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Interventions to Improve Minority Health Care and Reduce Racial and Ethnic Disparities

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PREFACE

Health Services Research & Development Service's (HSR&D) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) managers and policymakers, as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout the VA.

HSR&D provides funding for four ESP Centers and each Center has an active VA affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence,
- guide the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures, and
- set the direction for future research to address gaps in clinical knowledge.

In 2009, the ESP Coordinating Center was created to expand the capacity of HSR&D Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of HSR&D field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight, guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP Coordinating Center Program Manager, at nicole.floyd@va.gov.

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INTRODUCTION

BACKGROUND

Racial and ethnic disparities are widespread in the US health care system. A 2007 report from the Portland Evidence-based Synthesis Program (ESP) similarly found disparities were prevalent in a variety of clinical arenas within Department of Veterans Affairs (VA). The report identified several promising avenues for future interventions designed to reduce racial and ethnic disparities. The extent to which such intervention research has been conducted in VA populations is unclear, though our review of published studies suggests disparities intervention research in the VA may be lagging behind research of interventions conducted outside of the VA setting. Furthermore, the approach to disparities interventions may be quite varied, and this may further complicate the development of an organized research agenda within the VA. Identifying challenges to conducting intervention research remain critical steps to informing future VA disparities intervention efforts to reduce disparities and improve health outcomes for minority Veterans.

The objectives of this review are to describe the state of disparities intervention research within the VA, glean lessons from systematic reviews of intervention research not limited to VA settings, and develop an organizing framework to describe studies in this field of research. This work is primarily intended for the Equity Portfolio for the VA Health Services Research & Development (HSR&D), the Veterans Health Administration (VHA) Health System Leadership and the field of race/ethnic disparities researchers, for the purposes of informing future disparities intervention research in the VA as well as VA policies and programs to reduce disparities.

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METHODS

TOPIC DEVELOPMENT

The review was requested by the director for the Equity Portfolio of the VA HSR&D and commissioned by the Department of Veterans Affairs Evidence-based Synthesis Program. We relied on individual topic expertise to form the technical expert panel for guiding topic development and reviewing drafts of the report. The objective of this report is to review the evidence that addresses the following key questions:

Key Question #1. What is the state of research on interventions to reduce race/ethnic disparities or to improve health and health care in minority populations within VA health care settings?

Key Question #2. What are the results of interventions (within and outside the VA) to reduce race/ethnic disparities or to improve health and health care in minority populations?

We used the following methods to address these questions:

1) Primary literature review of studies with the following characteristics:

    - Patients: any VA patient population
    - Intervention: any intervention primarily designed to reduce disparities or improve quality of care or outcomes for minority populations
    - Comparator: studies comparing minority to non-minority Veterans as well as studies focusing on outcomes for a targeted minority group of Veterans
    - Outcomes: no intention to limit by outcome
    - Timing: any length of follow-up
    - Setting: VA, inpatient or outpatient

2) Review of systematic reviews and meta-analyses of race/ethnic disparities interventions conducted in VA and non-VA settings.

In addition, discuss the utility of categorizing existing disparities research according to the kinds of populations included in the studies as well as by intervention type to provide an organizing language for the interventions literature.

- Two categories to describe included study populations:
    - ***Single-race*** or minority-only populations: examined the effect of interventions within a group known to receive lower quality care, or have poorer outcomes, than the majority white population. Effectiveness documented in such studies provides only indirect evidence that the studied intervention will reduce disparities.
    - ***Comparative***: included both minority and majority populations and compare measures in both groups before and after the intervention. Such studies provide direct evidence of an intervention's capacity to reduce disparities.

- Two categories for intervention types:
    - ***Generic*** interventions: applied without consideration of group specific needs or

preferences. Many of these interventions involved quality improvement efforts or care standardization testing the premise that deficits in care for minority groups might be reduced if care was applied similarly for everyone.

- ***Tailored*** interventions: described efforts to address barriers specific to a minority group. Many of these interventions involved specially designed educational materials crafted with specific minority groups in mind (e.g., lessons that address knowledge and health beliefs of minority populations), or community health workers that addressed the special needs of minority patients within their own communities. Community health workers were typically members of those minority communities and therefore understood the context and culture of the population served.

SEARCH STRATEGY

We conducted a search for recent primary intervention studies of VA patients in MEDLINE® (PubMed®) (2006 through August 2010) using the search strategy developed for the 2007 VA ESP report on health disparities (Appendix A). We also conducted a follow-up search for recently published studies by investigators identified in the 2007 report because they were conducting pending intervention work at the time of that report. Finally, we conducted a search for systematic reviews of intervention studies that are not limited to VA patients in MEDLINE® (PubMed®), the Cochrane Database of Systematic Reviews (OVID), and PsycINFO® (OVID) (database inception through November 2010). We obtained additional articles from reference lists of pertinent studies, and through reviewer feedback following review of the initial draft of this report. All citations were imported into an electronic database (EndNote X2).

STUDY SELECTION, QUALITY ASSESSMENT, AND DATA ABSTRACTION

Two reviewers assessed the titles and abstracts identified by the literature search for relevance to the key questions. Potentially relevant full-text articles were retrieved for further review. Two reviewers independently reviewed the articles for inclusion, and discordant results were resolved through discussion and input from a third reviewer. We included individual studies evaluating the effects of an intervention within or between racial/ethnic groups in VA patients. We relied on systematic reviews and meta-analyses of intervention studies conducted outside the VA setting (inclusion/exclusion criteria provided in Appendix B). We excluded poor quality reviews as defined by previously developed criteria (Appendix C). We also excluded reviews of interventions that were not likely to be applicable to VA settings (i.e., studies focused on reducing financial barriers to access).

From each study, we abstracted information on clinical topic, study methodology, population characteristics including race/ethnicity, types of interventions studied, search dates and number of studies included for systematic reviews.

We dual-reviewed each study for quality and data abstraction. Disagreements were resolved through discussion, and a third investigator was consulted when needed to reach consensus.

DATA SYNTHESIS

We examined intervention studies of both primary studies of VA populations, and systematic reviews conducted in settings not limited to the VA. We organized the literature addressing key question #1 and key question #2 according to clinical or substantive topic area in the Results section including: diabetes mellitus, arthritis and pain management, preventive and ambulatory care, cardiovascular disease, human immunodeficiency virus/auto immune deficiency syndrome (HIV/AIDS), mental health, and cross-cutting interventions.

We developed an abstraction form in order to extract data from included primary studies and systematic reviews. Our syntheses of systematic reviews were qualitative in nature. Because we engaged in reviews of systematic reviews, we relied on the conclusions and syntheses from review authors to a large extent. We gave higher consideration to reviews of good quality, as determined by the quality criteria detailed in Appendix C.

PEER REVIEW

A draft version of this report was sent to the technical expert panel and additional peer reviewers. Their comments and our responses are included in Appendix E.

