Factors Contributing to Higher Heart Disease Rates in Rural Women: A Literature Review

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Research Question

What are the cardiovascular health risk factors affecting women in rural areas?

INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death in the United States, significantly impacting public health, healthcare costs, and overall life expectancy. In 2022, heart disease accounted for approximately 702,880 deaths, which is 1 in every 5 deaths nationwide (CDC, 2023). On average, one person dies every 33 seconds from cardiovascular causes, highlighting the widespread burden of CVD (CDC, 2023). Additionally, the prevalence of cardiovascular conditions is substantial, with an about 48.6% of U.S. adults diagnosed with some form of heart disease and approximately 805,000 Americans experiencing a heart attack each year (AHA, 2024). Stroke, another major cardiovascular event, affects nearly 800,000 Americans annually and is the fifth-leading cause of death in the United States, accounting for approximately 1 in every 20 deaths (NIH, 2023).

Several key risk factors contribute to the high prevalence of cardiovascular disease. Hypertension affects nearly 48.1% of U.S. adults (119.9 million people), yet only about 22.5% have their blood pressure under control (CDC, 2023). Obesity, another major driver of CVD, affects 42% of adults, with 58% of individuals with obesity also experiencing high blood pressure (NIH, 2023). Additionally, 38 million Americans (about 1 in 10) have diabetes, which doubles the risk of developing heart disease (AHA, 2024). Despite a decline in smoking rates to 11.6% of adults, tobacco use remains a major preventable cause of cardiovascular disease, contributing to 480,000 deaths annually (CDC, 2023). These risk factors often overlap, creating compounded health risks that disproportionately affect certain populations.

The impact of cardiovascular disease extends beyond mortality rates, affecting quality of life, healthcare costs, and life expectancy. Approximately 6.7 million U.S. adults live with heart failure, a chronic condition that leads to severe fatigue and activity limitations (AHA, 2024). Stroke is also a leading cause of long-term disability, with many survivors requiring extensive rehabilitation (NIH, 2023). Financially, heart disease imposes a massive burden on the healthcare system, with an estimated $252.2 billion spent on heart disease-related healthcare and lost productivity in 2020 (CDC, 2023). Stroke-related costs add another $56.2 billion, pushing the total financial impact of cardiovascular diseases to over $600 billion annually (AHA, 2024). These conditions also have a profound effect on life expectancy; about 1 in 5 cardiovascular deaths occur in adults under 65, contributing to disparities in longevity across racial and socioeconomic groups (NIH, 2023).

Cardiovascular disease disproportionately affects rural populations, where both prevalence and mortality rates are significantly higher than in urban areas. In 2019, the death rate from heart disease was 21% higher in rural areas compared to urban areas (Curtin, 2021). Women are also disproportionately affected, with over 60 million women (44%) in the U.S. living with some form of heart disease (Harvard). Although women have a lower overall prevalence of heart disease compared to men, they are more likely to die from it. There are gender-based disparities at every stage of heart disease treatment, stemming from factors such as underrepresentation in clinical trials and systemic biases in hospital settings, including symptoms being dismissed or misdiagnosed (Harvard). Women living in rural regions face a higher risk of developing CVD due to a combination of socioeconomic, geographic, and healthcare access barriers. Rural residents are more likely to experience risk factors such as hypertension, obesity, diabetes, and smoking at greater rates than their urban counterparts (CDC, 2023). Limited access

to preventive healthcare services, fewer healthcare providers, and long travel distances for care contribute to delayed diagnoses and treatment. Additionally, rural hospitals are more likely to close, reducing the availability of critical cardiovascular services. These compounding challenges result in rural women experiencing higher CVD-related death rates and poorer long-term health outcomes compared to women in urban areas (NIH, 2023; AHA, 2024).

With the current issue of cardiovascular health being so prevalent especially in women in rural areas, there is a need for a review of the current research to address the specific risk factors. This review aims to identify and explain risk factors in cardiovascular health for women in rural areas.

