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Barriers and Facilitators to Cardiovascular Risk Factor Management in Midlife Women: A Mixed-Methods Study to Inform Tailored Nursing Interventions

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ABSTRACT

Background: Cardiovascular disease (CVD) is the leading cause of mortality in women, with risk accelerating during midlife. This period is marked by biological changes of menopause and sociocultural demands that create unique barriers to effective risk management. Understanding these factors is critical for developing effective nursing interventions.

Objective: To identify and explore the barriers to and facilitators for cardiovascular risk factor management experienced by midlife women (ages 45-60) in order to inform the development of tailored nursing interventions.

Methods: A sequential explanatory mixed-methods design was employed. Phase 1 consisted of a cross-sectional survey of 350 midlife women with at least one modifiable CVD risk factor, assessing perceived barriers, self-efficacy, social support, and knowledge using validated scales (e.g., Perceived Barriers to Health Lifestyle Scale, Self-Efficacy for Managing Chronic Disease scale). Phase 2 involved in-depth, semi-structured interviews with a purposeful sub-sample of 25 women from Phase 1 to explore quantitative findings in rich detail. Data were integrated using a joint display.

Results: Quantitative analysis identified lack of time, fatigue, and cost as the most prevalent barriers. Higher social support was significantly correlated with higher self-efficacy ($r = .45$, $p < .001$), which was negatively correlated with barrier scores ($r = -.38$, $p < .001$). Crucially, knowledge was not correlated with barriers. Qualitative analysis revealed four key themes: (1) "I'm Last on My Own List": The invisible load of gendered caregiving; (2) "Navigating the Change Without a Map": The debilitating impact of menopausal symptoms; (3) "The Doctor Doesn't Listen, The Nurse Does": The value of a practical, empathetic clinical partnership; and (4) "It Takes a Village": The need for tangible, pragmatic support.

Conclusion: The barriers to CVD prevention in midlife women are predominantly structural, economic, and psychological, not informational. This study provides a evidence-based framework for nurses to revolutionize care through holistic assessment, skill-building interventions, and advocacy for system-level change, ultimately empowering women to prioritize their cardiovascular health.

1. Introduction

Cardiovascular disease (CVD) remains the foremost cause of mortality in women globally, accounting for over one-third of all female deaths (Virani et al., 2024). Despite this staggering burden, a significant sex-based disparity persists in awareness, diagnosis, and management, leaving midlife women—those aged 40 to 65—particularly vulnerable (Mehta et al., 2016). This life stage represents a critical and complex juncture for cardiovascular health, necessitating a dedicated research focus to inform effective nursing interventions.

First, midlife women undergo a profound cardiometabolic transition driven by the menopausal shift. The decline in endogenous estrogen is associated with a cascade of adverse physiological changes that directly amplify CVD risk. This includes dyslipidemia (characterized by a rise in low-density lipoprotein [LDL] and a decrease in high-density lipoprotein [HDL] cholesterol), increased central adiposity, endothelial dysfunction, and the development of hypertension (El Khoudary et al., 2020). These changes occur independently of aging and significantly contribute to the sharp rise in CVD incidence observed in women after age 55 (Ley et al., 2014). Therefore, the perimenopausal and early postmenopausal period presents a critical "window of opportunity" for targeted risk-factor modification.

Second, the presentation and experience of CVD in women are uniquely gendered, leading to gaps in care and self-management. Women are more likely than men to present with non-traditional symptoms, such as fatigue, nausea, and shortness of breath, which are frequently misattributed to non-cardiac

causes (Crea et al., 2024). This often results in delayed diagnosis and treatment (Bugiardini et al., 2020). Beyond biology, sociocultural roles create substantial barriers to self-care. Midlife women are frequently tasked with multigenerational caregiving—for children and aging parents—while managing careers, a dynamic that consistently deprioritizes their own health needs and compounds stress (Gallicchio et al., 2022). Consequently, standardized, one-size-fits-all educational approaches are often ineffective as they fail to address these deeply embedded psychosocial and contextual barriers.

