8-2021

USING POPULATION HEALTH MANAGEMENT TO REDUCE HEART DISEASES AND HEALTH DISPARITIES AMONG AFRICAN AMERICANS: A NARRATIVE REVIEW

Adolfo Gonzalez

USING POPULATION HEALTH MANAGEMENT TO REDUCE HEART

DISEASES AND HEALTH DISPARITIES AMONG AFRICAN AMERICANS: A

NARRATIVE REVIEW

_____

A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

_____

In Partial Fulfillment

of the Requirements for the Degree

Master of Public Health

_____

by

Adolfo G. Gonzalez

August 2021

USING POPULATION HEALTH MANAGEMENT TO REDUCE HEART

DISEASES AND HEALTH DISPARITIES AMONG AFRICAN AMERICANS: A

NARRATIVE REVIEW

_____

A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

_____

by

Adolfo G. Gonzalez

August 2021

Approved by:

Salome Kapella Mshigeni, Ph.D,. Committee Chair,

Health Sciences and Human Ecology

Neal Malik, DrPH,. Committee Member, Health Science and Human Ecology

Evangel Sarwar, PhD,. Committee Member, Health Science and Human Ecology

ABSTRACT

Background The integration of Population Health Management (PHM) within the U.S. health care system may effectively decrease heart disease and health disparities among African American adults. Population Health Management strategies look at whether the health care system is meeting the needs of health care access, medical coverage, quality of care, and to reducing health disparities within specific population. Population Health Management strategies could be used to mitigate and reduce health disparities.

Objective The purpose of this study is to discuss the potential impacts of Population Health Management within our health care system and how its influence can reduce heart diseases among African American adults.

Study Design A narrative review was conducted integrating qualitative and quantitative research examining Population Health Management strategies and its relation to heart disease incidents, among African Americans adults.

Results The initial search identified 24 studies that met the criteria, 4 studies were duplicated and used for reference purpose only, 8 studies were included in the qualitative analysis, and 12 studies were included in the quantitative analysis. A total of 70,811 subjects were identified with males representing 55.68% and females 44.31%. Results indicated that PHM may reduce heart disease incidence and health disparities among African American adults. Additionally, PHM may influence Social Determinants of Health and reduce Health Disparities

by improving health care access and delivering quality of care among African

American adults.

Conclusions From a public health perspective, the inclusion of PHM strategies

may improve the health of African American adults and others minority groups.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Social Determinants of Health	SDOH
World Health Organization	WHO
Centers for Disease Control and Prevention	CDC
Population Health Management	PHM
American Heart Association	AHA
Hypertension	HTN
Coronary Heart Disease	CHD
U.S. Department of Health and Human Services	DHHS
Low Density Lipoprotein	LDL
Veterans Health Administration	VA
Cardiovascular Diseases	CVD

CHAPTER ONE

INTRODUCTION

Problem Statement

Health equity is an essential principle to build a health care system that

allows patients to obtain quality medical care when needed. Health equity

removes barriers to health care access and provides health care to all individuals

regardless of their socio-economic, race/ethnicity, or educational status

(Braveman, 2014). Health care disparities among minority groups in the United

States (U.S.) continue to be a challenge despite of the awareness, policies, and

legislation adopted during the last decade (Braithwaite, 2019). Health care

disparities are defined as the unfairness and inconsistencies between groups

with regards to health care coverage, access to care, and the quality of care

received (Wasserman et. al, 2019). The presence of these factors along with

social determinants of health are the main core of health disparities in the U.S.

Generally, social determinants of health refer to certain conditions such as

access to reasonably healthy food, potable water, safety housing, access to

health care, and supportive socioeconomic system. According to Barnett (2005),

social determinants of health refer to social, economic, and political resources

and structures that influences health outcomes One of two primary goals

of Healthy People 2010 was to eliminate health disparities among different

segments of the population and create social and physical environment that

1

promote good health for all (Koh, Piotrowski, Kumanyika, 2011). A similar goal

with the purpose of achieving health equity and eliminate health disparities was

proposed by the Health and Human Services Secretary's Advisory Committee

(SAC) for Healthy People 2020.

Healthy People (2020) defined health disparity as a type of health

difference that is intricately linked with social economic and/or environmental

disadvantages that limit individuals to achieved health equity. In contrast,

according to Kindig and Stoddar (2003) Population Health Management

recognizes systematic patterns of occurrences of chronic diseases and uses the

results to develop and implement health policies that to improve the health and

well-being of underserved populations.

The intent of Population Health Management is to collect information on

health occurrences within specific geographical locations and community groups

at a specific time with the purpose to identify gaps in the distribution of medical

care. In turn, healthcare systems may use this information it to implement

specific medical services, health promotion, health education, and chronic

diseases management and prevention, and more specific heart disease

prevention programs to lessen health disparities among African American adults.

Additionally, Population Health Management can be useful to identify the most

relevant Social Determinants of Health among African American adults.

According to the Centers for Disease Control and Prevention (CDC)

population health encompasses an interdisciplinary approach that allows health

departments to connect practice to policy and generate changes in health care access. Health care disparities refer to the inequitable between groups of people in terms of health coverage, health care access, and the quality of care received (Wasserman et. al, 2019). Population Health Management may help us to understand how health care disparities happen within the delivery of care in the health care system and might be the greatest contributions to close the gaps of health disparities and reduce heart diseases among African American adults.

Hartley, Kindig, and Stoddar (2003) proposed that population health is concerned with both defining measurements of health outcomes and the patterns' determinants. Determinants include medical care, public health intervention, genetics, along with social (income, education, employment) and physical environmental components (urban designed, clean air, water).

Social Determinants of Health (SDOH) are the non-medical factors that influences health outcomes. These are the conditions in which people are born, work, grow, live, and age, and the conditions that shape the conditions of daily life (World Health Organization [WHO] 2021). Hence, SDOH have an important impact on health inequities. According to WHO (2021), income and social protection, education, unemployment and job insecurity, food insecurity, working conditions, housing, early childhood development, social inclusion and non-discrimination, structural conflict, and access to affordable quality of health services are examples of SDOH that influence health equity in a positive or negative way.

This study will examine the potential use of Population Health Management strategies, and how it they may impact one's health outcomes with the goal of reducing heart diseases and health disparities among African American adults.

