

Embracing innovations to fight breast cancer: a letter to the editor

Muhammad Usama Nasr¹, Muhammad Kamran Saleem²

Dear Editor, Breast cancer is the most commonly diagnosed cancer in female patients in Pakistan, with one in nine women at risk of the diagnosis. In 2019, the nation saw the highest CA breast-associated death rate in the world¹ which signifies the burden on the national healthcare system the disease brings. Apart from increasing awareness among the general public about potential signs of the disease and screening methods, the medical community must keep up with the latest advancements in technology that could play a pivotal role in diagnosis and a potential decline in morbidity and mortality rates of breast carcinoma.

In the last few years, Artificial Intelligence (AI) and machine learning models have made huge strides in medicine, helping process data, guiding medical professionals, and improving patient outcomes. AI's role in imaging modalities is particularly promising, e.g., improving mammography screening and reducing screen-reading workload. The Mammography Screening with Artificial Intelligence Trial (MASAI), conducted in Sweden, was recently published in *The Lancet Oncology* revealing that AI-supported mammography screening resulted in similar rates of cancer detection and a considerably reduced screen-reading workload compared to standard double-reading by radiologists². In light of these findings, the use of AI-supported mammography was deemed safe. The trial is thus ongoing, and the primary endpoint of interval cancer rate will be assessed in the enrolled patients after 2 years of follow-up. Other studies also discuss AI systems for breast cancer screening with the technology proving to be non-inferior to radiologists, with lower false-positive and false-negative rates.³

.....
¹Department of Pharmacology, Shalamar Medical and Dental College, Lahore, Pakistan; ²CMH Lahore Medical College and Institute of Dentistry, Lahore, Pakistan.

Correspondence: Muhammad Usama Nasr.

Email: m.usama.nasr@gmail.com

ORCID ID: 0000-0001-5393-143X

Submission complete: 02-10-2024 **First Revision received:** 23-10-2024

Acceptance: 16-11-2024 **Last Revision received:** 15-11-2024

Such advancements could prove to be revolutionary in a country like Pakistan which has the highest incidence of breast cancer in the region. The majority of the population resides in rural areas with little or no diagnostic services let alone trained radiologists. A large proportion of patients present at an advanced stage of cancer which is a major contributor to a high case fatality rate.⁴ Even if an extensive screening programme were to be developed by the government, with diagnostic centres catering to the needs of the rural and urban population, the resulting immense workload could lead to delayed reporting and loss of follow-up. AI-assisted mammography screening could provide a very efficient, and in the long-term, cost-effective solution to Pakistan's high burden of disease from breast cancer. The government and leaders in healthcare should embrace such innovations to make some inroads in fighting this battle.

DOI: <https://doi.org/10.47391/JPMA.22246>

Disclaimer: This manuscript has not been presented or published elsewhere.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding Disclosure: The authors have no funding sources to declare.

References

1. Abdul Rehman M, Tahir E, Ghulam Hussain H, Khalid A, Taqi SM, Meenai EA. Awareness regarding breast cancer amongst women in Pakistan: A systematic review and meta-analysis. *PLoS One* 2024;19:e0298275. doi: 10.1371/journal.pone.0298275
2. Lång K, Josefsson V, Larsson AM, Larsson S, Högberg C, Sartor H, et al. Artificial intelligence-supported screen reading versus standard double reading in the Mammography Screening with Artificial Intelligence trial (MASAI): a clinical safety analysis of a randomised, controlled, non-inferiority, single-blinded, screening accuracy study. *Lancet Oncol* 2023;24:936-44.
3. McKinney SM, Sieniek M, Godbole V, Godwin J, Antropova N, Ashrafian H, et al. International evaluation of an AI system for breast cancer screening. *Nature* 2020;577:89-94. doi: 10.1038/s41586-019-1799-6
4. Khan NH, Duan SF, Wu DD, Ji XY. Better Reporting and Awareness Campaigns Needed for Breast Cancer in Pakistani Women. *Cancer Manag Res* 2021;13:2125-9. doi: 10.2147/CMAR.S270671

AUTHORS' CONTRIBUTIONS:

MUN: Conceived idea, writing and literature review.

MKS: Literature review, collected relevant references, editing and revision.