The EMPOWER Study: Promoting breast cancer screening: A randomized controlled trial (RCT) in the Childhood Cancer Survivor Study (CCSS)

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Background: Women treated with chest radiotherapy (RT) for childhood cancer should undergo annual surveillance mammography and breast MRI, but best methods of promoting this guideline-based screening are not established. In an RCT, we tested the role of an intervention using tailored information by mail and brief motivational telephone interview in promoting breast cancer screening in women in the U.S. and Canada.

Methods: Female survivors in the CCSS treated with chest RT $\geq$ 20 Gy, age 25-49 years, and without a mammogram in the past 2 years were eligible. Participants (n=204; mean age 35.8 years) were randomized 2:1 to the tailored intervention (TI) or attention control group (AC) (general health information by mail followed by heart health telephone interview), stratified by age at enrollment (25-39 vs $\geq$40) and race/ethnicity. The primary outcome was the difference in the proportion of participants completing a mammogram by 12 months as evaluated in an intent-to-treat analysis with the test. The stratum-adjusted relative risk (RR) and 95% confidence interval (CI) were estimated with Cochran-Mantel-Haenszel weights.

Results: Participants in the TI and AC groups did not differ by demographic or clinical characteristics. Women in the TI group were significantly more likely than those in the AC group to report a surveillance mammogram by 12-months: 45/136 (33.1%) vs 12/68 (17.6%) [RR=1.7; 95% CI: 1.0-2.9, p=0.02]. The proportion of women reporting a surveillance MRI at 12-months (secondary outcome) was similar between the two groups, 16.8% (TI) compared with 13.2% (AC) [RR=1.2; 95% CI: 0.6-2.5; p=0.58]. In the TI group, the endorsed primary barriers for not obtaining mammography were: put it off (27%), cost (25%), doctor didn’t order it (23%), and haven’t had any problems (22%).

Conclusions: The use of mailed tailored materials followed by telephone-delivered counseling increased mammography surveillance rates in female survivors at high-risk for breast cancer. However, this approach did not significantly increase the rate of breast MRI. Cost and physician ordering were important barriers that may be addressed in future studies. Clinical trial information: NCT01579552.