Purpose of Study

The focus of this narrative review is to explore and understand how Population Health Management Strategies can reduce heart disease and health disparities among African Americans adults within the context of SDOH factors. Racial and ethnic disparities in the U.S. healthcare system must involve the development of strategic plans to end health disparities among minority groups. Population Health Management methodology can be useful eliminating the gaps of social disparities and improving the health of African American adults and reducing heart diseases.

Research Questions

The following research questions are examined:

1) Can Population Health Management strategies reduce heart diseases and health disparities among African American Adults? *Is there an association between the utilization of Population Health Management strategies and a decrease of heart diseases and health disparities among African American Adults?*

2) Can Population Health Management strategies influence SDOH and reduce health disparities by delivering better health care access among African American Adults?

Is there a relationship between Population Health Management strategies and SDOH in reducing health disparities that hinders access to care among African American Adults?

Significance to Public Health

The CDC states that public health is the science of protecting and improving the health of people and their communities (CDC PH 101 Series, n.d.). Public Health efforts focus on prevention by recognizing that the health of the people is an interaction between human behavior and environmental factors. Health intervention is not just about the individual and the health services but also the geographical location and the study of the population. This study recommends the application of Population Health Management strategies as a platform of action in addressing SDOH, health disparities, and heart diseases among African American adults. *This suggestion fulfills an MPH competency that calls for a focus on the social determinants of health and how they contribute to population health and health inequalities.* Schmittdiel et. al (2017) reported that population-based management approaches to diabetes care through information technology significantly impacts outcomes of diabetes care. The authors concluded that information technology and data integration could efficiently help

5

patients to control and avoid diabetes complications. Population Health

Management strategies may have possibility to improve and reduce health

disparities (Braithwaite, 2019). However, to accomplish this possibility a great

awareness within the context of the determinants of health and disparities must

be included.

With regards to public health, the study of Population Health Management

and health inequalities must be addressed within the context of SDOH, in order

to effectively reduce health disparities among minority groups in the U.S. Turnock

(2001) stated that public health data must be precise, applicable, and appropriate

to inform activities taken by public health. Management has been defined as the

process of compiling and the use of resources in a goal-focused manner to

achieve responsibilities in an organizational setting (Black et al., 2013).

From these two concepts it is possible to formulate the following

statements: i) the strategies of the Population Health Management are to collect

data and process information to achieve transformations in the healthcare

system, with the aim to reduce health disparities among minority groups in the

U.S., and ii) potentially reduce heart diseases among African American Adults.

Public health interventions can be categorized educational and environmental.

Educational interventions intend to adjust individual behaviors, whereas

environmental interventions pursue to adjust the social and environmental

circumstances that strengthen individual behaviors that could be beneficial or

detrimental to the individuals' health (National Research Council, 2004).

Public health interventions assess three principles: the capability for harm (including stigmatization, missing opportunity, costs, and threats to autonomy), justice, and social solidarity (Mastroianni, Khan, and Kass, 2019). Population Health Management strategies might be the method to accomplish the three principles of public health to reduce health disparities by delivering better access and quality of care to African American adults.

The American Heart Association [AHA] (2016), reported that the prevalence of hypertension (HTN) in African Americans in the U.S. is one of the highest in the world. More than 40 percent of Non-Hispanics African Americans males and females have HTN (AHA, 2016). At present African Americans represents 13.3% of the U.S. population and are the second largest racial/ethnical minority behind Hispanics/Latinos (Carnethon et. al., 2017). African Americans experience early onset of cardiovascular diseases (including HTN, peripheral vascular disease, and coronary heart disease) and co-morbidities such as diabetes, obesity, and hypercholesterolemia (Carnethon et. al., 2017). Hypertension is known as "the silent killer" because there are not obvious symptoms indicating that something is wrong, and people who have HTN often do not know that they have it (American Heart Association, 2016). Hypertension develops slowly throughout lifetime without any symptoms. Although, HTN cannot be cured, it can be managed successfully through lifestyle changes and pharmacotherapy when necessary. If HTN is left untreated the

damage to the circulatory system may result in a heart attack, stroke, and kidney failure (American Heart Association, 2015).

Using Population Health Management to reduce heart disease among African Americans adults must comply with the core principles of public health: population health assessment, surveillance and control of risks and threats, disease and injury prevention, health promotion and social participation, health protection, policy, planning, regulations and control, and emergency preparedness (Valdes, PAHO, 2014). Vital statistics applied to the core principles of public health generates information about the health status and health risks factors of a particular population or ethnical group. The results obtained from the analysis allows the planning, design, and implementation of program to reduce health disparities.

CHAPTER TWO

LITERATURE REVIEW

Below is a presentation of the Review of Literature regarding the use of Population Health Management to reduce heart disease and health disparities among African Americans in the U.S.

1. Heart Health among African Americans Adults

Heart diseases among African Americans is the primary cause of disparities in the life expectancy between African Americans and Whites (AHA, 2015). Despite advances in medical technology and the identification of risk factors for heart disease and general use of evidence-based strategies these disparities remain persistent in the U.S. (Carnethon et. al., 2017). Cardiovascular disease mortality rates are higher among African Americans than Whites (Rosamond et al., 2012).

2. Cardiovascular Risk Factors

Cardiovascular disease is a general term that includes coronary heart disease (CHD), sudden cardiac death/sudden cardiac arrest, heart failure, stroke/transient ischemic attack, and peripheral arterial disease (AHA, 2015). The AHA annually updates, publishes, and summarizes the burden of these disease among African American compared to non-Hispanic Whites (Carnethon et. al., 2017). The AHA has indicated that health care access must improve to

9

mitigate health disparities with comprehensive screening, enhanced specificity of

diagnoses, and tailored disease management. Globally, CVD remains the

leading cause of death, and in 2015, there were nearly 423 million cases and an

estimated 18 million deaths attributed to CVD. In the U.S., the most recent

national vital statistics show 774,165 deaths from CVD, nearly 29% of all deaths

in 2015 (Roth et al., 2017).

Optimal health depends on multiple factors such as socioeconomic status,

higher education, health coverage, and healthcare access. A lack of one or more

of these factors may increase cardiovascular disease risk (Guy-Walls and Long,

2017).

3. Declines in Heart Disease Mortality in the U.S. South

Since 1950, heart disease has remained the leading cause of death in the

U.S. (Heron and Anderson 2016) despite substantial decline in its incidence over

the last 50 years. The reduction of heart disease is attributed to public health

interventions and improvement in clinical treatment (Cooper et al., 2000). A study

by Kramer et al. (2017) aimed to characterize the role of county-specific legacies

of slavery in patterning temporal (1968-2014) and geographic declines in heart

disease mortality.

