

# Title: Determinants of Participation in Recommended Medical Screening by At-Risk Adult Survivors of Childhood Cancer

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## ABSTRACT

**Background:** Increased childhood cancer survival ( $\geq 80\%$ ) has prompted greater awareness of treatment-related morbidity. While recommended medical screening affords survivors the opportunity to prevent/minimize treatment late effects, a majority of survivors fail to participate in screening despite their higher risk. To inform interventions, we sought to identify factors that predict participation in echocardiography, mammography, and bone densitometry among childhood cancer survivors at greatest risk of treatment sequelae.

**Methods:** A broad-based health behavior model guided structural equation modeling of data from three sequential surveys of 838 survivors (diagnosed between 1970 and 1986; mean age, 24.92y, mean age at diagnosis, 9.25y) participating in the Childhood Cancer Survivors Study.

**Results:** More cancer-related visits ( $p=0.01$ ), provider discussion of heart disease ( $p<0.001$ ), prior ( $p=0.05$ ) and current exercise history ( $p=0.05$ ), increased cancer-related pain ( $p<0.001$ ), severity of late effects ( $p<0.001$ ), and higher level of readiness for medical follow-up ( $p<0.001$ ) directly and/or indirectly contributed to 23% of the variance in echocardiographic screening frequency among survivors at risk for cardiac sequelae ( $N=316$ ;  $\chi^2=110.07$ ,  $df=102$ ,  $p=0.28$ ;  $CFI=0.990$ ,  $TLI=0.987$ ;  $RMSEA=0.016$ ; 90% CI 0.00-0.34). Age  $\geq 40$ y ( $p<0.001$ ), more frequent fatigue ( $p<0.001$ ), frequent health fears ( $p=0.01$ ), positive affect ( $p=0.01$ ), provider's discussions about subsequent cancer risk ( $p=0.001$ ) and late effects severity ( $p=0.01$ ), increased health concerns ( $p<0.001$ ), positive perceptions of provider ( $p<0.001$ ), and intrinsic ( $p<0.001$ ) and extrinsic motivation ( $p<0.01$ ) directly and/or indirectly contributed to 40% of the variance in mammogram frequency in women at risk for breast neoplasm ( $N=153$ ;  $\chi^2=318.53$ ,  $df=311$ ,  $p=0.37$ ;  $CFI=0.993$ ,  $TLI=0.992$ ;  $RMSEA=0.013$ ; 90% CI=0.00-0.034). For survivors at risk of osteoporosis, lower BMI ( $p=0.05$ ), increased

cancer-related pain ( $p=0.01$ ), more frequent fatigue ( $p=0.001$ ), more cancer-related visits ( $p=0.05$ ), oncology clinic follow-up ( $p=0.01$ ), provider discussion about osteoporosis ( $p<0.001$ ), a print media intervention ( $p=0.01$ ), increased health concerns ( $p=0.01$ ), more frequent health-related fears ( $p<0.001$ ), late effects severity ( $p<0.001$ ), intrinsic ( $p=0.05$ ) and extrinsic motivation ( $p=0.01$ ) contributed directly and/or indirectly to 26% of the variance in the frequency of bone densitometry ( $N=324$ ;  $X^2=236.83$ ,  $df=229$ ,  $p=0.35$ ;  $CFI=0.995$ ,  $TLI=0.993$ ;  $RMSEA=0.010$ , 90% CI= 0.00-0.026).

**Conclusions:** Tailored interventions that address multiple influences (risk, fear, motivation, provider influences) likely will be more successful in supporting recommended screening among childhood cancer survivors.