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998 – Effectiveness of mammographic screening for reducing breast cancer mortality in women aged 40 to 49 years

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Introduction: Breast cancer is the most prevalent malignancy among women and a leading cause of cancer-related mortality. While mammographic screening is well established for women aged 50 years and older, its implementation for those aged 40–49 years remains controversial.

Objective: This systematic review assesses the positive and negative impacts associated with expanding screening to this population: mortality reduction, radiation exposure, diagnostic difficulty, and associated costs.

Methods: This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations and the PICO framework: women aged 40–49 years (population); mammography screening (intervention); absence of mammographic screening or usual care (comparison); and breast cancer mortality, mortality rate, and survival (outcomes). PubMed/MEDLINE databases were searched for studies published since 2020, using the terms “breast cancer”, “mammography” and “40–49 years”. Inclusion criteria covered observational studies, clinical trials, and comparative studies, and studies were independently assessed by two reviewers. Data extraction was performed by six reviewers using standardized forms. Due to methodological heterogeneity, results were synthesized narratively.

Results: Of the 34 studies identified, five met the research goals and inclusion criteria: three randomized controlled trials and two observational studies. Screening was associated with a reduction in breast cancer mortality, with one trial reporting a relative risk (RR) of 0.75 (95% confidence interval: 0.58–0.97) at ten years, and one included meta-analysis showing approximately 18% reduction (RR=0.82) in women aged 39–49 years. However, higher rates of false-positive results and interval cancers, and lower sensitivity were observed with mammographic screening in this age group. Additional concerns included overdiagnosis and increased psychological and economic burden.

Conclusion: Mammographic screening in women aged 40–49 years was associated with a significant decrease in breast cancer mortality. Despite limitations related to overdiagnosis, reduced sensitivity, increased false positives, and radiation exposure, the findings suggest potential benefits and support consideration of screening expansion to this population. Nevertheless, further analyses are pivotal to better evaluate long-term clinical and socioeconomic impacts.

Ethics: Public data – Literature review.

Keywords: mammography; breast cancer; screening; mortality; women.