METHODS

A comprehensive search was conducted using the web of Science and PsycINFO databases through the University of Georgia's library system to identify current, peer-reviewed literature addressing the research question of cardiovascular health risk factors among rural women in the United States. These databases were selected due to their broad indexing of interdisciplinary studies across public health, behavioral sciences, and clinical medicine. Both Web of Science and PsycINFO provide access to U.S.-based journals, which provided a diverse and comprehensive sample of relevant research.

Inclusion and Exclusion Criteria

To ensure the inclusion of the most recent and relevant research, only articles published within the last 10 years (2014–2024) were considered. The search was limited to studies conducted exclusively in the United States, with a clear focus on rural female populations and cardiovascular health. Articles were required to be original research, published in peer-reviewed

journals, and to include empirical data related to cardiovascular risk factors, such as obesity, hypertension, access to care, and diet. Studies were excluded if they were review articles, commentaries, editorials, systematic reviews, or meta-analyses. Additionally, studies were excluded if they did not specifically report findings for women or rural subpopulations, or if they included international populations or general adult cohorts without gender-specific analysis.

The first search was conducted through the Web of Science. In Web of Science, the initial search using the terms “cardiovascular health” OR “heart disease” AND “rural populations” AND “risk factors” yielded 61,529 results. The search was then refined to include “cardiovascular disease” OR “heart health” AND “rural populations” OR “rural communities” AND “women” OR “female” AND “United States”, which narrowed the results to 324 articles. Titles and abstracts were screened for relevance to the research question, with articles further evaluated based on sample characteristics and outcome measures. This process resulted in the selection of 11 studies that met all inclusion criteria.

An initial broad search using “heart health” OR “cardiovascular disease” AND “rural populations” AND “United States” produced 75,832 results. This was refined using “cardiovascular health” OR “cardiovascular disease” AND “rural communities” OR “populations” AND “women” OR “female” AND “United States”, which yielded 542 results. Applying the date range and relevance filters reduced the final pool to 152 articles, from which 8 studies were selected based on population focus and methodological rigor.

RESULTS

Obesity and Physical Inactivity

Obesity and sedentary lifestyles are two of the most consistent cardiovascular disease (CVD) risk factors found in women living in rural areas. Several studies report obesity rates exceeding 60% among older rural women, with particularly high rates among those with comorbid conditions such as diabetes or metabolic syndrome. In one sample of Hispanic women in rural North Carolina, 69% of those with type 2 diabetes were classified as obese, and 82% met the clinical definition for metabolic syndrome (Hu et al., 2021, p. 2). Similarly, in a needs assessment of African American women in the rural Black Belt region of Alabama, 90% of the sample were obese and 96% had high-risk waist circumferences (Andrabi et al., 2024, p. 4).

Although behavioral interventions have demonstrated modest improvements in weight loss and fitness, challenges to maintaining long-term progress are significant. The Strong Hearts, Healthy Communities (SHHC) program, a 24-week multicomponent intervention, produced significant reductions in weight, BMI, and waist circumference among participants (Seguin-Fowler et al., 2022, p. 5; Seguin et al., 2018, p. 5). However, these improvements were closely linked to session attendance, and long-term follow-up suggests that only some gains were maintained after six months. While physical functioning improved in both aerobic endurance and strength (e.g., chair stand test), consistent participation was necessary to sustain benefits (Pullyblank et al., 2020, p. 4).

Nevertheless, physical inactivity remains prevalent. In a multi-site intervention across three rural regions, participants had low baseline levels of activity, and even after participating in an 8-week program, no significant changes in physical activity were observed (Khare et al., 2014, p. 5). Similarly, in a process evaluation of SHHC, average attendance was just 67%, and women cited caregiving duties, transportation challenges, and time constraints as key reasons for missing sessions (Sriram et al., 2019, p. 3). Importantly, even where improvements in fitness

were observed, accelerometer data often failed to confirm sustained behavioral changes (Folta et al., 2019, p. 4).

Program reach remains a major obstacle. In the SHHC-2.0 trial, researchers found that only 7.5% of eligible women in the target rural areas participated, despite high satisfaction and fidelity ratings (Szeszulski et al., 2024, p. 3). This low penetration of health promotion programs in rural communities limits the potential for widespread risk reduction and highlights the need for scalable, accessible interventions.