The authors found that African Americans living in counties with history of

the highest concentration of slavery, experienced 17% slower declines in heart

disease mortality. The authors concluded that at the county level, heart disease

mortality reduction among African Americans is associated with place-based historical legacy of slavery. Social, economic, and political structures, which have deep roots in the institution and legacy of slavery may contribute to racial differences influencing in heart health. In the end, the study recommended that effective and equitable public health prevention efforts should consider the historical context of place and the social and economic conditions (Kramer et al., 2017).

According to Roth et al. (2017) the national age-adjusted mortality rates continuously has declined since 1975 concerning heart disease and stroke. The long-term tendencies declined to 61% for heart disease and 70% for stroke in the U.S. Nevertheless, among African Americans, heart disease rate remains 20% higher and for stroke 40% higher compared to Whites. The author asserted that among all race/ethnic groups in the U.S. presently, African American male and females have the greatest age-adjusted mortality rate for heart disease and stroke.

4. Health Education and Heart Disease among African Americans Adults

Socio-economic status, such as educational achievement are one SDOH and may influence the prevalence of heart disease among minority groups given that socio-economic status is unequal across racial and ethnic groups in the U.S. (Mirowsky and Ross, 2015). Higher education is often a predictor of improve health status, however, highly educated African American individuals and

Hispanics reported high levels of environmental risks factors such as stress, racial discrimination, and exposure to smoke (active and passive). These risk factors increase risk of developing HTN, heart coronary disease, myocardial infarction, and stroke (Assari, 2019).

Assari et al. (2020) used a representative sample from a national data survey to exploring racial/ethnic differences and heart disease link to educational success among American adults. The authors examined data from the American Adults Survey of 2013 and observed that individuals with higher educational success had lower probabilities of developing heart disease. Nevertheless, the authors reported that this significant relation of racial/ethnicity, higher education, and lower probability of developing heart disease was less among Hispanic and African Americans compared to Whites.

Ultimately, highest prevalence of heart diseases in highly educated African Americans and Hispanics was disproportionate to their socio-economic status. The investigators proposed that factual resolutions to racial and health disparities in heart ailment cannot be based only on higher socio-economic status of African Americans and Hispanics, but they must be empowered to utilize their available socio-economic status assets for better health outcomes (Assari et al., 2020).

The prevalence of health and health disparities has become more relevant due to research studies showing that minority groups (African Americans, Hispanics, Native Americans, and Pacific Islanders) in the U.S. are disproportionally affected with poorer health outcomes compared to Whites

12

(Thomas, 2014). SDOH also significantly contributes to poorer health outcomes among minorities groups. Thomas (2014) specified that educational level, socioeconomic status, and health status are all directly linked as key components of our social structure; and perhaps the most influential determinants of health over lifetime is educational achievement.

These SDOH factors have a negative impact in the health, the quality of life and life expectancy particularly among African Americans and Hispanic individuals. The health care system shares responsibility to identify SDOH, educate the healthcare providers, communities, and policy makers on how to improve the health of all Americans. According to Boone and Molter (2010), lower levels of education, overall socioeconomic status, inadequate and unsafe housing, and living in a proximity to environmental hazards contributes to poor health outcomes among minority groups. According to the Association of American Medical Colleges (2012) there is a misrepresentation between minority groups in the health professions, biomedical, and behavioral sciences. Minorities account for only 7.4% of medical school faculty, 8.6% of dental school faculty, and less than 10% of nursing school faculty and African Americans constitute less than 1.0% of the school faculty. These low numbers contribute to lack of role models in their communities and alternatively lack of motivation to adopt positive behavioral changes among the African American population.

The U.S Department of Health and Human Services (DHHS) (2010) documented that minority groups are less likely than Whites to participate in

clinical research. In turn, study results and conclusions may be not applicable to minorities or marginalized populations. Collecting and processing accurate data, analyzing, and applying the methodology of population health management could help to close the gaps of health disparities among minority groups in the U.S. (Thomas, 2014).

5. Population Health Management Interventions on Disparities

Population health refers to a model of health or a field of study of health determinants. PHM encompasses many terms such as outcomes, disparities, determinants, and risk factors. A thorough understandings of population health is required policymakers to improve the public's health and reduce disparities (Kindig and Stoddart, 2003). PHM strategies have been recently used by healthcare systems to improve the quality of patient care and disease management. These same strategies or interventions can be used among African Americans adults to reduce health disparities in this population (James et al., 2018).

James (2018) conducted a study with the aim to determine whether using PHM program coordinators decreased racial/ethnic disparities in LDL-cholesterol levels and improve blood pressure control. From a network of 18 primary care practices, a total of 12,550 patients were diagnosed with abnormal LDL-cholesterol levels and 41,183 were diagnosed with hypertension. The study included non-Hispanic White, non-Hispanic Black, and Hispanic participants.

14

The implementation of a PHM program that included information technology to identify and connect with patients who were not meeting care goals, as well as involving the use of Population Health Coordinators, showed improvements in LDL-cholesterol and hypertension management. However, PHM was not sufficient to reduce disparities among those from different racial backgrounds. The authors recommended that future PHM interventions should explicitly focus on decreasing disparities among people from different racial background (James et al, 2018).

Ashburner et al., (2017) conducted a quasi-experimental study implementing a health information technology PHM program for chronic disease management in an academic hospital. The study compared quality of care outcome measures among practices assigned a central Population Health Coordinator and those did not assign a Population Health Coordinator. All practices used electronic health records and utilized PHM strategies to identify patients that needed preventative cancer, diabetic, cardiovascular, and hypertensive screening. Results showed that a PHM program using IT electronic health records improved process and outcome measures for diabetic, cardiovascular, and hypertensive patients over short-term.

Government healthcare systems such as the Veterans Health Administration (VA), have made efforts to improve access and quality of care, however, these initiatives do not effectively reduce racial or ethnic disparities. Trivedi et al., (2011) observed a disconnection on performance-process

measures and clinical outcomes of blood pressure, blood glucose, and cholesterol between African American veterans versus White veterans. The study reported a gap in clinical outcomes as high as 9% between African Americans veterans and White veterans. The VA serves more than 9 million veterans enrolled annually, and more than 20 percent of VA users are members of racial and ethnic minorities (U.S Department of Veterans Affairs, 2021). Cardiovascular disease and diabetes are the major contributors to racial/ethnic disparities in life expectancy. Therefore, these findings emphasize the urgency to focus on efforts to improve and reduce health disparities among African Americans in the Veterans Affairs Healthcare System.