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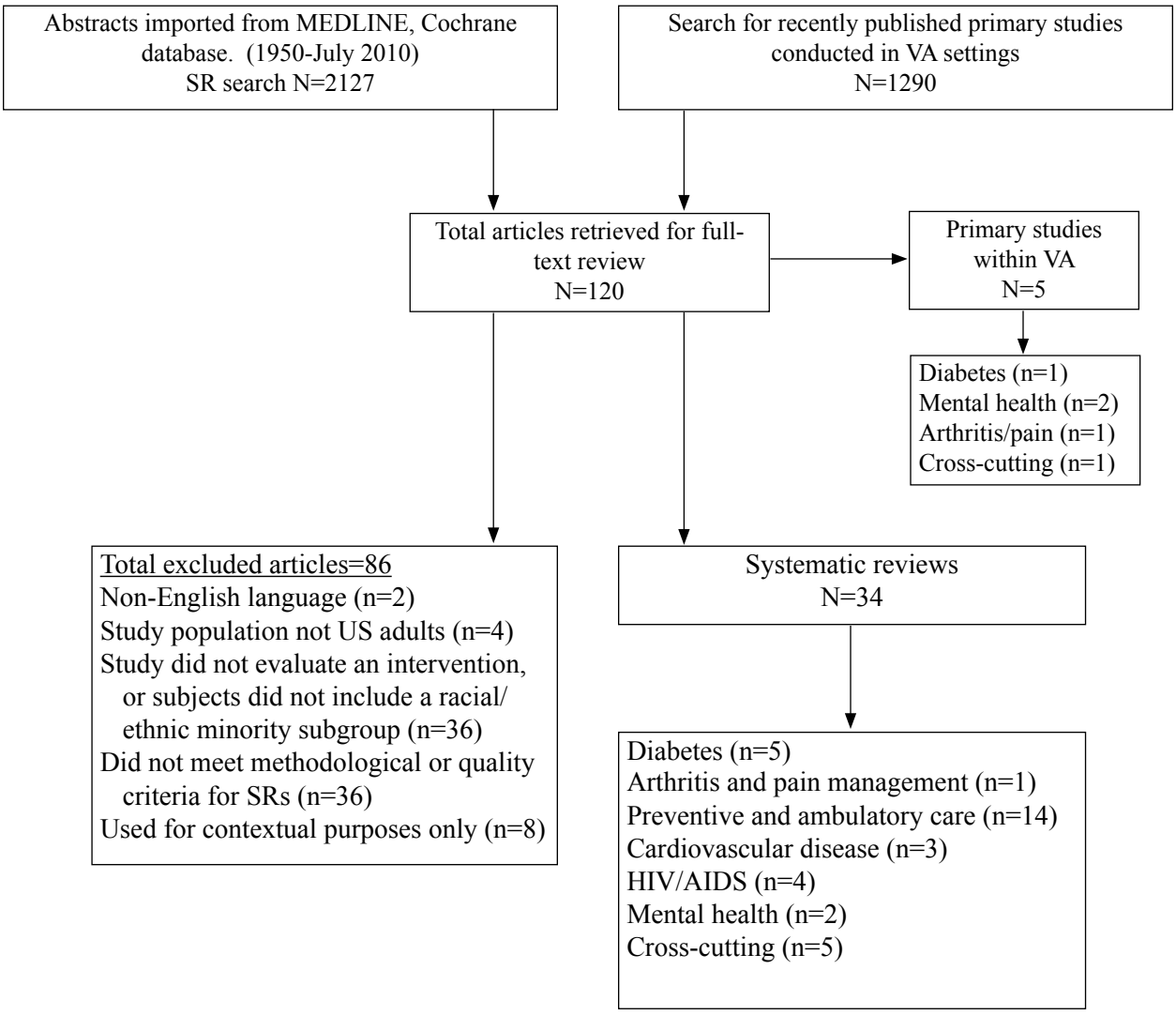
RESULTS

LITERATURE SEARCH

The search for systematic reviews and meta-analyses yielded 2,127 citations, and the search for primary VA studies published since the 2007 report yielded 1,290 citations. Appendix B details the inclusion/exclusion criteria for study selection. Following a review of these 3,417 titles and abstracts, we selected 115 articles for further review at the full-text level. Of these, we included five primary VA studies and 34 systematic reviews across the various clinical areas (Figure 1). The table in Appendix D provides details about the included studies. We discuss the results by key question in the sections that follow.

Figure 1. Literature Flow



KEY QUESTION #1. What is the state of research on interventions to reduce race/ethnic disparities or to improve health and health care in minority populations within VA health care settings?

We found five recently published primary studies of interventions involving minority Veteran populations.[1-5] The populations included in these studies varied. Two were comparative and included black and white Veterans.[1, 5] Another two studies were comparative with black, white and Hispanic Veteran populations.[2, 4] The final study was single-race and examined Native American Veterans.[3]

The effectiveness of the interventions examined by these studies also varied. Only one of the studies examined is able to conclude that the intervention significantly reduced disparities.[4] One of the studies did not examine the effects of the intervention by race group,[1] one study piloted the acceptability of the intervention in the minority population without evaluating the effects on the outcome,[3] one study found reductions in disparities in intermediate outcomes only[5] and the final study concluded that no significant findings were attributable to the intervention.[2]

The single-race study compared videoconferencing with in-person administration of a psychiatric assessment among American Indian Vietnam Veterans.[3] Although this study was unable to determine whether the intervention was effective in improving psychiatric outcomes for Native American Veterans, it concluded that teleconferencing was a culturally acceptable method for the delivery of psychiatric care for this sample of minority Veterans. Similarly, one of the comparative studies investigating the effectiveness of a screen-phone assisted care coordination for black, white and Hispanic Veterans with dementia was unable to determine whether the intervention reduced disparities.[2] The study concluded that there were no significant findings. A separate comparative study of black, white and Hispanic Veterans by the same author examined the effects of a phone-based, in-home messaging device combined with care coordination on glycemic control among diabetics.[4] This study was able to conclude that disparities in glycemic control were reduced between white and black Veterans. The fourth study was a comparative study between black and white Veterans that examined the effects of an educational videotape and tailored total knee replacement decision aid on patients' expectations about postoperative pain, physical function, and willingness to consider total knee replacement surgery.[5] This study found decreased disparities between black and white Veterans in intermediate outcomes (knowledge and expectations) rather than in osteoarthritis outcomes. The fifth study was a comparative study between black and white Veterans.[1] The study examined found that the intervention was effective in reducing hospital admissions and total days hospitalized for the study sample, but did not examine the results of the intervention by race.

We discuss the results of each of these primary VA intervention studies in combination with the findings of systematic reviews on similar clinical/substantive topics to key question #2 in the sections that follow.

KEY QUESTION #2. What are the results of interventions (within and outside the VA) to reduce racial/ethnic disparities or to improve health and health care in minority populations?

Diabetes Interventions

Summary

Five good quality systematic reviews of interventions for diabetes mellitus identified studies that were mostly conducted in single-race populations. The outcomes studied included glycemic control measures, patient knowledge and satisfaction, dietary habits, physical activity, self-management activities, emergency room visits and hospital admissions. Process measures included the use of eye exams, microalbumin testing, HbA1c monitoring, foot care, and exercise counseling. We identified a primary intervention study tested on a multiethnic population of Veterans that examined the effects of care coordination and telemedicine intervention on glycemic control. We also reviewed a randomized controlled trial of the effects of cultural competency training on both clinician awareness and glycemic control among black and white outpatients. There was some evidence of benefit for interventions focused on community health workers, care managers, and culturally tailored health education for patients. Provider-focused interventions reported improvements in process measures, although computerized reminders for physicians resulted in negligible or negative results. Studies on the long-term effects of diabetes mellitus interventions on process and outcome measures are lacking. Heterogeneity between studies in subjects, settings, study design, and multiple aspects of the interventions limit the comparisons that can be made across studies. One small single center VA study suggests a telemedicine/care coordination intervention may reduce disparities in black Veterans with diabetes; this finding warrants further research. A study of cultural competency training significantly increased clinician awareness of racial differences in diabetes care, but no effect was observed on reducing disparities between white and black patients on glycemic control targets, LDL cholesterol, or blood pressure 12 months after the intervention.

Details

We identified five good-quality systematic reviews of interventions for diabetes mellitus,[6-11] including a Cochrane review[7] that was subsequently published as a journal article.[6] We found one primary intervention study conducted in VA settings that examined race/ethnic disparities for diabetic Veterans.

The interventions identified by existing reviews included health education interventions;[6, 7] the use of community health workers;[10] primary care interventions (including case management, patient counseling, and the use of reminder cards for providers);[9] and self-care interventions aimed to change behavior using culturally tailored techniques.[11] One review included a variety of interventions including patient-targeted interventions, physician provider-targeted interventions, health care organization interventions (including case management, community health workers, and pharmacist-led medication management), and multi-target interventions.[8] Most of the studies identified by the systematic reviews were conducted in single-race populations.