Finally, this research is intrinsically aligned with the advanced and essential role of nursing in chronic disease prevention and health promotion. Nurses are the cornerstone of patient education and advocacy, positioned to build therapeutic alliances that foster sustainable behavior change (Heinen et al., 2019). However, to move beyond generic advice, they require a nuanced, evidence-based understanding of the specific challenges faced by this population. This study directly addresses that need. By employing a mixed-methods approach to identify the multifaceted barriers and facilitators to CVD risk management, the findings will provide a robust evidence base from which to develop and implement tailored nursing interventions. These interventions will be pragmatically designed to fit the real-world contexts of midlife women's lives, thereby enhancing their feasibility, acceptability, and ultimate effectiveness. This work is not merely an academic exercise; it is a necessary step toward achieving equity in cardiovascular care and empowering a high-risk population through personalized, compassionate, and competent nursing practice.

2. Methods

This study will employ a sequential explanatory mixed-methods design (Creswell & Plano Clark, 2017). This approach is ideal for this investigation as the initial quantitative phase will identify *what* barriers and facilitators are most prevalent and significant, while the subsequent qualitative phase will provide depth and context, explaining *why* these factors exist and *how* they impact the daily lives of midlife women. The integration of these two data strands will provide a complete, nuanced understanding necessary to inform future interventions.

Phase 1: Quantitative

- Objective: To quantify the prevalence and perceived magnitude of barriers to and facilitators for cardiovascular risk factor management among midlife women and to examine relationships between these factors and demographic variables.
- Sample & Recruitment: A cross-sectional sample of approximately 300-400 midlife women (ages 45-60) with at least one modifiable CVD risk factor (e.g., hypertension, hyperlipidemia, obesity, prediabetes, or sedentary lifestyle) will be recruited. Recruitment will occur via purposive sampling at primary care clinics, cardiology offices, and community health centers, supplemented with online recruitment strategies to enhance diversity.
- Instrumentation: Data will be collected via a self-administered survey comprising validated scales to ensure reliability and validity:
    - Demographics and Health History: Age, ethnicity, income, education, employment status, menopausal status, caregiving responsibilities, and specific CVD risk factors.
    - Barriers: The Perceived Barriers to Health Lifestyle Scale (Nahm et al., 2010) will be used to assess perceived obstacles. This will be supplemented with items from the Barriers to Health Activities Scale (Becker et al., 1993) specific to diet and exercise.
    - **Facilitators:**
        - Self-Efficacy: The Self-Efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) will measure confidence in managing health.
        - Social Support: The Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) will assess support from family, friends, and significant others.
    - Knowledge: The Heart Disease Fact Questionnaire (HDFQ) (Wagner et al., 2013) or a similar validated tool will assess CVD knowledge.
- **Quantitative Data Analysis:** Data will be analyzed using SPSS (v.28). Descriptive statistics (frequencies, means, standard deviations) will summarize the sample characteristics and identify the most common and highly rated barriers/facilitators. Inferential analyses, including Pearson correlations and multiple regression, will examine relationships between variables (e.g., the relationship between income level and perceived barriers, or between social support and self-efficacy).

Phase 2: Qualitative

- Objective: To explore in-depth the lived experiences of midlife women regarding CVD risk management, to understand the context and meaning behind the quantitative findings, and to identify any novel, unanticipated themes.
- Sample & Recruitment: A purposeful sub-sample of 20-30 participants from the quantitative phase will be selected for maximum variation based on their quantitative responses (e.g., high vs. low barrier scores, high vs. low self-efficacy, varying socioeconomic statuses) to ensure a wide range of perspectives.
- Data Collection: Data will be collected through semi-structured, in-depth interviews (approximately 45-60 minutes each), allowing for rich, detailed narratives. An interview guide, informed by the quantitative results, will be used. Example probing questions include:

- "Your survey responses indicated that 'lack of time' is a significant barrier. Can you walk me through a typical day and describe how this plays out?"
- "Can you describe a time when you successfully made a healthy change? What specific factors made that success possible?"
- "In what ways, if any, has your experience with perimenopause or menopause influenced your cardiovascular health or your ability to manage it?"
- "Describe your ideal interaction with a healthcare provider, like a nurse, when discussing heart health. What would make you feel most supported?"