6. Status of Disparities in CVD Health in the U.S.

SDOH are factors associated with unhealthy behaviors and poor health outcomes. Braithwaite (2018) concluded that health-related research is an underappreciated determinant of health disparities because it generates knowledge that focuses on the fundamental causes of these disparities. For example, those with a higher socio-economic status have access to more resources. For example, approximately 245,000 US deaths in 2000 were attributable to low education, 176,000 to racial segregation, 162,000 to low social support, 133,000 to individual-level poverty, 119,000 to income inequality, and 39,000 to area-level poverty (Galea et al., 2011). Braithwaite concluded that the field of population health has potential to mitigate health disparities (2018).

Nevertheless, this potential may be unrealized without awareness of health research as it relates to health disparities, actionable goals, and an evaluation of bioethical implications.

These steps, in turn, may reduce cardiovascular disease incidence and prevalence among African Americans. Socio-economic status appears to be the most significant cardiovascular disease risk factor in the U.S. (Valero-Elizondo et al., 2017). Researchers have documented that cardiovascular risk factors (physical inactivity, poor healthy diet, high cholesterol, high blood pressure, high level of glucose, and a high body mass index) significantly contributes to higher morbidity, mortality, and financial risk in the U.S population (Folsom et al., 2011). Further, Lloyd-Jones et al. (2010) concluded based on the AHA goal to improve cardiovascular health by 20% by the year 2020, this goal will likely not be met.

Table 1. Characteristics of Studies Identified for Literature Review

Author, date	Population and sample size	Study type	Objective of Study
Ashburner et al (2017)	N=160,123	Quasi-experimental	Implementing health information technology-enable PHM
Assari and Lankarani (2016)	N=1,493	Cross-sectional survey	Link association between education and alcohol consumption on racial differences
Assari (2019)	N=4,773	Multiple linear regression model	To evaluate the association between socioeconomic status and systolic blood pressure on racial and ethnic minorities.
Assari et al, (2020)	National data survey of American adults (2013) N=25, 659	Logistic regression	Explore racial/ethnic variations between education and heart disease among American adults
Folsom et al, (2010)	Data from Atherosclerosis Risk in Community (2010) N= 12,744	Study Cohort	To estimate the prevalence of ideal cardiovascular health and its relationship with incident CVD
James et al (2018)	N=12,555 patients with CVD. N=41,183 patients with HTN	Retrospective difference-in-difference analysis	To determine whether a program that uses PHCs decrease racial/ethnicity disparities in LDL and Blood Pressure control
Kramer et al (2017)	Mortality rate from 1968 to 2014	Age-adjusted race- and county-specific mortality rates from 1968-2014 for all heart diseases were calculated for all Southern U.S. counties.	This study aims to characterize the role of county-specific legacy of slavery in patterning temporal
Rosamond et al (2012)	N=396,000	Continuous retrospective surveillance of hospital discharges	To understanding trends in coronary heart disease (CHD) mortality rates.

Table 1 shows the results of each of the eight qualitative studies

CHAPTER THREE

METHODS

Study Design

A narrative review was conducted using qualitative and quantitative data to assess whether Population Health Management influences health disparities and reduces cardiovascular disease risk and incidence among African American adults.

Data Source and Review Process

A computerized search for primary research articles published in peer-reviewed journals within social and medical science databases including SAGE, MEDLINE, AHA Journals, JAMA CINAHL (Cumulative Index to Nursing and Allied Health Literature), OXFORD ACADEMIC, HEALTH AFFAIRS, AJPH, PubMed, GOOGLE SCHOLAR, NIH, and CDC, was conducted. A PRISMA tabulation tool was used to identify studies performed among African American Adults and addressing PHM, Health Disparities, and CVD published over the last ten years. Studies were restricted to those performed among the U.S. population published in English and included African American adults with diagnosed with heart disease.

The following search terms were used to conduct the research: "population health and management," "health disparities and social determinants

of health," "management strategies and social disparities," "impact of health population management and/or health disparities," health management and minorities," "African Americans," "minorities and social determinants of health," "cardiovascular diseases," and "heart disease."

Data Analysis

The study consisted of both qualitative and quantitative data collection from 24 eligible research articles. A total of eight qualitative studies and 12 quantitative studies were included in the review. Four duplicated studies were excluded from the data analysis.

Ethics

The study was reviewed and approved by the California State University – San Bernardino Institutional Review Board (Project number IRB-FY2021-283).

