ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 04 | April - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

LIGHT IN THE DARKNESS OF SAD - LIGHT THERAPY & SEASONAL AFFECTIVE DISORDER- A SYSTEMATIC LITERATURE REVIEW

Healthcare

Dr Aabha Gupta Adarsh Hospital ,Sanganer Jaipur.
Dr Rukmini Singh RBH hospital Jaipur.
Dr Radhika Singh* SDMH Hospital Jaipur. *Corresponding Author

ABSTRACT

Seasonal affective disorder is a seasonal pattern of recurrent depressive episodes most commonly during autumn or winter and remission in spring. .Numerous studies have found that the prevalence of SAD is higher in northern latitudes, where there are greater differences in daylight hours between summer and winter months. Light therapy has been found to have favorable outcomes in treatment of patients of SAD in many studies and no effect in others ..The objective of the systematic literature review was assess the efficacy of light therapy in treatment of adult patients with SAD -seasonal affective disorders .Data extraction was done and final 10 studies were finalized which fulfilled the inclusion criteria .The data was synthesized and analyzed .The results showed 7 of the studies were showing improvement in patients but were equal to placebo which also showed improvement .The 4 studies showed positive impact of light therapy on SAD and were encouraging and supportive of the hypothesis .The conclusion was that the studies were not conclusive and scientific based larger studies are needed for definitive standardized guidelines.

KEYWORDS

BLT ,SAD,RCT, Mood, serotonin, light box , depression

INTRODUCTION

Seasonal affective disorder is a seasonal pattern of recurrent depressive episodes most commonly during autumn or winter and improvement in spring. The diagnosis of SAD is typically made based on a clinical evaluation and the presence of symptoms that meet the criteria for major depressive disorder with a seasonal pattern (American Psychiatric Association, 2013).

Partonen and Lönnqvist (2000) reviewed the literature on seasonal affective disorder (SAD) and found that the etiology of SAD is thought to be related to the body's circadian rhythms and the regulation of certain hormones such as melatonin and serotonin. Reduced exposure to natural sunlight during the winter months may disrupt the body's internal clock and lead to the development of SAD. Some genetic and environmental factors may also contribute to the development of the disorder (Partonen& Lönnqvist, 2000).

Rosenthal (1993) provides a comprehensive overview of seasonal affective disorder (SAD) and suggests several diagnostic criteria for the disorder, including the presence of major depressive episodes that occur during a specific time of year (typically winter), for at least two consecutive years, with full remission of symptoms during the other seasons (Rosenthal, 1993).Seasonal affective disorder (SAD) has been reported in many different regions around the world. However, the prevalence of SAD appears to vary by geographic location and is more common in regions that have long, dark winters with reduced exposure to sunlight. According to a systematic review by Partonen and colleagues (1998), the prevalence of SAD ranges from less than 1% in some tropical countries to as high as 9.7% in some areas of Alaska.

Other studies have found that the prevalence of SAD is higher in northern latitudes, where there are greater differences in daylight hours between summer and winter months (Magnusson, 2000; Lam & Levitan, 2000). In addition to latitude, other factors such as altitude, climate, and weather patterns may also influence the prevalence of SAD in certain regions (Magnusson, 2000).

Overall, the available research suggests that SAD is a worldwide phenomenon, but its prevalence varies based on the specific environmental conditions in different regions.

BLT or bright light therapy, light therapy can be used to treat SAD and other conditions by using artificial light. (7).Types of light therapy maybe full-spectrum fluorescent light, Blue light .It is in the form of a light box and exposure is by sitting next to it for 30 minutes (7).

There are studies supporting use of BLT in SAD .Golden et al. (2005) conducted a review and meta-analysis of the evidence for the efficacy of light therapy in the treatment of mood disorders, including seasonal affective disorder (SAD). The authors found that light therapy is an effective treatment for SAD and other mood disorders (Golden et al., 2005). In another study Kripke et al. (1998) investigated the efficacy of light therapy for nonseasonal depression and found that it was an effective and rapid treatment for this condition.

On the other hand a systematic literature review on light therapy for preventing SAD by Barbara Nussbaumer found that comparison of both forms of preventive light therapy versus each other yielded similar rates of incidence of depressive episodes in both groups.

In view of the various studies regarding use of BLT a systematic literature view for a synthesis and information on this important and simple method to improve mood ,sleep and activity levels for people suffering from SAD seemed important.

OBJECTIVE -

To assess the efficacy of light therapy in treatment of adult patients with SAD -seasonal affective disorders

METHODOLOGY-

A systematic literature search including RCT investigating patients with SAD and effect of BLT against placebo or dim light placebo The databases searched were GOOGLE SCHOLAR.,WEB OF SCIENCE and PUBMED .The outcome was measured by the validated scales as improvement in symptomatology.