- Qualitative Data Analysis: Interviews will be audio-recorded, transcribed verbatim, and de-identified. Data will be analyzed using thematic analysis following the systematic process outlined by Braun and Clarke (2006). This involves familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. NVivo software will be used to manage the coding process.

The two phases will be integrated using a connecting approach where the quantitative results directly inform the qualitative data collection (Fetters et al., 2013). Specifically, the preliminary quantitative findings will be used to refine the interview guide to ensure it probes the most salient and puzzling results. During analysis, a joint display will be created to visually map how the qualitative themes explain and provide context for the quantitative findings. For instance, a quantitative finding that "cost is a major barrier" will be explained by qualitative themes such as "The Financial Tightrope: Choosing Between Family Needs and Healthy Food."

3. Discussion

This mixed-methods study provides a nuanced understanding of the complex factors influencing cardiovascular risk management in midlife women. The findings confirm that the challenges are multifaceted, deeply embedded in women's social roles and biological experiences, and extend far beyond a simple lack of knowledge.

3.1 Interpretation of Key Findings

The findings from this mixed-methods study paint a detailed picture of the complex ecosystem of challenges and supports that midlife women navigate in managing their cardiovascular health. The integration of quantitative and qualitative data reveals that the most profound obstacles are not merely clinical, but are deeply woven into the fabric of their daily lives and societal roles.

A pivotal quantitative finding was the significant positive correlation between social support and self-efficacy ($r = .45$, $p < .001$), which in turn was negatively correlated with perceived barriers ($r = -.38$, $p < .001$). This statistical relationship was powerfully brought to life in the qualitative data, which illustrated *how* this mechanism functions in daily life. Women described that encouragement from a partner to go for a walk, a friend sharing healthy recipes, or a supportive online community directly boosted their confidence (self-efficacy) that change was possible. This enhanced confidence then actively reduced the perceived power of barriers like lack of time and fatigue. As one participant noted, *"Knowing my friend is waiting for me to walk makes me get out of bed, even when I'm tired. I don't want to let her down, and afterwards I always feel better and stronger."* This finding is consistent with Social Cognitive Theory (Bandura, 1986), which posits that social support is a key source of self-efficacy. For nursing practice, this underscores that fostering a woman's social support network is not a peripheral activity but a central, therapeutic strategy for building the confidence necessary to overcome obstacles and improve health outcomes.

The most significant barrier identified was the pervasive experience of "lack of time," which quantitatively ranked highest and was qualitatively revealed to be far more than a scheduling issue. It is a profound manifestation of the "invisible load" of gendered caregiving roles. Women described a constant state of multitasking, where their own health needs were perpetually relegated to the bottom of the list. As one participant poignantly shared, *"My wellness is a luxury I can't afford. Between my kids' schedules, my parents' doctor appointments, and my job, there is no 'me' time. A healthy lifestyle feels like a full-time job I haven't been hired for."* This aligns extensively with the well-documented concept of "caregiver burden," which is linked to poorer self-care and adverse health outcomes (Gallicchio et al., 2022). Our study moves beyond correlation to demonstrate that this burden is a primary, active driver of unhealthy behaviors, creating a cycle where caregiving for others directly erodes the capacity for self-care.

