Gender Gap in Cardiovascular Research

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Cardiovascular disease (CVD) is the leading cause of death in women worldwide (1). Despite this, women are largely underrepresented in cardiovascular research (2). The underrepresentation is a multifaceted issue that has persisted despite longstanding recognition and guidelines aimed at addressing it. This disparity not only impacts the generalizability of research findings but also perpetuates inequalities in healthcare outcomes for women.

Historically, CVD was often considered a predominantly male disease, which contributed to the exclusion of women from clinical trials. This misconception has led to a lack of comprehensive data on the effectiveness and safety of various treatments for women. Despite improvements, an analysis of data from ClinicalTrials.gov found that women comprised only 38% of participants in cardiovascular clinical trials from 2010 to 2017. (3). This underrepresentation is even more pronounced in certain areas, such as acute coronary syndrome trials, where only 26.9% of participants were women (3).

Several factors contribute to the underrepresentation of women in CVD research. One key issue is the differential referral patterns, where women are less likely to be referred to specialists conducting clinical trials (4). Additionally, logistical barriers, including caregiving responsibilities, can prevent women from participating in studies (2). There is also a notable lack of female leadership in clinical trials, which has been shown to correlate with lower recruitment of female participants (2). Furthermore, there is a significant gap in data regarding the effects of treatments on women of childbearing age and pregnant women, as they are often excluded from clinical research due to perceived risks (5).

The exclusion of women from clinical trials has far-reaching implications. For instance, treatments and drugs that are effective in men may not be as effective or may even be harmful to women due to biological differences. In a review conducted by Kalibala et al, women appeared to be more prone to adverse effects of drugs treating cardiovascular diseases (e.g. hypertensive drugs) (6). The lack of sex-specific data can lead to suboptimal treatment strategies and outcomes for women. Moreover, the underrepresentation of women in CVD research exacerbates the knowledge gap regarding the pathophysiology and natural history of heart disease in women, further hindering the development of effective interventions (6).

Efforts to address this disparity must be multifaceted. Firstly, clinical trials should monitor and adjust exclusion criteria to ensure that they are not disproportionately excluding women. Concerns about hormonal fluctuations and reproductive potential have traditionally led to the exclusion of these groups (7), but more inclusive protocols, including adequate monitoring and data collection, are necessary to gather meaningful sex-specific data. Moreover, logistical challenges such as travel, childcare, and time constraints are significant barriers for women. Solutions involving remote monitoring, flexible appointment scheduling, and financial reimbursements for time and travel can help mitigate these issues. Educational interventions and sex-specific trial materials can significantly improve understanding and participation (7). Additionally, more emphasis should be placed on increasing the representation of women in clinical trial leadership as this may potentially improve the recruitment of female participants (5). Finally, there needs to be a focus on sex-specific analyses in clinical trials to ensure that treatment guidelines are applicable to both men and women (8).

To summarize, the underrepresentation of women in CVD research remains a significant barrier to achieving equitable healthcare outcomes. While awareness of this issue has grown, tangible changes in research design and

execution are necessary to ensure that the unique needs of women are addressed. As the medical community continues to advocate for gender equity in research, it is crucial that these efforts translate into concrete actions that enhance the inclusivity of cardiovascular research for all patients.

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