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AI Emerged as a Promising Tool to Advance Global Radiology

Imaging plays a large and pivotal role in cancer diagnosis and treatment. Given the important role it plays, it is crucial countries have implemented coordinated screening programmes, particularly in low-resource environments.

However, low-resource countries face serious financial limitations, lack of imaging equipment and shortages of workers including insufficient staff to adequately maintain imaging equipment. As a result, a multifaceted approach is required to overcome the hurdles and improve health outcomes for women living in lower-resource environments.

Screening breast ultrasound has a relatively small field of view and carries high-false positive rates in contrast to other breast imaging modalities, implying that it may not be the most reliable solution in lower-resource environments. In terms of diagnostic imaging, ultrasound can differentiate between cystic and solid masses, making it a reliable tool for triaging patients.

The integration of artificial intelligence (AI) algorithms into the workflow can improve the specificity of ultrasound imaging. The early algorithms have provided reliable and reproducible assessments of breast masses equivalent to the standard set by a subspecialised breast radiologist.

Furthermore, the application of AI to sonographic images of the breast has shown to maintain the high sensitivity of trained readers. The results suggest that AI will most likely have the largest impact in resource-constrained environments, where AI is being used by less-trained staff.

AI will be expected to have the largest influence when integrated into a global setting, as these resource-constrained environments often have less trained individuals interacting with such technology. However, a lot of the research has been with images acquired by trained radiologists, which implies the uncertainty of whether such algorithms will perform similarly with images obtained by less-trained individuals.

Investigators compared how well an AI algorithm would perform with use of images obtained on a portable low-cost unit, contrasted with use of images acquired with standard equipment in a cohort of Hispanic women in a lower-resource environment presenting for imaging. Overall, AI performance was better with standard-of-care equipment than with the lower-cost portable unit, regardless of whether the images were acquired by trained staff.

Integrating AI into breast imaging in lower-resource environments can provide support to staff triaging patients for downstream care by identifying women who require rapid intervention. However, it is essential the further education is provided to on-site providers as well as further refinement of the AI algorithms to support better analysis of sonographic images.

Overall, it is encouraging to see how AI can impact radiologists in providing timely care to patients, especially to those in lower resource environments.

As existing AI algorithms continue to advance, integrating AI tools into lower-resource environments will help to reduce the burden of disease and improve overall outcomes.

Source: Radiology

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