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Digital breast tomosynthesis added to synthetic mammography (DBT + s2D) in women with partially fatty or heterogeneously dense breasts (patterns 2 and 3 ACR BI-RADS): Systematic review, meta-analysis, and clinical outcomes in Brazilian breast cancer screening

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Objective: The objectives of this study were to compare DBT + s2D to digital mammography (DM) in breast cancer screening of women with breast patterns 2 and 3 ACR BI-RADS and evaluate the clinical outcomes in Brazil. **Methodology:** This is a systematic review and meta-analysis (PRISMA) comparing DBT+s2D with DM in women between 40 and 69 years old with breast patterns B and C of ACR BI-RADS 5th Edition eligible for biennial breast cancer screening. The Medline, PubMed, Embase, and Cochrane databases were searched on September 06, 2022 for the descriptors: digital breast tomosynthesis, DM, and breast cancer combined to Boolean AND or OR. To estimate outcomes between the screening strategies, a hybrid decision analytic tree with a Markov transitional model was built. **Results:** A total of 18 publications from 11 studies were included, two randomized clinical trials and the others, prospective or retrospective observational studies. The detection cancer rate of DBT+s2D was 1.35 (RR, $p<0.001$), the detection invasive cancer rate was 1.48 (RR, $p<0.001$), the recall rate (RR) was 0.81 (RR, $p=0.028$), the biopsy rate was (BR) 0.89 (RR, $p=0.303$), and the positive predictive value for recall (PPV1) was 1.64 (RR; $p<0.001$) when compared with DM. For every 10,000 screening exams, 49 biopsies and 69 recalls would be avoided with DBT+s2D. DBT+s2D would have a lower rate of interval cancer (0.13% for DBT+s2D and 0.19% for DM), while it would detect more patients in the early stage of breast cancer (TNM 1) 0.74% for DBT+s2D and 0.45% for DM). DBT+s2D would present superior results regarding the number of false positives and true negatives. For every 10,000 screens, 79 false positives would be avoided, and 80 more true negatives would be identified when compared with DM. **Conclusion:** DBT + s2D breast cancer screening for women with breast patterns B and C BI-RADS would improve Brazilian screening outcomes when compared with mammography.

Keywords: digital breast tomosynthesis; digital mammography; breast cancer.