Data collection was done by 2 authors on independent basis .

Predefined Inclusion criteria -RCT studies in adults with SAD and light therapy, A total of 10 studies were finalized (**Fig 1).**

Name and details	Study type &year	Number participants	Author& country	Method & Scale	Conclusions
1. 100,000 lumens to treat seasonal affective disorder: A proof of concept Bright, whole-ROom, All-Day (BROAD) light therapy .-depressanxiety -2022dec;39(120:760-769-doi10.1002/da/23281	RCT 2022	62	Sandkuhleretal Germany	(BROAD light therapy) or standard 10,000 lux SAD light box. Hamilton Depression Rating Scale-Seasonal Affective Disorders	: BROAD light therapy is feasible and seems similarly effective as the standard of care while not confining the participants to 30 min in front of a light box. In follow-up trials, BROAD light therapy could be modified

					for increased illuminance, which would likely improve its effectiveness
2.Br J Psychiatry. 2001 Apr;178:311-6. doi: 10.1192/bjp.178.4.311./Comment in Br J Psychiatry. 2001 Sep;179:270. AIMS: To evaluate light therapy in primary care.	RCT 2001	57	Wileman SM et al Scotland	- randomly bright white or dim red light Hamilton Depression Rating Scale-Seasonal Affective Disorders.	primary care patients with with SAD improve after light therapy but bright white light is not associated with greater improvements
3.Am J Psychiatry. 2015 Sep 1;172(9):862-9. doi: 10.1176/appi.ajp.2015.14101293. Epub 2015 Apr 10.Randomized Trial of Cognitive-Behavioral Therapy Versus Light Therapy for Seasonal Affective Disorder: Acute Outcomes.	RCT 2015	177	Rohan KJ(1), USA	CBT -SAD group and light therapy group Hamilton Depression Rating Scale-Seasonal Affective Disorders	: CBT-SAD and light therapy are comparably effective for SAD during an acute episode, and both may be considered as treatment options.
4. Affect Disord. 2008 Jun;108(3):291-6. doi: 10.1016/j.jad.2007.10.009. Epub 2007 Nov 28.Light room therapy effective in mild forms of seasonal affective disorder--a randomisedcontrolled study.	RCT 2008	50	rastad C et al Sweden	light therapy group and no light therapy group Hamilton Depression Rating Scale-Seasonal Affective Disorders	Light room therapy was effective in reducing depressive symptoms in subjects with winter depressive mood. Results were maintained over a period of one month.
5,.BMJ Open. 2020 Oct 28;10(10):e038030. doi: 10.1136/bmjopen-2020-038030.Effects of bright light therapy for depression during pregnancy: a randomised, double-blind controlled trial.	RCT 2020	67 preg	Bais B(1), Holland	BLT group and placebo group Hamilton Depression Rating Scale-Seasonal Affective Disorders	: Depressive symptoms of pregnant women with depression improved in both treatment arms.
.6. J Nerv Ment Dis. 2012 Jan;200(1):51-5. doi: 10.1097/NMD.0b013e31823e56ca.-imporvment in depression scores after 1 hour of light therapy treamtne in patients with SAD	RCT 2012	23	Reeves et al USA	BLT group and placebo group Hamilton Depression Rating Scale-Seasonal Affective Disorders	modest improvement detected
7.BMC Psychiatry. 2007 Aug 7;7:38. doi: 10.1186/1471-244X-7-38.A controlled trial of litebook emitting diode light therapy device for treament of SAD	RCT 2007	23	Desan PH et al USA	litebook LED treatment device - bright white ligth group and placebo group Hamilton Depression Rating Scale-Seasonal Affective Disorders	support the hypothesis that light therapy with the Litebook is an effective treatment for SAD.
8. Biol Psychiatry. 2001 Nov 1;50(9):691-8. doi: 10.1016/s0006-3223(01)01182-9./extraocular light therapy in winter depression a double blind placebo controlled study	RCT 2001	29	Koorengevel et al Netherland	extraocular light fibreoptic illumination &placebo(no light poplital fossa) Hamilton Depression Rating Scale-Seasonal Affective Disorders	: The response to extraocular light therapy in SAD patients did not exceed its placebo effect. Extraocular light did not induce a phase shift of the circadian pacemaker.Both showed improvement
. 9.Biol Psychiatry. 2001 Aug 1;50(3):205-16. doi: 10.1016/s0006-3223(01)01200-8./dawn simulation and bright light in the treament of SAD a controlled study	RCT 2001	95	Avery DH et al USA	3groups/bright light,dawn simulation and placebo Hamilton Depression Rating Scale-Seasonal Affective Disorders	: Dawn simulation was associated with greater remission and response rates compared to the placebo and compared to bright light therapy.Placebo and BLT was similar response
10.. BMC Psychiatry. 2011 Jan 28;11:17. doi: 10.1186/1471-244X-11-17.-Low-intensity blue-enriched white light (750 lux) and standard bright light (10,000 lux) are equally effective in treating SAD.	RCT 2011	22	Meesters Y et al Netherland	high intensity and blue enriched white light low intensity) Hamilton Depression Rating Scale-Seasonal Affective Disorders	Both treatment conditions were found to be highly effective

