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# 1179 – Where is the main bottleneck in the breast cancer care pathway in Brazil? An ecological analysis of imaging, diagnostic confirmation and stage at diagnosis

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**Introduction:** In Brazil, regional inequalities in access to diagnostic services may contribute to delayed breast cancer diagnosis and a high burden of advanced-stage disease. In this study, it was assessed whether greater imaging intensity was associated with earlier stage at diagnosis while also comparing this pattern with diagnostic confirmation capacity.

**Methods:** A nationwide ecological study was conducted using databases from the Brazilian Unified Health System Informatics Department (DATASUS) from 2015 to 2024. The EpiWriting platform (Techtrials, Brazil) supported database standardization, consistency checks, analytical structuring, and scientific writing. Female breast cancer registrations with known initial stage (I–IV) were included. Early-stage disease was defined as stage I–II and advanced-stage disease as stage III–IV. Imaging intensity was defined as mammography plus breast ultrasonography procedures per 100 known-stage registrations, and diagnostic confirmation intensity was defined as breast biopsy plus pathology procedures per 100 known-stage registrations. Analyses were performed by state and region.

**Results:** Imaging intensity alone was not consistently associated with earlier stage distribution. The North exhibited the second-highest imaging intensity (53.7 procedures per 100 cases) but only 43.3% early-stage disease. In contrast, the South and Southeast showed higher diagnostic confirmation intensity (76.5 and 97.1 per 100 cases, respectively) and the highest proportions of early-stage disease (52.9% and 50.4%, respectively). At the state level, the correlation between imaging intensity and early-stage proportion was weak to moderate and borderline significant (Spearman  $\rho=0.37$ ;  $p=0.054$ ), whereas biopsy plus pathology intensity showed no overall monotonic association ( $\rho=-0.05$ ;  $p=0.821$ ), indicating marked territorial heterogeneity. Amazonas and Piauí were notable for very high imaging intensity but low early-stage proportions.

**Conclusion:** Imaging volume alone does not appear to explain earlier breast cancer diagnosis in Brazil. The main bottleneck may lie in diagnostic resolution and care pathway organization rather than in imaging availability alone.

**Ethics:** Public data.

**Keywords:** breast neoplasms; early detection of cancer; health services accessibility.