

Time-restricted eating to address cancer-related fatigue among cancer survivors: A randomized controlled trial

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Cancer-related fatigue is common and debilitating

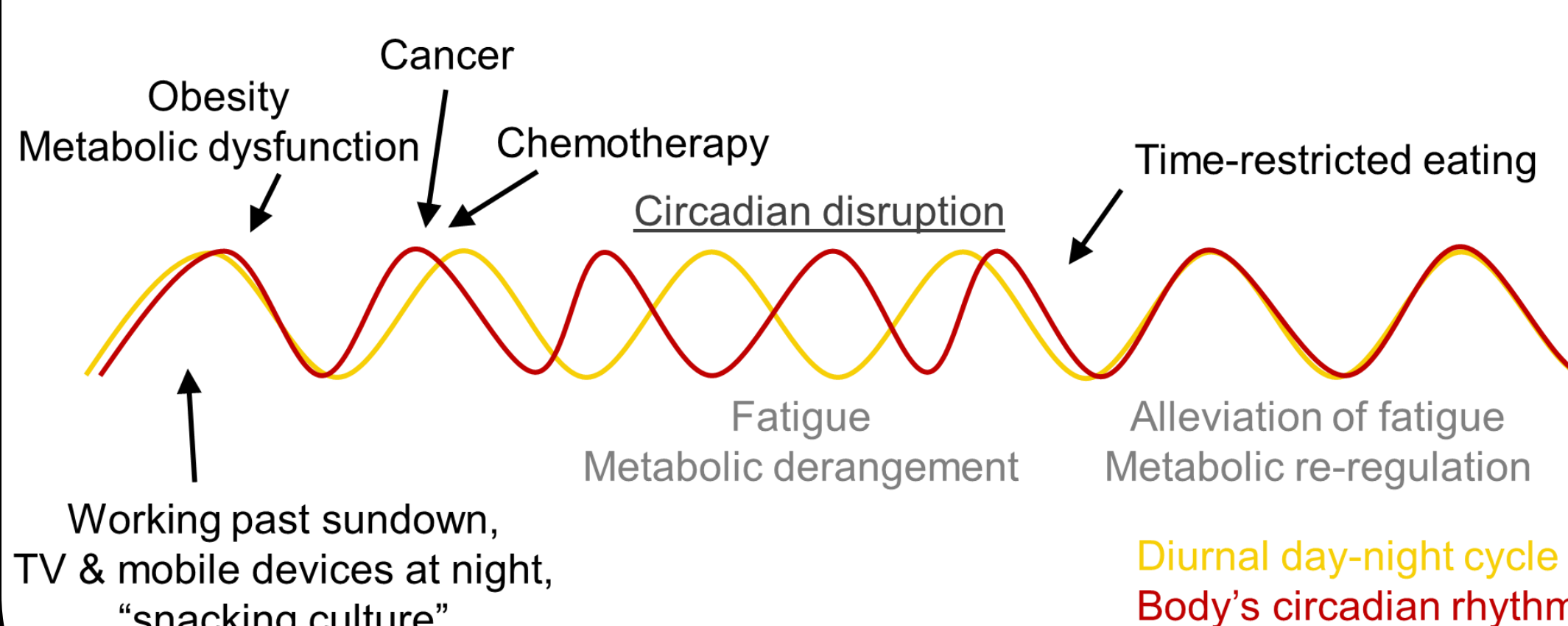
- Cancer-related fatigue affects 30-90+% of patients with cancer.¹
- Cancer-related fatigue is unlike day-to-day fatigue in that it cannot be alleviated by sleep or rest.
- This fatigue can persist for months and even years after treatment.
- Persistent fatigue can prevent people from returning to work, family responsibilities, and hobbies, and greatly reduce quality of life.
- There are few effective treatments, largely because the etiology and pathophysiology are poorly understood.²



Time-restricted eating may help manage cancer-related fatigue

- Cancer³** and **cancer therapies⁴** contribute to circadian dysregulation.⁵
- Nutrient timing** may help regulate the circadian clock.⁶⁻⁸
- Fasting also initiates healthful metabolic processes that involve energy regulation.

We hypothesize that, by using food intake as an external cue, we can entrain circadian rhythms and alleviate fatigue.



Objectives

- To evaluate the feasibility of conducting a randomized controlled trial that tests a time-restricted eating program vs. nutrition control on cancer-related fatigue.
- To test the effects of time-restricted eating vs. control on cancer-related fatigue among cancer survivors.