Identification

# of records identified through database searching. (n= 24)

# of additional records identified through other sources. (n= 0)

# of records after duplicates removed. (n= 4)

Screening

# of records screened (n= 24)

# of records excluded. (n= 0)

Eligibility

# of full-text articles assessed for eligibility. (n= 24)

# of full-text articles exclude, with reasons (n= 0)

# of studies included in qualitative synthesis. (n= 8)

Included

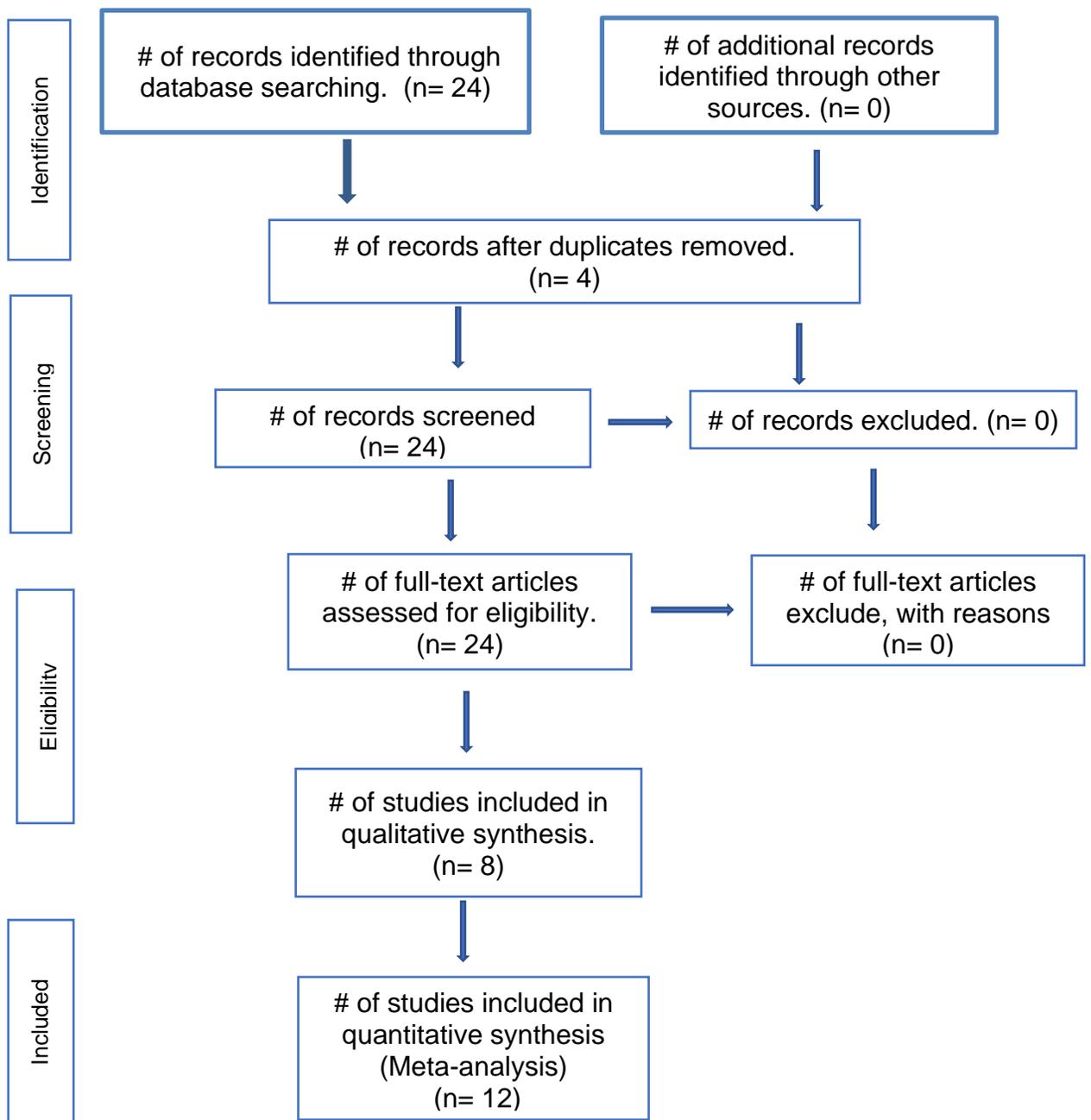# of studies included in quantitative synthesis (Meta-analysis) (n= 12)

Figure 1. Systematic Review Flow Diagram using PRISMA

PRISMA 2009 Flow Diagram (From Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. J Clin Epidemiol 2009; 62:1006-12, For more information, visit www.prisma-statement.org)

21

CHAPTER FOUR

RESULTS

Health disparities and social factors are significant contributors to the soaring incidence of mortality due to heart diseases among African American adults in the U.S. Medical literature has shown that African American adults have the highest occurrence of heart disease more than any other racial group in the U.S. (AHA, 2015). It is important for public health professionals to consider the SDOH in the process of reducing inequalities in the U.S. healthcare system especially among minority groups.

Cardiovascular disease and risks factors such as physical inactivity, poor diet, high cholesterol, high blood pressure, high blood glucose levels, and a higher body mass index substantially contribute to higher morbidity and mortality rates in the U.S. population (Folsom et al., 2011). These risk factors are more prevalent among African American males and females than their White counterparts. Additionally, heart disease mortality rate is greater among African Americans than Whites. However, incorporating Population Health Management strategies can be invaluable to mitigate health disparities, improve accessibility to health care access, quality of care, and decrease morbidity and mortality rate due to heart disease among African American adults.

Although the national age-adjusted mortality rates for heart disease and stroke have been declining since 1975, the age-adjusted mortality rates for heart disease and stroke remain highest among African American adults (Van Dyke, et

al., 2018). Socio-economic status is inequitable among all minority groups in the

U.S. and education attainment plays an influential role in preventing and

managing chronic diseases among all individuals (Valero-Elizondo et al., 2017).

However, highly educated African Americans and Hispanics may be exposed to

more stress and consequently may increase the risk of developing heart disease

(Assari et al., 2020).

Population Health Management (PHM) strategies have been instrumental

at reducing health care disparities by improving health care screening,

management of chronic disease, and reducing the gaps in the health care

system (Ashburner et al., 2017). These strategies have improved health care

access and quality of care in the U.S., and potentially will decrease racial/ethnic

disparities of heart diseases among African Americans and other minority

groups. There appears to be a clear alliance between the utilization of PHM

strategies, reducing healthcare disparities, and improving the outcome of chronic

conditions (James et al., 2018). However, long-term follow-up studies are needed

to reassess these outcomes. Soon, modern medical technology such as PHM

may be the answer to close the gap of healthcare disparities in the U.S.

African Americans and other ethnic minority groups in the U.S. face low

socio-economic disadvantages and most likely experience significant health

disparities (Braveman et al., 2011). PHM strategies have the potential to improve

the quality of care and decrease heart disease among African American adults.

The strategies of PHM proactively can identify individuals affected by heart

disease through data registry of diseases and electronic medical records. Present evidence suggests that PHM strategies have improved quality of care outcomes in diabetes, cholesterol, and hypertension, potentially ameliorate existing race/ethnic disparities in health care.

Socio-economic influences on health in the U.S. primarily focused on poverty and health status, however, SDOH may be relevant to the general population (Braveman, 2011). Indeed, there is a relationship between PHM strategies and SDOH to reduce health disparities and heart disease among African American adults (Schmittdiel et al., 2017)

The complexity of SDOH factors cannot be overturned by short-term interventions or impermanent health care programs. To reduce health disparities, interventions must be considered at all levels including social changes, cultural norms, socioeconomic infrastructure, health coverage, access to care, improve the health of communities with the aim to reduce health disparities among minority groups in the United States.

Research has shown that when PHM strategies are included to improve the access and quality of care; the outcomes of disease management seem to be more efficient, effective, reaching large target population and making substantial contributions to reduce health disparities and inequality of care in the U.S. Having applicable data that involves SDOH factors will allow the development of evidence-base healthcare programs, implement a course of action, and create

policies that will reduce health disparities and CVD diseases among African

American adults.

