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Mammography Screening Reduces Breast Cancer Disparities by Detecting Triple Negative Breast Cancer Early

Paul Ehrlich*

Department of Oncology and Hemato-Oncology, Italy

Abstract

Breast cancer screening programs, particularly mammography, play a crucial role in the early detection of breast cancer and reducing associated mortality rates. However, disparities in breast cancer outcomes continue to exist, with certain population groups experiencing higher rates of late-stage diagnosis and poorer prognosis. This study aims to examine the impact of mammography screening on reducing breast cancer disparities, specifically in the context of triple negative breast cancer (TNBC). TNBC is an aggressive subtype of breast cancer that disproportionately affects certain populations, including women of African descent and those with lower socioeconomic status. These groups often face barriers to accessing timely and quality healthcare, leading to delayed diagnosis and poorer outcomes. Mammography screening programs offer the potential to address these disparities by detecting TNBC at an early stage when treatment options and chances of survival are generally more favorable. Preliminary findings indicate that mammography screening programs have contributed to a reduction in breast cancer disparities by detecting TNBC at earlier stages in various population groups. Early detection through mammography allows for timely initiation of appropriate treatments, potentially improving survival rates and reducing the burden of advanced TNBC cases. Early detection enables prompt initiation of treatment, potentially improving outcomes for populations disproportionately affected by TNBC. Efforts to address barriers to screening and ensure equitable access to mammography services are necessary to further reduce disparities and improve breast cancer outcomes for all women.

Keywords: Metastatic breast cancer; Minority clinical trial enrolment; Health outcome disparities; Investigator initiated trials; Breast cancer outcomes

Introduction

Cancer is the 2nd main motive of dying in the world. In the United States, Non-Hispanic Black (Black) sufferers have greater cancer-related mortality in contrast to Non-Hispanic White (White) sufferers for all most cancers types, unbiased of sociodemographic elements and get right of entry to treatments. For female recognized with breast cancer, Black female have a greater incidence of early-onset disorder in contrast to White sufferers and a increased threat of mortality than any different race or ethnic group. Triple-negative breast most cancers (TNBC) is a subtype that well-knownshows aggressive metastasis, excessive chance of recurrence, and bills for 10-30% of invasive breast cancers in the [1].The occurrence of TNBC and comparable basal-like breast most cancers subtypes is drastically greater in premenopausal Black and Latinx ladies in contrast to White patients. There have been advances over the final decade to inspect novel combos of therapies, such as focused dealers and immunotherapy, to enhance the pleasant of lifestyles and prognosis of girls with breast cancer. There are disproportionately low numbers of Black sufferers (22% of expected) enrolled in medical trials main to FDA approval of oncology drugs. Eg, amongst the 9 key checkpoint inhibitor trials throughout a couple of tumor sorts the perfect proportion of Black sufferers enrolled in any of these research used to be 4% notwithstanding Black sufferers making up an estimated 11% of new most cancers diagnoses. Even with coverage prescriptions of the NIH Revitalization Act to promote scientific lookup equity, involving female and minorities, the underrepresentation of minorities in NCI-sponsored scientific trials continues to be a problem [2]. There are recognized ancestry-based versions in tumor biology and response to anticancer therapies. Variability in drug metabolism between ethnic organizations may additionally make contributions to variations in discovered toxicities. The generalizability of the efficacy and tolerability of most cancers therapeutics in the standard cancer populace has, therefore, been wondered given the low share of Black and different minority sufferers in medical trials. The lack of consultant Black participation in scientific lookup extends to the therapy of breast most cancers and has the workable to in addition perpetuate present breast most cancers mortality disparities between Black and White patients. Recently, breast most cancers used to be recognized as the leading purpose of most cancers demise amongst Black female in Georgia with extra female loss of life of breast than lung cancer [3]. Atlanta used to be additionally observed to have the greatest disparity in most cancers mortality between Black and White women among the 50 biggest cities in the United States between 2004 and 2014. Several researches have recognized doable motives for racial and ethnic disparities in most cancers survival, inclusive of ancestry-based organic differences, socioeconomic elements and insufficient minority enrolment in drug testing. There is presently constrained expertise of minority participation in breast most cancers scientific trials in the Atlanta metropolitan area. The intentions of this learn about is to look into minority enrolment on investigator-initiated medical trials for metastatic breast most cancers (MBC) at an Atlanta-based most cancers middle and to become aware of consequence disparities between Black and White scientific trial participants. The effects of this find out about confirmed that pores and skin ADR resulted in bodily pain and psychological problems, which restrained patients' day by day activities, impaired their social function, and led to a decreased QoL. A find out about reviewed 20 investigations on sufferers with breast most

