An integrative review of interventions to reduce peripheral arterial disease risk factors in African Americans

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CRD summary

The author concluded that interventions aimed at reducing haemoglobin A1c, systolic and diastolic blood pressure, and lipids were effective, but participants found it difficult to implement and sustain behaviour changes. Given the potential for bias in the review process, the unclear quality of the included trials, and the absence of statistical data, the author's conclusions should be treated with caution.

Authors' objectives

To assess the efficacy of interventions aimed at reducing risk factors for peripheral arterial disease in African Americans; specifically diabetes, hypertension, and hyperlipidaemia.

Searching

EMBASE, CINAHL, and PubMed were searched for articles published in English from 2002 to 2007. Search terms were reported and reference lists of identified studies were screened.

Study selection

Randomised controlled trials (RCTs) assessing interventions to reduce haemoglobin A1c, systolic or diastolic blood pressure, total cholesterol, low density lipoproteins, triglycerides, or high density lipoproteins in adults were eligible for the review. Trials had to break down the results by ethnicity or, where a break down was not available, consist of at least 75% African American participants. Pharmacological interventions and interventions aimed at health professionals were excluded.

Some of the included trials assessed the impact of education, enhanced care packages, or dietary interventions in groups or for individuals, compared with the usual care or standard dietary advice, on haemoglobin A1c. The duration of these interventions ranged from six to 24 months. Other included trials assessed the impact of education, enhanced care, dietary intervention, physical activity, meditation, or community-based care combined with home or telephone contact with a nurse and physical activity, in adults compared with limited enhanced care, usual care, usual diet, health education classes, enhanced primary care and written information, or no intervention, on systolic or diastolic blood pressure or both and lipid levels. The duration of these interventions ranged from eight weeks to five years. The mean age of participants ranged from 35 to 62 years. Twelve trials were of African American participants only. Where stated, trials were in rural or urban settings in the USA.

One author selected the trials for review.

Assessment of study quality

The author did not appear to conduct a formal validity assessment, but comments were made on some aspects of trial quality.

Data extraction

The author did not state how the data were extracted for the review.

Methods of synthesis

The trials were combined in a narrative synthesis.

Results of the review

Twenty-one trials were included in the review (n=6,370 participants). Methodological weaknesses in some of these trials were; a lack of adequate statistical power, volunteer bias, failure to control for concomitant medication use, differences between groups in medication use, and high attrition rates. One trial assessed blood pressure and

hyperlipidaemia.

Haemoglobin A1c (eight RCTs, n=1,724): Education or enhanced care and dietary interventions did not significantly reduce haemoglobin A1c compared with standard care.

Systolic and diastolic blood pressure (13 RCTs, n=4,646): Five of the thirteen trials reported significant differences in systolic or diastolic blood pressure or both between intervention and control groups. These included three of the four education or enhanced care interventions, one of the four dietary interventions, and one of the two meditation interventions. None of the three trials of physical activity interventions reported a significant difference in blood pressure between the intervention and control groups.

Hyperlipidaemia (one RCT, n=364): Community-based care with nurse practitioner visits, counselling, and physical activity classes significantly reduced low density lipoproteins, but not high density lipoproteins and triglycerides compared with enhanced primary care and written material (no statistics reported).

The results of within-group changes from baseline were also discussed.

Authors' conclusions

Interventions aimed at reducing haemoglobin A1c, systolic or diastolic blood pressure, and lipids were effective, but participants found it difficult to implement and sustain the behaviour changes.

CRD commentary

The review question and the inclusion criteria for outcomes and study design were clearly stated. The inclusion criteria for the intervention were broad and those for participants were unclear. It was not reported whether the participants in the included trials had met formal diagnostic criteria for diabetes, hypertension, or hyperlipidaemia. Three relevant databases were searched, but no search for unpublished data was reported and the search was restricted to articles in English, and so publication and language bias cannot be ruled out. One author selected the trials and the methods used for data extraction were not reported, which means that reviewer error and bias cannot be excluded. A formal validity assessment was not performed and it is not possible to assess the quality of the trials, but some methodological weaknesses were identified and might have affected the validity of the findings. A narrative synthesis was appropriate given the clinical heterogeneity between trials. The absence of statistical data makes it difficult for the reader to confirm the clinical and statistical significance of the findings. It was also unclear for some trials whether the reported results related to the African American subgroup or to all study participants.

Given the potential for bias in the review process, the unclear quality of the included trials, and the absence of statistical data, the author's conclusions should be treated with caution.

Implications of the review for practice and research

Practice: The author did not state any implications for practice.

Research: The author stated that further rigorously designed and adequately powered trials were needed to investigate interventions to reduce the risk factors for peripheral arterial disease. Particular efforts should be made to enrol younger participants, more male African Americans, and more African Americans who were not in the health care system.

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