



Application of Ultrasound and PET Techniques in Cancer Diagnosis and Treatment in Resource-Limited Settings: A Pilot Study in South Africa 2004

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Abstract

The application of ultrasound and PET techniques in cancer diagnosis and treatment is an emerging field with potential for resource-limited settings such as South Africa. A comparative study was conducted to assess the effectiveness of ultrasound imaging versus PET scans in diagnosing early-stage cancers. The sample size included 50 patients, with a focus on breast cancer cases. Ultrasound proved superior in identifying small lesions compared to PET, with an accuracy rate of 87% for detecting breast cancer at stage I and II. The study highlights the potential of ultrasound as a cost-effective alternative to PET, particularly in resource-limited settings where both technologies are available. Further research should be conducted to validate these findings across different types of cancers and healthcare facilities. The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, AfricanRadiomics, ImageRegistration, MolecularImaging, TraumaSurgery, DigitalPhantoms, MedicalInformatics*

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