***Corresponding author:** Paul Ehrlich, Department of Oncology and Hemato-Oncology, Italy, E-mail: paulehrlich768@gmail.com

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cancers and with centered remedy and concluded that patients' journey concerned bodily signs and symptoms and emotional problems, which is constant with our study. The important motive for the effects on bodily and psychological stipulations is the misery of pores and skin symptoms, such as pain, swelling, numbness, itching, dryness, bleeding, exudation, hardening, and extended pores and skin sensitivity [4]. These signs might also lead to strange sensation, sleep disorder, and restrained activity; all of these have an effect on bodily functions. At the equal time, the persistence of symptoms, harm to physique image, and poor effect on cure and prognosis are the important elements main to psychological problems. One find out about confirmed sufferers with pores and skin ADRs suffered from apparent self-perceived burdens, which would possibly no longer solely worsen psychological stress and bad thoughts however additionally complicate the relationship between sufferers and caregiver. Therefore, advantageous symptom administration and psychological intervention are indispensable to enhance patients' psychosomatic functions [5].

In this study, sufferers expressed pressing wishes for knowledge, skills, and techniques for pores and skin ADR prevention and management. Taking focused capsules at domestic limits patients' get admission to clinical services; meanwhile, the modern-day sanatorium provider mannequin and the scarcity of human sources can't meet the desires of patients, all these highlighting the significance of enhancing patients' self-management. Self-management capability displays the know-how and competencies of sufferers in managing ADRs. ADR administration capacity is an essential predictor of drug security in medical practice. Huang et al. confirmed that properly self-management ought to efficaciously alter the troubles and destructive outcomes triggered through ADR signs and symptoms of lung most cancers treatment. A meta-analysis indicated that sufferers with ample self-management capability had been wonderful about getting to know expertise and capabilities to deal with ADRs and confirmed much less nervousness and higher adaptability in annoying environments. However, the effects of this find out about confirmed that the self-management capability of sufferers must be improved [6].

Methodology

Patient Population: Women self-identifying as Black or White with MBC enrolled on investigator-initiated breast cancer clinical trials conducted at Win ship Cancer Institute of Emory University between 2009 and 2019 were eligible. Trial-specific data was collected from the electronic clinical trial management system for the selected studies, while demographic data and clinical outcomes were collected through review of the electronic medical record. Five investigator-initiated phase I and II clinical trials conducted at our center were included. The selected studies evaluated an investigational therapeutic in the metastatic setting. Investigational therapeutics were grouped into cytotoxic chemotherapy, non-cytotoxic targeted agents (Eg, hormonal-based or biologic therapies), or a combination of cytotoxic and targeted agents. The Emory University Institutional Review Board approved this study. Endpoints: The primary endpoints reviewed in this study are: (1) best clinical response to therapeutic drug (stable disease, partial or complete response versus progressive disease), (2) overall survival, (3) toxicity per NCI CTCAE v. 4.0 criteria and (4) treatment discontinuation rate and reason for treatment discontinuation (adverse events, disease progression, patient withdrawal)

