Light Therapy for Major Depressive Disorder

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Q: What is light therapy?

A: Light therapy, also known as bright light therapy or phototherapy, has been proposed as a treatment for major depressive disorder (MDD) with a seasonal pattern (formerly seasonal affective disorder [SAD]), and non-seasonal MDD. Light therapy involves exposure to artificial bright light using a fluorescent light box. Light boxes are much brighter than regular lamps, emitting up to 10,000 lux (brighter than normal indoor light, but less bright than direct sunlight). Procedures vary, but common protocols involve exposure to bright white light between 1350 to 10,000 lux for one or two 30- to 60-minute sessions per day (Pjrek et al., 2020).

Q: What are the potential mechanisms of action underlying light therapy for the treatment of MDD?

A: Light therapy was first proposed as a treatment for SAD, now known as MDD with seasonal pattern, in the early 1980s (Rosenthal et al., 1984). It has been hypothesized that patients with MDD with seasonal pattern become depressed in the winter due to the later dawn, which causes a delay in their circadian rhythms with respect to the sleep/wake cycle (Campbell et al., 2017; Lewy, Sack, Miller, & Hoban, 1987). Duration of melatonin secretion, a natural hormone that regulates the sleep/wake cycle, is longest in the winter when the photoperiod (day length) is the shortest (Lewy, 1983; Nussbaumer-Streit et al., 2019). Light therapy was proposed to extend the photoperiod during the winter months, thus suppressing melatonin production and improving circadian rhythms of patients with MDD with seasonal pattern. Although it is known that light is responsible for phase-shifting of circadian rhythms and changes in melatonin secretion and metabolism, the exact mechanism of action by which light therapy affects depression is not yet completely understood (Oldham & Ciraulo, 2014; Pail et al., 2011; Tuunainen, Kripke, & Endo, 2004).

Q: Is light therapy recommended as a treatment for MDD in the Military Health System (MHS)?

A: Yes. The 2022 *VA/DoD Clinical Practice Guideline for the Management of Major Depressive Disorder* suggests offering light therapy for patients with mild to moderate MDD with or without a seasonal pattern with a "weak for" strength of recommendation.

The MHS relies on the VA/DOD clinical practice guidelines (CPGs) to inform best clinical practices. The CPGs are developed under the purview of clinical experts and are derived through a transparent and systematic approach that includes, but is not limited to, systematic reviews of the literature on a given topic and development of recommendations using a graded system that takes into account the overall quality of the evidence and the magnitude of the net benefit of the recommendation. Recommendations for or against a treatment may be characterized as strong or weak based on a variety of factors (e.g., confidence in the quality of the evidence, weight of treatment benefits versus risks, feasibility). The CPGs also state if there is insufficient evidence to develop a recommendation. A further description of this process and CPGs on specific topics can be found on the VA clinical practice guidelines website.

Q: Do other authoritative reviews recommend light therapy as a treatment for MDD?

A: No. Other authoritative reviews have not substantiated the use of light therapy for MDD.

Other recognized organizations conduct systematic reviews and evidence syntheses on psychological health topics using grading systems similar to the VA/DOD CPGs. Notable among these is Cochrane, an international network that conducts high-quality reviews of healthcare interventions.

- Cochrane: A 2004 review of light therapy for non-seasonal depression concluded that the benefit of light therapy is "modest though promising" for non-seasonal depression (Tuunainen, Kripke, & Endo, 2004). Overall, treatment response was better in the bright light group than in the control treatment group, but this difference was not statistically significant.

Q: What conclusions can be drawn about the use of light therapy as a treatment for MDD in the MHS?

A: Based on the current evidence base, light therapy has a "weak for" recommendation for the treatment of MDD. *The* 2022 *VA/DoD Clinical Practice Guideline for the Management of Major Depressive Disorder* suggests offering light therapy to patients with mild to moderate MDD with or without a seasonal pattern. While the emerging evidence is promising, future studies examining the efficacy of light therapy for MDD should be more standardized in their design, including the use of an adequate placebo control and the identification of optimal duration, timing, and intensity of treatment. For additional guidance on selecting a treatment for MDD, please visit the PHCoE Clinician Resources section of the website and navigate to clinical support tools.

References

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