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Women, Occupation, and Cardiovascular Risk Factors: A Review

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Abstract

Cardiovascular disease (CVD) is the leading cause of mortality in women globally. While traditional risk factors (e.g., hypertension, dyslipidemia) are well-characterized, the role of occupational exposures—encompassing psychosocial stressors, physical demands, and environmental hazards—in shaping women's cardiovascular health is increasingly

recognized but remains understudied. This review synthesizes evidence on the relationship between women's occupational characteristics and the development of key CVD risk factors. It examines how work-related psychosocial stress (high demands/low control, effort-reward imbalance, job strain), shift work, sedentary work, and occupational physical activity differentially impact women's risk for hypertension, metabolic syndrome, obesity, and unhealthy behaviors. The review highlights the complex interplay of occupation with gender-specific roles, including unpaid caregiving labor and the "double burden" of work and family responsibilities, which compound occupational stress. Emerging evidence points to significant disparities by socioeconomic position and race/ethnicity. The findings underscore the urgent need for gender-sensitive occupational health research, workplace interventions, and public policies that address the unique work-related pathways contributing to CVD risk in women.

Keywords: Women's health, cardiovascular disease, occupational stress, job strain, shift work, work-family conflict, psychosocial factors, gender disparities.

1. Introduction

Cardiovascular disease (CVD) accounts for over one-third of all deaths in women worldwide, yet significant knowledge gaps persist regarding sex-specific risk pathways [1]. Beyond biological and traditional lifestyle factors, a growing body of literature implicates the work environment as a critical social determinant of cardiovascular health [2]. Women's occupational experiences differ systematically from men's due to gender-based occupational segregation, unequal pay, and the disproportionate burden of unpaid domestic labor [3]. These factors create unique exposures and vulnerabilities. This review examines the epidemiological evidence linking occupational characteristics—including job strain, shift work, physical activity at work, and environmental exposures—to the development of modifiable CVD risk factors (hypertension, dyslipidemia, obesity, diabetes, and metabolic syndrome) in women. It also explores the mediating role of health behaviors and the compounding effect of work-family conflict.

2. Psychosocial Work Environment and CVD Risk

2.1. Job Strain and High-Demand/Low-Control Models

The Job Demand-Control (JDC) model posits that high psychological demands coupled with low decision latitude (control) create harmful job strain.

- **Hypertension & Blood Pressure:** Women in high-strain jobs exhibit higher prevalence of hypertension and higher ambulatory blood pressure readings, even after adjusting for traditional risk factors [4].
- **Metabolic Syndrome:** Longitudinal studies associate high job strain with an increased incidence of metabolic syndrome in women, mediated in part by chronic activation of the hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system [5].

2.2. Effort-Reward Imbalance (ERI)

The ERI model suggests that high effort expended at work without commensurate rewards (salary, esteem, job security) leads to distress.

- **Women and ERI:** Women are more likely to experience ERI due to gendered pay gaps and occupational segregation into lower-status roles. ERI is strongly associated with incident coronary heart disease in women and correlates with higher levels of inflammatory markers (e.g., C-reactive protein) and abdominal obesity [6].

2.3. Job Insecurity and Organizational Injustice

Precarious employment and perceived unfairness at work are independent predictors of poor cardiometabolic profiles, including dyslipidemia and increased body mass index (BMI) [7].

3. Specific Occupational Exposures

3.1. Shift Work and Circadian Disruption

- **Metabolic Dysregulation:** Night shift work is classified as a probable carcinogen and a significant risk factor for CVD. In women, it is robustly linked to weight gain, insulin resistance, and type 2 diabetes, disrupting circadian rhythms, sleep, and eating patterns [8].
- **Interaction with Menopause:** The cardiometabolic risks of shift work may be exacerbated during the menopausal transition, a period of inherent metabolic change [9].

3.2. Sedentary Work

- **The "Sitting Disease":** The proliferation of office-based jobs has led to prolonged occupational sitting. In women, this is independently associated with

higher triglycerides, lower HDL cholesterol, and greater waist circumference, irrespective of leisure-time physical activity [10].

3.3. Occupational Physical Activity (OPA)

- **The Physical Activity Paradox:** Unlike leisure-time physical activity (LTPA), which is cardioprotective, **high levels of OPA** (often characterized by static postures, heavy lifting, and lack of recovery) are associated with **increased CVD risk** in both men and women. This paradox is particularly relevant for women in service, healthcare, and manual occupations [11].

4. The Compounding Burden: Work-Family Conflict and Unpaid Labor

Women, on average, perform significantly more unpaid domestic and caregiving work than men—the "second shift."

- **Work-Family Conflict (WFC):** The stress arising from conflicting role pressures between work and home life is a potent contributor to psychological distress, poor sleep, and unhealthy coping behaviors (e.g., emotional eating, smoking), leading to elevated blood pressure and adverse lipid profiles [12].
- **Caregiver Strain:** Intensive caregiving responsibilities, often shouldered by women, are associated with higher incidence of hypertension and metabolic syndrome, acting as a chronic stressor [13].

5. Disparities and Intersectionality

Occupational CVD risk is not uniform among women and is shaped by intersecting social positions.

- **Socioeconomic Status (SES):** Women in lower-skilled, lower-paid occupations face a double jeopardy: higher exposure to job strain and physical hazards, and fewer resources for stress mitigation and healthcare.
- **Race/Ethnicity:** Structural racism influences both occupational opportunities and health outcomes. For example, Black and Hispanic women are overrepresented in high-strain, low-control service jobs and experience a greater burden of work-related hypertension [14].

