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A Review of Interventions to Reduce Health Disparities in Cardiovascular Disease in African Americans

Errol D. Crook, MD, **Norman B. Bryan, PhD**, **Roma Hanks, PhD**, **Michelle L. Slagle, DPA**, **Christopher G. Morris, MS**, **Mary C. Ross, PhD**, **Herica M. Torres, RN**, **R. Clay Williams**, **Christina Voelkel, MD**, **Sheree Walker, MD**, and **Martha I. Arrieta, MD, MPH, PhD**
University of South Alabama Center for Healthy Communities and College of Medicine (EDC, NBB, RH, CGM, RCW, CV, SW, MIA), College of Business (MLS), College of Nursing (MCR, HMT), Mobile, Alabama

Abstract

Background—There is a wealth of first- (type or extent) and second- (causes) generation health disparities research. Literature on health disparities interventions (third-generation research) is emerging. In this study, we compiled and qualitatively evaluated interventions to eliminate health disparities in cardiovascular disease (CVD) among African Americans.

Methods—We reviewed articles published from 1996 through 2006. Inclusion criteria were focus on CVD, African American participants, and intervention, including evaluation data. Two readers evaluated each abstract for including in the full review, and a third reader resolved incongruence. Articles with abstracts that received at least 2 votes for inclusion were reviewed in their entirety by 2 readers. Data were recorded in a Microsoft Access database.

Results—Of 524 abstracts identified, 111 were selected for full review. Only 33 articles were considered third-generation health disparities research by 2 readers and 23 by 1 reader. Approximately half of the interventions were in high-risk populations (low income, low education, urban) and hypertension and nutrition and physical activity were the most common focuses. Of the 33 that received 2 votes, the interventions that received the most enthusiasm from the reviewers used community-based clinics with lay health volunteers. The intensity of the intervention was not correlated with outcome.

Conclusions—While not widely published, third-generation health disparities research demonstrates interventions to reduce CVD among African Americans. More of this type of research is necessary, and those results must be disseminated.

Keywords

Health Disparities; Cardiovascular Disease; African American; Hypertension; Health Behaviors

Address correspondence to: Errol D. Crook, MD; University of South Alabama Center for Healthy Communities; Mastin 400-A, 2451 Fillingim St; Mobile, AL 36617-2293; 251-471-4891; ecrook@usouthal.edu.

Author Contributions
Design concept of study: Crook, Bryan, Hanks, Ross, Torres, Williams, Arrieta
Acquisition of data: Crook, Bryan, Hanks, Slagle, Morris, Ross, Torres, Voelkel, Walker, Arrieta
Data analysis and interpretation: Crook, Bryan, Hanks, Slagle, Morris, Ross, Williams, Voelkel, Walker, Arrieta
Manuscript draft: Crook, Slagle
Statistical expertise: Crook, Bryan, Morris, Torres, Arrieta
Acquisition of funding: Crook
Administrative, technical, or material assistance: Crook, Bryan, Ross, Torres, Williams, Arrieta
Supervision: Crook, Torres

Introduction

The causes and solutions for the problem of health disparities have received considerable attention in the last 2 decades. Although there are trends toward reduction of some disparities, the gaps remain wide.[1–3] Work related to addressing health disparities was spearheaded by the statement of an explicit national goal for eliminating health disparities by the year 2010 and funding to support the pursuit of that goal.[1] Work in the area of health disparities has produced a wealth of data on the type and extent of health disparities (first-generation research), and the reasons why health disparities occur (second-generation research). However, research designed to reduce or eliminate health disparities (third-generation health disparties research) has been slow to appear in the literature.[4]

The objective of the present literature review was to move beyond looking at the current state of health disparities to outline interventions designed to reduce or eliminate health disparities. As cardiovascular disease (CVD) contributes the most to disparate mortality in the United States, we focus on interventions in CVD and its risk factors.[5] In addition, we focus on interventions in African Americans, since this population accounts for >90% of the ethnic minority population in Mobile County, Alabama.[5]

Methods

This was a project of the Health Disparities Research Group of the University of South Alabama Center for Healthy Communities and was conducted from February 2006 through January 2008.[6] Initially, possible third-generation interventions were identified by Medline, CINAHL, and PsycINFO searches of English-language articles published from 1996 through 2006. Search terms included, but were not limited to, “cardiovascular disease,” “African American,” and “health disparity.” Abstracts of identified articles (n = 505) were reviewed by 2 readers to determine if they were third-generation research. If there was incongruence, a third reader reviewed the abstract. Abstracts earning at least 2 votes for inclusion were reviewed in their entirety. Additional abstracts and manuscripts were identified by review of text and references of the articles selected for full review (n = 19).

