Bright light therapy

Science, Physics

Bright Light Therapy, also known as light therapy or phototherapy, is a relatively new treatment method that is still being researched to define its usage and effectiveness. Light therapy is the treatment of certain psychological disorders via exposure to bright fluorescent lights for up to four hours a day or as little as fifteen minutes a day. Light exposure is thought to regulate melatonin levels in the blood and, as such, has been most effective in treating seasonally affective disorder or SAD (Columbia 2).

However, the method has been researched to treat other common disorders as well. Sleep insomnia, dementiaand some forms of skin cancer are a few of the examples. Just like with any other alternative medical treatment to pharmacological methods, light therapy has come under strong critical review and its implementation has been low compared to drug therapies. History Historically, humans were not thought to be affected by seasonal changes in day length (Rohan et al 491).

Because of this, currently accepted seasonal disorders such as SAD were not known in the medical field. It was not until doctors researched specific causes ofdepressionthat were known to become onset in late fall and remitted in the spring, was a connection made between time of sun exposure and depression (SLBTR. org). A new disorder, SAD had been defined and continues to be hotly debated today. Although light treatment can be dated all the way back to Aristotle, who suggested treatment for certain diseases by lying in the sun, modern methods began in the 1950’s (slbtr.

org) Originally, light was used as a device for the removal of skin acne until research on the subject of light therapy was conducted by Dr Lewy in the

1980’s, the founder of the Society for Light Treatment and Biological Rhythms (slbtr. org). The first documented treatment of a person with SAD was an engineer complaining of depression that came at the same times each year. Two hours of artificial sunlight in both the morning and in the evening were administered at the first onset of depression.

The treatment was deemed successful, and since then over 2, 500 people have been treated for SAD as well as numerous other conditions with light therapy. Implementation and Use Light therapy is mostly thought to affect the levels of the light-sensitive hormone melatonin in the blood (Columbia. edu). It is this hormone that is responsible for day-night cycles of the body. When subjected to high levels of light the body is stimulated negatively to produce less melatonin or to “ skip ahead” in its cycle. Thus, the effects of depression caused by SAD are avoided.

Some of the long term effects of increased melatonin levels have also been studied with mixed results coming from treatment with light therapy. The exact implementation of the treatment varies greatly for different people. Some research has shown the most effective time of treatment to be in the waking hours or just before waking while still others believe the best time to be in the evening hours just before bed. The length of time patients are exposed to the light also changes depending on how much the patient is affected or the severity of the issue.

Still again, the intensity of the light can be changed according to personal comfort or need (Skjerve et al 518). The number of variables in the method of light therapy has prevented the successful study of the treatment in many instances. It is difficult to determine the correct level of treatment for

conditions that in themselves have not yet been thoroughly documented. While potentially negative side effects in the use of light therapy are minimal they do still exist. Some patients experience nausea, headaches, or eyestrain/irritation. These are generally mild, though, and dissipate after just a few days (Columbia).

Another, much more infrequent, effect of light therapy is a state of hyperactivity, called mania. This is typically observed in the late spring or summer months (Cancer. org). It is most easily prevented through constant supervision from the physician and proper light therapy usage. Retinal discomfort has also been reported among some patients. This can be solved through the use of special glare-reducing glasses made exclusively for the purpose of light therapy, but often times those with retinal pathologies, such as glaucoma or cataracts are excluded from studies and are therefore usually excluded from treatment as well (Columbia).

Otherwise, with proper medically accepted light therapy devices the side effects are minimal. The acceptance of light therapy has been met with strong opposition. Several factors have affected the widespread use of light therapy as a method for controlling any number of disorders. The cultural stigma attached with any alternative to Western medicine has prevented many people from accepting the treatment as opposed to conventional medicine.

Evidence directly linking the method to treating certain conditions has also been spotty due to the difficulty of finding patients to research and building an experiment that would irrefutably confirm light therapy as a treatment for whatever illness was tested. Finally, the actual treatment itself has kept

many people from following through with the recommended dosages. Numerous patients have been reported as quitting treatment because of the length of time commitment necessary or discomfort reported by sitting in front of a bright box for hours on end (Rohan et al, 492).

Newer light therapy technologies have been developed that reduce the time required to approximately 15 minutes a day and that have various light spectra that don’t produce glare for the user, but until proper research has been conducted on all of these new methods acceptance of the treatment will remain relatively when compared to modern pharmacological medicines. Applications Numerous studies have been conducted to determine the efficacy of light therapy in treating different disorders. Dementia is a condition that has received the attention of many researchers attempting to discover its root cause and resulting treatment.

