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Mammography for Breast Cancer Screening in India - A Health Technology Assessment

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INTRODUCTION

- Breast cancer is a major public health problem affecting millions of women in developed countries
- Various randomized controlled trials (RCTs) showed that mammographic screening substantially reduced breast cancer mortality [1]
- Developed countries in Europe, North America, Australia, Japan, and others have initiated early detection programs for breast cancer that use mammography as the screening test. [2]
- In most low-and middle-income countries (LMIC) breast cancer incidence is lower than that in high-income countries [3]
- However, the absolute number of deaths attributable to breast cancer in these countries is almost two times the number in high-income countries [3]
- Data is inadequate regarding the clinical and cost-effectiveness of breast cancer screening using mammography in India

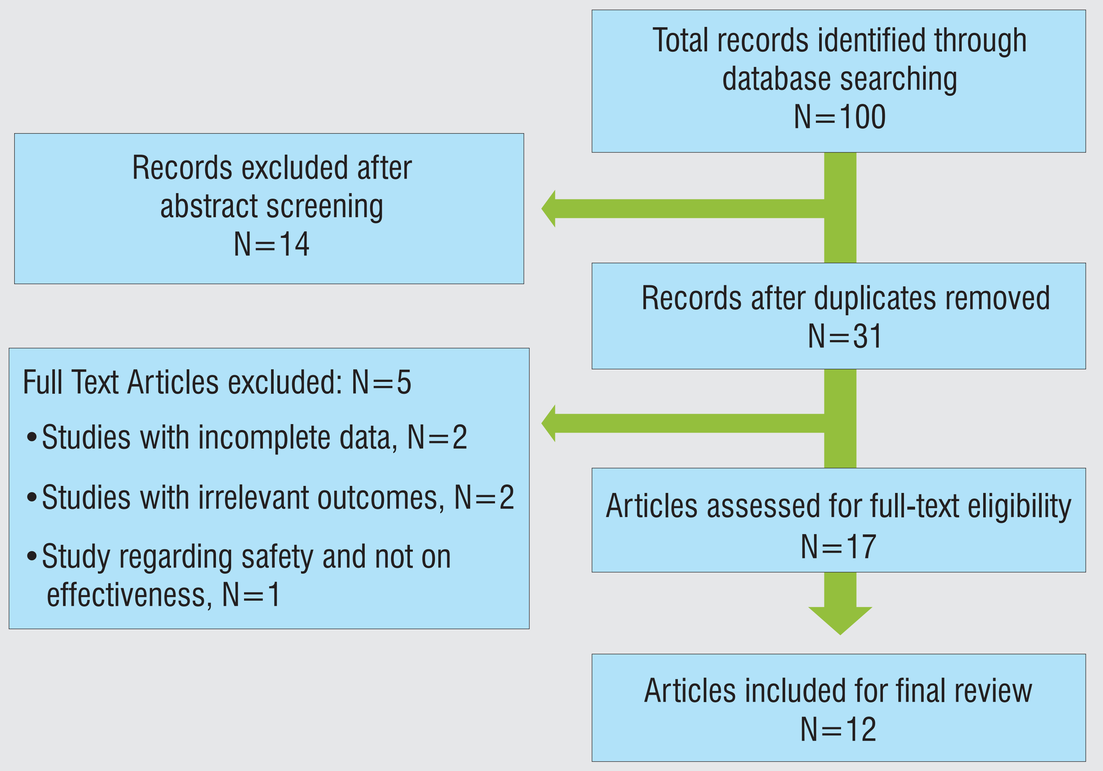
OBJECTIVES

- To assess the clinical and cost effectiveness of mammography for breast cancer screening in India