There are 10 studies all random controlled trials carried out in the years 2000 to 2022.The patients were all adults and had SAD - seasonal affective disorder.They were studies conducted in Germany, USA, Scotland, Netherlands and Holland and Sweden and Germany.

Total number of participants were 605. The studies were generally of two groups. One was a control group which was either exposed to a placebo effect or no light therapy and the other was the group which was exposed to light therapy and they were patients all having history of SAD. The depression scale used was Hamilton Depression Rating Scale-Seasonal Affective Disorders.

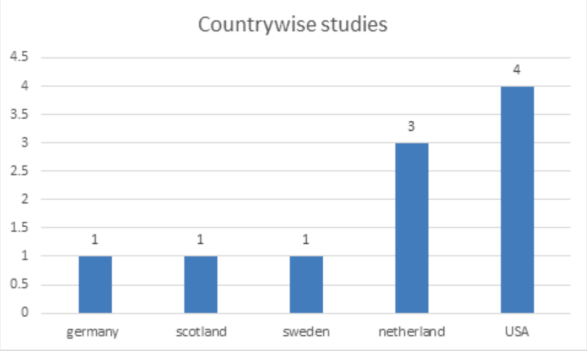

Fig -1

The studies were conducted mainly in the cold countries of Netherland (3),Sweden (1),Scotland (1) and USA(4) and Germany (1) as studies have found that the prevalence of SAD is higher in northern latitudes, where there are greater differences in daylight hours between summer and winter months.

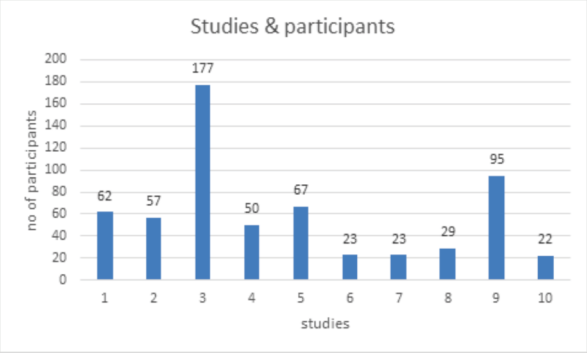

Fig 2

The Fig 2 illustrates that the participants in the various studies were in range of 22 to 67 .Two studies had more -95 and 177 participants The number of the studies is the number in the tabular sheet of studies synthesis

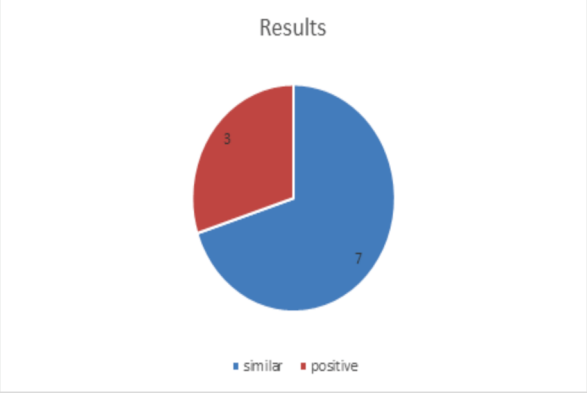

Fig 3

As shown in Fig 3 there were no studies which showed no impact .All studies reported positive impact of light therapy .But the placebo effect was similar in 7 studies whether no light or low wavelength light etc.Only 3 studies reported positive association with light therapy and SAD depression by the validated scale .

DISCUSSION

SAD -Seasonal affective disorder has many options for treatment and one simple therapy is BLT or bright light therapy .The light box therapy involves exposure to bright artificial light that mimics natural sunlight for a period of 30 minutes every day during the period of seasonal affective disorder .The idea behind light box therapy is that it can help regulate circadian rhythms and increase serotonin levels, leading to improvements in mood and energy levels.It has also shown benefit in SAD in visual impairment and blindness according to a study by Helle(2021)(11)but eye safety has to be ensured .