Table 2. Descriptive Table Stratified Review by Race, Gender, and Education
Level Participants Adults Characteristics > 18 years old

Characteristics	Total n across study reporting (n=70,881)	% of Participants
Ethnicity		
White	68,690	74.40%
Hispanics	5,689	6.20%
African Americans	15,919	17.30%
Other Hispanics	148	0.16%
Asian Americans	1,090	1.18%
Pacific Islander	192	0.20%
Other Ethnicities	0	0.00%
Gender		
Male	39,473	55.68%
Female	31,408	44.31%
Educational Level		
Less than High School	5,580	19.40%
H.S Graduated	16,009	55.90%
College Graduated	6,421	22.40%
Non-College Graduated	607	2.12%

Characteristics of Subjects Researched According to Table 2

Out of the eight qualitative research studies analyzed, a total of 70,881

subjects participated in the studies. Of these, 55.68 % identified as male and

25

44.31% identified as female. A total of 74.4% of study participants identified as White compared to 17.3% African Americans, and 6.20% Hispanic. Based on these distributions, it appears African Americans and Hispanics were underrepresented in these studies. Therefore, it would be worthwhile for future studies to include proportionate numbers of minorities in order to be able to draw stronger conclusions.

Regarding participants' educational level, studies often reported only different levels of education among racial and ethnic groups. However, it would have been worthwhile to further aggregate these data by gender. Additionally, among the 28,617 subjects that reported educational attainment level 6,221 participants completed a college degree which, represents 8.7% of the total research subjects.

Two of the qualitative studies included in this review examined education and identified less education as a risk factor for heart disease among African Americans adults. However, highly educated African Americans and Hispanics may be subjected to life stressors thus increasing the risk for heart diseases due to social, cultural, and structural barriers (Carnethon et al., 2017)

CHAPTER FIVE

DISCUSSION

This review discussed how Population Health Management (PHM) can make a different in our health care system and how its influence can reduce heart diseases among African American adults. A narrative review was conducted incorporating qualitative and quantitative research to assess how PHM strategies may reduce heart disease among African Americans. Ultimately, inclusion of PHM strategies may be effectively used to improve the health of African American adults and other minority groups.

Strengths and Limitations

Strengths

The incorporation of both qualitative and quantitative data in this review allowed for a larger sample size.

Limitations

The studies were conducted over short-term with no specific statistical analyses to assess how on health disparities or SDOH may reduce heart disease among African Americans.

Recommendations for Research and Practice

Research Recommendations

SDOH are an important requisite for effective implementation of PHM

programs oriented to reduce health disparities and heart disease among African

Americans. Publications of longitudinal studies examining both SDOH and PHM

to evaluate health outcomes among minority groups in the United States would

be worthwhile.

Practice Recommendations

To better understand the causes of health disparities and the high

incidence of heart disease among African American adults, public health

professionals should consider the social environments or the SDOH and how this

great inequality in our U.S. healthcare system affects minority groups. The

research has shown that African American adults have the highest occurrence of

heart disease more than any other racial group in the U.S.

Conclusion

Researchers have demonstrated that Population Health Management can

improved the quality of care and decrease morbidity and mortality related to

chronic conditions. Therefore, the field of PHM has a great potential to effectively

reduce health disparities and reduce heart disease among African American

adults.

The intent of this analysis was to answer the questions how PHM

strategies can reduce heart disease and health disparities among African

American adults, and how PHM can influence SDOH to reduce health disparities

and improve the delivery of health care to African Americans. Hence, the results of this literature review provided us suggestions that PHM is a considerable tool that would help public health and healthcare organizations to reduce health disparities, improve quality of care, and the delivery of health care to all Americans.

The application of PHM strategies can help the healthcare system to reduce efforts and inefficiency. Population Health Management strategies efficiently can support public health, medical insurance plans, hospitals, and providers to identify the populations' needs to deliver quality of care, improve healthcare access, improve healthcare coverage, reduce health disparities, and identify SDOH factors that contribute with the high incidence of heart disease among African American adults.

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

May 3, 2021

CSUSB INSTITUTIONAL REVIEW BOARD

Not Human Subjects Research (NHSR) Determination

IRB-FY2021-283

Status: NHSR Determination

Prof. Salome Mshigeni and Mr. Adolfo Gonzalez

CNS - Health Science

California State University, San Bernardino

5500 University Parkway

San Bernardino, California 92407

Dear Prof. Mshigeni and Mr. Gonzalez:

Your application titled "USING POPULATION HEALTH MANAGEMENT TO

REDUCE HEART DISEASES AND HEALTH DISPARITIES AMONG AFRICAN

AMERICANS: A LITERATURE REVIEW" has been reviewed by the Chair of the

Institutional Review Board (IRB) of California State University, San Bernardino

and has determined that your application does not fall under the definition of

human subjects research and, as written, your protocol is No/Not Human

Subjects Research (NHSR).   The IRB NHSR determination means that your

project is not research and/or not research with human subjects as defined by

the Office of Human Research Protections (OHRP) under 45 CFR 46.102 noted

below.

The OHRP defines research as:

A systematic investigation, including research development, testing, and

evaluation, designed to develop or contribute to generalizable knowledge.

- A *systematic investigation* is an activity that is planned in advance and that uses data collection and analysis to answer a question.
- *Generalizable knowledge* is information that expands the knowledge base of a scientific discipline or other scholarly field of study

A *Human subject* means a living individual about whom an investigator (whether

professional or student) conducting research obtains:

(1). Data through intervention or interaction with the individual, or

(2). Identifiable private information.

An Intervention *i*ncludes both physical procedures by which data are

gathered and manipulations of the subject or the subject's environment that are

performed for research purposes. Interaction includes communication or

interpersonal contact between investigator and subject.

Private information includes information about behavior that occurs in a context

in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record). Private information must be individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information) in order for obtaining the information to constitute research involving human subjects.

The CSUSB IRB has not evaluated your proposal for scientific merit. This approval notice does not replace any departmental or additional approvals which may be required.

If you have any questions regarding the IRB decision, please contact Michael Gillespie, the Research Compliance Officer. Mr. Michael Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at mgillesp@csusb.edu. Please include your application approval identification number (listed at the top) in all correspondence.

Best of luck with your research.

Sincerely,

Nicole Dabbs

Nicole Dabbs, Ph.D., IRB Chair

CSUSB Institutional Review Board

ND/

REFERENCES

American Heart Association. Editorial Guidelines. Last Reviewed: Jul 31, 2015.