A review of health education interventions determined that culturally tailored health education was more effective than usual care in improving HbA1c and knowledge for up to one year of follow-up, although clinically important long-term outcomes were not examined.[6, 7] Another review of health

education interventions that sought to improve dietary habits, physical activity, or self-management activities reported that using interpersonal interventions such as peer support and nurses/nutritionists/health educators more often had positive findings than computer-based patient education.[8]

One review examined self-care interventions that aimed to change the behavior of patients, rather than simply educating them. Four of the 12 included studies were designed using cultural tailoring techniques such as the use of focus groups and specific recipes for the ethnic group being studied. Improved glycemic control tended to occur in studies in which baseline glycemic control was markedly poor (A1C>10%). The author of the review concluded that culturally tailored interventions appeared to be successful among African Americans and Latinos, and that self-care interventions may be effective in more difficult-to-treat patients.[11]

One review examined five provider-focused interventions (reminder systems, practice guidelines, continuing medical education, in-person feedback, and problem-based learning) and reported improvements in process measures such as the use of eye exams, microalbumin testing, HbA1c monitoring, foot care, and exercise counseling. By contrast, computerized reminders for physicians resulted in negligible or negative results. None of the physician-targeted studies included provider communication, cultural competence, or shared decision making.[8]

Interventions that used community health workers, care managers, and other non-physician providers showed evidence of benefit, although comparisons across studies were limited by the heterogeneity in the interventions, settings, and types of providers. A review of health care organization interventions found that nurse care managers were effective in improving quality of care as well as patient outcomes, including diabetes control and onset of retinopathy. Telemedicine case management had more modest results than on-site nursing staff. Positive findings were found for other non-physician interventions, including the use of community health workers and medical assistance programs that provided free medications.[8] A review of case management delivered by specialist nurses found improvement in glycemic control and cardiovascular disease risk factors including blood pressure and total cholesterol.[9] A review of community health workers serving in a variety of roles showed some improvements in patient knowledge, behavior and satisfaction, and decreases in emergency room visits and hospital admissions; increases in retinopathy screening and glycemic control monitoring by providers were also noted in a few studies.[10]

A primary study conducted at an urban VA Medical Center (VAMC) examined the effects of a care coordination and telemedicine intervention on glycemic control among older Veteran diabetics.[4] Patients aged 60 and older (mean age 72 years SD=6) were enrolled for at least nine months. Although the study population was small (n=41), it did recruit black (n=14; 34%), white (n=21; 51%) and Hispanic (n=6; 15%) Veterans. The study was designed as a pre-post intervention evaluation. Patients used a telephone-based, in-home messaging device to transmit blood sugar data and answers to clinical questions to the care coordination team, comprised of a nurse practitioner, social worker, administrative assistant, and geriatrician. The data were used to both risk stratify patients and guide ongoing clinical advice from the care coordination team. A comparison of pre- and post-intervention data found that glycemic control improved significantly in black, but not in white or Hispanic Veterans. However, several methodological issues limit the validity of study findings including the single-site observational design and high attrition rate (28 originally eligible Veterans did not complete the study).

Arthritis and Pain Management Interventions

Summary

One fair quality systematic review of behavioral interventions for arthritis in racial and ethnic minority populations found limited evidence from a single randomized controlled trial that exercise interventions may be effective in improving pain and disability. Compared with a health education control program, exercise programs were comparably effective between whites and African Americans in improving pain and disability. In addition, one primary VA study investigating an educational intervention provides evidence of improving knowledge and expectations related to total knee replacement; however, it does not improve willingness to consider total knee replacement surgery.

Details

A fair-quality systematic review[12] that included 25 randomized controlled trials of psychosocial interventions in patients with osteoarthritis or rheumatoid arthritis identified only randomized controlled trial (represented in two publications[13, 14]) that directly compared the effectiveness of an intervention between racial groups. The trial compared an aerobic exercise program and a resistance exercise program with a health education control program; patients were not blinded to the treatment assignment. The study reported that the exercise programs were comparably effective in improving pain and disability between whites and African Americans.

One primary study involved Veterans with moderate to severe knee osteoarthritis. The study assessed whether an educational video and total knee replacement decision aid affected expectations about postoperative pain and physical function following total knee replacement, as well as their willingness to undergo total knee replacement surgery. The study included 31 white and 33 African American Veterans. Although the video and decision aid improved expectations significantly among African American Veterans (bringing them in line with white Veteran expectations), expectations for both groups were still lower than post-total knee replacement outcomes reported by individuals who had undergone total knee replacement surgery. In addition, despite improving knowledge about total knee replacement pain and functional outcomes, the study found little change in participant willingness to consider total knee replacement surgery after the intervention. Although reported baseline and post-intervention willingness runs counter to what is found in previous studies (willingness was higher for African Americans than for white Americans in this study), the educational intervention did not alter subsequent willingness for either group. Despite improving disparities in knowledge and expectations about total knee replacement surgery, this intervention failed to demonstrate a similar improvement in African American Veterans choosing total knee replacement surgery.[5]

Preventive and Ambulatory Care Interventions

Summary

We identified the greatest number of reviews in preventive and ambulatory care interventions. 14 good quality reviews of single-race and comparative studies encompassed several preventive health areas, including cancer screening, smoking cessation, physical activity and diet. Little research explicitly focuses on reducing gaps in screening, treatment and outcomes for minority compared to white adults. Several reviews note the lack of sufficient number of studies to compare similarly-configured interventions or specific components of multifaceted interventions.

There is some evidence that community health workers may improve rates of preventive health service utilization. Overall, improvements in preventive and ambulatory care for minorities are inconsistent. The overwhelming majority of reviews focused on improving screening and process of care measures for race/ethnic minorities; however, there are fewer studies evaluating the effects of interventions on health outcomes.

Details

Eight reviews examined interventions to improve cancer screening rates among various combinations of white, Hispanic, Asian/Pacific Islander, Native American and African American study participants. Two reviews focused on smoking cessation interventions for African Americans and Mexican Americans. Four reviews examined physical activity and diet interventions for African Americans, Hispanics and Japanese Americans. The use of community health workers (also referred to as lay health workers, peer navigators, and *promotoras* in studies among Hispanics), and various examples of culturally tailored health education and counseling were the most commonly evaluated interventions. We found no primary intervention studies conducted in VA settings that examined race/ethnic disparities in preventive and ambulatory care.

Cancer Screening

Eight reviews evaluated interventions designed to improve breast, cervical and colorectal cancer screening and treatment in the United States.[15-22] The best quality breast cancer screening review included 43 studies of primarily African American, Hispanic and white providers and patients.[18] Included studies examined patient-focused (i.e., reminder letters, telephone calls, patient education and counseling), or provider-focused interventions (i.e., clinical reminders, provider education) to improve mammography screening rates. Only two studies examined interventions specifically designed to reduce disparities. These studies found that comprehensive case management interventions that combined health education, counseling, and assistance with health system navigation demonstrated promise in reducing time to initiation of cancer treatment. However, the review also found that interventions aimed at improving screening were more effective for white, educated populations, suggesting that the interventions may exacerbate disparities. Another systematic review also identified health education dissemination for Hispanic women by community health workers to have promising results in improving rates of breast cancer screening.[15]

Three reviews assessed interventions aimed at improving cervical cancer screening.[16, 19, 20] The best and most recent of these reviews examined 18 studies including access enhancement, community education, individual counseling, mass media and community health worker interventions.[20] A meta-analysis of these studies found an overall improvement in cancer screening rates in the intervention groups among African American (d=0.146 [95% CI=0.028, 0.265]) and Asian (d=0.177 [95% CI=0.098, 0.256]) women, but not among Hispanic (d=0.116 [95% CI=-0.008, 0.240]) women. To attempt to explain the neutral findings for Hispanic women, the authors cite potential contamination of treatment and control groups in addition to low education and consequently, low health literacy for this specific ethnic group. Additional analyses found that all intervention types were associated with improvements in Pap screening, with access-enhancing interventions associated with the biggest improvements, while community health workers rendered the smallest effect. The investigators also note that the use of culturally matched materials and culturally matched intervention delivery was associated with improved Pap screening for minority women.

Three reviews examined interventions to increase colorectal cancer screening rates.[19, 21, 22] One review included 15 randomized controlled trials of interventions in multiethnic populations.[22] All interventions were associated with increased screening rates whether they were low intensity outreach programs (i.e., by telephone or mail) or more comprehensive community education programs (i.e., system navigation, risk counseling, cultural self-empowerment). The review found no differences between race/ethnic groups in screening uptake, though five studies did not report outcomes by race/ethnic group in some cases because these data were not collected. Another review offered insights into improving screening among African American patients, such as using personalized materials to educate and remind patients to improve screening adherence.[21] Although this review suggested that the most successful interventions were tailored to address important barriers to screening (i.e., lack of knowledge, perception of risk), the review authors note that only a few studies directly addressed these barriers in the intervention design and evaluated the subsequent effect of interventions on these barriers.