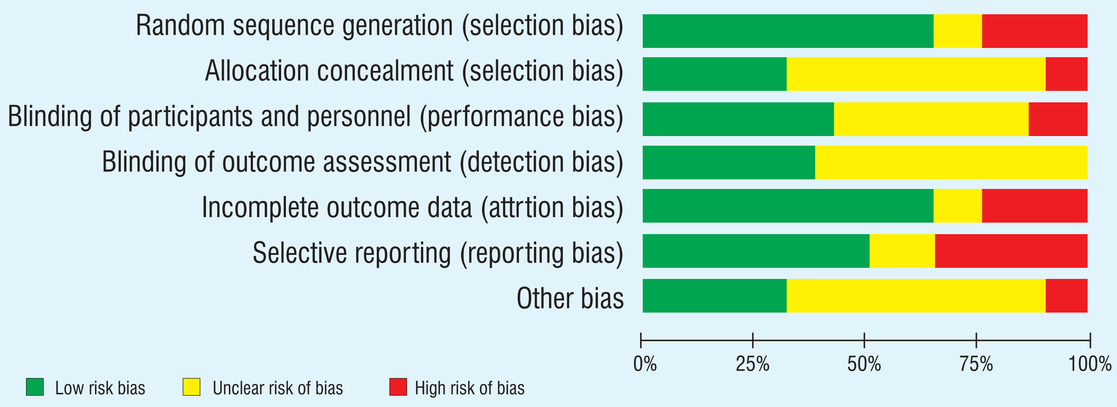
MATERIALS AND METHODS

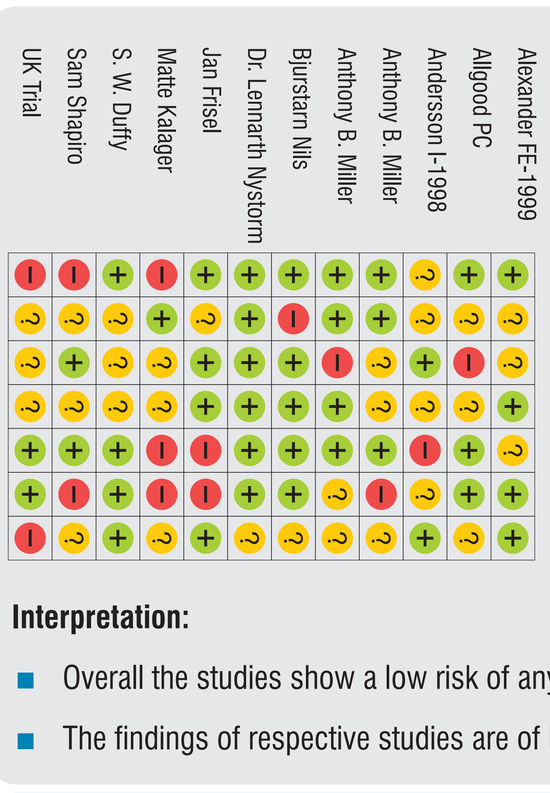
- A systematic literature search was conducted in Cochrane library, MEDLINE, PUBMED Science Direct, EMBASE, SCOPUS and Google Scholar for relevant studies.
- We identified 31 studies and literature filter started by scanning titles, abstracts, and the content of the articles according to Inclusion criteria
- Finally 12 studies were included in quantitative synthesis (Meta-analysis)
- We estimated risk of bias using Cochrane collaborating guidelines
- Review Manager 5.2 was used to do the data analysis.
- The key words used were "Breast Cancer" OR "Mammography" OR "Breast Cancer and Mammographic Screening
- PICO:
  - Population: Females above 30 years of age.
  - Intervention: Mammography
  - Comparator: No Screening
  - Primary Outcome: Mortality
  - Secondary Outcome: Detection of Breast Cancer

RESULTS



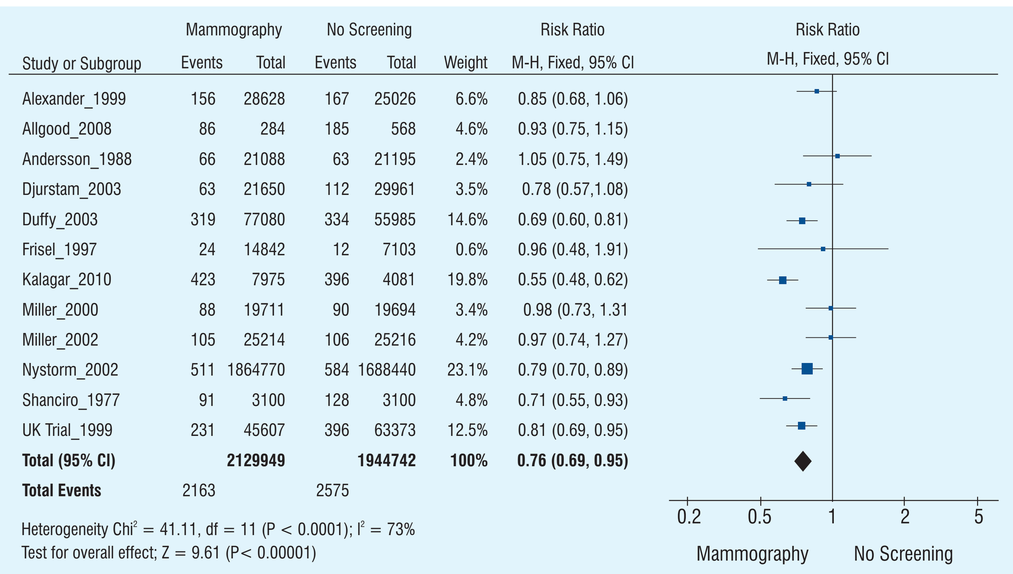
RISK OF BIAS





Interpretation:

- Overall the studies show a low risk of any form of bias
- The findings of respective studies are of high scientific validity and credibility



Interpretation:

- The reduction in mortality due to breast cancer in mammography group as compared to no screening was 24%
- Since RR is less than 1, experimental intervention is more effective than control

- After cost-effectiveness analysis, the following are the results:
- Cost for saving one additional life after mammography screening = INR 4,60,000
- Total cost of mammography screening = INR 6,329/life year gained Total number of mammography machines required = 29,271 units

DISCUSSIONS

- In most of India, breast cancer has become the second most common cancer among women, after cervical cancer [3]
- Majority of women with breast cancer in India are premenopausal; factors contributing include:
  - Young age of the population
  - Relatively lower life expectancy (about 62 years)
  - Age at which incidence peaks (around 45 years) [4]
- Further, over 70% of patients are diagnosed with clinically advanced disease, with either locally advanced breast cancer or higher stage [5]
- The aim of this HTA report is to explore the efficacy of early detection of breast cancer through mammography
- The advantage of screening an asymptomatic population of women is the benefit of identifying pre-clinical disease with sufficient lead time to potentially alter the natural and more adverse course of breast cancer
- Unlike other cancers, breast cancer is treatable if detected at an early stage
- However, there is a need for systematically implement breast cancer screening, education and intervention strategies

CONCLUSIONS

- Annual screening of female population above 30 years of age could reduce breast cancer associated mortality by 24% mainly due to early detection of breast cancer
- Annual mammographic screening is a cost-effective strategy associated with an excellent social return on investment on this technology

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