Education

E-ISSN No : 2581-6195 | Volume : 7 | Issue : 9 | September 2024

GENDER DISPARITIES IN ASPIRIN USE FOR HEART DISEASE: A CRITICAL EXAMINATION OF BIAS IN MEDICAL PRACTICE

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ABSTRACT

As research progresses, increasing evidence of gender bias in various fields, including medicine, has been identified. This paper presents evidence of gender bias in treating heart diseases with aspirin. The significant increase in aspirin effectiveness can be attributed to the lower odds ratio of women being prescribed aspirin and its varying efficacy in female bodies. The research highlights the consequences of gender bias in medicine, such as inadequate treatment and health disparities. It addresses the underrepresentation of women in clinical trials and the lack of gender-specific analysis, which contribute to gaps in medical research. Additionally, the paper discusses implicit bias among healthcare providers, leading to differential diagnosis and assessment, limited awareness of gender differences, and inconsistent prescription practices. Understanding and addressing gender bias is crucial to ensuring equitable and evidence-based care for heart diseases, including the appropriate use of aspirin.

KEYWORDS: Gender Bias, Heart Disease, Aspirin, Medical Research, Healthcare Disparities

INTRODUCTION

Gender bias in medicine results in lower-quality healthcare and increases health inequity. This bias leads to a lack of inclusivity in medical research, creating gaps in knowledge. Historically, medical research has predominantly focused on male subjects, resulting in an inadequate understanding of gender-specific health conditions and differences in treatment outcomes. For example, Poulis & Christodoulou (2024) demonstrated that women comprised only 38% of participants in cardiovascular clinical trials between 2010 and 2017. Furthermore, Zucker & Prendergast (2020) illustrate that the common practice of prescribing equal drug doses to women and men neglects sex differences in pharmacokinetics and dimorphisms in body weight, which puts women at risk of overmedication and contributes to adverse reactions. This limited knowledge and gender disparity in clinical trials can lead to suboptimal or inappropriate treatment decisions for women, including the use of aspirin for heart diseases.

Diagnostic bias influenced by gender stereotypes also impacts the use of aspirin for heart diseases. Especially considering symptoms and presentations of heart diseases in women may differ from those in men, leading to underdiagnosis or misdiagnosis. Women often present with different symptoms of ischemic heart disease compared to men. Studies like Sawan et al. (2023) and Khan et al. (2016) have found that women are more likely to experience atypical symptoms like unusual fatigue, sleep disturbances, anxiety, and arm weakness/ discomfort than classic chest pain.

These atypical symptoms increase the chances that a woman may experience delayed or inadequate treatment, including the appropriate use of aspirin as a preventive measure. Thus, ensuring diverse representation in medical research and considering gender-specific differences is crucial for reducing health disparities and improving healthcare outcomes for both men and women. For example, research on cardiovascular disease has historically underrepresented women and racial and ethnic minorities. As a result, treatment guidelines and risk prediction models have been less accurate for these populations, contributing to persistent disparities in cardiovascular outcomes. Ilic et al. (2022) found that the Framingham Risk Score, a widely used tool for predicting heart disease risk, performed poorly in predicting events among black women. Addressing these biases can help us work towards equitable and evidence-based medical care.

METHODOLOGY

This study analyzes quantitative data from various sources, employing multiple approaches to provide evidence of gender bias in the use of aspirin for heart diseases. These diverse methodologies collectively establish a clearer relationship between gender and aspirin use.

For instance, Williams et al. (2003) aimed to

Impact and Research Fellowship, Harvard Student Agencies, In collaboration with Learn with Leaders

HOW TO CITE THIS ARTICLE:
Ridhi Anumulapalli (2024). Gender Disparities in Aspirin Use for Heart Disease: A Critical Examination of Bias in Medical Practice, International Educational Journal of Science and Engineering (IEJSE), Vol: 7, Issue: 9, 07-09

Research Paper

determine if a gender or age bias exists in the prescription of important secondary preventive therapies for ischemic heart disease in primary care. The researchers identified 15,590 patients with ischemic heart disease who had received a prescription for nitrate therapy over a 1-year period in the Eastern Region of the General Medical Services scheme in Ireland. The researchers conducted a retrospective analysis of patient records. Data from a large sample of patients with heart disease were collected and analyzed to determine the likelihood of receiving therapies such as β-blockers, aspirin, and ACE inhibitors. The odds ratio was used to compare the likelihood of receiving aspirin between male and female patients. Additionally, a confidence interval was calculated to assess the precision of the estimates. This data, which determines whether or not there is a gender aspect to the prescription of medicines, helps determine whether there may be a bias involved in addressing the symptoms of ischemic heart disease.