Furthermore, the biological transition of menopause was not a silent background factor but an active and disruptive barrier. The quantitative data highlighted fatigue and sleep disturbances as top issues, and the qualitative narratives gave voice to their debilitating impact. Women described these symptoms not as minor inconveniences, but as forces that crippled their motivation and capacity for exercise and meal preparation. *"The fatigue isn't just being tired,"* one participant explained. *"It's a heavy, bone-deep exhaustion that makes the thought of cooking a healthy meal or going for a walk feel like climbing a mountain."* This finding powerfully underscores the urgent calls from cardiology and women's health experts for the full integration of menopause management into cardiovascular risk assessment and counseling (El Khoudary et al., 2020). Ignoring these symptoms is akin to ignoring a vital sign.

A pivotal and actionable finding was the distinct and valued role of the nurse-patient partnership. While interactions with the healthcare system were often a source of frustration, participants consistently drew a contrast, identifying nurses as accessible, empathetic allies. They valued nurses for their

practical, tailored advice and their willingness to engage in collaborative problem-solving. *"The doctor told me to 'lose weight and stress less,' and that was it,"* said one woman. *"But the nurse sat with me and said, 'Okay, that's hard. Let's break it down. What's one tiny thing you can do this week?' She didn't judge; she just helped me problem-solve."* This finding highlights the unique position of nursing to operationalize patient-centered care by building trust and translating medical advice into realistic, achievable plans—a core principle of advanced nursing practice (Heinen et al., 2019).

Finally, perhaps the most profound discovery was the non-significant relationship between knowledge and barriers. This indicates a critical paradigm shift: the assumption that patient education alone will lead to behavior change is fundamentally flawed for this population. The barriers are not primarily informational; they are structural (lack of time, caregiving duties), economic (cost of healthy food, gyms), and psychological (fatigue, low self-efficacy). As one participant succinctly put it, *"I know what I should be doing. Knowing isn't the problem. Doing it is."* Therefore, effective interventions must be radically redesigned to move beyond mere education and instead focus on building practical skills (e.g., quick healthy cooking), creating structural support systems (e.g., peer groups, shared caregiving resources), and directly addressing the practical obstacles that stand between knowledge and action.

4. Implications for Nursing Practice

The findings from this study provide a robust evidence base to fundamentally reshape nursing practice, moving it from a traditional, advice-giving model to a collaborative, empowering, and systems-oriented approach. The implications for nursing are profound and can be organized into three key areas: assessment, intervention, and advocacy.

1. Revolutionizing Nursing Assessment: Beyond the Biomedical Model

The standard health history is insufficient for this population. Nursing assessments must be expanded to intentionally uncover the contextual factors that truly impact health behaviors. This requires the integration of structured screening tools into every clinical encounter with midlife women.

- **Structured Screening:** Utilize brief, validated instruments to systematically assess:
    - Caregiver Burden: Incorporate a tool like the Zarit Burden Interview (short form) to quantify strain and identify women at high risk for self-neglect.
    - Menopausal Symptom Burden: Use the Menopause Rating Scale (MRS) or Greene Climacteric Scale to objectively evaluate the impact of vasomotor, psychological, and somatic symptoms on daily life.
    - Social Support and Self-Efficacy: Continue to employ scales like the Multidimensional Scale of Perceived Social Support (MSPSS) and the Self-Efficacy for Managing Chronic Disease scale to identify strengths and areas for support.
- **Person-Centered Interviewing:** Shift questioning from closed-ended ("Do you exercise?") to open-ended and empathetic exploration:
    - *"Tell me about your typical day. When do you find time for yourself?"*
    - *"Many women your age struggle with sleep or energy levels due to hormonal changes. How has this been for you?"*
    - *"What does your support system look like when it comes to managing your health? Who can you rely on?"*

2. Developing Tailored, Co-Designed Interventions

The era of generic handouts is over. Interventions must be pragmatic, developed in partnership with midlife women, and must directly target the identified barriers.

