



KEY POINT SUMMARY

OBJECTIVES

The main purpose of this study was to evaluate the effect of bright white light (BWL) exposure as compared to dim red light (DRL) in preventing chronic-related fatigue.

Systematic light exposure in the treatment of cancer-related fatigue: A preliminary study

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Key Concepts/Context

Patients with cancer frequently report the side effect of fatigue, which is described as distressing, persistent, and related to physical, emotional, and cognitive tiredness or exhaustion. Patients report feeling tired after resting during their treatments and long after the treatment has ended.

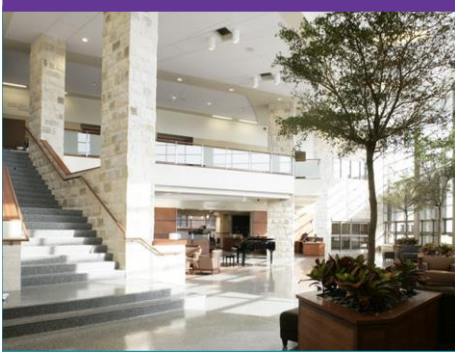
Methods

This study used a randomized comparative design. Thirty-six ($n = 36$) survivors of cancer (hematopoietic stem cell transplantation, breast cancer or gynecologic cancer) participated in the study. The subjects were randomized to either the bright white light or the dim red light groups. Each group had 18 subjects. All participants completed the Functional Assessment of Chronic Illness Therapy (FACIT) fatigue scale at four times: during the second week of intervention, at the end of the fourth week of intervention, and three weeks after completion of the intervention. Because depression is known to correlate with fatigue, the Brief Symptom Inventory (BSI) depression scale was also used.

Data was analyzed using a general linear model analysis and mixed model repeated measures analysis of baseline fatigue and differences between the effect of the two light conditions.

Findings

Using the linear mixed model repeated measures analysis demonstrated that there was a statistically significant time effect, suggesting that fatigue levels changed over time. There was also a statistically significant group effect across the four time measurements, indicating that the bright white light group had less fatigue than the dim red light group. There was a statistically significant improvement in fatigue over



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time for the bright white light group, but for the dim red light group fatigue improved in two weeks that became worse at four weeks and at follow-up post treatment. When depression was added to the model as a control variable, depression was not a statistically significant predictor of cancer-related fatigue, and the bright white light remained a statistically significant predictor of fatigue. Three weeks following the completion of the intervention, none of the participants in the bright white light condition reported clinical levels of fatigue; whereas most of the participants in the dim red light condition continued to report clinical levels of fatigue.

Design Implications

The findings from this study would suggest that the design of cancer treatment centers should include the availability of lighting options for patients receiving chemotherapy, radiation therapy, hematopoietic stem cell transplantation, or other forms of cancer therapy. Bright white light intervention is a low-cost and low-burden intervention and has demonstrated a positive and long-term effect on reducing cancer-related fatigue. If the bright white light source is mounted on a movable stand, the design team will want to consider storage options for the equipment. Otherwise, bright white light sources could be built into each patient's individual station where they receive outpatient therapy.

Limitations

The small sample size is a limitation to this study; however, the effect size in the study was larger than the small to moderate effects seen in other nonpharmacological interventions.

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