Limited Knowledge and Health Literacy

Health literacy and knowledge of CVD risk factors remain limited among women living in rural areas, particularly among those with lower educational attainment. In a study of rural South Carolina women aged 65 and older, 46% had not completed high school and the average score on the CHD Knowledge Tool for Women was 15.17 out of 30—considered a low score compared to national norms (Webster Fink & Jacobs, 2021, p. 13). These findings are consistent with previous research showing that many rural women do not recognize menopause, cholesterol, or inactivity as CVD risk factors (Thanavaro et al., 2006; Oliver-McNeil & Artinian, 2002, as cited in Webster Fink & Jacobs, 2021, p. 11).

Education level is strongly correlated with knowledge and health-promoting behaviors. Women with at least a high school education scored significantly higher on both CHD knowledge and the Health-Promoting Lifestyle Profile-II (Webster Fink & Jacobs, 2021, p. 18). McDonnell et al. (2014, cited in Webster Fink & Jacobs, 2021, p. 19) similarly found that women with a college education had double the knowledge scores compared to women with a secondary

education or less. This knowledge gap has real consequences: women unaware of their family history of cholesterol were significantly less likely to get screened (Galbraith et al., 2011).

Some interventions have shown promise in improving knowledge in the short term. A brief, clinic-based education session in California raised awareness of CHD risk factors among rural women more than among urban women, whose baseline awareness was higher (Villablanca et al., 2016, p. 5). However, the study lacked long-term follow-up, and it's unclear whether knowledge gains translated into behavior change. Notably, only 2.2% of participants in Webster Fink & Jacobs' (2021) study reported feeling they had "a lot" of knowledge about CHD (p. 9).

Low health literacy is also linked to increased risk for CVD. National data shows older adults score lowest on health literacy assessments (Kutner et al., 2006), and this is further compounded in rural populations. Wu et al. (2016, as cited) found that low health literacy partially explains higher cardiac event risk among rural adults 65 and older. Collectively, these findings indicate that efforts to increase health literacy—through tailored education, accessible language, and multi-modal delivery—are critical to improving outcomes.

Access Barriers and Systemic Inequities

Access to preventive care, cardiovascular screenings, and health promotion resources is significantly more limited for rural women than for their urban counterparts. Physical and geographic isolation, limited transportation, and high poverty rates combine to reduce healthcare access across the lifespan (Abrams et al., 2021, p. 3; Hu et al., 2021, p. 3). Weaver & Gjesfjeld (2014, p. 5) found that women without insurance or a regular source of care were significantly less likely to utilize recommended CVD screening services, such as mammograms and cholesterol checks.

Healthcare system barriers are compounded by environmental and social disadvantages. Many rural communities are food deserts, have minimal public transportation infrastructure, and offer few recreational or wellness facilities. Khare et al. (2014, p. 5) noted that participants had difficulty attending group classes due to transportation and scheduling constraints. Even when community-based programs are offered, session adherence is inconsistent due to caregiving obligations and logistical barriers (Szeszulski et al., 2024, p. 4; Sriram et al., 2019, p. 4).

Notably, women in rural areas are less likely to receive counseling from providers on healthy lifestyle changes. Park et al. (2024, p. 5) emphasized that even when rural women had access to primary care, counseling on behavior change was infrequent. In one program (WISEWOMAN), women praised the support and flexibility of coaching, but described major systemic barriers like cost, time, and transportation that prevented sustained behavior change.

Models like the Community Health Advisor (CHA) approach in Uniontown, Alabama, offer insight into potential solutions. The CHA model trained local women to lead community classes on nutrition and exercise, increasing community capacity and initiating physical infrastructure improvements (Cornell et al., 2009, p. 3). These grassroots interventions appear effective in reaching underserved populations, though sustainability and reach remain ongoing challenges.