Several studies have investigated the effectiveness of light box therapy for SAD, with generally positive results. For example, a meta-analysis of 20 randomized controlled trials found that light box therapy was significantly more effective than placebo in reducing SAD symptoms, with no significant side effects reported (Golden et al., 2005).(12).

In a study However, it is important to note that light box therapy is not effective for everyone with SAD, and individual response to the treatment can varyIn a study of blue light therapy for seasonal and non seasonal depression -a systematic literature review by Andre (2022)the efficacy of blue light therapy was unproven for treatment of seasonal MDD .

In addition, it is important to use a high-quality light box that emits the appropriate spectrum of light and to follow recommended guidelines for treatment duration and timing. The adverse effects should also be kept in mind with proper use of light boxes.

Overall, light box therapy is a promising treatment option for SAD that can provide relief for many individuals. It is important to consult with a healthcare provider to determine if light box therapy is appropriate and to receive guidance on selecting and using a light box effectively.

CONCLUSIONS-

SAD has various treatment options and BLT is a considered significant treatment option .The available evidence is from different types of studies and different sample sizes and is limited .Further trails with longer duration and larger sample sizes may better define and standardize use of BLT with standardized light box devices .

REFERENCES:

[1] American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.).
[2] Rosenthal, N. E. (1993). Winter blues: Seasonal affective disorder: What it is and how to overcome it. Guilford Press.
[3] Partonen, T., & Lönnqvist, J. (2000). Seasonal affective disorder. The Lancet, 355(9201), 1369-1374. https://doi.org/10.1016/S0140-6736(00)02107-1
[4] Lam, R. W., & Levitan, R. D. (2000). Pathophysiology of seasonal affective disorder: A review. Journal of Psychiatry & Neuroscience, 25(5), 469-480.
[5] Magnusson, A. (2000). An overview of epidemiological studies on seasonal affective disorder. Acta Psychiatrica Scandinavica, 101(3), 176-184. https://doi.org/10.1034/j.1600-0447.2000.101003176.x
[6] Partonen, T., Lönnqvist, J., & Tiihonen, J. (1998). Seasonal affective disorder. The Lancet, 352(9137), 1369-1374. https://doi.org/10.101
[7] https://health.clevelandclinic.org/light-therapy/December 2, 2021 / Mental Health How Light Therapy Can Help With Seasonal Affective Disorder (SAD)
[8] Golden, R. N., Gaynes, B. N., Ekstrom, R. D., Hamer, R. M., Jacobsen, F. M., Suppes, T., ... & Nemeroff, C. B. (2005). The efficacy of light therapy in the treatment of mood disorders: A review and meta-analysis of the evidence. American Journal of Psychiatry, 162(4), 656-662. https://doi.org/10.1176/appi.ajp.162.4.656
[9] Kripke, D. F., Mullaney, D. J., Atkinson, M., Wolf, S., & Lester, J. (1998). Light treatment for nonseasonal depression: Speed, efficacy, and combined treatment. Journal of Affective Disorders, 49(2), 109-117. https://doi.org/10.1016/S0165-0327(97)00141-4
[10] 2019 Mar 18;3(3):CD011269. doi: 10.1002/14651858.CD011269.pub3. Light therapy for preventing seasonal affective disorder Barbara Nussbaumer-Streit 1, Catherine A Forneris, Laura C Morgan, Megan G Van Noord, Bradley N Gaynes, Amy Greenblatt, Jörg Wipplinger, Linda J Lux, Dietmar Winkler, Gerald Gartlehner Affiliations expand PMID: 30883670 PMCID: PMC6422319 DOI: 10.1002/14651858.CD011269.pub3
[11] Helle O Madsen,Shakoor Ba Ali,Idahagemen,Henrik Lund-anderson,Klausmartiny(2021)light therapy for SAD in visual impairment and blindness-a pilot study ,Acta neuropsychiatr2021 aug 33(4)Doc 10.1017/neu/202016
[12] Golden, R. N., Gaynes, B. N., Ekstrom, R. D., Hamer, R. M., Jacobsen, F. M., Suppes, T., ... & Nemeroff, C. B. (2005). The efficacy of light therapy in the treatment of mood disorders: a review and meta-analysis of the evidence. American Journal of Psychiatry, 162(4), 656-662.
[13] Andre Do,Victor W Li,SamanthaHuang,Erin E Michalak,Edwin M Tam,TrishaChakraborthy,Lakshami N Yatham,Raymond W Lam ,Blue light therapy for seasonal and non seasonal depression – a systematic review and metaanalysis,of RCT ,Can J Psychiatry ,2022,Oct 67,(10)745-754 doi:10.1177/07067437221097903
[14] www.mayoclinic .org-patient &health information,Seasonal affective disorder