Literature Review

Name

Institution Affiliation

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**Introduction**

Mammographic screening is a current and hotly debated topic among oncologists. Mammography screening for breast cancer has been observed to lower the danger of death from breast cancer by up to 20% and is recommended for the bracket aged 50-74 years old. However, mammography is only practical when performed at the appropriate age and interval. There are constant talks of whether or not mammographic screening should be made available to women for the timely discovery of breast cancer.

This literature review aims to summarize the current evidence for and against risk-based mammography screening in women. Risk-based screening has become increasingly popular over the past few decades, with the main argument is that high-risk women should be screened more frequently than those at low risk at specific age groups.

**Review of search history**

The literature review will explore the history of mammographic screening. The search sources will include academic journals, textbooks, and other relevant publications exploring mammographic screening history. The search will identify relevant topics, and the search process will identify critical authors, studies, and articles and their implications in the development of mammographic screening. The search will also identify the implications of demographic trends, including the changing age of women, in the development of mammographic screening. The search will be conducted using the following keywords: mammography, breast cancer, screening, early detection, and early detection techniques. The literature review will be presented concisely and organized and include a summary of the published literature. In addition, the literature review will include a summary of the most important findings and recommendations that the authors have developed.

**Synthesis of Evidence**

**Appropriate age of screening**

The objective of this study (Arleo et al., 2017) was to use CISNET breast cancer models to evaluate the three most often debated current mammography diagnosis guidelines: 1) once a year screening commencing at age 40; 2) yearly screening between the bracket of 45 and 54 years and semiannually between the ages of 55 and 79, and 3) biannual screening between the ages of 50 and 74. According to the findings, yearly screening at the age of 40 is the most effective, with a mortality reduction of 38%. The second suggestion is that women begin yearly screening at the age of 55 rather than 50. The advantages and hazards of the first and second proposals are not included in the 2016 CISNET models. They do not provide any suggestions for ladies above the age of 74. Between 2009 and 2016, the number of women who would die from breast cancer if not tested increased substantially. In the United States, annual screening would have a significant influence on breast cancer death. In 2009, we evaluated the advantages and risks of screening for a variety of ages. The ideal age was 40, but the study's final aims ultimately determined the study's success.

According to the findings (Burnside et al., 2019) study, age-based screening resulted in more non-threatening examinations than risk-based screening. The chance of having breast cancer was lower in those aged 40 to 44 than in 50. The study demonstrates how switching from yearly screening to a risk-based strategy can impact short-term results. The influence on cancer diagnosis if a patient has evident breast cancer but is not suitable for screening is determined by the period of the diagnostic setback and the lump’s reaction. Although risk-based screening allows women to match their risk to their present situation, it can be challenging to carry out. The risk-based screening method did not affect outcomes in those aged 45 to 49, but it did in people aged 40 to 44. Fewer women are diagnosed with breast cancer due to cost savings linked with fewer false-positive findings and reduced total mammography use. These findings, on the other hand, contribute to the number of missed biopsies.

The long-term findings of the UK Age study (Duffy et al., 2020) reveal that the intervention group had a substantial drop in the probability of succumbing to cancer after ten years. Those who did not participate in the experiment experienced the same impact. During a baseline follow-up of 17 years, the intervention group's overall survival rate (HR) was 088. Only when the analysis was limited to breast cancers identified after seven years of follow-up did the reported difference in mortality between the control and intervention groups become meaningful. When the malignancy was discovered after eight years, the intervention's effect on death was similarly reduced. The intervention's long-term effect on death was limited to individuals diagnosed with cancer during the intervention period. The reduction in mortality following the screening period was not linked to the inclusion of all cancer-related fatalities. There was a substantial difference in the long-term effect between cancer fatalities diagnosed during the intervention and those diagnosed after screening. The results of the experiment demonstrate that screening did not lead to overdiagnosis or impact the participants' quality of life.

Furthermore, the lack of a substantial excess of invasive tumors at the start of the study does not rule out the possibility of overtreatment due to screening. Overall, the findings underscore the need for yearly mammography screening for women in their 40s who have a history of breast cancer. The advantage of screening in terms of mortality is minimal, and further research is needed to assess long-term consequences.

**Outcomes of Screening**

This research (Le & Adler, 2020) aimed to examine the treatment regimens of breast cancer patients who had yearly mammography screenings. The breast cancer database of approximately 30,000 individuals who received assessments between 2016 and 2017 was evaluated in this study. Data from the yearly and biannual screening cohorts were compared. Between 2016 and 2017, 490 people were diagnosed with breast cancer. Two hundred forty-five of the patients had a screening frequency of more than 200 per year. There were also fewer interval tumors and smaller mean tumor size as a result of the screening. During yearly screening, less than 200 lesions were found in postmenopausal women. They also had a smaller tumor size and a lower AJCC stage. Annual mammograms have been related to a decreased risk of breast cancer and fewer interval cancers.

The research (Moorman et al., 2021) compared the results of yearly, biannual, and triennial mammography screenings. Comparisons were performed based on the features of breast tumors (stages) and the efficacy of treatment regimens. The CNBSS data created a mechanistic model that assesses the incidence and death of breast cancer in a community. Multiple types of heterogeneity are included in the model, which may be used to anticipate therapy response. The system is predicated on cancer incidence and survival data from the CNBSS. The benefit and harm of screening are then calculated based on the rise in overdiagnosis and the mortality gain. Although age and other established risk factors can affect screening, they cannot predict tumor features. The CNBSS was critiqued because participants were chosen randomly, raising the screening's impact but not changing the screening's orientation.

**Biblical integration**

 It has been suggested that women start having yearly mammography screening at the age of 40 years. This procedure helps in detecting early-stage cancer. As humans, it is our responsibility to ensure that we follow the recommended guidelines for mammography. Proverbs 6: 23 "For the commandments are a lamp and the teaching of a light." Women should regularly screen for early detection of cancer. Healthcare professionals and patients must weigh the benefits and risks of various age-based screenings and consider any complexity in the assessments. For women, annual mammography screening is recommended at age 40 instead of waiting until 50 years old. The bible states that people should follow their lives according to their seasons. Certain cancers, for instance, are known to appear during different seasons. In the bible, the Lord has established His steps. For instance, annual mammography is very beneficial for women. It can prevent many cancers and reduce the need for complex treatment procedures. This passage talks about being steadfast in everything that we do. The bible encourages us to be constantly abounding in the work of the Lord.

**Conclusion**

Mammography is an effective screening tool with the potential to reduce mortality in women with breast cancer. There has been no clear consensus on when it should begin. The literature review was completed on the benefits and risks of mammographic screening every 40 years. The results of this review demonstrate that mammographic screening at 40 has more benefits than risks and that the biblical teaching of self-examination is a good idea. The benefits of mammographic screening must be weighed against the risks, including false-positive results, unnecessary biopsies and surgeries, and overdiagnosis. Mammograms should be individualized to each woman's risk factors and age.

**References**

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