Depression and Psychosocial Risks

Depression is a significant, yet often underrecognized, risk factor for CVD in rural women. As noted by the American Heart Association, depression is an independent predictor of post-cardiac event mortality and morbidity (Lichtman et al., 2014, as cited). In rural areas, stigma, lack of mental health resources, and cultural norms around self-reliance contribute to the

underdiagnosis and undertreatment of depression among women (Snell-Rood et al., 2017; Hauenstein & Peddada, 2007, as cited).

In the South Carolina study, 17.7% of participants reported a clinical history of depression, yet the majority (82.3%) had minimal symptoms based on BDI-II scores (Webster Fink & Jacobs, 2021, p. 10). This mismatch between self-reported history and current symptoms may reflect coping mechanisms or selection bias in the sample. Importantly, women with lower education levels had higher depression scores, highlighting the intersection of mental health with socioeconomic status (Webster Fink & Jacobs, 2021, p. 19).

Older rural women are at heightened risk due to widowhood, chronic illness, and social isolation. Depression has been shown to predict both the onset and progression of CHD, and its presence worsens prognosis after heart attacks (Frasure-Smith & Lespérance, 2006; Drory et al., 2003). Women tend to experience more persistent symptoms of depression than men, particularly following cardiac events (Barry et al., 2008).

Despite this evidence, depression is rarely addressed directly in cardiovascular health interventions. Neither SHHC nor Heart Smart included mental health screening or treatment components (Khare et al., 2014, p. 6; Sriram et al., 2019, p. 5). Park et al. (2024, p. 5) emphasized the need for integrative models that address emotional well-being alongside behavior change, as participants identified stress and caregiving demands as key challenges.

In sum, addressing depression among rural women is not only important for mental health, but also for cardiovascular prevention. Integrating mental health support into CVD programs may enhance both engagement and long-term outcomes, particularly in medically underserved regions.

DISCUSSION

Implications

The findings of this study highlight the significant cardiovascular health challenges faced by women in rural communities. The results emphasize that obesity, education, and healthcare access remain critical factors influencing cardiovascular health outcomes in these populations. Addressing these disparities is essential in reducing the burden of cardiovascular disease and improving health equity for rural women. While public health initiatives have sought to mitigate these issues, systemic barriers continue to limit progress in many areas.

Obesity remains one of the most pressing concerns for rural women, as dietary habits and limited access to healthy foods contribute to increased cardiovascular risk. Structural challenges such as food deserts and socioeconomic constraints make it difficult for women in rural areas to adopt heart-healthy diets. Furthermore, cultural factors and generational habits often reinforce poor dietary behaviors. While interventions such as nutrition education programs and community gardens have been implemented in some rural communities, these efforts require sustained investment and expansion to make a significant impact on public health.

Limitations

Despite the significance of these findings, there are several limitations to consider. First, much of the existing research on cardiovascular health in rural women is based on cross-sectional studies, limiting the ability to establish causal relationships between risk factors and health outcomes. Longitudinal research is needed to better understand how socioeconomic and environmental factors influence cardiovascular disease progression over time.

Another limitation is the accessibility of healthcare data in rural areas. Many rural health statistics rely on self-reported data, which may introduce bias and inaccuracies. Additionally, healthcare infrastructure varies widely between different rural regions, making it difficult to generalize findings across all rural communities. Future studies should aim to include a diverse range of rural populations to improve the applicability of research findings.

Conclusion

Efforts to improve education in rural communities have shown promise in reducing cardiovascular risk factors. Community-based educational programs focused on nutrition, exercise, and disease management have been found to significantly improve health outcomes among rural women (Cornell et al., 2009). Expanding these programs and improving access to educational resources on cardiovascular health can help mitigate the long-term impact of heart disease in rural populations (Khare et al., 2014).

Addressing cardiovascular health disparities among rural women requires a multifaceted approach that incorporates policy changes, targeted community interventions, and healthcare system improvements. Future research should focus on evaluating the effectiveness of existing interventions and identifying strategies to scale successful programs to reach more rural populations. By prioritizing these efforts, public health professionals and policymakers can work toward reducing cardiovascular disease disparities and improving health outcomes for women in rural communities.

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