Selected manuscripts were reviewed by 2 readers. If a manuscript was thought not to represent third-generation research, the readers recorded the reason for exclusion. For publications selected for inclusion, individual readers collected the following data: type of study, statistical methods, description of intervention, demographics of study sample, site of study, and measured variables. Readers also provided their overall impressions of the study and highlighted studies that, in their opinion, had a major effect. Data was entered into a Microsoft Access database (Microsoft Corp, Redmond, Wash). Analysis of data focused on characteristics of interventions that were considered third-generation health disparities research. Papers that were considered third-generation by at least 1 reader were analyzed, and those that were considered third-generation by both readers were analyzed more in depth. Because of the nature of most studies, we chose not to quantitatively define degrees of success, but rather we relied on the subjective opinions of readers. To avoid bias among readers as to what constituted third-generation research, we had frequent meetings for consensus. In these meetings we agreed on the definition of third-generation research and what protocols to follow for manuscript analysis. Readers were not given specific inclusion and exclusion criteria with regard to characteristics such as sample size, statistical methods, or study demographics. All reviewers were core members of the Center for Healthy Communities Healthy Disparities Research Group and had extensive experience in reviewing health disparities literature.

Results

Of 524 abstracts identified, 116 (22.1%) were selected for review of the full manuscript. These 116 manuscripts were published in 57 unique journals, and 7 were dissertations that were not published in journals. The journal *Ethnicity & Disease* published more of these manuscripts than any other journal by far (n = 23, 19.8%), followed by the *Journal of Healthcare for the Poor and Underserved* (n = 6). Only 33 articles (29.2%) were rated as third-generation research by 2 readers.[7–39] Again, *Ethnicity & Disease* published the most articles (n = 9, 27%) of the 22 unique journals that published these 33 articles. Twenty-three articles were rated as third-generation research by 1 reader, and 55 were rejected by both readers. The most common reasons for rejecting articles were that it was not considered to be third-generation research, it did not have a meaningful number of African Americans, or the article was a review article, editorial, or methods article.

We analyzed characteristics of interventions from articles that received at least 1 vote for inclusion (n = 56). In general, the range of sample sizes was broad (mean 350), but the sample size for those interventions that received 2 votes for inclusion were small (in general, 30–60 participants). Most participants were female (58.1%) and African American (76.7%). Age ranges of participants ranged from adolescence to >70 years. Approximately one-half of participants were in low-income jobs or were unemployed, and ≈50% of adult participants were high school graduates. The cardiovascular risk factors or specific forms of CVD addressed in these 56 studies are shown in Table 1.

Other than sample sizes, characteristics of studies that received 1 vote vs 2 votes did not substantially differ. Therefore, we discuss only those data from articles that received 2 votes for inclusion.[7–39] All but 1 study was a single-center study,[31] and most were conducted in urban areas (Table 2). Community-based participatory research principles were evident in several projects. Some of the sites and specific methods employed are outlined in Table 3. Readers identified several high-effect studies.[9,15,17,39] In general, the interventions that received the most enthusiasm used community-based clinics with lay health volunteers or community health workers[9,17] or were based at work sites or religious institutions.[15,39] Several interventions were faith-based or recruited from churches. Several challenges to conducting effective third-generation health disparities research were outlined by the authors (Table 4).

Discussion

We sought to outline the best practices for reducing the disparity in CVD in African Americans by identifying interventions that were designed for that purpose. While the literature is replete with contributions on this topic, we found few contributions that actually attempted to reduce disparities. By using a group-based comprehensive literature review, we were able to identify only 33 recently published articles that were clearly focused on reducing cardiovascular disease in African Americans.[7–39]

While the number of published interventions is small, lessons can be learned from them. Interventions that tested a change in the model of healthcare delivery were considered by readers to have the most effect. Placing clinics in the community of the study participants, using trained volunteer community health workers, and using community nurses that delivered care in the neighborhood (including home visits) were considered to have the greatest effect.[9,17] Community centers and other “nonmedical” buildings were used as community health clinics, which shows that traditional venues do not have to be used to deliver effective care or implement effective prevention strategies. The degree of effect, however, was the subjective view of individual readers rather than a degree of change on a cardiovascular risk factor or CVD.

Among third-generation studies, interventions to effect behavior change, particularly with regard to diet and physical activity, were most common. The more intensive strategies to create behavior change were no more successful than were less intense strategies.[7,11,21,26] The more intensive interventions often suffered from participant fatigue. Faith-based strategies were used in many interventions. Their success was more likely if the church leadership was involved from the beginning and bought into the study's objectives. Moreover, involving members of the congregation as part of the study team (eg, as lay health advisors) increased the study's effect. In both faith-based and non–faith-based interventions, group activities increased study participation and recruitment.[24,28,39]