Smoking Cessation

Two good quality reviews offer insights into smoking cessation interventions for minority adults in the US.[23, 24] Each review focused on cessation programs aimed at African American and Hispanic populations, respectively. For African American adults, one meta-analysis of 20 quasi-randomized or randomized controlled trials indicated the odds of quitting were 40 percent higher for intervention programs of stand-alone or combinations of pharmacological, individual/group/telephone counseling, targeted print materials, community outreach and media campaigns, compared to usual care or placebo. Although treatment setting moderated intervention effectiveness (i.e., church and community over clinical settings), treatment intensity did not. Interestingly, culturally specific interventions were only effective insofar as smokers indicated readiness to quit.[23]

One good quality review included in the "Cardiovascular Disease Interventions" section below also examined 13 tobacco cessation intervention trials in minority populations.[25] The findings for that systematic review are largely in agreement with the systematic reviews presented here. In particular, patient-level interventions found that pharmacologic therapy – especially when combined with counseling – was effective in increasing quit rates. Culturally tailored, patient-level interventions produced mixed results. Of note, one study tested physician training and patient enrollment in a culturally tailored cessation program and found a 21 percent quit rate at seven months. Another study found culturally tailored health education was more effective than motivational interviewing.

A systematic review and meta-analysis of 17 studies involving Mexican Americans also indicated good evidence for pharmacological, and moderate evidence for community health workers (*promotoras*) and counseling (both group and telephone) interventions for smoking cessation. However, concerns with methodological design, length of follow-up and generalizability to other Hispanic subgroups limit conclusions based on these findings.

Physical Activity and Diet

Four reviews involved interventions to improve physical activity and nutritional education among minorities.[26-29] We identified one systematic review as the most comprehensive and best

quality.[26] This review included 29 studies in African American populations, 15 of which were randomized controlled trials. Intervention modalities included telephone counseling, community health worker counseling, structured exercise programs, group exercise sessions and unstructured exercise programs. Most of the trials found a neutral effect of interventions. Those interventions that were associated with benefit demonstrated only short-term improvements in physical activity behavior change.

A second review of 19 culturally tailored weight loss intervention trials in African American, Hispanic, and Japanese American adults found that though most found a benefit from the intervention, the benefits were short-lived.[27] The authors also indicate that even the short-term weight loss benefits did not extend to African American women.

In a third review, tailored nutrition programs showed marginal benefit, although there were few studies that examined race/ethnic group differences explicitly and little exposition of tailored education program details.[28] This meta-analysis included multiple ethnic groups, including white, African American and Hispanic adults in 16 quasi- or randomized controlled trials. Tailored nutrition education interventions were implemented in the form of face-to-face interactions, email or print materials and appear effective in improving dietary intake over the long-term (six months or more) for priority minority groups. However, review authors do not comment on minority versus white intervention effectiveness.

One review focused on Hispanic Americans and found the use of community health workers (*promotoras*) for peer nutrition education improved diabetes disease management, though the authors emphasize the need for longer-term trials to further evaluate the effectiveness of such interventions.[29]

Cardiovascular Disease Interventions

Summary

We identified three systematic reviews that examined cardiovascular health care interventions. Most studies were conducted in single-race populations and could not test the ability of interventions to reduce disparities. Those comparative studies with mixed populations did not test for differential intervention effects based on race/ethnicity. The largest body of literature focused in the areas of hypertension and smoking cessation. On the whole, nurse-based interventions were associated with improvements in proximal health outcomes (e.g., blood pressure, lipid level, body mass index) for minority populations, but the addition of community health workers provided limited gains. Culturally tailored education approaches to lifestyle change interventions appear promising. Several small trials suggest intensive nurse led multicomponent care management interventions may reduce hospitalization in minority patients with heart failure.

Details

We found three systematic reviews examining interventions related to cardiovascular health. [25, 30, 31] The Davis et al. review was methodologically the most rigorous of these, and included studies from 1995 to 2006 of a broad variety of health care delivery interventions focusing on cardiovascular risk factor management (hypertension, hyperlipidemia, smoking, obesity), and management of cardiovascular conditions including myocardial infarction and heart failure. Studies were included if they included >50 percent minority populations, or were subgroups of larger trials for which race/

ethnicity subgroup data were reported. Studies were excluded if the intervention had no connection to a health care setting. Most studies included minority-only populations and therefore could not test the impact of the interventions on disparities. The authors did find, however, a number of interventions tested in minority populations summarized below:

- Twenty-seven studies of interventions focused on hypertension, most of which were intended to change the structure of care delivery. Only nine studies evaluated patient-level interventions. Nursing interventions – either using home nurses alone or in combination with community health workers – were assessed in eight studies, most of which found these interventions to be successful in lowering blood pressure. Some of these also successfully lowered lipid levels. Pharmacist and community health worker interventions were not well studied. One clinic reorganization intervention was effective for both African Americans and whites, while two others were either ineffective or demonstrated only short-term gains. Of note, one of these was a VA study which found that chart-based reminders failed to improve physician adherence to hypertension guidelines. Patient-level interventions such as salt restriction were effective in some studies, and the Dietary Approaches to Stop Hypertension diet was significantly more effective in African Americans than in other racial/ethnic groups.
- Four patient-level hyperlipidemia intervention studies produced largely negative results, though studies using culturally tailored recipes in African Americans did find very modest improvements in lipid levels.
- The review included 13 trials examining tobacco cessation interventions in minority populations, and these results are described under the "prevention" section above.
- Only three trials assessed interventions promoting physical activity; high drop-out rates limited the conclusions that could be drawn from these studies.
- Four trials found nurse-led care management interventions featuring patient education and close follow-up appeared to reduce heart failure hospitalizations in minority subpopulations.

One poor quality review, which covers an identical search period as Davis et al., did not present study results, but included a qualitative critique of the literature.[30] The authors' interpretation of the literature indicated that the location of health care delivery matters, with community based approaches being particularly promising. They also noted that studies did not clearly show intensive interventions to be more effective than less intensive ones, and the intensity of intervention may have contributed to the high attrition rates seen in some studies. They noted that group based interventions were associated with high rates of recruitment and retention.

Finally, a third review focused on Native Hawaiian and other Pacific Islander populations and found only three intervention studies which were all limited by significant methodological weaknesses.[31]

HIV/AIDS Interventions

Summary

No intervention studies were specifically designed to reduce disparities. However, evidence suggests that behavioral interventions can be effective in improving HIV/AIDS service

utilization and health care outcomes for African American and Hispanic populations. A number of studies consistently found that behavioral interventions can reduce risky sex behavior and sexually transmitted infection rates. In particular, gender and culture specific interventions focused on empowerment were effective in at-risk African American female populations. The reviewed studies did not address organizational barriers and only targeted behavioral intervention efficacy. Based on this scant evidence, there is insufficient data to suggest that these interventions would be effective in reducing disparities in HIV/AIDS. Moreover, none of the reviews focus on reducing disparities among Veterans.

Details

We identified four good quality meta-analytic reviews that examined behavioral interventions to reduce HIV risk behaviors and incidence of sexually transmitted infections among African Americans and Hispanic Americans. None evaluated the effectiveness of behavioral HIV/sexually transmitted infection risk reduction interventions in reducing racial and ethnic disparities in HIV service utilization or health outcomes between racial/ethnic groups.

One systematic review evaluated the efficacy of HIV behavioral interventions for African American women.[32] The majority of participants were low income women who were unemployed or received public assistance. Most studies contained multiple intervention components aimed at reducing the risk of heterosexual transmission of HIV. All interventions provided information to increase HIV/sexually transmitted infection knowledge. Skills training components usually took specific forms, including correct use of male condoms, or negotiating safer sex practices through demonstration or role-playing. Several common constructs of behavioral change theories were addressed, including motivation; positive attitude toward condoms; normative influence; self-efficacy for protective behavior; personal responsibility to protect oneself, family, significant others, or community; and personal risk or vulnerability. Most interventions were delivered in small groups, had more than one session, and lasted longer than 240 minutes.

