Clinical-Medical Image

Advancing Global Breast Cancer Risk Assessment and Screening in Adult Women: A Scoping Review

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Case Study

Breast cancer remains a leading cause of cancer-related mortality among women worldwide, emphasizing the need for effective risk assessment and screening strategies. This scoping review examines advancements in global breast cancer care, highlighting innovative approaches to risk prediction and screening for adult women. By leveraging diverse methodologies, researchers aim to address disparities in healthcare access and improve early detection. Risk assessment tools have evolved to incorporate a wide range of factors, including genetic predisposition, family history, lifestyle influences, and environmental exposures. Integrating these variables into predictive models allows for more accurate identification of high-risk individuals, enabling personalized screening protocols. Advances in imaging technologies, such as digital mammography and ultrasound, have enhanced the sensitivity and specificity of cancer detection, reducing false-positive rates and unnecessary interventions.

Global disparities in breast cancer screening present significant challenges, particularly in low- and middle-income countries where resources are limited. Tailored approaches, such as community-based screening programs and the use of portable diagnostic devices, have shown promise in improving accessibility and outcomes in underserved populations. Collaborative efforts among governments, non-governmental organizations, and healthcare providers have also facilitated the development of cost-effective screening initiatives. The use of artificial intelligence (AI) has further transformed breast cancer risk assessment and screening. AI algorithms analyze complex datasets to identify patterns and optimize diagnostic accuracy. These tools reduce variability in interpretation and enable earlier detection of abnormalities. However, challenges such as data privacy, algorithm bias, and the need for robust validation must be addressed to ensure equitable and reliable AI deployment.

In conclusion, advancing global breast cancer care requires continued innovation, interdisciplinary collaboration, and a commitment to equitable healthcare access. By improving risk assessment and screening methods, these efforts aim to reduce the burden of breast cancer and improve outcomes for women worldwide [1,2].

Keywords: X-ray absorption; Polymeric materials; Maxillofacial applications

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Conflict of Interest

None.

References

1. Pierz AJ, Randall TC, Castle PE, Adedimeji A and Ingabire C, et al (2020). A scoping review: Facilitators and barriers of cervical cancer screening and early diagnosis of breast cancer in Sub-Saharan African health settings. *Gynecol Oncol Rep* 33 100605.

2. Dickson-Swift V, Adams J, Spelten E, Blackberry I and Wilson C, et al (2024). Breast cancer screening motivation and behaviours of women aged over 75 years: A scoping review. *BMC Health* 24(1) 256.