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Aurora: a home-based, woman-centered design intervention to mitigate the physical and biological consequences of neoadjuvant chemotherapy in women with breast cancer —preliminary results from a Chilean public hospital

Background: Supervised exercise mitigates the adverse physical and biological effects of neoadjuvant chemotherapy (NAC) in breast cancer, but implementation in the Chilean public health system is constrained by travel costs, caregiver burden, and treatment fatigue, demanding scalable autonomous alternatives. Aurora is a 9-week home-based, woman-centered design intervention, developed with and for women undergoing NAC, with its 9-week duration aligned to habit-formation theory and deployed during NAC as a teachable moment. Methods: Ongoing randomized controlled trial enrolling women <70 years with primary breast carcinoma diagnosis and NAC treatment. Recruitment at public hospital Centro Asistencial Sótero del Río (CASR) in Santiago, Chile. Outcomes include physical activity (MVPA, daily steps), quality of life (EORTC QLQ-C30), functional capacity (upper/lower-body strength, 2-Minute Walk Test [2MWT]), and biological markers (erythrocyte fatty acids, inflammation, tumor response). Per-protocol analyses of the initial cohort (N=13) used non-parametric tests.

Results: The intervention group significantly increased MVPA (+57.5 min/week; $p=0.043$), while the control group declined (-37.5 min/week). Functional capacity diverged in favor of intervention: upper-body strength (+3.8 vs -3.25 repetitions) and 2MWT (+7.0 vs -10.0 steps; $\Delta p=0.065$). Emotional functioning (EORTC QLQ-C30) improved (+18.1) in the intervention group, whereas it declined (-16.7) in the control group. The erythrocyte omega-6/omega-3 ratio shifted favorably in the intervention group. In the subset with available tumor response data ($n=6$; 3 per arm), pathological complete response (pCR) was observed in 2/3 (66.7%) intervention participants versus 0/3 (0%) controls ($p=0.150$), accompanied by greater tumor size reduction in the intervention arm (-86.1% vs -21.8%).

Conclusions: A home-based, woman-centered design product-system can be delivered during NAC within a Chilean public hospital and shows directional benefits across behavioral, functional, and biological domains. These preliminary findings position Aurora as a scalable, equity-oriented alternative when supervised exercise oncology programs are inaccessible, supporting further evaluation in larger cohorts.

Keywords

breast cancer; home-based exercise; neoadjuvant chemotherapy; woman-centered design.

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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