In 33 studies including 11,239 patients, interventions overall reduced unprotected sex rates by 37 percent (OR=0.63; 95% CI=0.54 - 0.75), and in 17 studies interventions reduced sexually transmitted infection diagnosis rates by 19 percent (OR=0.81; 95% CI=0.67, 0.98; n=8760). Efficacious interventions were those delivered by women, and focused on self-efficacy, assertiveness, and negotiation skills intended to empower women to seek equality in their relationships. Additionally, the success of HIV behavioral risk interventions may be more dependent on the quality than number of intervention sessions. Culturally tailored interventions with fewer sessions and skills training were as efficacious as multiple session interventions in reducing HIV risk behaviors.

Another systematic review by the same author evaluated the efficacy of behavioral interventions in reducing unprotected sex and sexually transmitted infection incidence among African American and Hispanic American sexually transmitted infection clinic patients, and found similar positive results.[33] The number of intervention sessions ranged from one to eight, were commonly delivered in small groups, took 10 minutes to 16 hours to deliver, and spanned from less than one day to six months. Beneficial intervention effects were seen in trials regardless of participants' characteristics (i.e., sexually transmitted infection date at baseline, specifically

targeting African Americans or Hispanic Americans, 90 percent of participants being African American or Hispanic American), methodological quality of trials (i.e., participation rate, retention rate, reporting generation of randomization sequence or allocation concealment), or intervention features (e.g., intervention contents or setting, unit of delivery, total time to deliver intervention). In addition, the review found that interventions using facilitators that were ethnically matched to patients were more efficacious.

Despite being of lower quality, we included the third review to provide limited discussion of the effectiveness of behavioral interventions in reducing HIV transmission among African Americans.[34] The analyses indicated that, overall, sexual risk reduction intervention participants improved condom use but neither increased nor decreased the number of sexual partners compared with controls. Interventions less than 13 weeks long achieved greatest results when the intervention content included intrapersonal skills training (i.e., self-management). Interventions lasting from 13 to 43 weeks were more effective when the interventions included: (a) more HIV+ participants or men who have sex with men and fewer intravenous drug users, (b) higher retention rates, (c) tailored content to participants, (d) more sessions of longer duration, (e) interpersonal skills training (i.e., partner negotiation), and (f) no counseling and testing. Interventions of longer duration (i.e., 43 to 152 weeks) were more effective when they: (a) included a sampling of more HIV+ participants, younger people, and females; (b) had higher retention rates; (c) tailored content to participants; (d) offered more sessions; (e) included interpersonal skills training; and (f) did not include counseling and testing.

The fourth review focused on HIV/AIDS or sexually transmitted infection prevention interventions seeking to reduce the HIV risk behaviors of Hispanic Americans residing in the US or Puerto Rico.[35] In summary, participants in the intervention groups experienced a 25 percent reduced odds of engaging in sex risk behaviors (OR = .75, 95% CI = .66–.85); a 56 percent increased odds of condom use (Reverse =1.56; OR = .64, 95% CI = .54–.75); a 25 percent reduced odds of unprotected sexual intercourse (OR = .75, 95% CI = .63–.89); a 25 percent reduced odds of number of sex partners (OR = .75, 95% CI = .66–.86); a 31 percent reduced odds of new sexually transmitted infections (OR = .69, 95% CI = .54–.88); a 17 percent reduced odds of engaging in injection drug use; and a 27 percent reduced odds of sharing injection paraphernalia (OR = .73, 95% CI = .63–.85). Efficacious interventions: (a) did not use peer outreach, $p < .01$; (b) were delivered by non-peers such as health care providers, counselors or other professional facilitators, $p < .05$; (c) comprised of four or more sessions, $p < .05$; (d) included problem solving skills, $p < .01$; (e) discussed barriers to condom use, $p < .01$ and sexual abstinence, $p < .05$; (f) used peer norms to encourage behavior change, $p < .05$.; and (g) targeted either females only or males only and were successful in reducing sex risk behavior, $p < .01$. Interventions that utilized ethnographic formative interviews, $p < .05$, or addressed the Hispanic traditional gender norm of machismo, $p < .05$, were more efficacious than those that did not.

Mental Health Interventions

Summary

There is good evidence suggesting that multicomponent chronic disease management interventions including case management strategies and care coordination are helpful in reducing health disparities related to depression. There is insufficient research investigating the effectiveness of culturally tailored psychotherapeutic and preventive interventions in reducing

depression health disparities; however, the preliminary evidence in this area indicates that these types of culturally tailored interventions hold promise. No good quality primary studies designed to reduce health disparities in Veteran populations were identified; however, two primary studies provide initial support for the feasibility of using technology-based interventions with ethnic minority Veteran populations. There were no good quality reviews examining disparities reduction interventions for mental health conditions other than depression. Though there is insufficient evidence for psychopharmacological, psychotherapeutic, and preventive interventions in ethnic minority populations, preliminary research on a variety of interventions suggests that such interventions can be effective for this population, particularly when they are culturally tailored and include a care coordination or case management component.

Details

We identified two good quality systematic reviews examining interventions aimed at reducing health disparities in mental health care in settings not limited to the VA. Additionally, we found two primary studies conducted within VA settings that addressed mental health care disparities interventions.

One systematic review examined 20 interventions related to depressive disorders.[36] Of the 20 reviewed interventions, 14 were randomized controlled trials and six were observational studies. This group of studies was comprised of 12 studies which the authors classified as "chronic disease management" research including case management and collaborative care approaches; the remaining eight were classified as "culturally tailored interventions" and included treatment programs, preventive interventions, and psychoeducation.

Multicomponent chronic disease management interventions were successful in reducing or eliminating disparities; in most cases, ethnic minorities obtained a greater benefit than non-Hispanic white participants, though outcomes for minority populations often remained below those of majority group. The authors identified the following components of successful chronic disease management interventions: practice redesign, patient education, expert consultation or decision support, feedback information, active case management by a trained provider or layperson, and adequate tailoring to patient and provider unique factors. Systems-level interventions included enhanced access to care (including patient cost reduction as well as integrated mental/physical health care), screening, and process improvements (including meetings, patient reminders, progress reviews, and expert team leaders). It was generally impossible to identify the individual parts of these multicomponent interventions that were more or less efficacious. However, physician reminders and screening tools alone were not effective in reducing disparities. Among patient-level intervention studies, case management was the most commonly used strategy. Case management was provided by a range of providers and laypersons, and focused on improved access and adherence to care, mental health care stigma, and psychotherapy focused on management of challenges; this was often accompanied by reading, electronic, and culturally tailored educational materials.

Culturally tailored psychotherapy and preventive interventions were described as showing promise, though few randomized controlled trials were identified. Promising components of cultural tailoring included culturally specific explanatory models of illness (e.g., family structure, autonomy, and time), educational and intervention materials, problem-solving approaches,

recruitment of participants, and participant or provider ethnicity (e.g., ethnicity specific groups or providers).

A second systematic review examined 10 studies (7 of which were randomized controlled trials) investigating the effectiveness of psychopharmacological management, psychotherapy, and combination psychotherapy and religion or psychotherapy and case management interventions.[37] There was inconsistent evidence for relative effectiveness of one type of intervention versus another within or across ethnic groups. The authors highlight specific examples of differential response to treatment across ethnic groups, and though group differences were inconsistent across studies, there was consistent evidence supporting the effectiveness of psychotherapeutic and psychopharmacological interventions in ethnic minority populations, particularly when included as part of a case management or care coordination intervention.

In spite of evidence supporting the effectiveness of these interventions in ethnic minority groups, there was inconsistent and insufficient evidence documenting reductions in health disparities related to depression. Many interventions were conducted with only ethnic minority populations, making comparisons to majority group populations impossible. Though some interventions examined multiple ethnic groups, the findings across studies were inconsistent in terms of relative effectiveness of particular intervention types for specific ethnic groups.