The irregular sleep patterns observed among patients with dementia has been hypothesized to be corrected with bright light therapy. As explained before, the exact dosage and type of light are yet to be determined but a study by Ancoli-Israel et al measured continuous sleep activity in elderly patients innursinghomes before and after treatments of morning, evening and both morning and evening bright light therapies. A significant change in sleep patterns was exhibited by the morning/evening treatments with no statistically significant changes shown by the singular morning or evening treatments.

It was suggested by the authors to increase the ambient levels of light in common areas of the nursing home in order to easily treat the symptoms of sleep disturbance exhibited in patients with mild to severe dementia.

Insomnia has also been shown to be treatable with light therapy. It has been documented in treating several types of sleep disorders in patients not afflicted with dementia including delayed sleep phase type patients, advanced sleep phase syndrome and nonentrained sleep and wake disorders (Atwood 53-55).

Trials have been more effective in studying the effectiveness of light therapy in patients not suffering from other psychological disorders but the same problems that exist in other studies also exist when studying general sleep disorders. The evidence presented by Ancoli-Israel et al is promising, however a meta-analysis conducted by Skjerve et al has pointed out many of the flaws in the light therapy treated dementia studies and by association many of the other studies conducted by researchers concerning light therapy. First, few of the trials were controlled, inasmuch they can be controlled according to generally accepted standards.

All of the studies suffered from a small number of patients in which to research and because of that experienced problems with numerous external variables affecting the results. Practicability of the treatment was not studied in any of the trials. The implementation of light therapy depends largely on the ease of use of the product and a solid body of knowledge associated with it. Proper research, with the exception of the Arconi-Israel et al trial has yet to be conducted on a large scale. Thusly, no conclusive treatment methods can be developed.

Before treating for seasonal affective depression and other psychological conditions, light therapy was thought to be effective in treating skin conditions such as psoriasis or skin acne. The treatment is still used to treat

patients with psoriasis with limited success but is not as widely used for patients with skin acne. The feasibility of asking people to sit in front of a light box for several hours at a time for a relatively benign issue as skin acne is pointed to as the biggest cause of the ineffectiveness of the treatment. Light therapy is, however, an accepted from of treatment for psoriasis (Psoriasis. org).

The type of light in this case involves the use of ultraviolet B rays which can cause skin irritation. Treatment has to be more closely monitored than during light therapy used for SAD. Despite this, UVB rays have been shown to penetrate the skin and affect underlying skin cells, thereby slowing their growth and slowing the process of psoriasis. Light therapy is used more often for the treatment of seasonal affective depression, by far. Research for this type of use far exceeds any other method of treatment. The Society for Light Treatment and Biological Systems advocates the use of light therapy as an effective treatment for the disorder.

People suffering from SAD report greatly increased amounts of daily sleep, general state of chronic depression and avoidance of social situations. While many people experience “ the winter blues”, reported to be as much as three times as many people as those with clinical SAD, actual SAD is an extreme level of depression that affects the daily life of those suffering from it (slbtr. org). With the first use of light therapy to treat an engineer suffering from chronic depression on an annual basis to today, light therapy has been used as a significant treatment of the psychological disorder.

Unfortunately, despite the use of light therapy for the widespread treatment of SAD, concrete evidence linking it to the effective treatment of the disorder

is rare. The same problems afflicting the dementia studies exist in the SAD studies. Development of an acceptable experiment, acquiring suitable patients and the relative difficulty of recording immediate results have all held back the proliferation of the treatment for treating SAD. Conclusion Light therapy, just like most other alternative medical treatments, has had difficulty in developing a solid body of evidence in support of the hypotheses that have been attached to it.

Effective treatment of SAD, some skin disorders and several types of sleep disorders have been shown to be treatable by light therapy. Dementia, other forms of depression and even cancer have been shown to be inconclusively treatable by light therapy. That does not mean, however, that light therapy is not effective in solving issues with anything other than seasonal affective disorder or sleep disorders. Problems of proper experimental method, small amounts of people tested and efficacy of the treatment have impeded light therapy clinical trials.

Unfortunately, cultural roadblocks lie in the way of the widespread use of light therapy. Further research of light therapy is necessary in several fields of the subject. First, conclusive evidence of the link between light therapy and its leading treatable syndrome, SAD, is necessary. A proper, supervised and controlled clinical trial must be developed that can be accepted by the peers of those experimenting. Once that is created, a large number of subjects must be tested in order to prevent external variables from affecting the statistical outcomes of the experiment.

Once conclusive evidence is determined on the efficacy of treating SAD with light therapy, further research can be conducted in other treatments such as

certain types of skin cancers. As difficult as this may seem by itself, funding is limited for most alternative medical treatments. Funding of the treatment must be acquired in order for light therapy to be proven as a compelling method of treatment. In the meantime, light therapy will continue to be used as a method of treating seasonal affective depression and several types of sleep disorders. References " ACS :: Light Therapy.

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