12111 **Poster Session**

Effects of yoga vs placebo on inflammation among cancer survivors: A nationwide multicenter phase III randomized controlled trial (RCT).

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Background: Inflammation, both acute and chronic, is universally associated with primary and secondary cancer development and progression, as well as a myriad of toxicities that negatively affect cancer treatment adherence and survival. The effectiveness of targeting inflammation with non-pharmaceutical therapies such as yoga is not known. As part of a nationwide, multicenter, phase III RCT with cancer survivors, we compared the effects of yoga (Yoga for Cancer Survivors; YOCAS) to a behavioral placebo (survivorship health education) on inflammation (i.e. pro-inflammatory, anti-inflammatory, and overall inflammatory status). **Methods:** Participants were recruited via the URCC NCORP Research Base in partnership with 23 community oncology practices across the United States. Eligible participants were cancer survivors with insomnia 2-60 months post-treatment. They were randomized to receive YOCAS (gentle Hatha and Restorative yoga, 75-min./session, 2x/week, 4 weeks) or placebo (ASCO survivorship recommendation-based health education, 75-min./session, 2x/week, 4 weeks). Serum samples were collected at baseline and post-intervention to assess inflammation (i.e., pro-inflammatory markers IL-1β, IL-6, TNF-α, IFN-γ and anti-inflammatory markers IL-4, IL-8, IL-10, sTNFRI), via Luminex multiplex assays. Analysis of covariance (ANCOVA) and structural equation modeling (SEM) were used to access yoga's effects on inflammation. **Results:** 502 survivors (94% female, mean age 56±11 years, 74% breast cancer) were enrolled. ANCOVAs revealed significantly lower levels of pro-inflammatory markers in YOCAS participants compared to placebo participants (IL-1β: -0.07±0.03, $p = 0.01$; TNF-α: -0.04±0.02, $p = 0.08$; IFN-γ: -0.07±0.03, $p = 0.02$) where YOCAS participants exhibited stable pro-inflammatory responses (all $p > 0.05$) and placebo participants exhibited significant increases in pro-inflammatory responses (all $p \leq 0.05$) from baseline to post-intervention. ANCOVAs also revealed a statistical trend toward lower levels of anti-inflammatory markers in YOCAS participants compared to placebo participants (IL-4: -0.06±0.04, $p = 0.10$; IL-10: -0.06±0.04, $p = 0.09$; sTNFRI: -0.06±0.04, $p = 0.09$). SEM also demonstrated significantly lower pro-inflammatory status (-0.16±0.03, $p < 0.01$), significantly lower anti-inflammatory status (-0.14±0.03, $p = 0.03$), and significantly lower overall inflammatory status (-0.15±0.03, $p = 0.01$) in YOCAS participants compared to placebo participants. **Conclusions:** Our data suggest that YOCAS yoga significantly reduces inflammation among cancer survivors. Clinicians should consider prescribing yoga for survivors experiencing inflammation, which may lead to a high chronic toxicity burden and increased risk of progression, recurrence, and second cancers. Funding: NCI UG1CA189961, R01CA181064, T32CA102618. Clinical trial information: NCT02613364. Research Sponsor: U.S. National Institutes of Health.