We identified two primary intervention studies focused on mental health disparities reduction in Veteran populations. One study investigated a screen-phone assisted care coordination intervention for caregivers of Veterans with dementia.[2] Caregivers were provided with a screen-phone that included visual resources related to caregiving for individuals with dementia, as well as at least monthly phone calls from a nurse care coordinator. Outcomes including burden, depression, coping, quality of life, knowledge, and satisfaction with the intervention were assessed pre- and post-enrollment. There was no control group. The only significant difference on pre-test measures for African American versus white participants was related to burden, with African American participants endorsing significantly more burden than white participants. There were no significant changes on any outcomes comparing pre- and post-test scores. Results related to intervention satisfaction presented in aggregate format across racial/ethnic groups indicated patient satisfaction with the intervention, with 92 percent of participants recommending the intervention. Finally, cost analyses indicated a significant cost savings to the VA of approximately 50 percent compared to pre-intervention service utilization costs.

The other primary study investigated the acceptability of videoconferencing versus in person administration of a psychiatric assessment with an American Indian Veteran population.[3] Though this study did not investigate an intervention, we chose to include it because it investigated a novel method of service delivery designed to reduce mental health disparities in an ethnic minority, Veteran population. This study used a no-control, test-retest design. American Indian participants were administered a culturally tailored, structured clinical interview over videoconferencing and in person. There were no statistically significant differences between the two methods of administration on process and satisfaction measures, though 45 percent of participants indicated a preference for the in-person interview, while only 20 percent indicated a preference for the videoconferencing.

Cross-Cutting Interventions

Summary

There is good evidence that cultural competence interventions can improve provider knowledge, attitude, and skills, but there are few good quality studies of effects on patient outcomes. Overall, interventions designed to improve the standardized delivery of care for all patients are effective; however, most interventions to reduce disparities between minority and white patients are characterized by poor quality. One small single-site VA study provided very limited initial evidence that care coordination and multiprofessional home-based primary care programs can improve process of care measures for an African American cohort.

Details

We found five good quality reviews conducted in settings not limited to the VA,[38-42] as well as one primary VA study[1] concerning interventions that cut across clinical categories. Of the five reviews, four focused on cultural competency interventions and one focused on interventions to improve quality of care delivered in primary care settings. One VA study examined the effects of home-based primary care on improving outcomes for Veterans with multiple chronic conditions.

Cultural Competence Interventions

We identified four good quality systematic reviews investigating the effectiveness of cultural competence interventions. One review examined whether cultural competence interventions improved provider knowledge, attitudes, and skills; as well as patient adherence, satisfaction, and health status outcomes.[41] This review identified 34 studies: 2 randomized controlled trials; 12 non-randomized controlled trials; and 20 non-randomized, non-controlled, pre-post studies. All but three of the included studies focused on provider outcomes and found good evidence that both general and culture-specific cultural competence training improved provider knowledge. There was consistent, fair-quality evidence that cultural competence training improved provider attitudes including cultural self-efficacy, attitudes toward community health issues, and interest in learning about patient and family backgrounds. There was consistent, fair-quality evidence that cultural competence training improved provider skills, including outcomes such as communication skills, community involvement, social interactions, and facility of treatment implementation.

A more recent review focused specifically on patient outcomes and identified seven studies with patient outcomes, including satisfaction, self-efficacy, health status, and patient assessment of provider competence.[38] The studies ranged from poor to fair quality and included two quasi-randomized, two cluster randomized, and three pre-post study designs; four of the studies included in this review were not included in the Beach, 2005 review[41] and investigated outcomes including patient satisfaction, resourcefulness, service access, health status, trust, ratings of physician cultural competence, and treatment adherence. The authors indicate that in spite of low quality and inconsistent results among existing studies, the general trend among studies suggests the potential for cultural competence training to have a positive impact on patient outcomes.

Another review examined comparative interventions designed to facilitate culturally competent health care including as outcomes patient satisfaction, service utilization, and health status.[42] No studies on recruitment and retention of ethnically diverse providers were identified. Two studies provided insufficient evidence for the effectiveness of interpreter/bilingual services in improving patient treatment receipt and adherence. One study provided insufficient evidence

for the effectiveness of cultural competence training in improving patient treatment adherence. Four studies provided insufficient evidence for the effectiveness of culturally tailored educational materials in improving treatment receipt and adherence, as well as in terms of patient satisfaction. No studies on culturally specific health care settings were identified.

One review investigated cultural competence interventions in mental health care with a specific focus on evaluation of cultural competence models, and found only nine poor quality observational studies.[39] Overall, evidence for the effectiveness of cultural competence models in mental health care was insufficient and low quality.

Two well-designed randomized controlled trials identified by our technical expert panel may provide additional insights about culturally sensitive approaches to interventions. One study found that culturally tailored peer mentoring on advance directives elicited a significant impact on advance directives completion among black end-stage renal dialysis patients. By contrast, peer mentoring had no effect on advance directives completion among white end-stage renal dialysis patients in the trial.[43] Another randomized controlled trial found that providing clinicians with data reports on disparities along with cultural competency training significantly increased their awareness of racial differences in diabetes care, but there was no effect on reducing disparities between white and black patients on glycemic control targets, LDL cholesterol, or blood pressure 12 months after the intervention.[44] The findings of this study suggest that cultural competence training for clinicians, while effective in raising clinician awareness, may not be sufficient to have a measurable impact on disparities in health outcomes.

Quality Improvement

One good quality systematic review examined health system organization elements, as well as provider education efforts to improve rates of preventive services and quality of care for racial/ethnic minorities.[40] Consisting of 27 studies (20 were randomized controlled trials and seven were case-control studies) predominantly in primary care settings, the authors found mixed evidence regarding various intervention components. Tracking and reminder systems were very effective in increasing rates of preventive service use, particularly for cancer screening and advance directives. However, these effects weren't demonstrated for all clinical areas, limiting their potential for addressing overall disparities.

The review authors identify several additional promising interventions. These include interventions that bypass the physician to offer standardized services directly to patients, use of remote simultaneous translation for patients with limited English proficiency, and using structured questionnaires of patients to assess health behavior risk. Fair evidence was found for bypassing physicians in order to provide preventive services to patients. However, there are no indications that language proficiency may be a relevant issue for Veteran populations; therefore, remote simultaneous translation services may not be applicable to VA settings. The authors also note the dearth of studies to explicitly evaluate the ability of interventions to reduce disparities between minority and white patients.

Home-Based Primary Care

In one primary study, 130 African American (71%) and 53 white (29%) Veterans from an urban VA setting were enrolled in home-based primary care for at least six months.[1] The home-based

primary care program involved a multiprofessional team including a medical director, nurse practitioners, registered nurses, social workers, pharmacists, a registered dietician, a dental hygienist and a program director. The single-site study was designed as a retrospective chart review of enrollees, with pre-post intervention evaluation of a number of physical and mental health measures.

Patients were older (mean age 73.6), mostly male (95.6%) and had an average of six comorbidities per patient. The intervention was associated with a significant decrease in hospital admissions (43.7% reduction, p=0.001) and total number of days hospitalized (49.9% reduction, p=0.001), but not in emergency room use. Unfortunately, the study did not analyze outcomes according to race/ethnic group and though the results for this majority African American patient population were encouraging, the intervention's impact on health disparities reduction is uncertain.[1]

SUMMARY OF RESULTS ACROSS INTERVENTIONS

Although not directly comparable, there were some similar intervention types implemented across clinical areas included in this review. Based on our review, interventions that include personnel (e.g., care managers, community health workers) providing increased connectedness between patients and the health care systems they access offer indications of effective intervention results. Though the strength of evidence is limited by methodological issues, small sample sizes, and the preponderance of studies focused on non-VA populations, the most promising interventions in the various clinical areas reviewed were care coordination, care management, community health workers and culturally tailored education interventions. However, it is interesting to note that at least one review of interventions to reduce HIV/AIDS found that efficacious interventions did not use peer outreach.

On balance, efforts to improve quality of health care were largely successful. Various reviews and primary studies detail a narrowing of many gaps in illness care, particularly in the process measures that are the direct responsibility of health care systems and providers. Still, many of the reviewed studies include single-race populations or do not report improvements in minority groups relative to white groups. Therefore, it is difficult to surmise that intervention-specific improvements offer consistent evidence of improved race/ethnic equity in care.