Methods

- Clinicaltrials.gov: NCT05256888
- 12-week, parallel-arm, randomized controlled trial
- Eligibility**
 - Age 18 years or older
 - 2 months-2 years post-treatment for cancer
 - Worst fatigue in the last week ≥ 4 on a scale from 0-10
 - Do not already eat within a 10-h window
 - No contraindications to the diet pattern
- All participants met with a licensed dietitian for individualized nutritional counseling.
- Intervention:** Participants randomized to TRE were asked to consume all food and beverages within a self-selected 10-h eating window for 12 weeks; water was allowed at all times.
- Adherence** was measured with diaries during baseline, week 6, and week 12, on which patients reported the time of their first and last calorie (paper or myCircadianClock app).
- Patient-reported fatigue** was measured using the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F) at baseline, week 6, and post-intervention.
- All study activities were performed remotely via phone, mail, or REDCap (internet-based questionnaires)
- We report mean $\pm$ standard deviation and used mixed models to assess group effects.

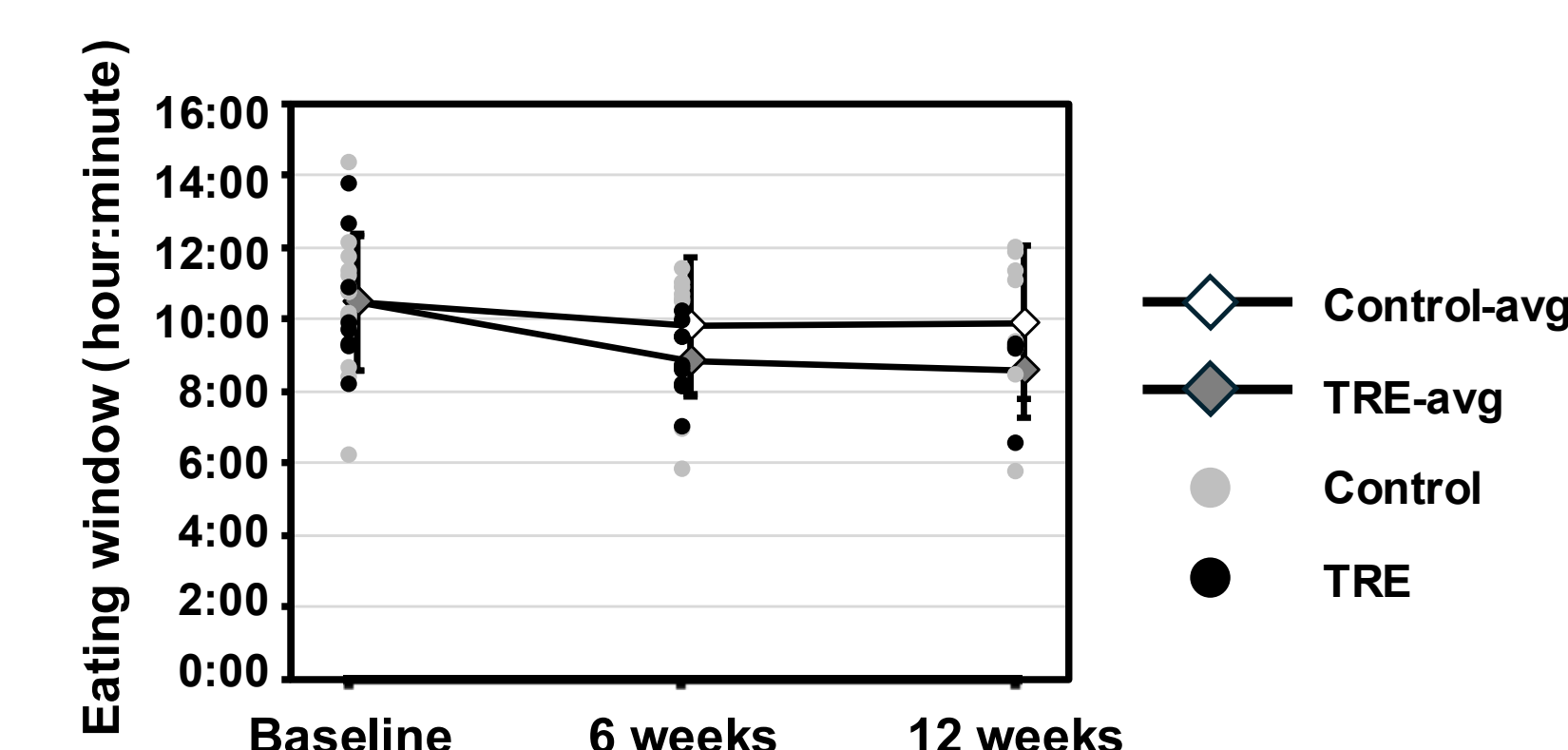
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Results

