

Researchers find a new solution in detecting breast-cancer related lymphedem

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The Imp XCA, a FDA approved device, uses a single frequency below 30 kHz to measure impedance and resistance of extracellular fluid. Credit: NYU College of Nursing

Viewed as one of the most feared outcomes of breast cancer treatment, doctors struggle detecting and diagnosing breast-cancer related

Lymphedema—a condition affecting the lymphatic system and causing psychosocial distress and physical challenges for patients.

Now, a team of researchers led by Mei R. Fu, PhD, RN, ACNS-BC, associate professor of Chronic Disease Management at the New York University College of Nursing (NYUCN), offers supporting evidence for using Bioelectrical Impedance Analysis (BIA) ratios to assess Lymphedema. The study, "L-DEX Ratio in Detecting Breast Cancer-Related Lymphedema: Reliability, Sensitivity, and Specificity," published in *Lymphology*, argues because the low frequency electronic current cannot travel through cell membranes, it provides a direct measure of lymph fluid outside the cells. This allows for a more accurate assessment of lymphedema using a Lymphedema Index named L-Dex ratio.

"To lessen [breast cancer](#) survivors' worry about lymphedema development, the BIA may have a role in clinical practice by adding confidence in the detection of arm lymphedema among breast [cancer survivors](#)," says Dr. Fu, "even when pre-surgical BIA baseline measures are not available."

The objective of the study was to examine the reliability, sensitivity, and specificity of cross-sectional assessment of BIA in detecting lymphedema in a large metropolitan clinical setting.

Measuring lymphedema is challenging because most methods cannot distinguish bone and soft tissues from extracellular fluid. BIA is time-efficient, easy to operate and easy to interpret, making it ideal for clinical practice. Dr. Fu's research collected data from 250 women, including healthy female adults, breast cancer survivors with lymphedema, and those at risk for lymphedema, demonstrating that survivors with lymphedema had significantly higher L-Dex ratios, which shows the possibility of using BIA to discriminate between those cohorts

of women.

"Our study also demonstrated that using a more sensitive L-Dex cutoff point, this allowed for BIA to catch 34% of the usually missed lymphedema cases," said Dr. Fu. "This allows for earlier treatment, which naturally leads to better outcomes for at-risk patients."

The American Cancer society estimates that in 2013 approximately 232,340 new cases of breast cancer are detected, adding to the already 2.9 million breast cancer survivors, all with a at a lifetime risk of Lymphedema.

"Giving that all the women who are treated for breast cancer are at a life-time risk for lymphedema, using assessment methods that can accurately identify true [lymphedema](#) cases among at-risk [breast cancer survivors](#) is of the ultimate importance for [clinical practice](#)," added Dr. Fu.

Provided by New York University

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