Retrieved March 31. 2021 from https://www.heart.org/en/health-topics/consumer-healthcare/what-is-cardiovascular-disease/african-americans-and-heart-disease-stroke

Ashburner, J.M., Horn, D.M., O'Keefe, S.M., Zai, A.H., Chang, Y., Wagle, N.W., Atlas, S.J. (2017). Chronic disease outcomes from primary care population health program implementation. *Am J Manage Care. 2017*; In press.

Assari, S. (2019). Socioeconomic determinants of systolic blood pressure; Minorities' diminished returns. *Journal of Health Economics and Development*, 1(1), 1–.

Assari, S., Cobb, S., Saqib, M., & Bazargan, M. (2020). Diminished returns of educational attainment on heart disease among Black Americans. *The Open Cardiovascular Medicine Journal*, *14*, 5–12. https://doi.org/10.2174/1874192402014010005

Assari, S., & Lankarani, M. M. (2016). Education and alcohol consumption among older americans; Black-White differences. *Frontiers in Public Health*, *4*, 67–67. https://doi.org/10.3389/fpubh.2016.00067

Barnett E, Casper. M.A definitions of "social environment." (2001). *Am J Public*

Health. 2001:91:465. Retrieved June 6, 2021, from:

https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2005.061812

Black, S., Hitt, M., Porter, L. (2013). *Management.* (3rd edition). United

Kingdom: Pearson.

B.J. Turnock. (2001). *Public Health—What it is and how it works*, (2nd edition).

Gaithersburg, Md.: Aspen Publishers, 2001.

Boone, M.; Molter, J. (2010). The Role of academic health centers in

addressing the social determinants of health; Report 14; The Blue Ridge

Academic Health Group: Emory University, Atlanta, GA, USA, 2010.

Braithwaite, R. S. (2019). Population health could do far more to mitigate health

disparities. *Population Health Management, 22*(2), 96–98*.* Retrieved April

1, 2021, from https://doi.org/10.1089/pop.2018.0042

Braveman, P. (2014). What is health equity: and how does a life-course

approach take us further toward it? *Matern Child Health J* 18, 366–372

(2014). https://doi.org/10.1007/s10995-013-1226-9

Braveman, Paula, Egerter, Susan, David R. Williams. (2011). The social

determinants of health: coming of age. *Annual Review of Public*

Health 2011 32:1, 381-398

Carnethon MR, Pu J, Howard G, Albert MA, Anderson CAM, Bertoni AG, Mujahid

MS, Palaniappan L, Taylor HA Jr, Willis M, Yancy CW. (2017). American

Heart Association Council on Epidemiology and Prevention; Council on

Cardiovascular Disease in the Young; Council on Cardiovascular and

Stroke Nursing; Council on Clinical Cardiology; Council on Functional

Genomics and Translational Biology; and Stroke Council. Cardiovascular

Health in African Americans: A Scientific Statement From the American

Heart Association. *Circulation. 2017 Nov 21;136(*21): e393-e423.

https://doi: 10.1161/CIR.0000000000000534 Epub 2017 Oct 23. PMID:

29061565.

Center for Disease Control and Prevention (n.d) Population Health Training.

What is Population Health? Retrieved April 1, 2021, from

https://www.cdc.gov/pophealthtraining/whatis.html

Center for Disease Control and Prevention (n.d) Population Health Training. PH

101 Series. Retrieved April 1, 2021, from:

https://www.cdc.gov/training/publichealth101/public-health.html

Center for Disease Control and Prevention (n.d). Public Health in Action. What is

Public Health? CD Foundation. Retrieved March 29, 2021, from:

https://www.cdcfoundation.org/what-public-health

Cooper, J. Cutler, P. Desvigne-Nickens, S.P. Fortmann, L. Friedman, R. Havlik,

T. Thom. Trends and disparities in coronary heart disease, stroke, and

other cardiovascular diseases in the United States: Findings of the

national conference on cardiovascular disease prevention.

Circulation, 102 (25) (2000), pp. 3137-3147, 10.1161/01.CIR.102.25.3137

David Hartley, (2004): Rural Health Disparities, population health, and rural

culture. *American Journal of Public*

Health 94, 1675_1678, https://doi.org/10.2105/AJPH.94.10.1675

Folsom, A.R., Yatsuya, H., Nettleton, J.A., Lutsey, P.L., Cushman, M.,

Rosamond, W.D., (2011). Community prevalence of ideal

cardiovascular health, by the American Heart Association definition, and

relationship with cardiovascular disease incidence. *Journal of the*

American College of Cardiology, Volume 57, Issue 16, 2011*,* Pages 1690

1696, ISSN 0735-1097, https://doi.org/10.1016/j.jacc.2010.11.041.

Galea S, Tracy M, Hoggatt KJ, Dimaggio C, Karpati A. Estimated deaths

attributable to social factors in the United States. *Am J Public Health 2011*;

101:1456–1465*.*

Guy-Walls, P., & Long, J. G. (2017). African Americans and heart disease.

Health & Social Work, 42(4), 247-249. https://doi:10.1093/hsw/hlx033

Healthy People.gov. Social Determinants of Health. Retrieved April 1, 2021, from

https://www.healthypeople.gov/2020/topics-objectives/topic/social-

determinants-health/interventions-resources.

Healthy People 2020. What is a health disparity? Retrieved March 3, 2021, from:

https://www.healthypeople.gov/2020/data-search/health-disparities-data.

Heron. M., R.N. Anderson, (2016). Changes in the leading cause of death: recent

patterns in heart disease and cancer mortality. NCHS Data

Brief, 254 (2016), pp. 1-8. Retrieved April 2, 2021, from

http://www.ncbi.nlm.nih.gov/pubmed/27598767

James, A., Berkowitz, S. A., Ashburner, J. M., Chang, Y., Horn, D. M., O'Keefe,

    S. M., & Atlas, S. J. (2018, January 8). Impact of a population health

    management intervention on disparities in cardiovascular disease control.

    Journal of General Internal Medicine.

    https://link.springer.com/article/10.1007/s11606-017-4227-3#citeas

Joan Wasserman, Richard C. Palmer, Marcia M. Gomez, Rick Berzon, Said A.

    Ibrahim, and John Z. Ayanian, (2019): Advancing Health Services

    Research to Eliminate Health Care Disparities. *American Journal of Public*

    Health 109, S64_S69, https://doi.org/10.2105/AJPH.2018.304922

Kramer, M. R., Nyesha C. Black, Stephen A. Matthews, Sherman A. James.

    (2017). The legacy of slavery and contemporary declines in heart disease

    mortality in the U.S. South, SSM - *Population Health, Volume 3,* 2017,

    Pages 609-617, ISSN 2352-8273,

    https://doi.org/10.1016/j.ssmph.2017.07.004.