Several reviews discuss effectiveness of organizational interventions that appear specific to less-integrated health systems than the VA. Although these interventions generally garner large effects, there may be only small benefits to implementing these changes into VA health care practice, where the organizational changes are already in place. For example, clinical reminders for both providers and patients had substantial effects for improving uptake of a broad array of preventive services; however, there may be only marginal benefit to VA testing and adoption of these strategies since the VA already extensively uses reminders. Additionally, a variety of interventions tested in settings not limited to the VA rely largely on exploiting the gains from providing access to care for the uninsured. Although financial access to care is not as relevant to VA patient populations, further expansion of access to Veterans residing in areas lacking necessary providers via telehealth practice adoption and availability of community based outreach may have the capacity to reduce race/ethnic disparities in the VA health care system.

DISCUSSION

STATE OF INTERVENTION RESEARCH

The original intent of this review was to take stock of evidence provided by VA intervention studies designed to reduce race/ethnic disparities among minority Veteran populations. However, very few published interventions in VA settings were found in our systematic searches. As a result, we examined intervention studies not limited to VA populations because many of the interventions studied – outside of those focused on organizational change in non-integrated health systems – could be potentially informative to VA settings. Because of the number of studies and the adequacy of existing systematic reviews, we conducted a review of systematic reviews rather than of original studies. The review of reviews also allowed us to discern lessons through a qualitative "meta-synthesis" of the syntheses offered in the existing reviews. In general, these reviews from disparate clinical and cross-clinical areas find that a good case can be made for interventions based on case manager-led care coordination efforts, culturally tailored patient education, and community health workers. However, most studies included only single-race, minority populations. Very few interventions tested for reductions in disparities between minority and white adults. Thus, much of the evidence in the reviews provided only indirect evidence of the potential for interventions to reduce disparities. Fewer interventions still have been tested with Veteran populations.

Our review provided the opportunity to categorize existing disparities intervention research into a framework that can be used to guide future research. This framework builds on a taxonomic system widely used to sort disparities research into three generational categories.[45, 46] First generation research is the term coined for work that identifies race/ethnic disparities in health or health care. In logical sequence, second generation research then attempts to explain and elucidate reasons for these disparities, and third generation work describes efforts to deploy interventions to reduce and eliminate observed disparities. Increased attention to third generation research is seen as a necessary next step in order to continue to make advances in reducing disparities in health and health care. However, little effort has been paid to further categorizing third generation research.

We categorize existing disparities research in order to highlight gaps in the literature and provide a framework for describing future interventions. Based on our review, we categorized disparities intervention research studies according to the populations included. Most studies included ***single-race*** or minority-only populations, examining the effect of interventions within a group known to receive lower quality care or have poorer outcomes than the majority white population. Effectiveness documented in such studies provides only indirect evidence that the studied intervention will reduce disparities. Fewer studies were ***comparative*** in nature, including both minority and majority populations, and comparing measures in both groups before and after the intervention. Such studies provide direct evidence of an intervention's capacity to reduce disparities. However, studies including minority and majority groups did not always report data stratified by race/ethnicity.

We also categorized interventions, as "generic" or "tailored". The bulk of included studies described ***generic*** interventions, ones that are applied without consideration of group specific

needs or preferences. Many of these interventions involved quality improvement efforts, or care standardization, testing the premise that deficits in care for minority groups might be reduced if care was applied similarly for everyone. In contrast, ***tailored*** interventions describe efforts to address barriers specific to a minority group. Many of these interventions involved specially designed educational materials crafted with specific minority groups in mind (e.g., lessons that address knowledge and health beliefs of minority populations), or community health workers that addressed the special needs of minority patients within their own communities. Community health workers were typically members of those minority communities and therefore understood the context and culture of the population served.

Only studies that examine intervention effectiveness with a minority population (or several) alongside whites can detail the extent of a disparity and the potential for the intervention to reduce it. Ideally, these studies would report differences between minorities and whites before and after intervention implementation. Instead, the majority of third generation literature is populated with studies that either: (1) do not allow determination of the presence of a disparity because of the lack of a white comparison group, or (2) do not provide pre-post intervention measures for both minority and white population groups. In order to determine whether interventions are effective in *reducing* disparities in outcomes or care, it is necessary to examine both minority and white populations using a difference-in-difference approach to evaluating intervention effectiveness. However, the methodological challenges (e.g., sample size, ability to receive funding, cost) inherent in designing, testing and implementing interventions to reduce disparities raise questions of feasibility. It is possible that partnering with large projects to investigate multiple research objectives could provide sufficiently large populations of minority Veterans to detect effects in clinically meaningful outcomes.

CONCEPTUAL FRAMEWORK

Though the evidence base is overall a limited one, there are common intervention types across clinical areas that suggest promising results. A key theme was that studies that considered patients in their lived environment were often more promising than those confined to health care systems or interactions. This finding, along with emerging thought about the key drivers of disparities in health and health care, indicates that an intervention framework that considers not only medical care but also incorporates social determinants of health and illness could be helpful in guiding future research. In this view, race/ethnic disparities in health are seen as driven in part by a broad array of social factors – including education, poverty, and community infrastructure – as well as a complex interplay between these social and cultural influences, characteristics of communities and environments where individuals reside, and interactions with providers and health care systems.

Disparities in health and disparities in health care have traditionally been viewed as distinct problems with different solutions. Addressing health disparities has accordingly been viewed largely as a social and public health agenda, beyond the purview of health care delivery systems. Disparities in health care, in contrast, reflect the observation that the quantity and quality of health services received by racial and ethnic minority groups are consistently lower than for the majority white population. Initiatives to address health care disparities typically focus on ensuring equity in health care delivery, which is viewed as a responsibility of health systems.

The role of health systems in addressing social determinants has been limited, with difficulties in dealing with factors that traditionally lie outside of physician purview often cited as a main obstacle.

However, reducing disparities in the care and outcomes of minority Veterans poses special challenges that will require taking down the partition between medical care and public health, and between health systems and communities. Minority Americans bear a disproportionate burden of morbidity and mortality attributable to chronic illnesses, such as diabetes, hypertension and heart disease.[47-49] Despite the fact that the VA provides an integrated health care system with universal access for Veterans, race/ethnic disparities in care and outcomes have been extensively documented in VA settings.[50] Reducing disparities in health care and outcomes will require not only improving equity *within* the health care system, but extending beyond the system and into the communities where patients live and work. VA health care, in other words, may need to incorporate an understanding of the social determinants of health and extend beyond the health care center into patient communities.[51-53]

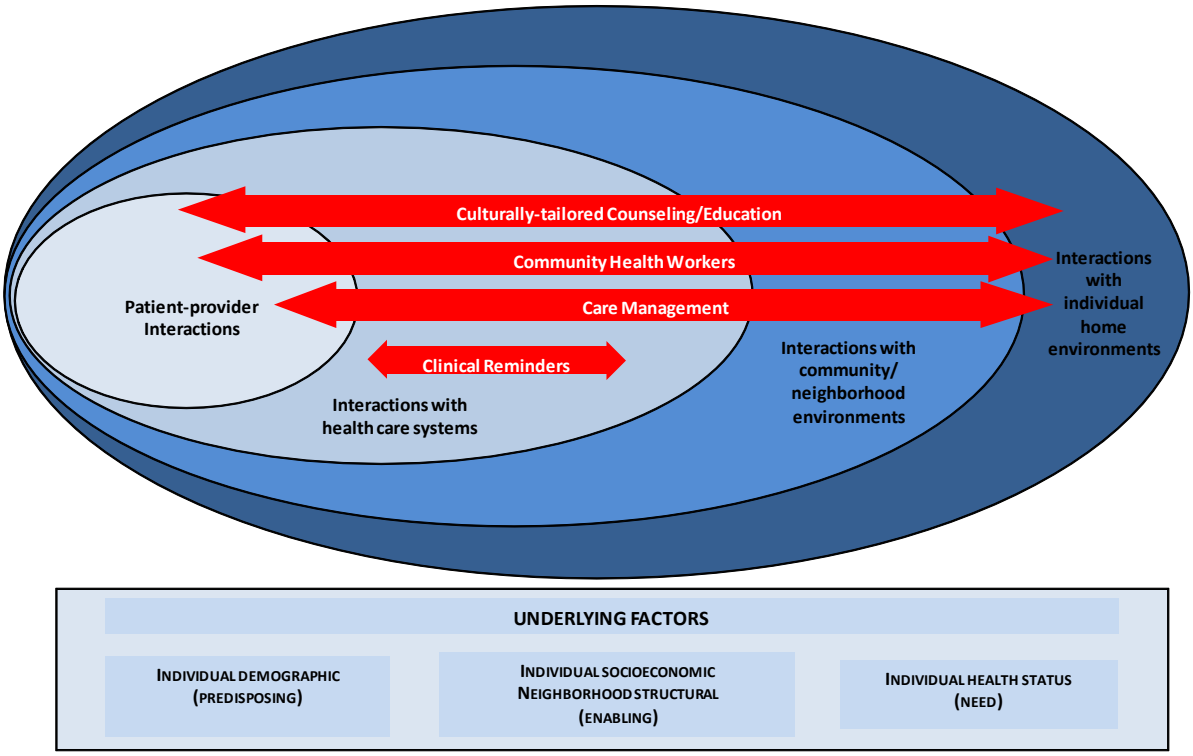
There are efforts underway that attempt to bridge social factors with care delivery. Community health worker interventions represent an effort to bridge communities and health care systems. The VA implementation of a network of community based outpatient clinics represents an effort to connect care access for Veterans in less-populated areas. It is important to consider not only disparities that may arise from clinician biases and organizational deficiencies in cultural competence, but also to incorporate an understanding of patient circumstances in their lived environment. Accounting for what transpires for Veterans as they move from clinician offices through their communities and into their homes may expand the possibilities for reducing and eliminating disparities in care and outcomes.

