



Feasibility of a physical activity intervention for obese, socioculturally diverse endometrial cancer survivors☆



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HIGHLIGHTS

- A physical activity intervention is feasible for diverse, obese cancer survivors.
- Waist circumference declined by over 5 cm in 12 weeks.
- There was a clinically meaningful increase in quality of life scores.
- Better recruitment strategies are needed to increase intervention reach.

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ABSTRACT

Purpose. Determine the feasibility of a 12-week physical activity intervention for obese, socioculturally diverse endometrial cancer survivors and to evaluate whether the intervention improves physical activity behavior, physical function, waist circumference, and quality of life.

Methods. Obese endometrial cancer survivors from Bronx, NY were assigned to either a 12-week physical activity intervention of behavioral counseling, physical activity and home-based walking ($n = 25$), or wait-list control group ($n = 15$). Mixed-design ANOVA (2 groups \times 2 time points) were analyzed to determine differences between the intervention and the control for the Yale Physical Activity Survey, six-minute walk test, 30-second chair stand test, waist circumference, and Functional Assessment of Cancer Therapy-Endometrial questionnaire. Data are presented as mean \pm standard deviation.

Results. The sample was diverse (38% non-Hispanic black, 38% Hispanic, 19% non-Hispanic white). Mean Body Mass Index was $37.3 \pm 6.5 \text{ kg} \cdot \text{m}^{-2}$. Although recruitment rate was low (20% of 140 contacted), 15 of 25 participants in the intervention group attended 75–100% of scheduled sessions. Participants reported walking $118 \pm 79 \text{ min/week}$ at home. There were large effect sizes for the improvements in the six-minute walk test ($22 \pm 17 \text{ m}$ vs. $1 \pm 22 \text{ m}$, $d = 1.10$), waist circumference ($-5.3 \pm 5.3 \text{ cm}$ vs. $2.6 \pm 6.7 \text{ cm}$, $d = -1.32$), quality of life (10 ± 12 vs. -1 ± 11 , $d = 0.86$) and walking self-efficacy ($24 \pm 30\%$ vs. $1 \pm 55\%$, $d = 0.87$) compared to the control group.

Conclusions. The intervention appeared feasible in this population. The results show promising effects on several outcomes that should be confirmed in a larger randomized control trial, with more robust recruitment strategies.

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1. Introduction

Approximately 55,000 women were diagnosed with endometrial cancer in 2015, and the incidence rate of this cancer is projected to increase by 50% in the United States from 2010 to 2030 [1]. Although the 5-year survival rate is over 80%, the disease has a negative impact on quality of life and physical function, especially in obese survivors [2]. Middle-aged (40–64 years) endometrial cancer survivors are more likely to be sedentary, and perform 45 min less moderate-intensity physical activity per week than counterparts without cancer [3]. Furthermore, Latina and non-Hispanic black women are more likely to be sedentary than non-Hispanic white women [4]. Ethnically diverse, obese female cancer survivors have elevated risk for poor quality of life, impaired physical function, cardiovascular disease and diabetes [5, 6].

Physical activity interventions have been shown to reduce body fat and fatigue, as well as increase physical function and quality of life for cancer survivors [7]. In poorer urban environments, adherence to physical activity may be relatively low due to environmental, language and societal barriers [8], which may attenuate the effectiveness of physical activity programming in real-world settings. Tailored physical activity interventions are more effective than non-tailored interventions in the general population [9] and this is likely true in socioculturally diverse endometrial cancer survivors.

The aims of this study were to 1) assess the feasibility of a 12-week physical activity intervention for obese socioculturally diverse endometrial cancer survivors in Bronx, NY; 2) determine the probable effectiveness of the intervention on physical activity, waist circumference, physical function and quality of life; and 3) evaluate changes in self-efficacy, outcome expectations, social support, and self-regulation during the 12-week physical activity intervention.

2. Methods

The methods and procedures for this study were approved by the Institutional Review Boards of Albert Einstein College of Medicine and Teachers College Columbia University. Informed consent was obtained from all participants prior to participation in the study.

2.1. Study overview

This study was a wait-list controlled trial. Recruitment began in February with a fixed intervention start date in April 2014, based upon staff and space availability. By the date of the start of the intervention, 20 participants had been enrolled, and they were randomized in a 2:1 ratio to the intervention ($n = 13$) and wait-list control groups ($n = 7$). The subsequent 8 participants enrolled after the start date were placed into the wait-list control group within the next 3 weeks. Both the intervention and control groups were assessed before (pre) and after (post) the 12-week intervention period. The post assessment for the wait-list control group also served as their pre-intervention values for when they subsequently completed an identical 12-week intervention and post-testing. The results from the immediate intervention group and delayed intervention group (from wait-list control) were pooled ($n = 25$; Table 1).

2.2. Participants

Based on a previous physical activity intervention by von Gruenigen et al. [10], which found an effect size of 1.02 for improvements in physical activity from a similar intervention, it was estimated that 12 participants per group would be needed. To account for an estimated 2 dropouts per group, 28 obese (Body Mass Index $\geq 30 \text{ kg} \cdot \text{m}^{-2}$) English-speaking women who had been diagnosed with endometrial cancer between 6 months and 5 years prior, and without currently active

Table 1
Participant characteristics at baseline.

	Control ($n = 15$)	Intervention ($n = 13$)	Pooled intervention ($n = 25$)
Age (years)	65 (5)	64 (10)	64 (8)
Body mass index ($\text{kg} \cdot \text{m}^{-2}$)	37.8 (7.7)	36.7 (4.9)	36.6 (6.5)
Time since diagnosis (months)	31 (22)	32 (14)	32 (19)
Stage at diagnosis			
Stage I	13 (87%)	11 (85%)	22 (88%)
Stage II	0 (0%)	0 (0%)	0 (0%)
Stage III	2 (13%)	1 (8%)	2 (8%)
Stage IV	–	1 (8%)	1 (4%)
Race/ethnicity			
Non-Hispanic black	6 (40%)	4 (31%)	9 (36%)
Hispanic	4 (27%)	6 (46%)	8 (32%)
Non-Hispanic white	3 (20%)	2 (15%)	5 (25%)
Other	–	1 (8%)	1 (4%)
No answer	2 (13%)	–	2 (8%)
Education			
High school graduate or less	5 (36%)	4 (31%)	8 (32%)
Some college/college graduate	3 (21%)	7 (54%)	9 (36%)
Some graduate school or graduate degree	6 (43%)	2 (15%)	8 (32%)
Employment status			
Retired	10 (67%)	10 (77%)	17 (68%)
Unemployed	2 (13%)	1 (8%)	3 (12%)
Employed	1 (7%)	1 (8%)	2 (8%)
On disability	1 (7%)	1 (8%)	2 (8%)
Homemaker	1 (7%)	–	1 (4%)
Household income			
<\$40,000	6 (40%)	6 (46%)	11 (44%)
\$40,000–79,999	2 (13%)	2 (15%)	4 (16%)
\$80,000 or more	3 (21%)	4 (29%)	4 (16%)
No answer	4 (27%)	1 (8%)	5 (25%)

Data expressed as mean (standard deviation) or as frequency (percentage of group).
No statistically significant differences between groups at baseline.

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