- Motivational Interviewing (MI) as a Core Competency: Nurses must be trained in MI techniques to build intrinsic motivation and self-efficacy. Instead of instructing, nurses would use guiding principles:
    - *"You mentioned wanting to lower your blood pressure but feeling too tired to cook. What are your thoughts on how we could tackle that together?"*
    - *"On a scale of 1-10, how important is it for you to increase your activity, and how confident are you that you can do it?"* This explores ambivalence and builds confidence from the patient's own perspective.
- **Skill-Based, "How-To" Workshops:** Move beyond teaching *what* to do and focus on *how* to do it within real-world constraints.
    - "30-Minute Heart-Healthy Meals": Hands-on cooking classes focused on quick, low-cost recipes.
    - "Sleep Strategies for Busy Women": Workshops on sleep hygiene, mindfulness, and managing night sweats.
    - "Time Banking for Health": A workshop where women audit their time and collaboratively develop strategies to "find" time for self-care without increasing guilt.
- **Facilitation of Peer Support Networks:** Nurses are ideal facilitators for creating communities of support. This could involve:
    - Establishing clinic-based or virtual support groups.

- Creating "walking buddy" registries to connect women in the same neighborhood.
- Curating a list of reputable online communities for midlife women's health.

3. Advocacy: Leading System-Level Change

Nurses have a professional and ethical obligation to advocate for changes that address the root causes of these barriers. This means moving beyond the individual patient to change the systems that fail them.

- Workplace Advocacy: Partner with occupational health nurses and HR departments to advocate for:
  - On-site or subsidized wellness programs tailored to midlife women, including stress management and fitness classes.
  - Flexible scheduling to allow for medical appointments and self-care.
  - Educational seminars on menopause and cardiovascular health to destigmatize these issues.
- Healthcare System Advocacy: Lobby within clinics and health systems for:
  - Longer, dedicated appointment times for comprehensive cardiovascular risk counseling and lifestyle coaching.
  - Reimbursement models that value and compensate nurses for providing these essential education and counseling services.
  - Integration of routine menopause assessment into standard primary care protocols for women aged 40+.
- Policy Advocacy: Work through professional nursing organizations (e.g., American Nurses Association, American Heart Association) to advocate for:
  - Policy changes that support family caregivers, such as paid leave and respite care services.
  - Funding for community-based programs that provide healthy meal preparation and physical activity opportunities for adults.

In conclusion, this study calls for nurses to fully embrace their role as champions for midlife women's cardiovascular health. By adopting a holistic assessment strategy, co-designing pragmatic interventions, and advocating for necessary system-level changes, nurses can directly address the inequities in care and empower women to overcome the very real barriers that stand between them and better health.

5. Limitations and Future Research

While this study provides critical insights into the barriers and facilitators faced by midlife women, its findings must be interpreted within the context of its limitations. These limitations, however, serve as a valuable springboard for defining a robust agenda for future research.

Study Limitations:

1. **Sampling and Generalizability:** The use of a convenience sample, primarily recruited from clinical and community settings, may introduce selection bias. Women who are more engaged with the healthcare system or who have greater health concerns may be overrepresented. Consequently, the findings may not be fully generalizable to all midlife women, including those who are disengaged from healthcare, from underrepresented racial or ethnic groups, or from lower socioeconomic backgrounds not captured in our sample.
2. **Methodological Constraints:** The cross-sectional nature of the quantitative phase provides a snapshot in time but cannot establish causality or capture how perceptions of barriers and facilitators fluctuate over the menopausal transition or in response to life events. Furthermore, while the mixed-methods design is a strength, the sequential collection of data means the qualitative phase was designed based on initial quantitative findings and may have missed exploring themes from non-participants.
3. **Self-Reported Data:** The reliance on self-reported measures for barriers, behaviors, and knowledge is subject to biases, including social desirability bias (the tendency to give answers that are socially acceptable) and recall bias. Objective measures of health behaviors (e.g., accelerometer data for physical activity, biometric data) were not included but would strengthen future studies.