	Control (n=15)	TRE (n=15)
Age (years)	53.7 $\pm$ 16.8	64.6 $\pm$ 12.7
Gender		
Female	10 (66.7%)	13 (86.7%)
Male	5 (33.3%)	2 (13.3%)
Race		
African American/Black	6 (40.0%)	10 (66.7%)
White	8 (53.3%)	5 (33.3%)
Mixed race	1 (6.7%)	0
Body mass index (kg/m²)	28.7 $\pm$ 4.3	30.9 $\pm$ 7.0
Type of cancer		
Leukemia	4 (36.7%)	2 (13.3%)
Lymphoma	1 (6.7%)	3 (20.0%)
Multiple myeloma	8 (53.3%)	8 (53.3%)
Other	2 (13.3%)	2 (13.3%)
Previous treatment for cancer		
Surgery	4 (26.7%)	2 (13.3%)
Chemotherapy	14 (93.3%)	14 (93.3%)
Radiation	4 (26.7%)	3 (20.0%)
Stem cell transplant	5 (33.3%)	6 (40.0%)
CAR-T cell therapy	3 (20.0%)	2 (13.3%)

Participants were adherent to time-restricted eating



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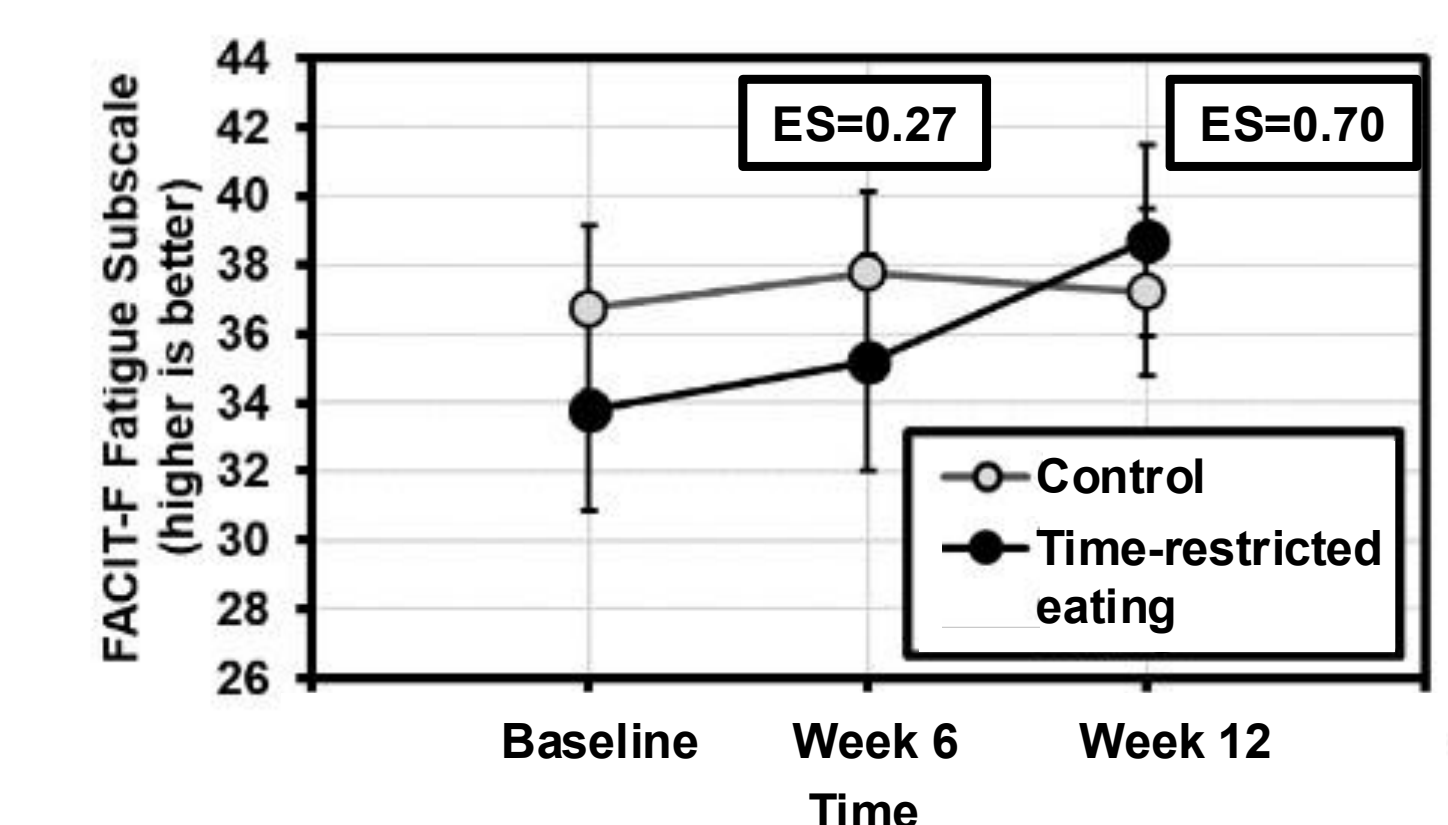