6. Mechanisms and Pathways

Occupational factors influence CVD risk through integrated biological and behavioral pathways:

- **Biological:** Chronic stress → HPA axis dysregulation → increased cortisol → visceral fat deposition, insulin resistance, and inflammation.
- **Behavioral:** Job strain and time pressure → reduced time/energy for LTPA, poor dietary choices ("stress eating"), and sleep deprivation.
- **Psychosocial:** Low control and ERI → feelings of helplessness and depression → further exacerbating unhealthy behaviors and biological risk.

7. Implications for Prevention and Workplace Health

- **Gender-Sensitive Risk Assessment:** Clinical CVD risk assessment in women should include occupational history (job type, hours, perceived stress, work-family balance).
- **Workplace Interventions:**
  - **Psychosocial:** Implement participatory action programs to increase employee control and reward (e.g., job crafting, fair scheduling).
  - **Organizational:** Promote flexible work arrangements to reduce WFC. Provide paid family leave.
  - **Environmental:** Encourage breaks from sedentary work (sit-stand desks) and reduce physically taxing demands where possible.
- **Policy-Level Action:** Enforce regulations against excessive work hours, mandate equitable pay, and strengthen protections for precarious workers.
- **Research Priorities:** More longitudinal studies focusing on women, especially in non-professional occupations, are needed. Research must adopt an intersectional lens to understand compounded vulnerabilities.

8. Conclusion

Occupation is a powerful, yet often overlooked, determinant of cardiovascular risk in women. The interplay of psychosocial stress, shift work, the physical activity paradox, and the added burden of unpaid caregiving creates a unique risk profile that extends beyond traditional Framingham factors. Addressing CVD in women requires a holistic approach that includes the work environment as a key intervention target. Moving forward, public health efforts must advocate for gender-equitable workplaces, support policies that alleviate the double burden, and integrate

occupational health into mainstream cardiovascular prevention strategies for women.

References

1. Vogel B, Acevedo M, Appelman Y, Bairey Merz CN, Chieffo A, Figtree GA, et al. The Lancet women and cardiovascular disease Commission: reducing the global burden by 2030. Lancet. 2021 Jun 19;397(10292):2385-2438.
2. Kivimäki M, Steptoe A. Effects of stress on the development and progression of cardiovascular disease. Nat Rev Cardiol. 2018 Apr;15(4):215-229.
3. Artazcoz L, Cortès I, Escribà-Agüir V, Cascant L, Villegas R. Understanding the relationship of long working hours with health status and health-related behaviors. J Epidemiol Community Health. 2009;63(7):521-7.
4. Gilbert-Ouimet M, Trudel X, Brisson C, Milot A, Vézina M. Adverse effects of psychosocial work factors on blood pressure: systematic review of studies on demand-control-support and effort-reward imbalance models. Scand J Work Environ Health. 2014 Mar;40(2):109-32.
5. Chandola T, Brunner E, Marmot M. Chronic stress at work and the metabolic syndrome: prospective study. BMJ. 2006 Mar 4;332(7540):521-5.
6. Siegrist J, Li J. Associations of Extrinsic and Intrinsic Components of Work Stress with Health: A Systematic Review of Evidence on the Effort-Reward Imbalance Model. Int J Environ Res Public Health. 2016 Apr 27;13(4):432.
7. Virtanen M, Nyberg ST, Batty GD, Jokela M, Heikkilä K, Fransson EI, et al. Perceived job insecurity as a risk factor for incident coronary heart disease: systematic review and meta-analysis. BMJ. 2013 Aug 13;347: f4746.
8. Wang XS, Armstrong ME, Cairns BJ, Key TJ, Travis RC. Shift work and chronic disease: the epidemiological evidence. Occup Med (Lond). 2011 Mar;61(2):78-89.
9. Charles LE, Gu JK, Fekedulegn D, Ma CC, Burchfiel CM, Violanti JM. Association between shift work and metabolic syndrome among female police officers. J Occup Environ Med. 2018 Jul;60(7):e335-e340.
10. Van der Ploeg HP, Chey T, Korda RJ, Banks E, Bauman A. Sitting time and all-cause mortality risk in 222,497 Australian adults. Arch Intern Med. 2012 Mar 26;172(6):494-500.
11. Holtermann A, Krause N, van der Beek AJ, Straker L. The physical activity paradox: six reasons why occupational physical activity (OPA) does not confer the cardiovascular health benefits that leisure time physical activity does. Br J Sports Med. 2018 Feb;52(3):149-150.
12. Allen TD, Herst DE, Bruck CS, Sutton M. Consequences associated with work-to-family conflict: a review and agenda for future research. J Occup Health Psychol. 2000 Apr;5(2):278-308.
13. Capistrant BD, Moon JR, Berkman LF, Glymour MM. Current and long-term spousal caregiving and onset of cardiovascular disease. J Epidemiol Community Health. 2012 Oct;66(10):951-6.
14. DeSantis CE, Miller KD, Goding Sauer A, Jemal A, Siegel RL. Cancer statistics for African Americans, 2019. CA Cancer J Clin. 2019 May;69(3):211-233. (Note: While cancer-focused, this source highlights occupational segregation patterns relevant to CVD risk pathways).