Will screening mammography in the East do more harm than good?
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Authors' objectives
To evaluate the effects of white, population-based mammographic screening when applied to a low-risk Chinese population.

Searching
MEDLINE (January 1966 to October 2000) and the Cochrane Library were searched for potentially relevant studies; the search terms were reported. To identify additional trials, bibliographies of systematic reviews and clinical practice guidelines were scanned and experts were consulted. Only studies published in the English language were eligible for inclusion; abstracts were excluded.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion in the review.

Specific interventions included in the review
Studies of population-based mammography were eligible for inclusion in the review. Studies of opportunistic screening and case-finding were excluded. The reported rounds of mammography in the included studies ranged from 2 to 6.

Reference standard test against which the new test was compared
The review did not include any diagnostic accuracy studies that compared the performance of the index test with a reference standard of diagnosis.

Participants included in the review
Studies of women older than 50 years were eligible for inclusion in the review. Primarily symptomatic patients with breast lumps, pain, nipple discharge, or enlarged lymph nodes were excluded. The majority of women in the included studies were white. The results of the review were subsequently applied to data from Hong Kong (where 95% of the population were Chinese) and extrapolated to other Asian populations.

Outcomes assessed in the review
Studies measuring breast cancer-related mortality (with a minimum follow-up of 5 years and 10 breast cancer deaths) were eligible for inclusion. The duration of follow-up in the included studies ranged from 11 to 18 years. In the context of Asian populations, the number-needed-to-screen (NNS) to prevent one death or adverse event was also assessed.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed the studies for eligibility for inclusion in the review.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Two reviewers independently performed the data extraction, and any disagreements were resolved by consensus. Relative risks (RRs) and their corresponding 95% confidence intervals (CIs) were extracted, or calculated where necessary. Pooled risk ratios were subsequently applied to a selected Chinese population, using published mortality data to calculate the absolute risk ratio and the NNS.
Methods of synthesis

How were the studies combined?
The RRs were pooled in a meta-analysis using the random-effects model of DerSimonian and Laird, Greenland's fixed-effect model, and Peto's assumption-free method.

How were differences between studies investigated?
Heterogeneity was statistically assessed using a critical value of p equals 0.2. The test was not reported.

Results of the review

Seven RCTs were included in the review (n=305,112 at enrolment).

A reduction in the risk of breast cancer-related death was reported (RR 0.80, 95% CI: 0.71, 0.90), as a result of mammographic screening in white women. The sensitivity analysis showed similar results when the fixed-effect model and Peto's assumption-free method were used (RR 0.81, 95% CI: 0.74, 0.88). Heterogeneity between the studies was statistically significant (p=0.14).

Although the following analysis was not part of the systematic review, the pooled RR reduction from western data was applied to mortality data from Chinese women aged 50 years and older in 1996, using a mortality rate of 38.4 per 100,000. The absolute risk reduction of breast cancer-related mortality was 0.106% over a screening period of 13.8 years. The NNS was 1,302 (95% CI: 898, 2,604) women for 10 years to prevent one death.

Cost information

The authors discussed the benefits, harms and costs of mammographic screening in the context of false positivity.

Authors' conclusions

There is currently insufficient evidence to support population-based mammographic screening in Chinese women and in other Asian populations where low disease prevalence exists.

CRD commentary

The review question was clear and inclusion criteria were specified for the interventions, participants, outcomes and study design. The search strategy was limited and the apparent lack of an attempt to retrieve unpublished material, along with the exclusion of non-English language papers, means that relevant studies might have been missed and biases introduced. The procedures for selecting the studies and extracting the data seemed to be systematic and transparent. The method of synthesis and application of sensitivity analysis were appropriate. However, the absence of study population details and the lack of a validity assessment mean that the reliability of the included trials (and their synthesis) is unclear. The authors acknowledged that effects in the Asian population were dependent on assumptions made about the baseline population risk. They also appropriately discussed problems associated with the extrapolation of data between different populations. The authors' conclusions reflect the evidence presented, but the reliability and generalisability of them is unclear.

Implications of the review for practice and research

Practice: The authors stated that future opportunistic screening in Hong Kong should be accompanied by advice on the potential hazards associated with clinically insignificant detection of disease.

Research: The authors stated that resources should be directed at raising awareness of growing evidence from the Western world, and the generalisability issues arising from this review. Increased focus on high-risk groups, where the intervention can potentially provide greater benefit, is recommended.

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