Opotowsky et al. (2007) utilize data from the National Health and Nutrition Examination Survey (NHANES) to assess aspirin use in a nationally representative sample of adults aged 20 years and older with self-reported CHD. The researchers utilized a different approach to investigate gender differences in aspirin use for secondary prevention. They analyzed data from the nationally representative survey, which included information on aspirin use among individuals with coronary heart disease (CHD) in the United States. A statistical analysis, including chi-square tests, was conducted to examine the gender disparity in aspirin usage while adjusting for various confounding factors. This study complements Williams et al. (2003) in that it helps understand the usage of aspirin among men and women, however, these results involve self-reported statistics and therefore give a wider and more accurate range of data.

Yerman et al. (2007) conducted a systematic review and meta-analysis of randomized placebo-controlled clinical trials. The researchers gathered data from various studies that investigated the efficacy of aspirin therapy in preventing myocardial infarction (MI). By combining and analyzing the data from these trials, they assessed the influence of gender on aspirin's effectiveness in preventing non-fatal MI. These varied approaches increase the validity of this study by establishing a clearer relationship between gender and aspirin use.

RESULTS

Gender bias in the prescription of aspirin

The findings of Williams et al. (2003) revealed that female patients were less likely to receive important therapies such as β-blockers, aspirin, and ACE inhibitors compared to male patients. The 95% confidence interval supported the lower odds ratio for receiving aspirin in women. These findings indicate a gender bias in the prescription of aspirin as a secondary preventive therapy.

Similarly, Opotowsky et al. (2007) examined the gender differences in aspirin use for secondary prevention among individuals with coronary heart disease (CHD) in the United States. The researchers analyzed data from a nationally representative survey and found that women with CHD were less likely than men to use aspirin regularly (62.4% vs. 75.6%, $p < .001$). This gender difference persisted even after adjusting for various factors. Women were also more likely to report contraindications to aspirin use, but this did not fully explain the disparity.

The findings suggest that there is a gender disparity in the use of aspirin for secondary prevention among individuals with CHD. This disparity may put women at a higher risk of cardiovascular events and premature death. The study highlights the need for improved secondary prevention of cardiovascular events for women with CHD. Further research is needed to better understand the underlying causes of this disparity and to develop interventions to address it.

Gender bias in the biological working of Aspirin

Yerman et al. (2007) examine the influence of gender on the effects of aspirin in preventing myocardial infarction (MI). The researchers conducted a systematic review and meta-analysis of randomized placebo-controlled clinical trials that investigated the efficacy of aspirin therapy on MI. They found that aspirin significantly reduced the risk of non-fatal MI but not fatal MI. They also observed that the gender mix of the trials played a role in the efficacy of aspirin, with trials predominantly including men demonstrating the largest risk reduction in non-fatal MI. In contrast, trials with predominantly women did not show a significant risk reduction in non-fatal MI. These findings suggest that women may be less responsive to aspirin than men in preventing MI. The study highlights how Asprin's efficiency is skewed towards males and therefore increases the risk to women's lives.

Some may argue that this explains the reduced odds ratio for receiving aspirin in women, but Luepker et al. (2015) analyzed population trends in the use of aspirin for cardiovascular disease (CVD) prevention. The use of aspirin for primary prevention reached 21% among men and 12% among women aged 25 to 74. The study also found that aspirin use for secondary prevention was widespread, reaching 74% among men and 64% among women. This shows that despite aspirin's ineffectiveness in females, it is still widely used.

DISCUSSION

The evidence from multiple studies suggests that there is gender bias in the use of aspirin for heart disease. According to Williams et al. (2003), female patients are less likely to receive important therapies such as aspirin compared to male patients. This gender bias is supported by the lower odds ratio for women receiving aspirin. Similarly, Opotowsky et al. (2007) found that women with coronary heart disease (CHD) are less likely to use aspirin regularly compared to men. This gender difference persists even after adjusting for various factors.

These findings indicate that there is a gender disparity in the use of aspirin for secondary prevention of cardiovascular events among individuals with CHD. This disparity may put women at a higher risk of cardiovascular events and premature death. The study highlights the need for improved secondary prevention strategies for women with CHD.