Figure 2 details our conceptual mapping of areas bearing influence on health outcomes for individuals, which span from the patient-provider interaction to the environments where individuals live and work. In addition, figure 2 describe our meta-findings by mapping interventions identified in this review that bridge areas where disparities in health care and outcomes arise. By considering the entire spectrum, we are able to identify potential for intervention strategies to expand the reach of health systems. While specific interventions tackling disparities arising from particular nodes are associated with limited or equivocal evidence (i.e., clinical reminders), more effective interventions reach beyond one limited area to address multiple components simultaneously (i.e., case management, community health workers, tailored health education). Conceptually, these interventions are more successful at addressing disparities that emerge and operate at different levels. This conceptual diagram also demonstrates the importance of incorporating social factors into the discussion of addressing disparities in health outcomes. In the future, studies designed to address race/ethnic disparities in health should be explicit about where interventions fall within these conceptual ellipses. Based on our review, interventions that span across multiple ellipses may prove to be more effective than more limited interventions.

The strength of interventions lies in the connectedness of intervention programs to the individuals they are meant to reach, as well as the consideration of underlying patient health needs and socioeconomic means. The diagram acknowledges that the effectiveness of

interventions that span across providers, health care systems, neighborhood environments and individual residences are at least partly dependent on patient demographics (e.g., age, gender, literacy), individual socioeconomic means and neighborhood structural qualities (e.g., safe and abundant places to exercise) and health needs (e.g. severe chronic conditions). Based on this review, interventions that include comprehensive care management efforts, evidence-based health education programs, and consistent, well-trained community health workers show potential for reducing disparities in health and health care for minority Veterans.

Figure 2. Conceptual Model—Reach of Interventions



FUTURE RESEARCH AND IMPLICATIONS FOR VA HEALTH CARE SETTINGS

There are several key steps that may aid in the development, testing, and implementation of disparities interventions that could help fill some of the many identified evidence gaps. First and foremost, continuing the VA policy to consistently collect race and ethnicity information for all Veterans is to be encouraged. The ongoing concerted effort to populate race/ethnicity in the VA data records is a critical step to chronicling progress in reducing disparities for minority Veterans.

Capacity assessment also forms an important precondition with regard to intervention implementation in the VA. Two active war theaters imply changes in the Veteran population that will result in near-term burdens on the VA health care system. Efforts to improve knowledge and expertise of providers (e.g., through cultural competence training) will increase awareness of disparities in care and outcomes among minority Veterans.

In addition, there are practical and operational considerations to implementing promising interventions. For example, the use of community health workers was frequently identified as a strategy that holds promise for reaching minority populations. However there is substantial heterogeneity in the composition, training, monitoring, frequency of contact and setting for peer health workers. Identifying optimal characteristics (e.g., training protocols, forms, software) for these interventions is necessary for effective implementation. Documentation and implementation details (including unanticipated challenges and solutions) should be encouraged.

A recent study of VA health care trends found that, although gaps in process measures between black and white Veterans in the VA health care system narrowed after the implementation of quality improvement efforts, significant differences in clinical outcomes have persisted, most notably in heart disease, diabetes and hypertension.[54] Most studies included in our review focused on process of care outcomes and few examine the effects on distal health outcomes. Future studies should sustain longer follow-up periods and include enough patients to examine distal health outcomes.

The vast majority of reviewed interventions also relied on results from small-scale study settings with limited geographic scope. This raises questions of generalizability of results, and VA capacity for scaling these demonstration projects to larger and more geographically representative Veteran populations. Although it is difficult – and risky – to argue for scaling up promising pilot studies of small-scale interventions, there is potential for partnering with already-deployed, large, multicenter programs such as the VA's patient aligned care team (PACT) demonstration projects. In this way, multiple initiatives that require access to a large pool of Veterans can be addressed with a single research investment.

In sum, in order to translate promising directions posed in this review into future research and implementation efforts in the VA, it is necessary to consider the following issues:

- Interventions need to be described in more detail in order to allow for determination of effective components of interventions. For example, in interventions involving community health workers and care managers, there was poor specification of the training of those personnel.
- Integrate the use of community health workers into VA settings. This could involve Veteran peer advisors coming from communities where Veterans reside.
- Examine the potential for ongoing, large VA demonstration projects in care coordination/care management to improve the health of minority Veterans and reduce disparities.
- Enhance the capacity to tailor patient educational materials to address the specific needs of minority Veterans.
- Consider funding studies explicitly designed to measure pre-post changes in disparities between minority and white Veterans.
- Encourage the inclusion of less well studied minority Veteran groups (i.e., Asian/Pacific Islander and American Indian) in the design and implementation of disparities studies.

There are also opportunities for studies conducted in single VAMCs – such as the lessons offered by the five included primary VA research studies – to provide important discussion of how to best reduce disparities for minority Veterans. Future third generation research specific to VAMCs

should be encouraged and disseminated in order for VA researchers and implementers to benefit from a robust evidence base. From a practical standpoint, there is room for "disparities teams" at individual VAMCs to learn from collective knowledge gained across various VA sites. Sharing lessons and promising strategies for reducing disparities from ongoing research projects through periodic communication between disparities interest groups may serve to quicken dissemination of actionable results to VA equity stakeholders.

Given the low yield of VA intervention studies identified in our search of published literature, we examined the abstracts of recently funded HSR&D studies to determine whether intervention studies for racial/ethnic disparities are in progress. We reviewed 89 titles and abstracts of projects in the HSR&D Equity Portfolio and found four projects containing race-specific interventions: Improving Dental Decision Making for Root Canal Therapy (Kressin N), Tailoring Coping Skills Training for African Americans with Osteoarthritis (Allen K), Knee Replacement Disparity: A Randomized, Controlled Intervention (Ibrahim S), Proactive Tobacco Treatment for Diverse Veteran Smokers (Fu S). There were three career development awardees with potentially relevant project titles, although the details of study design are not currently available: Understanding & Reducing Racial Disparities in Renal Transplantation (Myaskovsky L), Understanding & Ameliorating Racial/Ethnic Disparities in Healthcare (Burgess D), Identifying Mechanisms Linking Perceived Discrimination & Health (Hausmann, L).

Few disparities interventions have been implemented in the VA, and although a few race-specific intervention studies are underway, much more work is needed in this area. The barriers to implementing disparities intervention research in VA care settings are not entirely clear. Future steps emanating from this review will include conducting a survey and interviews of key VA informants to identify barriers to dissemination of interventions, in an effort to provide a better understanding of the obstructions in the VA disparities research pipeline.

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