Kindig, D., & Stoddart, G. (2003). What is population health? *American journal of*

    public health, *93*(3), 380–383*.* https://doi.org/10.2105/ajph.93.3.380

Koh HK, Piotrowski JJ, Kumanyika S, Fielding JE. Healthy people: a 2020 vision

    for the social determinants approach. *Health Educ Behavior. 2011 Dec;*

    *38(*6):551-7. https://doi: 10.1177/1090198111428646 PMID 22102542

Lewis, Niñon. (n.d.). Populations, Population Health, and the Evolution of

    Population Management: Making Sense of the Terminology in US Health

    Care Today. http://www.ihi.org/communities/blogs/population-health-

    population-management-terminology-in-us-health-care.

Lloyd-Jones, D. M., Hong, Y., Labarthe, D., Mozaffarian, D., Appel, L. J., Van
Horn, L., … Rosamond, W. D. (2010). Defining and setting national goals
for cardiovascular health promotion and disease reduction. *Circulation*,
*121(*4), 586–613*.* https://doi.org/10.1161/circulationaha.109.192703

Mastroianni, A. C., Kahn, J. P., & Kass, N. E. (2019). *The Oxford handbook of
public health ethics.* Oxford University Press.

Mirowsky J, Ross CE. (2015). Education, health, and the default American
Lifestyle. *J Health Soc Behavior. 2015 Sep ;56(*3):297-306. https://doi:
10.1177/0022146515594814 Epub 2015 Aug 13. PMID: 26272989.

National Center for Health Statistics (US). Health, United States, 2015: With
Special Feature on Racial and Ethnic Health Disparities. Hyattsville (MD):
National Center for Health Statistics (US); 2016 May. Report No.: 2016-
1232. PMID: 27308685.

National Research Council (US) Panel on Race, Ethnicity, and Health in Later
Life; Anderson NB, Bulatao RA, Cohen B, editors. Critical Perspectives on
Racial and Ethnic Differences in Health in Late Life. Washington (DC):
National Academies Press (US); 2004. 17, Behavioral Health
Interventions: What Works and Why? Retrieved April 1, 2021 from:
https://www.ncbi.nlm.nih.gov/books/NBK25527/

Paula A. Braveman, Shiriki Kumanyika, Jonathan Fielding, Thomas LaVeist,

Luisa N. Borrell, Ron Manderscheid, and Adewale Troutman, (2011):

Health Disparities and Health Equity: The Issue Is Justice. *American*

*Journal of Public*Health *101, S149_S155,*

https://doi.org/10.2105/AJPH.2010.300062

Rosamond WD, Chambless LE, Heiss G, Mosley TH, Coresh J, Whitsel E,

Wagenknecht L, Ni H, Folsom AR. Twenty-two–year trends in incidence of

myocardial infarction, coronary heart disease mortality, and case fatality in

4 U.S. communities, 1987–2008. *Circulation. 2012;* 125:1848–1857.

Roth, G.A., Johnson C., Abajobir, A., Abd-Allah, F., Abera, S.F., Abyu, G., M,

…Murray, C. (2017). Global, regional, and national burden of

cardiovascular diseases for 10 Causes, 1990 to 2015. *J Am Coll*

*Cardiology. 2017 Jul 4;70(*1):1-25. https://doi:10.1016/j.jacc.2017.04.052

 Epub 2017 May 17. PMID: 28527533; PMCID: PMC5491406.

Schmittdiel, J.A., Gopalan, A., Lin, M.W., Banerjee, S., Chau, C, V., and Adams,

Population Health Management for Diabetes: Health care system-level

approaches for improving quality and addressing disparities. Current Diab

Rep 17, 31 (2017). Retrieved April 1, 2021, from

https://doi.org/10.1007/s11892-017-0858-3

The Association of American Medical Colleges: Washington, DC, USA, 2012.

Diversity in Medical Education: Facts and Figures.

The National Action Plan to Improve Health Literacy, U.S. Department of Health

and Human Services: Washington, DC, USA, 2010.

Thomas B. Health and Health Care Disparities: The effect of social and

    environmental factors on individual and population health. *International*

    *Journal of Environmental Research and Public Health. 2014; 11(*7):7492-

    7507. https://doi.org/10.3390/ijerph110707492

Trivedi, AN., Grebla, RC., Wright SM., and Donna, L. (2011). Despite improved

    quality of care In The Veterans Affairs Health System, Racial disparity

    persists for important clinical outcomes. Washington. Health

    Affairs 2011 30:4, 707-715

World Health Organization. Social Determinants of Health. Available at:

    https://www.who.int/health-topics/social-determinants-of-

    health#tab=tab_1. Accessed March 2, 2021. Google Scholar.

US Department of Health and Human Services. Office of Disease Prevention and

    Health Promotion. Healthy People 2020, November 2010. Available

    at: http://www.healthypeople.gov/2020/about/disparitiesAbout.aspx.

    Accessed   March 17, 2021. Google Scholar

U.S. Department of Veterans Affairs. (2021). National Center for Veterans

    Analysis and Statistics. Retrieved April 7, 2021, from:

    https://www.va.gov/vetdata/Utilization.asp

Van Dyke M, Greer S, Odom E, et al. Heart disease death rates among Blacks

    and Whites aged ≥35 Years — United States, 1968–2015. MMWR

    Surveillance Summary 2018;67(No. SS-5):1–11.

    DOI: http://dx.doi.org/10.15585/mmwr.ss6705a1

Valdes, A. (2014, January 10). *PAHO/WHO: Core Competencies for Public Health: A Regional Framework for the Americas*. Pan American Health Organization / World Health Organization. https://www.paho.org/hq/index.php?option=com_content&view=article&id=9267%3A2014-competencias-esenciales-salud-publica-un-marco-regional-america&Itemid=3562&lang=en.

Valero-Elizondo, Javier., Hong, Jonathan C., Spatz, Erica S., Salami, Joseph A., Desai, Nihar R., Rana, Jamal S., Khera, Rohan., Virani, Salim S., Blankstein, Ron., Blaha, Michael J., & Nasir, Khurram. (2018). Persistent socioeconomic disparities in cardiovascular risk factors and health in the United States: Medical Expenditure   Panel Survey 2002 2013. *Atherosclerosis, 269,* 301–305. https://doi.org/10.1016/j.atherosclerosis.2017.12.014