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AI-based scalable breast cancer screening solution in resource-constrained settings

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Abstract

Cancer of the breast is the most common cause of cancer-related deaths in India. Detecting breast cancer at early stages is critical for providing early treatment and thereby reducing disease morbidity and mortality. Mammography is the only screening method proved by randomized trials to reduce breast cancer mortality. However, it is less sensitive in women with dense breasts, and hence, its usage is limited in Asian countries where breast cancer is being increasingly detected in younger pre-menopausal women. Moreover, in India, where breast cancer screening is recommended at district hospitals (DHs), there are just 55 mammography machines at Government DHs to cater to 763 districts. Apart from increasing screening uptake at DHs, it is also necessary to make screening accessible at community health centres (CHCs). In a resource constrained setting, the cost of the equipment and high-skill requirement for interpretations makes mammography less affordable and feasible as a routine screening method. The more affordable clinical breast examination suffers from inconsistent results and late detection.

Niramai's Thermalytix™ is an AI-based solution that has demonstrated high sensitivity for screening breast cancers. This automated test is affordable, accessible, scalable for population-level screening and has already been used to screen over 30,000 women. However, loss to follow-up and risk perception in the asymptomatic population remains a barrier for large-scale screening programmes. This can be addressed by taking a holistic approach and combining screening of the top three cancers: breast, cervical, and oral cancers, along with other major non-communicable diseases such as cardio-vascular disease, stroke, and diabetes at the CHC level.

Biography

Dr. Lakshmi Krishnan is Clinical Research Scientist at Niramai and oversees its activities related to clinical studies and trials. She is an oral pathologist with a unique work experience of over 8 years in the fields of clinical research, technology innovation for public health, and scientific writing. She is a University rank holder and has completed a fellowship in Healthcare Technology Innovation from HTIC, IIT Madras. Having chosen to give up on clinical practice and pursue research in the domain of public health, she has contributed to a multi-centric cervical cancer screening project with PGI, Chandigarh and MCC, Thalassery and also worked in a Tata Trust funded breast and cervical screening programme in Pune.