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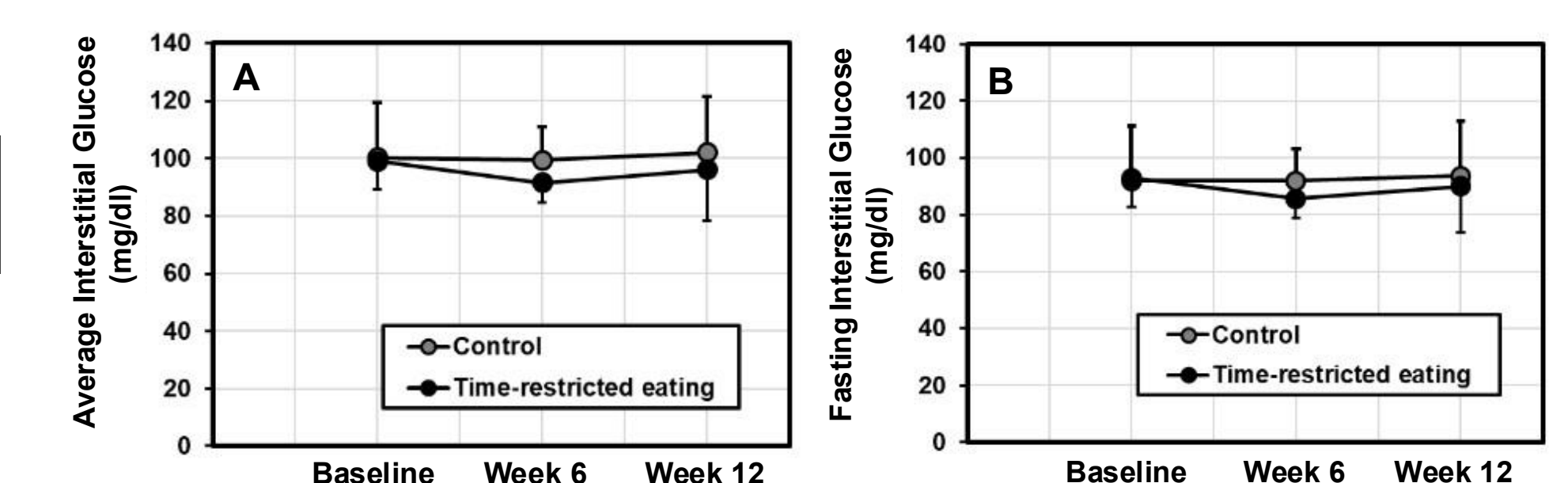
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TRE improved fatigue by a clinically meaningful degree



TRE and glucose regulation

- Participants wore a continuous glucose monitor for 7 days at baseline, week 6, and week 12
- TRE reduced A) average interstitial glucose and B) average fasting interstitial glucose, but the differences did not reach statistical significance.



Conclusions

- Time-restricted eating improved fatigue with a moderate effect size of 0.70.
- Larger studies should be performed before time-based nutritional programs are incorporated into clinical guidelines.
- This paper was published in *Supportive Care in Cancer* in April 2025