As we completed our review of articles, a similar project was published.[40] Like us, these investigators reviewed healthcare interventions to reduce cardiovascular health disparities in ethnic minorities, but they did not limit their work to African Americans. Among the 62 projects they reviewed were those focused on specific CVD risk factors such as hypertension, hyperlipidemia, smoking cessation, and physical inactivity. However, in contrast to our work, they did not include interventions set in non-healthcare venues, such as schools or churches. Similar to our findings, the largest group of interventions were focused on hypertension and blood pressure (n = 27), and several of these studies were included among our selections.[9,13,16,17,21,31–33] Other studies in common focused on behavior change (smoking cessation and physical inactivity).[7,9,27,39] This agreement demonstrates the limited number of studies that have an objective of reducing health disparities in high-risk populations. It will be important to understand the role of nontraditional healthcare settings in addressing health disparities. Although the other review excluded such studies, we found that several interventions based in these environments had a positive effect. This highlights the importance of evaluating methods when critiquing interventions to reduce health disparities.

Our study is limited in that the search strategy may have omitted some publications, but we attempted to minimize these omissions by reviewing the original publications for additional articles that might meet our inclusion criteria. While potential biases among individual readers were addressed proactively, some bias likely affected selection of studies. For example, many of the 23 publications that only received 1 vote for inclusion as third-generation work from our group were included in the other review.[40] We did not find any notable trends among our readers for biases for inclusion and exclusion. We were limited by the data made available in the publications. We recognize that many details may not be published because of word and page limitations. We also recognize that our approach is prejudiced to interventions from academia. We are aware that grassroots activities to reduce CVD in African Americans occur outside of academia, and many, if not most, of these activities are not published. For this reason, we believe it is all the more important to share information on all interventions that work.

In conclusion, it is critical to determine best practices for eliminating health disparities in African Americans and other populations. Data on these best practices are emerging but are still limited. From this review, we identified several barriers to performing effective third-generation research (Table 4). Despite these barriers, it is clear that effective third-generation research can be done. Continued third-generation research is critical, and these studies need to be systematically evaluated for effectiveness. Such evaluations should be used by funding agencies to prioritize how their resources will be distributed in the fight to eliminate health disparities.

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Table 1

Area of focus of third-generation research among 56 studies of CVD health disparities in African Americans published from 1996 to 2006

CVD Risk Factor	%*
Hypertension	42
Diet/nutrition	33
Physical inactivity	23
Coronary heart disease/CVD awareness	18
Blood pressure	15
Obesity/overweight	8
Dyslipidemia	8
Stroke	5
Mental stress/strain	5
Renal disease	3

CVD = cardiovascular disease.

*Percentages add to >100 because many studies addressed multiple risk factors.

Table 2

Types of third-generation research among 33 studies of CVD health disparities in African Americans published from 1996 to 2006

Intervention	%*	References
Counseling/education for behavior change	82	7, 8, 10, 12–15, 18–21, 23–39
Disease or CVD risk factor screening	15	11, 22, 24, 35, 39
Change in medical care model	24	9, 12, 13, 15, 16, 17, 25, 28
Specific active intervention	12	
Exercise		7, 18, 19, 38
Stress reduction		8, 34
Dietary modification		25, 26, 31, 37, 38

CVD = cardiovascular disease.

*Percentages add to >100 because some studies used multiple interventions.

Table 3

Focus and methods of interventions among 33 studies of CVD health disparities in African Americans published from 1996 to 2006

Focus	%	References
Faith-based	21	18, 24, 26, 28, 33, 37, 39
Worksite	15	15, 22, 34, 35, 36
Community center/community program	30	9, 12, 13, 16, 17, 29, 30, 36, 37, 39
School-based	12	8, 14, 37, 38
African American women	30	7, 10, 11, 19, 27, 30, 34, 35, 36, 39
Methods		
Community-based participatory research	33	9, 13, 15, 16, 17, 21, 22, 23, 28, 36, 39
Phone/survey	12	10, 21, 29, 33
Intergenerational/family	6	24, 31
Clinic-based	6	25, 32

CVD = cardiovascular disease.

Table 4

Barriers and Challenges to conducting effective third-generation health disparities research among studies of CVD health disparities in African Americans published from 1996 to 2006

Barrier/Challenge	Issues
Financial resources	Limited funders with limited funding, financial incentives are valuable, provisions of health services (medicine, transportation)
Buy-in from community	Community-based participatory research of great benefit, cultural competence a must, some members of investigational team should share cultural background of study sample, use faith-based institutions
Challenges in rural areas	Limited access, no dense populations, poverty
Data often not applicable to other populations/sites	What works in one place may not be applicable to another site
Recruitment and retention	Participant fatigue, other day-to-day pressures on participants, effect of criminal justice system, investigators not part of community, mistrust of scientific community
Difficulty in evaluation of interventions	Long-term follow-up difficult, numbers of participants small, morbidity and mortality data lacking
Varied return on investment	Poor correlation between intensity of intervention and impact