Health Rep.* 2001;116(Supplement 1):68–81.
  36. Newlin K, Melkus GD, Chyun D, et al. The relationship of spirituality and health outcomes in Black women with type 2 diabetes. *Ethn Dis.* 2003;13:61–68.
  37. Diabetes Prevention Program Research Group. Reduction in the incidence of Type 2 diabetes with lifestyle intervention or metformin. *NEJM.* 2002;346:393–403.
  38. Yancey AK, Ortega AN, Kumanyika SK. Effective recruitment and retention of minority research participants. *Annu Rev Public Health.* 2006;27:1–28.
  39. Lamvu G, Lorenz C, Johnson F. Racial differences among reasons for participating in research of pregnancy outcomes: the right from the start experience. *Gen Med.* 2005;2:166–173.
  40. Jeffries SK, Choi W, Butler J, et al. Strategies for recruiting African American residents of public housing developments into a randomized controlled trial. *Ethn Dis.* 2005;15:773–778.
  41. Loftin WA, Barnett SK, Bunn PS, et al. Recruitment and retention of rural African Americans in diabetes research: lessons learned. *Diabetes Educ.* 2005;31:251–259.

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