In addition to gender bias in prescription, there may also be gender differences in the biological workings of aspirin. Yerman et al. (2007) found that the efficacy of aspirin in preventing myocardial infarction (MI) may vary between men and women. Trials predominantly including men demonstrated a larger risk reduction in non-fatal MI compared to trials with predominantly women. This suggests that women may be less responsive to aspirin for preventing MI.

However, it is important to note that despite the potential gender bias and differences in efficacy, aspirin use for cardiovascular disease prevention is still widely prevalent. The use of aspirin for secondary prevention is high among both men and women, reaching 74% among men and 64% among women, according to a population trends study. This indicates that aspirin is still being used despite its potential inefficacy in females.

CONCLUSION

In conclusion, the evidence indicates a significant presence of gender bias in the use of aspirin for heart disease. Women are less likely to receive aspirin therapy and may respond differently to aspirin compared to men. Addressing this gender disparity is crucial to ensuring equitable access to preventive treatments and improving health outcomes for both men and women with heart diseases. Understanding the underlying causes of this gender bias, such as differences in clinical presentation and potential biological factors, is essential for developing targeted interventions. By promoting gender-specific research and clinical practices, healthcare providers can better tailor treatments to individual needs, thereby reducing health disparities and enhancing the quality of care. Future research should focus on exploring these gender differences in greater detail and developing strategies to mitigate bias in medical treatment. This will contribute to more inclusive and effective healthcare for all patients, regardless of gender.

REFERENCE

1. Opotowsky, A. R., McWilliams, J. M., & Cannon, C. P. (2007, January 9). Gender differences in aspirin use among adults with coronary heart disease in the United States - Journal of General internal medicine. SpringerLink. https://link.springer.com/article/10.1007/s11606-007-0116-5
2. MediLexicon International. (n.d.). Gender bias in healthcare: Examples and consequences. Medical News Today. https://www.medicalnewstoday.com/articles/gender-bias-in-healthcare
3. Poulis, K., & Christodoulou, I. (2024). Justificative conformity in ontologically ring-fenced fields: Problematizing the scholarly nomenclature in qualitative studies. Marketing Theory. https://doi.org/10.1177/14705931241230046
4. Sawan, M. A., Steinberg, R. S., Sayegh, M. N., Devlin, C., Behbahani-Nejad, O., & Wenger, N. K. (2023). Chest pain in women: Gender- and sex-based differences in the presentation and diagnosis of heart disease. US Cardiology Review, 17. https://doi.org/10.15420/usc.2022.30
5. Khan, N.A., Daskalopoulou, S.S., Karp, I., Eisenberg, M.J., Pelletier, R., Tsadok, M.A., Dasgupta, K., Norris, C.M., & Pilote, L. (2016). Sex differences in prodromal symptoms in acute coronary syndrome in patients aged 55 years or younger. Heart, 103, 863 - 869.
6. Ilic, N., Prescott, A., Erolin, C., & Peter, M. (2022). Representation in medical illustration: The impact of model bias in a dermatology pilot study. Journal of Visual Communication in Medicine, 45(4), 253–262. https://doi.org/10.1080/17453054.2022.2086455
7. Luepker, R. V., Steffen, L. M., Duval, S., Zantek, N. D., Zhou, X., & Hirsch, A. T. (2015). Population trends in aspirin use for cardiovascular disease prevention 1980–2009: The Minnesota Heart Survey. Journal of the American Heart Association, 4(12). https://doi.org/10.1161/jaha.115.002320
8. Williams D, Bennett K, Feely J. Evidence for an age and gender bias in the secondary prevention of ischaemic heart disease in primary care. Br J Clin Pharmacol. 2003 Jun;55(6):604-8. doi: 10.1046/j.1365-2125.2003.01795.x. PMID: 12814456; PMCID: PMC1884265.
9. Yerman, T., Gan, W.Q. & Sin, D.D. The influence of gender on the effects of aspirin in preventing myocardial infarction. BMC Med 5, 29 (2007). https://doi.org/10.1186/1741-7015-5-29
10. Zucker, I., & Prendergast, B. J. (2020). Sex differences in pharmacokinetics predict adverse drug reactions in women. Biology of Sex Differences, 11(1). https://doi.org/10.1186/s13293-020-00308-5