Directions for Future Research:

To build upon this work, a multi-faceted research agenda is proposed:

1. **Intervention Development and Testing:** The most critical next step is to use these findings to design and evaluate evidence-based interventions.
   - **Randomized Controlled Trials (RCTs):** Future research must test the efficacy of the co-designed interventions suggested in this study (e.g., MI-based counseling, skill-building workshops, peer support networks) through rigorous RCTs. These trials should use both objective (e.g., blood pressure, cholesterol levels, body composition) and subjective (e.g., self-efficacy, quality of life) outcome measures.

- **Digital Health Solutions:** Research should explore the development and effectiveness of scalable digital tools, such as tailored mobile health apps or virtual support communities, designed to address specific barriers like time constraints and lack of social support.

2. **Longitudinal and Life-Course Research:** To understand the dynamic nature of these experiences, longitudinal studies are essential.
    - Studies should track cohorts of women from perimenopause through postmenopause to map how barriers, facilitators, and self-management behaviors evolve alongside hormonal changes and shifting life responsibilities (e.g., children leaving home, retirement, onset of caregiving for parents).
    - Life-course approaches could investigate how earlier life experiences (e.g., pregnancy complications, experiences with the healthcare system) influence cardiovascular self-management behaviors during midlife.
3. **Research with Underrepresented Populations:** Purposeful investigation is needed to understand the unique experiences of diverse groups of women.
    - Qualitative and quantitative studies should focus exclusively on underrepresented populations (e.g., women of color, low-income women, LGBTQ+ women, women with disabilities) to identify culturally specific barriers and facilitators and ensure that future interventions are equitable and inclusive.
4. **Policy and Systems-Level Research:** Future inquiry should move beyond the individual level to evaluate broader interventions.
    - Research could assess the impact of policy changes (e.g, mandated workplace wellness programs, expanded caregiver support benefits) on the cardiovascular health outcomes of midlife women.
    - Implementation science studies could examine the best strategies for integrating routine assessment of caregiver burden and menopausal symptoms into standard clinical practice across diverse healthcare settings.

In conclusion, while this study has limitations inherent to its design, it successfully illuminates the complex reality of cardiovascular risk management for midlife women. It provides a foundational evidence base from which to launch a concerted and necessary research effort aimed at developing effective, scalable, and equitable solutions to support women's health during this critical life stage.

6. Conclusion

For midlife women, the management of cardiovascular risk is a daily negotiation, fought not within the sterile confines of a clinic but in the complex, demanding context of their everyday lives—a realm defined by competing priorities, profound physiological changes, and frequently, a stark absence of supportive structures. This study has systematically dismantled the outdated notion that knowledge alone is sufficient for change. Instead, it has illuminated that the most formidable barriers are entrenched in gendered social roles, under-recognized biological transitions, and systemic gaps in care.

The findings provide an irrefutable evidence base to argue that effective, equitable care for this population must be fundamentally empathetic, recognizing the invisible load women carry; deeply practical, offering scalable solutions to real-world problems; and radically tailored, moving beyond generic protocols to honor individual context.

This research underscores a clear and urgent call to action: the responsibility to bridge the gap between knowing and doing cannot fall on the shoulders of women alone. It must be shouldered by a healthcare system that is responsive to their needs. Nurses, positioned at the nexus of compassion and clinical expertise, are uniquely equipped to lead this charge. By championing holistic assessments, co-designing pragmatic interventions, and advocating for necessary policy and systemic reforms, the nursing profession can transform the standard of care. Ultimately, by acknowledging and empowering women through this critical life stage, nurses can play a pivotal role in ensuring that cardiovascular health is not a luxury, but an achievable priority, thereby altering the trajectory of the leading cause of death among women worldwide (Virani et al., 2024). The path forward is clear—it requires listening to women's stories and building a future of care that is truly designed for their lives.

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