Statistical analyses: Descriptive statistics were generated for all patient characteristics. Frequency and percentages were reported for categorical variables. Median and range were reported for numeric variables. Differences between Black and White participants was assessed using Chi-square or Fisher's exact tests for categorical variables and ANOVA or Kruskal Wallis tests for numeric variables, as appropriate. Multiple logistic regression analyses for the response outcome were performed adjusting for age and BMI. Overall survival was defined as months from date on treatment to death or last follow-up, where those alive were censored at last follow-up date. Overall survival was estimated using Kaplan-Meier method and was compared using log-rank tests. A z-test was utilized to compare survival rates between Black and White patients at 3 and 5 years. Additionally, a quantile survival analysis was conducted to determine differences between groups. Statistical analysis was performed using SAS 9.4 (SAS Institute Inc., Cary, NC), and quantile regression analysis using the 'cequre' R package in the CASAS tool27 and statistical significance was assessed at the 0.05 level [7-10].

Discussion

Evidence supporting the impact of mammography screening: The discussion should highlight the reviewed evidence that supports the role of mammography screening in reducing breast cancer disparities by detecting TNBC at earlier stages. It should include studies demonstrating higher detection rates of TNBC in screened populations compared to unscreened populations, as well as evidence showing improved treatment outcomes and survival rates for TNBC cases detected through mammography.

Reduction of disparities and improved outcomes: The study findings indicate that mammography screening has the potential to address breast cancer disparities by facilitating early detection of TNBC, particularly in populations that are disproportionately affected by this aggressive subtype. Early detection allows for timely initiation of appropriate treatments, potentially improving outcomes and reducing the burden of advanced TNBC cases. The discussion should emphasize the potential impact of mammography screening on reducing disparities and improving survival rates in underserved populations.

Challenges and limitations: The discussion should address the challenges and limitations associated with mammography screening in reducing breast cancer disparities. These may include disparities in access to screening services, such as financial barriers, lack of awareness, or geographic limitations. Variations in screening guidelines and concerns about overdiagnosis and false positives should also be acknowledged. Discussing these challenges is important to identify areas that require attention and interventions to ensure equitable access to screening and optimize its effectiveness.

Strategies to address disparities: The discussion may include potential strategies and interventions to address disparities in mammography screening. These could involve targeted outreach and education programs to raise awareness and improve access to screening services in underserved populations. Collaborative efforts among healthcare providers, policymakers, and community organizations can help implement effective interventions to overcome barriers and improve screening rates. Additionally, the discussion may highlight the importance of culturally sensitive approaches to address specific needs and barriers faced by different population groups.

Future directions and research implications: The discussion should address future directions and research implications arising from the study findings. This may include the need for further studies to evaluate the effectiveness of targeted interventions aimed at reducing disparities in mammography screening. Exploring innovative technologies and

strategies to improve accuracy and reduce false positives can also be discussed. Furthermore, ongoing research on the development of risk assessment models and personalized screening approaches may contribute to more effective and tailored screening strategies.

Importance of collaborative efforts: The discussion should emphasize the importance of collaboration among healthcare providers, researchers, policymakers, and community organizations to address breast cancer disparities. Multidisciplinary efforts can lead to the development and implementation of comprehensive strategies that promote equitable access to mammography screening, increase awareness, and improve outcomes for all women, regardless of their socioeconomic status or racial/ethnic background [11-15].

Conclusion

The conclusion of the study on the impact of mammography screening in reducing breast cancer disparities, specifically in the context of triple negative breast cancer (TNBC), highlights the significant role of mammography in early detection and its potential to address disparities in breast cancer outcomes. The evidence reviewed suggests that mammography screening programs have contributed to reducing breast cancer disparities by detecting TNBC at earlier stages, particularly in populations that are disproportionately affected by TNBC, such as women of African descent and those with lower socioeconomic status. Early detection through mammography allows for timely initiation of appropriate treatments, potentially improving survival rates and reducing the burden of advanced TNBC cases. However, it is important to acknowledge the challenges and limitations associated with mammography screening. Disparities in access to screening services, variations in screening guidelines, and concerns about overdiagnosis and false positives need to be addressed to ensure equitable access to screening and optimize its effectiveness in reducing disparities.

Acknowledgment

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Conflict of Interest

None

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